THE UNIVERSITY OF TENNESSEE AT CHATTANOOGA

CAMPUS MASTER PLAN

DECEMBER 2012


FACIEBAM VT

ACKNOWLEDGEMENTS

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EXECUTIVE SUMMARY

The goal of The University of Tennessee at Chattanooga 2012 Campus Master Plan is to create a living master plan document tool to guide future growth at UTC. By completing a thorough analysis of campus conditions and in light of the Strategic Plan we have a strong foundation from which to build. The driving forces behind the Campus Master Plan include:

1. Create facilities in support of educational/research initiatives
2. Provide physical access to all aspects of the campus
3. Support technology (infrastructure) to support instruction, learning, scholarship, service
4. Provide leadership as an environmentally sustainable institution
5. Promote connections to the environmental city of Chattanooga
6. Build the framework for a safe and appealing campus landscape
7. Seek resources to support research and creative/scholarship
8. Encourage facilities that support strong graduate programs
9. Create support for intercollegiate athletics program of the highest caliber
10. Provide housing and residence life opportunities that unify students in an engaged learning community

INTRODUCTION

The University of Tennessee at Chattanooga (UTC) 2012 Campus Master Plan is built on a strong foundation: UTC's past strategic planning, current growth initiatives, and recent campus achievements. Significant institutional changes that have occurred since 2000 include:

- Carnegie Community Engagement Classification and strengthened relationships with the region, the city of Chattanooga and surrounding neighborhoods
- UTC Chancellor's signing of the American College and University Presidents Climate Commitment (ACUPCC), with the goal of carbon neutrality by 2050
- Continued academic excellence in Health Sciences; Science, Technology, Engineering and Math initiatives (STEM); and other interdisciplinary degree programs

UTC has also successfully implemented many of the campus facility and open space improvements identified in the 2000 Campus Master Plan. Completed projects include:

- Property acquisitions (Enterprise South, Engel Field, multiple McCallie/Oak/Douglas parcels)
- Engineering, Math, & Computer Science Building
- University Center expansion & major renovation
- Aquatics & Recreation Center, the "ARC"
- South Campus Housing
- Academic building renovations and improvements (Race, Hooper, Grote, and Metro)
- Multiple Central Energy Plant, and utility infrastructure expansion and improvements
- Lawson Student-Athlete Success Center
- Intramural sports field expansion and Scrappy Moore field renovation
- Crossroads dining renovations and improvements
- Significant landscape & hardscape improvements (Pedestrian Mall Phase 1, Heritage Plaza and campus gateways)
- Demolition of North & South Stadium, Siskin Memorial and J. Avery Bryan buildings

Due to successful capital planning, additional campus facility improvements are currently under planning, design or construction, these include:

- New Library building
- Bretske Hall improvements
- Pedestrian Mall, Phase 2 (Chamberlain Pavilion and "Cardiac Hill" improvements)
- Stagmaier Hall housing restoration

FIGURE 1.1 EXISTING CAMPUS

CAMPUS MASTER PLAN PROCESS

In 2010, a Campus Master Plan Steering Committee was convened to guide the update to the 2000 Campus Master Plan. A planning team led by Perkins+Will was selected to complete the update. A hallmark of the planning process has been its highly participatory and consensus-building activities. A wide cross section of on-campus groups including administrative, academic, student life, and varsity sports leadership; faculty; staff; and students – have been invited to attend interviews, focus groups and campus open house forums throughout the academic year. In addition, off-campus stakeholder groups and organizations from the city of Chattanooga and surrounding neighborhoods were invited to participate in the planning process. Interviews, focus groups and community open house forums were held to gather input on planning goals, concepts, and final recommendations. The following components guided these planning activities and discussions:

- Master Plan goals and objectives
- Strategic Plan relationship to the physical campus
- Evaluation of 2000 Campus Master Plan
- Completion of a Comprehensive Housing Master Plan
- Sustainable campus perspective
- Open space
- Athletics and recreation spaces
- Circulation and transportation
- Land ase and acquisition
- Campus infrastructure
- Campus renewal, reprogramming, & asset maintenance plan
- Space utilization and affinity program alignment

MASTER PLAN GOALS + OBJECTIVES

1. STRATEGIC TARGETS AND INITIATIVES

Enrollment growth from 11,000+ existing:

- 13,000 short term
- 15,000 intermediate term
- 18,000 long term

Academic excellence
- Honors Colleges
- Health Sciences expansion
- STEM research and lab science clusters
- Interdisciplinary degree programs

Community access and engagement

2. LAND AND BUILDING USE

Coordinated with surroundings
- Downtown Chattanooga
- Erlanger Medical Center
- Historic Fort Wood
- MLK Corridor
- Greenway / Riverwalk

Vibrant 24/7 residential campus housing 35% of undergraduates

3. OPEN SPACE

- Campus as an arboretum
- Well-connected and visually attractive
- Pedestrian-oriented and accessible
- Conserving potable water and managing rainwater
- Expanded outdoor sports and gathering areas

4. CIRCULATION AND PARKING

- Shuttle/Bus & bicycle-friendly transportation systems
- Mixed-use parking decks
- Perimeter parking on-campus, meeting zoning requirements
- Reduced single-occupancy demand

5. UTILITY INFRASTRUCTURE AND ENERGY USE

- Plant and distribution efficiency upgrades and improvements
- 50% carbon reduction by 2030
- Net carbon neutrality by 2050

MASTER PLAN RECOMMEDATIONS

The 2012 Campus Master Plan strategies and recommendations are a result of detailed analysis completed during the initial phase of the master plan process. For ease of cost estimating and tracking, they are itemized and organized into implementation phases according to the type of construction (building, open space, and infrastructure). Every effort has been made to provide flexibility in the phasing recommendations so that if the timing for approvals or funding changes, project sequence and construction sites can shift to meet the need. It is important to note that wherever possible the physical planning recommendations should be supported by university policies.

SPACE NEEDS

The existing UTC campus is comprised of 77 buildings encompassing 2,408,000 gross square feet of space. A space needs analysis was undertaken to project the academic, administrative, and student life facility requirements for the targeted enrollments of 13,000, 15,000, and 18,000 student Head Count (HC). The analysis incorporated the following components: existing baseline square footage; square footage added due to projects in design or construction; square footage anticipated due to successful requests made through the captial budgeting process; reduction of square footage due to facility remodeling or demolition; and benchmark square footage need per full-time equivalent student enrollment. The space needs analysis, and resultant Space Model, was based on Tennessee's Higher Education Commission document, 'THEC Space Allocation Guidelines User's Manual, and the following data and criteria:

- Federal Index Classification Manual (FICM) (space taxonomy)
- Existing Space Inventory provided by UTC
- Class Schedule provided by UTC
- State of Tennessee higher education space standards (THEC)
- Council for Educational Facility Planners International (CEFPI) (general guidelines)
- Perkins+Will square footage benchmark data from campuses throughout the United States

Application of the THEC Space Allocation Guidelines User's Manual (2009) reveals a current space formula deficiency of space at UTC (Table 1.1). Generally, there is a current deficit of about 13,000 Net Assignable Square Feet (NASF) of space that includes classroom plus service space. Using an efficiency factor of 0.65, this translates into about 20,000 Gross Square Feet (GSF) of deficit building space. The Research category indicates a deficit of approximately 23,000 NASF or 35,000 GSF. The Study category includes the new library (currently under construction) and a renovated Lupton Library as the

FIGURE 1.2 VISION PLAN

Riverside dr
East 3th st
East 4th st
East 5th st
Vine st
Oak st
McCallie ave
East 8th st
East Martin Luther King blvd
Georgia ave
Lindsey st
Houston st
Mabel st
Foster st
Douglas st
University st
Baldwin st
Palmetto st
East 3th st
Central Ave
Oneal st
Fortwood st
Vine st
Oak st
McCallie ave
East 8th st
East Martin Luther King blvd
Magnolia st
Park ave
Fairview ave
Central ave

TABLE 1.1 - SPACE MODEL

SPACE TYPE	NET ASSIGNABLE SQUARE FEET AVAILABLE	JUSTIFIED BY THEC FORMULA	(DEFICIT)/ SURPLUS	(DEFICIT)/ SURPLUS (GSF)
CURRENT (2011)				
Classroom + Service	149,551	167,333	(17,762)	(26,249)
Teaching Labs + Service	111,684	108,397	3,287	5,056
Open Labs	53,223	49,245	3,978	6,120
Research Labs + Service	39,191	62,000	(22,809)	(35,090)
Office	333,681	244,387	89,284	137,360
Study	83,657	111,883	(26,226)	(40,229)
Recreation/Physical Education	167,507	176,339	(8,832)	(13,587)
15,000 HC				
Classroom + Service	147,159	219,444	(72,284)	(111,206)
Teaching Labs + Service	109,784	142,154	(32,370)	(49,800)
Open Labs	51,247	64,581	(13,334)	(20,513)
Research Labs + Service	39,191	124,000	(84,809)	(130,475)
Office	326,956	284,804	42,154	64,852
Study	83,014	146,726	(63,712)	(98,018)
Recreation/Physical Education	167,507	210,078	(67,571)	(103,955)

baseline for current space analysis, a current deficit of this space type exists. This will continue to be identified as a need at the 15,000 HC target. A current deficit of 13,500 GSF in the Recreation/Physical Education category also exists at the 15,000 HC target.

Over all space type categories analyzed, UTC will have a deficit of 375,000 NASF at the 15,000 HC target. If UTC reaches this target and goes beyond to 18,000 HC this deficit rises to approximately 640,000 NASF. UTC has stated its optimal size is at the 15,000 HC target, but additional facility space to meet a future demand could be developed in future expansion areas identified in the campus plan. By optimizing program migration and facility renovation over time, the campus will increase efficiency and utilization of current building area, which could also help meet targets beyond 15,000 students. Table 1.1 also shows projected space surpluses and deficits based on THEC and other national guidelines.

A campus space needs diagram (Figure 1.3) represents the square footage identified in the Space Model. The deficit, or "need," is represented by colored building blocks, at the scale and mass of the existing campus plan that shows the primary use of each UTC building. Recommendations for facility space needs to accomodate a campus of 15,000 students - whether renovation, repurposing, addition or new construction - are identified by the following major uses:

- Academic / Learning
- Administration/Support
- Student Support
- Student Housing
- Sports & Physical Education
- Athletics

FIGURE 1.3 SPACE NEEDS

PLANNED PROJECTS

ACADEMIC/ LEARNING

- LAB SCIENCE — 81,200 GSF (4 FLOORS)
- HEALTH SCIENCE — 78,400 GSF (4 FLOORS)
- COMMUN. — 40,400 GSF (4 FLOORS)

PARKING

- 700 STALLS (4FLOORS)

STUDENT HOUSING

- 4 BLDGS, 300 BEDS EACH (4 FLOORS)

ADDITIONAL TARGET SPACE NEEDS (13,000 HC)

REC. SPORTS & PHYS. ED.

- 48,000 GSF (2 FLOORS)

PARKING

- 120 STALLS EACH

STUDENT SUPPORT

- 78,000 GSF (2 FLOORS)

ACADEMIC/ LEARNING

- 172,000 GSF (4 FLOORS)

STUDENT HOUSING

- 2 BLDGS, 286 BEDS EACH (4 FLOORS)

ADMIN/ SUPPORT

- 12,000 GSF (1 FLOOR)

ADDITIONAL TARGET SPACE NEEDS (15,000 HC)

ACADEMIC/ LEARNING

- 186,000 GSF (4 FLOORS)

REC. SPORTS & PHYS. ED.

- 67,500 GSF (2 FLOORS)

PARKING

- 120 STALLS EACH

STUDENT SUPPORT

- 50,000 GSF (2 FLOORS)

FACILITY SUPPORT

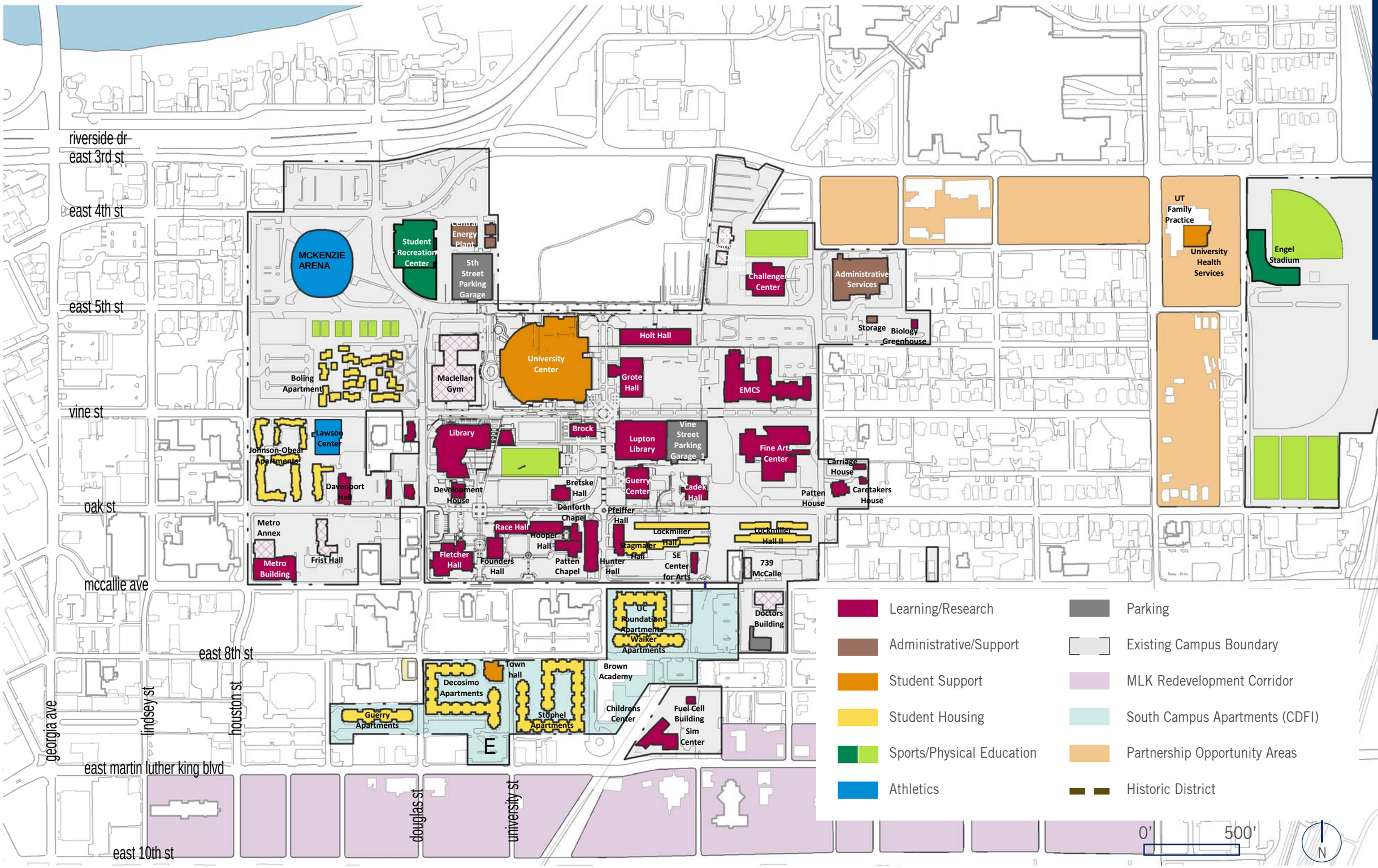
- 4,200 GSF (1 FLOOR)

STUDENT HOUSING

- 1 BLDG, 182 BED (4 FLOORS)

ADDITIONAL INTERCOLLEGIATE ATHLETICS (NCAA PEERS)

- ATHLETICS SUPPORT FACILITY — 75,000 GSF (3 FLOORS)
- FOOTBALL PRACTICE FAC. — 40,000 GSF (2 FLOORS)
- VOLLEYBALL/ WRESTLING GYM — 50,000 GSF (2 FLOORS)
- TENNIS/FIELDHOUSE — 40,000 GSF (1 FLOOR); TENNIS
- TRACK/SOCCER STADIUM — 25,000 GSF (2 FLOORS); TRACK & FIELD, SOCCER



MASTER PLAN VISION

The 2012 UTC Campus Master Plan outlines a future vision for campus development in terms of buildings, open space, circulation and parking, transit and bicycle, utilities and land acquisition. Recommendations synthesize UTC goals, program aspirations, community concerns, and physical and funding constraints on development.

BUILDING AND LAND USE

Future facility plans for UTC are grounded in the 2000 Campus Master Plan, recent capital budgeting, the Comprehensive Housing Master Plan, and city of Chattanooga planning activities. They create academic neighborhoods, complement the "academic main streets" of Oak and Vine, firmly anchor UTC student neighborhoods to evolving community revitalization along Martin Luther King Boulevard and Georgia Avenue, satisfy UTC current and future space needs, showcase signature programs, enable partnerships, and provide flexibility for program expansion and growth. Recommendations for future building renovation, repurposing and construction also engage UTC with its surroundings:

- Downtown Chattanooga
- Erlanger Medical Center
- Historic Fort Wood
- MLK Corridor
- Greenway / Riverwalk

RESIDENTIAL STUDENT LIFE

The Campus Master Plan includes a Comprehensive Housing Master Plan. It identifies goals and defines an implementation path to maintain a 35% on-campus population for full-time students. The following recommendations were made:

- Add 1,800 new beds near the campus core, in approximately 600 bed increments, adjacent to existing student housing neighborhoods.
- Provide a wider variety of housing types to improve the first and second year experience, transitioning from semi-suites to suites and apartments.
- Focus new construction on semi-suites and suites, unit-types currently missing from campus.
- Include mixed-use opportunities and living-learning spaces to create vibrant, 24/7 residential communities.
- Position South Campus Apartments, over time, to be renovated and fully incorporated into a living-learning environment.

OPEN SPACE

Recommendations to improve campus open space have been made based upon a detailed analysis of current campus conditions and future needs for academics, student life, athletics, recreation and physical education. Concepts and strategies were guided by the following objectives:

- Well-defined campus edges and entrance markers
- Consistent and coherent landscape plantings, following the collegiate gothic expression
- Tree preservation and renewal tree planting
- Enhanced student gathering spaces
- Strong pedestrian connections for North-South and East-West pedestrian corridors and streetscapes
- Accessible pedestrian circulation
- Optimized views both into and from campus
- Academics on display and outdoor art
- Coordinated open space and building use

The overarching strategy is to clearly link university open space with the Greenway – along its entire length from 3rd Street to Martin Luther King Boulevard – and to expand the new Chamberlain Field Quad into a diagonal matrix of flexible campus lawns. Three academic quads are envisioned as the heart - or "public realm" -

that binds UTC's learning and research neighborhoods. Recommendations for improved campus open spaces relate directly to their use – whether edges of campus as the University transitions to surrounding neighborhoods or within the historic campus core - to create a recognizable network of comfortable gathering areas, athletic and recreation fields, paths, walks, and streetscapes.

CIRCULATION AND PARKING

Vehicular circulation and parking will continue to have a significant impact on both the sustainability targets and future land use of UTC. As a key component within a comprehensive set of campus systems, they are at the core of strategies for successful campus growth. To define a future path for circulation and parking improvements, the following recommendations were made:

- Replace lost surface parking (due to future construction or streetscape improvements) to meet, not exceed, the University's Planned Unit Development agreement with the city of Chattanooga.
- Place parking at the campus perimeter, while retaining strategic short-term and accessible parking areas near the core of campus.
- Utilize mixed-use parking structures to efficiently use land and potential funding.
- Consider alternative vehicle/fuel infrastructure, such as EV charging stations.
- Improve unsafe or inefficient street intersections in and around campus, specifically on Douglas and Palmetto.
- Incorporate overhead pedestrian bridges at key locations on campus.
- Expand limited-use street sections on Vine and Oak Streets to control through-traffic.
- Optimize planned City of Chattanooga improvements for the Central Avenue Corridor and Fourth Street.

TRANSIT AND BICYCLE

As noted in the recently completed UTC Climate Action Plan, transportation represents the second largest contributor to the institutional carbon footprint. A comprehensive approach to improve transportation and transit systems on campus will help guide the University towards carbon neutrality, improve campus traffic conditions, preserve open space and the pedestrian experience, and reduce the need for structured parking. University policies that support the physical recommendations are key to achieving success. Some of these policy recommendations include:

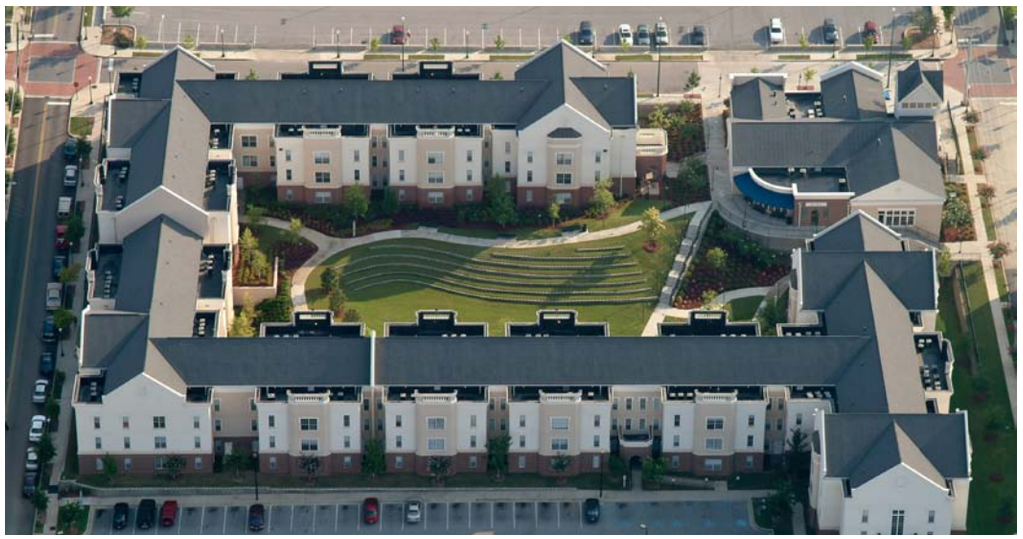
- Increasing the availability and feasibility of campus shuttle options by operating a second route.
- Partnering with the city of Chattanooga to strengthen bus routes into surrounding neighborhoods and downtown areas.
- Providing improvements to community bike lanes and expanding bike paths through campus.
- Implementing a Transportation Fee that rewards transit and bicycle use.

UTILITIES

Campus utilities are vitally important components to successful operations and growth. UTC will continue to provide adequate utility infrastructure improvements to meet current and future needs on campus while conserving overall energy use. Currently planned improvements to the existing Central Energy Plant will bring new areas of campus under control of the facility and allow for efficien future campus expansion. Planned replacement of inadequate distribution systems will be accomplished in phases.

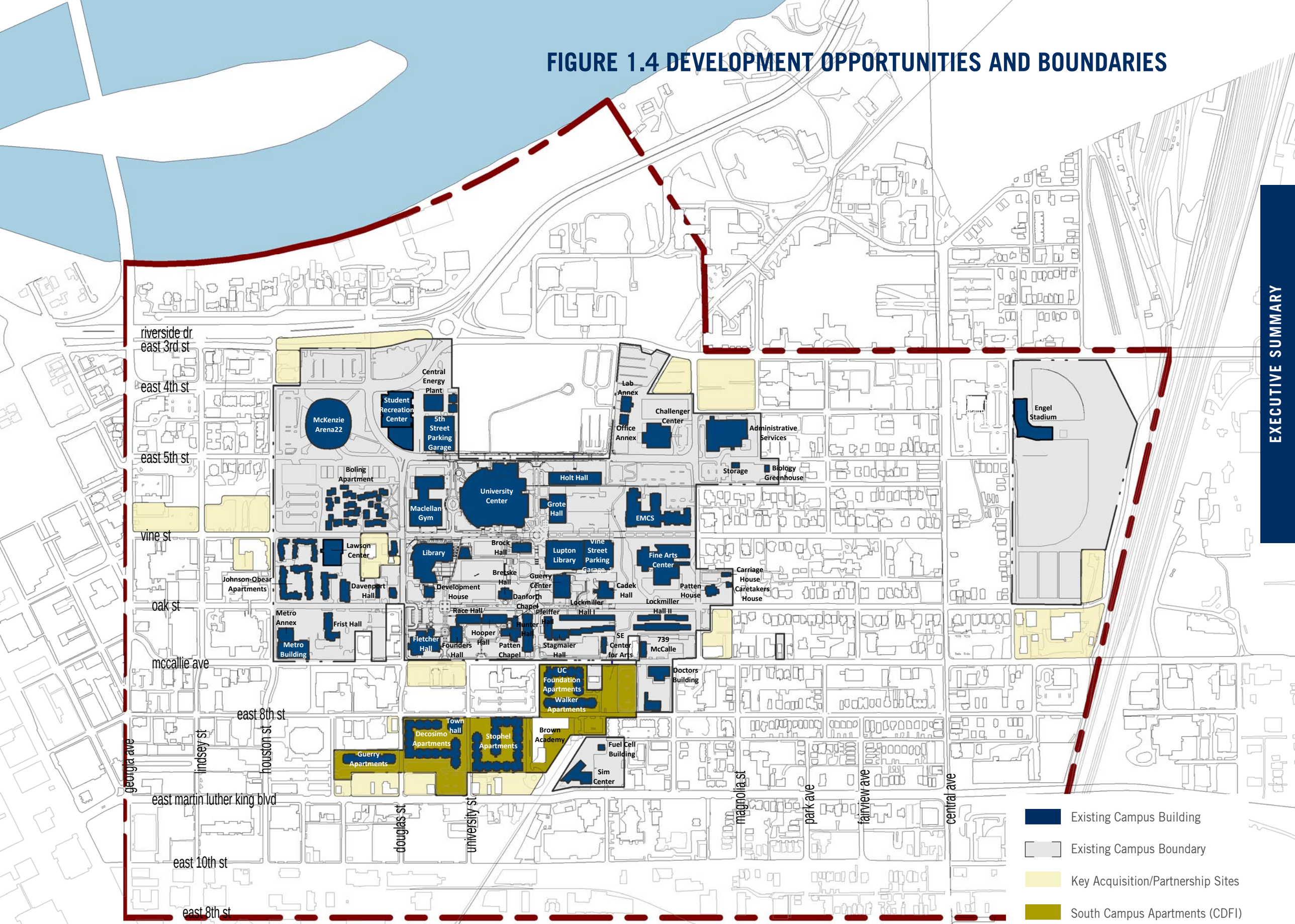
LAND ACQUISITION

The UTC campus comprises 123 acres just east of downtown Chattanooga. Additional properties include the Enterprise South property (272 acres), located north and east of the main UTC campus. The University's long-range building needs exceed its current land holdings within the master plan boundary identified on Figure 1.4, Development Opportunities and Boundaries. Specifically this boundary represents an area of influence whereby the University will continue to understand planning activities by neighboring institutions, but also identify potential properties to acquire.



The University currently owns land primarily bound by McCallie Avenue on the south, Houston Street on the west, East 3rd Street on the north and Palmetto Avenue on the east. The proposed master plan boundary follows East 11th Street on the south, Georgia Avenue on the west, the Tennessee River and East 3rd Street on the north and the railroad lines east of Engel Stadium on the east.
The University has identified "Key Acquisition/Partnership Sites" within this master plan boundary – these sites have a higher priority for land acquisition as specific development opportunities have been identified to help meet growth needs over the next 15 years, the life of this campus master plan.
The University has identified the "South Campus Apartments," currently owned by the University Foundation, as a high priority land acquisition to better serve its recruitment and retention needs. This is consistent with the Comprehensive Student Housing Master Plan recommendations to improve the residence life experience and Strategic Plan goals for living and learning. In addition, UTC is actively pursuing a property transfer arrangement with the First Presbyterian Church on McCallie Avenue to meet the long term needs of both institutions.

FIGURE 1.4 DEVELOPMENT OPPORTUNITIES AND BOUNDARIES



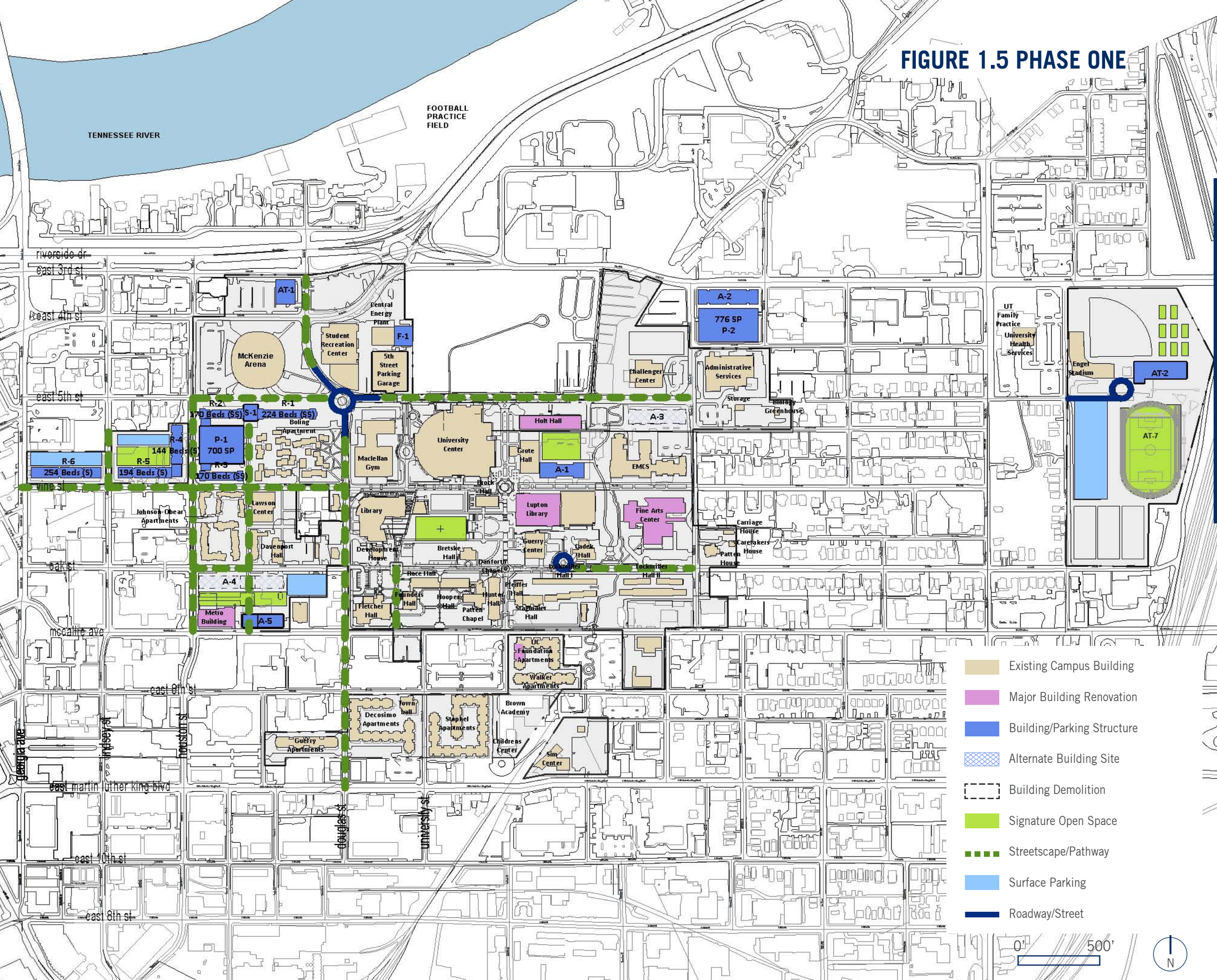
PHASE ONE

PROJECT	LABEL	GROSS SQUARE FEET — RENOVATED	GROSS SQUARE FEET — NEW	FUND	BUDGET
BUILDING					
Life Sciences	A-1		118,500	State	$59,500,000
Health Sciences	A-2		91,000	State	$49,100,000
Alternate Site - Life Sciences	A-3		-	State	-
Alternate Site - Health Sciences	A-4		-	State	-
Communications Building	A-5		64,500	State	$20,000,000
Holt Hall	Ren-1	26,000		State	$7,450,000
Lupton/Fine Arts Renovation	Ren-2	161,000		State	$31,500,000
Football Practice Facility	AT-1		46,000	Other	$18,487,200
Tennis Facility	AT-2		57,000	Other	$11,432,800
Track/Field/Soccer	AT-7		-	Other	$3,300,000
Central Energy Plant Expansion	F-1		22,000	State	$5,686,000
Parking - 1 (640 spaces)	P-1		246,500	Other	$12,822,000
Parking - 2 (776 spaces)	P-2		253,000	Other	$13,173,000
Residential - 1 (246 beds)	R-1		61,000	Other	$18,500,000
Residential - 2 (200 beds)	R-2		47,000	Other	$14,300,000
Residential - 3 (200 beds)	R-3		47,000	Other	$14,300,000
Residential - 4 (154 beds)	R-4		52,000	Other	$15,800,000
Residential - 5 (194 beds)	R-5		71,000	Other	$21,500,000
Residential - 6 (254 beds)	R-6		94,000	Other	$28,200,000
Student Support - 1	S-1		13,500	Other	$3,378,000

PROJECT	FUNDING	BUDGET
OPEN SPACE CONSTRUCTION		
Residential Hall Courtyard	Other	$376,000
Metro Building Courtyard	Other	$354,000
Library Courtyard	Other	$454,000
Holt Hall Courtyard	Other	$393,000
PATHWAY / STREETSCAPE		
East 5th Street	Other	$2,860,000
Vine Street	Other	$1,747,000
Oak Street	Other	$470,000
Founders Pedestrian Way	Other	$259,000
Lindsey Street	Other	$393,000
Houston Street	Other	$609,000
Arena to Metro Pedestrian Way	Other	$460,000
ROADWAY IMPROVEMENTS		
East 5th Street Roundabout	Other	$1,053,000
Engel Field Access	Other	$738,000
UTILITIES		
Infrastructure and distribution systems	State	$9,000,000
STATE SUBTOTAL		**$175,072,000**
OTHER SUBTOTAL		**$145,475,000**

In addition to the detailed list of projects above, approximately $15 million is anticipated to be requested to complete academic building upgrades over the first two phases of the master plan.

FIGURE 1.5 PHASE ONE

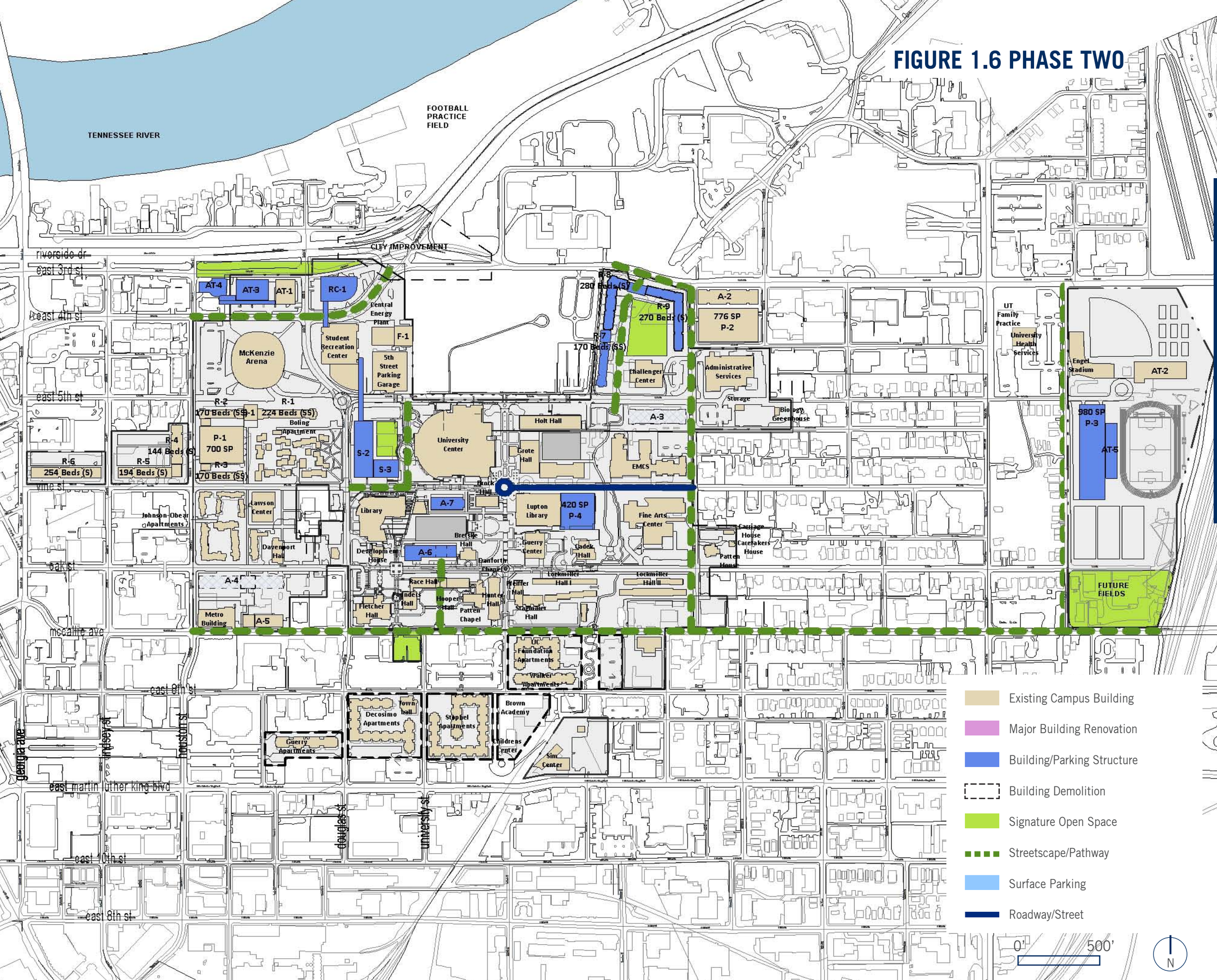


PHASE TWO

PROJECT	LABEL	GROSS SQUARE FEET — RENOVATED	GROSS SQUARE FEET — NEW	FUND	BUDGET
BUILDING					
Academic/Learning 6	A-6		63,000	State	$25,365,000
Academic/Learning 7	A-7		48,000	State	$19,477,000
Volleyball / Wrestling Gym	AT-3		42,000	Other	$8,520,000
Athletics Office / Support	AT-4		84,000	Other	$12,600,000
Grandstand / Support	AT-5		40,000	Other	$7,996,000
Recreation - 1	RC-1		60,000	Other	$33,000,000
Facility Support - 2	F-2		3,000	State	$2,254,000
Parking - 3 (980 spaces)	P-3		306,000	Other	$15,932,000
Parking - 4 (420 spaces)	P-4		130,000	Other	$6,777,000
Residential - 7 (170 beds)	R-7		47,000	Other	$14,300,000
Residential - 8 (280 beds)	R-8		78,000	Other	$23,600,000
Residential - 9 (270 beds)	R-9		99,000	Other	$29,800,000
Student Support - 2	S-2		100,000	Other	$21,993,000
Student Support - 3	S-3		41,000	Other	$9,081,000

PROJECT	FUNDING	BUDGET
OPEN SPACE CONSTRUCTION		
Student Support Courtyard	Other	$266,000
McCalle Avenue Courtyard	Other	$328,000
Challenge Center Courtyard	Other	$745,000
Recreation Fields	Other	$1,396,000
PATHWAY / STREETSCAPE		
East 4th Street	Other	$1,428,000
Douglas Street	Other	$916,000
Vine Street and University Center	Other	$932,000
Race / Hooper Hall Pathway	Other	$233,000
Oak Street	Other	$727,000
O'Neal Street	Other	$2,332,000
Challenger Center Pathway	Other	$1,586,000
ROADWAY IMPROVEMENTS		
Cadek Hall Cul-de-sac	Other	$348,000
UTILITIES		
Infrastructure and distribution systems	Other	$4,500,000
STATE SUBTOTAL		**$41,410,000**
OTHER SUBTOTAL		**$162,377,000**

FIGURE 1.6 PHASE TWO



PHASE THREE

PROJECT	LABEL	GROSS SQUARE FEET — RENOVATED	NEW	FUND	BUDGET
BUILDING					
Academic/Learning 8	A-8		46,000	State	$18,541,000
Academic/Learning 9	A-9		49,000	State	$19,578,000
Academic/Learning 10	A-10		46,500	State	$18,618,000
Academic/Learning 11	A-11		36,000	State	$14,400,000
McKenzie Addition	AT-6	79,000	36,500	Other	$10,953,000
Parking - 5 (650 spaces)	P-5		207,500	Other	$10,789,000
Residential - 10 (128 beds)	R-10		47,500	Other	$14,300,000
Residential - 11 (132 beds)	R-11		49,000	Other	$14,700,000
Residential - 12 (72 beds)	R-12		26,000	Other	$7,900,000

PROJECT	FUNDING	BUDGET
OPEN SPACE CONSTRUCTION		
Academic / Learning Courtyard	Other	$441,000
East Martin Luther King Blvd.	Other	$503,000
PATHWAY / STREETSCAPE		
Vine Street	Other	$420,000
Oak Street	Other	$420,000
East Martin Luther King Blvd.	Other	$2,287,000
Douglas Street	Other	$554,000
ROADWAY IMPROVEMENTS		
Palmetto Street	Other	$1,013,000
UTILITIES		
Infrastructure and distribution systems	Other	$500,000
STATE SUBTOTAL		**$71,137,000**
OTHER SUBTOTAL		**$54,483,000**

FIGURE 1.7 PHASE THREE

TENNESSEE RIVER
FOOTBALL PRACTICE FIELD
riverside dr
east 3rd st
east 4th st
east 5th st
vine st
oak st
mccallie ave
east 8th st
georgia ave
lindsey st
houston st
east martin luther king blvd
douglas st
university st
east 10th st
east 8th st
AT-4
AT-3
AT-1
RC-1
AT-6
McKenzie Arena
Student Recreation Center
Central Energy Plant
F-1
5th Street Parking Garage
R-2
170 Beds (SS)
R-1
224 Beds (SS)
Boling Apartment
P-1
700 SP
R-4
144 Beds (S)
R-6
254 Beds (S)
R-5
194 Beds (S)
S-2
S-3
University Center
Holt Hall
Grote Hall
Brock Hall
EMCS
A-3
R-8
230 Beds (S)
R-9
270 Beds (S)
R-7
176 Beds (SS)
Challenger Center
A-2
776 SP
P-2
Administrative Services
Storage
Biology Greenhouse
UT Family Practice
University Health Services
Engel Stadium
AT-2
980 SP
P-3
AT-5
Lawson Center
A-10
A-9
Library
A-7
Lupton Library
420 SP
P-4
Fine Arts Center
Carriage House
Caretakers House
Patter House
Johnson Hall Apartments
Davenport Hall
A-8
Development House
A-6
Bresette Hall
Guerry Center
Cadek Hall
Danforth Chapel
Race Hall
Lockmiller Hall I
Lockmiller Hall II
A-4
Metro Building
A-5
Founders Hall
Hooper Hall
Hunter Hall
Patten Chapel
Pfeiffer Hall
Stagmaier Hall
Fletcher Hall
UC Foundation Apartments
Walker Apartments
480 SP
P-5
FLEXIBLE FUTURE EXPANSION SITE
Decosimo Apartments
Town hall
Stophel Apartments
Brown Academy
Childrens Center
Sim Center
A-11
Guerry Apartments
72 Beds (S)
R-12
132 Beds (S)
R-11
128 Beds (S)
R-10
F-2

Existing Campus Building
Major Building Renovation
Building/Parking Structure
Building Demolition
Signature Open Space
Streetscape/Pathway
Surface Parking
Roadway/Street

0’ 600’
N

FIGURE 1.8 EXISTING AERIAL VIEW

FIGURE 1.9 VISION PLAN AERIAL VIEW

PLANNING GOALS & ASSUMPTIONS

The planning process at UTC has been highly participatory with a focus on consensus-building activities. A wide cross section of on-campus groups including administrative, academic, student life, and varsity sports leadership; faculty; staff; and students – have been invited to attend interviews, focus groups and campus open house forums throughout the academic year. In addition, off-campus stakeholder groups and organizations from the city of Chattanooga and surrounding neighborhoods were invited to participate in the planning process. Interviews, focus groups and community open house forums were held to gather input on planning goals, concepts, and final recommendations.
A key driver for the planning process was the determination of planning goals and assumptions. These goals and assumptions frame the issues and identify the potential growth opportunities for the campus and drive the need for improvements and additions to campus space, grounds, and infrastructure. Detailed descriptions of the following general categories are provided in each chapter to follow:

1. STRATEGIC TARGETS AND INITIATIVES
2. LAND AND BUILDING USE
3. OPEN SPACE
4. CIRCULATION AND PARKING
5. UTILITY INFRASTRUCTURE AND ENERGY USE

COMMUNITY CONTEXT PLANNING TARGETS AND INITIATIVES

UTC lies within close proximity to downtown Chattanooga, as well as several historic districts and neighborhoods. This creates both challenges and opportunities to meet the needs of campus growth. Fort Wood Historic District, Fountain Square, M.L. King Boulevard Historic District, Market-Main Streets Historic District, and Market Square - Patten Parkway are all unique and historic neighborhoods, buildings and landscape directly bordering or nearby the UTC campus. Sensitivity to these areas is an important aspect to the planning process.

Just as important is understanding the historic context of UTC as an institution. Since its founding as Chattanooga University in 1886, The University of Tennessee at Chattanooga has developed an institutional excellence which rests on an unusual blend of the private and public traditions of American education.

In 1969 the University of Chattanooga and a junior college, Chattanooga City College, merged with the University of Tennessee, one of the oldest land-grant universities in the nation, to form the UTC campus. Pledged to the service of the entire state, the University of Tennessee has emerged as a statewide system consisting of four primary campuses. The new campus was given the mandate to devote the major portion of its resources to the development of excellence in undergraduate education and in selected areas of graduate study.

1930 Aerial view of the UTC campus.

FIGURE 2.1 CAMPUS CONTEXT

LEGEND

Campus Boundary

Historic District

Goals and objectives are important to guiding the comprehensive planning process. The following descriptions were initially created through a series of discussions with various campus stakeholder groups and further refined with the Executive Team as a way to check and balance growth over time.

1. Strategic Targets and Initiatives: These targets drive the space needs by various campus categories, academics and research, study and library, student support and housing, recreation and athletics, facility support, and parking. These targets include enrollment growth from 11,000+ existing:

- 13,000 short term
- 15,000 intermediate term
- 18,000 long term

UTC is driving forward several initiatives which directly tie to the core mission of the University and to provide the best possible academic environment for students. Specifically, related to academic excellence are the following themes:

- Honors College
- Health Sciences expansion
- STEM research and lab science clusters
- Interdisciplinary degree programs

An important aspect to UTC's mission is its classification as a Community Engagement University, this will remain a strategic classification and a driver for success. UTC's engagement with the surrounding Chattanooga community promotes the partnership of knowledge and resources with the public and private sectors, with a goal to enrich scholarship, research, and creative activity; enhance curriculum, teaching and learning; prepare educated, engaged citizens; strengthen democratic values and civic responsibility; address critical societal issues; and contribute to the public good.

2. Land and Building Use: Within the land and building use component of the plan, a key priority is to understand and incorporate uses within the context of the city. UTC has made it a priority to:

Coordinate with surroundings

- Downtown Chattanooga
- Erlanger Medical Center
- Historic Fort Wood
- MLK Corridor
- Greenway / Riverwalk

Also within this component remains a goal to be a vibrant 24/7 residential campus which houses 35% of undergraduates. UTC sees the opportunity to enhance the student life experience by thinking about the full range of experiences from door-to-door. Whether it's within the housing district itself or part of the larger campus, UTC is committed to providing this vibrant experience through quality of housing and amenities, recreation and sports, retail and dining, and social and study spaces.

3. Open Space: Campus open space at UTC is a critical component of the student experience and directly enhances the quality of life for all. Ensuring the open space remains accessible, attractive, and well-connected are key aspects of successful open space. UTC has also identified an opportunity to utilize open space to help achieve sustainable goals relating to water conservation. Recreation and gathering for students provides another opportunity to access open space. The following are key goals relating to open space:

- Campus as an arboretum
- Well-connected and visually attractive
- Pedestrian-oriented and accessible
- Conserving potable water and managing rainwater
- Expanded outdoor sports and gathering areas

4. Circulation and Parking: The ability to access UTC by transit, shuttle, vehicles, bicycles, and as a pedestrians is a key objective for this master plan update and critical success factor for the University. UTC has an existing framework in place for campus transit (shuttles) and a pedestrian/bicycle network. Opportunities exist to continue to improve the physical quality of these environments as future demands on the transportation system continue with enrollment growth. A goal of UTC is maintain an adequate parking supply on campus to meet current zoning requirements, but promote mixed-use decks, move parking to the campus perimeter, and to reduce single-occupancy demand.

- Shuttle/Bus & bicycle-friendly transportation systems
- Mixed-use parking decks
- Perimeter parking on-campus, meeting zoning requirements
- Reduced single-occupancy demand

5. Utility Infrastructure and Energy Use: As a great testament to UTC's commitment to energy efficiency and reduction of energy use, they have been on the forefront of providing utility infrastructure improvements to meet campus growth needs in a sustainable way. UTC has also signed the American College and University President's Climate Commitment and subsequently completed a Climate Action Plan (CAP). As such, they've established the following specific goals related to carbon reduction and carbon neutrality --- these goals will be achieved in part by a combination of recommendations outlined in this master plan and the CAP.

- Plant and distribution efficiency upgrades and improvements
- 50% carbon reduction by 2030
- Net carbon neutrality by 2050

ISSUES, OPPORTUNITIES & CONSTRAINTS

CONTEXT AND LAND USE

The University of Tennessee at Chattanooga campus lies within close proximity to a variety of local cultural and natural resources. Strengthening this strong connection to the surrounding community is a series of major roadways that physically link the campus to its both local communities and other regional cities. Located within blocks of Chattanooga's downtown, the campus has strong and lasting connections to its community.

In addition to its urban context, the campus sits at the foot of Lookout and Signal Mountains on the Tennessee River, both are landmarks with great historical significance. The adjacent campus community consists of historic districts and neighborhoods.

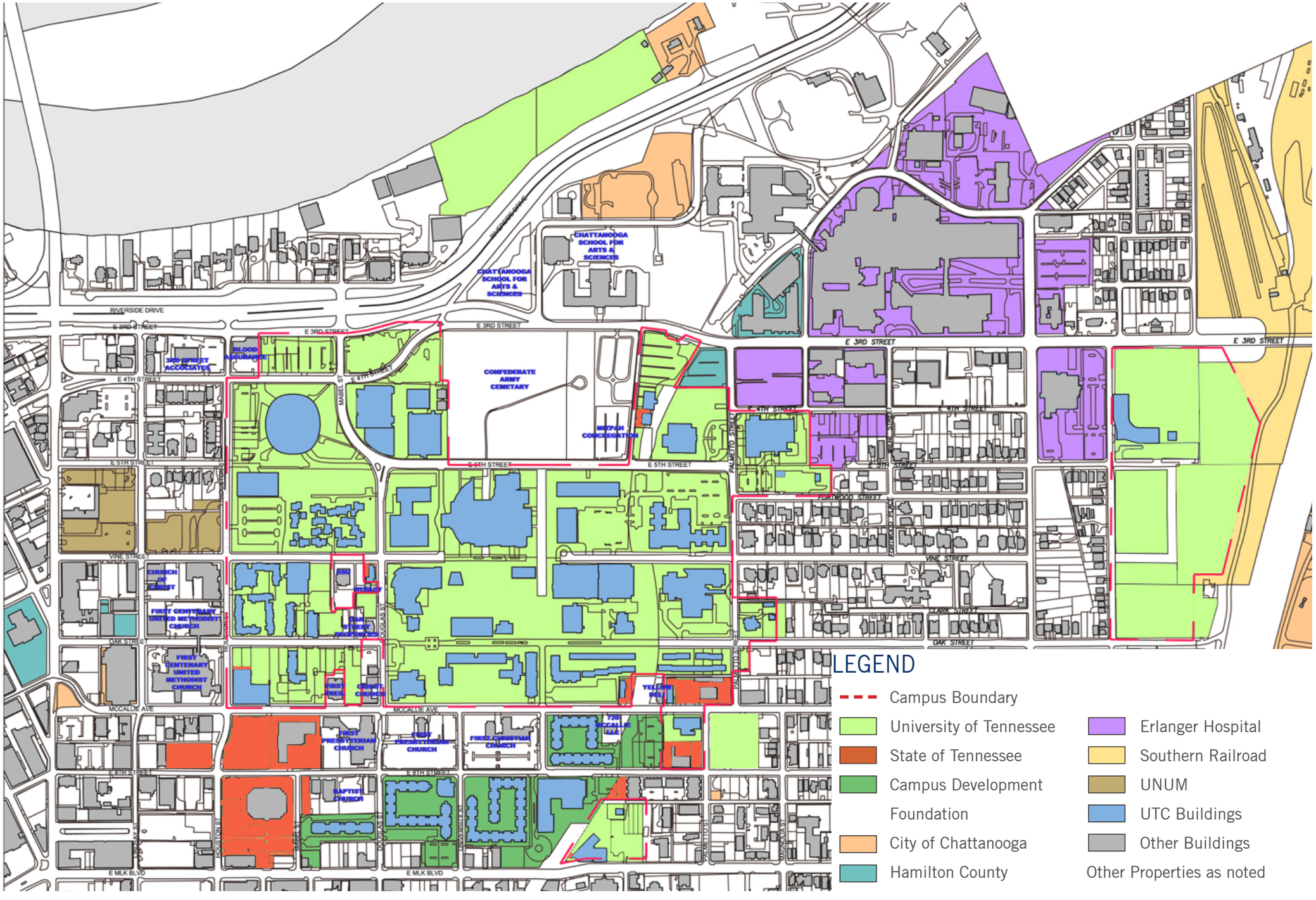
Looking at the surrounding land ownership, it becomes evident the amount of opportunity for partnerships and connectivity to existing neighborhoods. Erlanger Hospital, and Unum are major employers in the area, and land is owned by state, county, city, railroad agencies, several community churches, and the Campus Development Foundation, all neighboring properties to UTC.

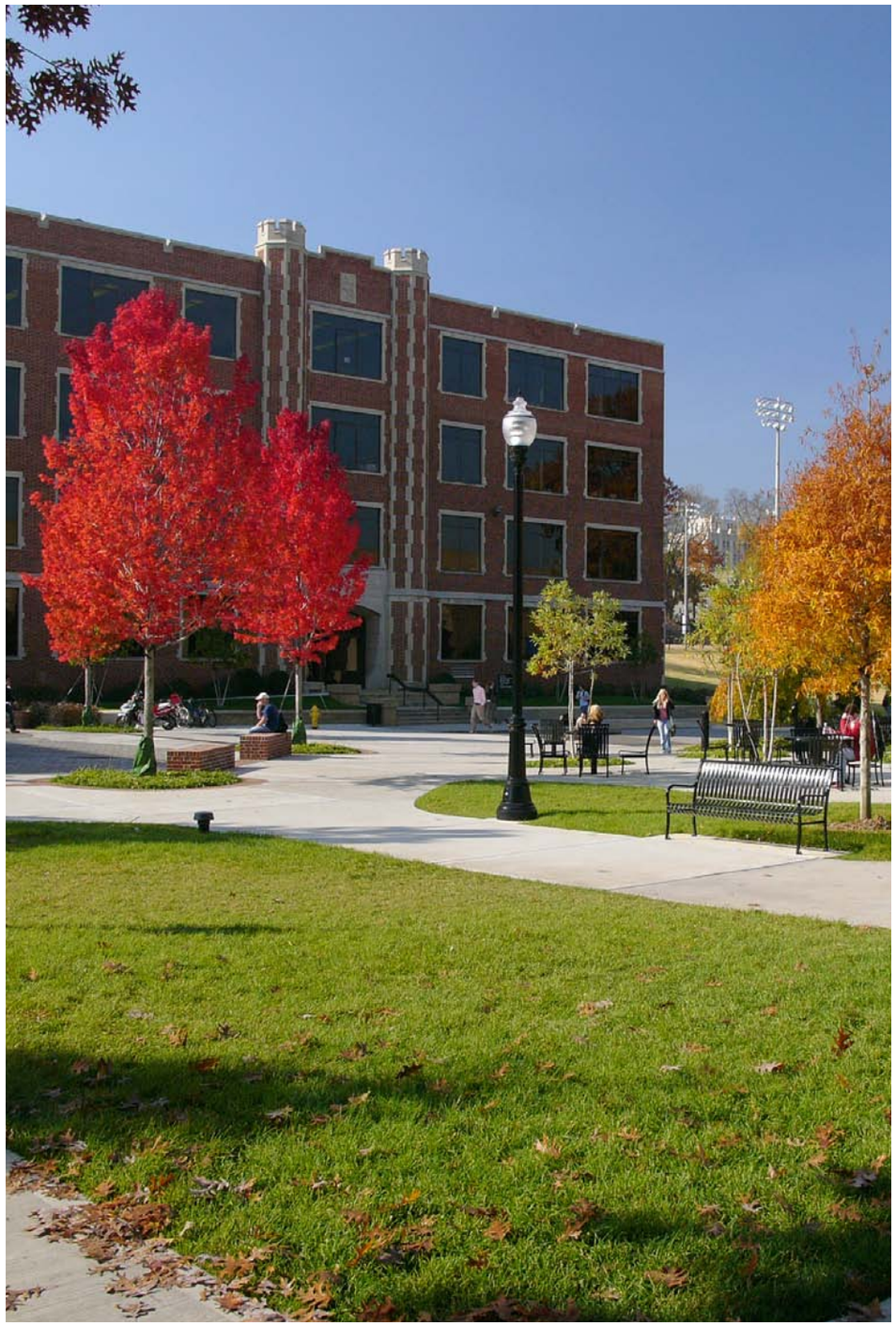
As UTC continues to grow the goal is to continue to nurture and expand the relationship between the University and the adjacent community promoting physical connections, and holding similar goals to meet the demand challenges of future growth.

Existing and proposed greenways that connect the UTC to local and city-wide neighborhoods are important aspects of current planning thought to maintain and promote in the future. Portions of an existing greenway which runs through the heart of campus from the south also extend to the larger city context. Additional bike routes near and around campus also create opportunities for a more well-connected community and institutions.

University needs within the community will continue to expand, as will community needs. An additional goal is to have both the city and University grow in mutually beneficial ways. For example, UTC has a need for a high quality conference facility which business, health care and educational leaders could use for large and small meetings or seminars. Additionally, these needs could be met through an existing or new facility within the community

FIGURE 2.2 LAND OWNERSHIP





BUILDING USE

One of the challenges facing UTC as it has expanded its campus to meet enrollment increases, is that many of the new facilities have been scattered throughout campus as sites became available. In some cases this approach has created some challenges with operations as well as circulation throughout campus by students, faculty and staff.

As a result of continued campus growth, existing buildings have been retrofitted for new program uses, unfortunately not all of these efforts have been successful. An additional concern for the campus is the number of general classrooms and labs on campus. Due to continual student growth room scheduling has become increasingly difficult and as the student population continues to grow in the future, these constraints will continue to increase in difficulty. Additional concerns that have been uncovered and expressed in the campus assessment process are as follow:

- Lack of specialized space for individual programs.
- Developing programs such as interior design are running out of space
- Lab space is in short supply
- Lack of classroom space
- Lupton Library to become general classrooms of different sizes configurations
- Lack of space for commuter students such as lounges and coffee shops

FIGURE 2.3 BUILDING USE

riverside dr
east 3rd st
east 4th st
east 5th st
vine st
oak st
mccallie st
east 8th st
east martin luther king blvd
east 10th st
east 8th st
georgia ave
hawkins st
houston st
douglas st
university st
magnolia st
park ave
fairview ave
fortwood ave

McKenzie Arena1
Student Recreation Center
Central Energy Plant
5th Street Parking
Lady Vol Annex
Lady Vol Office Annex
Challenger Center
Administrative Services
Storage
Biology Greenhouse
Boling Apartment
Maclellan Gym
University Center
Holt Hall
Grote Hall
EMCS
Brock Hall
Lupton Library
Vine Street Parking
Fine Arts Center
Carriage House Caretakers House
Patten House
Library
Johnson-Dhear Apartments
Lawson Center
Davenport Hall
Development House
Guerry Center
Bates Hall
Stanforth Hall
Ladek Hall
Locksmither Hall I
Locksmither Hall II
Race Hall
Hooper Hall
Chapel
Pfeiffer Hall
Frist Hall
Metro Annex
Metro Building
Founders Hall
Fletcher Hall
Hunter Hall
Patten Chapel
Stagmaier Hall
Ste Center for Arts
739 McCalle
Doctors Building
Fuel Cell Building
Sim
Neyland Stadium

LEGEND

- Academic/Learning
- Administrative/Support
- Student Support
- Student Housing
- Semi-suites & Traditional (SS)
- Suites & Apartments (S)
- Recreation Sports/Phys. Ed.
- Athletics
- Parking Deck
- Existing Campus Boundary
- Dining Locations

0' 500'

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FACILITY ASSESSMENT

In 2009 and 2010, consulting firms Michael Brady Inc., and Pickering completed an updated facility assessment for all UTC buildings. Buildings were scored for future upgrades on a scale of 0-100, with 90-100 being Adequate, 80-89 Recommended, 70-79 Necessary, 60-69 Potentially Critical, 50-59 Critical and finally 0-49 Demolition. The majority of buildings scored in the Potentially Critical Category. No building was scored Adequate and only one building was scored for Demolition which can be seen in the color coded map to the right. This completed facility assessment was used as the baseline of information for the master plan update. Understanding which facilities are recommended for demolition over time as well as renovation is an important piece of the campus puzzle to solve. The ability to understand on a program by program basis which facilities need long term replacement leads to a more implemented vision of the master plan. Through the planning process, the following facilities have been recommended for demolition or for major renovation and repurposing of use over time:

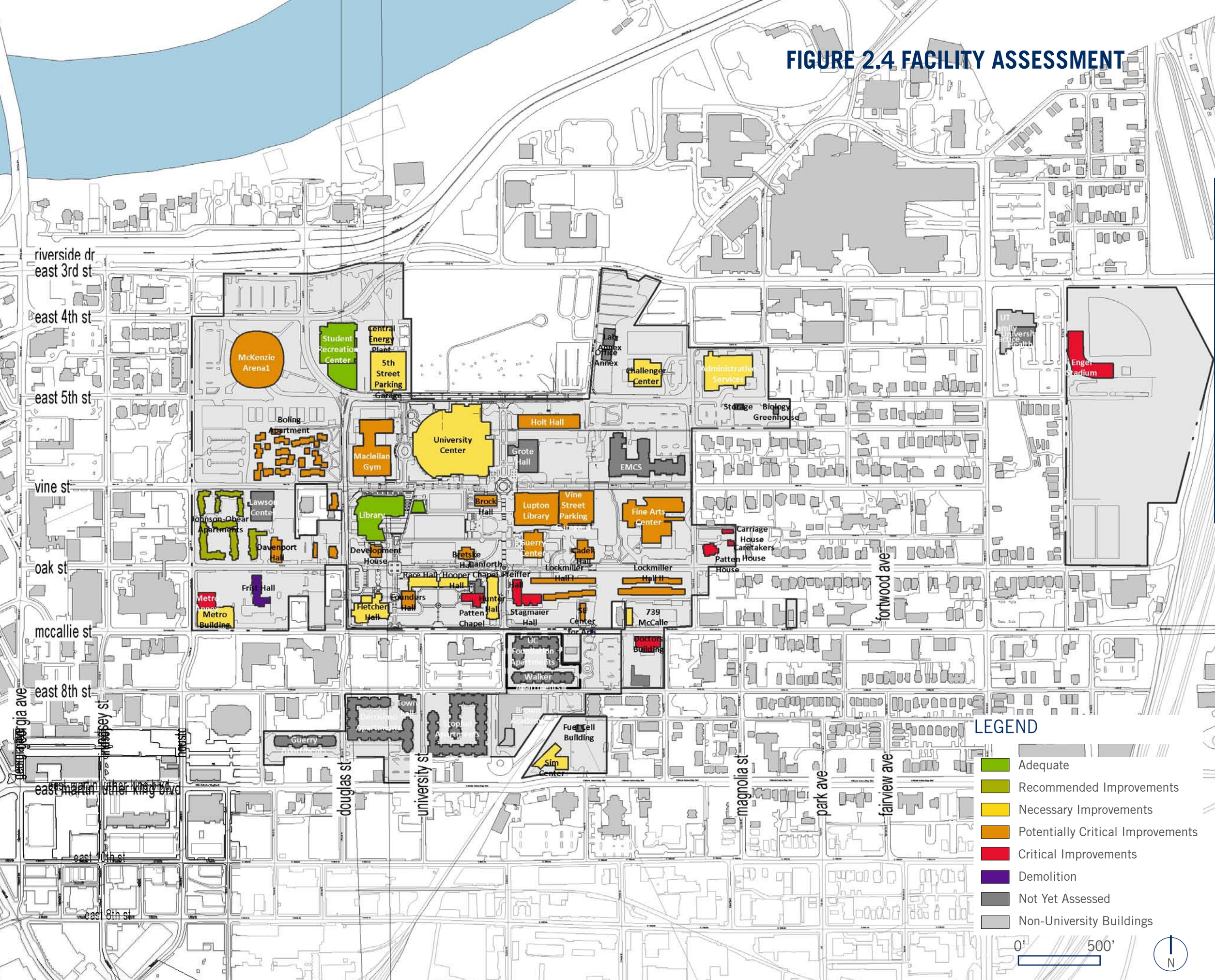
Recommended for Demolition

- Frist Hall
- Metro Annex
- Doctor's Building

Recommended for Major Renovation or Repurposing:

- McClellan Gymnasium
- Lupton Library
- Holt Hall
- Fine Arts Center
- Guerry Center
- McKenzie Arena
- Lockmiller Apartments
- Cadek Hall
- Boling Apartments
- Founders Hall
- Brock Hall
- Development House

FIGURE 2.4 FACILITY ASSESSMENT



OPEN SPACE

Within the 130 urban acres of The University of Tennessee at Chattanooga, there exists a variety of open space types throughout the campus. While the campus has been noted for its excellent facilities, architecture and overall scenic beauty, there is opportunity to improve upon the existing open space found on campus. Given the urban context of the campus, open space should be treated as a sacred space. These sacred spaces should be capitalized on to help create campus gateways, enhancement of pedestrian circulation, and to create connections and linkages through campus and beyond to the surrounding areas.

On campus, passive spaces throughout the campus are frequent, however, they lack a cohesive quality and identity to carry throughout the campus. This lack of identity creates a disconnect throughout campus providing for a mismatched landscape fabric. The active open spaces on campus are few within the immediate campus, with most being located off campus and away from on-campus residents. One of the more notable absences from the campus is the lack of a large central quad area for active use and fostering a campus community. Currently such a space is scheduled to be completed in 2013 as part of a major landscape project.

While the campus has a very strong East-West orientation that facilitates much of campus traffic, the majority of the key streetscape corridors run in a North-South orientation. The campus contains several very strong key streetscape corridors with a primarily North-South orientation.

Off campus, the proximity to the Tennessee River provides the student population access to additional open space and scenic views with the creation of the Riverwalk Corridor. With investments from both the city and the University, there is a greater opportunity to create stronger connections to the riverfront.

Taking into consideration the existing open space on campus and areas of opportunity, the master plan proposes a variety of methodologies to improve upon

existing open space and create new open space that is accessible to the student population and creates a cohesive framework throughout the campus utilizing the following key goals:

- Further define campus edges/markers-Monuments and gateway elements
- Continue landscape plantings that are cohesive through campus
- Tree preservation needs to be a priority as well as the addition of new trees
- Pedestrian connections need to be strengthened on campus by creating more North-South and East-West corridors
- Pedestrian circulation needs to be accessible
- Noticeable views need to be maintained and strengthened
- Outdoor Art should be incorporated where appropriate
- Open space areas need to relate with the surrounding uses and vice versa
- Optimized views both into and from campus
- Coordinated open space and building use

FIGURE 2.5 OPEN SPACE

riverside dr
east 3rd st
east 4th st
east 4th st
vine st
oak st
mccalle st
east 8th st
lindsey st
east martin luther king blvd
university st
magnolia st
park ave
fairview ave
fortwood ave

LEGEND

- Primary Campus Corridors
- Primary Campus Rooms
- Key Streetscape Corridors
- Greenway Corridor
- Riverwalk Corridor
- Floodplain
- Cemetary
- Open Space - Active/Recreation
- Campus Boundary

0’ 500’

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TRANSPORTATION SYSTEMS

With the goal of creating a well connected, enlarged metropolitan university, there exists a variety of public transportation and parking infrastructure. As a result, one of the biggest challenges for UTC is how to capitalize on existing infrastructure while addressing the continual student growth.

The difficulty of parking on campus has caused concern for many. It has been stated repeatedly that parking on campus is difficult primarily due to the lack available spaces. Many of the current parking facilities are at full capacity throughout the day. A potential option to alleviate periodic parking shortages is to consider an adjustment to the class schedule, thereby distributing the on campus demand for parking to a broader range of times.

Coupled with the difficulty of on campus parking, wayfinding on campus on campus can cause confusion for pedestrians. Several conflicts on campus arise as a result of vehicular traffic patterns increasing the difficulty for pedestrians. In addition to improving pedestrian conditions on campus, the city of Chattanooga should feel encouraged to walk the campus in an effort to forge connections with the surrounding community.

In addition to current parking facilities, Chattanooga's CARTA provides several routes that service the campus, as well as link to city-wide routes. Shuttle capacity and headways provide a high level of service and have routes that service either side of campus providing free rides to students and faculty with their college ID. Despite these benefits, observed ridership appears to be very low for the size of the student body with many underutilized shuttle stops. Possible reasons for the low ridership may stem from:

- The shuttle route only goes one way.
- General parking lots north of campus are further from shuttle route.
- Commuter students may not be aware of the satellite shuttle lot at Engel Stadium.
- Students may not be familiar with bus service in general.

Observed parking utilization rates:

- Reserved parking comprises 54 percent of all spaces.
- For all spaces the morning count found 81 percent occupied.
- The midday count showed 91 percent of all parking spaces were filled.
- The afternoon count showed 89 percent.

Of the 2,207 reserved spaces only 183 are 24-hour reserved.
Remaining 1,781 on-campus spaces are labeled general parking for all users.
The shuttle lot at Engel Stadium has about 84 improved spaces used by shuttle riders; over 550 spaces could be developed.

FIGURE 2.6 TRANSPORTATION SYSTEMS

riverside dr
east 3rd st
east 4th st
east 4th st
vine st
oak st
mccalle st
east 8th st
east martin luther king blvd
georgia ave
lindsey st
douglas st
university st
magnolia st
park ave
fairview ave
fortwood ave
central ave

LEGEND

- Most Used Shuttle Stop
- Moderately Used Shuttle Stop
- Least Used Shuttle Stop
- Shuttle Route
- Traffic/Pedestrian Conflicts
- Campus Boundary

Campus Parking Inventory

- 0-75% Full
- 75-95% Full
- 95-100% Full

0’ 500’

N

UTILITY INFRASTRUCTURE AND ENERGY USE

ELECTRICAL SYSTEM

The campus electrical distribution system is served via a 12.47 kilovolt Electric Power Board (EPB) overhead riser, which feeds UTC's main incoming switchgear (S12P1). The overhead riser is the primary metering point for the campus and utilizes two individual feeders to serve the UTC switchgear. The switchgear includes a tie switch allowing the respective loads to be bi-directionally fed from the EPB riser. Additionally, the EPB riser pole is tapped after the meter to feed a 2500 kva step down transformer (T1201A), which is utilized to serve the existing three chillers for the campus chilled water distribution system. The UTC switchgear also serves campus electrical system with two primary distribution feeders (F12A and F12B respectively) and a 1500 kva unit substation (T1201) in the central energy plant.

With the addition of the third chiller, the 2500 kva transformer has exceeded its capacity. The existing transformer can operate only two chillers simultaneously. In order to operate more than two chillers, the capacity must be increased to accommodate same. Further, the existing central energy plant unit substation is sized to accommodate the existing load, but there does not appear to be any excess capacity to accommodate any substantial increase in additional load. Any future load growth will result in subsequent need for extensive modification of the existing electrical plant.

The campus primary distribution system has an alternate service connection point (S12P16) from the EBP located at the intersection of Oak and Houston. The alternate source is not automated, and requires manual operation in conjunction with the vacuum recloser located on the main service point. It is not clear as to how the campus power would be metered when being operated on the alternate source.

The student housing located on the south side of McCallie Avenue is metered individually from the EPB. The opportunity for extension of the campus power grid south of McCallie Avenue to serve these loads is not economically justified for bulk power purchase at this time; however, consideration to extending the campus south of McCallie Avenue may be justified with future projected load growth south of this street.

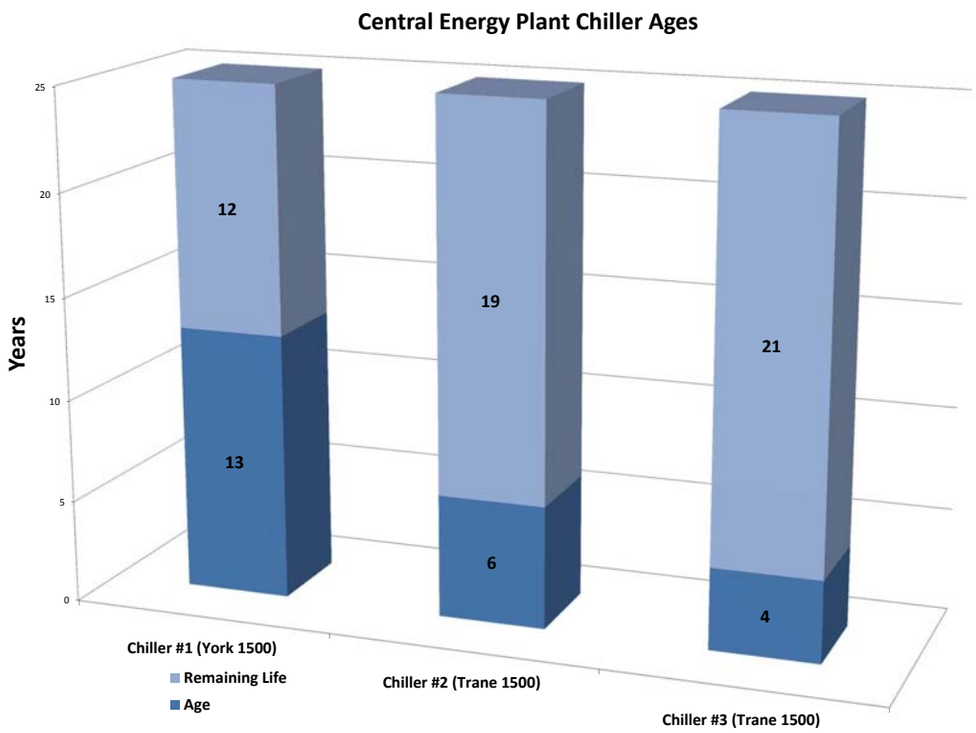
The buildings served from UTC's electrical distribution system are individually metered with digital meters, which provide real time demand in kilowatts and "time of day" energy consumption. This information can be trended and analyzed for load growth and it can also provide coincident system demand for each of the two primary feeders. The distribution transformers utilized to serve the various buildings are the padmounted type and eliminate the need for overhead distribution equipment. The padmounted transformers were installed during the

last five years as part of the campus beautification project in conjunction with the removal of the overhead power lines.

Both electrical distribution feeders F12A and F12B are 350 Kcmil copper type MV-105, 15kv cable and have an approximate ampacity of 330 amperes for conductors positioned in multicell ductbank. The maximum deliverable kilowatt demand is 7,127kw at 100% load factor for each feeder. The limiting factor for ultimate power delivery is the ampacity of the conductors and the associated conductor heating and not their respective length or voltage drop. The connected load is in excess of their rated capacity; however, the actual coincident demand is well within their ampacity rating. The existing power infrastructure can accommodate a very minor increase in actual load. Anything substantive such as an addition to an existing building or construction of a new facility will necessitate a significant capital expenditure for additional medium voltage feeders, PMH- switchgear, and duct bank extension to maintain loop capability and single metering point.

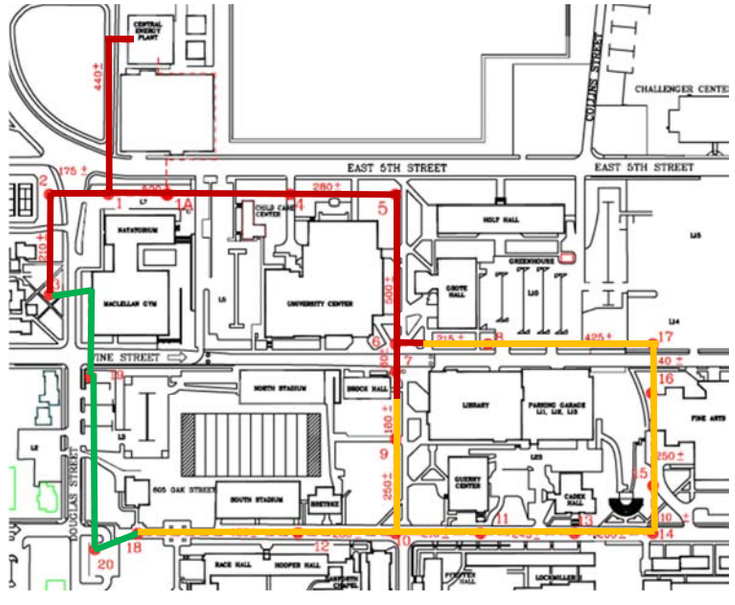
The existing medium voltage feeders range in age from 10-20+ years with some approaching their end life. Prior to the conductors reaching their end of life, consideration should be given to their replacement with ethylene propylene rubber (EPR) insulated conductors and replace any remaining cross-linked cable. EPR insulated conductors have expected lifetime duration in excess of forty years. Consequently, when portions of either F12A or F12B feeders are replaced; it would appear prudent to utilize EPR insulated conductors. The existing bus duct has spares cells, which terminate in the manholes.

Feeder F12B appears to have approximately 25% of available connected demand capacity, and approximately 50% of diversified demand capacity available. Should loads be transferred from F12A to F12B the capacity availability will be reduced significantly. Though load transfer between the feeders, especially at switch S12P29, would preclude the immediate need to add an additional feeder (future F12C) to serve Race Hooper, Chamberlain Field, Bretzke, Founders Hall, Hunter Hall, Pfeiffer Stagmaier, Guerry Center, Brock Hall, Grote Hall, and Holt Hall. The additional feeder would at a minimum be required in order to provide redundancy in the campus electrical distribution system.
See Table 2.5 for Building Type Electrical Load Density.
See Table 2.6 for Individual Electrical Load Density.



Chilled Water Vintages

1972
1986
2002



CHILLED WATER SYSTEM

A majority of the buildings on the campus are cooled with chilled water produced at the Central Energy Plant. The chilled water is produced using three 1,500-ton chillers. Chilled water leaves the plant at 40°F (42°F during winter months) and is distributed through a network of chilled water piping to the buildings. The chilled water piping is a combination of ductile iron and seamless steel direct buried piping. The three (3) chillers are served by two cooling towers, each sized to reject the heat from two 1,500-ton chillers.

The Central Energy Plant has three 1,500-ton chillers, a York installed in 1998 and currently used primarily as a standby unit, and two (2) 1,500-ton centrifugal Trane units installed in 2003 and 2008. The graphc above illustrates the age and remaining useful life of each chiller.

The Central Energy Plant has two cooling towers, one built in 1972, which had its fill replaced in 1998, and a second built in 1986. Each cooling tower can reject the heat from two 1,500-ton chillers and operate with two-speed fans. Chemical treatment is provided by a contract with a local chemical supplier.

The chilled water distribution system consists of direct-buried ductile iron piping and seamless steel piping. The piping has three vintages, as illustrated in diagram above, ranging from piping installed in 1972 to as recent as 2002.

COOLING LOAD AND DIVERSITY FACTORS BY BUILDING TYPE

Building Type	Chilled Water Density: Building Gross SF/Ton	Cooling Load Diversity	Building Diversified GSF/Ton
Agricultural/Greenhouse	636	0.65	979
Auditorium	375	0.88	426
Child Care Facility	601	0.75	801
Classroom	495	0.75	660
Food Service	283	0.86	329
Gymnasium	707	0.70	1010
Gymnasium w/Spectators	707	0.60	1178
Gymnasium w/Spectators/Pool	672	0.65	1033
Laboratory (Light)	424	0.80	530
Laboratory (Medium)	283	0.87	325
Laboratory (Heavy)	212	0.90	236
Library	778	0.60	1296
Office	530	0.65	816
Office/Classroom	513	0.70	732
Office/Classroom/Laboratory (Light)	483	0.73	659
Office/Classroom/Food Service	436	0.65	671
Apartment	495	0.75	660
Service/Grounds Facility	566	0.70	808
Sports Arena	283	0.25	1131
Sports Arena - Outdoor	0	N/A	N/A
Storage Facility	636	0.65	979
Student Center/Union	283	0.86	329

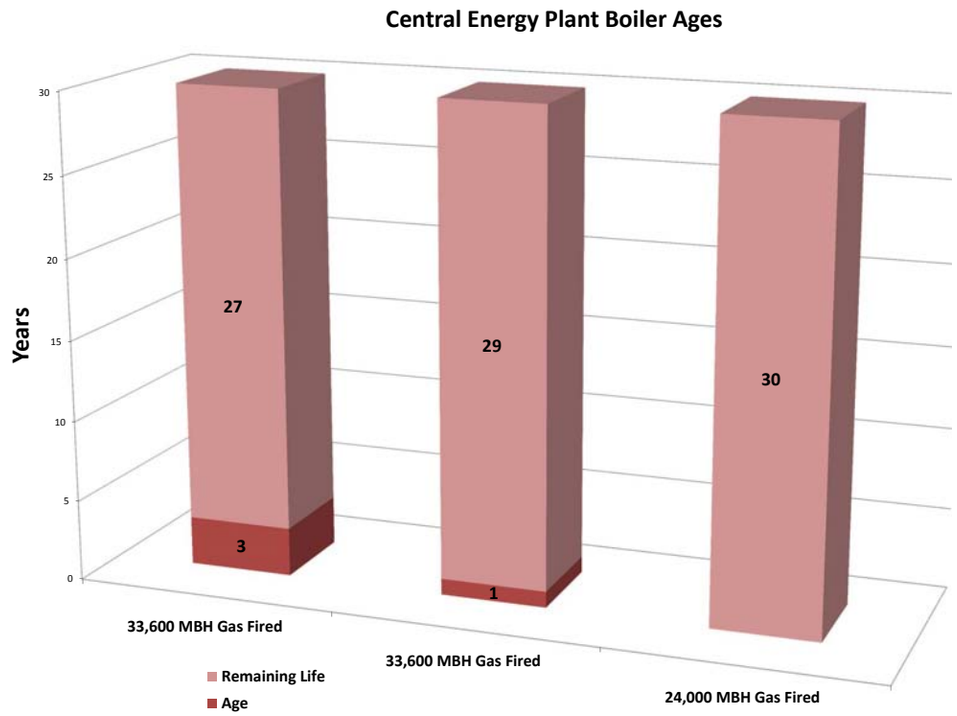
TABLE 2.1 - BUILDING TYPE CHILLED WATER LOAD DENSITY

Each building was assigned a specific load density based on building type and usage. The load densities are based on normalized measured usage, along with AEI's experience and a database of building load data from other campus master plans and building projects. The load density is applied to each building on campus and scaled based on the total Central Energy Plant Usage. The resulting load densities and diversity factors per building type are shown in Table 2.1. The building diversity factors were adjusted based on the total chilled water flow rate provided by the campus Central Energy Plant staff. The peak and diversified loads that were developed for each building on campus and the total campus load are shown in Table 2.2.

The total chilled water capacity of the chilled water distribution system on the campus is 4,500-ton. The firm capacity, defined as the total capacity minus the largest incremental piece of equipment, is 3,000-ton. Currently, the chilled water distribution system load is less than 3,000-ton. Twelve additional campus buildings are currently being added to the central chilled water distribution

Building Name	Building Gross SF	Building Type	Building Peak Load, ton	Building Diversified Load, ton	Diversified Flow gpm
Aquatic & Recreation Center	123,101	Gymnasium w/Spectators/Pool	183	119	238
McKenzie Arena	211,778	Sports Arena	749	187	374
Racquetball Center	27,000	Gymnasium	38	27	53
Boling Apartments - Building A	7,171	Apartment	14	11	22
Boling Apartments - Building B	8,320	Apartment	17	13	25
Boling Apartments - Building C	3,566	Apartment	7	5	11
Boling Apartments - Building D	3,566	Apartment	7	5	11
Boling Apartments - Building E	2,380	Apartment	5	4	7
Boling Apartments - Building F	5,866	Apartment	12	9	18
Boling Apartments - Building G	8,320	Apartment	17	13	25
Boling Apartments - Building H	7,171	Apartment	14	11	22
Boling Apartments - Building I	5,510	Apartment	11	8	17
Boling Apartments - Building J	5,280	Apartment	11	8	16
Boling Apartments - Building K	8,320	Apartment	17	13	25
Boling Apartments - Building L	17,329	Apartment	35	26	53
Boling Apartments - Building M	3,566	Apartment	7	5	11
Boling Apartments - Building N	5,866	Apartment	12	9	18
Boling Apartments - Building O	15,450	Apartment	31	23	47
Boling Apartments - Building P	3,566	Apartment	7	5	11
Boling Apartments - Building Q	9,508	Apartment	19	14	29
Boling Apartments - Building R	5,866	Apartment	12	9	18
Boling Apartments - Building S	1,664	Apartment	3	3	5
Engineering/Math/Computer Science Building	203,296	Laboratory (Light)	479	383	767
Holt Hall	78,513	Office/Classroom	153	107	214
Brock Hall	31,064	Office/Classroom	61	42	85
Cadek Hall	23,085	Office/Classroom	45	32	63
Fine Arts Center	72,300	Auditorium	193	170	340
Founders Hall	26,784	Office/Classroom	52	37	73
Guerry Center	38,857	Office/Classroom	76	53	106
Hooper Hall	20,176	Office/Classroom	39	28	55
Hunter Hall	58,221	Office/Classroom	114	80	159
Lupton Library	116,349	Library	150	90	180
Fletcher Hall	98,742	Office/Classroom	193	135	270
Maclellan Gymnasium	76,628	Gymnasium	108	76	152
Race Hall	20,140	Office/Classroom	39	28	55
Central Energy Plant	12,909	Service/Grounds Facility	23	16	32
Grote Hall	86,198	Laboratory (Medium)	305	265	530
University Center	226,372	Student Center/Union	800	688	1,377
Pfeiffer Hall	25,007	Office/Classroom	49	34	68
Lockmiller Apartments I	55,048	Apartment	111	83	167
Lockmiller Apartments II	40,971	Apartment	83	62	124
	1,800,824		4,302	2,935	5,871

TABLE 2.2 - INDIVIDUAL CHILLED WATER LOAD DENSITY



system bringing the total load to approximately 3600-tons, which exceeds the firm capacity.

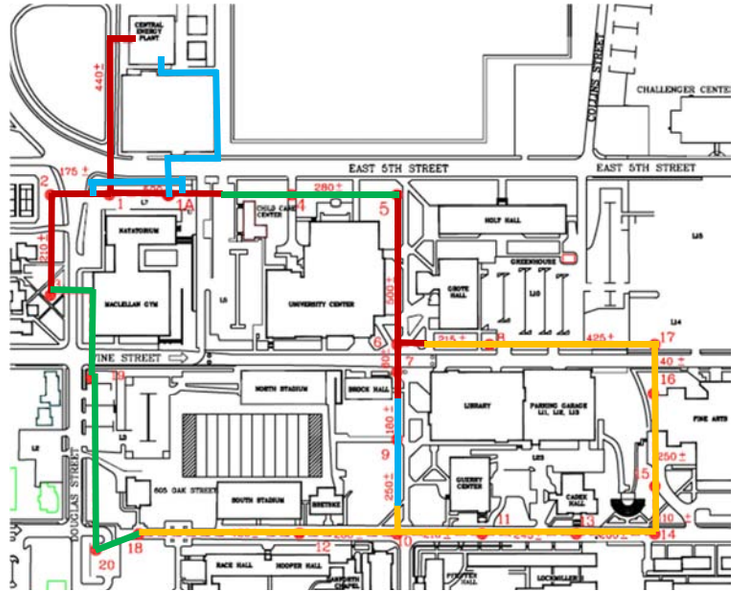
HOT WATER SYSTEM

A majority of the buildings on campus are heated using hot water produced at the Central Energy Plant. The hot water is produced using two natural gas-fired, 33,600 MBH capacity boilers with #2 fuel oil backup, and a natural gas-fired, 24,000 MBH capacity boiler with #2 fuel oil backup. Hot water leaves the plant at 300°F and 200 psig through a network of hot water piping and is distributed to the buildings. The hot water distribution piping is a combination of insulated steel pipe encased in clay tile pipe or direct buried piping with concrete pits for access to isolation valves. The distribution piping has a combination of expansion loops and mechanical slip-type joints to accommodate thermal expansion.

The Central Energy Plant has three boilers, all installed within the last three years. The boilers and ancillary equipment are well maintained, operational and should experience normal maintenance costs over the next five years. Graph to the left illustrates the ages of each boiler and remaining useful life.
The hot water distribution system consists of welded steel piping encased in clay tile pipe and direct buried pre-insulated piping. There are four vintages of piping in the distribution system varying from 40 years old to new installations installed in 2011. The diagram below illustrates the age of each segment of hot water piping on campus. The 3,000 ft of piping installed in 1972 is approaching the

Heating Hot Water Vintages

1972
1986
2002/2003
2010/2011



end of its expected useful life. University staff has indicated that the clay tile pipe seals have failed and most of the insulation is missing from the steel piping, and have plans to abandon in place and replace with new piping.

Existing building heating loads were calculated by assigning each building a specific load density based on building type and usage. The load densities are based on AEI's experience and a database of building load data from other campus master plans and building projects. The load density is applied to each building on campus and scaled based on the total Central Energy Plant measured usage. The resulting load densities and diversity factors per building type are shown in Table 2.3. The building diversity factors were adjusted based on the total hot water flow rate provided by the campus Central Energy Plant staff. The peak and diversified loads that were developed for each building on campus and the total campus load are shown in Table 2.4.

The total hot water capacity at the Central Energy Plant is 91,200 MBH. The firm capacity, defined as the total capacity minus the largest incremental piece of equipment, is 57,600 MBH. Currently, the total campus hot water load is approximately 47,900 MBH. Twelve additional campus building are currently being added to the central distribution system bringing the campus hot water load to approximately 59,700 MBH. Therefore, the Central Energy Plant firm capacity is 2,100 MBH short of the campus load with the added buildings.

Building Type	Building Gross Btu/GSF	Heating Hot Water Density Diversity	Building Diversified Btu/GSF
Agricultural/Greenhouse	55	0.55	30
Auditorium	50	0.55	28
Child Care Facility	25	0.65	16
Classroom	42	0.65	27
Food Service	50	0.65	33
Gymnasium	33	0.55	18
Gymnasium w/Spectators	50	0.55	28
Gymnasium w/Spectators/Pool	53	0.55	29
Laboratory (Light)	50	0.65	33
Laboratory (Medium)	60	0.70	42
Laboratory (Heavy)	90	0.85	77
Library	35	0.60	21
Office	42	0.60	25
Office/Classroom	42	0.63	26
Office/Classroom/Laboratory (Light)	45	0.63	28
Office/Classroom/Food Service	45	0.63	28
Apartment	27	0.65	18
Service/Grounds Facility	18	0.65	12
Sports Arena	50	0.55	28
Sports Arena - Outdoor	30	0.55	17
Storage Facility	25	0.65	16
Student Center/Union	50	0.60	30

TABLE 2.3 - BUILDING TYPE HOT WATER LOAD DENSITY

Building Name	Year Built	Building Gross SF	Building Type	Building Peak Load, MBH	Building Diversified Load, MBH
Aquatic & Recreation Center	2008	123,101	Gymnasium w/Spectators/Pool	6,524	3,588
McKenzie Arena	1982	211,778	Sports Arena	10,589	5,824
Racquetball Center	1976	27,000	Gymnasium	891	490
Boling Apartments - Building A	1975	7,171	Apartment	194	126
Boling Apartments - Building B	1975	8,320	Apartment	225	146
Boling Apartments - Building C	1975	3,566	Apartment	96	63
Boling Apartments - Building D	1975	3,566	Apartment	96	63
Boling Apartments - Building E	1975	2,380	Apartment	64	42
Boling Apartments - Building F	1975	5,866	Apartment	158	103
Boling Apartments - Building G	1975	8,320	Apartment	225	146
Boling Apartments - Building H	1975	7,171	Apartment	194	126
Boling Apartments - Building I	1975	5,510	Apartment	149	97
Boling Apartments - Building J	1975	5,280	Apartment	143	93
Boling Apartments - Building K	1975	8,320	Apartment	225	146
Boling Apartments - Building L	1975	17,329	Apartment	468	304
Boling Apartments - Building M	1975	3,566	Apartment	96	63
Boling Apartments - Building N	1975	5,866	Apartment	158	103
Boling Apartments - Building O	1975	15,450	Apartment	417	271
Boling Apartments - Building P	1975	3,566	Apartment	96	63
Boling Apartments - Building Q	1975	9,508	Apartment	257	167
Boling Apartments - Building R	1975	5,866	Apartment	158	103
Boling Apartments - Building S	1975	1,664	Apartment	45	29
Engineering/Math/Computer Science Building	2003	203,296	Laboratory (Light)	10,165	6,607
Holt Hall	1977	78,513	Office/Classroom	3,298	2,061
Brock Hall	1949	31,064	Office/Classroom	1,305	815
Cadek Hall	1961	23,085	Office/Classroom	970	606
Fine Arts Center	1975	72,300	Auditorium	3,615	1,988
Founders Hall	1917	26,784	Office/Classroom	1,125	703
Guerry Center	1958	38,857	Office/Classroom	1,632	1,020
Hooper Hall	1918	20,176	Office/Classroom	847	530
Hunter Hall	1958	58,221	Office/Classroom	2,445	1,528
Lupton Library	1975	116,349	Library	4,072	2,443
Fletcher Hall	1940	98,742	Office/Classroom	4,147	2,592
Maclellan Gymnasium	1965	76,628	Gymnasium	2,529	1,391
Race Hall	1917	20,140	Office/Classroom	846	529
Central Energy Plant	1973	12,909	Service/Grounds Facility	232	151
Grote Hall	1968	86,198	Laboratory (Medium)	5,172	3,620
University Center	1975	226,372	Student Center/Union	11,319	6,791
Pfeiffer Hall	1949	25,007	Office/Classroom	1,050	656
Lockmiller Apartments I	1982	55,048	Apartment	1,486	966
Lockmiller Apartments II	1986	40,971	Apartment	1,106	719
		1,800,824		78,829	47,871

TABLE 2.4 - INDIVIDUAL HOT WATER LOAD DENSITY

Building Type	Building Gross W/SF	Electric Use Diversity	Building Diversified W/GSF
Agricultural/Greenhouse	3.3	0.60	2.0
Auditorium	3.9	0.25	1.0
Child Care Facility	3.0	0.65	2.0
Classroom	3.0	0.65	2.0
Food Service	4.1	0.70	2.9
Gymnasium	3.8	0.70	2.7
Gymnasium w/ Spectators	5.4	0.70	3.8
Gymnasium w/Spectators/Pool	5.3	0.70	3.7
Laboratory (Light)	7.0	0.90	6.3
Laboratory (Medium)	10.8	0.90	9.8
Laboratory (Heavy)	13.0	0.90	11.7
Library	2.2	0.65	1.4
Central Plant	81.3	0.80	65.0
Office	5.4	0.70	3.8
Office/Classroom	4.7	0.68	3.1
Office/Classroom/Laboratory (Light)	5.3	0.75	4.0
Office/Classroom/Food Service	5.0	0.67	3.3
Apartment	2.4	0.70	1.7
Service/Grounds Facility	3.8	0.70	2.7
Sports Arena	3.3	0.25	0.8
Sports Arena - Outdoor	21.7	0.25	5.4
Storage Facility	2.2	0.25	0.5
Student Center/Union	6.0	0.70	4.2

TABLE 2.5 - BUILDING TYPE ELECTRIC LOAD DENSITY

Existing Campus Building Electrical Load Estimate

Bldg #	Building Name	Year Built	Building Gross SF	Building Type	Building Peak Load (kW)	Building Diversified Load (kW)
50832000	McKenzie Arena	1982	211,778	Sports Arena	635	159
50821200	Davenport Hall	1959	21,521	Office/Classroom	93	62
50824000	Racquetball Center	1976	27,000	Gymnasium	95	66
50825800	Johnson Obear Village Apartments (A, B, & C)	1995	67,376	Apartment	148	104
50825900	Johnson Obear Village Apartments (D,E,F,G,&H)	1995	100,042	Apartment	220	154
50827800	Boling Apartments - Building A	1975	7,171	Apartment	16	11
50827900	Boling Apartments - Building B	1975	8,320	Apartment	18	13
50828000	Boling Apartments - Building C	1975	3,566	Apartment	8	5
50828100	Boling Apartments - Building D	1975	3,566	Apartment	8	5
50828200	Boling Apartments - Building E	1975	2,380	Apartment	5	4
50828300	Boling Apartments - Building F	1975	5,866	Apartment	13	9
50828400	Boling Apartments - Building G	1975	8,320	Apartment	18	13
50828500	Boling Apartments - Building H	1975	7,171	Apartment	16	11
50828600	Boling Apartments - Building I	1975	5,510	Apartment	12	8
50828700	Boling Apartments - Building J	1975	5,280	Apartment	12	8
50828800	Boling Apartments - Building K	1975	8,320	Apartment	18	13
50828900	Boling Apartments - Building L	1975	17,329	Apartment	38	27
50829000	Boling Apartments - Building M	1975	3,566	Apartment	8	5
50829100	Boling Apartments - Building N	1975	5,866	Apartment	13	9
50829200	Boling Apartments - Building O	1975	15,450	Apartment	34	24
50829300	Boling Apartments - Building P	1975	3,566	Apartment	8	5
50829400	Boling Apartments - Building Q	1975	9,508	Apartment	21	15
50829500	Boling Apartments - Building R	1975	5,866	Apartment	13	9
50829800	Boling Apartments - Building S	1975	1,664	Apartment	4	3
50829700	Metro Building	1954	58,000	Office/Classroom	249	168
50830100	Development House	1909	11,124	Office/Classroom	48	32
50832100	Frist Hall	1965	24,498	Office/Classroom	105	71
50820200	Engineering/Math/Computer Science Building	2003	203,296	Laboratory (Light)	1,951	1,756
50820300	Bretske Hall	1947	8,703	Office/Classroom	37	25
	Chamberlain Field					
50820400	Holt Hall	1977	78,513	Office/Classroom	338	228
50820500	Brock Hall	1949	31,064	Office/Classroom	134	90
50820700	Cadek Hall	1961	23,085	Office/Classroom	99	67
50821400	Fine Arts Center	1975	72,300	Auditorium	260	65
50821600	Founders Hall	1917	26,784	Office/Classroom	115	78
50821700	Aquatic & Recreation Center	2008	123,101	Gymnasium w/Spectators/Pool	597	418
50821800	Guerry Center	1958	38,857	Office/Classroom	167	113
50822000	Hooper Hall	1918	20,176	Office/Classroom	87	59
50822200	Hunter Hall	1958	58,221	Office/Classroom	250	169
50822300	Lupton Library	1975	116,349	Library	233	151
50822400	Fletcher Hall	1940	98,742	Office/Classroom	425	287
50822600	Maclellan Gymnasium	1965	76,628	Gymnasium	268	188
50823500	Race Hall	1917	20,140	Office/Classroom	87	58
50823600	Central Energy Plant	1973	12,909	central plant	968	775
50823900	Grote Hall	1968	86,198	Laboratory (Medium)	862	776
50824300	University Center	1975	226,372	Student Center/Union	1,245	872
50824900	Pfeiffer Hall	1949	45,007	Office/Classroom	194	131
50825200	Stagmaier Hall	1949	31,015	Office/Classroom	133	90
50825400	Lockmiller Apartments I	1982	55,048	Apartment	121	85
50825600	Lockmiller Apartments II	1986	40,971	Apartment	90	63
50822800	Challenger Center	1994	23,940	Office/Classroom	103	69
	Parking					
50826000	Administrative Services Building	1992	63,500	Office	318	222
			2,230,543		10,957	7,848

TABLE 2.6 - INDIVIDUAL ELECTRIC LOAD DENSITY

STRATEGIC SPACE NEEDS & OPPORTUNITIES

In support of the UTC Strategic Plan, the 2012 Campus Master Plan strategies and recommendations are a result of detailed analysis completed during the initial phase of the master plan process. UTC has stated goals and assumptions for enrollment increases over a period of time.

A comprehensive analysis and assessment of existing and projected facility space needs was completed to guide recommendations in the planning process. For ease of cost estimating and tracking, various improvements have been itemized and organized into implementation phases according to the type of construction (building, open space, and infrastructure).

Every effort has been made to provide flexibility in the phasing recommendations so that if the timing for approvals or funding changes, project sequence and construction sites can shift to meet the need. It is important to note that wherever possible the physical planning recommendations should be supported by university policies.

In addition to identifying faclity needs, an exploration and assessment of neighboring property surrounding UTC was completed to gain an understanding of any existing or long term plans for development. UTC fits well within the surrounding community and looks forward to considering partnership relationships with neighboring institutions to meet the needs of both parties.

CAMPUS-WIDE SPACE NEEDS ASSESSMENT

The campus space needs analysis for the University of Tennessee at Chattanooga Campus Master Plan investigates the projected space requirements for the target enrollment of 13,000 student Head Count (HC) and 15,000 student Head Count (HC). The base and target population include the following components: existing baseline square footage, square footage added due to projects in design or construction, Capital Improvement Plan (CIP), reduction of square footage due to facilities taken off-line, and square footage need per student enrollment.

The space needs analysis and resultant Space Model was based on the following data and criteria:

a. Federal Index Classification Manual (FICM) (space taxonomy)
b. Existing Space Inventory provided by UT Chattanooga
c. Class Schedule provided by UT Chattanooga
d. State of Tennessee higher education space standards (THEC)
e. Council for Educational Facility Planners International (CEFPI) (general guidelines)
f. Perkins+Will square footage benchmark data from campuses throughout the United States

The following assumptions were made when preparing the space needs analysis:
1. Space utilization analysis and space needs projections were performed based on Tennessee's Higher Education Commission document titled, 'THEC Space Allocation Guidelines User's Manual. Where no Tennessee standard existed, either Council of Educational Facility Planners International (CEFPI) guidelines or Perkins+Will benchmark data were utilized.
2. Per the University's direction, foundation of space demand model was based on student Head Count (HC).
3. University of Tennessee Chattanooga identified future population targets of 13,000 Headcount (HC) and 15,000 Headcount (HC) to be used as the basis for enrollment projections and resultant modeling of space needs.
4. Historical growth was noted as 4% over the past 5 years.
5. Research expenditures were declared as $10.0 million last year, and a desire was expressed to increase the figure to $20.0 million. Both Education and Engineering were declared to contribute 40% each to the research total.
6. Facilities under construction during the study included the Recreation Center. Since the Recreation Center was completed prior to completion of the study it was factored into the Space Model as existing space. The New Library was also under construction during the study --- UTC made the decision to identify the new Library space as the existing space guideline to paint a more

accurate picture of future space needs. The new library has also been added to the existing space inventory as if it is completed and occupied. The Lupton Library (old Library) is identified as renovated space, primarily for academic classroom, office and study space. This renovation has been included in current capital planning models. Category 400 (study) and 310 (faculty office) space in the Lupton Library has been modified from the existing inventory, with a reallocated amount of renovated space.

7. Additional planned facilities tested and moving forward include Lab Sciences Building, Health Sciences Building and Communications/Classroom Building. These facilities were factored into the Space Model on the Summary Space Model sheet column titled "CIP Plan (Capital Improvement Plan)" (projected changes in facilities add or demo). Since no FICM categories were available for these facilities, the Assignable Square Feet (ASF) per FICM were "reverse engineered" based on project cost, construction cost, initial discussions regarding project goals, primary facility function and typical percentage makeup of support spaces for similar facilities. Based on these factors, approximate Assignable Square Footage per FICM categories were developed. These categories should be continued to be followed and updated once more space programming information becomes available.

8. Facilities targeted for demolition include the Metro Annex, which has been removed from the existing space inventory, and Frist Hall, which has been removed from the inventory at the 13,000 HC target.

The following information more fully details the foundation by which the academic space needs analysis was developed for the UTC campus. The analysis investigates the increasing space needs expressed by the college as the campus expands from an initial FTE/HC of 9,849/11,438 to an intermediate target of 11,194/13,000, and further to a long term target of FTE/HC of 12,916/15,000. The assumptions and space category summaries clarify the elements of the final space model.

1. Detailed commentary for each FICM Space Type Category follows in this document.

HC 13,000		**HC 15,000**		**HC 18,000**	
Undergraduate	11,242	Undergraduate	12,971	Undergraduate	15,565
Graduate	1,758	Graduate	2,029	Graduate	2,435
Total Student	13,000	Total Student	15,000	Total Student	18,000
FTE		**FTE**		**FTE**	
Undergraduate	10,053	Undergraduate	11,599	Undergraduate	13,373
Graduate	1,141	Graduate	1,317	Graduate	1,518
Total Student	11,194	Total Student	12,916	Total Student	14,891

TABLE 3.1 - ENROLLMENT TARGETS

2. Per all site planning diagrams, individual space Net Assignable Square Feet were escalated to Gross Square Footage by nationally recognized factors for the specific type of space. (I.e., Library space is more efficient at 70% than say Classrooms which may be at 60-65 %.)

3. The total existing assignable square feet on campus is roughly 8.3% shy of its current calculated guideline need. In general, a variance of 10% or more starts to warrant questions on space use and availability, however, there are a few areas of significant concern in square footage need.

4. Where there are space anomalies, they are discussed in each detailed FICM Category outlined under their respective headings

5. As shepherds for one of the largest University assets (facilities), it is important to have top-level campus leaders communicate the need for continued diligence in good space utilization.

6. Continue good scheduling practices so that classes "dove tail" with each other (i.e., common start and end times), enforce scheduling policies, schedule all times and days of week, etc.

7. Continue to maintain registrar control of classrooms (in lieu of departmental control), so that it can be actively managed with the entire institution's needs in mind.

The space category codes are based on the FICM taxonomy. The space codes are a national standard and can be used as a basis for comparison amongst most higher education institutions. The category summaries indicate ASF/FTE ratios that were used to develop the space needs projections and final space model.

Each of the facilities in the University of Tennessee at Chattanooga Campus Master Plan is comprised of multiple space categories as outlined below. Instructional buildings may contain a mix of classroom spaces, office space, study space and student lounge space. The master plan defines the primary use of each building, but the functions inside the building encompass a variety of spaces as outlined in the space categories.

Benchmark comparisons were made with other peer institutions, the selection of which was provided by University of Tennessee at Chattanooga. Schools include institutions considered to be peer, both competitive and aspirant peers. Also included is a comparison to the Society of College & University Planners (SCUP) national analysis average for Public Schools with a population over 10,000 Students.

Based on current guidelines, University of Tennessee at Chattanooga is a negligible 5.0 ASF below average amongst the data listed.

Application of the guidelines identified in the THEC Space Allocation Guidelines User's Manual (2009) reveals a current overall deficiency of academic space at UTC. Generally, there is a current deficit of about 18,000 Net Assignable Square Feet (NASF) of space that includes classroom plus service space. Using an efficiency factor of 0.65, this translates into about 25,000 Gross Square Feet (GSF) of deficit building space short of the current academic needs of the university. The Research category indicates a deficit of approximately 23,000 NASF or 35,000 GSF. The Study category includes the new library (currently under construction) and a renovated Lupton Library as the baseline for current space analysis. A current deficit of this space type exists, and is continued to be identified as a need at the 15,000 HC target. A current deficit of 13,500 GSF in the Recreation/Physical Education category increases to 100,000 GSF at the 15,000 HC target.

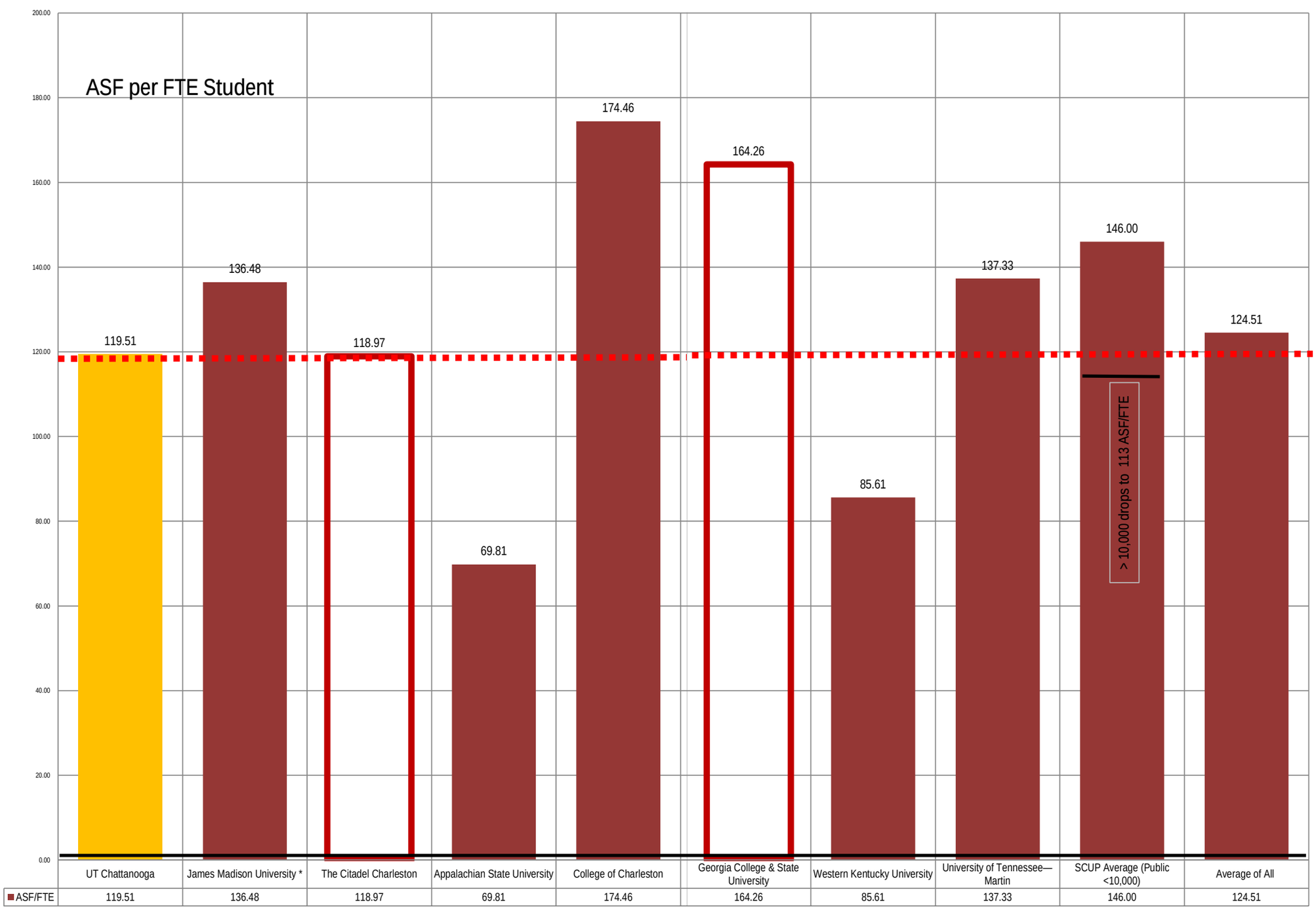
A Development Needs graphic was created as a graphic representation of the square footage information outlined in the Academic Space Model. The 'Assignable Square Feet' in the Space Model are converted to 'Gross Square Feet' and are represented, by colored "building blocks" on a campus-wide base map that show each buildings' primary use. Each building use classification is comprised of multiple space use categories.

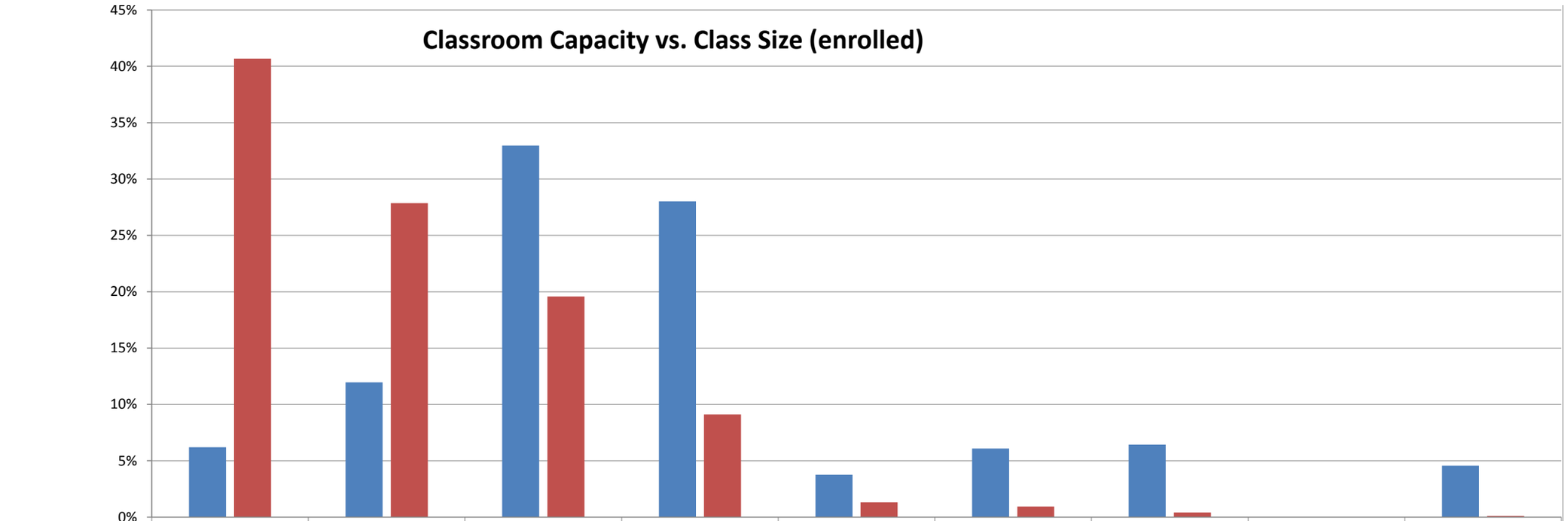
Building use classifications include the following:

- Academic / Learning
- Administrative / Support
- Student Support
- Student Housing
- Sports & Recreation
- Athletics

The size of these building blocks reflect the most efficient use of internal space with appropriate floor widths and lengths and efficient GSF floor areas for each type of building use classification.

The diagram indicates both CIP and the school's target space needs. The CIP projects are deemed priority projects and have been incorporated into the implementation plans accordingly. The baseline for the diagram and the analysis below includes completion of the new library and the renovation of the existing Lupton Library.


ASF per FTE Student
200.00
180.00
160.00
140.00
120.00
100.00
80.00
60.00
40.00
20.00
0.00
119.51
136.48
118.97
69.81
174.46
164.26
85.61
137.33
146.00
124.51
> 10,000 drops to 113 ASF/FTE
UT Chattanooga
James Madison University *
The Citadel Charleston
Appalachian State University
College of Charleston
Georgia College & State University
Western Kentucky University
University of Tennessee—Martin
SCUP Average (Public <10,000)
Average of All
ASF/FTE
119.51
136.48
118.97
69.81
174.46
164.26
85.61
137.33
146.00
124.51



	5-20	21-30	31-40	41-50	51-70	71-100	100-150	150-200	200-300
Room Capacity	6%	12%	33%	28%	4%	6%	6%	0%	5%
Class Size (enrolled)	41%	28%	20%	9%	1%	1%	0%	0%	0%

DETAILED SUMMARIES BY SPACE CATEGORY

Cat 110/115

Classrooms

Existing = 149,551 ASF

Need: Assignable square footage (ASF) need was determined by generally following THEC standards as the basis for Classroom Guidelines:

1. Calculating Weekly Student Contact Hours (days of week, meeting time in hours, number of students in each class)
2. THEC standard of 60% utilization rate
3. THEC standard of 30 hours per week room use

Benchmark: In review of comparable institutions, and based on the assumption of 'Student Centered Learning' (SCL) being fully implemented within the University, an allocation of 12-16 ASF/FTE was observed. Current UTC Classroom ASF/FTE equals 15.18.

Analysis: UTC shows an existing ASF/FTE of 15.18, which indicates a deficit of 17,782 ASF.

However, there is a significant misalignment between enrollment and room capacity that creates an "artificial" shortage of classroom space even though the Space Model shows a surplus. Referring to the table below "Classroom Capacity vs. Class Size", it is understood that in Classrooms sized 21-30, demand far exceeds capacity. Further, any shortage of seats gets "pushed up to the next size" and classrooms sized 31-40 are used because there are no more 21-30 seat classrooms available. This trend continues upwards until class seats are filled.

FIGURE 3.1 SPACE NEEDS

PLANNED PROJECTS

ACADEMIC/ LEARNING

LAB SCIENCE — 81,200 GSF (4 FLOORS)

HEALTH SCIENCE — 78,400 GSF (4 FLOORS)

COMMUN. — 40,400 GSF (4 FLOORS)

PARKING — 700 STALLS (4FLOORS)

STUDENT HOUSING — 4 BLDGS, 300 BEDS EACH (4 FLOORS)

ADDITIONAL TARGET SPACE NEEDS (13,000 HC)

REC. SPORTS & PHYS. ED. — 48,000 GSF (2 FLOORS)

PARKING — 120 STALLS EACH

STUDENT SUPPORT — 78,000 GSF (2 FLOORS)

ACADEMIC/ LEARNING — 172,000 GSF (4 FLOORS)

STUDENT HOUSING — 2 BLDGS, 286 BEDS EACH (4 FLOORS)

ADMIN/ SUPPORT — 12,000 GSF (1 FLOOR)

ADDITIONAL TARGET SPACE NEEDS (15,000 HC)

ACADEMIC/ LEARNING — 186,000 GSF (4 FLOORS)

REC. SPORTS & PHYS. ED. — 67,500 GSF (2 FLOORS)

PARKING — 120 STALLS EACH

STUDENT SUPPORT — 50,000 GSF (2 FLOORS)

FACILITY SUPPORT — 4,200 GSF (1 FLOOR)

STUDENT HOUSING — 1 BLDG, 182 BED (4 FLOORS)

ADDITIONAL INTERCOLLEGIATE ATHLETICS (NCAA PEERS)

ATHLETICS SUPPORT FACILITY — 75,000 GSF (3 FLOORS)

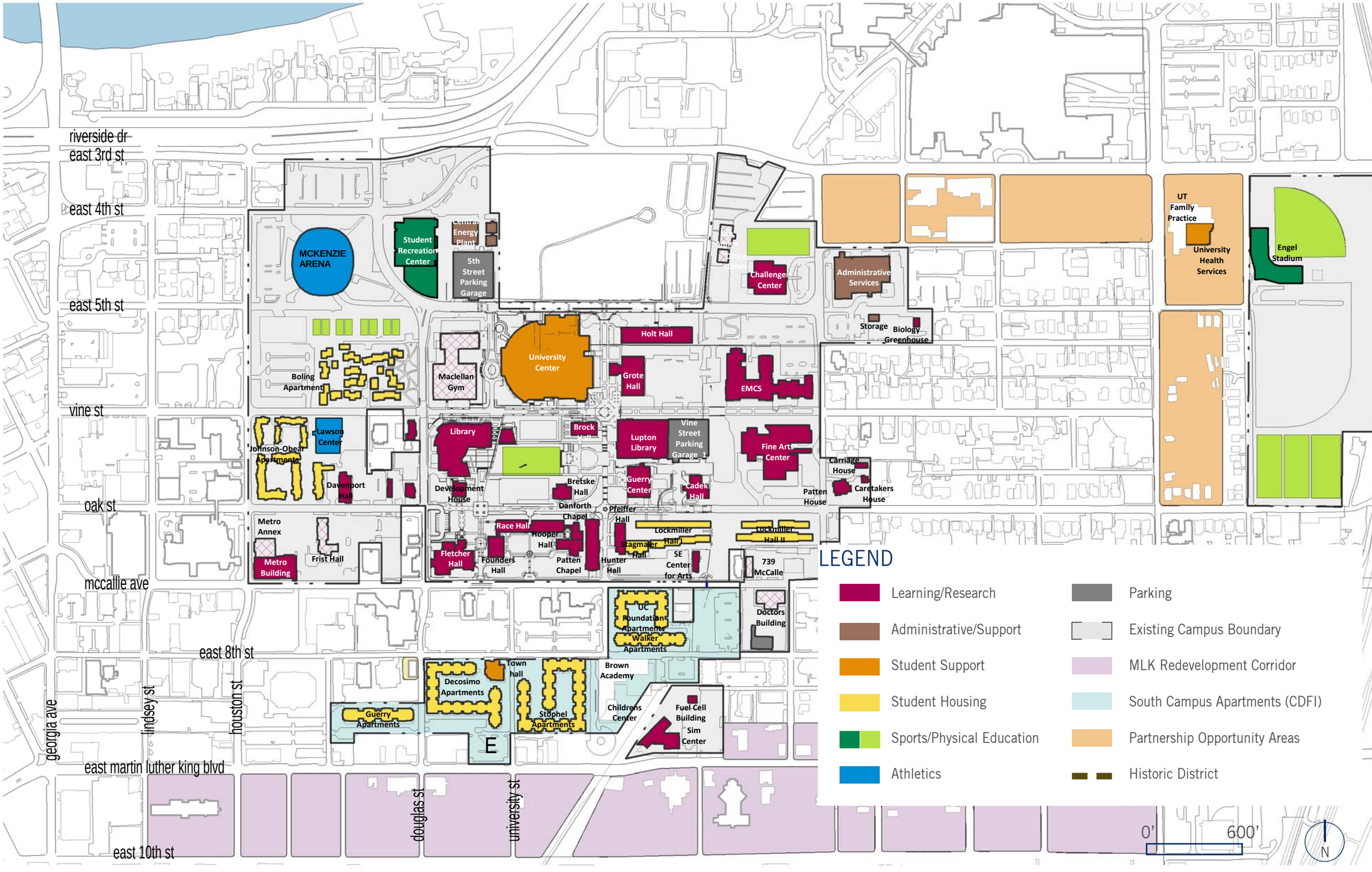
FOOTBALL PRACTICE FAC. — 40,000 GSF (2 FLOORS)

VOLLEYBALL/ WRESTLING GYM — 50,000 GSF (2 FLOORS)

TENNIS/FIELDHOUSE — 40,000 GSF (1 FLOOR)

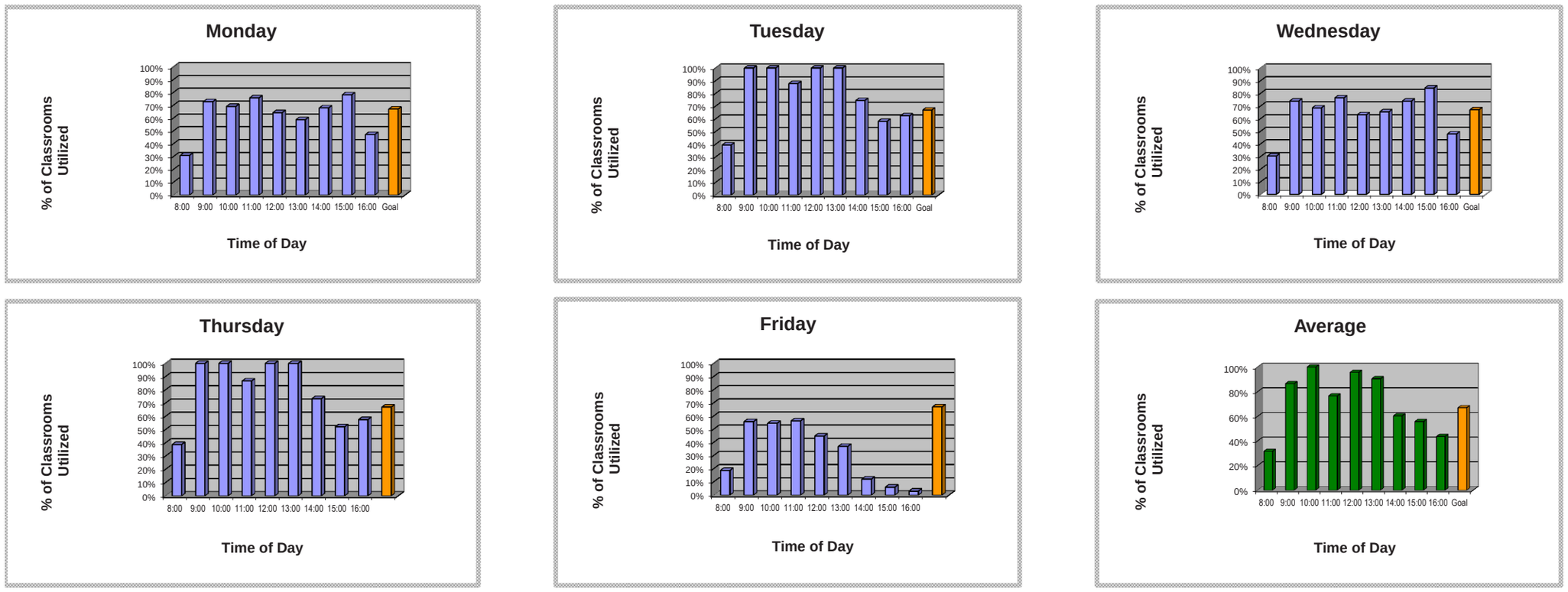
TENNIS

TRACK/SOCCER STADIUM — 25,000 GSF (2 FLOORS); TRACK & FIELD, SOCCER



LEGEND

- Learning/Research
- Administrative/Support
- Student Support
- Student Housing
- Sports/Physical Education
- Athletics
- Parking
- Existing Campus Boundary
- MLK Redevelopment Corridor
- South Campus Apartments (CDFI)
- Partnership Opportunity Areas
- Historic District



An additional indicator of classroom space required can be measured in classroom seat to FTE ratio. Ratios observed at schools across the country have ranged from 0.5 all the way up to 1.26, both of which are extremes. UTC's Seat to FTE ratio is 0.75 and is adequate for current needs and allows for a reasonable amount of growth.

Classroom Daily Use Rates: Another measurement of efficient classroom use can be illustrated in the graphs above which show classrooms use, hour by hour and day by day.

Classroom use appears quite good except for Friday which is typical on many campuses. Also, the high use rate also occurs due to the need for classrooms produced by the misalignment of classroom demand with classroom supply.

Summary:

Existing Fall 2011	149,551 ASF
Current Guideline	167,333 ASF
13,000 HC Guideline	190,184 ASF
15,000 Guideline	219,444 ASF

Conclusion: The misalignment of Classroom Capacity versus Class Enrollment needs to be addressed, so available Classroom ASF can be used more efficiently.

By reconfiguring classroom sizes to meet class enrollment, the "artificial" shortage is negated, as well as when additional enrollment is increased.

If the seat to FTE ratio begins to approach 0.65, additional study is recommended.

Cat 210/215
Instructional Lab
Existing = 111,684 ASF

Need: Assignable square footage (ASF) need was determined by generally following THEC standards as the basis for Laboratory Guidelines:

1. Calculating Weekly Student Contact Hours (days of week, meeting time in hours, number of students in each class)
2. THEC standard of 80% utilization rate
3. THEC standard of 20 hours per week room use
4. THEC standard of 75 ASF per station due to vast majority of teaching lab space allocated in Category C space.

Analysis: UTC shows an existing instructional lab surplus of 10,398 ASF based on the guidelines listed above -- this equates to 12.06 ASF/FTE. The slight surplus can be absorbed quickly with the expected enrollment rate increases.

Summary:

Existing Fall 2011	111,684 ASF
Current Guideline	108,397 ASF
13,000 HC Guideline	123,200 ASF
15,000 Guideline	142,154 ASF

Conclusion: Additional review of the current CIP may be necessary to determine if the additional space identified in this category is an accurate representation of on-campus needs.

Cat 220/225
Open Lab
Existing = 53,223 ASF
Need: 5 ASF average allocation per THEC Guidelines

Analysis: With the THEC Guideline set at 5 ASF per FTE, this calculation results in a demand of 49,245 ASF, which in turn identifies a slight deficit of 2,574 ASF.

Summary:

Existing Fall 2011	53,223 ASF
Current Guideline	49,245 ASF
13,000 HC Guideline	55,970 ASF
15,000 HC Guideline	64,581 ASF

Conclusion: Additional review of the current CIP may be necessary to determine if the additional space identified in this category is an accurate representation of on-campus needs.

Cat 250/255
Research Lab
Existing = 39,191 ASF

Need: Expenditures provided by UTC for the past year were expressed as $7.0 million with a desire to increase to $20.0 million in the future.

Major areas of research noted were, Education at 40%, Engineering at 40%.

Undergraduate science is a strong program with a specific desire to grow research in social science.

Analysis: Based on THEC's guideline of ASF per $1.0 M research (Category A considered for 50% of the current expenditures and Category B considered for the remaining expenditures). Therefore, need was determined based on current ASF use, anticipated increase of undergraduate research, and consideration of the THEC Guideline.

Category A Research = $5.0 million = 34,000 ASF
Category B Research = $5.0 million = 28,000 ASF

Total Current Guideline = 62,000 ASF

Summary:

Existing Fall 2011	39,191 ASF
Current Guideline	62,000 ASF
13,000 HC Guideline	80,600 ASF
15,000 HC Guideline	124,000 ASF

Conclusion: A current deficit of approximately 22,000 ASF exists, this leads to a future deficit of 54,766 ASF at the 13,000 HC target level. Additional review of the research targets may be necessary to determine if the additional space identified in this category is an accurate representation of on-campus needs.

Cat 300 Offices
(incl Conf)
Existing = 333,631 ASF

NOTE: The Lupton Library facility is planned to be re-purposed partially for office space (administrative and faculty). The assignable square feet (ASF) re-categorization has been acknowledged in the final Space Model as an existing condition.

Need: The THEC office guideline is on average140 ASF plus 30% support space per faculty, staff and administrator who require an office. The resultant ASF allocation (for each personnel type) includes support space for some ancillary space such as reception, waiting, work rooms, circulation, etc.

Summary:
Category 310: Faculty Offices (corresponds to THEC Administrative and Faculty):
Existing 112,055 ASF
Need: 123,656 ASF
Deficit: - 11,601 ASF

Category 320: Administrative Offices / Student Worker (corresponds to THEC Staff and Student Workers):
Existing: 197,971 ASF
Need: 103.065 ASF
Surplus: 94,907 ASF

Category 350: Conference Rooms:
Existing 23,605 ASF

Need: Based on ratio of similar sized institutions at 1 Conference Room per 25 Offices with an average of 14 seats at 25 ASF per seat = 17,666 ASF
Surplus: 5,939 ASF

Conclusion: In discussions with UTC, it was noted that Office space is typically the largest space use category, consistent with this fact, UTC Office space

accounts for roughly 25% of the total ASF and should be closely monitored -- University administration may want to review policy on personnel office requirements.

Cat 400
Study
(Library)
Existing = 83,657 ASF (Includes new library currently under construction, an area of 54,400 ASF, and existing Lupton Library being repurposed to primarily classroom and office)

Need: THEC calculations yield a deficit of 28,226 ASF in Library. The THEC model is based on number of volumes, study space, service space, and processing room.

Analysis: Collection Space Need = 19,762 ASF
Study Space Need = 73,868
TOTAL COLLECTION AND STUDY NEED = 93,629
Processing Space Need = 1,480 ASF
Study Service = 14,744 ASF
Lounge / Coffee Space Desired = 2,000

TOTAL UNIVERISTY LIBRARY GUIDLINE NEED = 111,883

Benchmarks: The current 111,883 ASF equates to 11.36ASF/FT, which is in the expected range of a state university of this size and makeup.

Conclusion: Based on standardized calculations, Library/Study Space shows a current deficit of 28,226 ASF.

Cat 510
Armory

All areas are included in Categories 310 and 410.
Cat 520
Rec Athletic and Phy Ed

Based on THEC Guidelines, with a current FTE of 9,849, UTC has a need of 176,339 ASF for recreation space. With current space on campus of 167,507 a current deficit of 8,832 ASF exists. This deficit increases to 23,627 ASF at the 13,000 HC Guideline, and to 67,571 at the 15,000 HC Guideline.

One challenge for Recreational Sports is the use of Maclellan Gymnasium. Current space is adequate for the current student population if Maclellan were to be 50% dedicated to recreational sports. Assuming that recreational sports has part time access to the facilities in Maclellan, the observation is that recreational sports needs can be meet on campus with current facilities.

13,000 HC Guideline:
As student population increases current recreational sports facilities will no longer meet the needs of UTC students. Assuming a 50% use factor for Maclellan Gymnsasium – a shortfall of 23,627 ASF exists.

15,000 HC Guideline:
As student population increases current recreational sports facilities will no longer meet the needs of UTC students. Assuming a 50% use factor for Maclellan Gymnsasium – a shortfall of 67,571 ASF exists. Two recommendations:
1. Build new, dedicated recreational sports facilities on campus. Approximately

30,000 ASF. This space would include basketball courts, weights and fitness space and multi-purpose rooms.
2. Athletics vacates Maclellan Gymnasium – becomes a dedicated recreational sports, HHP building.
If Maclellan Gymnasium is no longer available for recreational sports the replacement need is approximately 88,747 ASF.

Two recommendations:
1. Build new, dedicated recreational sports facilities on campus. Approximately 60,000 ASF. This space would include basketball courts, weights and fitness space and multi-purpose rooms.
2. Athletics vacates Maclellan Gymnasium.
3. Lawson Center becomes a dedicated recreation sports facility when Athletics facilities are completed, an additional 17,000 ASF is created.

Maclellan Gymnasium currently houses a performance gymnasium with approximately 4,000 spectator seats, a practice gymnasium, aquatic center and support facilities for intercollegiate athletics and academic programs. The facility was originally constructed as the primary facility for intercollegiate athletics on campus prior to the construction of McKenzie Arena.

Today, the facility is used to host events for intercollegiate sports, campus recreation, academic programs and community outreach. Multiple small renovations have occurred over the years with no substantial infrastructure upgrades or modernization since its original construction. The facility no longer adequately meets the needs of the University as a competitive venue for intercollegiate sports, academic programs and expanding programs in recreation, intramural and club sports for a growing undergraduate student population. The renovation of Maclellan Gymnasium into a dedicated facility for recreation sports will not be cost effective and cannot adequately accommodate the increased program spaces (basketball, weights and fitness and multi-purpose rooms) necessary to deliver quality programs. The recommendation of the master plan is to demolish Maclellan Gymnasium, relocate intercollegiate athletics to new facilities north of McKenzie Arena to create a unified, intercollegiate district on campus and plan for new recreation and student life programs physically connecting the new Recreation Center and the existing Student Center creating a vibrant and dynamic approach to improving the quality of the student life experience on campus.

Cat 525
Intercollegiate Athletics

The knowledge base and framework to use in order to effectively program and plan Athtletics for UTC is unique to the mission and vision of each Athletic Department. The methodology and tools used to develop the program recommendations contained with this report include the following activities, database information, national guidelines and on campus workshops.

Goals:
1. Enable and Enhance the UTC Athletic Community: all athletes, coaches and departmental staff currently reside under one roof (with minor exceptions). What defines ICA is the program's ability to offer the unique experience of sharing, working and living as a unit. While it has become increasingly clear that McKenzie Arena can longer accommodate UTC's need for growth, it's the Athletic Department's desire to retain that same sense of close-knit community. The master plan will enable and enhance community interaction in its facility and precinct organization.
2. Integrate Campus and Community: UTC considers athletics to be an integral part of the University community and thus follows and honors the overall institution mission and vision. This commitment assures that Intercollegiate

Athletics will provide exemplary leadership and appropriate facilities and support services to its student-athletes.

3. Improve Accessibility: UTC provides disabled, elderly and mobility-challenged fans with exceptional services, however, the major venues lack many of the appropriate physical accommodations to meet today's code requirements. Future additions and facility upgrades will consider accessibility a primary goal of the master plan.

4. Meet or Exceed the Benchmark: UTC is dedicated to providing its student-athletes and fans with facilities and services that are comparable to intercollegiate athletic programs at peer institutions, while retaining the character and tradition unique to UTC Moc athletics. Student – athletes will reflect pride in their facilities, and recruits will be impressed by the services and amenities offered. Student athletic and academic achievements will be showcased in an inspirational environment that celebrates the traditions of UTC programs.

5. Improve Facility Conditions: UTC's major (on-campus) athletic venues, McKenzie Arena and Maclellan Gymnasium, were originally built in 1960's And 1970's, respectively. While both facilities have seen incremental expansion and improved during the intervening years, deferred maintenance items, code compliance, and building systems must be addressed holistically as part of this master plan.

6. Support Sustainability: UTC supports sustainable design strategies specific to the campus and the local environment and is committed to responsible growth scenarios.

7. Improve Fan Experience: UTC Mocs fans are loyal and enthusiastic. The spectator experience will be thoughtfully considered at multiple scales. Existing facilities, venues and athletic fields will be visually enhanced with branding and wayfinding, feature improved circulation and access, and offer distinguished pre-and post-game experiences. Upgraded amenities will provided spectators enhanced service and comfort, while UTC and Intercollegiate Athletics distinct revenue generating opportunities.

8. Strategic Implementation: The master plan supports the interests of Intercollegiate Athletics while respecting the needs of existing non-athletic programs and its core campus environment. Phasing opportunities will be developed to satisfy immediate needs, while providing guidelines for future implementation.

Challenges:

1. A significant lack of space that adversely affects efficiencies of every administrative department, including team offices and lockers which compromise gender equity.
2. Limited site availability for expansion for critically needed program expansion.
3. Aging facilities, particularly McKenzie Arena, Harrison Racquet Center and Maclellan Gymnasium.
4. Accessibility issues and other code-related shortfalls in all existing facilities.
5. High expectations from recruits and competition from peer athletic programs.
6. A lack of spectator amenities, which adversely affects fan experience and potential revenue generation.
7. A precinct that, while adjacent to the campus core, is predominantly characterized by vehicular circulation and accommodation (need to elaborate and make more specific to UTC).

Program Guidelines:

Early in the planning process a series of workshops were held with individual stakeholders, department heads, team coaches and the Steering Committee. These meetings sought to define program needs for each department, sports team, and their respective venues.

While the program is based upon empirical guidelines such as staff FTE's, team sized and support space requirements, the design team also sought to align program with Intercollegiate Athletics goals, UTC standards, and improve upon

current inefficiencies.

1. Intercollegiate Administrative Office and Support Space:
2. Dedicated Team Locker Suites:
3. Equal Allocation of Space Across Gender Lines:
4. Locker Suites to Accommodate Coaches and Staff of any Gender:
5. Provide Basic and Enhanced Fan Amenities:
6. Allow for Flexible and Future Growth:
7. Provide Facilities to Support Outdoor Sports:
8. Invest in the Campus

Approximately 400,000 gsf of renovated and / or new facilities are required to meet the current and future needs of intercollegiate athletics. If the University requires an indoor practice facility an additional 90,000 gsf will be required for a total of approximately 480,000 to 500,000 gsf. Current facilities on campus include McKenzie Arena, Harrison Racquet Center and Maclellan Gymnasium (approximately 200,000 – 220,000 gsf). Current programmatic shortfall is approximately 200,000 – 300,000.The following program summary lists the required assignable and gross square footage required for each facility.

Program Summary:

Facility 1: Intercollegiate Athletics Support Facility – 100,000 gsf (3 stories)

1. Administrative Offices:	Proposed
a. Athletic Administration	3,600
b. Shared Administration	2,700
c. Business Office	450
d. Compliance Office	450
e. Event Management	900
f. Media Relations Office	900
g. Information Technology Office	450
h. Marketing & Development Office	900
i. Purchasing Office	450
j. Ticket Office	1,000

2. Team Offices:	Proposed
a. Basketball – Men's	1,350
b. Basketball – Women's	1,350
c. Cross Country – Men's	675
d. Cross Country – Women's	675
e. Football (see Football Building)	-
f. Golf – men's	675
g. Golf – Women's	675
h. Soccer – Women's	1,350
i. Softball	1,350
j. Tennis – Men's	675
k. Tennis – Women's	675
l. Track and Field – Men's	900
m. Track and Field – Women's	900
n. Volleyball – Women's	900
o. Wrestling	900

3. Team Locker Suites:	Proposed
a. Basketball – Men's	-
b. Basketball – Women's	-
c. Cross Country – Men's	1,800
d. Cross Country – Women's	1,800
e. Football	-
f. Golf – men's	900
g. Golf – Women's	900

4. Team Support Services:	Proposed
a. Sports Medicine	8,000
b. Strength and Conditioning (Lawson)	-

c. Men's Staff Area	1,200
d. Women's Staff Area	1,200
e. Equipment Services	8,000
f. Visitor's Locker Rooms (4 rooms)	-
g. Official's Locker Rooms (2 rooms)	-
h. Academic Center	10,000
5. Facility Support:	Proposed
a. Storage	2,000
b. Loading Dock	2,000

Facility 2: Football Team/Practice Facility – 45,000 gsf (two stories)

1. Football Facility (Indoor):	Proposed
a. Offices	8,000
b. Team Locker Suite	6,000
c. Coaches Locker Room	800
d. Manager's Locker Room	200
e. Equipment Room / Laundry	4,000
f. Strength and Conditioning	6,000
g. Sports Medicine (Satellite Facility)	2,000
h. Auditorium	2,000
i. Meeting Rooms (6)	2,400
j. Study Lounge	600
k. Support / Storage	1,000
2. Football Facility (Outdoor):	Proposed
a. Practice Fields	3 Fields
b. Storage/Support Facility	600
c. Sports Medicine	200

Facility 3: Arena – 185, 000 gsf (2 – 3 stories)

1. Spectator Facilities		Proposed
a. Spectator Seating (6,000 seats)		36,000
b. Hospitality Club		3,000
c. Suites (12)	3,600	
d. President's Suite	1,200	
e. Hall of Fame		2,000
f. First Aid	200	
g. Information	200	
h. Lost & Found	200	
i. Security	200	
2. Food and Retail Facilities		Proposed
a. Concessions	1,500	
b. Concessions Storage	1,500	
c. Commissary	2,000	
d. Suite / Club Serving Pantry	1,000	
e. Cold Storage	500	
f. General Storage	500	
g. Team Store	500	
h. Team Store Storage	250	
i. Vendor Storage	1,000	
3. Circulation		Proposed
a. Lobby	2,000	
b. Team / Press / VIP Entrance	500	
4. Event Facilities		Proposed
a. Event Floor	20,000	
b. Storage	1,000	
c. Wrestling Room	4,000	
d. Storage	250	
e. Practice Gymnasium	15,000	
f. Storage	250	
5. Team Facilities		Proposed

a. Basketball – Men's Team Locker Suite	3,600
b. Basketball – Women's Team Locker Suite	3,600
c. Volleyball – Team Locker Suite	1,800
d. Wrestling – Team Locker Suite	1,800
e. Basketball – Men's Coach Locker Room	400
f. Basketball – Women's Coach Locker Room	400
g. Volleyball – Women's Coach Locker Room	400
h. Wrestling – Coach's Locker Room	400
i. Visiting Team Locker Rooms (4)	4,800
j. Green Rooms (2)	400
k. Officials Locker Suite	400
l. Sports Medicine / Training (Satellite)	1,200
m. Equipment Distribution / Storage	2,000
6. Administration & Operations	Proposed
a. Arena Management	500
b. Ticket Office	800
c. Event Staff	500
d. Building Staff / Maintenance	1,600
e. Event Storage / Loading Dock	8,000
7. Media	Proposed
a. Press Box	2,000
b. Control Rooms	500
c. Video Production	800
d. Working Press	800
e. Media / Multi-purpose Room	1,200
f. Storage	400

Facility 4: Track and Field Stadium – 25,000 gsf (2 stories – excludes seating)

1. Track and Field Stadium – Team Facilities:	Proposed
a. Team Locker Suite – Men	2,700
b. Team Locker Suite – Women	2,700
c. Team Lounge	1,200
d. Coach Locker Suite - Men	400
e. Coach Locker Suite – Women	400
f. Multipurpose Room	1,000
g. Storage	250
h. Visiting Team Locker Rooms (2 rooms)	2,500
i. Support	1,000
2. Grandstands:	Proposed
a. Seating (1,500 seats)	9,000
b. Restrooms – Men	600
c. Restrooms – Women	900
d. Family Restroom	150
e. Concessions	600
f. Press Box	1,500
g. Storage	1,000
h. Officials Locker Suite	300
3. Track and Field:	Proposed
a. 400 meter track	
b. Track and Field Lighting	
c. Scoreboard	
d. Storage	1,000

Facility 5: Softball Stadium – 25,000 (2 stories – excludes seating)

1. Softball Stadium – Team Facilities:	Proposed
a. Team Locker Suite	2,700
b. Team Lounge	600
c. Coach Locker Room	400
d. Multipurpose Room	600
e. Storage	250

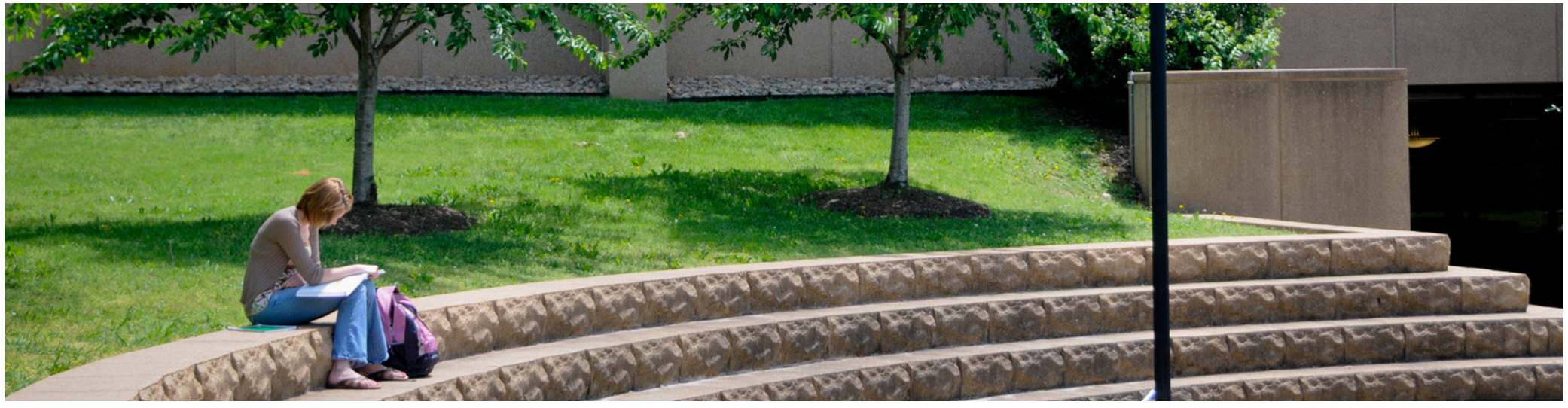
f. Support	1,000
g. Visiting Team Locker Room	1,200
h. Indoor Practice Facility	5,000
2. Grandstands:	Proposed
a. Seating (1,000 seats)	6,000
b. Restrooms – Men	400
c. Restrooms – Women	600
d. Family Restrooms	150
e. Concessions	400
f. Press Box	1,000
g. Storage	1,000
h. Umpire Locker Suite	300
3. Softball Field:	Proposed
a. Field	
b. Lighting	
c. Scoreboard	
d. Storage	300

Facility 6: Tennis Center – 15,000 gsf (2 stories – excludes seating)

1.Tennis Center – Team Facilities:	Proposed
a. Team Locker Suite – Men	1,800
b. Team Locker Suite – Women	1,800
c. Team Lounge	300
d. Coach Locker Room – Men	200
e. Coach Locker Room – Women	200
f. Multipurpose Room	600
g. Storage	250
h. Repair	250
i. Visiting Team Locker Rooms (2 rooms)	1,200
2. Grandstands:	Proposed
a. Seating (500 seats)	3,000
b. Restrooms – Men	200
c. Restrooms – Women	300
d. Family Restroom	75
e. Concessions	200
f. Press Box	1,000
g. Storage	1,000
h. Officials Locker Suite	300
3. Courts:	Proposed
a. Performance	6 Courts
b. Practice / Recreation	6 Courts

Facility 7: Soccer – 20,000 gsf (2 stories – excludes seating)

1. Soccer – Team Facilities:	Proposed
a. Team Locker Suite	2,700
b. Team Lounge	600
c. Coach Locker Room	400
d. Multi-purpose Room	600
e. Storage	250
f. Support	1,000
g. Visiting Team Locker Room	1,200
2. Grandstands:	Proposed
a. Seating (1,500 seats)	9,000
b. Restrooms – Men	600
c. Restrooms – Women	900
d. Family Restrooms	150
e. Concessions	600
f. Press Box	1,500
g. Storage	1,000
h. Officials Locker Suite	300



3. Field: Proposed

a. Field
b. Field Lighting
c. Scoreboard
d. Storage 1,000

Cat 530
Media
Existing = 6,317 ASF

Need: CEFPI core need of 10,000 ASF for schools greater than 10,000 FTE (UTC is on the cusp of this threshold).

Conclusion: Add 0.5 ASF/FTE when school exceeds 10,000 FTE.

Cat 580
Greenhouse
Existing = 3,678 ASF

Need: CEFPI rate of 0.5 ASF/FTDE yields 4,925 ASF which creates a deficit of 1,157 ASF.

Conclusion: Additional internal discussions may prove that existing space is appropriate based on current program needs.

Cat 610
Assembly
Existing = 35,048 ASF

Need: CEFPI core rate of 2 ASF/FTE (> 5,000 FTE) plus 14,000 ASF yields a total of 23,698 ASF. If theater, music and dance programs are growing, additional space programs should be added:

Theatre program = 8,000 ASF
Music program = 5,000 ASF
Dance program = 0 ASF

Analysis: A total need of 36,968 ASF is the result of calculations, which

indicates a deficit of 1,650 ASF. This was evident by discussions with program administrators and actual observations of random events in session while on campus.

Conclusion: The actual deficit in assembly space is likely higher due to UTC's emphasis on student events. \

Cat 620
Exhibition
Existing = 10,052 ASF

Need: CEFPI rate of 1.0 ASF/FTDE yields a need of 4,925 ASF. This indicates a deficit of 1,157 ASF.

Conclusion: Thoughts on the indicated deficit of exhibition space include:

1. Space needs for Cat 620 can vary widely between institutions.
2. On many campuses, space categorization for Cat 620 can be commingled due to changing use of the spaces, and uncertainty of how the space should be categorized. Further investigation by the University may show some of these inconsistencies.

Cat 630
Food Service
Existing = 53,436 ASF

Need: According to CEFPI calculations, a planning head count (PHC) of 9,848 was determined. Assuming 2.5 turns at lunch (busiest period for food service), seating area of 18 ASF per seat, a serving area of 5 ASF per PHC, and a prep area that is approximately 40% of the total ASF, the need is determined to be 60,273 ASF, which in turn indicates a deficit of 6,837 ASF.

Conclusion: The planning need guideline of 60,273 ASF equates to 6.12 ASF/FTE. This ratio is within the range of 4-8 ASF/FTE observed at many other schools.

Cat 650
Lounge
Existing = 18,915 ASF

Need: Using the CEFPI rate of 2.5 ASF/FTE (schools between 3,000 FTE and 10,000 FTE), 20,862 ASF of lounge space is needed, which results in a deficit of 1,947 ASF.

Conclusion: With current enrollment on the cusp of 10,000, lounge space will need to increase quickly and should be monitored closely.

Cat 660
Retail
Existing = 20,662 ASF

Need: The typically accepted CEFPI rate of 2 ASF/FTE yields 19,698 ASF, which results in a surplus of 964 ASF.

Conclusion: The surplus could be attributed to a number of things, including range of merchandise, student convenience, concentration of services and economy of scale of operations, sundries, snack foods, supplies, etc. This surplus may not be of major concern due to anticipated growth on campus.

Cat 670
Recreation
Existing = 12,909 ASF
Need: A CEFPI of rate of 1.5 ASF/FTE yields a need of 14,744, which results in a deficit of 8,522 ASF.
Conclusion: This deficit is should be closely monitored and is addressed in the campus plan.

Cat 680
Meeting
Existing = 11,478 ASF
Need: A CEFPI rate for enrollments between 3,000 FTE and 10,000 FTE (again on the cusp) yields a need of 20,000. This need results in a deficit of 8,522 ASF.
Conclusion: When enrollment increases over 10,000 FTE, an additional 1 ASF/FTE should be added for number of students above 10,000 FTE.

Cat 710
Central Computer/Telecom
Existing = 5,218 ASF
Need: A CEFPI based calculation with a core of 4,000 + 0.75 ASF/FTE > 5,000 FTE yields a need of 7,637 ASF, which results in a deficit of 2,419 ASF.
Conclusion: This figure will only continue to increase as student enrollment increases. The University's IT Strategic Plan should be closely dovetailed into the Campus Master Plan to ensure the long term needs are met.

Cat 720/730/740
Work/Storage
Existing = 42,962 ASF
Need: A CEFPI rate 5% of all ASF (excluding 720 – 745) yields a need of 57,570 ASF, which translates into a sizable deficit of 14,608 ASF.
Conclusion: This deficit is addressed by finding appropriate additional space within the final campus plan.

Cat 750
Central Service
Existing = 4,837 ASF
Need: A CEFPI rate of 1.0 ASF/FTE yields a need of 9,849 ASF, which indicates a deficit of 5,012 ASF.
Conclusion: This deficit will be addressed by finding appropriate additional space within the final campus plan.

Cat 760
Hazardous Materials
Existing = 481 ASF
Need: A CEFPI rate of 3% Cat 250 + 2% Categories 720-745 yields 1,160 ASF, which results in a deficit of 680 ASF. As research and science teaching increases, the space need for this category should be monitored.
Conclusion: This category needs to be monitored as more science classes are given and research increases.

Cat 800
Health Care
Note: 3rd Party provided health care services, space in this category is assumed to be accurately reflected in current conditions.

GRAND TOTAL of all ASF

Existing = 1,211,416 ASF

Current Fall 2011 HC of 11,438 guideline indicates 1,208,970 ASF (after current construction of new library, repurposing of Lupton Library)

Benchmarks: Overall, the University of Tennessee at Chattanooga appears to be adequately sized for its guidelines needs and population, yet compares well with other similar institutions on a campus wide ASF/FTE basis. Existing UTC is at 123.00 while the peers selected for comparison come in very close at 124.51.

Summary:

Existing Fall 2011	1,211,416 ASF	123.00 ASF/FTE
Current Guideline	1,208,970 ASF	122.75 ASF/FTE
13,000 HC Guideline	1,375,015 ASF	(based on 12% HC growth)
15,000 HC Guideline	1,571,290 ASF	(based on 24% HC growth)

DEVELOPMENT OPPORTUNITIES

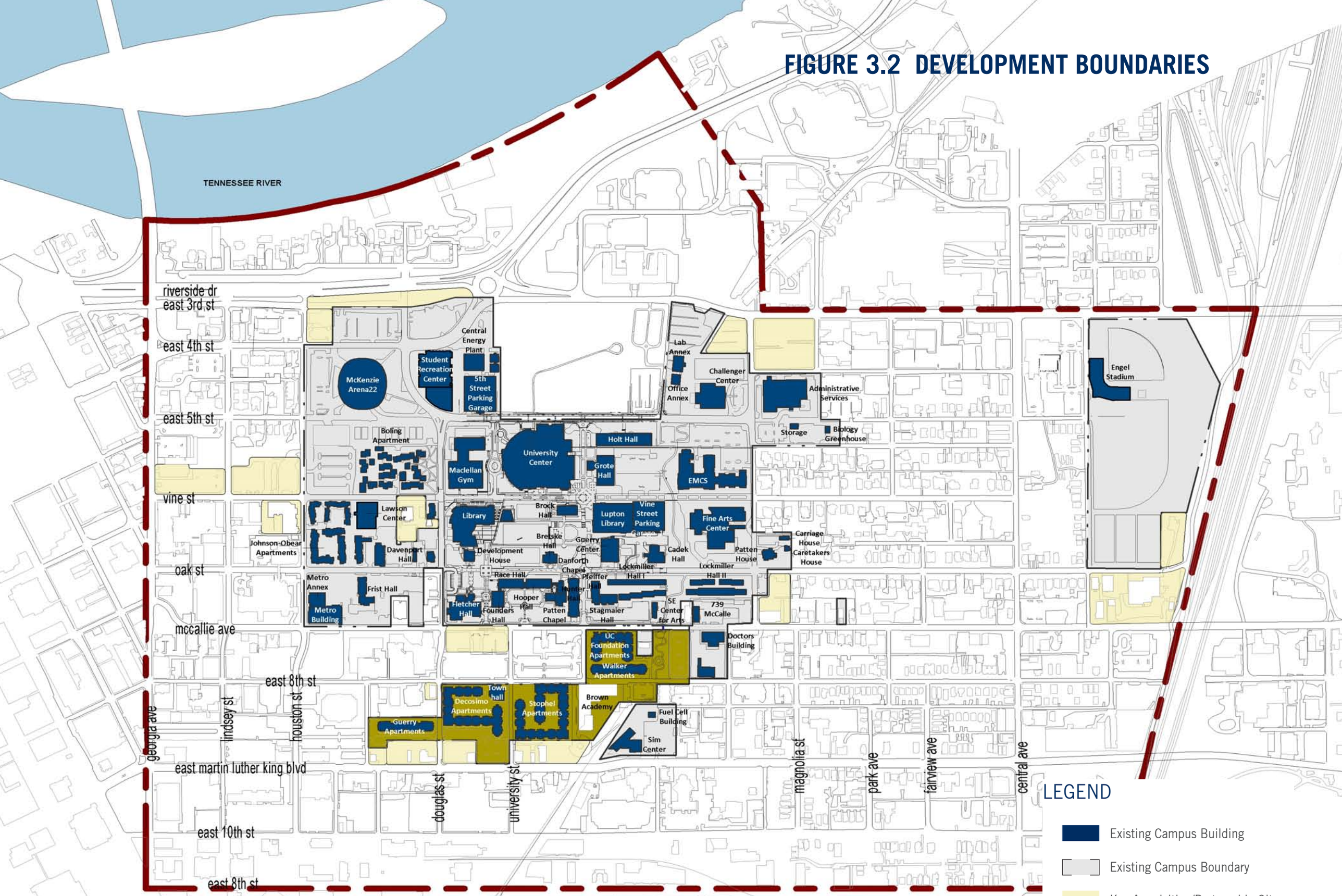
The UTC campus comprises 123 acres just east of downtown Chattanooga. Additional properties include the Enterprise South property (272 acres), located north and east of the main UTC campus. The University's long-range building needs exceed its current land holdings within the master plan boundary identified on Figure 1.3, Development Opportunities and Boundaries. Specifically this master plan boundary represents an area of influence whereby the University will continue to understand planning activities by neighboring institutions, but also identify potential properties to acquire.

The University currently owns land primarily bound by McCallie Avenue on the south, Houston Street on the west, East 3rd Street on the north and Palmetto Avenue on the east. The proposed master plan boundary follows East 11th Street on the south, Georgia Avenue on the west, the Tennessee River and East 3rd Street on the north and the railroad lines east of Engel Stadium on the east.

The University has identified "Key Acquisition/Partnership Sites" within this master plan boundary – these sites have a higher priority for land acquisition as specific development opportunities have been identified to help meet growth needs over the next 15 years, the life of this campus master plan.

The University has identified the "South Campus Apartments," currently owned by the University Foundation, as a high priority land acquisition to better serve its recruitment and retention needs. This is consistent with the Comprehensive Student Housing Master Plan recommendations to improve the residence life experience and Strategic Plan goals for living and learning. In addition, UTC is actively pursuing a property transfer arrangement with the First Presbyterian Church on McCallie Avenue to meet the long term needs of both institutions.

FIGURE 3.2 DEVELOPMENT BOUNDARIES

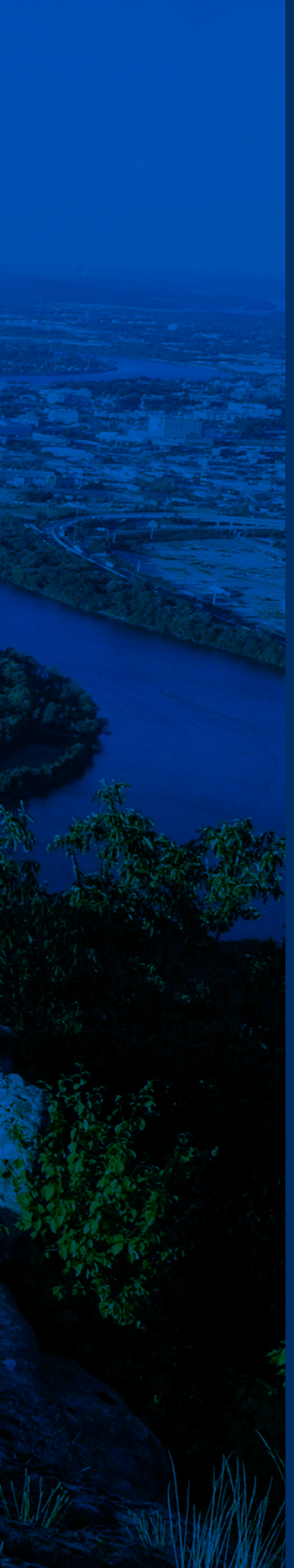


LEGEND

- Existing Campus Building
- Existing Campus Boundary
- Key Acquisition/Partnership Sites
- South Campus Apartments (CDFI)
- Master Plan Boundary

0’ 600’

N



MASTER PLAN VISION

The University of Tennessee at Chattanooga Campus Master Plan outlines needed development for buildings, open space, vehicular and pedestrian circulation, environmental responsibility, and utility infrastructure. Building recommendations are based on the academic and student life goals and priorities of the institution, and account for efficient utilization while achieving priorities for both existing and planned buildings. The recommendations focus on function first and form second, confirming scale and massing, and flexibly meeting program needs. Future building locations connect programs physically, visually and geographically to create a seamless presence of a vibrant living and learning community. This vision promotes a strong learning environment for students and faculty while further strengthening connections to the community.

The role of the Campus Master Plan is to provide a framework for open space, circulation, use relationships and building placement. One aspect of the plan is to encourage new construction and renovation that supports the ideals of the University and forms a coherent identity for the campus as a whole. The actions and frameworks described within this section are intended to support innovation, safety, flexibility and evolving uses, while enhancing the visual and civic integrity of the campus and the surrounding downtown neighborhoods. The desired result is a single integrated campus design in which the parts all relate to one another, regardless of when they are built.

BUILDING USE

In support of the campus-wide enrollment growth and subsequent space needs, the proposed building use plan sets up an overall framework for building development to occur over the coming decades at UTC. The building use graphic (right) depicts both existing and proposed buildings based on use as Academic/Learning, Administrative/Support, Student Support, Student Housing, Recreation Sports/Physical Education, Athletics, and Parking Deck.

Coordinated with surroundings:
The vision for the building use plan is consistent with the goal of coordinating uses with surroundings. Several of the existing campus precincts are predominantly one use or another. An understanding of this existing campus distribution of uses creates a framework for future development. New campus housing in different styles (suite, semi-suite) is provided in the Vine-Houston Street, MLK Boulevard, and Vine to Palmetto Street Precincts. New academic space is coordinated with surrounding uses and provided in a way that supports collaborative users, frames open spaces, and creates clear campus access.

Erlanger Medical Center
The existing medical center to the northeast of campus could represent an opportunity for future synergistic uses to occupy space together. Health related programs at UTC could greatly benefit from being closer in proximity to the medical center. At the very least, the other labeled Partnership Opportunity Zones identifies a portion of the campus community that needs to be taken into consideration with future planning.

MLK Corridor
Much like the medical center, the MLK corridor represents an opportunity for UTC for future development to become more integrated with the neighborhood and support common goals for the future. Planning activities have been established along the corridor and future UTC housing along MLK Boulevard would be consistent with this vision with retail or office type uses on the first floor.

Greenway / Riverwalk
The Greenway represents a key organizing component of the landscape for the UTC campus. Both future academic and housing facilities along this corridor take advantage of the distinct characteristics this open space provides - access to green space, connection to the larger campus and community.

FIGURE 4.1 PROPOSED BUILDING USE

TENNESSEE RIVER
FOOTBALL PRACTICE FIELD
riverside dr
east 3rd st
east 4th st
east 5th st
vine st
oak st
mccallie ave
east 8th st
east martin luther king blvd
east 10th st
east 8th st
lindsey st
houston st
douglas st
university st
5 min walking radius
AT-4
AT-3
AT-1
AT-6
RC-1
Student Recreation Center
Central Energy Plant
F-1
McKenzie Arena
R-2
170 Beds (SS)
S-1
R-1
224 Beds (SS)
P-1
700 SP
Boling Apartment
R-4
144 Beds (S)
R-5
194 Beds (S)
R-6
254 Beds (S)
R-3
170 Beds (SS)
S-2
S-3
University Center
Holt Hall
Grote Hall
EMCS
A-3
R-8
280 Beds (S)
R-9
270 Beds (S)
R-7
170 Beds (SS)
Challenger Center
A-2
776 SP
P-2
Administrative Services
Storage
Biology Greenhouse
PARTNERSHIP OPPORTUNITY ZONE
UT Family Practice
University Health Services
PARTNERSHIP OPPORTUNITY ZONE
Engel Stadium
AT-2
980 SP
P-3
AT-5
TRACK + FIELD
SOCCER
FIELDS
FUTURE FIELDS
RC-2
PARTNERSHIP OPPORTUNITY ZONE
FUTURE SPECIALTY HOUSING
Carriage House
Caretakers House
Patten House
Fine Arts Center
Lupton Library
420 SP
P-4
Library
A-7
Brock Hall
Development House
A-6
Bretske Hall
Dantorth Chapel
Race Hall
Guerry Center
Cadek
Johnson-Obear Apartments
Lawson Center
A-10
A-9
Davenport Hall
A-8
A-4
Metro Building
A-5
Flanders Hall
Hooper Hall
Patten Chapel
Hunter Hall
Fletcher Hall
Pfeiffer Hall
Lockmiller Hall I
Stagmaier Hall
FUTURE HOUSING
Lockmiller Hall II
FUTURE HOUSING
FUTURE HOUSING
480 SP
P-5
UC Foundation Apartments
Walker Apartments
Town hall
Decosimo Apartments
Stophel Apartments
Guerry Apartments
72 Beds (S)
R-12
132 Beds (S)
R-11
128 Beds (S)
R-10
F-2
Brown Academy
Childrens Center
Sim Center
A-11
ACADEMIC/ RESEARCH EXPANSION ZONE

LEGEND

- Learning/Research
- Administrative/Support
- Student Support
- Student Housing
  - Semi-suites & Traditional (SS)
  - Suites & Apartments (S)
- Recreation Sports/Phys. Ed.
- Athletics
- Parking Deck
- Existing Campus Boundary
- Dining Locations

0' 500'

N

STUDENT HOUSING & STUDENT LIFE

A concurrent Housing Master Plan has been completed by Brailsford & Dunlavey in support of a holistic view of campus conditions relating to student life. The following is a summary of findings from the Housing Master Plan:

Latent demand currently exists for housing at UTC
- Current unit type mix does not match student preference
- Flexibility in addressing unit types demanded

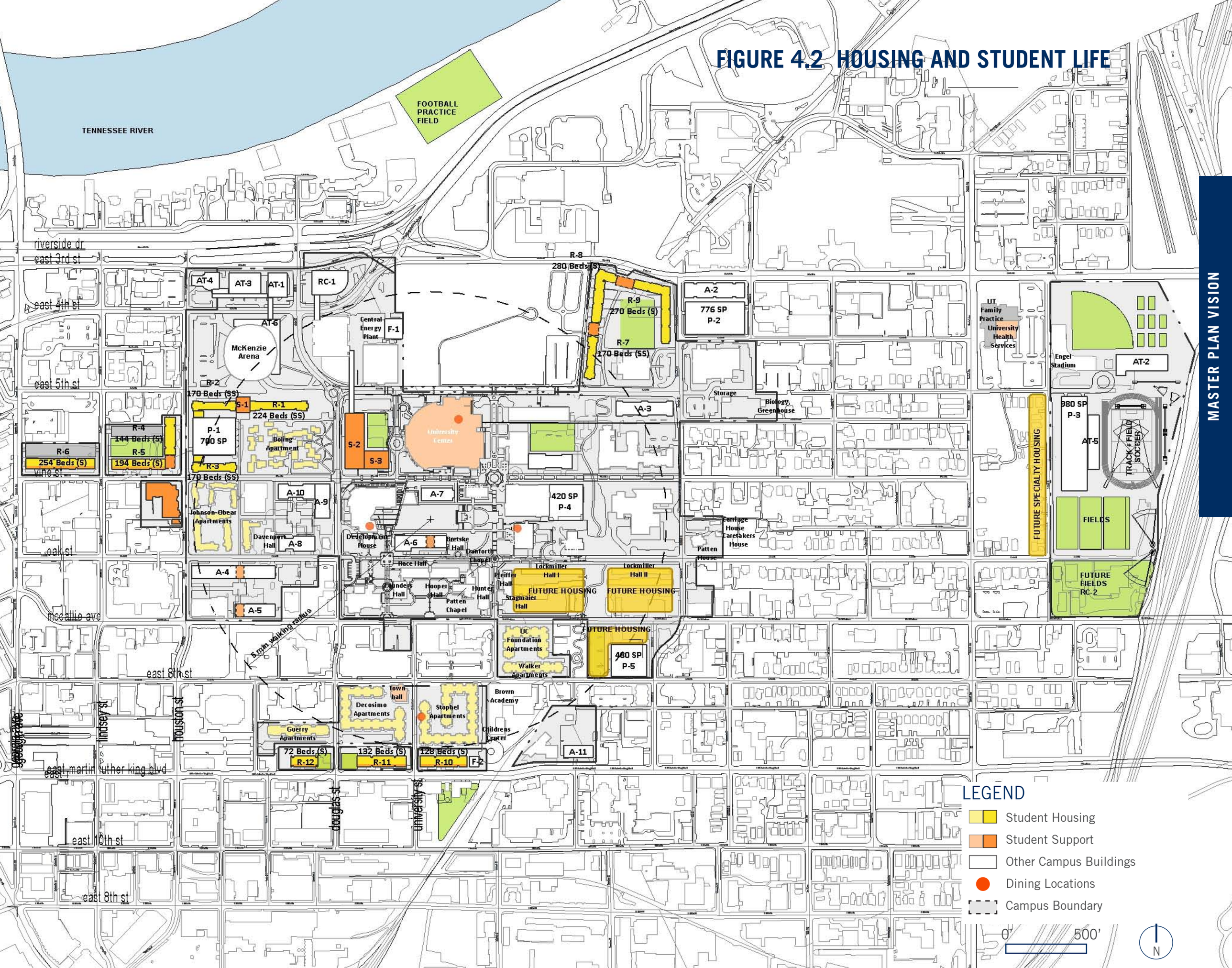
1,200 additional beds are needed when enrollment reaches 13,000 (2019-2020)
- Additional beds should not be apartments, but rather a mix of suite-style or traditional units
- New beds should be developed north of McCallie

All additional housing projects must be financially self-sufficient
- Current net operating income cannot subsidize additional developments
- Adherence to cost, programming and performance parameters is critical

Additional strategies for future housing development includes:
- Gradually dedicate and brand all units north of McCallie as First-year Student housing
- Gradually dedicate and brand apartments south of McCallie for Sophomore, Junior, Senior, Graduate Students
- Protect reserve funds to ensure utility through debt term
- Price the units as most market competitive housing stock
- Renovation / demolition unlikely viable in near term
- Location and type of housing responds well to demand

Some key points relative to the on-campus housing needs for UTC:
- UTC needs 1,200 new beds at an enrollment of 13,000, plus an additional 500 beds at an enrollment of 15,000
- Beds should not be apartment style, and should be north of McCallie
- With an increased enrollment, and additional on-campus beds being provided, additional study, student support, parking, athletic & recreation and facility support space will also be needed.

FIGURE 4.2 HOUSING AND STUDENT LIFE



OPEN SPACE

Given the urban context of the campus, creating a series of quality open spaces is essential to offset the continued urbanization of the University's surrounding, in addition to acting as a unifying element throughout the campus while upholding and reflecting the aesthetic quality of the campus. Creating a successful open space framework revolved around establishing a common set of ideals and goals to guide the process. These over arching themes included:

- Campus as an arboretum
- Well-connected and visually attractive
- Pedestrian-oriented and accessible
- Conserving potable water and managing rainwater
- Expanded outdoor sports and gathering areas

The focus of the open space framework revolves around the goal of linking open space within the campus to the greenway spanning the distance between 3rd Street and Martin Luther King Boulevard through a variety of both passive and active gathering areas. In addition, the open space plan also strives to improve conditions at the campus periphery as the campus transitions into the surrounding urban landscape through gateways and improved streetscapes. Within the campus, the quantity of active gathering spaces has been increased and predominantly centered around student housing to accommodate the active life of students while fostering a feeling of community. Adjacent to campus, the Engel Stadium area has been further developed to house a variety of athletic fields to accommodate the expanding athletic programs and associated student population.

Active Gathering Areas

Several areas of active open space exist on campus and will be planned for in the future. These spaces can be varied in scale but are designed in a way that supports various recreation activities, whether it's throwing a frisbee, or a pick up game of football, these spaces are meant for moving around and should be primarily lawn spaces with trees and vegetation at the edges.

Passive Gathering Areas

Passive gathering areas have also increased and take advantage of the spaces provided by the built environment to strengthen connections between the natural and cultural landscape. Located throughout the campus, these spaces are used as a unifying element to help orient pedestrians to their environment. Design of these spaces should be in accordance with the existing character of the campus. Within the campus core, the addition of the pedestrian plazas and limited access streetscapes foster a pedestrian oriented and accessible mode of transportation. With additional on campus paths, students can navigate through a variety of both active and passive gathering areas on campus. It is critical that design of passive gathering spaces be in accordance with the previously developed Ross/Fowler "Site Design Guidelines" to strengthen the existing character of the campus.

FIGURE 4.3 OPEN SPACE

TENNESSEE RIVER
riverside dr
east 3rd st
east 4th st
east 5th st
vine st
oak st
mccallie ave
east 8th st
east martin luther king blvd
east 10th st
east 8th st
georgia ave
lindsey st
houston st
douglas st
university st
5 min walking radius
McKenzie Arena
Student Recreation Center
Central Energy Plant
5th Street Parking Garage
Boling Apartment
Johnson-Ohear Apartments
Lawson Center
Davenport Hall
Development House
Library
Brock Hall
Gretzke Hall
Danforth Chapel
Race Hall
Founders Hall
Hooper Hall
Fletcher Hall
Patten Chapel
Hunter Hall
Stagmaier Hall
Lockmiller Hall
Pfeiffer Hall
Lupton Library
Vine Street Parking Garage
Guerry Center
Cadek Hall
Fine Arts Center
Carriage House
Caretakers House
Patten House
Metro Building
University Center
Grote Hall
Holt Hall
A-1
EMCS
Challenger Center
Administrative Services
Storage
Biology Greenhouse
UT Family Practice
University Health Services
Engel Stadium
Foundation Apartments
Walker Apartments
Brown Academy
Childrens Center
Sim Center
Decosimo Apartments
Town hall
Stophel Apartments
Guerry Apartments
TO FINLEY STADIUM
TO WARNER PARK

LEGEND

- Active Gathering Area
- Passive Gathering Area
- Athletics/Rec Sports
- Gateway Planting, Landmark and/or Signage
- Cemetary
- UTC Property
- Greenway Path
- Riverwalk
- Campus Path
- Pedestrian Plaza/Limited Access Streetscape
- Community Corridor Streetscape
- Campus Connector Streetscape

0’ 500’

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OPEN SPACE

Athletics/Rec Sports
Athletic and recreational sports field designations on the plan are a key component of the open space network and play an important role in student life. A primary expansion area for this activity is near the Engel Stadium precinct.

Gateway Planting, Landmark and/or Signage
Campus gateways and landmarks are primary access points to the University and should create an inviting appearance and begin to define the campus experience. The MLK Boulevard gateway (right) creates an enhanced entrance to the University from the south with new planting, signage, lighting and paving areas.

Cemetery
The cemetery that exists in the north part of the campus is not necessarily considered accessible open space, but does provide great open space views and an opportunity for walking paths and reflective space.

Greenway Path
The greenway path creates a key linkage through the campus and to the larger Chattanooga community. Overall improvements are recommended to create stronger connections to the Tennessee Riverwalk to the north and to bring a level of consistency to the experience. The riverwalk along the Tennessee River is also an important open space within the city. Direct connections to the Campus Greenway would enhance campus life while further adding to the unique academic character which UTC has established.

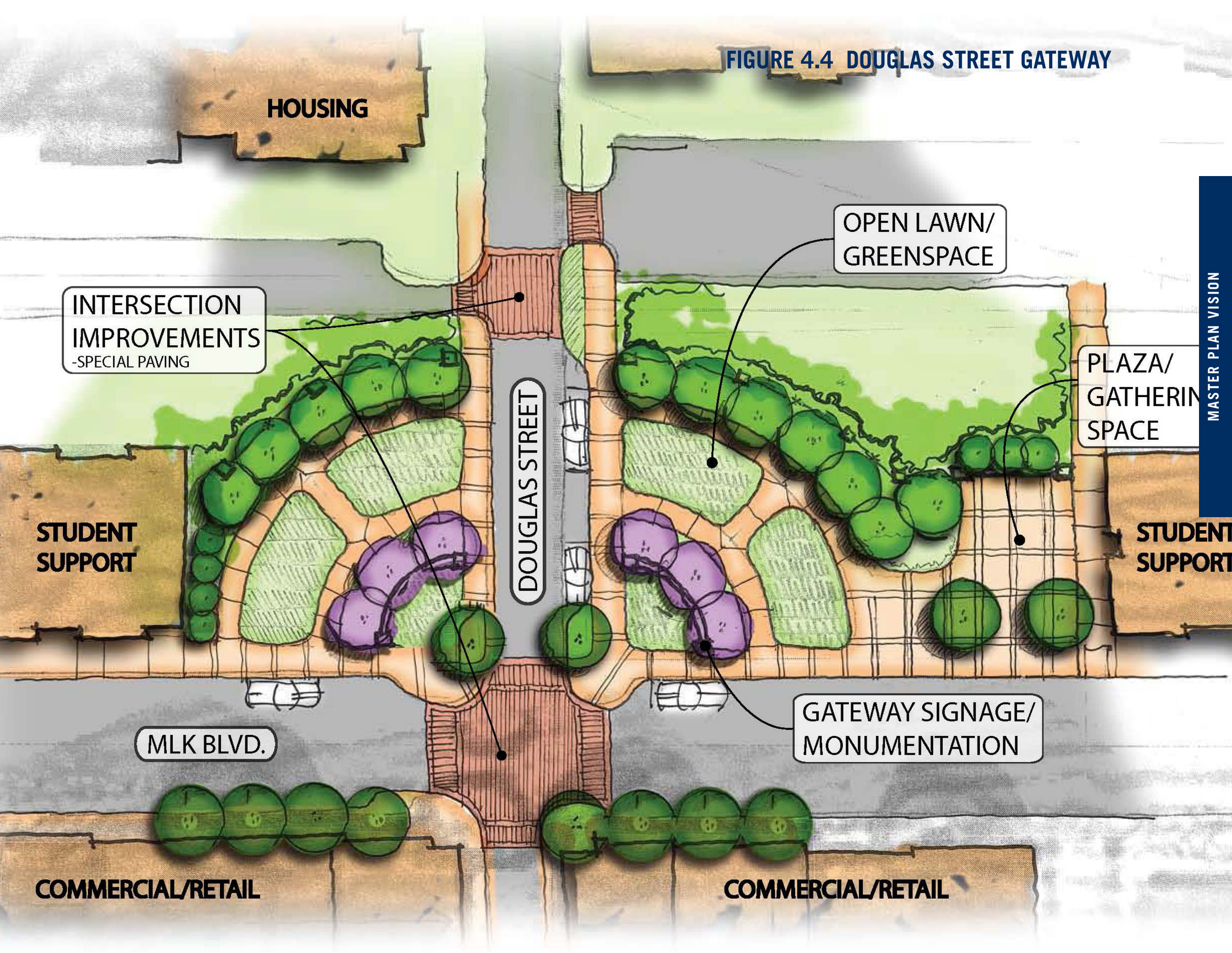
Pedestrian Plaza/Limited Access Streetscape
These streetscapes are major corridors through campus allowing pedestrians to make their way through campus open space from building to building. They act both as corridors for movement and open space gathering along the way. Several of these areas open up to large plazas for gathering, especially where streetscapes cross and interact.

Campus Path
These paths are important access points through precinct areas on campus. These paths should be maintained to create a fully connected and consistent pedestrian environment.

Community Corridor Streetscape
These streetscape areas are key transitional corridors from the UTC campus to the Chattanooga community. These streets should be treated in a way to help define the edge of campus but also create an inviting appearance.

Campus Connector Streetscape
These streetscape areas are primarily on campus streets which should support local traffic only, provide access to key parking areas and be comfortable and safe for pedestrians to walk along.

FIGURE 4.4 DOUGLAS STREET GATEWAY



CAMPUS GATEWAYS

MLK BOULEVARD AND DOUGLAS STREET

At the edge of campus, gateways located at several key intersections mark the entrance to campus. Used in conjunction with improved streetscapes a sense of entrance and grandeur is created upon entering the campus while creating a clear demarcation between the campus and its surrounding neighborhoods. The MLK Boulevard (previous page) and Douglas Street Corridor Gateways (right, Figure 4.6) provide a clear and consistent identification of public realm improvements which create an invitng apprearance, yet a clear boundary for the edge of the UTC campus.

Improved streetscape planting, lighting, seating, trash receptacles, paving at intersections are all key examples of expected improvements which will lead to creating this consistent and inviting edge to the campus.

Figure 4.5 depicts a section drawing of the campus greenway which runs north-south through the campus. This dimension exists in some portions along the greenway, a goal for implementation would be to improve this access throughout its entiretly on the campus.

Figure 4.7 depicts the character of the street along Vine Street at Georgia Avenue. This street provides an opportunity for a key pedestrian connection from the west to the campus and also a gateway opportunity.

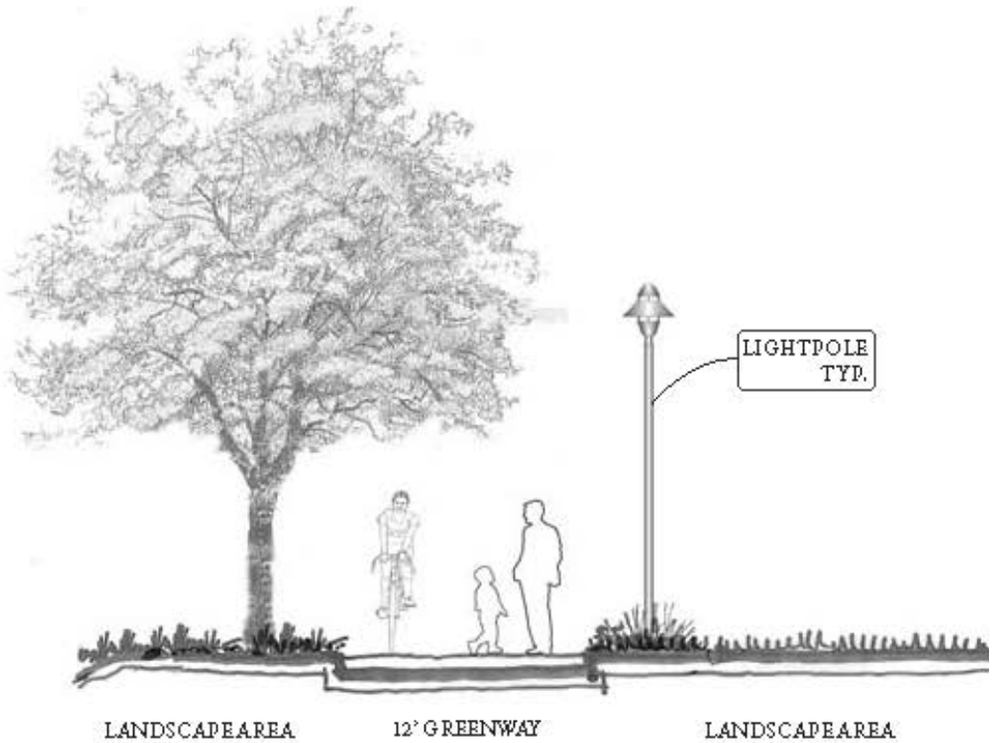


FIGURE 4.5 CAMPUS GREENWAY SECTION

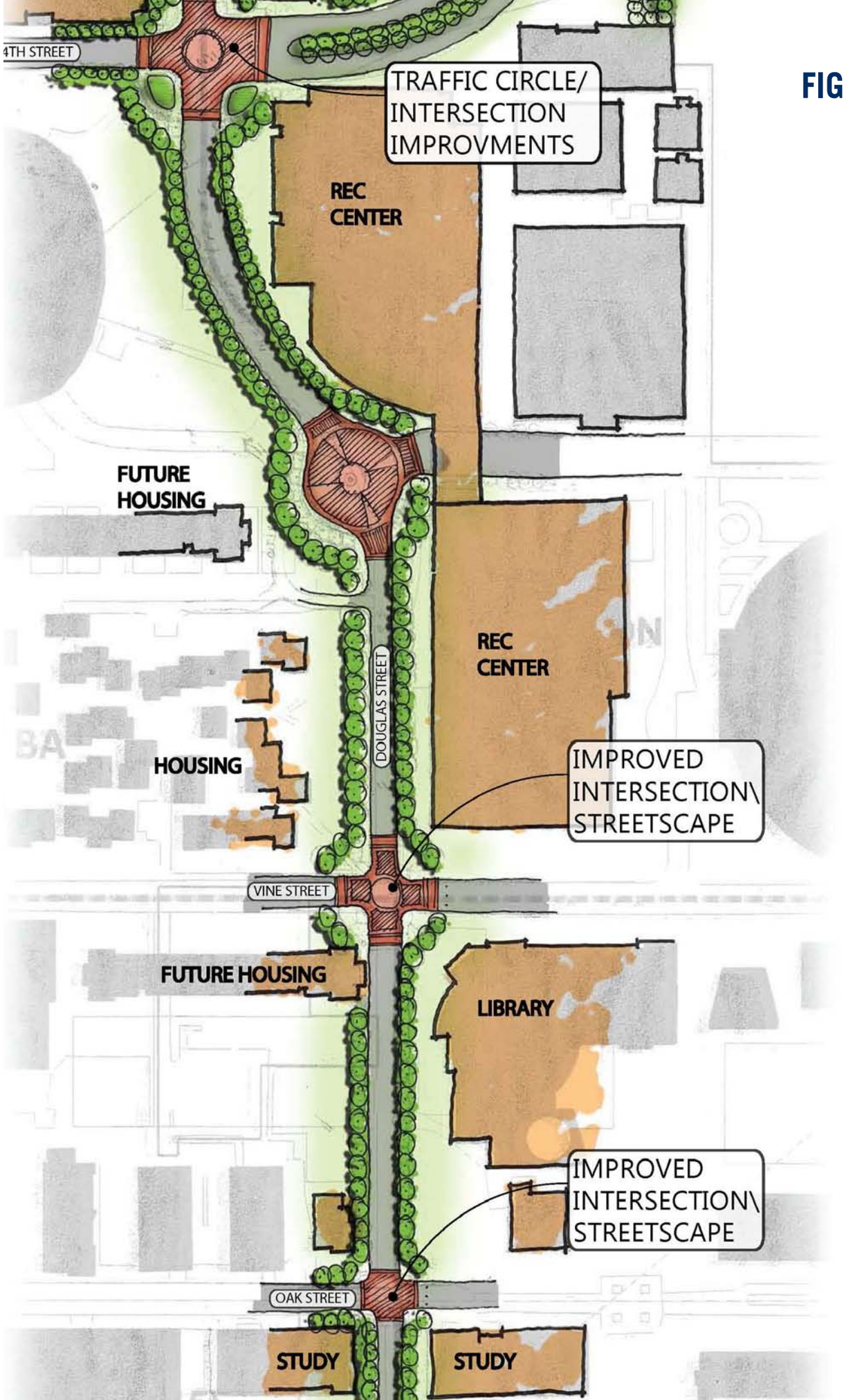


FIGURE 4.6 DOUGLAS STREET GATEWAY CONCEPTS

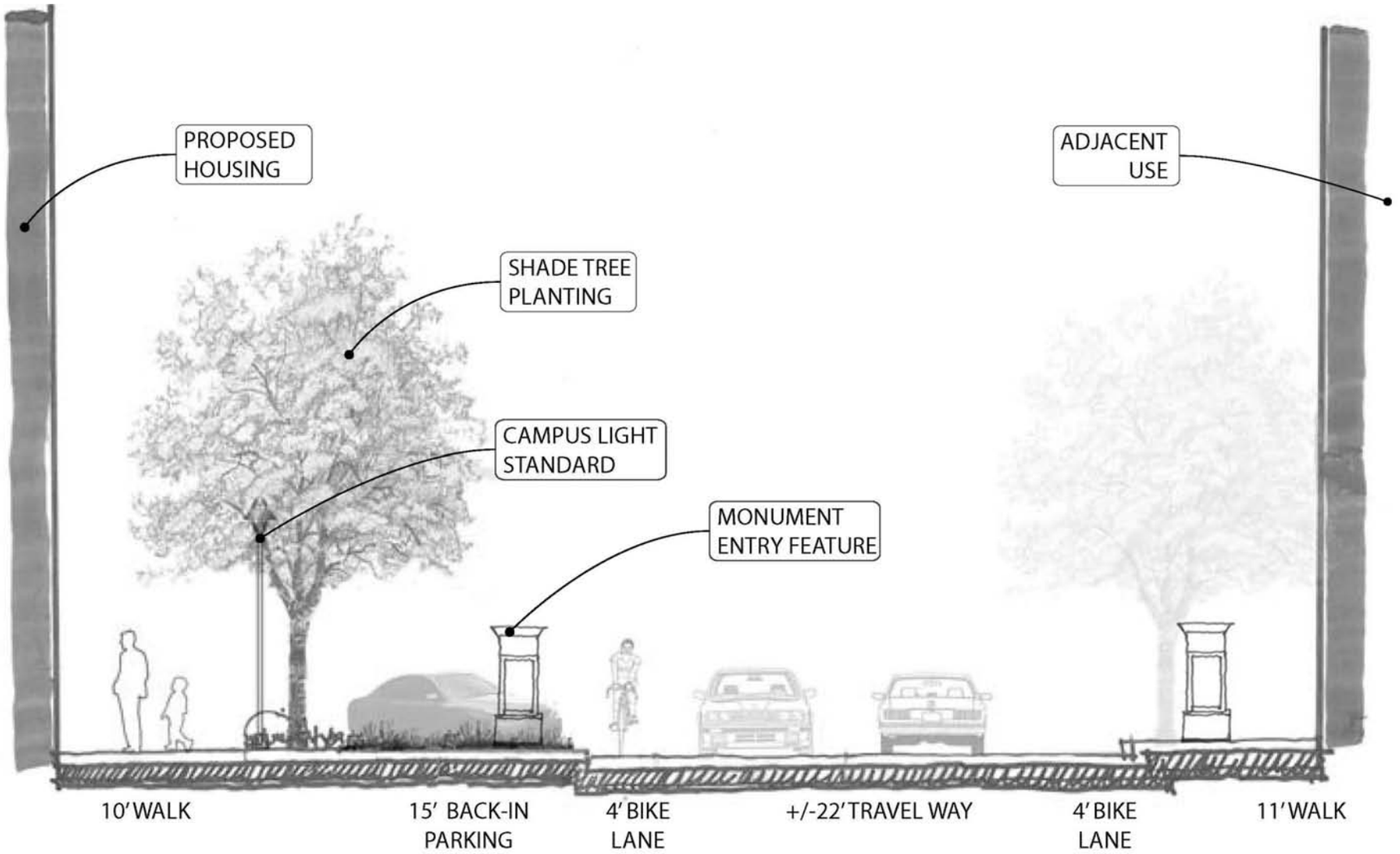


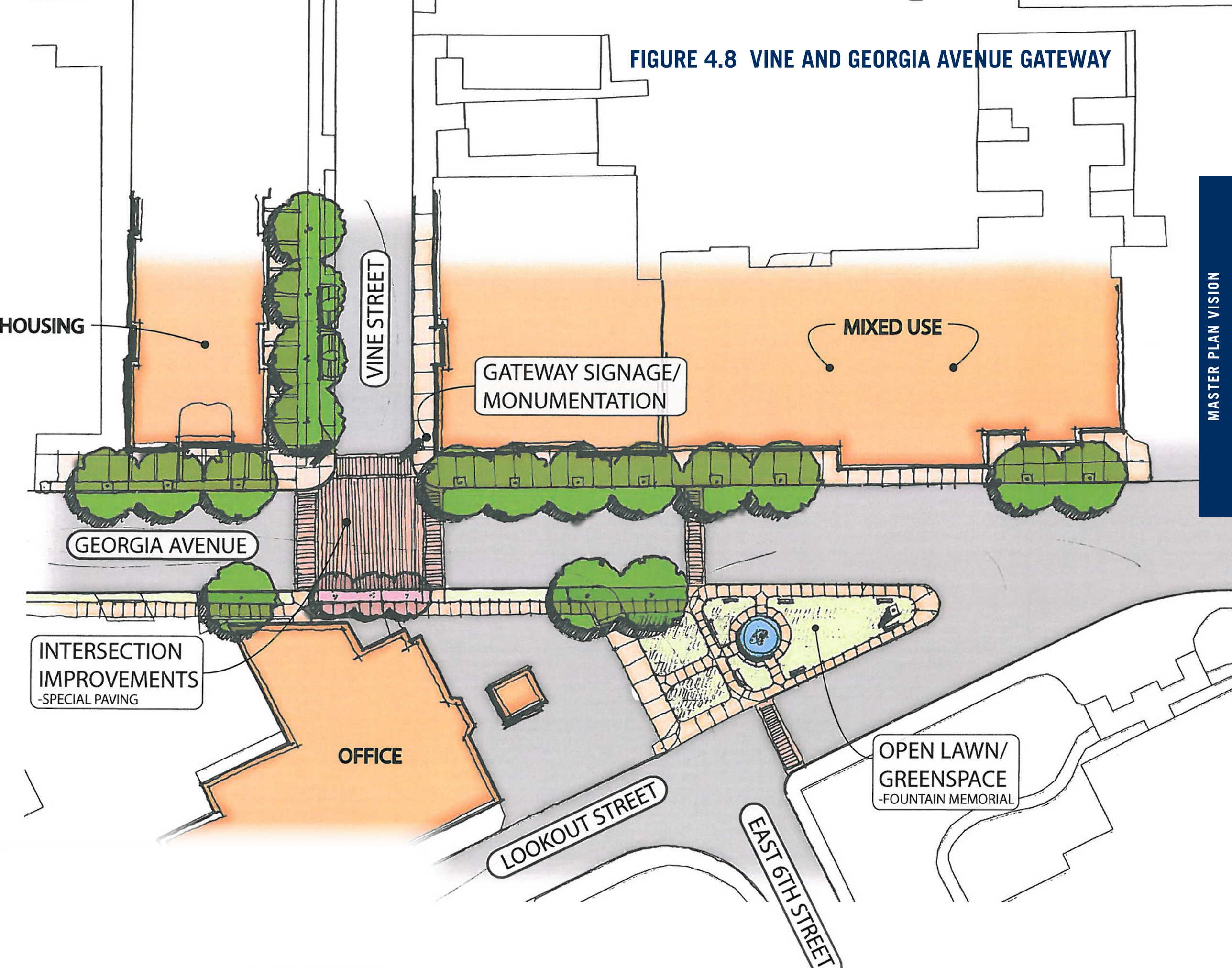
FIGURE 4.7 VINE AT GEORGIA STREET SECTION

VINE STREET AND GEORGIA AVENUE

Access from the west into the UTC along Vine Street represents a key connection from downtown Chattanooga. Fountain Square is a unique and historic landscape within the city of Chattanooga.

Minor improvements to Fountain Square, along with continued streetscape and campus gateway additions along Vine Street should include new street tree plantings, lighting, seating, trash receptacles, monument signs and specialy paving at the intersection will create safe and inviting entrance to the campus.

FIGURE 4.8 VINE AND GEORGIA AVENUE GATEWAY



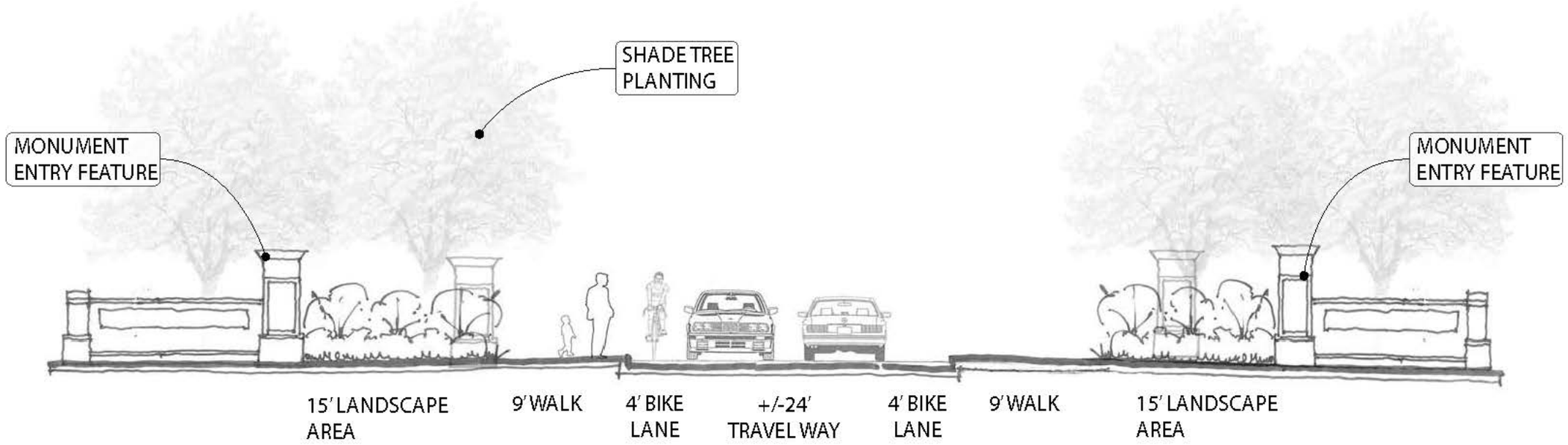
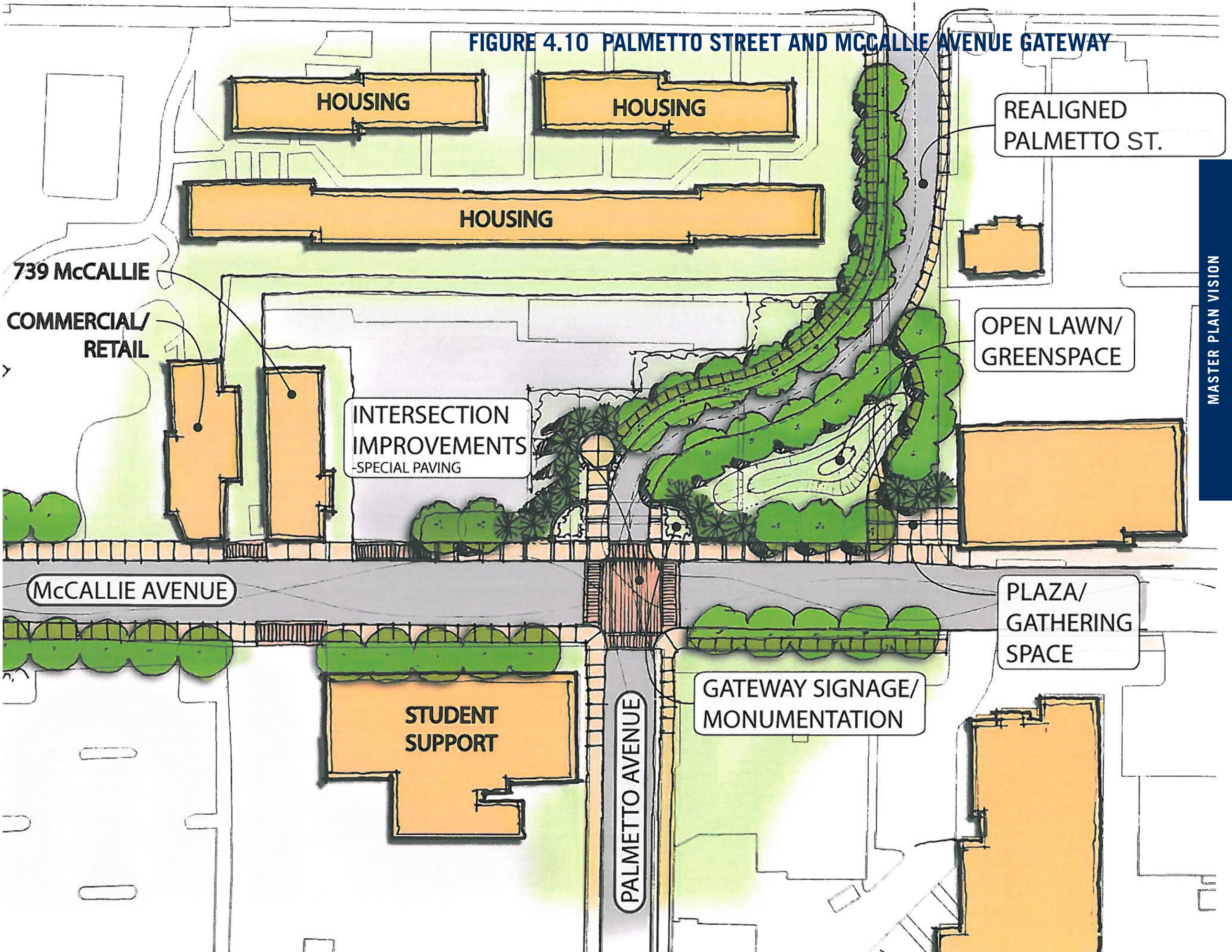


FIGURE 4.9 PALMETTO TO MCCALLIE AVENUE

PALMETTO STREET

The Palmetto Street and McCallie Avenue intersection at the southeast corner of campus is another key gateway into the UTC campus. The existing intersection presents several challenges for easy, and safe access for vehicles due to its offset alignment Several options for re-alignment of this intersection were looked at to improve vehicular access and safety, to create an enhanced gateway and entrance to the campus, and to maintain development parcels with maxium flexiblity for future uses. Figure 4.9 and 4.10 conceptually depict improvements to the streetscape corridor along McCallie Avenue and the re-alignment of McCallie to create a perpendicular approach at the intersection. This is a conceptual view of the intersection only, a traffic engineering study would need to be completed to determine a detailed deisgn approach for this intersection.

FIGURE 4.10 PALMETTO STREET AND MCCALLIE AVENUE GATEWAY



VEHICULAR CIRCULATION & PARKING

General circulation and parking goals for the master plan include:

- Shuttle/Bus & bicycle-friendly transportation
- Mixed-use parking decks
- Perimeter parking on-campus, meeting zoning requirements
- Reduced single-occupancy demand

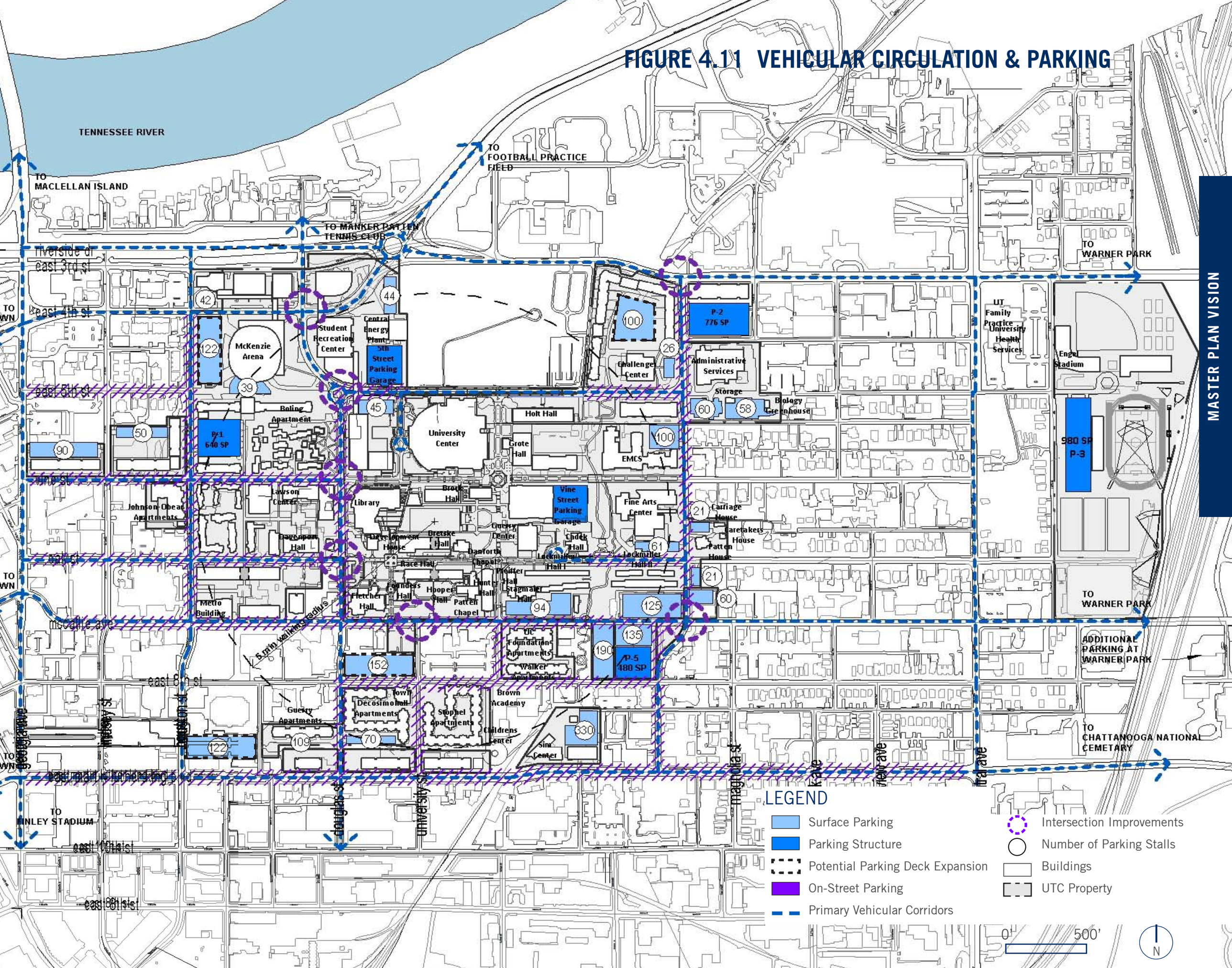
Plans for vehicular circulation and parking were completed with a comprehensive view of the campus environment as a whole, attempting to create a balance of attractive and usable open space as well as functional connections and access to parking for students and staff. Other primary drivers include creating mixed use parking decks - building in additional usable space to structured parking, providing parking the campus perimeter to preserve and protect campus open space, only meet minimum zoning requirements for parking and not more, and reducing single-occupancy demand for parking.

Figure 4.11 depicts a framework for future circulation and parking conditions on campus. Primary vehicular corridors are identified, both existing and proposed conditions. Areas for potential intersection improvements are also identified --- the improvements could range from providing simple painted crosswalks to total re-alignment and improvement of traffic flow through intersections. On-street, surface, and parking decks are also depicted on Figure 4.8, meeting the need identified through local zoning (PUD requirements) and locating new parking at the campus perimeter where feasible.

PUD COMPONENT	STANDARD	QUANTITY	CALCULATION
PROFESSIONAL OFFICES	1 space/300 s.f.		
Doctor's Building		34,855	116
DORMS	1 space/4 beds	3,960	990
Stadiums/Sports Arenas	1 space/8 seats		
Swimming Pool	1 space/30 s.f.		
Auditoriums/Assembly Spaces	1 space/4 seats		
New Assembly		750	750
FACULTY & STAFF	1 space/office	2,274	2,274
CLASSROOMS	1 space/classroom	288	288
STUDENTS	1 space/4 students*	8,790	2,198
*Student Supporting Information			
Total Headcount		15,000	
Total FTE		12,983	
Daytime/Nighttime FTE		11,035/1,947	
Daytime Peak Headcount		53,70	
Dorm Students		3,960	
TOTAL PEAK REQUIREMENT			**7,158**

TABLE 4.1 - PARKING REQUIREMENTS

FIGURE 4.11 VEHICULAR CIRCULATION & PARKING



TRANSIT & BICYCLE CIRCULATION

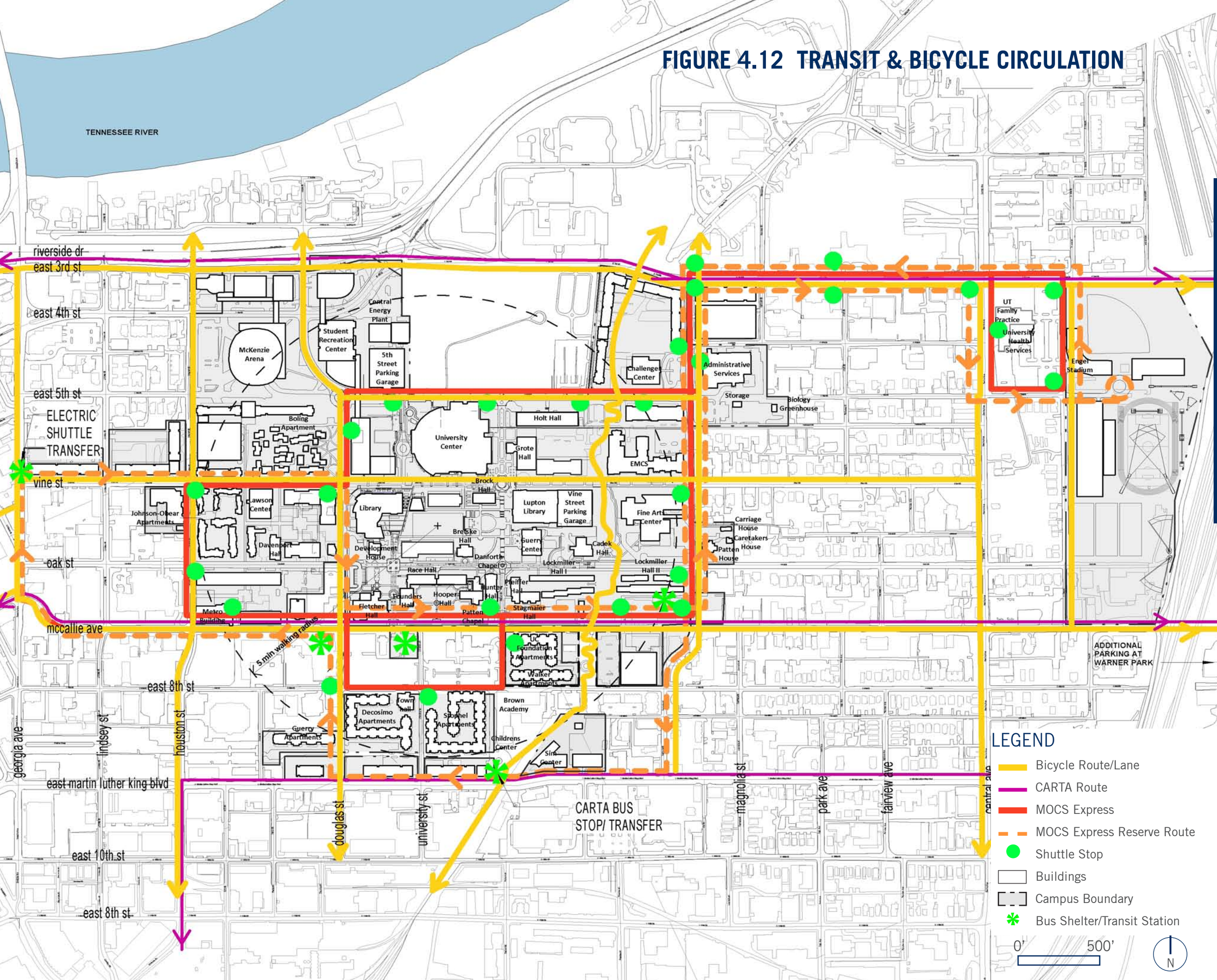
Increased costs to provide and maintain access to parking areas will continue to put pressure on a stressed economic condition for anyone attending higher education institutions across the country. UTC understands this challenge and is committed to promoting alternative modes of transportation for staff, students and visitors.

One primary recommendation to improve alternative transportation is a second shuttle route. The two routes overlap in the areas of highest demand while going in opposite directions. Many similar sized universities in the midwest have been successful utilizing campus shuttle systems to improve circulation conditions through the campus.

The second shuttle route would be scheduled at peak times for maximum efficiency. This would allow a route with shorter headways during the midday, making it more attractive to students between classes. The connection between the campus and the city bus routes will be strengthened with more attractive transfer points to the campus bus system as well as to the campus pedestrian system.

Figure 4.2 also depicts City of Chattanooga and UTC bicycle routes running along many of the city/campus streets, and campus paths, such as the greenway. Providing access and pathways for bicycle connections will further enhance the campus environment and support campus transportation goals.

FIGURE 4.12 TRANSIT & BICYCLE CIRCULATION



UTILITIES INFRASTRUCTURE

The general strategy for heating and cooling the majority of buildings on campus will not change moving into the future. The buildings will continue to be conditioned with hot and chilled water produced at the Central Energy Plant. In general, athletic facilities east of campus and buildings south of McCallie Avenue will be served by individual building systems with the distribution system expanding to accommodate the remaining new growth. Existing buildings will also be added to the Central Energy Plant as the distribution system is expanded.

The future campus loads were developed by applying the same specific load densities in Tables 2.2, 2.4 and 2.6 of Section 02 of the master plan to each of the proposed future buildings. Similar to the existing loads, the load density was applied to the gross square footage of each future proposed building to define a building peak load. The buildings that will be provided with hot and chilled water from the Central Energy Plant were also assigned a diversity factor to apply to each peak building load and totaled together to represent the future load on the Central Energy Plant.

Buildings on the outside edge of campus (AT-1, A-2, A-3, P-2, Challenger Center, Administrative Services) that are listed as Phase 1 buildings will not be connected to the Central Energy Plant until the Phase 2 distribution systems are installed. As such, the loads on the Central Energy Plant for these buildings are listed with Phase 2. In addition to the new buildings identified in the master plan, the following existing buildings will be connected to the Central Energy Plant:

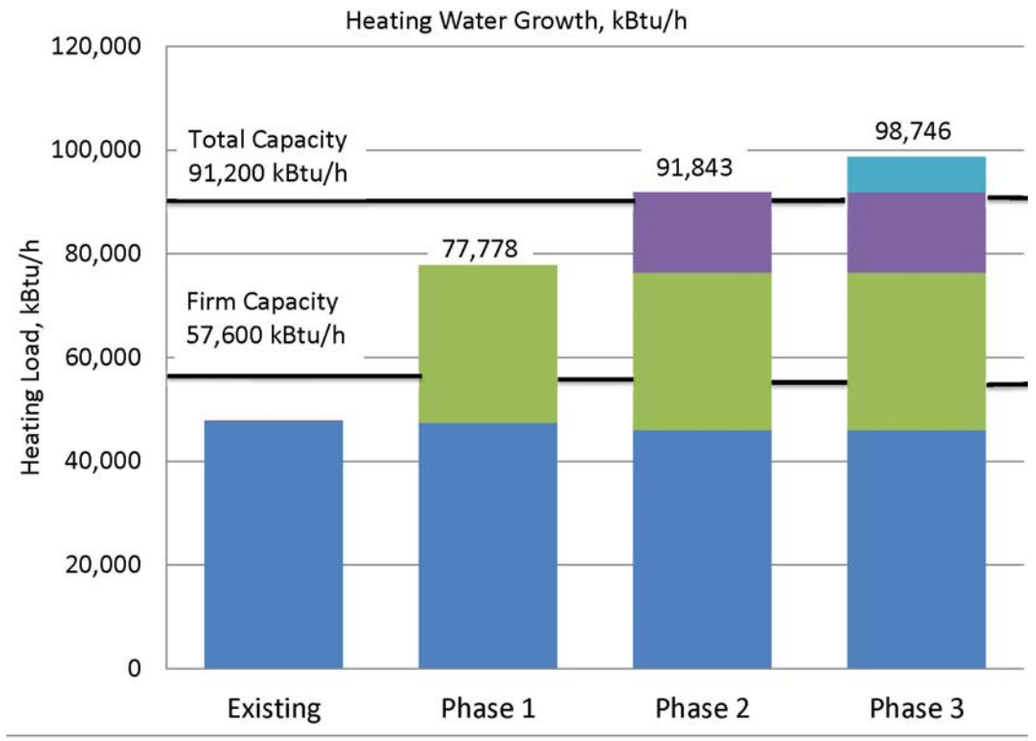
- Metro
- Frist Hall
- Johnson-Obear Apts
- Davenport
- 545 Oak
- 551 Oak
- Lawson Center
- Stagmaier Hall
- New Library
- Bretske
- Patten Chapel
- Danforth Chapel

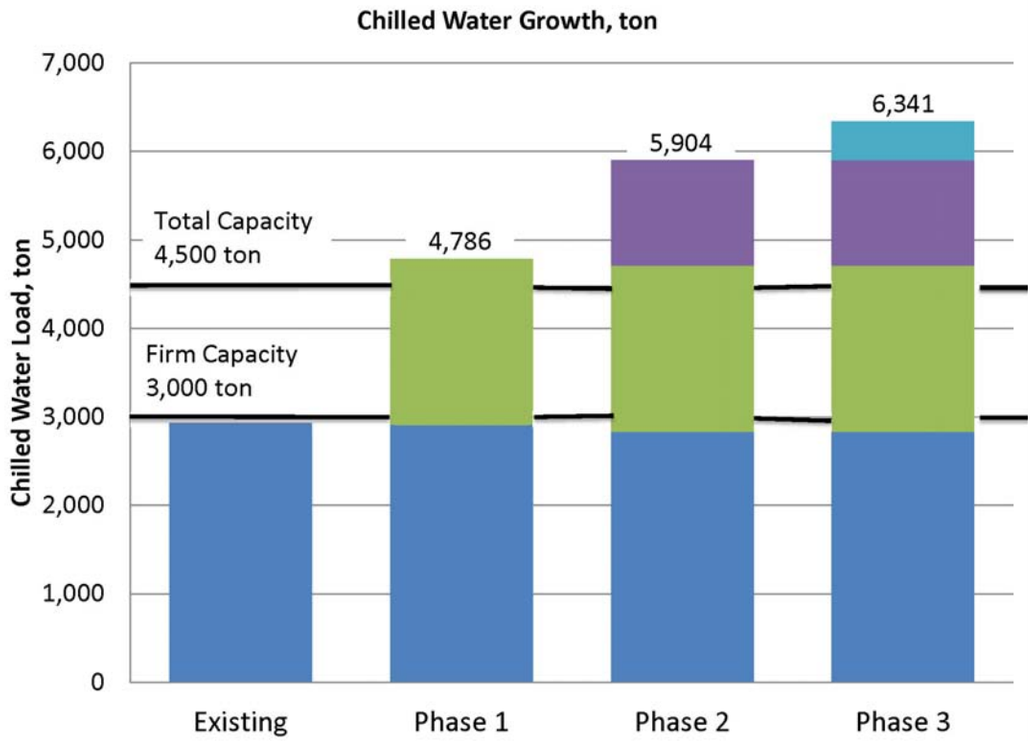
Athletic facilities east of campus and buildings added south of McCallie Avenue will not be added to the Central Energy Plant. Several new buildings will be served by individual boilers and not included in the Central Energy Plant's heating loads.

The Frist and Racquet Center will be demolished with Phase 1; MacLellan Gym and Metro Annex will be demolished with Phase 2 and removed from the Central Energy Plant heating loads. The peak and diversified loads that were developed for each future proposed building on campus and the future total diversified load, which is the actual load on the Central Energy Plant, are listed in the appendix.

Heating Capacity – Currently, the total heating capacity at the Central Energy Plant is 91,200 MBH. The firm capacity, defined as the total capacity minus the largest incremental piece of equipment, is 57,600 MBH. Currently, the total campus hot water load is less than 48,000 MBH. After the Phase 1 building heating loads have been added to the plant, the total load at the plant is approximately 78,000 MBH, which is greater than the firm capacity of the plant. Additional heating capacity will have to be added to the plant in Phase 1 to maintain firm capacity. Additional capacity will be added to the existing Central Energy Plant. After the Phase 2 building loads have been added, the total load is approximately 92,000 MBH, and the Phase 3 building loads add approximately 6,800 MBH to the total plant load for a total load of approximately 98,800 MBH at the Central Energy Plant. Table 4.2 represents the heating load growth and the current total and firm capacity at the plant.

Cooling Capacity – Currently, the total cooling capacity at the Central Energy Plant is 4,500-ton. The firm capacity, defined as the total capacity minus the largest incremental piece of equipment, is 3,000-ton. Currently, the total campus chilled water load is less than 3,000-ton. After the Phase 1 building cooling loads have been added to the plant, the total load at the plant is approximately 4,500-ton, which is greater than the firm capacity of the plant. Additional cooling capacity will have to be added to the plant in phase 1 to maintain firm capacity. Additional capacity will be added to an expansion at the existing Central Energy Plant. After the Phase 2 building loads have been added, the total load is approximately 5,900-ton, and the Phase 3 building loads add



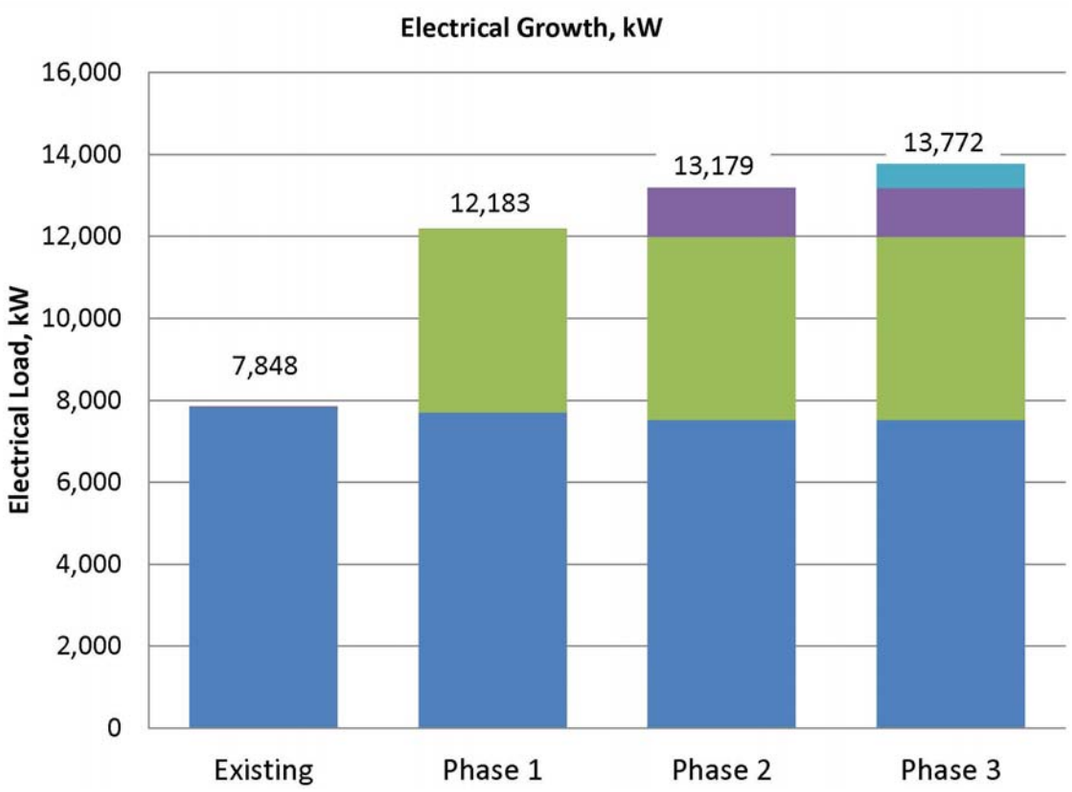


approximately 400-ton to the total plant load for a total load of approximately 6,300-ton at the Central Energy Plant. Table 4.2 represents the cooling and heating load growth and the current total and firm capacity at the plant. Table 4.3 shows electric growth loads in a table and bar chart format.

The University currently has plans to add a 35,000 MBH natural gas high temperature hot water generator, a 6,000-ton cooling tower and a 1,500-ton electric chiller in a 5,000 ft² addition to the central energy plant. The additional hot water generator will bring the heating firm capacity to 91,200 MBH. Campus heating loads will need to be re-evaluated with the addition of Phase 3 buildings. The additional chiller will bring the chilled water firm capacity to 4,500-ton. Additional chiller capacity will need to be added to the Central Energy Plant with the addition of Phase 2 buildings to maintain firm capacity.

Phase	Building Code	Number of Beds/Stalls	Building Use	Gross Area s.f.	Heated Water Load, Btu/s.f.	Heated Water Load, kBtu	Chilled Water Load, s.f./ton	Chilled Water Load, ton
0	Metro		Office/Classroom/Lab	58,000	28	1,624	659	2
0	Frist		Office/Classroom	25,000	26	650	732	1
0	Johnson-Obear		Residential	168,000	18	3,024	660	5
0	Davenport		Office/Classroom/Lab	21,600	28	605	659	1
0	545 Oak		Office	4,150	25	104	816	0
0	551 Oak		Office	5,500	25	138	816	0
0	Lawson Center		Gymnasium	21,000	18	378	1,010	0
0	Stagmaier Hall †		Residential	31,015	9	279	1,320	0
0	New Library		Library	185,000	21	3,885	1,296	3
0	New Library - Lecture		Library/Lecture Hall	14,778	27	399	660	1
0	Bretske		Office/Classroom	8,703	21	183	732	0
0	F-2		Facility Support	22,744	12	273	808	0
0	Patten Chapel		Chapel	8,814	28	247	426	1
0	Danforth Chapel		Chapel	880	28	25	426	0
1	A-1		Academics	82,632	27	2,231	660	3
1	Challenger		Office/Classroom	23,940	21	503	732	1
1	Administrative Services		Office	63,500	25	1,588	816	2
1	A-2		Academics	74,898	27	2,022	660	3
1	A-3		Academics	59,388	27	1,603	660	2
1	A-4		Academics	39,855	27	1,076	660	2
1	A-5		Academics	71,436	27	1,929	660	3
1	AT-1		Athletics	46,218	25	1,155	913	1
1	AT-2		Athletics	57,164	25	1,429	913	2
1	P-1	640	Parking	246,592	-	-	-	-
1	P-2	776	Parking	253,330	-	-	-	-
1	R-01	224	Residential	61,904	18	1,114	660	2
1	R-02	170	Residential	47,764	18	860	660	1
1	R-03	170	Residential	47,764	18	860	660	1
1	R-04	144	Residential	52,732	18	949	660	1
1	R-05	194	Residential	71,620	18	1,289	660	2
1	R-06	254	Residential	93,936	18	1,691	660	3
1	S-1		Student Support	13,512	27	365	329	1
2	F-1		Facility Support	3,135	12	38	808	0
2	A-6		Academics	63,414	27	1,712	660	3
2	A-7		Academics	48,693	27	1,315	660	2
2	AT-3		Athletics	42,600	25	1,065	913	1
2	AT-4		Athletics	83,916	25	2,098	913	2
2	AT-5		Athletics	39,984	25	1,000	913	1
2	RC-1		Rec Center	53,250	26	1,385	329	4
2	P-3	980	Parking	306,400	-	-	-	-
2	P-4	420	Parking	130,323	-	-	-	-
2	R-07	170	Residential	47,764	18	860	660	1
2	R-08	280	Residential	78,824	18	1,419	660	2
2	R-09	270	Residential	99,388	18	1,789	660	3
2	S-2		Student Support	99,972	27	2,699	329	8
2	S-3		Student Support	41,277	27	1,114	329	3
3	A-8		Academics	46,353	27	1,252	660	2
3	A-9		Academics	48,945	27	1,322	660	2
3	A-10		Academics	46,545	27	1,257	660	2
3	A-11		Academics	36,000	27	972	660	1
3	AT-6		Athletics	36,510	25	913	913	1
3	P-5	650	Parking	207,476	-	-	-	-
3	R-10	128	Residential	47,691	18	858	660	1
3	R-11	132	Residential	49,122	18	884	660	1
3	R-12	72	Residential	26,376	18	475	660	1
3	Future	220	Residential	60,000	18	1,080	660	2
3	Future	220	Residential	60,000	18	1,080	660	2

TABLE 4.2 - HOT WATER AND CHILLED WATER GROWTH LOADS



Phase	Building Code	Building Name	Building Use	Gross Area s.f.	Electrical Load, W/s.f.	Electrical Load, kW
0	New Library		Library	185,000	1.4	259
0	New Library - Lecture hall		Classroom	14,778	2.0	30
0	New 3,000 ton Chiller		Facility Support	-	-	2,000
0	Patten Chapel		Chapel	8,814	1.4	12
0	Danforth Chapel		Chapel	880	1.4	1
0	545 Oak		Office	4,150	3.8	16
0	551 Oak		Office	5,500	3.8	21
0	Lawson Center		Gymnasium	21,000	2.7	57
0	F-2		Facility Support	22,744	3.5	80
1	A-1		Academics	82,632	2.9	240
1	A-2		Academics	74,898	2.9	217
1	A-3		Academics	59,388	2.9	172
1	A-4		Academics	39,855	2.9	116
1	A-5		Academics	71,436	2.9	207
1	AT-1		Athletics	46,218	2.0	92
1	AT-2		Athletics	57,164	2.0	114
1	P-1		Parking	246,592	0.3	62
1	P-2		Parking	253,330	0.3	63
1	R-1	224	Residential	61,904	1.5	93
1	R-2	170	Residential	47,764	1.5	72
1	R-3	170	Residential	47,764	1.5	72
1	R-4	144	Residential	52,732	1.5	79
1	R-5	194	Residential	71,620	1.5	107
1	R-6	254	Residential	93,936	1.5	141
1	S-1		Student Support	13,512	2.0	27
2	F-1		Facility Support	3,135	3.5	11
2	A-6		Academics	63,414	2.9	184
2	A-7		Academics	48,693	2.9	141
2	AT-3		Athletics	42,600	2.0	85
2	AT-4		Athletics	83,916	0.8	67
2	AT-5		Athletics	39,984	2.5	100
2	RC-1		Athletics	52,250	1.0	52
2	P-3		Parking	306,400	0.3	77
2	P-4		Parking	130,323	0.3	33
2	R-7	170	Residential	47,764	1.5	72
2	R-8	280	Residential	78,824	1.5	118
2	R-9	270	Residential	99,388	1.5	149
2	S-2		Student Support	99,972	2.0	200
2	S-3		Student Support	41,277	2.0	83
3	A-8		Academics	46,353	2.9	134
3	A-9		Academics	48,945	2.9	142
3	A-10		Academics	46,545	2.9	135
3	A-11		Academics	36,000	2.9	104
3	AT-6		Athletics	36,510	2.5	91
3	P-5		Parking	207,476	0.3	52
3	R-10	128	Residential	47,691	1.5	72
3	R-11	132	Residential	49,122	1.5	74
3	R-12	72	Residential	26,376	1.5	40
3	Future	220	Residential	60,000	1.5	90
3	Future	220	Residential	60,000	1.5	90

TABLE 4.3 - ELECTRIC GROWTH LOADS

IMPLEMENTATION FRAMEWORK

Each phase of campus development is intended to further the goals and objectives outlined at the beginning of the Campus Master Plan design process. Issues of the highest and best use of all university resources such as academics, student life, community connectivity, sustainability, circulation, open space, image, identity, and a sense of completion are to be considered from the initial building project through the full campus build-out. The following implementation goals were used as the basis for developing the phasing framework:

Phase 1 – Short Term Development
Development Focus: Address the existing and immediate academic and housing needs of the University, upgrade existing facilities to prolong facility use while initiating projects outlined in the Capital Plan

Phase 2 – Intermediate Term
Development Focus: Optimizing the academic core through strategic renovations and additions, increasing on-campus housing, and addressing the needs for improved athletic facilities.

Phase 3 – Long Term
Development Focus: Expand academic facilities while further expanding housing, athletics, recreation, and student support space to meet the targeted enrollment goal.

PLANNING & NEIGHBORHOOD PRECINCTS

Planning for UTC has occurred within a variety of discreet neighborhood areas in and around the campus and surrounding community. Each of these precinct areas have unique characteristics and physical conditions but are all also connected to create a consistent campus and community environment. Planning at a precinct scale creates a greater understanding of the unique physical conditions and potential constraints for future development.

The following short descriptions summarize the unique condition in each precinct and begin to set the stage for a larger campus vision for the campus master plan:

- Vine-Houston Street Precinct - This precinct lies in the northwest portion of the campus and is uniquely situated within the city of Chattanooga to create a gateway to the UTC campus. With connections from downtown and from the interstate, this is the primary access point for visitors to the campus. Existing development in the area includes some office buildings, some single family homes, McKenzie Arena, the Aquatic & Recreation Center, Boling Apartments and Johnson-Obear Apartments. The physical environment is very hilly along the west edge of the campus, coming downhill into the campus at Douglas Street.
- Vine-Douglas Street Precinct - This precinct is defined by campus housing on the north and west (Boling and Johnson-Obear Apartments) and transitions across Douglas to the most historic portions of the campus. The new Library frames the historic Chamberlain Field, and just south of there, Founders, Fletcher, Hooper and Race Halls create the historic core of campus along McCallie Avenue.
- MLK BLVD Precinct - This precinct area is within a nationally designated historic district. Several UTC apartments lie within this precinct just north of MLK Boulevard and bound by Douglas Street on the west and Palmetto Avenue on the east.
- Vine - Palmetto Street Precinct - This precinct area encompasses a portion of the academic core of the campus. Planning in this precinct has also included key consideration for the Fort Wood Historic District, a collection of Victorian era homes just to the east of Palmetto Street.
- Engel Stadium Precinct - This area of the UTC campus includes the historic Engel Stadium and is located several blocks east of the campus core. Currently utilized as remote parking and recreation fields, this portion of the campus is characterized with opportunity for future development focused on sports, recreation and parking.

FIGURE 5.1 PLANNING & NEIGHBORHOOD PRECINCTS

VINE-HOUSTON STREET

VINE -PALMETTO STREET

ENGEL STADIUM

VINE-DOUGLAS STREET

MLK BOULEVARD

TENNESSEE RIVER

FOOTBALL PRACTICE FIELD

BATTERY PLACE (LOCAL)

riverside dr

east 3rd st

east 4th st

east 5th st

vine st

oak st

FOUNTAIN SQUARE (NATIONAL)

mccallie ave

east 8th st

east martin luther king blvd

east 10th st

MARKET SQUARE - PATTEN PARKWAY HISTORIC DISTRICT (NATIONAL)

MARKET & MAIN STREETS HISTORIC DISTRICT (NATIONAL)

M.L. KING BOULEVARD HISTORIC DISTRICT (NATIONAL)

FORT WOOD HISTORIC DISTRICT (NATIONAL)

PARTNERSHIP OPPORTUNITY ZONE

FUTURE SPECIALTY HOUSING

ACADEMIC/ RESEARCH EXPANSION ZONE

5 min walking radius

McKenzie Arena

Student Recreation Center

Central Energy Plant

Boling Apartment

Johnson-Obear Apartments

Lawson Center

Library

Development House

Bretske Hall

Race Hall

Cooper Hall

Hunter Hall

Patten Chapel

Holt Hall

Grote Hall

EMCS

Lupton Library

Fine Arts Center

Guerry Center

Lockmiller Hall I

Lockmiller Hall II

Heifler Hall

Stagmaier Hall

FUTURE HOUSING

UC Foundation Apartments

Walker Apartments

Decosimo Apartments

Stophel Apartments

Guerry Apartments

Brown Academy

Administrative Services

Storage

Biology Greenhouse

Carriage House Caretakers House

Patten House

UT Family Practice University Health Services

Engel Stadium

TRACK + FIELD SOCCER

FIELDS

FUTURE FIELDS RC-2

R-8 280 Beds (S)

R-9 270 Beds (S)

776 SP P-2

980 SP P-3

480 SP P-5

420 SP P-4

700 SP P-1

R-1 224 Beds (SS)

R-2 170 Beds (SS)

R-3 170 Beds (SS)

R-4 144 Beds (S)

R-5 194 Beds (S)

R-6 254 Beds (S)

72 Beds (S) R-12

132 Beds (S) R-11

128 Beds (S) R-10

0’ 600’

N

VINE-HOUSTON STREET PRECINCT

The Vine-Houston Street Precinct is characterized with the primary uses of housing, athletics and supporting campus open space. Figure 5.1 depicts a vision plan for the future UTC campus environment showing new building development, open space renovation, and modifications to campus streets and parking.

The Vine Street housing buildings are envisioned to be 5 story buildings with student support and potentially some retail space on the street level. The housing is made up of suite style units. The buildings should have a minimum setback and with the specified uses on the ground level that should support an active street life. Small surface parking areas are located in the back of the building and are intended for short term use. Open space is created in the rear of the building for passive gathering.

Housing across Houston Street and just west of the Boling Apartments is primarily made up of semi-suite style units and would be built in conjunction with a mixed-use parking deck, and potentially recreation space on the roof. A small satellite dining facility would also be located within this grouping of residential buildings.

North of McKenzie Arena two new facilities and one renovated facility will create space for an expanding intercollegiate athletics program. These facilities will have the potential of an overhead connection back to McKenzie Arena. In addition to these facilities, McKenzie Arena itself would be renovated over time. The following is a summary of the programs for these facilities:

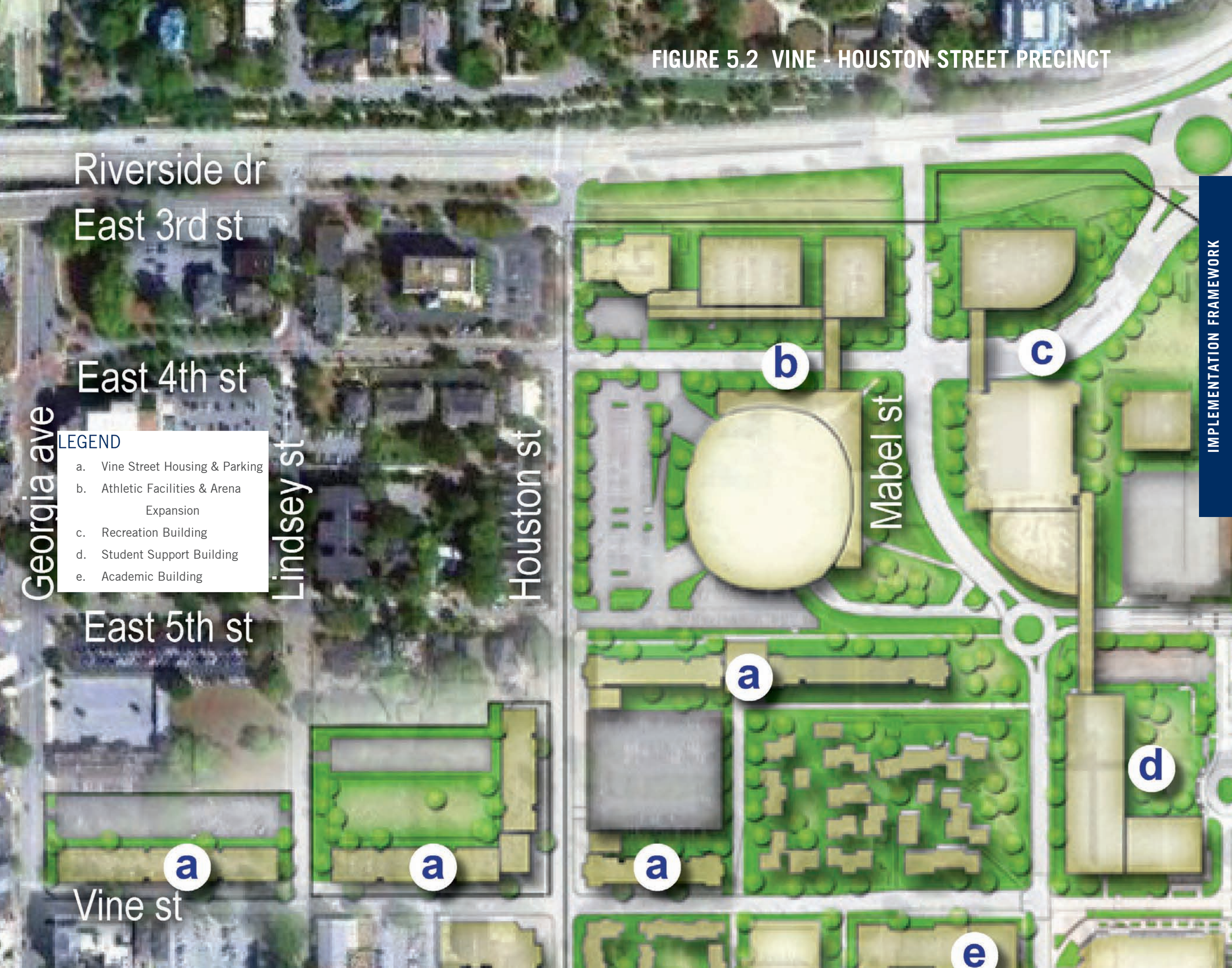
- Facility 1 and 2: Intercollegiate Athletics Support Facility – 100,000 gsf (3 stories)
- Facility 3: Football Team/Practice Facility – 45,000 gsf (two stories)
- Facility 4: Arena – 185, 000 gsf (2 – 3 stories)

North of the existing Aquatic & Recreation Center, a new replacement space for Maclellan Gymnasium is identified, also with potential overhead connection for pedestrians to safely cross East 4th Street.

Just west of the existing University Center, new student support space would be constructed over time, as additional space for student services - needed as enrollment expands.

One additional academic facility is also identified in this precinct, west of the new Library. This academic facility will frame an open space courtyard to its south, and allow pedestrian access to Douglas Street.

FIGURE 5.2 VINE - HOUSTON STREET PRECINCT



VINE-DOUGLAS STREET PRECINCT

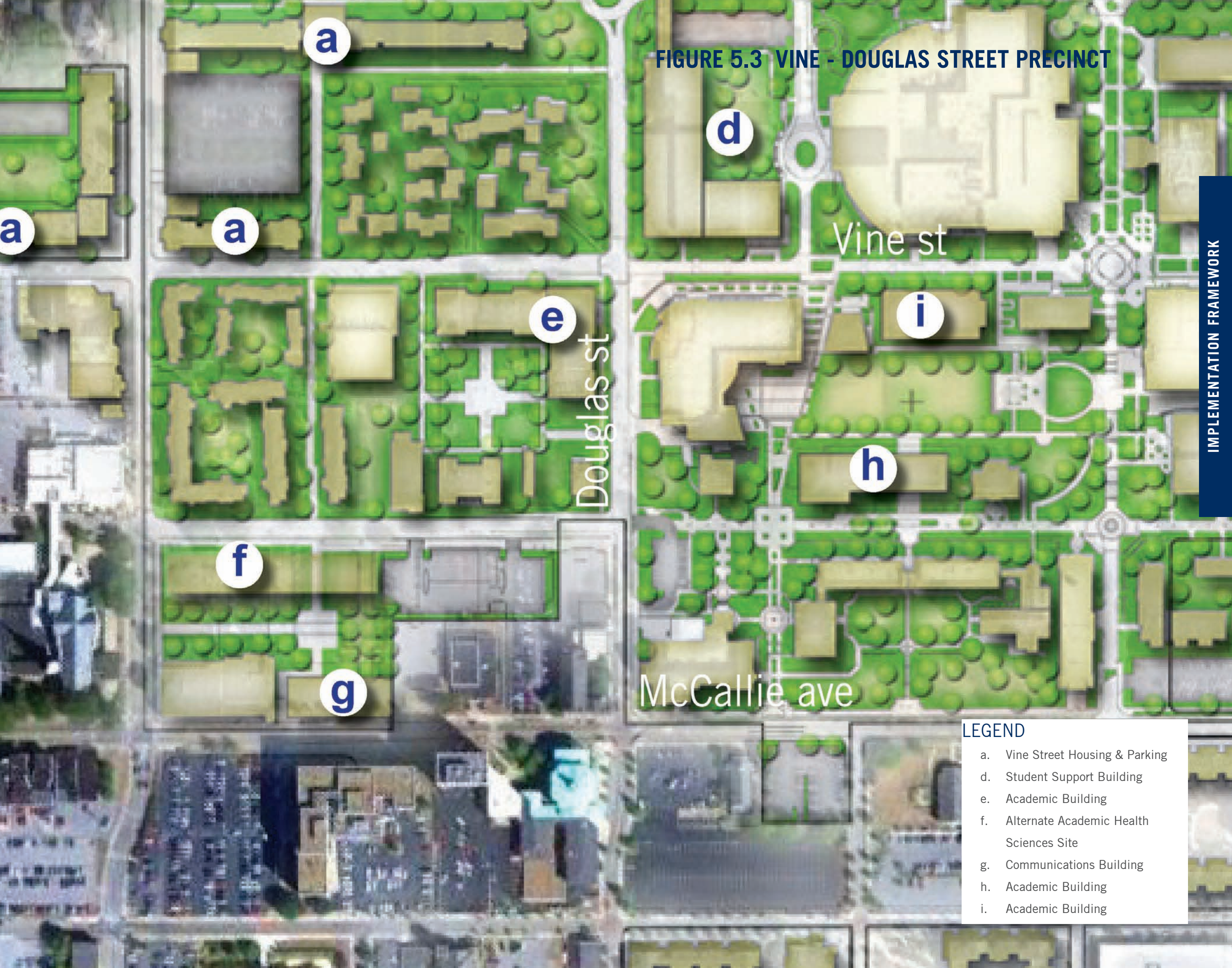
Douglas Street Precinct - This precinct is defined by campus housing on the north and west (Boling and Johnson-Obear Apartments) and transitions across Douglas to the most historic portions of the campus. The new Library frames the historic Chamberlain Field, and just south of there, Founders, Fletcher, Hooper and Race Halls create the historic core of campus along McCallie Avenue.

Figure 5.3 shows new academic facilities, labeled as “f” and “g.” These facilities should front the streets on the south and north facades and support an open space courtyard between them. The courtyard and building development will create a passive gathering area, but also allow pedestrian traffic to pass through in a north-south direction, creating cross campus connections.

Buildings labeled “h” and “i” on Figure 5.1 are also additional academic buildings which frame the original campus football field - Chamberlain Field - and now envisioned as UTC’s primary campus quad. Flanked by a new Library building (under construction) on the west, and planned open space improvements on the slope on the east side (known as “cardiac hill”), this open space is truly the heart of the campus. The academic buildings in this location should be no more the 4 stories, and easily allow pedestrian access to Chamberlain Field and at key points between buildings to connect to the larger campus environment.

Homecoming parade on Oak Street at the north side of Chamberlain Field.

FIGURE 5.3 VINE - DOUGLAS STREET PRECINCT



LEGEND

- a. Vine Street Housing & Parking
- d. Student Support Building
- e. Academic Building
- f. Alternate Academic Health Sciences Site
- g. Communications Building
- h. Academic Building
- i. Academic Building

VINE-PALMETTO STREET PRECINCT

This precinct area encompasses a portion of the academic core of the campus. Planning in this precinct has also included key consideration for the Fort Wood Historic District, a collection of Victorian era homes just to the east of Palmetto Street.

Building “j” on Figure 5.4 depicts additional levels of parking structure added on to the existing Lupton Library parking deck. This parking structure is in a key location, providing close access to the center of campus and providing conveniently located parking for the Fine Arts Center. Access to this structure would be relocated to Oak Street, which would allow for a pedestrian street environment along Vine Street on the north side of Lupton Library. Special consideration and additional study would be necessary to determine if the existing parking structure could support additional levels.

Buildings “k” and “l” would be additional academic buildings to support growing programs - and both are considered optional locations for a future life sciences building. Both facilities would frame open space courtyards for passive gathering areas and create unique connections to the campus greenway running in the north-south direction.

Just north of East 5th Street, the existing Challenger Field site would be re-developed over time to support additional campus housing. The housing in this location would add about 720 new beds, in both suite and semi-suite style units. The existing recreation field would be expanded to allow for active recreation in this new quad for the campus. The existing greenway would also run through this area, and continue under a break in the housing buildings, and potentially under East 3rd Street to potentially connect with the River Walk in the future.

Across Palmetto Street to the east a partnership opportunity site exists for a future health sciences facility with an additional parking deck. This facility could be constructed in partnership with the Erlanger Medical Center, as there are potential synergies with UTC and Hospital programs. The parking structure in this location could add an additional 770 spaces, with some retail located on the ground level, along Palmetto Street.

FIGURE 5.4 VINE STREET - PALMETTO STREET PRECINCT

East 5th st

East 3rd s

Palmetto st

Vine st

LEGEND

i. Academic Building
j. Parking Expansion
k. Life Sciences Building
l. Alternate Life Sciences Site
m. Challenager Field Housing & Recreation
n. Academic Health Sciences

MLK BOULEVARD PRECINCT

This precinct area is within a nationally designated historic district. Several UTC apartments lie within this precinct just north of MLK Boulevard and bound by Douglas Street on the west and Palmetto Street on the east.

The campus greenway continues in its north-south direction through this precinct, and creates much of the character for this portion of the campus. Eventually connecting to MLK Boulevard and an old railroad corridor, this greenway connection has the potential to continue southward and connect to Finely Stadium.

An additional parking structure is planned for the existing Doctor's Bulding site along McCallie Avenue. This structure could be coupled with future housing on the north side, which could meet a future unidentified demand.

Moving to the south, a future academic building site is located next to the SimCenter on MLK Boulevard, just to the west of Palmetto Street. This academic building could support specific needs relative to the SimCenter's program.

Considered a long term development option, buildings "q" on Figure 5.5 depict future suite style housing, with retail or office at the street level, along MLK Boulevard. The housing along this corridor will be of a smaller scale to begin to create a better transition to the smaller scale commercial and industrial uses located in the MLK neighborhood.
The Bessie Smith Center, along MLK Boulevard, was the site of several campus plan open houses.

FIGURE 5.5 MLK BOULEVARD PRECINCT

LEGEND

- h. Academic Building
- o. Parking Expansion
- p. Academic Building
- q. MLK Housing & Student Support

ENGEL STADIUM PRECINCT

This area of the UTC campus includes the historic Engel Stadium and is located several blocks east of the campus core. Currently utilized as remote parking and recreation fields, this portion of the campus is characterized with opportunity for future development focused on sports, recreation and parking.

Building “r” on Figure 5.6 identifies a future parking structure which could replace the existing surface parking lot in this location. The structure itself could also support additional building and stadium seating space for a new soccer stadium and track and field (labeled “s”).

The track in this configuration is considered a “broken back” track, in order to support a full size soccer field in the center, as well as all necessary field events to meet NCAA requirements.

Building “t” depicts a relocated Tennis Center, which would support 4 indoor courts, and 8 outdoor courts, also meeting NCAA requirements.

Facility “u” depicts additional recreational sports fields, as well as additional support space for the field requirements for a track and field program. Long term, the Engel Stadium Precinct will remain a viable and important location for athletics, recreation and parking facilities.

A volleyball court near Lockmiller Apartments, depicting the importance of Recreation Sports at the UTC campus.

FIGURE 5.6 ENGEL STADIUM PRECINCT

PHASE 1-SHORT TERM

PROJECT	LABEL	GROSS SQUARE FEET — RENOVATED	GROSS SQUARE FEET — NEW	FUND	BUDGET
BUILDING					
Life Sciences	A-1		118,500	State	$59,500,000
Health Sciences	A-2		91,000	State	$49,100,000
Alternate Site - Life Sciences	A-3		-	State	-
Alternate Site - Health Sciences	A-4		-	State	-
Communications Building	A-5		64,500	State	$20,000,000
Holt Hall	Ren-1	26,000		State	$7,450,000
Lupton/Fine Arts Renovation	Ren-2	161,000		State	$31,500,000
Football Practice Facility	AT-1		46,000	Other	$18,487,200
Tennis Facility	AT-2		57,000	Other	$11,432,800
Track/Field/Soccer	AT-7		-	Other	$3,300,000
Central Energy Plant Expansion	F-1		22,000	State	$5,686,000
Parking - 1 (640 spaces)	P-1		246,500	Other	$12,822,000
Parking - 2 (776 spaces)	P-2		253,000	Other	$13,173,000
Residential - 1 (246 beds)	R-1		61,000	Other	$18,500,000
Residential - 2 (200 beds)	R-2		47,000	Other	$14,300,000
Residential - 3 (200 beds)	R-3		47,000	Other	$14,300,000
Residential - 4 (154 beds)	R-4		52,000	Other	$15,800,000
Residential - 5 (194 beds)	R-5		71,000	Other	$21,500,000
Residential - 6 (254 beds)	R-6		94,000	Other	$28,200,000
Student Support - 1	S-1		13,500	Other	$3,378,000

PROJECT	FUNDING	BUDGET
OPEN SPACE CONSTRUCTION		
Residential Hall Courtyard	Other	$376,000
Metro Building Courtyard	Other	$354,000
Library Courtyard	Other	$454,000
Holt Hall Courtyard	Other	$393,000
PATHWAY / STREETSCAPE		
East 5th Street	Other	$2,860,000
Vine Street	Other	$1,747,000
Oak Street	Other	$470,000
Founders Pedestrian Way	Other	$259,000
Lindsey Street	Other	$393,000
Houston Street	Other	$609,000
Arena to Metro Pedestrian Way	Other	$460,000
ROADWAY IMPROVEMENTS		
East 5th Street Roundabout	Other	$1,053,000
Engel Field Access	Other	$738,000
UTILITIES		
Infrastructure and distribution systems	State	$9,000,000
STATE SUBTOTAL		**$175,072,000**
OTHER SUBTOTAL		**$145,475,000**

In addition to the detailed list of projects above, approximately $15 million is anticipated to be requested to complete academic building upgrades over the first two phases of the master plan.

FIGURE 5.7 PHASE 1

TENNESSEE RIVER

FOOTBALL PRACTICE FIELD

riverside dr
east 3rd st
east 4th st
east 5th st
vine st
oak st
mccalla ave
east 8th st
georgia ave
jessee st
houston st
east martin luther king blvd
douglas st
university st
east 10th st
east 8th st

AT-1
Central Energy Plant
F-1
Student Recreation Center
McKenzie Arena
5th Street Parking Garage
R-2
170 Beds (SS)
S-1
R-1
224 Beds (SS)
Boling Apartment
P-1
700 SP
R-3
170 Beds (SS)
R-4
144 Beds (S)
R-5
194 Beds (S)
R-6
254 Beds (S)
Johnson-Obear Apartments
Lawson Center
Davenport Hall
Development House
Bretske Hall
Library
A-4
Metro Building
A-5
Fletcher Hall
Founders Hall
Hooper Hall
Patten Chapel
Hunter Hall
Race Hall
Pfeiffer Hall
Stapleton Hall
Panfortte Chapel
Guerry Center
Cadek Hall
Lupton Hall I
Lupton Library
Fine Arts Center
Locksmiller Hall II
A-2
776 SP
P-2
Challenger Center
Administrative Services
Storage
Biology Greenhouse
A-3
Holt Hall
University Center
Maclellan Gym
Grote Hall
A-1
EMCS
Brock Hall
Carriage House
Caretakers House
Patten House
UT Family Practice
University Health Services
Engel Stadium
AT-2
AT-7
UC Foundation Apartments
Walker Apartments
Decosimo Apartments
Town hall
Stophel Apartments
Brown Academy
Childrens Center
Sim Center
Guerry Apartments

LEGEND

- Existing Campus Building
- Major Building Renovation
- Building/Parking Structure
- Alternate Building Site
- Building Demolition
- Signature Open Space
- Streetscape/Pathway
- Surface Parking
- Roadway/Street

0’ 500’

N

PHASE 2-INTERMEDIATE TERM

PROJECT	LABEL	GROSS SQUARE FEET — RENOVATED	NEW	FUND	BUDGET
BUILDING					
Academic/Learning 6	A-6		63,000	State	$25,365,000
Academic/Learning 7	A-7		48,000	State	$19,477,000
Volleyball / Wrestling Gym	AT-3		42,000	Other	$8,520,000
Athletics Office / Support	AT-4		84,000	Other	$12,600,000
Grandstand / Support	AT-5		40,000	Other	$7,996,000
Recreation - 1	RC-1		60,000	Other	$33,000,000
Parking - 3 (980 spaces)	P-3		306,000	Other	$15,932,000
Parking - 4 (420 spaces)	P-4		130,000	Other	$6,777,000
Residential - 7 (170 beds)	R-7		47,000	Other	$14,300,000
Residential - 8 (280 beds)	R-8		78,000	Other	$23,600,000
Residential - 9 (270 beds)	R-9		99,000	Other	$29,800,000
Student Support - 2	S-2		100,000	Other	$21,993,000
Student Support - 3	S-3		41,000	Other	$9,081,000

PROJECT	FUNDING	BUDGET
OPEN SPACE CONSTRUCTION		
Student Support Courtyard	Other	$266,000
McCalle Avenue Courtyard	Other	$328,000
Challenge Center Courtyard	Other	$745,000
Recreation Fields	Other	$1,396,000
PATHWAY / STREETSCAPE		
East 4th Street	Other	$1,428,000
Douglas Street	Other	$916,000
Vine Street and University Center	Other	$932,000
Race / Hooper Hall Pathway	Other	$233,000
Oak Street	Other	$727,000
O'Neal Street	Other	$2,332,000
Challenger Center Pathway	Other	$1,586,000
ROADWAY IMPROVEMENTS		
Cadek Hall Cul-de-sac	Other	$348,000
UTILITIES		
Infrastructure and distribution systems	Other	$4,500,000
STATE SUBTOTAL		**$41,410,000**
OTHER SUBTOTAL		**$162,377,000**

FIGURE 5.8 PHASE 2

TENNESSEE RIVER
FOOTBALL PRACTICE FIELD
CITY IMPROVEMENT
riverside dr
east 3rd st
east 4th st
east 5th st
vine st
oak st
mccallie ave
east 8th st
east martin luther king blvd
east 10th st
east 8th st
georgia ave
lindsey st
houston st
douglas st
university st
AT-4
AT-3
AT-1
RC-1
Central Energy Plant
F-1
Student Recreation Center
5th Street Parking Garage
McKenzie Arena
R-2
170 Beds (SS)
R-1
224 Beds (SS)
Boling Apartment
P-1
700 SP
R-3
170 Beds (SS)
R-4
144 Beds (S)
R-5
194 Beds (S)
R-6
254 Beds (S)
S-2
S-3
University Center
Holt Hall
Grote Hall
Brock Hall
EMCS
R-8
280 Beds (S)
R-9
270 Beds (S)
R-7
170 Beds (SS)
A-2
776 SP
P-2
Challenger Center
Administrative Services
Storage
Biology Greenhouse
A-3
A-7
A-6
A-4
A-5
Lawson Center
Johnson-Obear Apartments
Davenport Hall
Library
Development House
Bresette Hall
Lupton Library
420 SP
P-4
Guerry Center
Cadek Hall
Fine Arts Center
Carriage House
Caretakers House
Patten House
Race Hall
Flanders Hall
Hooper Hall
Patten Chapel
Fletcher Hall
Hunter Hall
Stapleton Hall
Locksmiller Hall I
Locksmiller Hall II
Metro Building
UT Family Practice
University Health Services
Engel Stadium
AT-2
980 SP
P-3
AT-5
FUTURE FIELDS
UC Foundation Apartments
Walker Apartments
Decosimo Apartments
Town hall
Stoppel Apartments
Brown Academy
Childrens Center
Sim Center
Guerry Apartments

LEGEND

- Existing Campus Building
- Major Building Renovation
- Building/Parking Structure
- Alternate Building Site
- Building Demolition
- Signature Open Space
- Streetscape/Pathway
- Surface Parking
- Roadway/Street

0’ 500’

N

PHASE 3-LONG TERM

PROJECT	LABEL	GROSS SQUARE FEET — RENOVATED	NEW	FUND	BUDGET
BUILDING					
Academic/Learning 8	A-8		46,000	State	$18,541,000
Academic/Learning 9	A-9		49,000	State	$19,578,000
Academic/Learning 10	A-10		46,500	State	$18,618,000
Academic/Learning 11	A-11		36,000	State	$14,400,000
McKenzie Addition	AT-6	79,000	36,500	Other	$10,953,000
Parking - 5 (650 spaces)	P-5		207,500	Other	$10,789,000
Residential - 10 (128 beds)	R-10		47,500	Other	$14,300,000
Residential - 11 (132 beds)	R-11		49,000	Other	$14,700,000
Residential - 12 (72 beds)	R-12		26,000	Other	$7,900,000
Facility Support - 2	F2		3,000	State	2,254,000

PROJECT	FUNDING	BUDGET
OPEN SPACE CONSTRUCTION		
Academic / Learning Courtyard	Other	$441,000
East Martin Luther King Blvd.	Other	$503,000
PATHWAY / STREETSCAPE		
Vine Street	Other	$420,000
Oak Street	Other	$420,000
East Martin Luther King Blvd.	Other	$2,287,000
Douglas Street	Other	$554,000
ROADWAY IMPROVEMENTS		
Palmetto Street	Other	$1,013,000
UTILITIES		
Infrastructure and distribution systems	Other	$500,000
STATE SUBTOTAL		**$71,137,000**
OTHER SUBTOTAL		**$54,483,000**

FIGURE 5.9 PHASE 3

TENNESSEE RIVER

FOOTBALL PRACTICE FIELD

riverside dr
east 3rd st
east 4th st
east 5th st
vine st
oak st
mccallie ave
east 8th st
georgia ave
lindsey st
houston st
east martin luther king blvd
douglas st
university st
east 10th st
east 8th st

AT-4
AT-3
AT-1
RC-1
Central Energy Plant
F-1
AT-6
McKenzie Arena
Student Recreation Center
5th Street Parking Garage
R-2
170 Beds (SS)
R-1
224 Beds (SS)
S-1
Boling Apartment
R-4
144 Beds (S)
P-1
700 SP
R-6
254 Beds (S)
R-5
194 Beds (S)
S-2
S-3
University Center
Holt Hall
Grote Hall
Brock Hall
A-3
EMCS
R-8
230 Beds (S)
R-9
270 Beds (S)
R-7
176 Beds (SS)
Challenger Center
A-2
776 SP
P-2
Administrative Services
Storage
Biology Greenhouse
UT Family Practice
University Health Services
Engel Stadium
AT-2
980 SP
P-3
AT-5
Lawson Center
A-10
A-9
Library
A-7
Lupton Library
420 SP
P-4
Fine Arts Center
Johnson Hall Apartments
Davenport Hall
A-8
Development House
A-6
Brehme Hall
Guerry Center
Cadek Hall
Carriage House
Caretakers House
Patten House
Race Hall
Danforth Chapel
Lockmiller Hall I
Lockmiller Hall II
A-4
Pfeiffer Hall
Fletcher Hall
Founders Hall
Hooper Hall
Hunter Hall
Patten Chapel
Stagmaier Hall
Metro Building
A-5
UC Foundation Apartments
Walker Apartments
480 SP
P-5
FLEXIBLE FUTURE EXPANSION SITE
Decosimo Apartments
Town hall
Stophel Apartments
Brown Academy
Childrens Center
Sim Center
A-11
Guerry Apartments
72 Beds (S)
R-12
132 Beds (S)
R-11
128 Beds (S)
R-10
F-2

LEGEND

- Existing Campus Building
- Major Building Renovation
- Building/Parking Structure
- Alternate Building Site
- Building Demolition
- Signature Open Space
- Streetscape/Pathway
- Surface Parking
- Roadway/Street

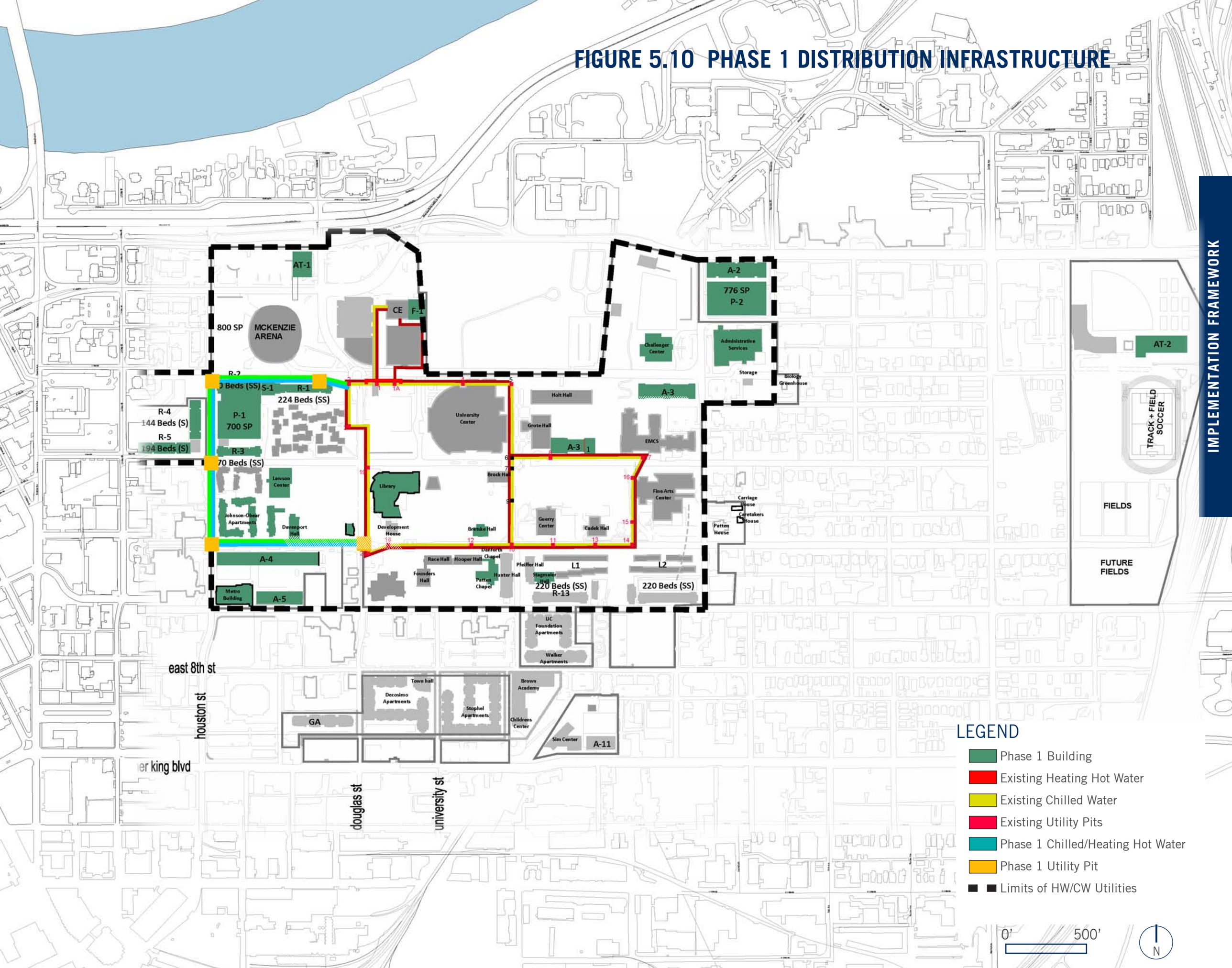
0’ 500’

N

PHASE 1- FUTURE DISTRIBUTION INFRASTRUCTURE

The Phase 1 proposed building development shown in Figure 5.10 requires new hot and chilled water distribution to each of the proposed buildings. Phase 1 will extend the distribution system west on East 5th St from manhole 2 to Houston St, south on Houston to Oak, east on Oak connecting to manhole 20, and add new manholes as illustrated in Figure XXX. New buildings being added on the northeast quadrant of campus (A-2, A-3, P-2, Challenger Center, Administrative Services) will be receive heating and cooling from individual building boilers until Phase 2 is completed. The Central Energy Plant has two main hot water distribution pipes leaving the plant, a newer 8" and a 12" pipe that is maintained as standby. The Phase 1 building growth may require using the standby distribution piping during peak periods to prevent excessively high pipe velocities until the distribution piping in Phase 2 has been installed. The Phase 1 building growth does not require the upsizing of any of the existing chilled water mains.

FIGURE 5.10 PHASE 1 DISTRIBUTION INFRASTRUCTURE



LEGEND

- Phase 1 Building
- Existing Heating Hot Water
- Existing Chilled Water
- Existing Utility Pits
- Phase 1 Chilled/Heating Hot Water
- Phase 1 Utility Pit
- Limits of HW/CW Utilities

0’ 500’

N

PHASE 2 & 3 - FUTURE DISTRIBUTION INFRASTRUCTURE

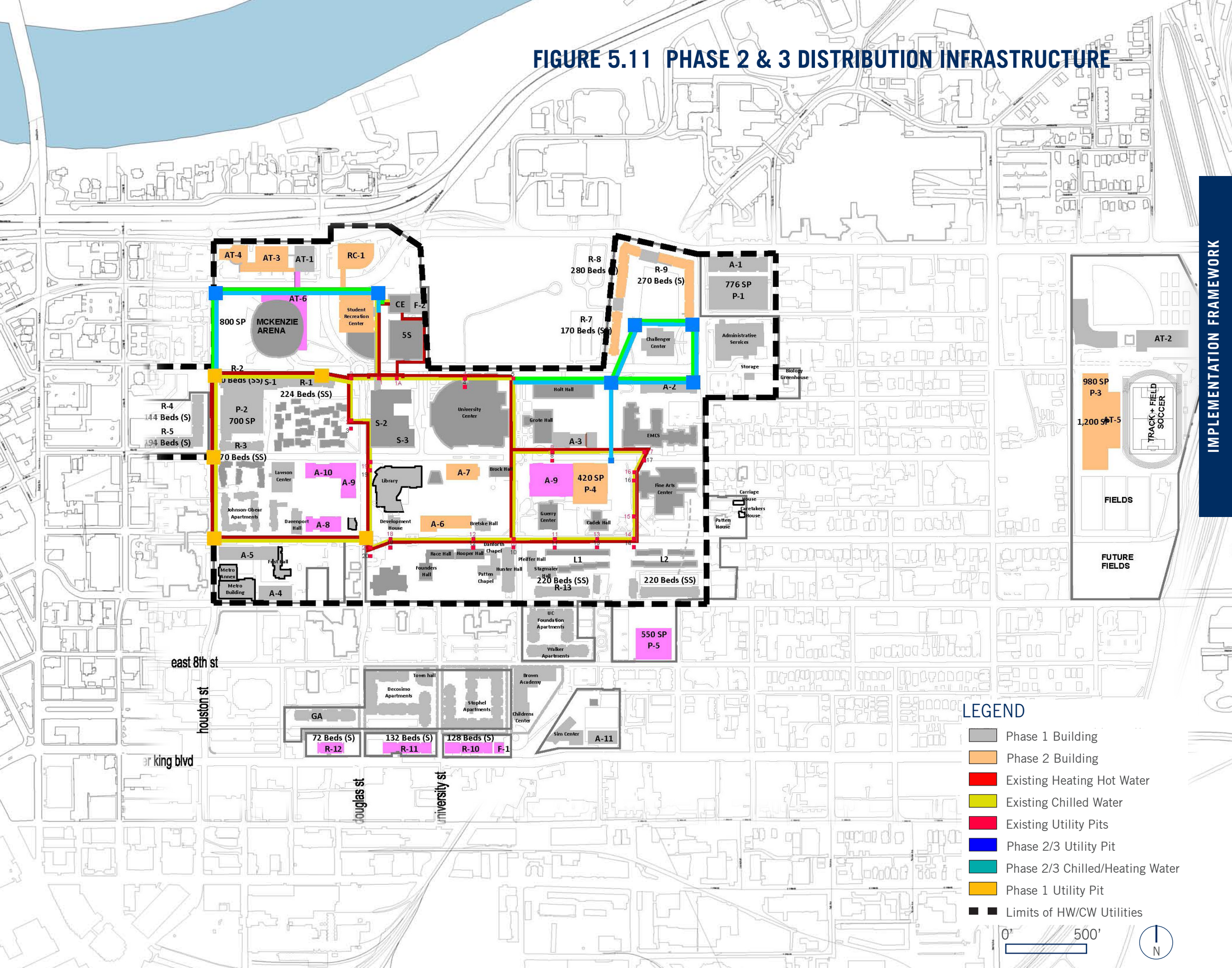
FUTURE DISTRIBUTION INFRASTRUCTURE PHASE 2

The Phase 2 proposed building development requires new distribution to each of the proposed buildings. Phase 2 will extend the distribution system east on East 5th St to Palmetto, north to East 4th St looping through the greenway and back to East 5th St; will extend distribution north from manhole 8 at Vine St following a path along the greenway to East Fifth and will extend distribution from the Central Energy Plant west along East 4th St to Houston and south along Houston connecting to the distribution system added in Phase 1, as illustrated in Figure XXX. The Phase 2 building growth does not require the upsizing of any of the existing mains as the pipes are sized for additional capacity.

FUTURE DISTRIBUTION INFRASTRUCTURE PHASE 3

The Phase 3 proposed building development requires new distribution to each of the proposed buildings, but will not add any additional central distribution network. The Phase 3 building growth does not require the upsizing of any of the existing mains as the pipes are sized for additional capacity.

FIGURE 5.11 PHASE 2 & 3 DISTRIBUTION INFRASTRUCTURE



PHASE 1, 2 & 3- ELECTRICAL INFRASTRUCTURE

PHASE 1 (ELECTRICAL)

Extensive modification of the existing medium voltage (12.47kv) electrical distribution system is to be completed during Phase One of the facilities build out. In addition to the existing feeders F12A and F12B, new feeders F12C and F12D are to be incorporated into the existing distribution looped system. In conjunction with the addition of new feeders, a second Main Incoming Switchgear lineup is to be installed. Main Incoming Switchgear #2 is to be fed from a redundant Chattanooga Electric Power Board overhead service. This service is to feed F12C and F12D feeders. The new primary service will be utilized to transfer load from F12A and F12B and equalize the peak electrical between four feeders. To compliment the two new feeders, additional padmounted sectionalizing switchgear will be required. The new sectionalizing switchgear will transfer between all four feeders, tie-in the secondary EPB feed and will provide a degree of redundancy via selective load transfers. The residential, parking, academic, and student services spaces as previously discussed for Phase One expansion will be connected during this construction period.

PHASE 2 (ELECTRICAL)

The residential, parking, academic, and student services spaces as previously discussed for Phase Two expansion will be connected during this construction period.

PHASE 3 (ELECTRICAL)

The residential, parking, academic, and student services spaces as previously discussed for Phase Three expansion will be connected during this construction period.

FIGURE 5.12 ELECTRICAL INFRASTRUCTURE