



TEXAS  STATE<sup>®</sup>  
UNIVERSITY

*The rising STAR of Texas*

## **2017-2027 UNIVERSITY MASTER PLAN**

AUGUST 2017

MEMBER THE TEXAS STATE UNIVERSITY SYSTEM

# LETTER FROM THE PRESIDENT



Dear Colleagues:

When we began the process of developing a University Master Plan for 2017-2027 in November 2015, we knew that the process would not be as easy as the previous Master Plan since so much had been accomplished over the past 10 years. The need for many of the projects that we implemented between 2005 and 2015 was obvious to both first-time visitors and long-term campus residents alike. The construction of the Undergraduate Academic Center and the Performing Arts Center, the renovations to academic buildings, the addition of three housing complexes, the expansions of

Bobcat Stadium and the Student Recreation Center, the construction of three parking garages, and the gray-to-green effort were all successful.

The challenge we faced in creating the University Master Plan for 2017-2027 was to provide an equally exciting vision for the future of the university as we move closer to becoming a National Research University that remains deeply rooted in providing world-class residential undergraduate teaching. The central themes for this plan for 2017-2027, which addresses the San Marcos Campus, the Round Rock Campus, and Science, Technology, and Advanced Research (STAR) Park, include: increasing academic capacity, increasing research capacity, enhancing the student experience, strengthening pedestrian corridors, augmenting campus support and infrastructure, and building a sense of place.

These themes have led to many of the initiatives you will find described in our University Master Plan. In San Marcos, Texas State projects a completely reimagined Hilltop academic and residential neighborhood, an emerging Science and Engineering district, significantly expanded outdoor recreation spaces, enhanced student life spaces, locations for parking garages, and plans to better connect pedestrians to all of the wonderful parts of our ever-growing campuses. In Round Rock, the University plans the completion of the quadrangle and the addition

of more buildings. At STAR Park, we will design a dense urban fabric that places buildings along a pedestrian friendly “main street” and reflects the entrepreneurial, energetic nature of the research district.

While it is important to look at what can and, in some cases, must be added to the University, this Master Plan also recognizes that it is equally important to take care of our existing buildings and infrastructure.

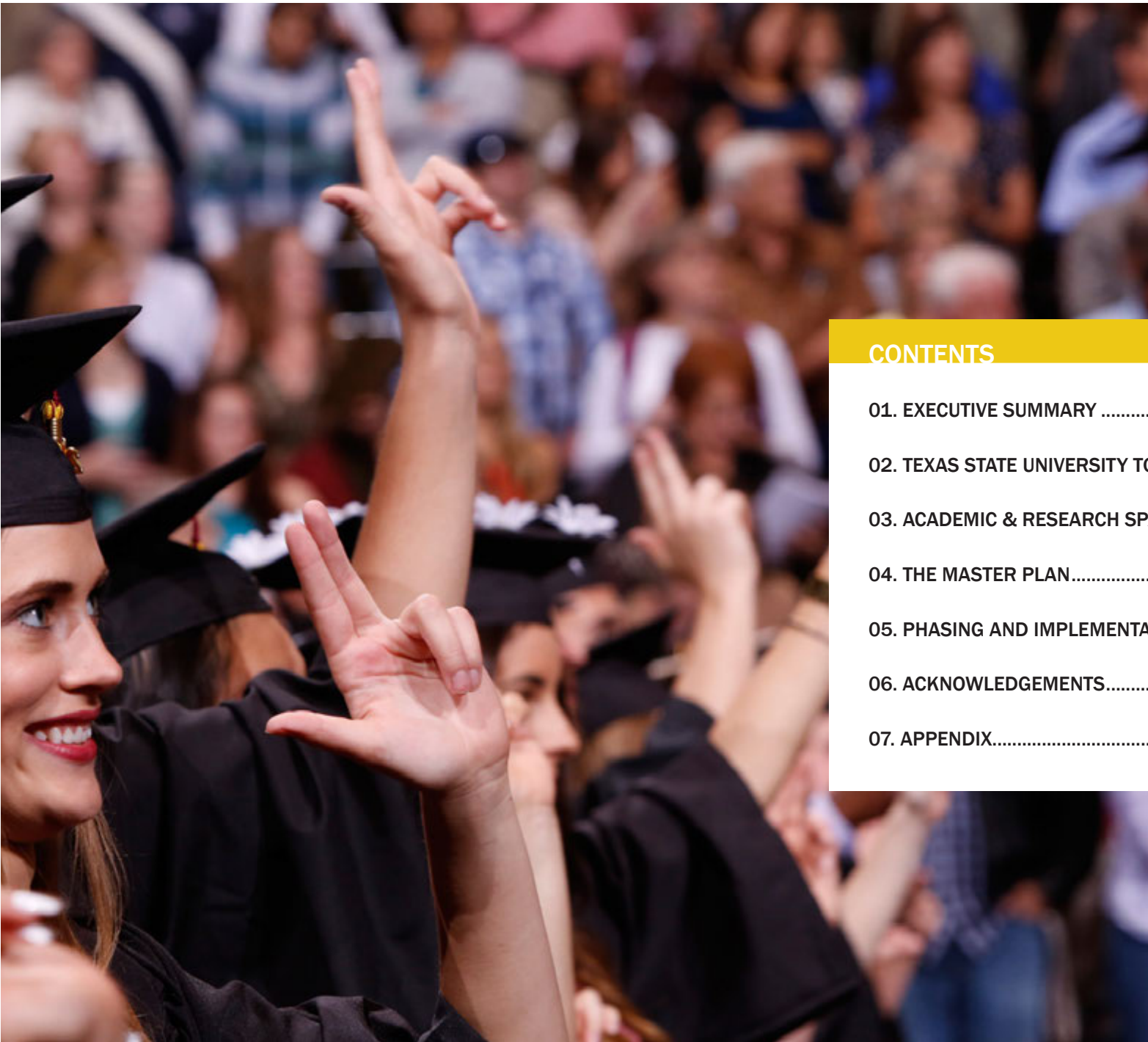
Allow me to express my gratitude to the faculty, staff, and students who participated in workshops and discussions as we created this Master Plan. For the first time, we were able to utilize online tools for virtual participation. Thank you for providing feedback using those online tools over the past year. This Master Plan could not have happened without your insightful ideas for our collective future.

I hope that this Master Plan inspires you about the next 10 years at Texas State. It is consistent with and supports our university’s mission, vision, and strategic plan, and is also flexible enough to accommodate the inevitable change that is typical in the dynamic higher education learning environment that is Texas State University.

Sincerely,

A handwritten signature in black ink that reads "Denise M. Trauth". The signature is written in a cursive, flowing style.

Denise M. Trauth, President



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# 01. EXECUTIVE SUMMARY





## PREFACE

The Texas State University Master Plan defines an exciting vision for the San Marcos and Round Rock Campuses and the Science, Technology, and Advanced Research (STAR) Park. This vision outlines a collective framework to guide the responsible growth and development of Texas State University as a nationally prominent public institution and Emerging Research University (ERU). This planning document culminates an 18-month process guided by input from students, alumni, faculty, staff, the administration, the Board of Regents, the City of San Marcos (City), and community members. Collectively, the University Master Plan is a series of powerful ideas to advance the institution's mission, enhance teaching and

learning, increase research, and improve the student life experience. This vision aligns with the four goals of the 2017-2023 University Plan and incorporates existing Guiding Principles into appropriate strategic and physical responses.

To continue the strong planning tradition at Texas State University, this University Master Plan adopts and expands key initiatives outlined in the 2006-2015 Campus Master Plan and the 2012-2017 Campus Master Plan Update. During the last decade, the University has created new and innovative programs, achieved national recognition in academics and research, enhanced the status of competitive athletics, added more than 2.1 million gross square feet

(GSF) of campus facilities, and increased the student body by more than 10,000 students. Even with these accomplishments, there remain many upcoming opportunities. Foremost among them include managing a burgeoning enrollment, creating appropriate housing capacity, addressing classroom and laboratory space needs, adding new research space, and addressing infrastructure as the university positions itself to become a National Research University.

The decades ahead will surely prove equally as challenging and rewarding as those that have passed. It is with purpose and confidence that Texas State University boldly moves forward with the 2017-2027 University Master Plan.

# INSTITUTIONAL OVERVIEW

Texas State University is one of eight institutions in The Texas State University System. Serving nearly 39,000 students today, Texas State University is the 34th largest institution in the United States. With over 468,000 semester credit hours in fall 2016, Texas State University is the fourth largest institution in Texas. The University began educating students in 1903 as the Southwest Texas State Normal School. These early beginnings as a teacher preparation institution instilled the values of face-to-face education, intimate faculty relationships, and a uniquely residential experience. This ethos remains at the core of the University's mission today even as its research activities and national prominence continue to grow.

Today, Texas State University educates a very diverse student body offering 200 programs at the baccalaureate, master's, and doctoral levels. The University delivers academic programs through nine colleges: Applied Arts, McCoy College of Business Administration, Education, Fine Arts and Communication, Health Professions, Liberal Arts, Science and Engineering, University College, and The Graduate College. The Honors College offers undergraduates a unique research-intensive educational experience that is integrated with baccalaureate degree programs.

From humble beginnings on 11 acres atop Chautauqua Hill, Texas State University now comprises two campuses in Hays and Williamson Counties, and a research park in Hays County. Texas State University has an additional 4,000 acres of academic, agricultural, research, and recreation areas which include Freeman Ranch and University Camp.

## SAN MARCOS

The San Marcos Campus is situated within the burgeoning City of San Marcos and contains more than 491 acres, 209 buildings, and more than 8,000,000 GSF. This campus houses nine colleges and provides a wide range of baccalaureate, master's, and doctoral degrees. It is defined by the natural topographic beauty of the central Texas Hill Country, Spring Lake, and the San Marcos River.

## ROUND ROCK

Texas State University operates a second campus located in Williamson County, 20 miles north of the City of Austin. The Round Rock Campus, on 101 acres with three buildings, offers students upper-level courses leading to bachelor's degrees, master's degrees, and certificate programs. Beginning in 2018, a doctoral degree will be offered on the Round

Rock Campus. Students who complete their degree requirements at the Round Rock Campus earn their degrees from Texas State University.

## SCIENCE, TECHNOLOGY, AND ADVANCED RESEARCH (STAR) PARK

Texas State University also includes the Science, Technology, and Advanced Research (STAR) Park, a 58-acre site situated approximately five miles from the San Marcos Campus. It serves to foster institutional and industry partnerships with the aim of creating knowledge, advancing research, fostering partnerships, and creating business ventures. Operating since 2013, STAR Park is the newest location within the Texas State University enterprise.

# A UNIQUE TIME IN TEXAS

## QUALITY OVER QUANTITY

Unlike much of the rest of the United States, the State of Texas continues to forecast significant public higher education enrollment increases for the next 10 years. Specifically, the Texas Higher Education Coordinating Board (THECB), using Texas State Data Center (TSDC) data, projects a 5.5 percent state-wide increase in public university enrollment by 2027. This increase includes 21,000 additional students within the four institutions serving the Central Texas Region: Texas State University, The University of Texas at Austin, Texas A&M University, and Texas A&M University-Central Texas. Historically, Texas State University has averaged four percent annual growth since 2000. At present, the University is placing greater emphasis on the quality of student over the quantity.

In order to manage growth, the University Master Plan anticipates responsibly growing undergraduate enrollment at 1.5 percent annually and accelerating graduate student growth to three percent annually. In aggregate, this represents a 1.7 percent annual increase for the 10-year planning horizon.

## DIVERSE STUDENT BODY

The projected increase in the enrollment quantity will also bring an increase in both quality and diversity of students. Texas State University will continue to be among the preferred in-state destinations for upper quartile, high acuity incoming freshman students. In addition, the University is poised to achieve minority-majority status, attracting an increasingly diverse student body, including many students of African American and Hispanic origin and many first-generation college students. These future student cohorts will require robust social and academic support structures, tailored student life amenities, dynamic learning spaces, and strong faculty relationships for success.

## A GROWING HOST COMMUNITY

In parallel to continued university growth, the City of San Marcos projects 8 percent annual growth. Located in Hays County, San Marcos is among the fastest growing communities in Texas and in the United States. It offers nearly equidistant access to the thriving economies of both Austin and San Antonio via the Interstate Highway 35 (IH-35) corridor. San Marcos generally offers a lower cost of living, lower than average unemployment, and the notable natural beauty of Central Texas Hill Country. Texas State University has a unique opportunity to help facilitate dynamic new connections between institutional and municipal assets to create a world-class university town. Further, both entities will need to balance growth and cooperate to retain the unique natural amenities and physical setting that define San Marcos. These will remain central challenges to the leadership of the University and the City.





## **NEW RESEARCH TRAJECTORY**

Texas State University was granted ERU status in January of 2012 by the State of Texas. This change in classification makes the institution eligible for several additional state-sponsored funding streams. Two major funding programs include the Texas Research Incentive Program (TRIP) and the National Research University Fund (NRUF). If Texas State University is successful in achieving and maintaining the momentum and growth of the past decade, it is poised to become a top-tier research university in Texas. Seven other ERUs are also competing for top-tier status: Texas Tech University, the University of Houston, the University of North Texas, and the University of Texas campuses in Dallas, Arlington, San Antonio, and El Paso.

The implications of this growth in research for Texas State University and the University Master Plan are important. In aggregate, they include adding approximately 100 new principal investigators (PIs) and nearly doubling the National Science Foundation (NSF) total reported research expenditures to reach an \$86 million target. This represents a 5 percent annual increase in research activity over the next decade.

# 2017-2023 TEXAS STATE UNIVERSITY PLAN

## OUR MISSION

Texas State University is a doctoral-granting, student-centered institution dedicated to excellence and innovation in teaching, research, including creative expression, and service. The University strives to create new knowledge, to embrace a diversity of people and ideas, to foster cultural and economic development, and to prepare its graduates to participate fully and freely as citizens of Texas, the nation, and the world.

## OUR SHARED VALUES

In pursuing our mission, we, the faculty, staff, and students of Texas State University, are guided by a shared collection of values:

- Teaching and learning based on research, student involvement, and the free exchange of ideas in a supportive environment;
- Research and creative activities that encompass the full range of academic disciplines—research with relevance, from the sciences to the arts, from the theoretical to the applied;
- The cultivation of character, integrity, honesty, civility, compassion, fairness, respect, and ethical behavior in all members of our university community;
- A diversity of people and ideas, a spirit of inclusiveness, a global perspective, and a sense of community as essential conditions for campus life;
- A commitment to service and leadership for the public good;
- Responsible stewardship of our resources and environment; and
- Continued reflection and evaluation to ensure that our strengths as a community always benefit those we serve.

Approved by the Board of Regents on February 16, 2017, and by the Texas Higher Education Coordinating Board on February 24, 2017



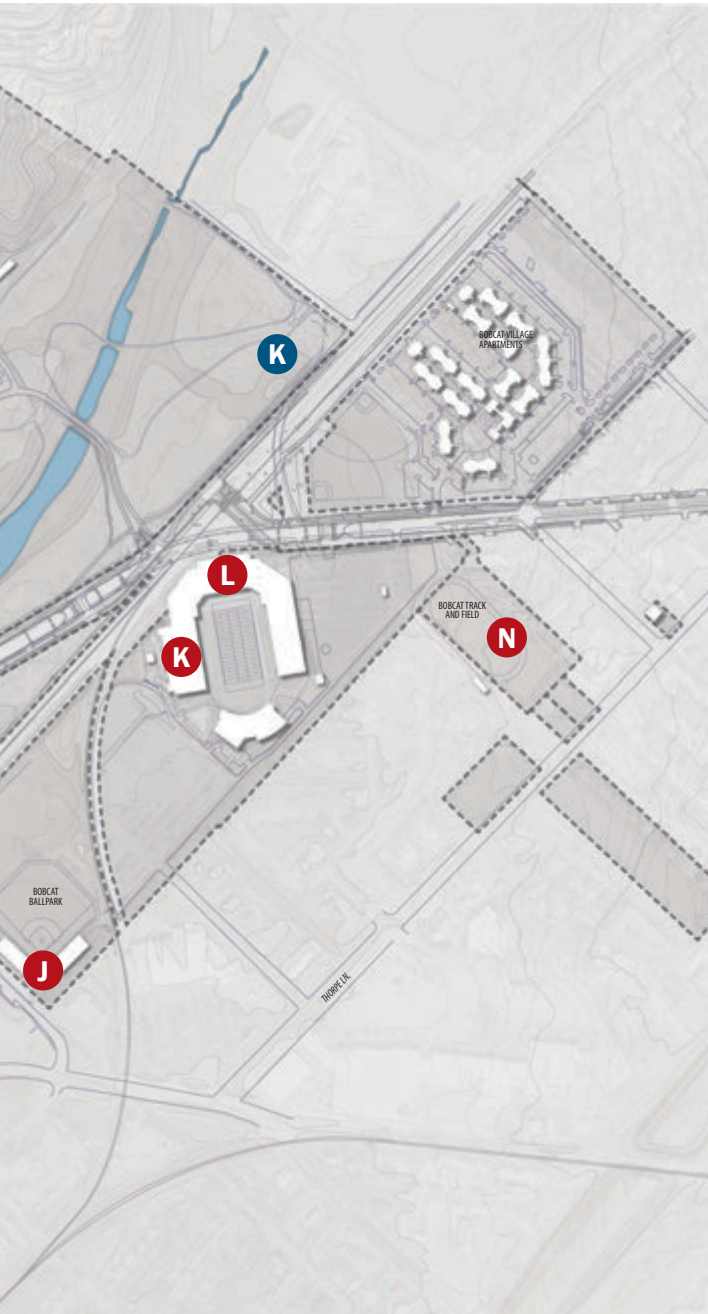


## OUR GOALS

- 1** Promote the success of all students.
- 2** Offer high quality academic and educational programming.
- 3** Achieve significant progress in research and creative activity as measured by national standards.
- 4** Provide the necessary services, resources, and infrastructure to support the University's strategic direction.



# A TRADITION OF PLANNING



## NEW CONSTRUCTION PROJECTS COMPLETED SINCE 2005

- A** Speck Street Garage
- B** Student Recreation Center Expansion and Renovation
- C** Family and Consumer Sciences Addition and Renovation
- D** Falls and Sayers Residence Halls
- E** Biology Research and Agriculture Greenhouses
- F** Chautauqua and Gaillardia Residence Halls
- G** Undergraduate Academic Center
- H** Performing Arts Center
- I** Edward Gary Street Garage
- J** Baseball and Softball Stadium Complex
- K** Bobcat Stadium: Fields West Side Complex
- L** Bobcat Stadium: North Side Complex
- M** Matthews Street Garage
- N** Bobcat Track and Field Stadium

## LANDSCAPE AND INFRASTRUCTURE

- A** Bobcat Trail Mall
- B** Concho Green
- C** Cogeneration Plant Expansion
- D** South Chill Plant

## PROJECTS UNDER CONSTRUCTION AND RENOVATION SINCE JANUARY 2016

- A** Albert B. Alkek Library Renovation
- B** Jones Dining Center Renovation
- C** Joann Cole Mitte Renovation
- D** Angelina and San Gabriel Residence Halls
- E** Roy F. Mitte Renovations
- F** Sabinal Renovation
- G** University Events Center
- H** Bruce and Gloria Ingram Hall
- I** Retama Residence Hall Renovation
- J** LBJ Student Center Renovation and Expansion
- K** Campus Recreation Sports Fields
- L** Willow Hall (Round Rock Campus)
- M** Archives and Research Center (STAR Park)
- N** STAR One Expansion (STAR Park)
- O** Infrastructure Research Laboratory (STAR Park)

# METHODOLOGY AND PROCESS

## THREE PHASES

The University Master Plan was conducted in three phases over 18 months spanning from late 2015 through mid-2017. These phases included Discovery and Analysis, Planning Alternatives, and Documentation. Each task was sequential and iterative, building upon consensus and cumulative decision-making.

## TRANSPARENCY AND INCLUSION

By design, Texas State University established an inclusive, multi-tiered process consisting of standing committees, focus groups, open forums, and online engagement. This process involved widespread participation and garnered support from a large cross-section of the institution and the larger community. More importantly, the University Master Plan benefitted from hundreds of individual voices including a board member and staff from The Texas State University System, students, staff, faculty, municipal leaders, and community members. As a result of this collaborative process, the University Master Plan has engendered widespread understanding and support.

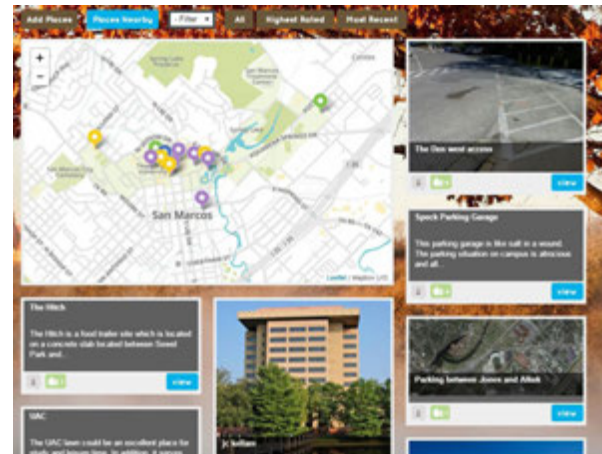
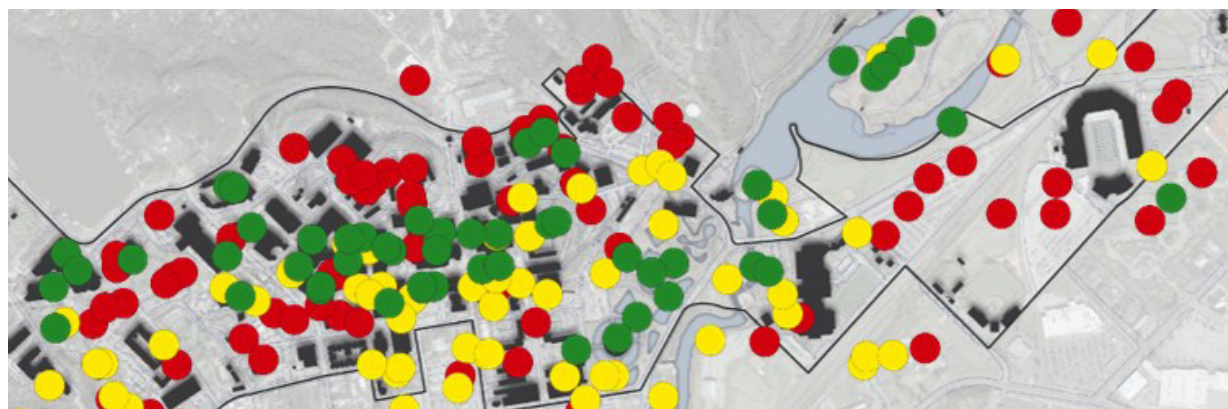
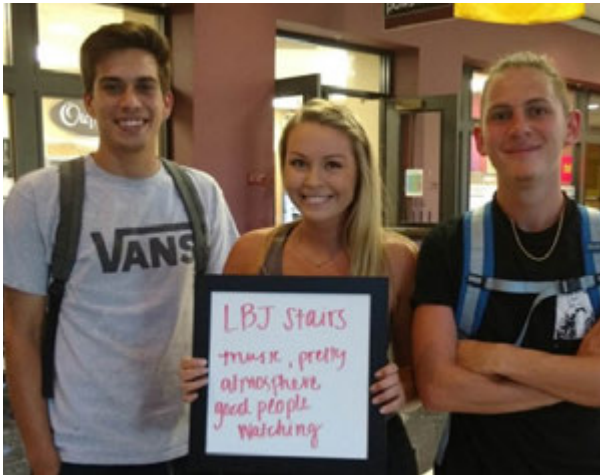
## STANDING COMMITTEES

- Executive Committee (President and President's Cabinet)
- Campus Facilities Planning Committee
- Texas State University Master Plan Committee



## FOCUS GROUPS

- Research Faculty and Staff
- Academics
- Institutional Research and Enrollment Management
- Faculty Senate
- Council of Academic Deans
- Council of Chairs
- Staff Council
- Student Government
- Residence Hall Students
- Commuter Students
- Student Affairs
- Alumni Affairs
- Transportation, Parking, and Public Safety
- Information Technology
- Facilities and Infrastructure
- Recreation and Athletics
- Housing and Dining
- Residence Life Managers
- Residence Hall Association
- Student Health Center
- The Meadows Center
- City of San Marcos
- STAR Park Strategic Planning Committee



## ONLINE ENGAGEMENT

*txstatemasterplan.com*

Texas State University developed an interactive master planning website to engage faculty, students, staff, alumni, and other interested stakeholders. This tool was successfully used throughout the planning horizon to expand communication, collect ideas, and provide feedback to a broad constituency. The interactive website was particularly useful to continue the conversation started during on-campus and in-person visits. The website featured a number of robust tools including an Idea Wall, Surveys, Interactive Mapping Tool, and featured detailed subjects including academics and research, recreation, sustainability, campus culture, safety, learning environments, housing, dining, and transit.

During the course of the University Master Plan, the online platform was visited by thousands of people, generating hundreds of useful ideas. More importantly, the website allowed critical feedback on proposed planning ideas during each phase of the project. Many of these ideas were incorporated into the physical master plan.

# GUIDING PRINCIPLES

The Guiding Principles for the University Master Plan, based primarily upon principles for the San Marcos Campus, will shape the development and improvement of the campus environment and facilities. They are the foundation for the master planning effort and will be incorporated into future construction projects. The development of these principles was consensus-based with input from faculty, staff, students, the Campus Facilities Planning Committee, and the President and her Cabinet. The principles detailed below are predicated upon the University's mission statement.

## FIVE PRINCIPLES

Based on the University's mission statement, the following Guiding Principles serve as the philosophical underpinning of the University Master Plan. More importantly, they are intended to be used as a counterweight to implementation activities—balancing the demands of the present while preserving values of the future. They have successfully guided past planning efforts and are herein reinterpreted to reflect this unique time and place.

### IDENTITY

- Provide visually unified and aesthetically pleasing campus that allows the University to showcase its status of excellence.
- Preserve the character of the original academic quadrangle and any potential expansion as a way of cultivating the small campus atmosphere.
- Create a sense of arrival to the campus distinguished by entrances with appropriate signage and borders that are consistent with the character of the campus and compatible with adjacent neighborhoods.

### COMMUNITY

- Continue to provide amenities for the resident college student, while responding to the needs of the non-resident student population.
- Identify areas for students, faculty, and staff to congregate in order to create a sense of community and to stimulate social and intellectual interaction.
- Enhance the relationship between the University and the San Marcos community by emphasizing responsible land use.

### NATURAL ENVIRONMENT

- Accentuate the unique physical characteristics of the campus in creating an identity and image for the University.
- Provide landscape design guidelines to enhance the beauty of the natural environment, provide for economy of operation, conserve resources and minimize environmental impacts, and drive future landscape design decisions.
- Preserve and protect existing natural areas where relaxation, academic instruction, informal discussion, and social interaction can take place.
- Provide the appropriate visibility and accessibility needed to create a secure environment.





## ARCHITECTURE

- Adhere to architectural design guidelines related to scale, materials, color, and design objectives that will achieve a varied but cohesive architectural style that enhances the character of the University and respects its history.
- Plan new academic buildings in close proximity to existing academic buildings to make the campus more pedestrian friendly for students.
- Anticipate and provide plans to address infrastructure requirements of the campus in the least intrusive manner possible.
- Assure that architectural designs and building sites give consideration to energy efficiency, safety, and environmental issues.

## MOBILITY

- Manage University transportation and movement of people to further the mission of the campus and contribute to the educational, intellectual, and physical development of the students, faculty, and staff. The primary goal is for students and faculty to reach class on time.
- Recognize that the University is a member of the regional community, and consider its impact on its neighbors and their access to the campus.
- Provide a campus that is conveniently and safely accessible by foot, bicycle, automobile, and bus.
- Provide a safe and reasonable flow of traffic with preferred vehicular routes clearly identified.
- Provide parking, conveniently located, or served by bus.
- Continue to create an environment that is accommodating for persons with disabilities.
- Enhance the experience of guests and first-time visitors when entering the campus, finding parking, and navigating the campus.

# PLANNING ASSUMPTIONS

During the last decade, many significant achievements have occurred at Texas State University. The institution has successfully orchestrated an increase in national academic and research reputation, athletic prowess, student quality and quantity, and overall institutional standing. Looking ahead, the University will be challenged with balancing various competing interests to maintain this momentum. Foremost among those challenges include augmenting existing public funding, the need to cultivate new partnerships, limited campus land availability, scarcity and cost of urban land, balancing parking resources, adding academic and research space, and meaningful integration of academic disciplines.

The University Master Plan reinforces the supporting program elements for the planning horizon 2017-2027:

## UNDERGRADUATE ENROLLMENT

Maintain a commitment to undergraduate education consistent with Texas State's mission to serve the needs of Texans yet manage undergraduate growth. The annual enrollment trajectory for undergraduate students will be 1.5 percent. The 2015 fall semester baseline enrollment was 33,480 undergraduate students.

## MASTER'S AND DOCTORAL ENROLLMENT

Increase graduate enrollment as a percentage of total, as resources permit, consistent with Texas State's desire to be a national research university. The annual enrollment growth trajectory for master's and doctoral students will be 3 percent. The 2015 fall semester baseline enrollment was 4,499 graduate students.

## ACADEMIC INSTRUCTIONAL MODALITY

Increase access to in-state students by providing selected undergraduate and graduate programs via distance education. The University will develop distance education programs in areas where Texas State University is an appropriate provider and where programs can be offered with the highest level of quality.

## SPACE UTILIZATION, EDUCATION, AND GENERAL SPACE NEEDS

Texas State University has a burgeoning student population and among the highest utilized classroom/teaching laboratory spaces in the State of Texas. To compound this situation, the University has not been able to add space commensurate with this growth. Consequentially, this has generated two issues. First, a lower assignable square footage (ASF) per full-time equivalent student (FTE), and second, an overall space shortage. Planning assumptions addressing space utilization include:

- Accommodate the addition of academic programs as prioritized in the University Strategic Plan.
- Monitor utilization rates as recommended by the THECB. At present, state-wide targets have been established at 38- and 25-weekly room hours for classrooms and teaching laboratories, respectively.
- Increase current space allocation levels of 64 ASF/FTE toward a target of 78 ASF/FTE which is below the THECB target of 91 ASF/FTE.
- Maintain one centrally located library on the San Marcos Campus.

# PLANNING ASSUMPTIONS CONTINUED

## RESEARCH TRAJECTORY

Research will remain an integral part of the life of the University, and the emergence of a stronger culture of research will be reflected in increasing faculty expectations for research space. Extramural funding for research is expected to grow. The need for more and improved research space will accelerate. In order to reach NRUF status the University must increase its restricted research expenditures to \$45 million or more annually.

The number of Principal Investigators will increase and the NSF total reported expenditures will increase from \$47 million to a new target of \$86 million. This corresponds to an increase in restricted research expenditures to \$52 million from \$27 million.

Future research space will be included in future academic and mixed-use facilities rather than in a stand-alone research building.

## HOUSING AND DINING

Texas State University will continue to offer quality student life amenities and a unique residential experience. At present, nearly 6,900 students live on the San Marcos Campus, primarily freshmen. There is demand for returning students to remain on campus.

A housing demand model will be created for freshman housing and for returning students. Currently 92 percent of the freshman class reside in campus housing. Approximately 80 percent of those students return as sophomores. Texas State University desires to house 33 percent of those returning students.

Texas State University supports a variety of unit types and price points for the residential community. New construction should be traditional unit types with shared community bathrooms to allow for more affordable prices for students. Remaining housing stock will be evaluated for renovation and/or replacement to ensure a range of price points will be available.

Future dining construction will need to be planned in conjunction with the expansion of the residential and academic community.

## TRANSPORTATION AND PARKING

The campus transportation and parking systems are vital and interdependent and serve as a functional necessity. The current system contains 11,200 parking spaces and the Bobcat Shuttle serves approximately 28,000 daily transit boardings during the fall and spring semesters. As the campus enrollment continues to increase, additional stresses will be placed on these assets. Looking forward, the University Master Plan will pursue the following opportunities:

- Continue to migrate parking spaces away from the campus core to larger perimeter facilities. Place a priority on visitor spaces and parking resources in proximity to high profile public destinations.
- Identify strategic locations for additional parking structures with a minimum parking count of 750 cars in each garage.
- Continue providing transit service from remote parking resources directly to the campus core.

## COMPETITIVE ATHLETICS

Texas State University competes at the NCAA Division I Football Bowl Subdivision (FBS) level within the Sun Belt Conference. Recent renovations and additions to both the University Events Center (Strahan Arena) and Bobcat Stadium have allowed the competitive athletics programs to reorganize, expand, and flourish. As a result of these strategic investments, the athletics programs will require mostly minor facility interventions with some new space additions in the next decade including:

- Upgrade tennis, track, and football facilities
- Improve athletic academic support facilities
- Add cross country course, indoor practice facility, and student athletic housing



## STUDENT RECREATION

The University operates robust intramural, club, and recreational sports programs. A substantial addition and renovation of the Student Recreation Center has satisfied nearly all of the indoor recreational space needs for the next decade. Outdoor recreation fields, however, remain one of the highest demands, least accommodated student needs. After peer benchmarking, user analysis, and in support of an improved residential student experience, the University Master Plan recommends the following:

- Add dedicated outdoor recreation fields for club, intramural, and recreational sports. Additional fields will be built at the former golf course site.
- Retain current outdoor recreation operations on the west side of campus adjacent to the Student Recreation Center and on the east side of campus near the Bobcat Village Apartments.

# PROGRAMMATIC SUMMARY

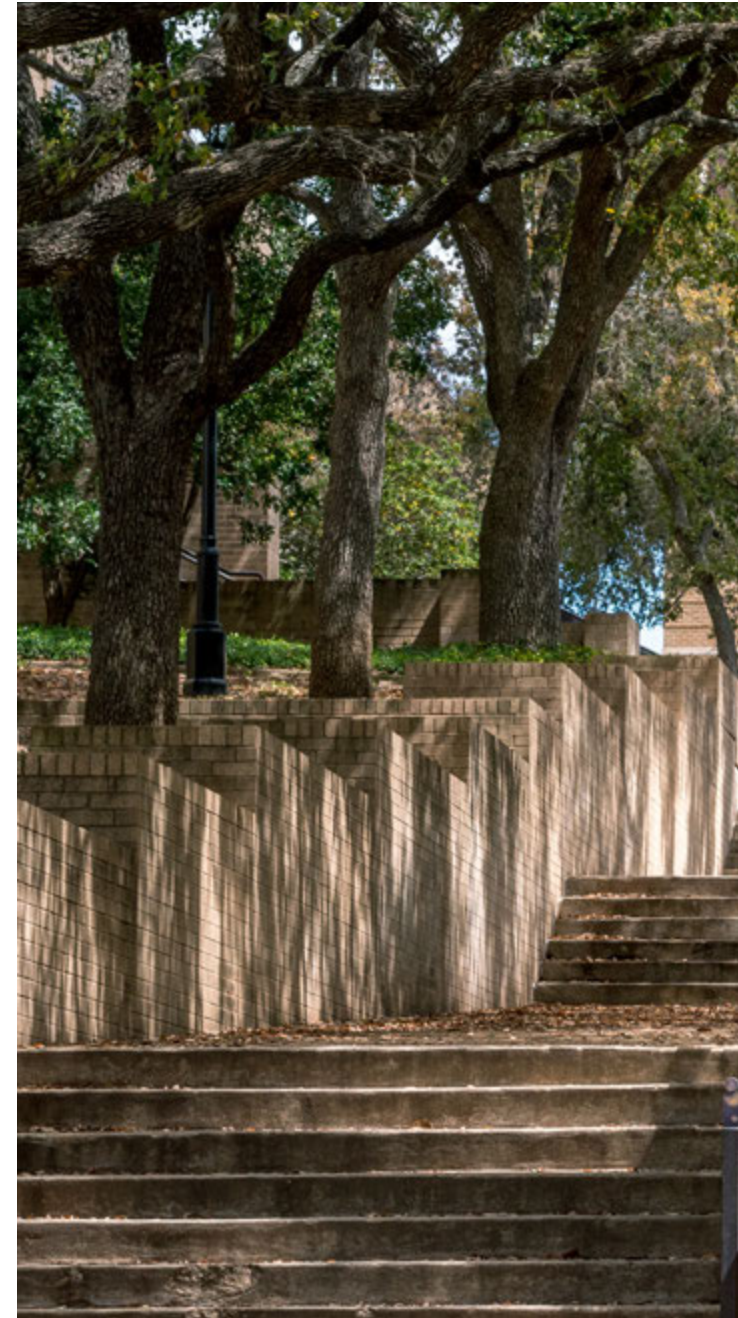
## SAN MARCOS CAMPUS

### INTRODUCTION

The San Marcos Campus contains both a majority of the physical square footage and land area between the San Marcos Campus and the Round Rock Campus. The campus overlooks and connects to the City of San Marcos. This campus hosts the vast majority of the total student population and contains all of the residential students. Programmatically, the San Marcos Campus is also home to all nine colleges and includes the full complement of administrative and student life functions. The campus is defined by consistent architectural materiality and expression, steep topography

and natural vegetation, and the unique ecosystem of Spring Lake and the San Marcos River.

As the University continues to face growth pressures, several significant physical challenges lie ahead: the strategic use of urban land, infill site availability, increasing campus density, and the delicate balance of enhancing campus order and character. The following summary represents executive-level recommendations. Additional narrative and graphics are included in Chapter 4.





# SAN MARCOS CAMPUS GOALS AND RECOMMENDATIONS

## GROW SUSTAINABLY

- Selectively grow undergraduate enrollment at 1.5 percent annually
- Accelerate graduate growth to three percent annually
- Increase current space allocation levels from 64 ASF/FTE to a target of 78 ASF/FTE

## INCREASE ACADEMIC CAPACITY

- Create interdisciplinary facilities that integrate academic and research activities across various colleges and disciplines
- Build additional classroom and teaching laboratory spaces
- Build modest support spaces as the academic, research, and student enterprises continue to grow
- Invest in up to 1.25 million GSF of additional Educational General (E&G) space to address campus-wide spatial shortages.
  - Bruce and Gloria Ingram Hall (166,851 GSF)
  - New Hilltop Academic and Research building (221,000 GSF)
  - New Music building (110,000 GSF)
  - New General Purpose Academic and Research Building at the former Music building site (180,000 GSF)
  - Expansion of the Performing Arts Center (65,000 GSF)
  - University Events Center Expansion (78,440 GSF)

## DOUBLE RESEARCH ACTIVITY

- Grow funded research by five percent annually over the next decade
- Add up to 100 additional Principal Investigators (PIs)
- Increase NSF total reported expenditures from \$47 million to a target of \$86 million and restricted research expenditures to \$52 million from \$27 million
- Diversify the number of PIs conducting research activity and incentivize greater financial productivity per PI
- Incorporate up to 303,000 GSF of additional research space into future academic and multidisciplinary facilities
- Reconfigure the first floor of Spring Lake Hall into an Interpretive Research Center



## REPOSITION EXISTING ASSETS

- Repurpose Elliott Hall for classrooms and faculty office spaces (37,293 GSF)
- Reposition Nueces Hall for the Testing Center, classroom and office space, and academic transition space
- Reconfigure Encino Hall after programmatic migration to the Round Rock Campus
- Reconfigure Roy F. Mitte building for the civil engineering program and other engineering programs
- Remove all or a portion of Butler Hall for a new Music building
- Relocate the President's House for future academic and research expansion. Possible locations include: corner of Holland and Academy Streets and off campus
- Repurpose the University Press/West Warehouse for the University Police Department
- Repurpose the Testing Center space in Commons as swing space
- Reconfigure Jowers Center for Health and Human Performance and Dance after Athletics relocates to the University Events Center

## ENHANCE THE STUDENT EXPERIENCE

- Add 1,025 new beds to accommodate first-time, full-time freshman students and 33 percent of returning sophomore students and to replace beds being removed due to demolition or renovation in existing halls
- Develop a residence hall complex on the Hilltop site in concert with a robust multidisciplinary academic and research facility
- Renovate beds at Retama, Blanco, Lantana, Butler, Bexar, and Sterry Hall sites
- Increase dining capacity to meet current and future demand
- Remove Arnold, Smith, Burleson, and Hornsby Halls
- Expand the LBJ Student Center
- Expand the Student Health Center
- Create dedicated recreation facilities at the Spring Lake property
- Construct a cross country course that can be used by students, faculty, and staff for wellness and recreation
- Upgrade the tennis, track, and football facilities
- Improve Athletic academic support space at Harris Dining Hall
- Develop a Learning Commons in the Albert B. Alkek Library and renovate other areas of the building
- Construct an Alumni Center
- Create Student Athletic housing
- Create an Indoor Practice Facility

## STRENGTHEN PEDESTRIAN CORRIDORS

- Redevelop areas of campus into vibrant, integrated-use neighborhoods
  - Hilltop
  - Performing Arts
  - Science and Engineering
- Maintain the east-west quadrangle and mall as the dominant campus organizational element
- Enhance the east-west pedestrian connector from Supple Science to Blanco Hall
- Introduce a diagonal pedestrian connector between the redeveloped Hilltop and the Science and Engineering neighborhoods
- Strengthen connections with downtown San Marcos and improve north-south pedestrian connections on:
  - North Guadalupe Street
  - North LBJ Drive
  - Edward Gary Street
- Complete Bobcat Trail from the Undergraduate Academic Center to Comanche Street
- Create a pedestrian connector from Bobcat Stadium Parking Lot and Mill Street Parking Lot to the Recreation Fields at Spring Lake

## SIMPLIFY PARKING AND TRANSPORTATION

- Migrate parking from the campus core to perimeter facilities and eliminate small, centrally located surface parking lots
- Expand the parking system by up to 2,000 spaces with the construction of three parking structures (a minimum net parking increase of 750 cars each), using three of the following options:
  - East side of campus at corner of Aquarena Springs Drive and Charles Austin Drive including a multi-modal transportation facility
  - Northwest side of campus at corner of Holland and Academy Streets
  - Southwest side of campus on Lindsey Street
  - Land adjacent to the San Marcos Campus that is currently not owned by the University
- Create or expand visitor parking adjacent to high profile public destinations
- Provide transit service from remote parking resources directly to the campus core





## IMPROVE INFRASTRUCTURE

- Upgrade chilled water systems for continued east and west campus growth
- Improve north, Hilltop, and south utility corridors to increase redundancy and capacity
- Create radial distribution circuits for the electrical system
- Create distributed electrical emergency generation system
- Develop a new well, pumping station, and ground storage tanks to meet the increased potable water demand
- Renovate boiler plant, pumps, tanks, and related infrastructure
- Replace aging infrastructure including:
  - Chillers
  - Air handlers
  - Steam coils
  - West Plant





## PROGRAMMED BUILDINGS

- A** Parking Garage at West Holland Street
- B** Bruce and Gloria Ingram Hall
- C** Student Health Center Expansion
- D** LBJ Student Center Expansion
- E** Academic and Research #1 (Hilltop Site)
- F** Residence Hall #1 (Hilltop Site)
- G** Residence Hall #2 (Hilltop Site)
- H** Academic and Research #2 (Current Music Building Site)
- I** Residence Hall #3 (Lantana Hall Site)
- J** Residence Hall #4 (Sterry Hall Site)
- K** Residence Hall #5 (Butler Hall Site)
- L** Music Building (Butler Hall Site)
- M** Performing Arts Center Expansion
- N** University Events Center
- O** Alumni Center
- P** Parking Garage at Charles Austin and Aquarena Springs Drive
- Q** Parking Garage at Lindsey Street
- R** Outdoor Recreation Fields Restrooms

### ILLUSTRATIVE 2027 MASTER PLAN

- Existing Building
- Future Building

# PROGRAMMATIC SUMMARY

## ROUND ROCK CAMPUS

### A GROWING EDUCATIONAL NEED

Texas State University operates the 101-acre Round Rock Campus in Williamson County, north of the City of Austin, proximate to IH-35. Similar to Hays County, Williamson County is experiencing significant annual growth adding more than 80,000 residents in the last five years to a county population of more than 500,000. For Texas State University, this growth trajectory is important—signaling the need for mindful program expansion to meet the higher education demands of Central Texas.

### PROGRAM OVERVIEW

Programmatically, the Round Rock Campus occupies a unique and important function within the University enterprise.

Students there take courses leading to bachelor's and master's degrees. Additionally, the campus offers certifications and continuing education, online, and distance learning opportunities via evening and weekend sessions—delivering vital education for working adults, professionals, and lifelong learners. Increasingly, the campus is an important destination for the region and a portal into the larger Texas State University.

### SUPPORT THE GROWTH OF RESEARCH ACTIVITY

The Round Rock Campus will play a crucial role in growing the funded research portfolio of Texas State University by five percent annually over the next decade.

Support efforts to add up to 100 additional Principal Investigators (PIs) university-wide.

Support efforts to increase NSF total reported expenditures from \$47 million to a target of \$86 million and restricted research expenditures to \$52 million from \$27 million university-wide.

Incorporate a portion of the 303,000 GSF of additional research space needed university-wide into future academic facilities.



NURSING BUILDING, ROUND ROCK CAMPUS

During this 10-year plan, the University's strategic priority is to position the Round Rock Campus to become a focal point for health professions education, while ensuring the community is served for high demand disciplines and professions. To accomplish this addition, the University is orchestrating a multi-phase migration of departments, programs, and clinical functions from the San Marcos Campus to the Round Rock Campus. This migration has several important and positive implications including:

- Increased overall student population
- Increased daytime population
- Increased utilization of classrooms and teaching laboratories, particularly during the day
- Increased demand for additional student services, academic support, and related functions
- Increased demand for student, faculty, and staff amenities
- Increased public-facing clinical functions

### **INCREASE ACADEMIC CAPACITY**

Migrate the Health Professions programs from the San Marcos Campus to the Round Rock Campus in two buildings to frame the quadrangle

- Develop 100,000 GSF Willow Hall
- Develop 100,000 GSF Esperanza Hall

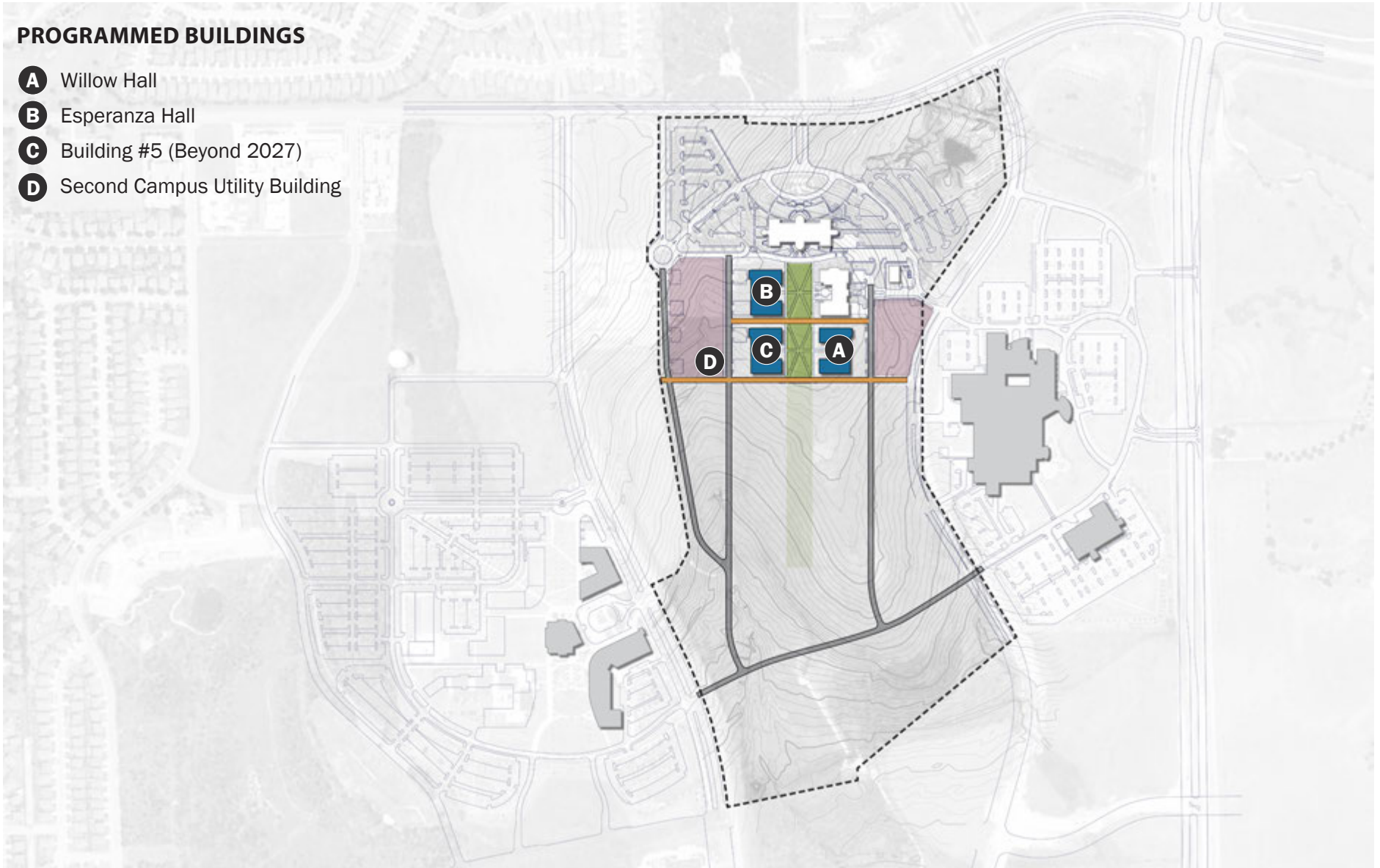
### **AUGMENT CAMPUS SUPPORT AND INFRASTRUCTURE**

- Expand spaces for a testing center and disability services
- Expand the library with collaborative study/work and office space
- Expand materials management space
- Incrementally add surface parking as the population of student, faculty, and staff increases
- Extend chilled water and heating lines from the central plant to Willow Hall and Esperanza Hall
- Connect buildings to existing domestic water, municipal wastewater, and stormwater service line stubs
- Build out the campus road structure
- Build out the Campus Mall



**PROGRAMMED BUILDINGS**

- A** Willow Hall
- B** Esperanza Hall
- C** Building #5 (Beyond 2027)
- D** Second Campus Utility Building



# PROGRAMMATIC SUMMARY

## SCIENCE, TECHNOLOGY, AND ADVANCED RESEARCH (STAR) PARK

The 58-acre Science, Technology, and Advanced Research (STAR) Park is strategically located five miles south of the San Marcos Campus in close proximity to IH-35, an innovation corridor that links science and technology between San Antonio, Dallas, Austin, and beyond. As the Strategic Plan states, STAR Park exists to support Texas State University's research enterprise and economic development mission.

STAR Park serves as a catalyst for collaboration, supporting Texas State University's goal of becoming eligible for distributions from the National Research University Fund (NRUF) by growing the regional ecosystem through activities promoting and supporting innovation, commercialization, and entrepreneurship.

STAR Park is currently home to the first building—STAR One. The balance of STAR Park land area is undeveloped and has few built or natural features that will limit the opportunity to create a state-of-the-art office and research park that is equal to or exceeds the vision and goals set forth by the University administration and the quality of the campus environment expected of potential high quality tenants.

The master plan for STAR Park envisions a dense urban planning model where two- to three-level buildings define exterior space and work in concert with strategically placed walks, richly designed roads, and usable outdoor

space to create a vibrant campus atmosphere. A central "Main Street" is used to organize the park and activate building entrances, giving priority to pedestrian flow in all directions. Parking is situated along this main road to provide convenient parking and drop-off for visitors and to help reduce the need for large expanses of parking that consume valuable buildable area and/or open space and serve as a barrier to interaction.

The master plan also provides a vision for how best management practices (BMPs) can be incorporated into the implementation of a comprehensive rainwater management plan. A key component is the utilization of the site's natural drainage pattern to create an amenity for the campus.

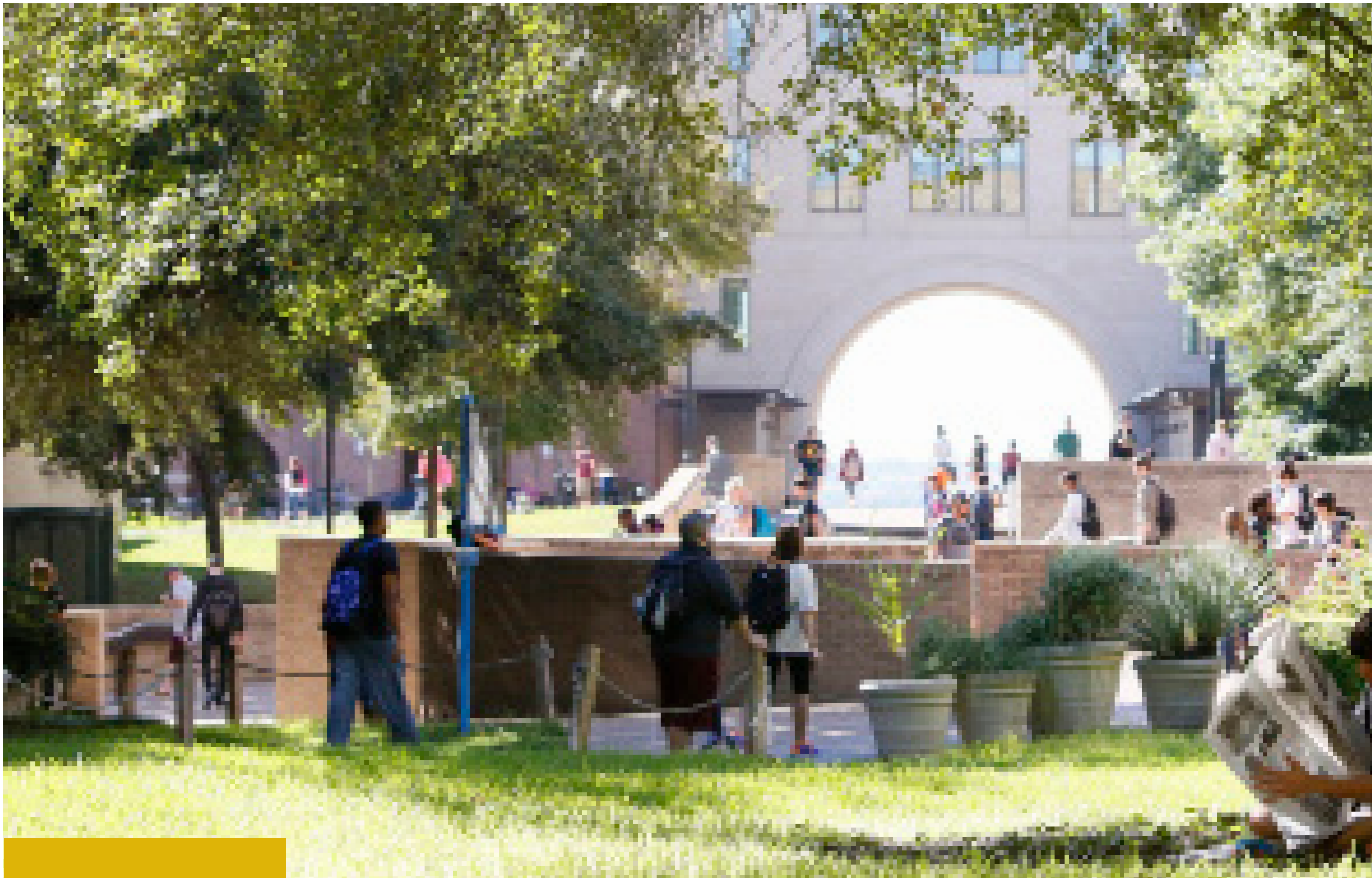
Additionally, the plan articulates an alternative energy strategy to further advance the University's sustainability goals. Most importantly, the physical planning for STAR Park establishes a framework where opportunities for both formal and informal collaboration can occur outside the office or laboratory to advance the mission of Texas State University.

During early visioning sessions for STAR Park, goals were established to provide clear direction for the master planning process. STAR Park will be:

- **Entrepreneurial:** Foster an entrepreneurial ecosystem  
Create programs, policies, and physical assets to support a dynamic innovation, commercialization, and entrepreneurial ecosystem.
- **Nimble:** Operate flexibly and responsively  
Be timely, responsive, and action-oriented in decision-making, client interactions, facilities development, management, and operations. Create programs and physical assets that are adaptable and resilient to change.
- **Collaborative:** Promote accessibility, social interaction, and community  
Be open and flexible to all university and non-university enterprises with the potential to benefit the University. Create a culture of social and professional interactions.
- **Inspirational:** Build a sense of place that reflects the entrepreneurial nature of STAR Park  
Adopt design guidelines to build a sustainable, dense, walkable STAR Park with spaces for social interaction. Be context-aware in development scale, massing, and integration of an inspirational design aesthetic.
- **Sustainable:** Achieve self-sustaining innovation  
Foster innovative processes which allow STAR Park to be open to a wide variety of funding sources to support long-term success.



STAR PARK



## 02. TEXAS STATE UNIVERSITY TODAY



# **SUMMARY OF ANALYTICAL FINDINGS**

## **CROSS-DISCIPLINARY ANALYSIS**

The master planning process employed the talents of many technical disciplines including architects, engineers (civil, mechanical, and electrical), landscape architects, planners (campus, academic, research, city, and space), transportation and parking professionals, data professionals, cost estimators, and student life, athletic, and recreation analysts.

During the early phases of the planning process, a rigorous analysis was conducted to identify major attributes and deficits across the Texas State University enterprise. Dozens of campus components were evaluated ranging from space utilization, facilities condition indexing (FCI), academics and research, infrastructure evaluation, transportation and parking, land use and density, student life, natural systems, athletics, and recreation among others.

## **DIRECTIONAL FINDINGS**

It is the intent of this chapter to highlight relevant planning issues and to foreshadow planning needs. This overlay formed the underpinnings of a strategy to address future investment and help set directionality.

# SAN MARCOS CAMPUS TODAY



## REGIONAL CONTEXT

The San Marcos Campus is the institution's original and founding campus. The metropolitan area of San Marcos, Texas, encompasses approximately 30 square miles and is the county seat for Hays County.

With an estimated population of over 60,000 and an annual growth rate of about 8 percent, San Marcos is one of the fastest-growing cities in the nation according to the United States Census Bureau.

As home to Texas State University and in proximity to both Austin and San Antonio, the City's primary economic sectors include Life Sciences, Clean Technology, Aerospace and Aviation, Advanced Manufacturing and Materials, and Supply Chain Management. The university's research park, Science, Technology, and Advanced Research (STAR) Park, to the southwest of the city, currently provides research and development support for the private sector and entrepreneurs in advanced materials, biotechnology, nanotechnology, clean technology, and alternative energy. With the University's addition of a Ph.D. in computer

science, STAR Park will support entrepreneurs in information management and software systems.

## LOCAL CONTEXT

The City of San Marcos is positioned along the Interstate Highway 35 (IH-35) Corridor, 25 miles south of Austin, Texas, and 50 miles north of San Antonio, Texas. The IH-35 Corridor, linking San Antonio and Austin, Texas, is one of the fastest-developing areas in the United States, fueled by international commerce and transportation from Mexico through the United States to Canada, the high tech boom in Austin, and the military and biotech sectors in San Antonio. The 13 counties that comprise the corridor had an aggregate population of 4.27 million people in 2014.

Affordable home prices in the San Marcos area and its position in the geographic center of the IH-35 Corridor ensure that the area will continue to see growth in the future.

The San Marcos Campus occupies 491 acres immediately adjacent to and north of downtown San Marcos.



# NATURAL FEATURES

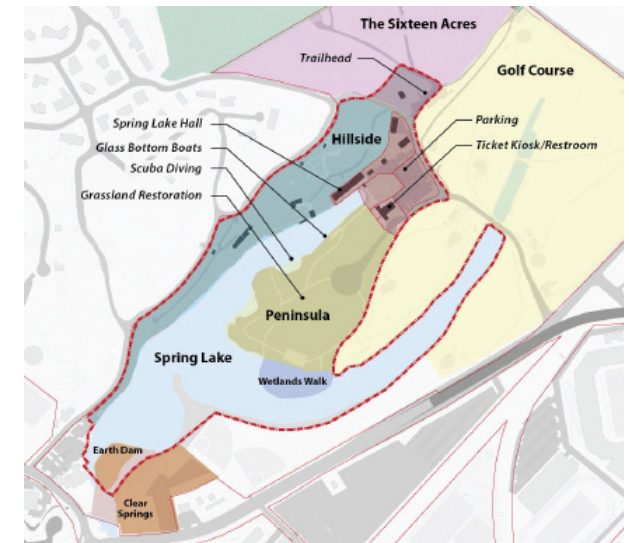
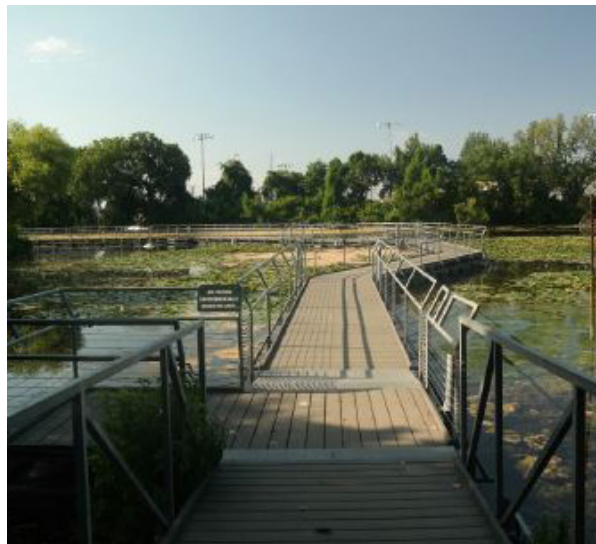
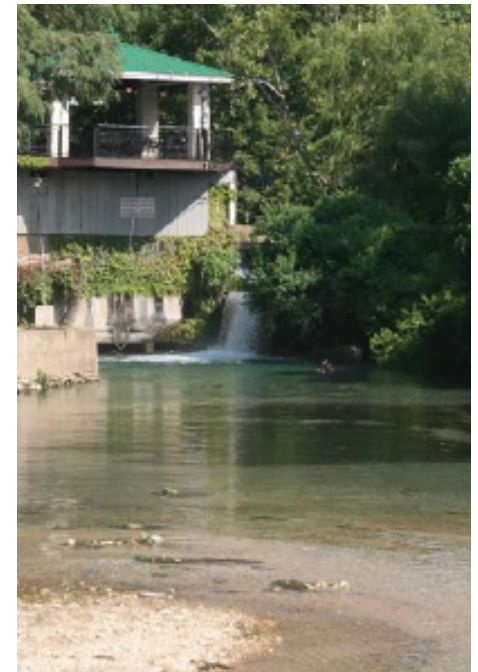
## SPRING LAKE

As part of the San Marcos Campus, the Spring Lake area encompasses approximately 40 acres and includes the natural features of Spring Lake, the San Marcos Springs, and the headwaters of the San Marcos River. It is one of the most environmentally and archaeologically significant sites in the entire country, with archeological artifacts showing the existence of human settlement going back thousands of years.

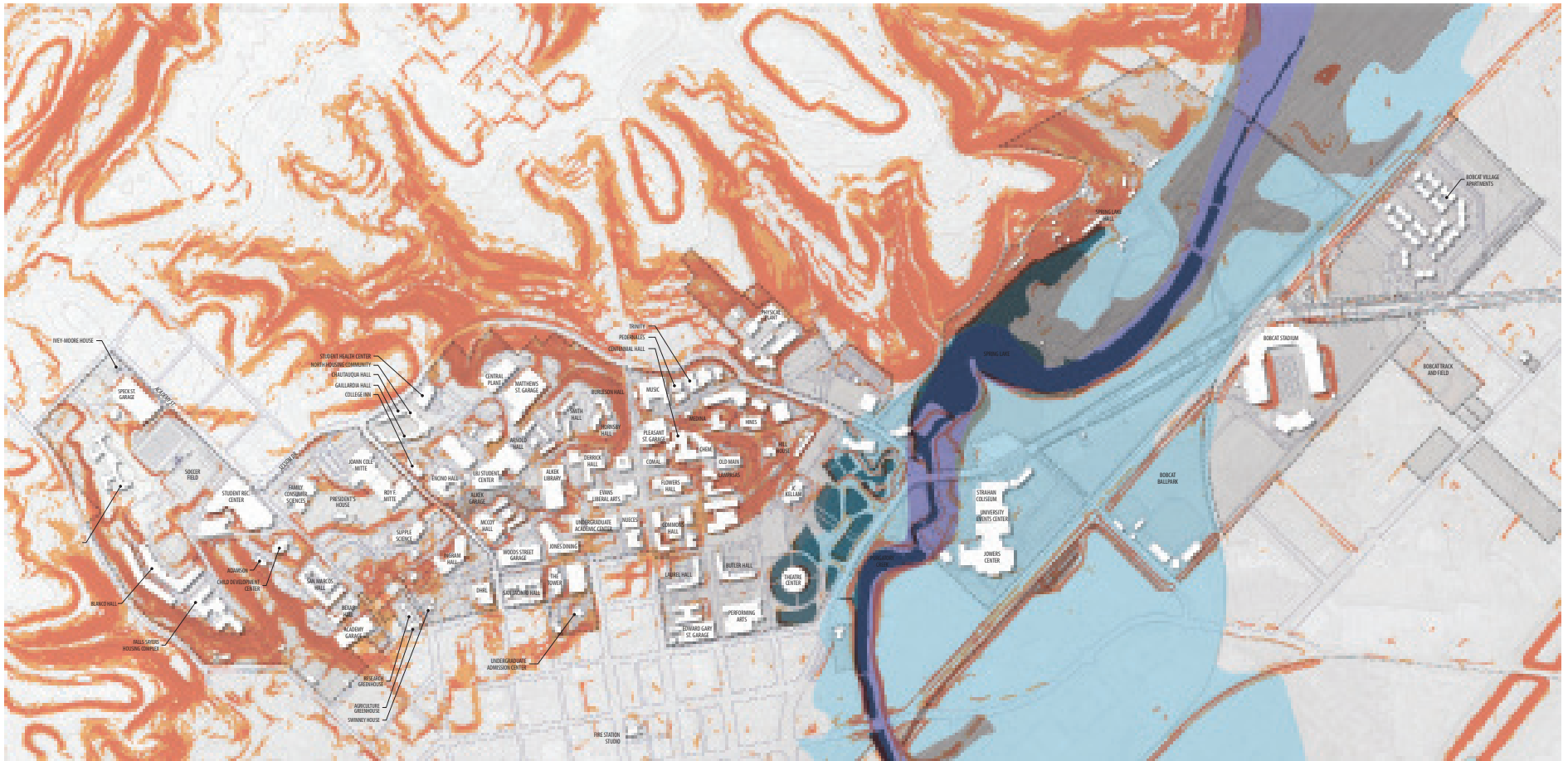
The unique spring-fed aquatic system of Spring Lake is part of the Edwards Aquifer system. The San Marcos Springs are the second largest cluster of natural springs in the state. Trails connect the University's property to the adjacent Spring Lake Preserve, a 250-acre natural area to the north. The Meadows Center for Water and the Environment, housed in Spring Lake Hall, is dedicated to the conservation, research, and environmental stewardship of the Spring Lake area, and to educating students and citizens on the importance of the state's water resources.

## FLOODPLAINS

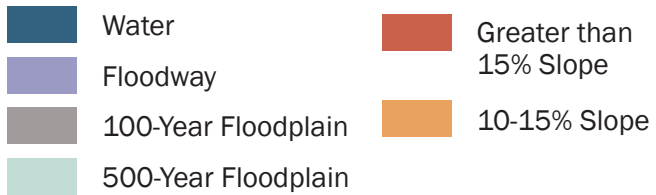
Stormwater drains towards Spring Lake, which is the lowest part of the San Marcos Campus and is highly culturally sensitive. A 100-year floodplain tightly surrounds the floodway. It is important to be cautious of the 100-year floodplain zone to ensure that no future development occupies the zone and to preserve the environmental sensitivity of the site.







**HILLS AND WATER**





**SOIL TYPOLOGIES AND PERMEABILITY**

Soils on the San Marcos Campus are highly variable, with rock, fractured shale, clay, and underground cave (karst) formations. Soil conditions, in combination with steep slopes, have limited the amount of developable area on campus, maintaining a very compact campus form.

Soil permeability also varies, with the greatest limitations in the lowland areas of campus.

**SOIL TYPOLOGIES**

- Medlin-Eckrant Association, 8%-30% Slope
- Branyon Clay, 1%-3% Slope
- Oakalla, 0%-1% Slope
- Comfort-Rock Outcrop Complex, 1%-8% Slope
- Doss Silty Clay, 1%-5% Slope
- Heiden Clay, 1%-3% Slope
- Krum Clay, 0%-3% Slope
- Denton Silty Clay, 1%-5% Slope, Eroded
- Tinn Clay, 0%-1% Slope, Often Flooded
- Eckrant-Rock Outcrop Complex, 8%-13% Slope
- Gruene Clay, 1%-5% Slope



**SOIL PERMEABILITY**

- Water
- Well-Drained
- Moderately Well-Drained

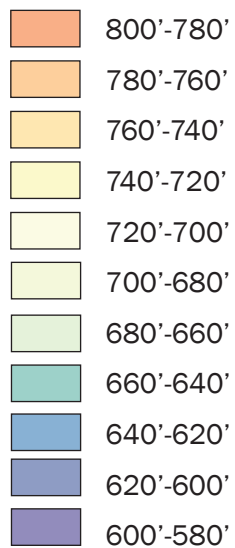


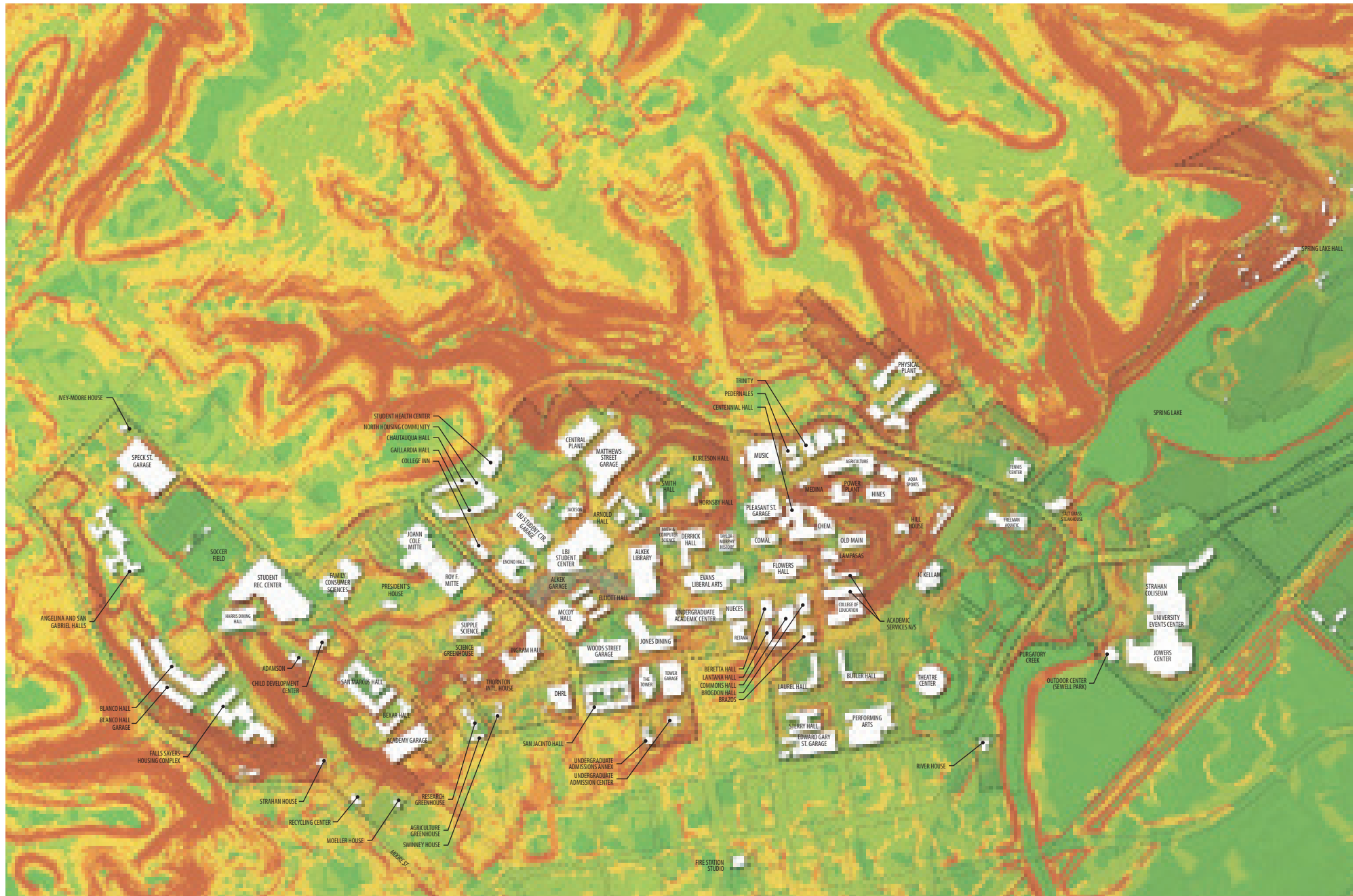


## CAMPUS TOPOGRAPHY

The San Marcos Campus has a drastic change in elevation of approximately 200-feet. The color change symbolizes an increase in elevation change from low to high across the campus from east to west. Although the elevation change provides students, faculty, and visitors with stunning views and vistas that help to define the unique charm of the campus, it constrains pedestrian, bicycle, and other forms of movement and restricts the amount of land available for development.

### CAMPUS TOPOGRAPHY



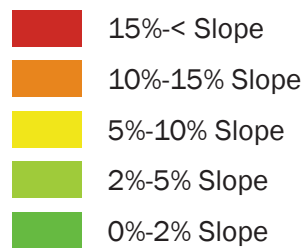


## SLOPE ANALYSIS

The majority of the San Marcos Campus is located on a site with steep slopes that can be challenging for future development. The slope analysis informs strategic opportunities for potential developable zones. The red and orange areas highlight slopes that are 10 percent and greater, which suggests limitations of development based on cost. The slope analysis study brings great value to the University Master Plan. It suggests the importance of taking advantage of the remaining developable land with slopes of 0 percent to 10 percent that is functional and available.



### SLOPE ON CAMPUS














## OPEN SPACE

The San Marcos Campus is situated in an area of remarkable natural features—the San Marcos Springs and distinctive landforms have given shape to the campus as it has grown over time. These natural systems work in concert with the constructed landscape of the campus to create a variety of memorable spaces and to enhance the campus experience.

Spring Lake and the San Marcos River anchor the campus to the northeast and contribute to the picturesque character of the San Marcos Campus. The cold springs provide recreation and gathering opportunities for students and community members in Sewell Park. The Old Fish Hatchery Ponds on the east end and the wooded Glade and valley on the western end create unique park-like settings that bookend the core of campus.

Up on the hill, the Quad in the center of campus forms the east-west landscape spine, an organizing element for much of the campus development, with a balanced composition of

### OPEN SPACE TYPOLOGIES

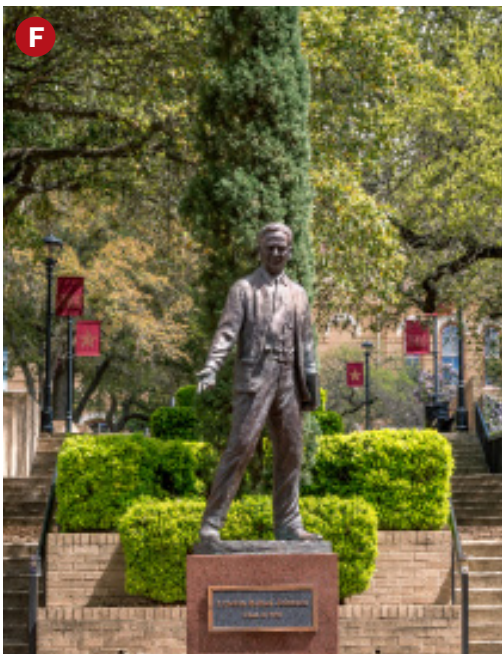
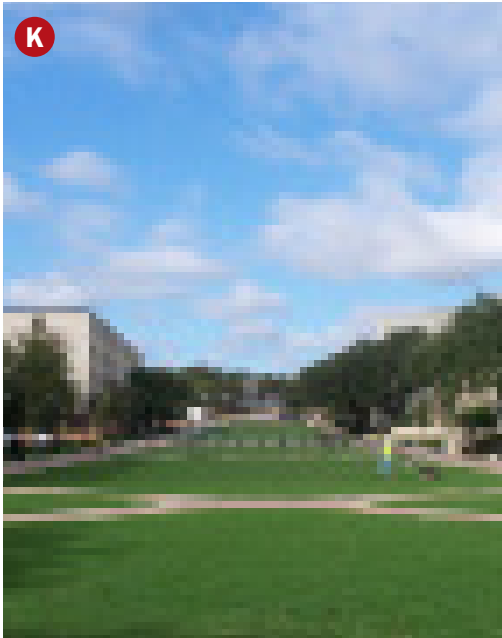
	Wooded Slopes
	Open Space
	Named Open Space
	City Parks
	Athletic and Recreation Fields

hardscape and traditional landscape areas. West of Albert B. Alkek Library, the Mall is primarily hardscape, an urban plaza with vegetation in raised planters. As the campus falls away from this central spine, the landscape becomes more informal and undefined. Many campus landmarks and memorial gardens are scattered throughout campus.

### NAMED OPEN SPACES

- A** Frisbee Golf Course
- B** The Glade
- C** Mitte/Supple Courtyard
- D** The Mall
- E** Fighting Stallions Area
- F** Quad
- G** Texas State Memorial Garden
- H** Veterans Memorial Garden
- I** Bobcat Trail Mall
- J** Education Courtyard
- K** Concho Green
- L** Old Fish Hatchery
- M** Sewell Park
- N** Sewell Park North
- O** Campus Recreation Fields
- P** Wetlands Walk
- Q** Spring Lake Area





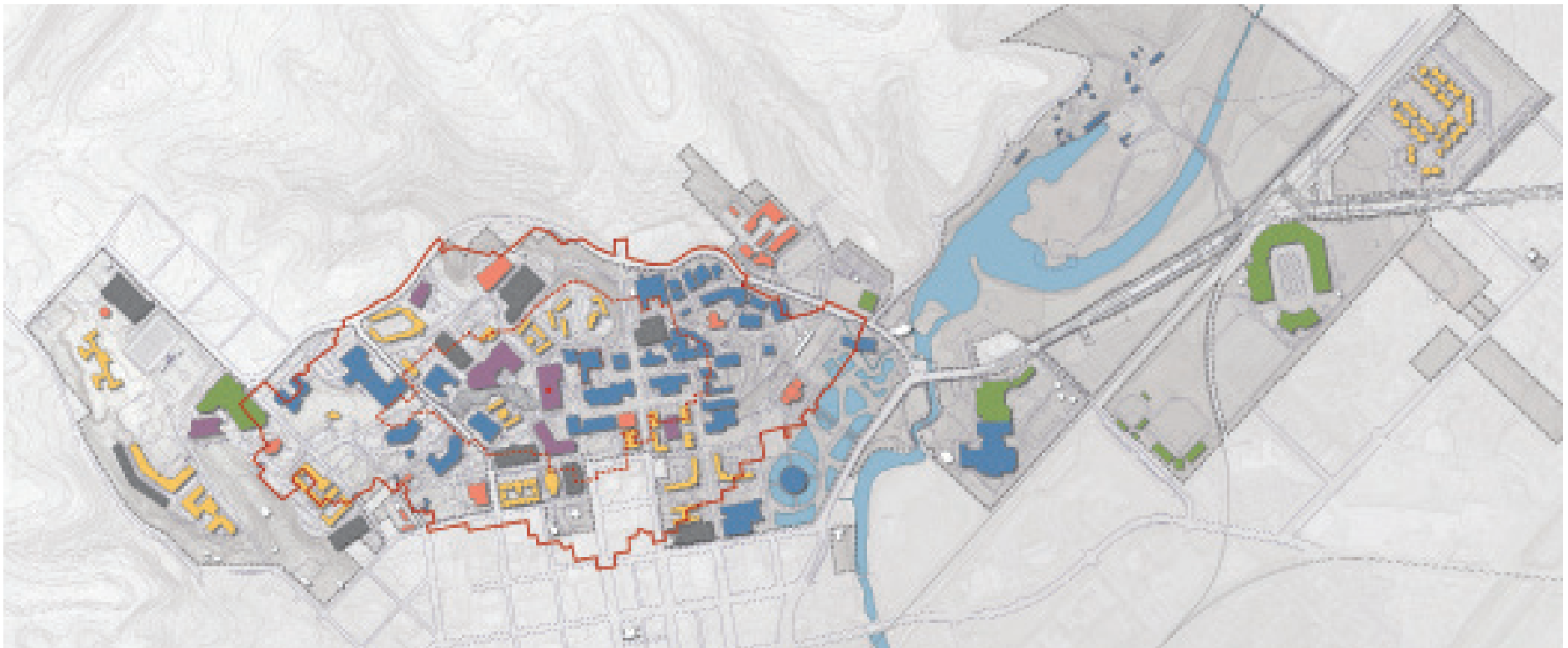
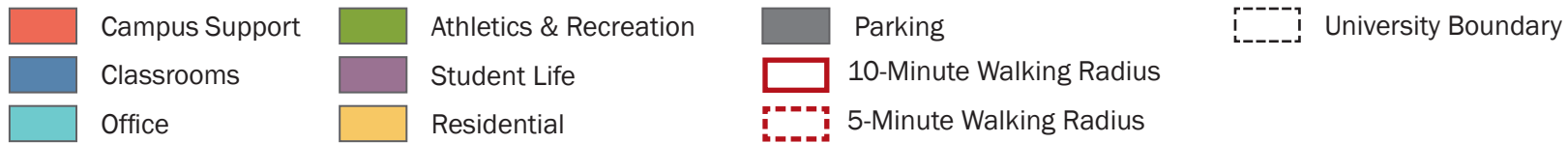
## CAMPUS LAND USE AND DISTRIBUTION

The San Marcos Campus provides academic, campus support, student life, residential, athletics, and recreation facilities. The framework of the existing conditions shows that the majority of the campus is west

of Spring Lake. The core of the campus is centrally located within a 10-minute walking radius zone. The dominating building use is classrooms, which are spread east and west within the campus core. There are many

residential halls that are woven throughout the campus, connecting the academic and residential experience. The athletic facilities are concentrated on the east and west ends of the site.

### BUILDING USE



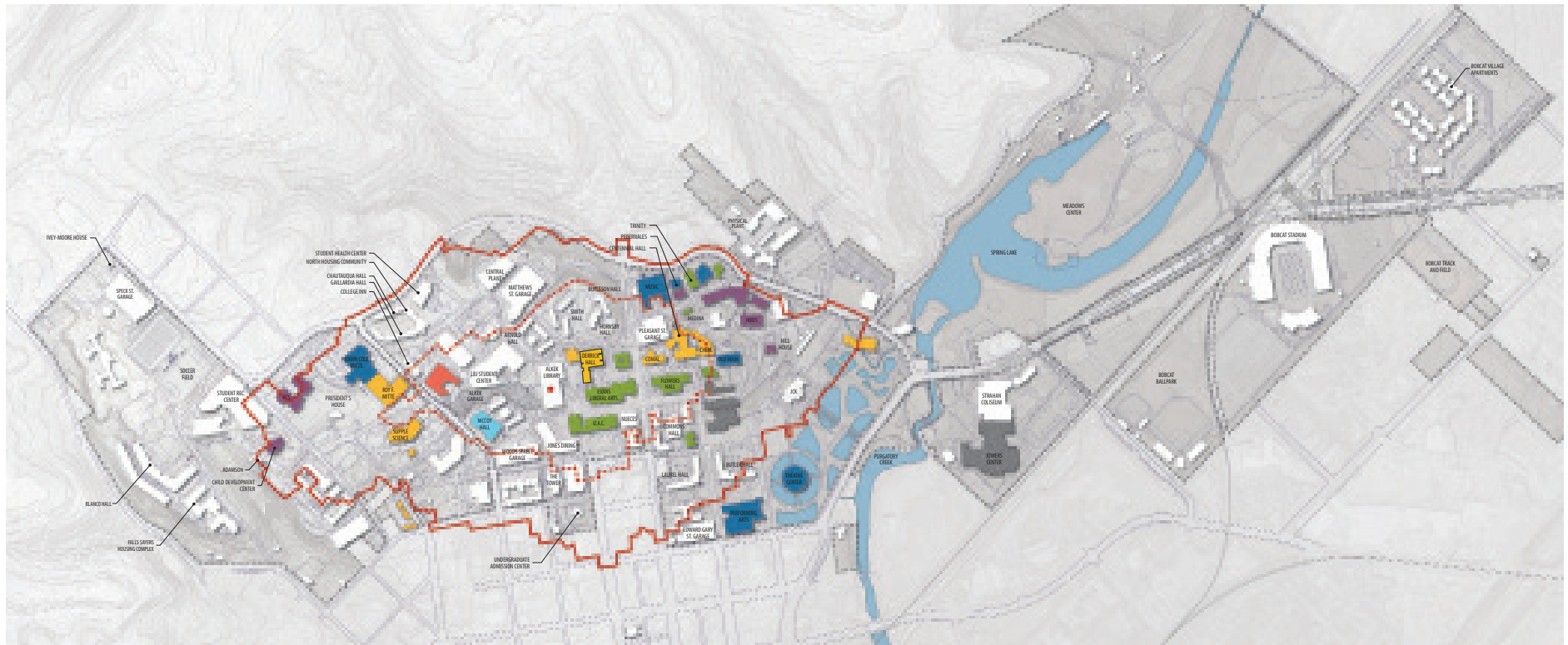
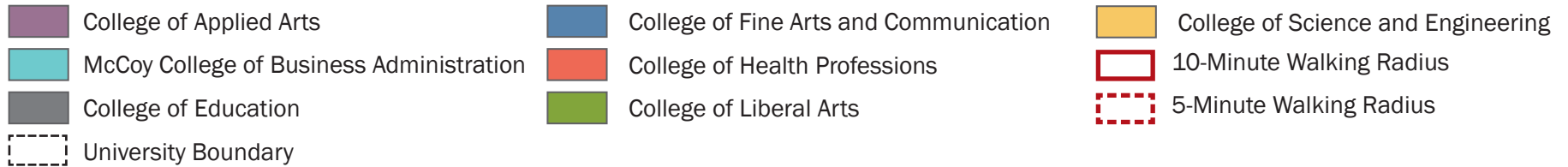
## COLLEGE DISTRIBUTION

The San Marcos Campus has a good distribution of colleges throughout the campus. The framework allows for expansion opportunities. The colleges that currently occupy the core of the campus, located within the five-minute radius zone, are Liberal Arts, Science and

Engineering, Health Professions, and McCoy College of Business Administration. The College of Science and Engineering facilities have a strong east-west axis. The Colleges of Applied Arts and Fine Arts and Communication, just bordering the 10-minute walk radius zone, have

the furthest walk and connection to the campus core. Part of the College of Education is currently disconnected from the core of the campus and requires pedestrian movement to Jowers Center. Studying the existing campus model encourages opportunities for a more interdisciplinary approach to the campus.

### COLLEGE DISTRIBUTION



## FACILITY USE AND CONDITION ASSESSMENT

In 2015, Texas State University commissioned Sightlines to conduct a facilities review to aid with long-term capital planning. The study, for the purposes of the University Master Plan, has two parts: the Net Assessed Value (NAV) and Facility Condition Index (FCI). Each of the evaluations were based on 11 major building systems including: renovation, plumbing, exterior shell, electrical, heating, ventilation and air conditioning (HVAC), safety/code, structural, interior shell, roof, and elevators. The NAV identifies the “percent good” in a building and uses replacement value as a key measurable. The FCI only measures the condition. The NAV also ranks the building on a scale from 0 percent to 100 percent with 100 being like-new, further breaking the percent ranking into stages. The lowest rank being Total Gut Renovation (below 50 percent), followed by System/Component Renovation (50 percent to 75 percent), Repair and Maintain (75 percent to 85 percent), and Capital Upkeep (85 percent to 100 percent).

For the purposes of the University Master Plan, the NAV and FCI were used together to identify key building renovations and repurposing, building infrastructure improvements, and demolition candidates.



### NET ASSESSED VALUE

- Repair and Maintain Building
- System/Component Renovation Stage
- Total Gut Renovation Stage
- University Boundary

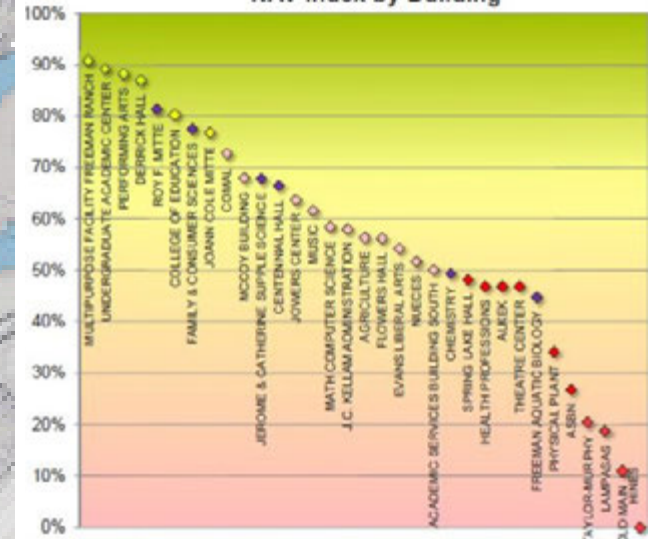
$$\text{NAV} = \frac{(\text{Replacement Value} - \text{Building Needs})}{\text{Replacement Value}} \times 100$$



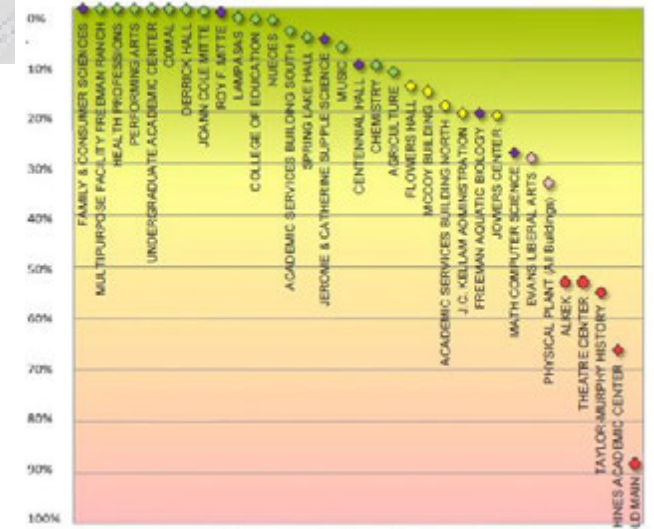
**FACILITY CONDITION INDEX (FCI)**

- Capital Upkeep Stage
- Repair and Maintain Building
- System/Component Renovation Stage
- Total Gut Renovation Stage
- University Boundary

**NAV Index by Building**



**FCI by Building**







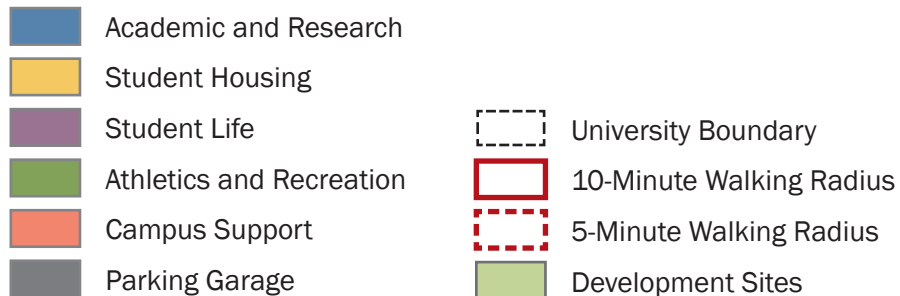
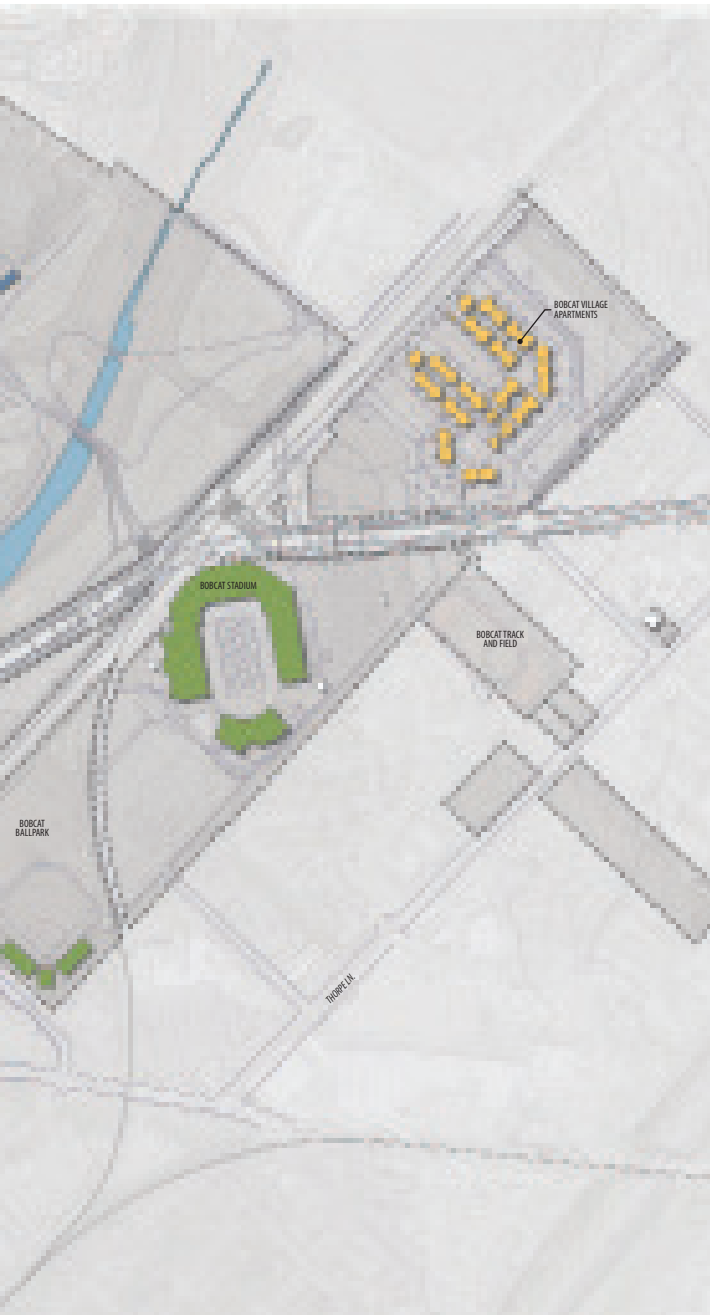
## FUTURE DEVELOPMENT SITES

One of the greatest challenges to expanding the San Marcos Campus will be finding viable infill sites to accommodate future growth. The summary analysis revealed:

- Natural systems composite overlay (vegetation, slopes, floodplains, etc.) significantly constrain developable land area. This constraint though, positively concentrates development opportunities within the five- and 10-minute walking radius of the academic core.
- More than 70 acres of long-term infill/redevelopment capacity exist within the existing San Marcos Campus footprint.
- Low density buildings coupled with aging facilities in several campus areas highlight significant redevelopment potential. Three major near-term redevelopment opportunities

exist constituting approximately 25 acres; they include:

- 7.5 acres on the Hilltop
- 6.5 acres in the Performing Arts Center residential district
- 11.3 acres in the emerging Science and Engineering neighborhood



## HOUSING AND DINING

The mix of student housing types is generally positive. The inventory consists of both old and new facilities. There are traditional style halls with community bathrooms and suite style halls with semi-private bathrooms. There is one apartment community. This wide mix helps to appeal to a broader, more diversified market. The newer facilities are particularly impressive, with generous common areas capable of handling a variety of programs. There are 14 living-learning communities (LLCs).

### HOUSING OCCUPANCY

Campus housing is focused on serving the needs of first-time, full-time freshmen students. Currently, very few sophomores (as well as juniors and seniors) and a very small percent of arriving transfer students can be accommodated in campus housing.

New freshmen under the age of 20 (by September 1 for fall admission or January 1 for spring admission) with fewer than 30 credit hours are required to live in on-campus University housing. All students who graduated from high school within the preceding 12 months of the semester of their admission are also required to live on campus. For the last several years, requests for on-campus housing contracts exceeded supply. For fall 2015, there were over 800 students on a waitlist. For fall 2015, there were 6,870 residents; this included 200 Resident Assistants. First-time, full-time freshmen comprised 5,354 of the total.



## EXISTING DINING FACILITIES

As of March 2016, Dining Services operated nine dining venues. Total seating capacity in the dining halls and food courts (including Jones Dining Center) is approximately 2,350. Meal plans for both residential and commuter students are offered in a standard format that includes a set number of meal swipes and a set number of dining dollars.

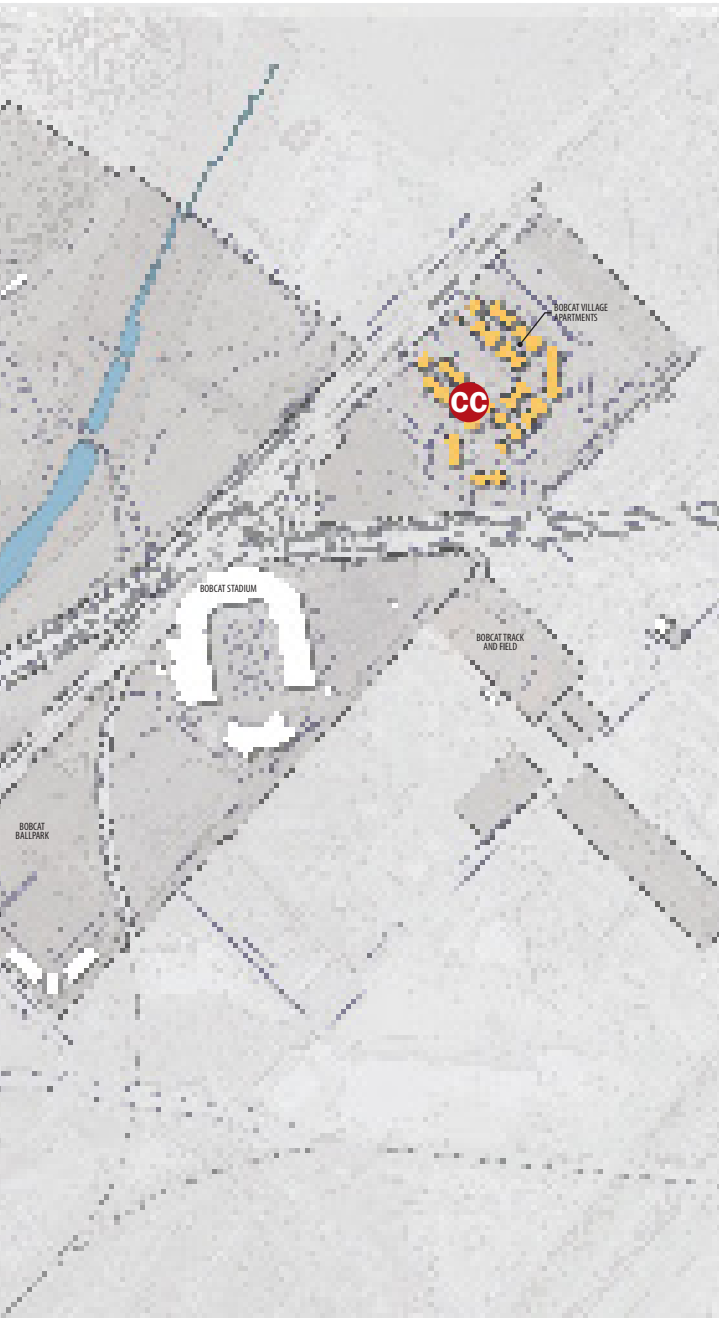
Block meals can be used at either of the All-You-Care-to-Eat (AYCE) dining centers or at most of the various retail locations as a ‘meal trade’ for a specific meal combo. This unique and generous feature of the meal plan provides students both a greater variety of menu selections and convenient access to dining when they are on the go.

Meal plan data indicate that students use the residential meal plans more at the retail venues than the AYCE dining halls. On a typical day during the 2014 fall semester, 36 percent of meal swipes were at AYCE dining halls and 64 percent of meal swipes were in the retail food courts.

Both Harris Dining Hall and Commons Dining Hall, Texas State’s traditional dining facilities, have an adequate number of seats to accommodate the current volume. Neither appear to be operating at full capacity and have room to absorb some additional patronage if the projected enrollment increases are realized.

Currently, national campus dining trends appear to design the food and beverage experience to help facilitate student-to-student and student-to-faculty interaction. This typically requires not only inviting spaces, but the opportunity to linger, including ample late night and weekend hours. When faster turnover is necessary to accommodate patronage, dining venues remain just that—a place to eat. If, however, it becomes a “hang-out” space, opportunities for socialization, group study, and engagement become almost equally important functions.





## HOUSING AND DINING

- A** Angelina Hall (280 New Traditional Beds)
- A** San Gabriel Hall (318 New Traditional Beds)
- B** Blanco Hall (484 Modified Traditional Beds)
- C** Falls Hall (286 Adjoining Suite Beds)
- C** Sayers Hall (292 Adjoining Suite Beds)
- D** Harris Dining Hall
- E** San Marcos Hall (417 Super Suite Beds)
- F** Bexar Hall (202 Adjoining Suite Beds)
- G** Chautauqua Hall (306 New Traditional Beds)
- H** Gaillardia Hall (306 New Traditional Beds)
- I** College Inn (280 Super Suite Beds)
- J** Jackson Hall (423 Traditional Beds)
- K** LBJ Student Center (The Lair)
- L** Arnold Hall (116 Traditional Beds)
- M** Smith Hall (163 Traditional Beds)
- N** Hornsby Hall (Closed)
- O** Burleson Hall (Closed)
- P** Albert B. Alkek Library
- Q** Elliott Hall (186 Traditional Beds)
- R** Jones Dining Center
- S** San Jacinto Hall (469 Super Suite Beds)
- T** Tower Hall (434 Adjoining Suite Beds)
- U** Retama (129 Traditional Beds)
- V** Beretta Hall (92 Traditional Beds)
- W** Lantana Hall (239 Traditional Beds)
- X** Commons Hall
- Y** Brogdon Hall (115 Traditional Beds)
- Z** Laurel Hall (141 Traditional Beds)
- AA** Butler Hall (236 Traditional Beds)
- BB** Sterry Hall (371 Traditional Beds)
- CC** Bobcat Village (655 Apartment Beds)
- DD** The Den Food Court (Academic Services Building South)

### BUILDING USE

- Residential
- Student Life

# ATHLETICS AND RECREATION

## EXISTING CAMPUS RECREATION

The Student Recreation Center was built in 1995 and was renovated and doubled in size in 2009 to create a high quality indoor facility for use by the campus population. During the hours of 3:00 p.m. to 11:00 p.m. the facility is typically well utilized and can feel somewhat crowded. In addition to space constraints during peak hours, recreation staff noted the relatively low fees paid by students.

The highest recreation priority on campus is the need for additional outdoor fields to accommodate a variety of sports. Currently, the campus has six fields, one of which is shared with the athletics department and is used for soccer. At the beginning of this master planning process, the assumption was the campus needed 10 new multi-purpose fields, in addition to the existing six fields, to meet demand. The multi-use fields should be designed and programmed to include flag football, intramural soccer, rugby, lacrosse, soccer, and baseball/softball. Ideally, the fields will be natural turf, lit for night use and fenced to prevent overuse and damage. It is assumed that the fields will be used five days a week for intramural soccer and



TEXAS STATE UNIVERSITY WOMEN'S SOCCER TEAM

by club sports on the weekends. There are 29 club sports on campus that use both the indoor recreation spaces as well as the outdoor fields. The fields will also be used to host summer camps. In addition to recreation and intramural fields, the campus should maintain open space for other activities such as frisbee, catch, and disc golf. It is also important to have these types of open spaces near residential locations.

The University has been exploring options to satisfy demand. The golf course was recently flooded and because of the cost of rehabilitation, it was decided to close it for golf use. After investigating numerous options, it was determined that the former golf course is a viable location for additional new recreation and intramural fields.

## EXISTING CAMPUS ATHLETICS

The athletics department's current plan is to maintain the existing sports offerings and focus on upgrading the quality of its venues. For example, the University Events Center is the most significant issue facing Athletics. The facility is currently undergoing a major addition and renovation to address its issues. Improvements will include upgrades to support facilities for the student athletes. It will also include improvements to enhance the spectator experience.

Soccer currently shares the west field with recreational users. The facility currently has 500 seats. However, in the future, soccer may move from the west side of campus. This potential move is beyond the time-frame of the University Master Plan.

The baseball and softball teams have existing adjacent fields and facilities. The home team's locker rooms and other amenities are located in the University Events Center. While improved locker rooms for both teams are planned at the University Events Center, the long-term desire is to have them located at the baseball and softball stadiums. The plan would be to include training and sports medicine, offices, and locker rooms. It could also include fan hospitality areas such as suites and indoor/outdoor viewing terraces. The University previously developed a plan that delineated these potential improvements. In the future, if the baseball and softball teams vacate the University Events

Center, those spaces can be used for offices and other uses.

Bobcat Stadium has had recent major additions and improvements. The facility has been master-planned to allow the completion of the ring and the addition of a third deck that would add 7,500 seats to the football stadium. The stadium would have a capacity of 34,000-35,000. The need for the stadium expansion is beyond this 10-year master plan. There are a number of congestion areas within the football stadium that slow or stop pedestrian flow and should be improved. Athletics would also like more chair back seats in priority areas.

Tennis plays at the existing indoor and outdoor courts. The eight outdoor courts are shared between Campus Recreation, Athletics, and Health and Human Performance. There are two indoor courts. The courts need to be redone with post-tensioned slabs, as they are cracking. The tennis locker room has no restroom and needs to be improved. The number of tennis courts works for practice, but the facility is inadequate to host championships because of the number of courts and caliber of facilities. The facility needs to be renovated and improved.

The outdoor track is a recent addition to campus. There are about 100 athletes in track programs. The cross country athletes can practice anywhere; however, for competition

they need a three-mile course and one option for that would be at Spring Lake.

For the track and field complex, the seats are located on the southwest side. Those seats need more shaded areas. The track and field complex also needs storage space at the southeast end, near the curved end of the track.

The University purchased a building on Thorpe Lane, adjacent to the track. With its ideal location, this facility could be used for a multitude of athletic purposes.

There have been discussions of a potential indoor practice facility; however, the location is undetermined at this time.

For academic support for student athletes, there are some existing support spaces at the football stadium. The main academic facility is underground at Harris Dining Hall, next to the current soccer field on the west side of campus. Athletics has more needs than that space can provide. The space is not ideally located for Athletics, and it has no parking. There is a need to enlarge academic support to better serve student athletes and a desire to move it closer to where the majority of the student athletes practice and play.







## ATHLETICS AND RECREATION

- A** West Recreation Field
- B** Bobcat Soccer Complex
- C** Harris Dining Hall (Athletic Academic Center)
- D** Student Recreation Center
- E** Tennis Center Complex
- F** University Events Center
- G** Baseball and Softball Stadium Complex
- H** Bobcat Stadium
- I** Bobcat Track and Field Stadium
- J** Bobcat Village Recreation Fields
- K** Disc Golf
- L** Aqua Sports Center
- M** Outdoor Center
- N** Intramural Sports Fields
- University Camp (not pictured)

### BUILDING USE

- Athletics
- Recreation



STUDENTS AT THE QUAD

# MOBILITY AND PARKING

Transportation and parking depends on a system of interconnected facilities that move traffic, provide parking, facilitate walking and cycling, and employ a variety of transit options to support the functioning of the University. Texas State University has a highly evolved parking and transit system that is capable of moving more than 40,000 students, employees, and visitors per day. A little more than three-quarters of parking spaces are occupied during the peak period on a typical day, and the Bobcat Shuttle bus service moves the campus community within the campus boundaries and adjacent neighborhoods.

## VEHICULAR CIRCULATION

IH-35 provides four exits into the City of San Marcos. Commuting students and employees living beyond the city approach the campus via one of these four exits (from north to south):

- Aquarena Springs Drive (Exit 206)
- Hopkins Street T80 (Exit 205)
- Guadalupe Street T123 (Exit 204)
- Wonder World Drive T12 (Exit 202)



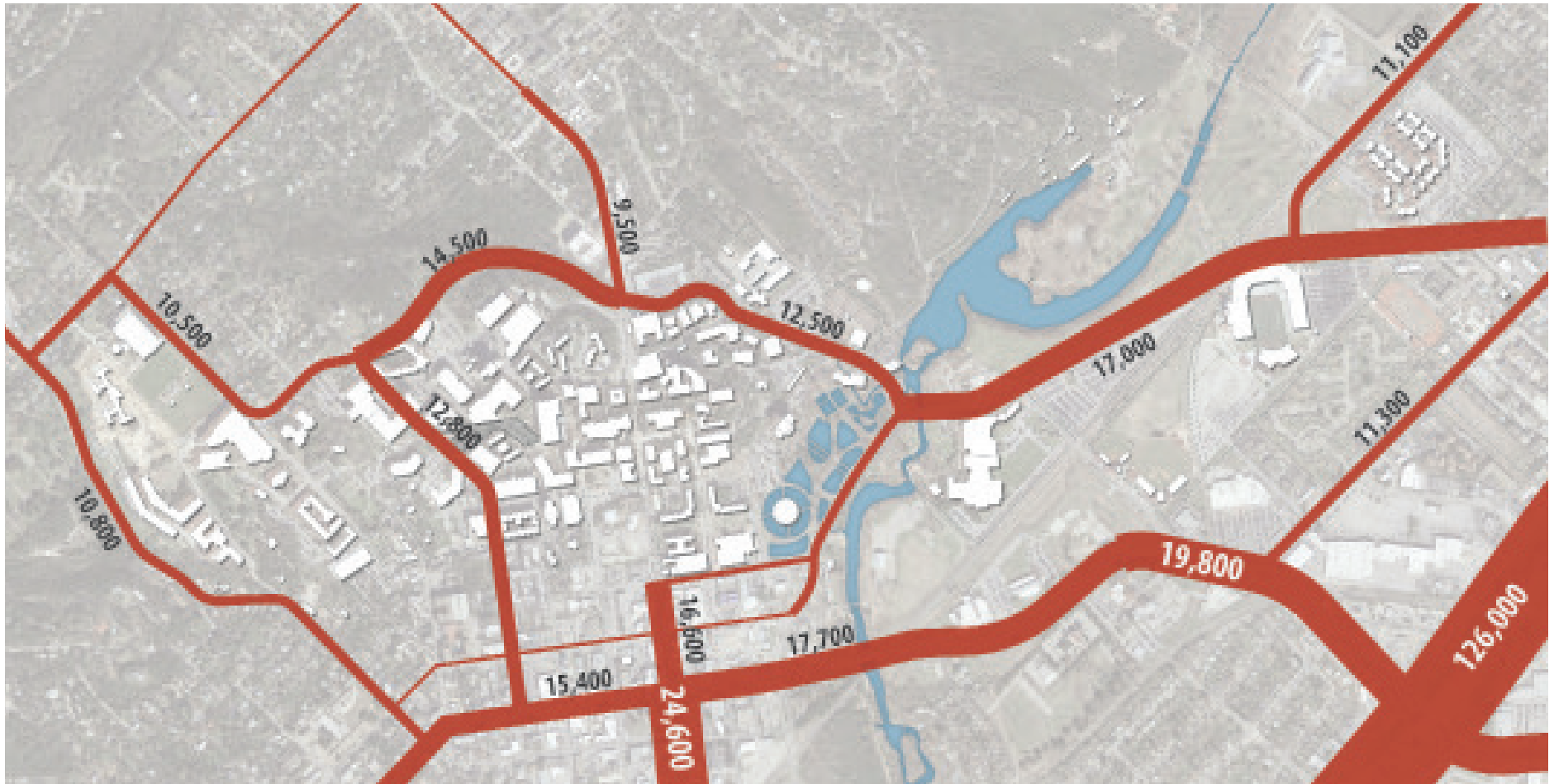
VEHICULAR APPROACH TO CAMPUS  
IH-35 EXITS TO SAN MARCOS

**(A)** Aquarena Springs Drive (Exit 206)

**(B)** Hopkins Street T80 (Exit 205)

**(C)** Guadalupe Street T123 (Exit 204)

**(D)** Wonder World Drive T12 (Exit 202)



 Daily Traffic Volume

Most campus streets have a posted speed limit of 20 miles per hour (mph); however, many roads are not posted and therefore default to a 35 mph speed limit. Travel lanes are a minimum of 11-foot wide for most campus streets, with a few exceptions of more narrow lanes where topography constrains the available roadway and parking areas.

There are no university-owned roadways that connect one side of the Texas State campus to the other, although Comanche Street (city-owned) does connect north to south. Vehicular through movements are limited, which is a benefit to the core of campus and pedestrian mobility. The lack of connected streets pushes vehicles outward to utilize Sessom Drive to the north or Woods Street to the south.

Providing access to parking lots/garages and building loading docks is the primary function of campus streets. State Street and Pleasant Street on the east side of campus are two examples of campus streets that support on-street parking and provide access to parking lots and loading docks. The Bobcat Shuttle bus service does not operate along these two campus streets, there are no bicycle facilities present, and the existing sidewalk network is disconnected or incomplete in some areas.

The natural topography of campus poses a challenge for campus streets, particularly on steep slopes surrounding Old Main Drive, the north side of campus near the Matthews Street Garage, and the southwest portion of campus near San Jacinto Hall and downtown

San Marcos. Portions of Old Main Drive and Hill House Circle are narrow due to topography constraints and the presence of on-street parking. Matthews Street is constrained by topography and has been retrofitted with an access control gate that limits its use to buses and service vehicles. Pickard Street, which runs between Derrick Hall and the Hilltop residence halls, is so steep that it has been closed to non-service vehicle traffic near its intersection with the Quad Bus loop.

Woods Street is a minor east-west roadway along the southern edge of campus, supporting campus vehicles, buses, as well as city traffic. The street is mostly owned and maintained by Texas State University, with the lone exception being a single block between LBJ Drive and Guadalupe Street. Texas State University is working with the City of San Marcos to transfer ownership of this portion of Woods Street to the University. This street has been modified over the years by campus buildings, sidewalk improvements, parking deck access, and transit shelters. Woods Street is a potential candidate for an entire corridor study to realign, connect, and improve the entire streetscape, including sidewalks, crosswalks, lighting, signage, street trees, transit amenities, and driveway access.



**EVENING TRAFFIC CONGESTION AT COMANCHE STREET BY MCCOY HALL**



**EVENING TRAFFIC CONGESTION AT SESSOM APPROACHING AQUARENA SPRINGS/UNIVERSITY DRIVE**

## SHUTTLE CIRCULATION AND STATIONS

The Bobcat Shuttle transit system operates weekday, evening, late night, and weekend routes when classes are in session during the school year. Service is fare-free, though students pay a student bus fee each semester as part of tuition and fees to support the system. The average daily boardings for the entire system was 27,000 during the spring 2016 semester, with a one-day peak of more than 33,000 boardings. Monday through Thursday service runs between 7:00 a.m. and 10:20 p.m. Friday service runs between 7:00 a.m. and 5:30 p.m.

The University works with a third-party contractor to operate the buses and maintain the fleet. This service contract is for seven years, through the spring semester of 2021, with an option for three more years.

There are three on-campus routes. The Campus Loop circles the university in a counter-clockwise direction, with peak service every 15 minutes during the weekday. The Bobcat Village route serves the residence halls at Bobcat Village and the Mill Street parking lot every 10 minutes during its peak. The Bobcat Stadium route serves commuter parking lots located near the football stadium, with peak service every 10 minutes. Average daily boardings of these three routes is 6,200, and a one-day maximum of 7,982 boardings was observed in the spring 2016 semester. Evening and late night routes provide service every 25 to 45 minutes.

There are eight weekday, off-campus routes that serve various apartment complexes throughout the City of San Marcos. One weekday, off-campus route was divided into two because of construction by the City of San Marcos. Peak service during the day is between 8 and 12 minutes depending upon the route. Average daily boardings of these seven routes is 19,800, and a one-day maximum of 28,072 boardings was observed in the spring 2016 semester. Off-campus routes support a majority of total riders.

Evening, late night, and weekend routes follow similar off-campus routes, though several routes are combined into one during these off-peak times. Additionally, there is a weekend route to the San Marcos Marketplace. These off-peak routes account for only 960 (4 percent) average daily boardings.

## MUNICIPAL BUS SYSTEM

The Capital Area Rural Transit System (CARTS) provides fixed route public transportation in San Marcos and elsewhere. Municipal Bus (“The Bus”) refers to the CARTS service that operates within the San Marcos urbanized area, which began in 1996. The Downtown San Marcos Station opened in 2001, consolidating CARTS with Greyhound bus and Amtrak rail services. The station is located 0.6 miles south of the Texas State University campus along LBJ Drive.






There are seven fixed routes operating Monday through Friday between 7:00 a.m. and 8:00

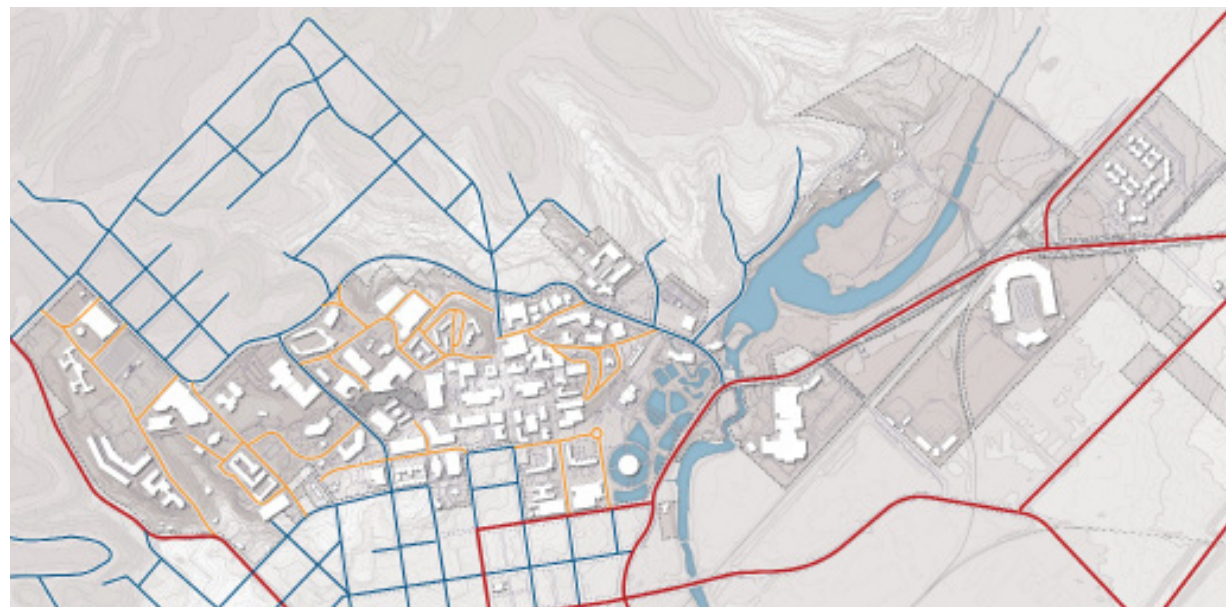
p.m. Several routes overlap with the Texas State University campus as well as existing Bobcat Shuttle routes. Route 5 provides direct service to the campus along Guadalupe Street, Woods Street, and Comanche Street. Routes 1, 2, and 3 all stop along Hopkins Street, approximately 0.25 miles from the Texas State University campus. All remaining routes transfer at the Downtown Station (five-minute walk-time), where passengers could either walk to campus or wait for the next Route 5 bus.

One-way fares are \$1, daily passes are \$2, and monthly passes are \$30. Riders who show a valid Texas State University identification card are able to ride The Bus for free. Transportation Services subsidizes these trips at the full-fare rate. In fiscal year 2016 the amount paid was \$9,798.






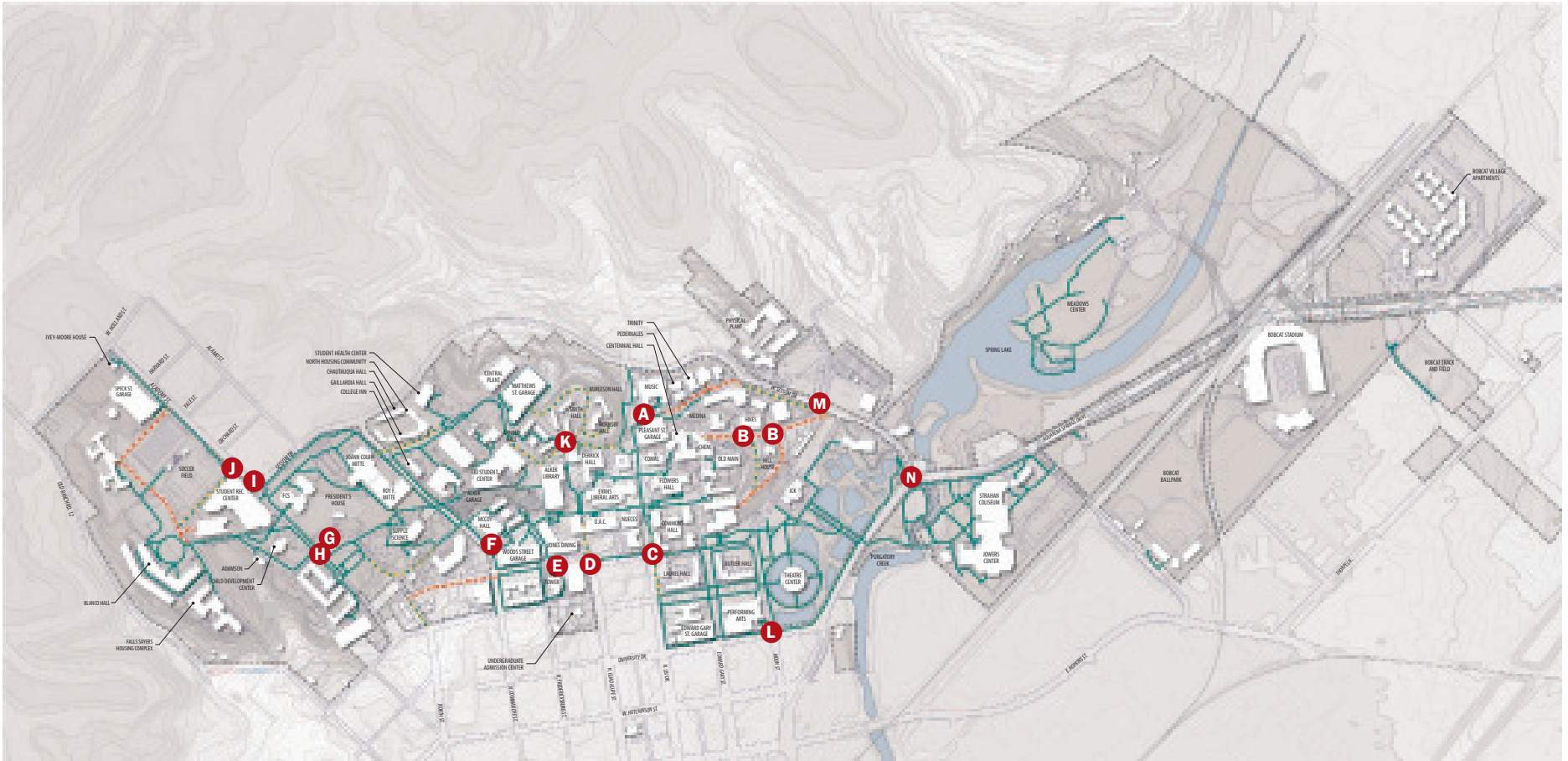
**WEEKDAY ON-CAMPUS TRANSIT SERVICE**

-  10 Bobcat Stadium
-  12 Bobcat Village
-  14 Campus Loop
-  Transfer Locations
-  Existing Bus Stops



**ROAD OWNERSHIP**

-  State of Texas (TxDOT)
-  Texas State University
-  Local (City/County)



**EXISTING PEDESTRIAN CIRCULATION AND CHALLENGING INTERSECTIONS**

- Existing Pedestrian Routes
- - - Identified Gaps in Pedestrian Routes
- - - - - - Identified Gaps in Pedestrian Accessibility (ADA)
- ⓐ Challenging Intersections



## BICYCLE AND PEDESTRIAN CIRCULATION

The Texas State University campus also provides a network of bicycle and pedestrian facilities within the campus core and immediate surrounding areas. Though the pedestrian network within the core of campus is well connected, these networks do not always provide direct connection to off-campus sidewalks and potentially limit the walkability of students living adjacent to campus.

### SIDEWALKS ON CAMPUS

Most pathways within the center portion of campus are sufficiently wide for large flows of pedestrians, between eight- and 20-feet in width. Sidewalks and pathways are narrow on the west and south sides of campus, as the campus boundary blends into the City of San Marcos (four- to five-feet in width).

Sidewalks were observed to be a minimum of four-feet wide along roadways; however, they are not always connected to the west of Comanche Street, where pathways diverge towards the many residence hall destinations. This is particularly true of Bobcat Trail, which

ends near Jones Dining Center with no clear or safe path to reach or cross Comanche Street. Sidewalks along Woods Street and Vista Street, both of which are west of Comanche Street, are disconnected around the current construction zone fencing.

Sidewalk gaps and crumbling sidewalks have been observed to the southwest of campus along Lindsey Street and Woods Street.

Sidewalks along LBJ Drive and Edward Gary Street, south of Woods Street, are wide in some portions; however, they are narrow in other portions. Intersection curb cuts are inconsistent along these two roadways.

Although the center of campus is predominantly pedestrian-oriented, there are a number of roadway crossings that are potential conflict points where vehicles are mixed with bicycle and pedestrian traffic, particularly during class change periods. The following intersections were observed or described as particularly challenging:

- A** North LBJ Drive at Pleasant Street
- B** State Street at Hill House Circle (two intersections)
- C** North LBJ Drive at Woods Street
- D** North Guadalupe Street at Woods Street
- E** Talbot Street at Woods Street and Woods Street Parking Garage entrance
- F** Sidewalk between McCoy Hall/Woods Street Parking Garage at Comanche Street
- G** Sidewalk near James Street and President's House parking lot
- H** Academy Street at James Street and Llano Circle
- I** Academy Street at Sessom Drive
- J** Read Street at Academy Street (near Student Recreation Center)
- K** Pickard Street at Russell Circle
- L** Moon Street and University Drive
- M** Sessom Drive, State Street, and Peques Street
- N** Sessom Drive and Aquarena Springs Drive

## SIDEWALKS OFF CAMPUS

Major flows of pedestrians to campus were observed from the south and west of campus. Downtown streets along Guadalupe Street, LBJ Drive, and Edward Gary Street support most of this flow from the south. Minor roadways such as Fredericksburg Street and North Street (further west) support pedestrian flow from nearby off-campus apartment complexes.

A smaller number of pedestrians crossing University Drive from Sewell Park and points further to the east were also observed. Students were likely walking from parking lots near the Bobcat Stadium or transit stops.

## BICYCLE FACILITIES ON CAMPUS

Texas State University has a limited number of campus streets with on-road bicycle facilities. Providing such on-road facilities represents a tremendous opportunity for the University to connect and extend the on-road facilities provided by the City and help to blend the boundary of campus.

Striped bicycle lanes exist along Student Center Drive, Matthews Street, and Buckner Street on the north side of campus. The pavement markings have been worn over the years and are nearing the time for replacement.

A significant number of cyclists were observed parking within the stadium (perimeter zone) parking lots and riding their bicycles onto campus. The pathway is informal and worn over years of bicycle traffic. The general alignment is

along the Bobcat Stadium driveway near Robbie Lane, crossing over the railroad tracks near Bobcat Baseball Stadium, along Charles Austin Drive to the north, over a second set of railroad tracks, turning west onto Jowers Access Road, through Sewell Park, and crossing University Drive at the signalized mid-block crossing.

Campus streets with a posted speed limit of less than 30 mph are ideal for bicycles, particularly Shared Lane Markings (SLM), where the bicycle operates within the travel lane and functions as a vehicle. Roadways with steep slopes such as Matthews Street and portions of Woods Street are better suited for a bicycle lane along the uphill portion, and SLM along the downhill portion. The bicycle lane allows the vehicle an opportunity to pass safely while the cyclist is climbing the hill at a slower speed. The shared lane portion allows the cyclist to travel at a faster speed while descending and take control of the lane to prevent an unsafe passing by the vehicle.

Cyclists are instructed to dismount when traveling through the Quad and Bobcat Trail portions within the center of campus. Small signs have been placed in these areas; however, they have not deterred most cyclists from riding through these heavy pedestrian zones.

Bicycle parking is provided in many areas of campus, most noticeably along the Quad and Bobcat Trail, as well as adjacent to most residence halls. Covered bicycle parking is lacking. Locations with a lack of sufficient

bicycle parking are apparent, as bicycles were observed locked to railings, light poles, or trees adjacent to full bicycle racks.

There are five bicycle repair stations on campus for minor do-it-yourself repairs. Strategically placed bicycle repair stations are effective encouragement initiatives to help persuade users to ride rather than drive to campus.

For more significant bicycle repair, the Bike Cave is located in the Colorado Building, along Pleasant Street, near Sessom Drive. Student workers and volunteer staff at the Bike Cave will provide tools to bikers to make the repairs themselves or sell low-cost parts for quick repairs and make the repairs for a nominal fee. Replacement bicycles are also available for purchase.

Amenities for cyclists who commute from home are not available or apparent. Long-term bicycle storage lockers, for example, are not available and, therefore, many faculty and staff will bring their bicycle into their office for storage. Buildings that offer changing areas or showers are not identified or publicized to the campus population. These amenities are barriers that may be preventing additional faculty, staff, or commuter students from riding a bicycle to campus rather than drive.



**BIKING DIFFICULTY ON CAMPUS**

- █ Easy Bikability
- █ Intermediate Bikability
- █ Difficult Bikability
- - - Future City of San Marcos Capital Improvement Project
- Bicycle Repair Stations

## PARKING SUPPLY AND UTILIZATION

Parking utilization counts were provided by the University reflecting the Tuesday/Thursday peak hour conditions.

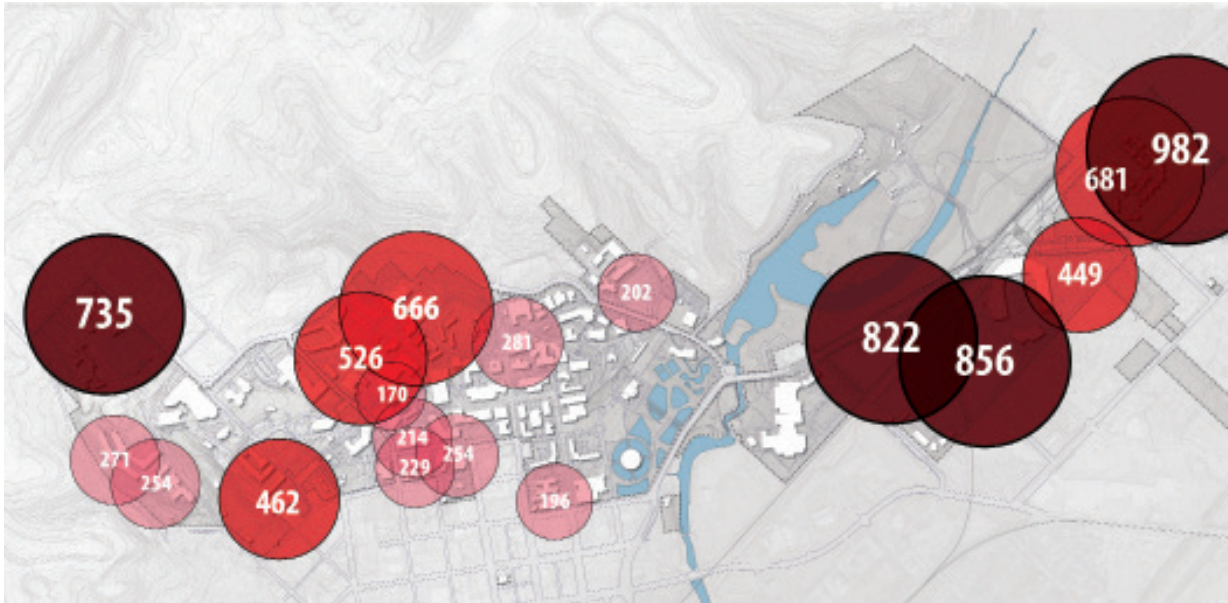
This parking data suggests that the total parking occupancy for all 11,200 parking spaces averages 77 percent full, which represents 8,600 cars during the busiest time of day. This percent occupancy is typical of an urban campus of this size that has large surface parking lots along the periphery. Most of the parking availability can be found within lots along the periphery of campus and extending to the east of Bobcat Football Stadium where surface parking is more prevalent than campus buildings. One-third of total parking is located here, east of the University Events Center.

Nearly all of the smaller parking lots located closer to the center of campus experience much higher parking utilization. Specifically, 65 parking areas located near the center of campus are considered to be at least 80 percent full during this peak period. These parking areas account for more than half of total parking spaces on campus, and include nine permit and two park-and-pay parking garages.

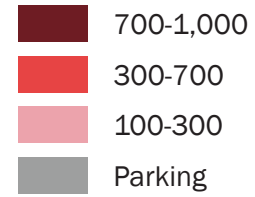
A much smaller number of parking areas located closer to the center of campus (eight lots representing only 550 spaces) have parking availability during this time (considered less than 80 percent full). These under-utilized lots will likely become fully-utilized as the total campus population continues to grow.

Parking at Texas State University is managed by a zoned permit system, which separates users by varying levels of access and permit cost. With some exceptions made for individuals, faculty and staff receive the highest level of parking access, followed by visitors, resident students, and commuting students. This hierarchy of user access is common among universities seeking to balance the high-demand number of vehicles hoping to park in the limited supply of parking spaces.

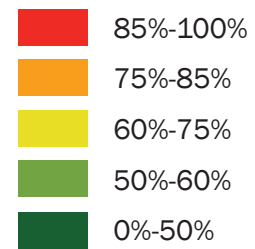




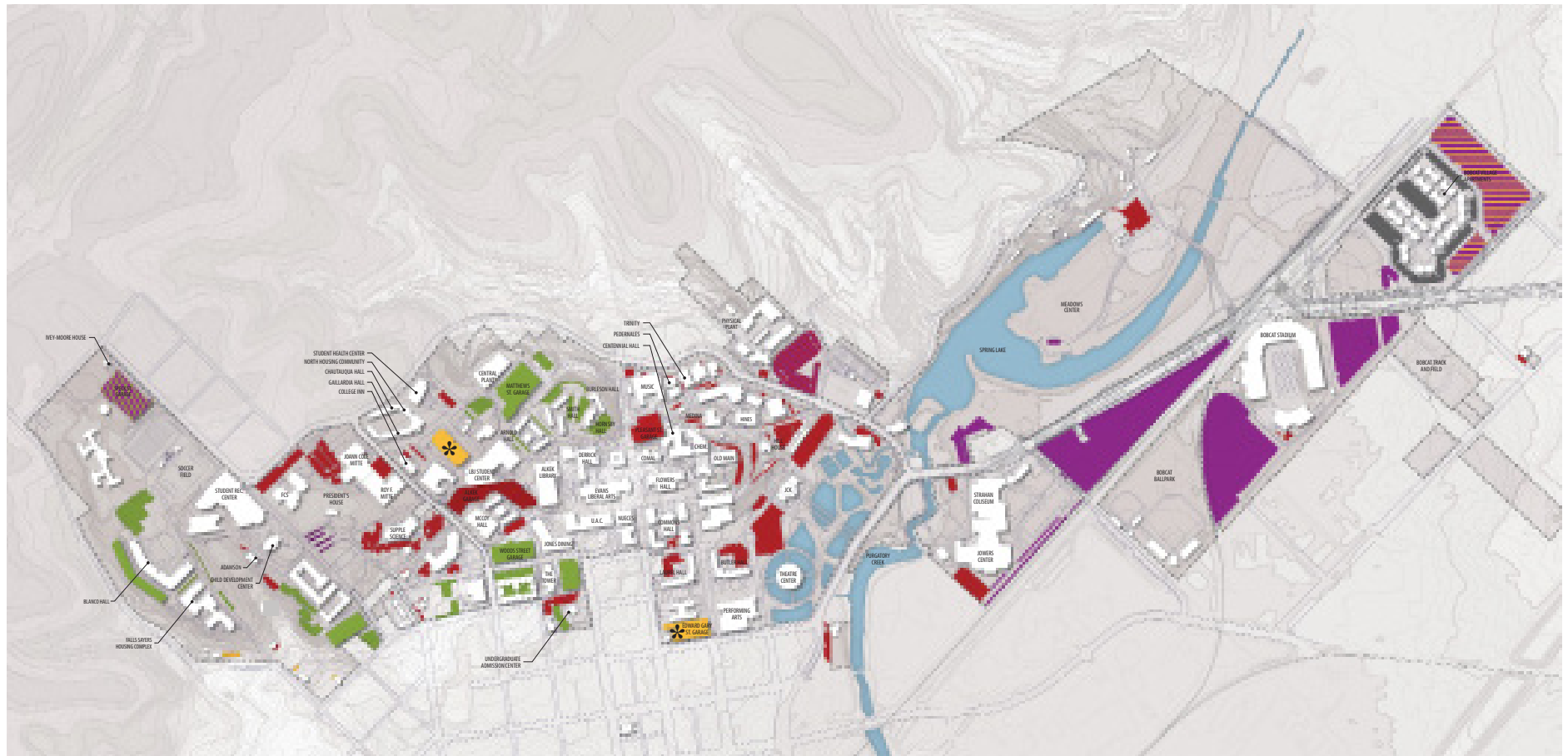
**PARKING CONCENTRATION**



**PARKING UTILIZATION\***



\*Parking utilization counts were provided by the University reflecting the Tuesday/Thursday peak hour conditions.



**EXISTING PARKING**

- Perimeter
- Residence Hall
- Mill Street/Perimeter
- Restricted/Reserved
- ✱ Pay Garage
- Bobcat Village

## **EMPLOYEE– RED PERMIT**

Red parking zones are concentrated at the campus core. The purchase of a restricted permit allows access to red zones and is limited to Texas State University faculty and staff. However, most red zones are open to other permit holders after 5:00 p.m. for evening classes.

## **RESIDENT STUDENT– GREEN PERMIT**

Resident students (except Bobcat Village) are eligible to purchase a green zone permit. Green zones are generally restricted Monday through Friday from 7:00 a.m. until 5:00 p.m., after which time, spaces are available to any permit holder. Green zones are concentrated on the central and western portions of campus, near existing residence halls. Commuter students may purchase a limited number of green zone permits after the 12th class day.

## **RESIDENT STUDENT– SILVER PERMIT**

Residents of Bobcat Village are eligible to purchase a silver permit, which allows residents to park at the Bobcat Village Apartments. These lots are only available to Bobcat Village Apartment residents. Bobcat Village residents may not purchase a commuter or Mill Street Residence Hall permit.

## **RESIDENT STUDENT– GOLD PERMIT**

In order to provide a second, low-cost option to resident students, the Mill Street Residence Hall (gold) permit was created. The only gold permit zone is a split-zone parking lot that is valid for gold and purple permits, located along Mill Street to the far eastern edge of campus.

## **COMMUTER STUDENT– PURPLE PERMIT**

Commuter students are eligible for a perimeter (purple zone) permit. After 5:00 p.m., in most cases, a purple zone permit holder is able to park on campus within a red zone parking lot, which makes this the popular permit choice for commuter students with evening classes. Purple zones are concentrated on the east side of campus near the Bobcat Stadium and in the Speck Street Garage on the west side of campus.

## **ANNUAL DEBT SERVICE FOR PARKING SERVICES**

The University pays approximately \$4.1 million per year to pay off the construction of several parking garages on campus. This amount will decrease as individual structured parking garages are paid off. The Woods Street Parking Garage will be paid off in 2021, followed by the Speck Street Garage in 2028, the Matthews Street Garage in 2029, and the Edward Gary Street Garage in 2031.

This annual debt service is a necessary component of a managed parking system on a growing campus. Revenue from parking permits is responsible for paying this annual debt service and, therefore, expected permit sales must be monitored and permit prices may be adjusted each fall to ensure that the parking system is financially solvent. This is a common practice for universities to ensure that the users of the parking system are paying for the system, rather than shifting this expense to student fees, which would charge both users and non-users of the system.

## SAN MARCOS CAMPUS UTILITIES

### ELECTRICAL DISTRIBUTION SYSTEM

The campus medium voltage (MV) distribution switchgear is located at the Central Plant and the South Chill Plant. The switchgear at each location has two 2,000 amp (A) buses with a tie breaker connecting the buses. Each bus receives a dedicated utility substation feed for a total of four feeders originating from three different San Marcos Electric substations.

The Central Plant serves as the original source for the campus underground MV feeders. Though there are some other circuits that serve chillers and other loads local to the plants, there are essentially 12 underground feeders that spread out across the campus. Eight of the feeders still originate only from the Central Plant and terminate at the last building served. Four of the feeders have been connected to the South Chill Plant in an effort to move the campus away from the original campus feeder design scheme, which has proven to be difficult to maintain and is rarely used on modern campuses.

The original design was a parallel radial feed network, meaning a circuit from the A and B bus run in parallel to each building where a pad mounted switch is used to select the source.

In a fault condition, this approach requires all building switches to be manually transferred to the alternate circuit. Additionally, the parallel circuits are frequently subject to simultaneous shutdown because faults and repair work on the cables often occur in a shared manhole. A preferable approach is an open loop system that allows faults to be isolated and the buildings fed from either direction by operating only a few switches.

At Texas State University, the ends of the central campus circuits 2 and 16 and east campus circuits 4B and 14B have been connected to the more recently installed South Chill Plant switchgear so that the circuits can be fed from both directions. While dealing with an on-site, underground fault is still difficult, the cross connect allows the load on these four circuits to be easily switched between the Central Plant and the South Chill Plant in the event of a utility substation outage. The remaining eight circuits are still essentially “dead-end” circuits, requiring all building local switches to be thrown in an outage on the primary source, and connecting these eight dead-end circuits to a source at both ends should remain the focus of electrical infrastructure planning.

### ELECTRICAL SYSTEM CAPACITY

The MV gear are lightly-loaded, with a maximum loading of approximately 35 percent at the Central Plant. This occurs in the scenario where one utility feed is down and the entire load flows through one bus across the tie to the other.

Under normal circumstances, all four services are currently less than 20 percent loaded, but are projected to rise to near 50 percent loading by the end of the University Master Plan. It is important to note that once the loading on the services rises above 50 percent, the ability to close the tie and feed one bus from the other is limited. Once 50 percent loading is reached, closing the tie breakers will require load shedding.

The ratings and 2017 loading on the system are summarized in the Campus Feeder Capacity and Reliability Summary table. Note that each bus is rated for 2,000A or 34,517 kilowatt (kW). Max demands were taken from the 2016 billing cycle, with the peaks in August to September.

The loading on the feeders is currently moderate, but will become a point of concern in the beyond 2027 period when several feeders could reach loads as high as 80 percent. The current feeder loading is summarized in the Utility Feeder Capacity Summary table. Note that load is typically split between the two parallel redundant circuits, but the loading shown here assumes the failure of one of the parallel circuits and the other circuit carrying all the load.



**CAMPUS FEEDER CAPACITY AND RELIABILITY SUMMARY**

CIRCUIT ID	FEEDER DESCRIPTION	2016% OF CAPACITY USED	CONNECTED TO SOUTH PLANT	FUTURE LOOP OR SOUTH PLANT CONNECTION PROJECT
2/16 (A3A/B3A)	Central Campus Feeder	60%	Yes	None
4B/14B (A3B/B3B)	East Campus Feeder	67%	Yes	None
6/10	North East Camps Feeder	40%	No	Hilltop Utility Corridor
3A/15A	North Campus Circuit (Wells)	10%	No	North Utility Corridor
3B/15B	West Campus Circuit 1	15%	No	South Utility Corridor
4A/14A	West Campus Circuit 2	50%	No	South Utility Corridor

**UTILITY FEEDER CAPACITY SUMMARY**

UTILITY SUBSTATION NAME	TEXAS STATE MV GEAR AND UNDERGROUND FEEDER ID	MAX DEMAND LOAD (kW)	% OF CAPACITY USED
Strahan 520	Central Plant-Bus A	6,500	19%
Hilltop 40	Central Plant-Bus B	5,500	16%
Strahan 510	South Chill Plant-A	4,732	14%
San Marcos 550	South Chill Plant-B	3,820	11%

## ELECTRICAL SYSTEM ASSESSMENT

The Powell Industries PowIVAC Arc Resistant switchgear installed around 2012 at each plant is in good condition, and the Schweitzer relays controlling the breakers are among the best products on the market. The switchgear and relays should be serviceable through the end of the current master planning timeframe.

The switchgear lacks automatic breaker control, remote monitoring, and power quality metering. Breaker automation and remote control is a low priority at this time. Plans are in place to install SEL 3530 Real-Time Automation Controllers for centralized monitoring and alarm. The MV switchgear currently lacks individual power quality meters on each of the feeder circuits. Though no major expansions or modifications to the MV gear should be required during the current master planning period, the need for circuit metering should be addressed and the switchgear will need manufacturer recommended maintenance, including regular exercising of the circuit breakers.

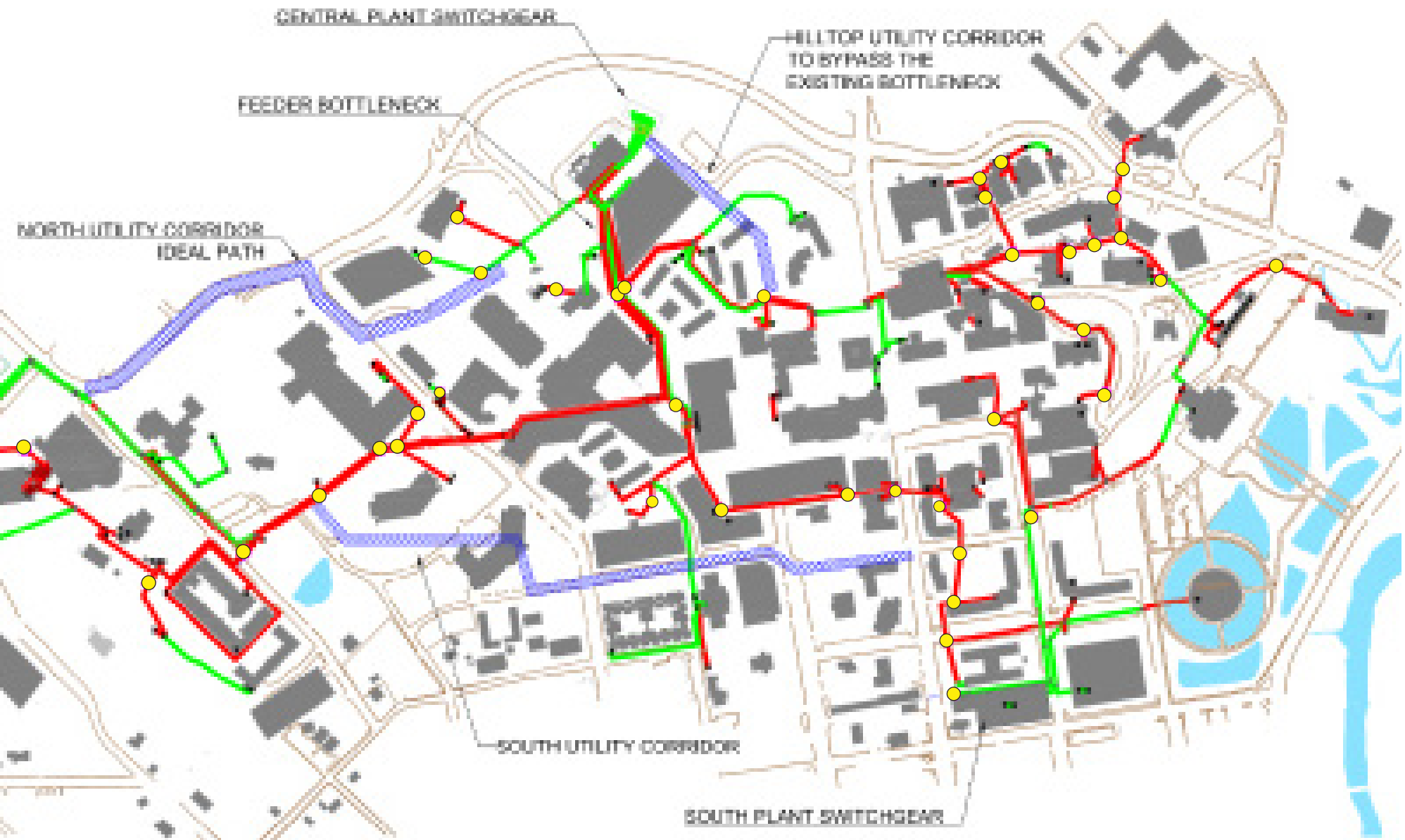
The 12 kW underground feeders were installed around 1988, and are now 30 years old. While the copper conductors may last indefinitely, the insulation and the splice and termination kits are typically rated for 20 to 30 years. As the material ages beyond its service life, it begins to degrade and faults become more frequent. Much, if not all, of the 1980s cable should be replaced within the next 20 years.

Replace the aging MV cables when sections of the central and east feeders are serviced. Additionally, much of the west campus circuits were installed later than 1988. However, there is still over 100,000 feet of circa 1980s underground cable that needs to be replaced during the next 10 to 20 years. The map on the right and continued to the next page shows new and replaced feeders in green and the 1980s feeders in red. Also note that the large magenta colored manholes are those in need of refurbishment along with the cable replacement. Newer manholes and those refurbished through previous cable replacement are small gray dots.

### FEEDER AND MANHOLE CONDITION

- New and Replaced Feeders
- 1980s Feeders
- Manholes in Need of Refurbishment
- Refurbished and New Manholes





## CHILLED WATER SYSTEM

The campus chilled water system consists of four generating plants (Central, West, South, and East), housing 12,750 tons of chillers, a large piping distribution system containing nearly 10 miles of direct buried piping and piping in utility tunnels, and over 60 end-use buildings. The end-use buildings contain a total of over 500 chilled water coils. A project currently in design will add a fifth generating plant. This plant will be located east of the San Marcos River and will serve the University Events Center and adjacent buildings, which are currently served by the East Plant.

## CHILLED WATER GENERATING CAPACITY

The four existing chilled water plants are interconnected through distribution piping. However, the plants typically operate as separate independent systems. This is done by closing isolation valves located in the distribution piping.

The table below indicates 2016 peak chilled water load on each plant under the standard valving strategy. The table also indicates “N+1 Capacity” for each plant and the calculated percent utilization for each plant. This is the capacity available in the plant: the failure of the largest single piece of equipment.

This analysis shows that the Central Plant and South Plant are both over-utilized, indicating that additional generating capacity in those plants is currently needed. The West Plant and East Plant are both completely built-out, but the Central Plant and South Plant do have space available for additional equipment. This analysis also shows that the campus overall currently lacks chilled water equipment redundancy (Campus Total Percent Plant Utilization = 109 percent).

## CHILLED WATER DISTRIBUTION CAPACITY

Hydraulic analysis of the existing chilled water system shows that the plants are not currently limited by their distribution piping. However, the plants are only interconnected at a few locations, which does reduce the plant-to-plant redundancy and the ability of the plants to share load. This is particularly true for the West Plant and South Plant. Additional flow paths from these plants to the other plants would increase service flexibility and overall chilled water system reliability, redundancy, and resiliency. Several critical campus facilities are also limited to one chilled water service source due to current configuration of the distribution piping.

## GENERATING CAPACITY ANALYSIS

PLANT	2016 LOAD (TONS)	2016 N+1 CAPACITY (TONS)	% PLANT UTILIZATION
West Plant	1,810	2,200	82%
Central Plant	4,370	3,500	125%
East Plant	1,740	2,065 <sup>1</sup>	79%
South Plant	1,530	750	204%
Campus Total	9,450	8,650	109%

<sup>1</sup> East Plant cooling towers are at capacity limitation.

## CHILLED WATER DISTRIBUTION EFFICIENCY

The campus chilled water generating equipment is generally of modern design and reasonable efficiency. However, the actual operating efficiency of the systems is significantly less than when initially designed. The primary factor causing this reduction in plant performance is the decreased chilled water differential temperature that is being experienced across campus:

- Campus chilled water plant design efficiency: 0.7 kW/ton to 0.8 kW/ton (power used/cooling generated)
- Actual campus chilled water plant operating efficiency: 1.0 kW/ton to 1.2 kW/ton
- Campus chilled water plant design differential temperature: 10° to 14°F
- Actual campus chilled water plant operating differential temperature: 6° to 8°F

The values presented to the left are typical of the campus' system operation. The systems operate below their design differential temperature ~60 percent of the time.

The decrease in chilled water differential temperature can require as much as 50 percent to 70 percent more water to be pumped across campus than at design conditions. Returning the campus chilled water plant operating efficiency to or near design conditions could reduce required cooling power consumption by 30 percent to 50 percent.

Chilled water differential temperature is a direct result of end-use HVAC system operation, and as such, cannot be corrected in the plants. It is driven by performance of the air handler cooling coils, control valves, and HVAC control systems. Poor performance at building components reduces usable plant capacity and increases operating costs. Conversely, improving the efficiency of the existing systems also increases existing system capacity.

## CHILLED WATER

### MAJOR GENERATING EQUIPMENT CONDITION

The campus chilled water plants contain 32 pieces of major generating equipment (chillers and cooling towers). As of 2017, none of those pieces of equipment have exceeded their anticipated service life (20 to 30 years, depending on equipment classification and condition). Of all pieces of equipment, the average service life utilized is 51 percent. Two chillers in the Central Plant (CH-2 and CH-4) failed in 2016 and are in need of replacement.

By 2027, the average service life utilized will have reached 91 percent, and 14 of the 32 pieces of equipment will be at or beyond their anticipated service life expectancy:

- West Plant cooling towers (4 of 5)
- Central Plant chillers CH-2, CH-3, CH-4
- Central Plant cooling towers (3 of 4)
- East Plant cooling towers (4)

Major renovation or replacement of those pieces of equipment will be required. As equipment degrades and nears the end of its service life, preventative maintenance increases, reliability decreases, and operating cost is typically increased.

## DISTRIBUTION PIPING

The campus chilled water distribution system contains over 52,000 linear feet of distribution piping (exterior to the buildings). Several large piping extension and replacement projects over the past decade have significantly improved the condition of the chilled water distribution system.

The percentage of existing chilled water piping beyond its useful service life in 2017, 2027, and 2037 are shown in the table below.

The large majority of the piping that will be beyond its anticipated service life in 2027 is centralized to one location on the east side of campus. Beyond 2027, many large sections of piping will reach their statistical service life; however, much of that piping is located within utility tunnels and is less of a concern. Piping in tunnels is typically in better condition and is also less costly to replace.

## END-USE HVAC EQUIPMENT

Approximately 285 large air handlers (over five tons) exist in the connected campus buildings. Since 2013, 50 of these air handlers have been modernized or replaced through various building and HVAC renovation projects. Additionally, there are many smaller fan-coil and blower-coil units that utilize chilled water. Of the 285 major air handling units, over 100 (35 percent) have reached their anticipated service life (20 to 25 years). In several buildings the equipment is approaching 50 years of operation. Equipment of this age typically contain cooling coils with internal fouling, leaky casings, and faulty or inoperable pneumatic controls. All of these items degrade performance and indoor air quality and cause significant reductions in chilled water differential temperature.

By 2027, over 200 of the 285 units (75 percent) will have reached the end of their anticipated service life.

## DISTRIBUTION PIPING

SERVICE	2017 % OF TOTAL (L.F.)	2027 % OF TOTAL (L.F.)	2037 % OF TOTAL (L.F.)
Chilled water	2% (1,110')	8% (4,600')	29% (16,675')

Anticipated chilled water line service life is 50 years

## STEAM SYSTEM

The campus steam system consists of two generating plants (Central and West) housing 160,700 pounds/hour (lbs/hr) of generating capacity, a large piping distribution system containing nearly five miles of steam and steam condensate return piping each, and 60 end-use buildings. The end-use buildings contain a total of nearly 300 steam coils and 90 steam-to-hot water heat exchangers.

## STEAM GENERATING CAPACITY

Similar to the chilled water system, the two steam plants are interconnected through distribution piping but operate as separate independent systems. The table on the following page indicates 2016 peak steam load, “N+1 Capacity,” and calculated percent utilization for the two plants.

This analysis shows that while the West Plant does have boiler redundancy, the Central Plant does not. Should one 50,000 lbs/hr boiler in the Central Plant fail during peak heating season, the load could not be met.

The analysis shows that campus-wide the steam system is 98 percent utilized while still maintaining equipment redundancy. It should be noted that while the Central Plant can support the buildings typically served by the West Plant, the opposite is not true. Due to the West Plant’s much smaller capacity and orientation of the system, the West Plant cannot practically serve many buildings typically serviced by the Central Plant.

## STEAM DISTRIBUTION CAPACITY

Hydraulic analysis of the existing steam system shows that the plants are not currently limited by their steam distribution piping. Adequate piping does exist to deliver the required steam load for the served buildings. As with the chilled water system, several critical facilities are only able to be served by one steam plant, and as such, have no plant-level redundancy.

Distribution capacity is also adequate in the steam condensate return system, but there are two significant vulnerabilities that exist in the condensate return system. Both of these are associated with return to the Central Plant from the south portion of campus. A section of condensate return piping routed from the Commons, beneath Flowers Hall, and to the Pleasant Street Parking Garage serves as the only current condensate return path from the south portion of campus. This section of piping is also well beyond its useful service life.

Additionally, the Boiler Plant serves as a major hub for condensate return to the Central Plant. The return tank and pump in the Boiler Plant are critical to operation of the system, but are also aging and have no full redundant backup. Failure of the tank or pump would eliminate condensate return from an even larger portion of campus.

## STEAM DISTRIBUTION EFFICIENCY

The campus distributed heating source is steam generated by high-mass boilers. The nominal efficiency of these boilers, combined with stack losses, distribution losses, and condensate return losses, contribute to a maximum theoretical system efficiency of ~70 percent. Based on system operation and condensate return volumes, the estimated operating efficiency (fuel in/end-use British thermal units delivered) of the Central and West Plant systems is 65 percent.

A major contributing factor to steam system efficiency is steam condensate return. Condensate can unintentionally leave the system from several sources: poor or non-functioning steam traps, faulty condensate return equipment, or leaking return pipes. Any condensate that is not returned to the Central Plant system must be made up with potable water from the Jackson Well. Current condensate return to the Central and West Plant systems is 60 percent to 70 percent. Through piping repair and replacement projects, this number has been increased from 40 percent in 2013. However, even at 60 percent return, the 40 percent of the condensate volume lost equates to 10,000,000 gallons drawn from the Jackson Well annually.

Although the condensate return and overall efficiency percentages are reasonable for a steam system of this size in this climate, a large distributed steam system such as this presents several significant operational challenges. Further improvements in condensate return will increase the total system efficiency, but will not exceed the theoretical 70 percent maximum.

With five miles of condensate return piping, much of it closing in or at its anticipated service life, nearly constant attention to the system is required to maintain or improve condensate return. In order to ensure proper operation, steam traps should be inspected at least biannually. However, with over 1,000 traps present on campus, a preventive maintenance program is a major and expensive endeavor.

Finally, the large incremental equipment sizes like those present at the Central Plant make full equipment redundancy less practical. While there are currently 15 operational chillers in the chilled water system, there are only five operational boilers in the steam system.

### STEAM GENERATING CAPACITY

PLANT	2016 LOAD (LBS/HR)	2016 N+1 (LBS/HR)	% PLANT UTILIZATION
West Plant	26,900	40,000	67%
Central Plant	61,700	50,000	123%
CAMPUS TOTAL	88,600	90,000	98%





### STEAM-GENERATING EQUIPMENT CONDITION

As of 2017, none of the boilers in the West Plant or Central Plant are near or approaching the end of their anticipated service lives. Average service life used on the equipment is 32 percent. By 2027, the average service life used will increase to 72 percent, but with proper maintenance all of the boilers are anticipated to be operational throughout the master planning period.

### STEAM DISTRIBUTION PIPING

The percentage of existing steam and steam condensate piping beyond its useful service life in 2017, 2027, and 2037 are shown in the table below left.

The steam and condensate lines currently beyond their anticipated service life, and those expected to be in 2027, are primarily located along the following routes:

- From Pleasant Street Parking Garage to the condensate return pit at Commons, south of Flowers Hall
- Beneath the Quad, from Comal to Derrick Hall
- From Pleasant Street Parking Garage to Bobcat Trail along North LBJ Drive
- From Retama to the Tower along Woods Street
- From the Boiler Plant to North LBJ Drive, beneath the Pleasant Street Parking Garage
- Short branch lines to College Inn, Tower, Nueces, Theatre, and Flowers Hall

The majority of the additional piping anticipated to reach the end of its service life by 2037 is condensate return piping located in the utility tunnels routed from the Central Plant.

### END-USE HVAC EQUIPMENT

Of the 60 end-use buildings that utilize steam, around half contain air handlers with steam heating coils. The other half utilize steam-to-heating water heat exchangers and circulate hot water within the buildings. Over half (36) of the buildings also use steam for generation of domestic hot water. Eight buildings use raw steam for additional functions such as kitchen equipment, humidifiers, or laundry.

The table below right lists major building steam equipment at or beyond its anticipated service life in 2017 and 2027. Similar to the chilled water system, many steam coils are in need of replacement. Many steam-to-heating water or domestic water heat exchangers are also in need of replacement; however, these replacements are relatively minor compared to the other building HVAC components.

### STEAM AND STEAM CONDENSATE PIPING BEYOND SERVICE LIFE

SERVICE	2017 % OF TOTAL (L.F.)	2027 % OF TOTAL (L.F.)	2037 % OF TOTAL (L.F.)
Steam	12% (3,250')	20% (5,200')	28% (7,300')
Condensate	29% (6,600')	35% (7,900')	72% (16,250')

Anticipated steam line service life is 50 years

Anticipated condensate line service life is 30 years

### STEAM EQUIPMENT AT OR BEYOND SERVICE LIFE

SERVICE	2017 % OF TOTAL (COUNT)	2027 % OF TOTAL (COUNT)
Steam Coils	12% (135)	49% (173)
Heat Exchangers	49% (43)	63% (55)

Anticipated steam coil service life is 20 years

Anticipated heat exchanger service life is 25 years

## EXISTING CAMPUS WATER SYSTEM

The San Marcos Campus is primarily supplied by two private wells located within the campus, and receives secondary service through a connection to the City of San Marcos water supply system. Below is a summary of the existing system elements:

- Jackson Well #1 capacity is 1,600 gallons per minute (gpm)
- Jackson Well #2 capacity is 1,340 gpm
- Ground Storage Tank (standpipe) capacity is 0.5 million gallons (MG)
- Elevated Storage Tank capacity is 1.5 MG
- Connection to City of San Marcos water system at Speck Street/Academy Street

The existing wells are regulated by the Texas Commission on Environmental Quality and currently have an annual permitted pumpage limitation of 2,000 acre-feet per year.

## POTABLE WATER SYSTEM

A Potable Water Study was prepared by Bury+Partners in July 2012, which indicated no current deficiencies in the system. There is a single connection to the City of San Marcos water supply system, but the campus is otherwise supplied from the Jackson Wells. Although there are no deficiencies in the system, the campus water piping is aged, with 50 percent to 75 percent of the system exceeding its design life.

The interconnection between the Texas State University campus water system with the City of San Marcos water supply system is located near the Speck Street Parking Garage at Speck Street and Academy Street. There is a four-inch water meter, eight-inch check valve and backflow preventer, and six-inch bypass line.

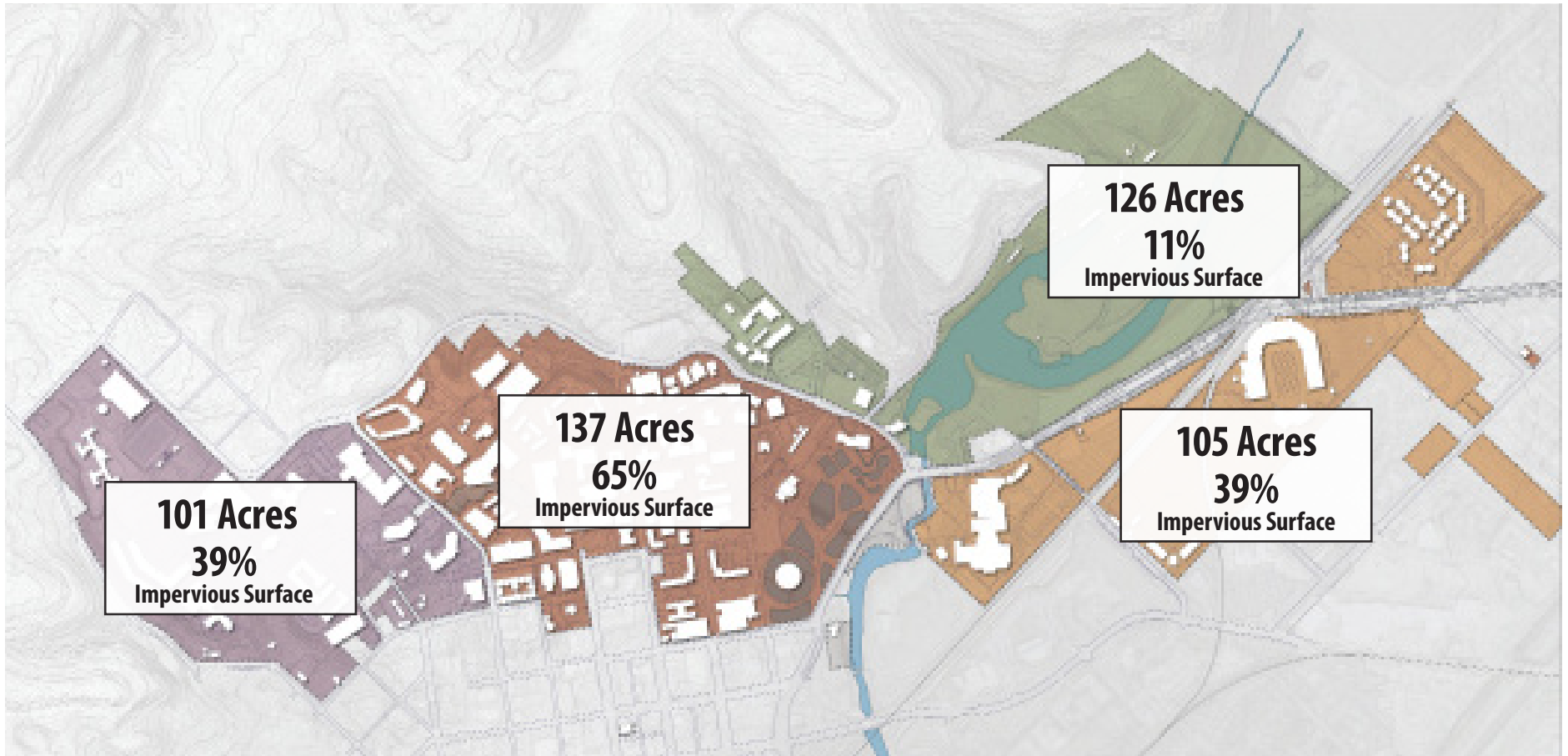
## FIRE DEMAND

The existing water system on campus has fire flow demand deficiencies. Some areas of campus have less than 1,000 gpm available for fire flow. Minimum fire flow requirements may be 1,500 gpm or higher based on allowable reductions. The fire flow deficiency is a result of the available water pressure at the connection to the City of San Marcos water system. The campus has 10 existing pressure reducing valves (PRVs) to reduce high system pressures in areas with lower ground surface elevations.

## STORM SEWER

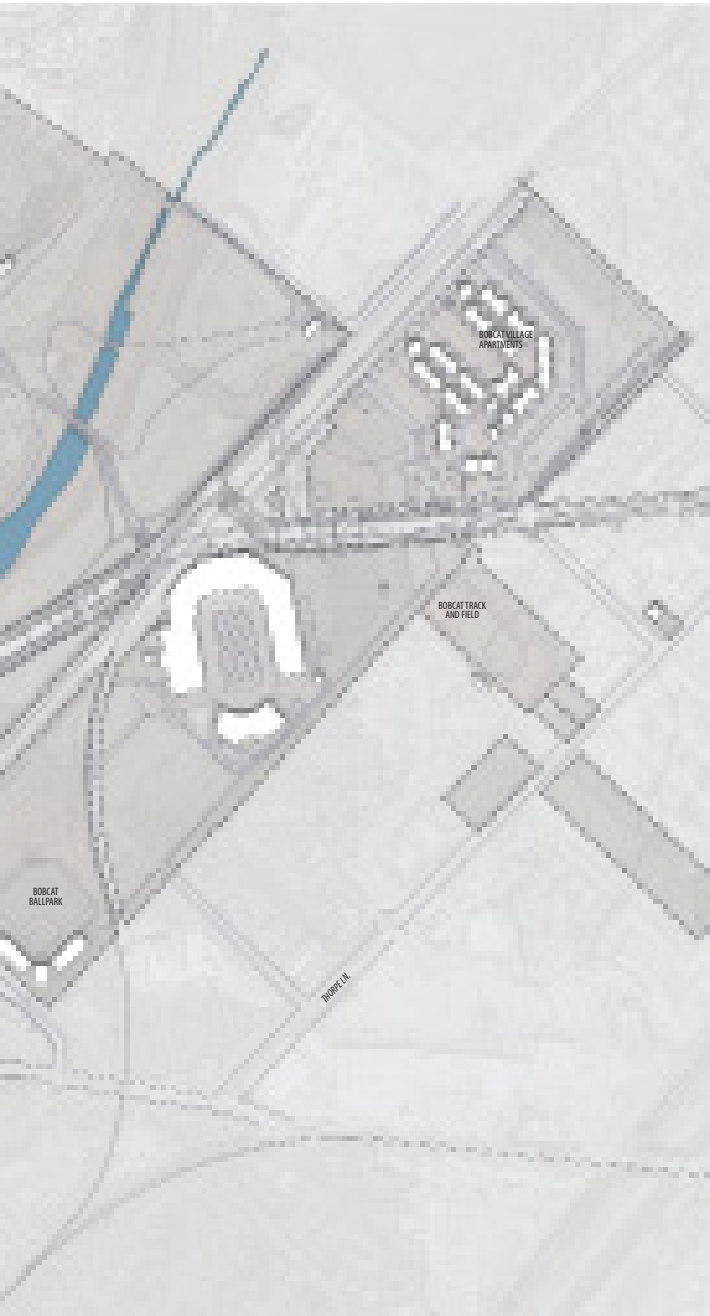
Of the 491 acres on campus, approximately 65.5 acres discharge directly to Sessom Creek, and approximately 112 acres discharge to the City of San Marcos right-of-way. Recommended upgrades to the system were established in the Campus Storm Water Drainage Study and Plan Report, 2013.

The amount of impervious surface by campus district is shown on the graphic on the following page.



IMPERVIOUS SURFACE ON CAMPUS





## WASTEWATER

Similar to the campus water system, the wastewater system does not have existing deficiencies, but is aging with 50 percent to 75 percent of the pipe at or exceeding its design life. In addition, due to the ground surface elevation ranges across campus, some lines are much deeper than typical depths, with the deepest line at nearly 50-feet deep at the Albert B. Alkek Library.

The existing wastewater system on campus is part of three separate wastewater basins. There are currently no deficiencies in the campus system at the connections to the City of San Marcos system. Improvements under the 2017-2027 University Master Plan that result in large wastewater demand increases will need to be evaluated in conjunction with the City of San Marcos system capacities.

### WASTEWATER SYSTEM

— Existing Wastewater System

## ROUND ROCK CAMPUS

Texas State University operates the Round Rock Campus in Williamson County, which is 20 miles north of the City of Austin and approximately two miles from IH-35. Similar to Hays County, Williamson County is experiencing significant annual growth adding more than 80,000 residents in the last five years to a county population of more than 500,000. Moreover, the United States Census Bureau estimated the combined population of the Austin Metropolitan Statistical Area (MSA), which included Travis, Hays, and Williamson Counties, now exceeds 2,000,000 people. For Texas State University, this growth trajectory is important—signaling the need for mindful program expansion to meet the higher education demands of Central Texas.

The Round Rock Campus had humble beginnings, starting quietly in 1996 as the Round Rock Higher Education Center (RRHEC). From 2003 to present, the University has created a new campus on land donated from the Avery family and completed two major facilities, the Avery Building and the Nursing Building.

Collectively, these facilities provide instructional space, administrative offices, and student support spaces. The Round Rock Campus is also physically adjacent to four major community amenities—Austin Community College District—Round Rock Campus, Cornerstone Hospital, the Seton Medical Center Williamson, and the Texas A&M Health Science Center.

### CAMPUS OVERVIEW

Programmatically, the Round Rock Campus occupies a unique and important function within the University enterprise.

At present, it offers upper-level courses leading to baccalaureate degrees in Applied Arts and Sciences, Computer Science, Criminal Justice Law Enforcement, General Studies, Interdisciplinary Studies, Early Childhood through Grade 6/ESL, Management, Mass Communication, Nursing, and Psychology. The Round Rock Campus also offers select master's degrees in the fast growing fields of Business Administration, Computer Science, Educational Leadership, Elementary Education, Professional Counseling, Public Administration, and Software Engineering.

Additionally, the campus offers certifications and continuing education, online, and distance learning opportunities via evening and weekend sessions—delivering vital education for working adults, professionals, and lifelong learners.

The Round Rock Campus, like the San Marcos Campus, is smoke-free. The Round Rock Campus student services area, “One Stop Center,” handles academic program information, admissions, registration, tuition payments, financial aid, and advising. Students can get assistance with printing and copying at the Campus Technology Center. The Round Rock Campus Library is located in the Avery Building and materials are also couriered daily from the San Marcos Campus. The Market Express Area, a snack and vending area, is located in the Avery Building.



## CHILLED WATER AND HEATING WATER SYSTEMS

The Round Rock Campus chilled and heating water systems currently consists of three water cooled chillers, five heating water boilers, and associated ancillary equipment located in the Central Utility Building. The system also utilizes direct-buried chilled and heating water distribution piping with valve vaults to serve the two connected buildings. A third building for the campus, Willow Hall, is currently under construction, and a fourth building, Esperanza Hall, is planned for the campus. Both buildings are to be served by the Central Utility Building.

The Central Utility Building currently has chilled water equipment redundancy. After completion of Willow Hall, the equipment will be near full utilization. Construction of Esperanza Hall will require installation of another 800-ton chiller.

The Central Utility Building currently has heating water equipment redundancy. Construction of Willow Hall will also include installation of new boilers and will slightly increase the firm capacity. Construction of Esperanza Hall will require installation of another modular boiler.

Beyond the construction of Esperanza Hall, any building adding 120,000 square feet to the chilled water system and 7,500 square feet to the heating water system may require an expansion of the Central Utility Building. Alternatively, a new satellite plant may be required. A satellite utility plant would provide some plant-level redundancy for the campus, and also could house more capacity for future

campus growth than is likely with a Central Utility Building expansion. A second Central Utility Building placed along a planned utility corridor could complete a loop between the two plants.

The plant, distribution, and end-use components of the system are relatively new, in good condition, and should have no issues serving the campus through the life of this University Master Plan.

## ELECTRICAL SYSTEM

The Round Rock Campus electrical infrastructure is new and in good condition. Capacity is not a concern for the foreseeable future. The underground system is laid out for expansion along the path of the new buildings. The existing infrastructure can be extended to the new buildings without major modifications to the system. The medium voltage switchgear is located outside, which will shorten its life. It is likely to need replacement by the end of the beyond 2027 time frame. The existing building electrical equipment is in good condition and serviceable.

There are two generators at the site. A 2005 Cummins at the Avery Building and a 2009 MTU at the Nursing Building.

## MOBILITY ANALYSIS

Students and employees of the Round Rock Campus arrive via personal automobile. There is no on-campus resident student housing or adjacent apartment complex with direct pedestrian access. There are no visible bicycles operating or frequently parked outside of campus buildings. The Bobcat Shuttle does not provide transit service to the Round Rock Campus, and the local bus service is demand responsive, meaning that individual trips must be reserved in advance by calling the Star Shuttle telephone. The one-way fare is \$5 per trip.

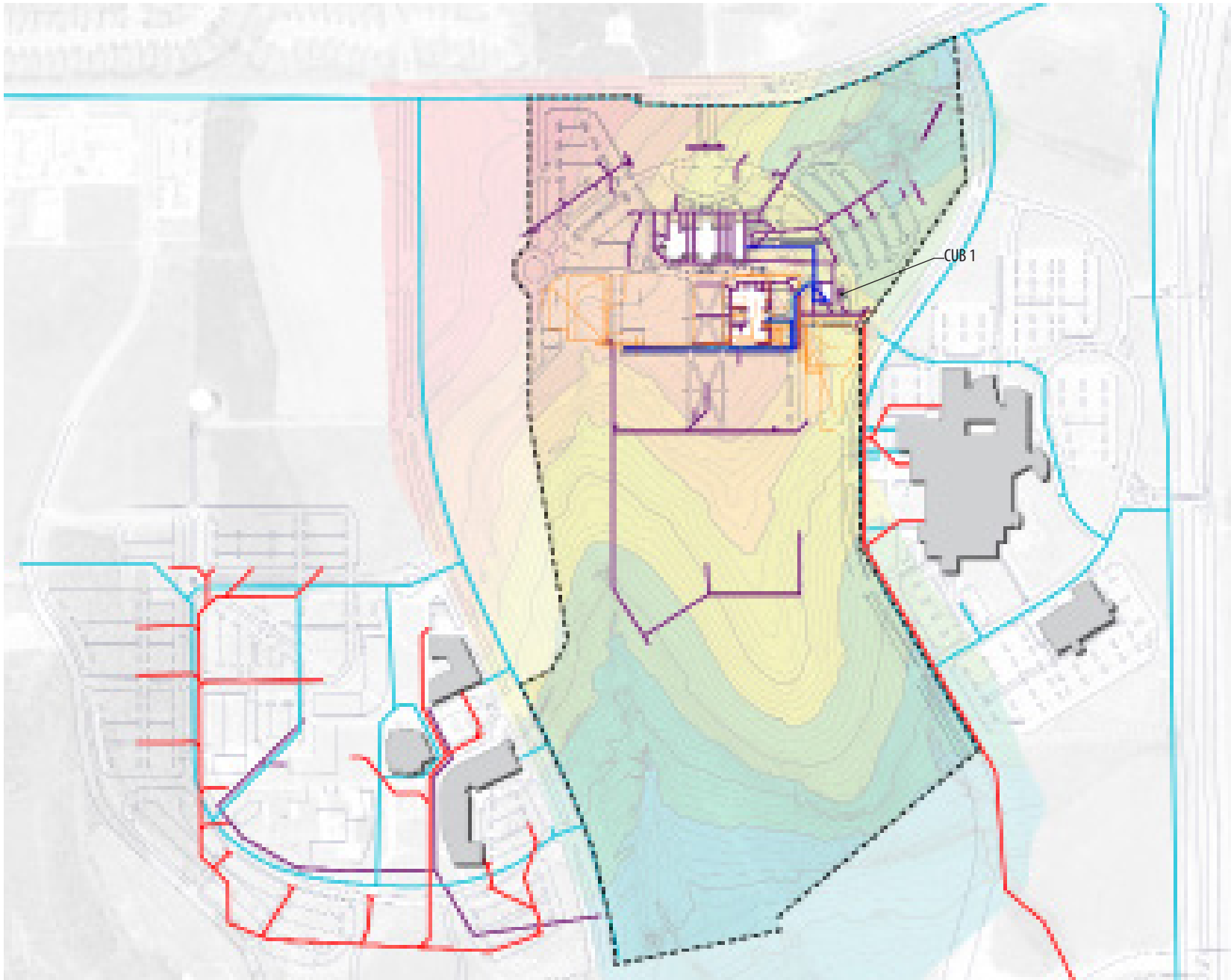
Surface parking lots surround the existing campus buildings. Texas State University provided more than 1,000 parking spaces during the initial development of the Round Rock Campus to exceed the immediate parking demand. This approach allows for student enrollment growth to occur without a parking shortfall in the next 10 years.

The central core of the Round Rock Campus is entirely pedestrian and bicycle friendly. Bollards prevent vehicular access from the surrounding parking lots. As such, there are no anticipated transportation improvements for the Round Rock Campus, barring unforeseen student enrollment growth that would surpass the 1,054 existing parking spaces.

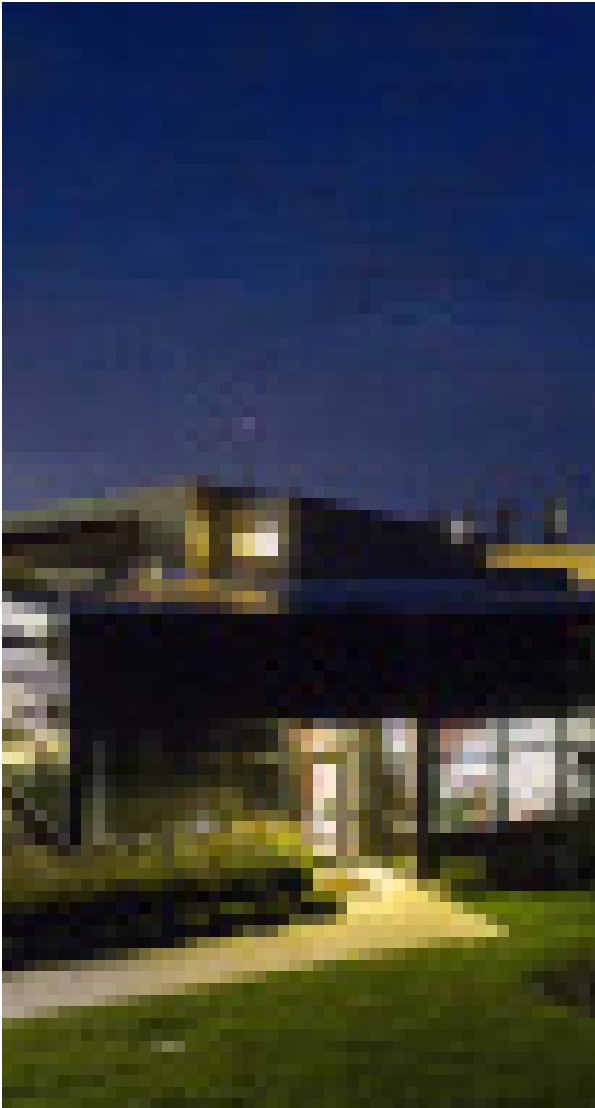
### CAMPUS UTILITIES SYSTEM

-  City Water
-  City Sanitary Water
-  Storm Sewer
-  Electric System
-  Chilled Water System





# SCIENCE, TECHNOLOGY, AND ADVANCED RESEARCH (STAR) PARK TODAY



## REGIONAL CONTEXT

The Science, Technology, and Advanced Research (STAR) Park site is in close proximity to the San Marcos Campus and has excellent regional access off IH-35 via McCarty Road forming the site's northern edge. The site is well positioned along the IH-35 innovation corridor that links research and development/technology centers in Dallas to the north and Austin/San Antonio to the south. Transit availability and linkage of STAR Park to the San Marcos community and the San Marcos Campus is currently limited and undetermined at this time. However, transit availability is expected to improve as development within and around STAR Park increases and regional non-motorized trails expand.

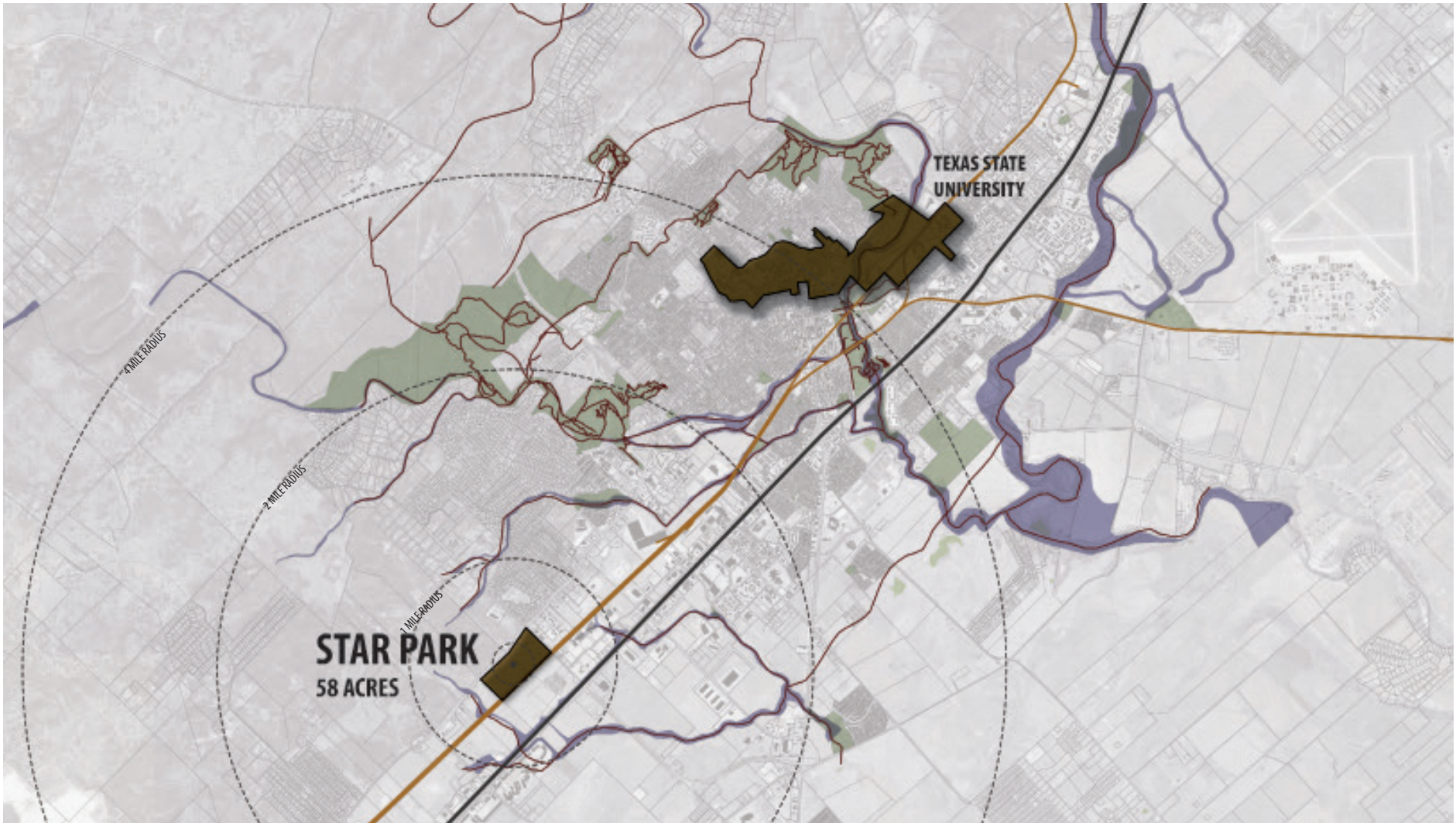
## LOCAL CONTEXT

Surrounding land uses are generally compatible with the mission and vision of STAR Park with commercial and multiple family housing north of McCarty Road. As STAR Park grows, it is anticipated that the area along McCarty Road will transition in both character of development and composition of uses. The area surrounding the property on the east, west, and south is predominantly vacant or residential with

the exception of a church located near the intersection of McCarty and Hunter Roads.

STAR Park enjoys great visibility into the site from the surrounding roadways. A significant opportunity exists at the corner of McCarty Road and Hunter Road to establish a positive identity for STAR Park. The existing railroad corridor and easement runs along the property's southeast boundary. Train noise must be recognized when locating future facilities. Additionally, an existing powerline and water easements traverses the mid-section of the site and must be factored into STAR Park's planning.

Grasses and shrubs cover the majority of the site's terrain that gradually slopes toward the southeast corner of the property. A scattering of trees provide cover and lines of hedgerows of volunteer species that bisect the site. A natural drainageway courses through the site from west to east before emptying into a recently constructed detention pond located at the northeast corner of the property. This pond was constructed for existing STAR Park development as part of an approved stormwater management plan that helps to protect the sensitive watershed that STAR Park is situated within.



## FACILITIES

The 58-acre STAR Park site is generally a blank slate for development with the exceptions being the existing 36,000 GSF STAR One Building and the 17,000 GSF Archives and Research Center. Immediate plans are to design and construct a 30,000-60,000 GSF Multi-tenant Research Building immediately south of the STAR One Building and a separate Infrastructure Research Laboratory.

## MOBILITY AND PARKING ANALYSIS

Primary access into the site is off Hunter Road approximately 625-feet south of McCarty Lane. Currently, only a portion of this proposed boulevard entry is constructed and is re-imagined in the University Master Plan. Pedestrian access to the site is limited by a lack of pedestrian connections along major roads and the only pedestrian routes within the site are around the STAR One building. Parking for STAR One is located to the west of the facility. Parking and service access for STAR One and the Archives and Research Center are off McCarty Lane.

## UTILITY SUMMARY

The existing facilities at the STAR Park site use localized HVAC equipment for building conditioning, and each are served individually from the electric utility.

Since the majority of the STAR Park property is undeveloped, utility service to the park are located along the McCarty Lane and Hunter Road. Some upgrades and expansion of the system to meet demand and create redundancy will be required.

- **Drainage:** As previously mentioned, the site is generally undeveloped. The existing facilities stormwater management needs are accommodated by a two-acre, four-foot deep detention pond located immediately west of the Archives and Research Center. There is adequate fall (slope) down in the southeast corner of the site where the existing pond is located.
- **Wastewater:** The 12-inch wastewater line for STAR One was designed and built at .8 percent to one percent yielding a capacity of 2.5 cfs+. So there is plenty of capacity in the line.

- **Water:** Existing facilities are currently serviced off water leads in Hunter Road. There is currently no formal water system plan for STAR Park. Water capacity is adequate to serve the proposed development.
- **Thermal and Electrical:** The existing facilities at the STAR Park site use localized HVAC equipment for building conditioning, and each are served individually from the electric utility.
- **Fiber:** Fiber currently exists along Hunter Road. Fiber will need to be extended into the site to serve future facilities.



## BUILDING

- A** STAR One
- B** Archives and Research Center

## LEGEND

- Existing Buildings
- Floodway
- 100-Year Floodplain
- Site Boundary
- Rail Road
- Contour
- High Voltage Power Line
- Existing Trail
- Vehicular Axes
- Canopy Trees
- Residences
- Setback
- Drainage
- Noise and Vibration
- Important Intersections



## **03. ACADEMIC & RESEARCH SPACE**



# NEEDS

## INTRODUCTION

As Texas State University continues to grow, the institutional emphasis is shifting to an ethos of more vigorous growth of graduate programs and slower growth at the undergraduate level. This chapter summarizes the growth recommendations for enrollment and future space needs for the San Marcos and Round Rock Campuses. Included herein is a summary of all Educational and General (E&G) spaces of teaching, research, library, office, and support. These programmatic elements are the foundation of the University Master Plan, driving a physical response to the 2017-2027 growth horizon.

This chapter begins with a summary of recommendations and is followed by sequentially organized topics:

- Enrollment and demographics
- Space utilization and benchmarking
- Programmatic space needs
- Research

## ENROLLMENT SUMMARY

### 2027 Overall Enrollment Trajectory

Manage the overall university population growth (headcount) at 1.7 percent annually from a 2015 fall semester baseline of 37,979 to a 2027 projection of 46,444.

### Undergraduate Enrollment

Establish a moderated 1.5 percent annual enrollment trajectory for undergraduate students. The 2015 fall semester baseline full-time equivalent was 33,480 students with the 2027 projection of 40,029.

### Master's and Doctorate Enrollment

Establish an accelerated three percent annual enrollment trajectory for master's and doctoral students. The 2015 fall semester baseline enrollment was 4,499 students with the 2027 projection of 6,414.

## SPACE UTILIZATION SUMMARY

Texas State University has a growing student population and among the highest utilized classroom/class laboratory spaces and the largest overall academic space deficit in the State of Texas. To compound this situation, the University has not been able to add space commensurate with this growth. Consequentially, this has generated a lower assignable square footage (ASF) per full-time equivalent student (FTE) and an overall spatial shortage. As a result, the University Master Plan recommends using higher utilization measures to generate future space needs. These assumptions include:

- Utilize higher utilization rates than recommended by the Texas Higher Education Coordinating Board (THECB). At present, state-wide targets have been established at 38- and 25-weekly room hours for classrooms and class laboratories, respectively. The University Master Plan recommends generating space needs based on 43 and 39 hours, respectively.
- Utilize higher classroom student station occupancy (fill rate) than the THECB standards. At present, the University exceeds state-wide targets of 65 percent and 75 percent for classrooms and class laboratories. The University Master Plan recommends using Texas State University's higher rates of 74 percent and 81 percent for classrooms and class laboratories, respectively.
- Increase current space allocation levels of 64 ASF/FTE to a target of 78 ASF/FTE. It should be noted that this target is a return to 2006 ASF/FTE levels and is lower than the recommended/projected THECB target of 91 ASF/FTE.

## SPACE NEEDS SUMMARY

In aggregate, Texas State University needs an additional 1,450,000 gross square feet (GSF) of E&G space for the San Marcos and Round Rock Campuses. Approximately 200,000 GSF is projected for the Round Rock Campus and 1,250,000 GSF is projected for the San Marcos Campus. The space need, categorically and in decreasing order, is in teaching space

(classrooms and class laboratories), office space, research space, followed by library and student collaboration spaces, and support spaces. This space need calculation is based on the parameters of enrollment targets, higher utilization, and a higher space allocation per student.

## RESEARCH SUMMARY

One of the directives of the University Master Plan is to advance the University's research agenda. This includes establishing space goals for maintaining Emerging Research University (ERU) status and concurrently preparing for top-tier status. After comparison with THECB ERU and national peers, discussions were held regarding the projected number of principal investigators (PIs) based on growth trends needed to reach National Research University Funding (NRUF) total research expenditures by 2027. In summary:

- Increase the PI count from 191 to 294.
- Establish a 5 percent annual increase in research activity through the year 2027.
- Increase National Science Foundation (NSF) total reported expenditures from \$47 million to \$86 million. This corresponds to an increase in restricted research expenditures to \$52 million from \$27 million.
- Add up to 295,000 GSF of additional research space in academic buildings to accommodate this increased research activity.

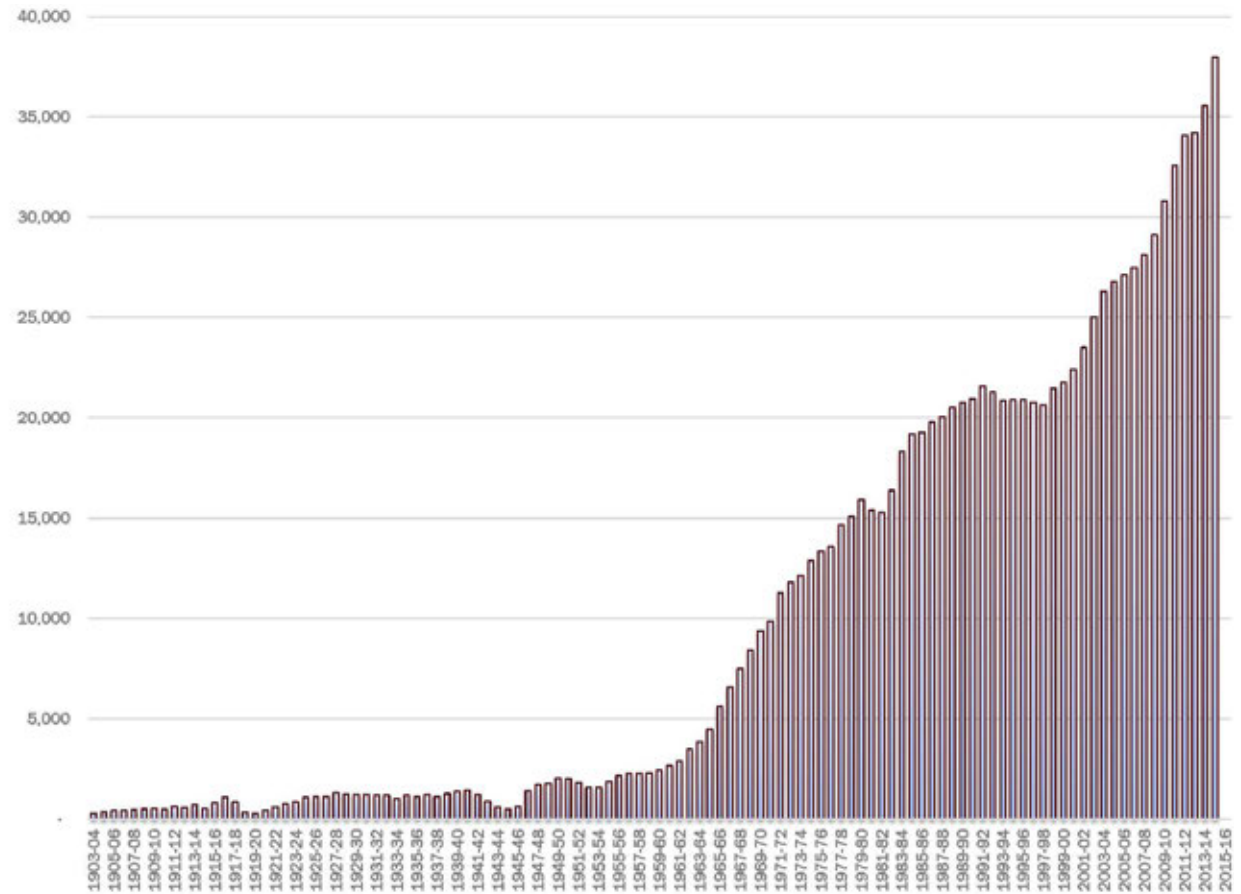


# ENROLLMENT AND DEMOGRAPHICS

## HISTORICAL ENROLLMENT

Since its opening in 1903 and throughout its growth and change as an institution, Texas State University has remained a constant source of education, economic strength, culture, entertainment, and pride for the City of San Marcos and the region. When the San Marcos Campus opened its doors for the 1903/1904 school year, it had an enrollment of 303 students. Since this time, the campus has grown to support a population of nearly 40,000 students.

Annual enrollment rates were low but relatively constant during the early years of the University. During the 1966/1967 school year, enrollment rates exceeded 5,000 students for the first time in the University's history. The University went on to experience robust growth between 1966 to 1987 by adding approximately 13,000 students (nearly 22,000 total population) over this 21-year period. The University would remain steady at approximately 20,000 students until the turn of the century. Beginning in 2000 and continuing through the current year, the University is once again experiencing rapid growth, increasing the population at a rate by almost 1,000 students per year for the past 10 years.



### Historical Enrollment

The chart above provides a visual image which tracks the Historical Enrollment of Texas State University since its opening in 1903 as the Southwest Texas State Normal School. (Historical Enrollment Data provided by Texas State University)

## CURRENT ENROLLMENT

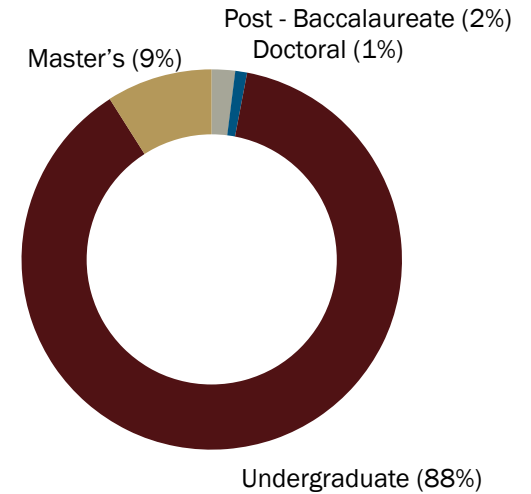
Based on recent enrollment growth trends, Texas State University is projecting an enrollment of over 40,000 students by the end of 2018.

The student body is comprised of baccalaureate, post-baccalaureate, master's, doctoral, and professional students. At 88 percent of the overall student population in 2015, undergraduate students comprise the majority of student enrollment. Master's programs have the second highest concentration of students with nine percent of the overall enrollment for 2015. The remaining post-baccalaureates, doctoral, and professional students account for the other three percent of the student body.

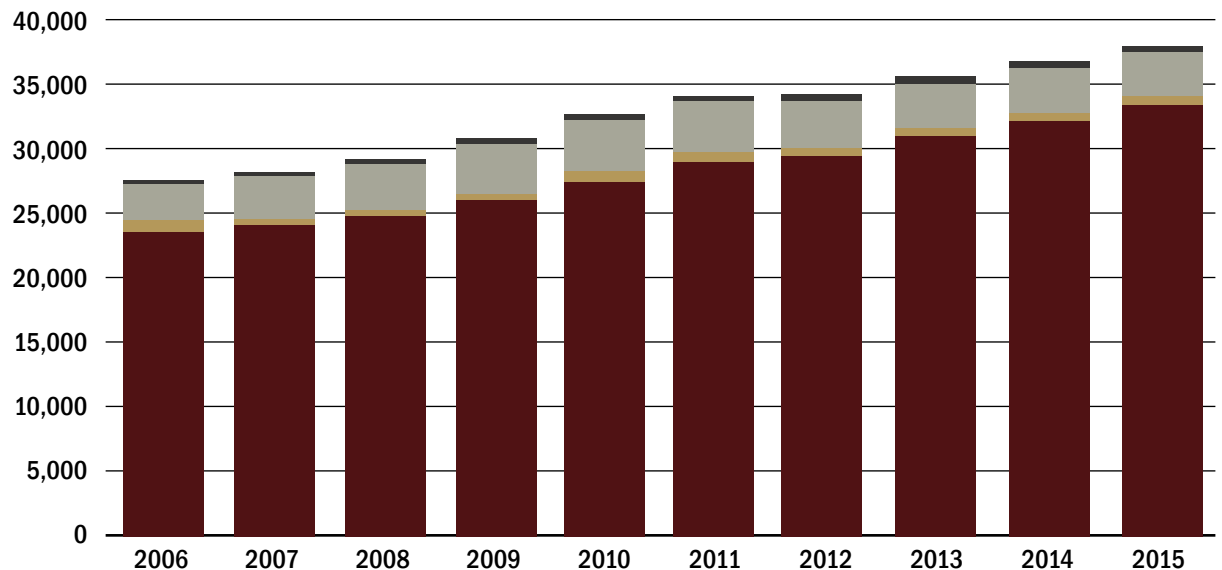
Over the past 10 years, undergraduate enrollment has experienced an annual population increase of four percent on average, which equates to an average increase of 1,101 students per year. While the undergraduate population continues to grow quickly, the doctoral student enrollment has also grown.

The high growth rate of enrollment in the doctoral program correlates with the University's increasing focus on research and graduate education.

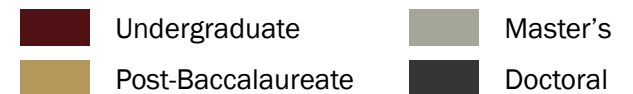
The continued growth of student enrollment will continue to strain existing campus facilities and operations and will require strategic planning tools to manage campus operations and campus growth.



2015 STUDENT ENROLLMENT BY CLASS

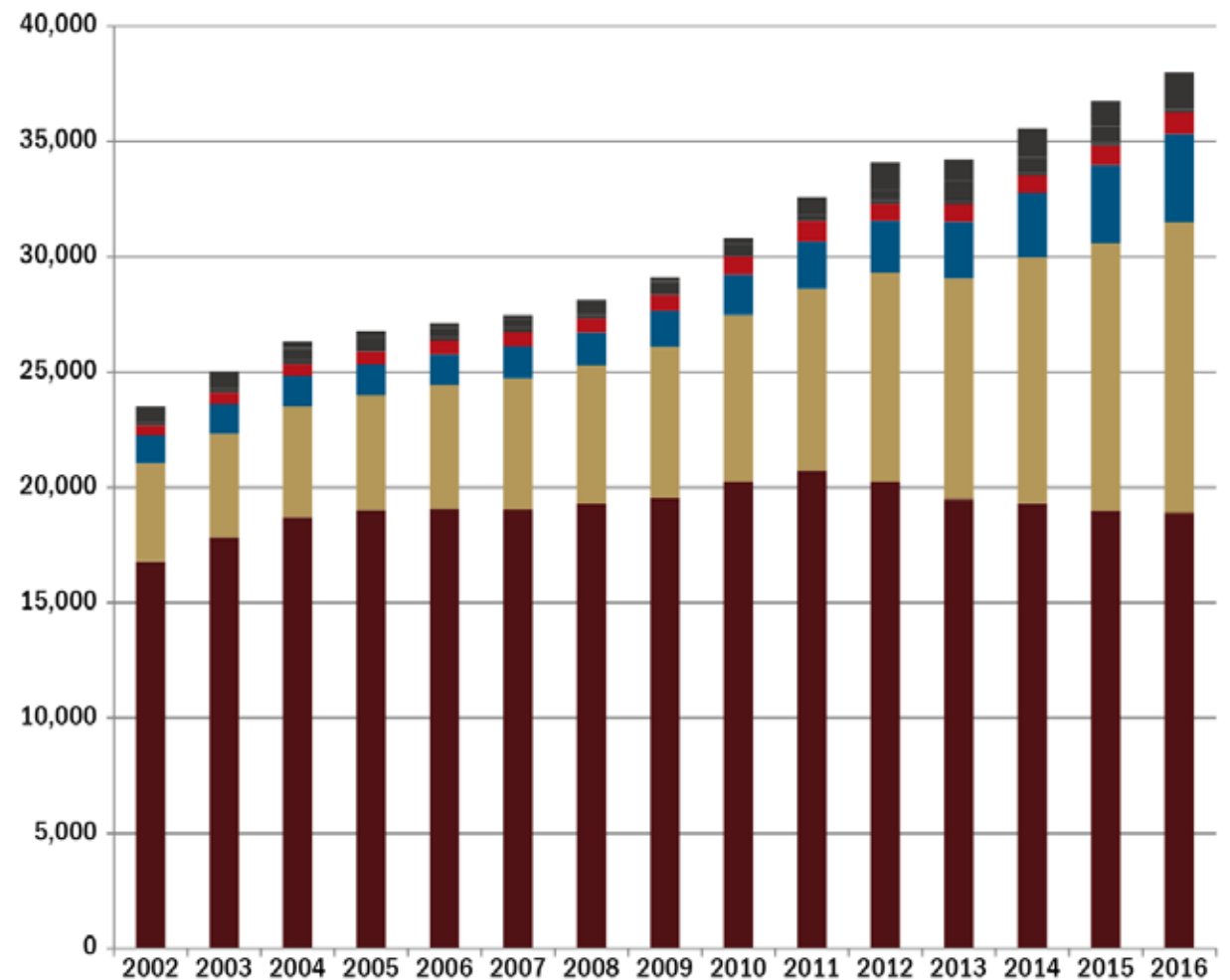


STUDENT ENROLLMENT BY CLASS



## ENROLLMENT DEMOGRAPHICS

Texas State University has seen its student demographics shift over the history of the institution. These changes have corresponded to shifts in Texas. Historically the majority of student enrollment at Texas State University has been comprised of Texas residents. While the University is committed to student diversity and reaching beyond the borders of Texas, over the past 10 years the majority of enrolled students, an average of 96 percent, have been Texas residents. Nevertheless, students from 66 countries, 50 states, and the District of Columbia attended Texas State University in 2015.



STUDENT ENROLLMENT BY ETHNICITY



While the University has seen shifts in gender composition over the past several decades, another shift has been even more evident over the past 10 years: the ethnicity of the student body. Ten years ago, in 2005, the student body was 70 percent White, non-Hispanic and 30 percent ethnic minorities. Fast forward to the year 2015, and we find 49.7 percent of the student enrollment to be White, non-Hispanic with 50.3 percent of students being ethnic minority.

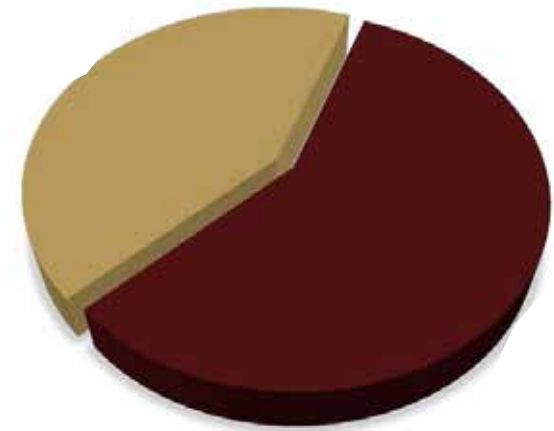
The bar chart provided to the right indicates the shifting ethnicity of the University. The University's greatest area of growth has been within the Hispanic population. The Hispanic student enrollment has more than doubled over the past 10 years growing from 5,396 students in 2005 to 12,614 students in 2015. The White, non-Hispanic student category reached a high of 20,715 students in 2010 and has been relatively level since. The University's enrollment mirrors the demographic changes seen in Texas' K-12 schools.

The current and ever-changing ethnic make-up of Texas State University is an important factor in the programs and services it provides to students. The University continues to be a leader in offering higher education to students, many of whom are first-generation college students. As the University continues to grow and expand, the cultures and configuration of its student body will continue to play a major role in its development.

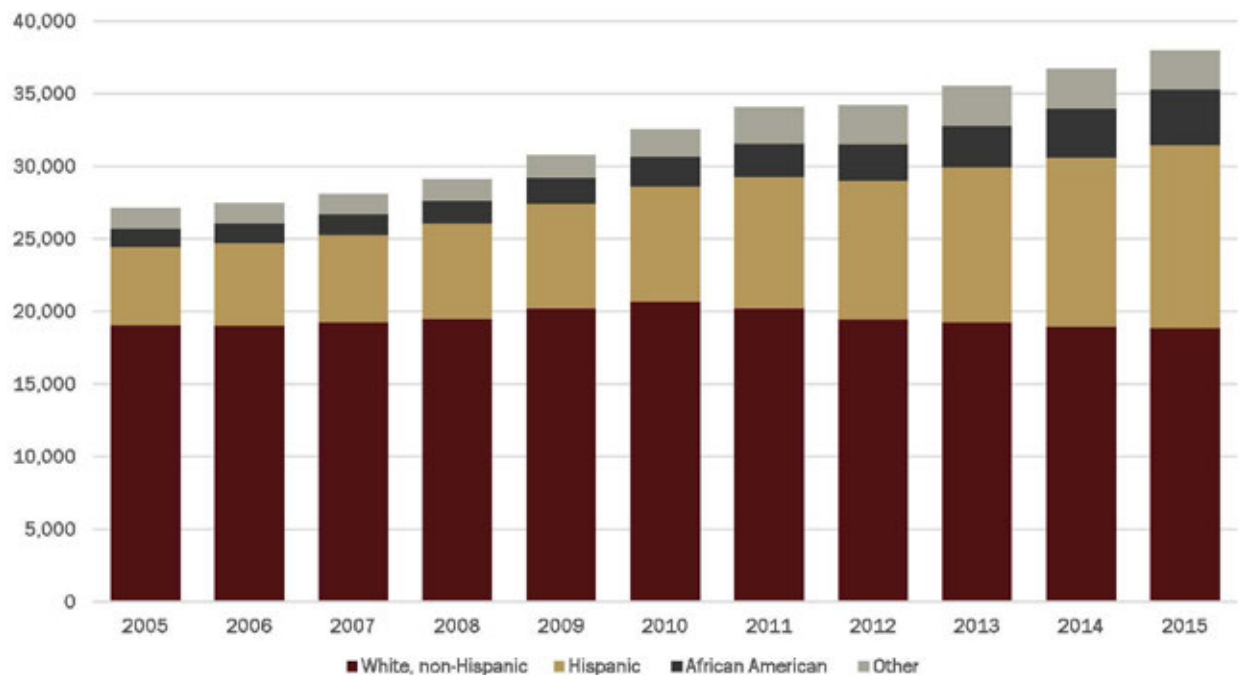
### CATEGORIZED DEMOGRAPHICS

The pie chart to the right indicates the percentage of male verses female student enrollment for the year 2015.

The bar chart below represents the shifting ethnic make-up of the University over the past decade. The chart indicates that as enrollment has grown, so has the overall percentage of ethnic minority students.



Female Students (Approx. 56%)  
Male Students (Approx. 44%)



# SPACE UTILIZATION AND BENCHMARKING

## CAMPUS OVERVIEW

Significant growth over the past decade has led Texas State University to become a highly utilized campus in terms of space usage for classrooms and class laboratories. Texas State is one of the leaders in Texas in this category, scheduling almost all classrooms and class laboratories beyond the THECB recommended average hours of use per week. The University, currently operating at a very high efficiency, is nearing the point where finding available time slots to schedule additional classes and class laboratories to accommodate a growing student population will be extremely difficult without the creation of additional teaching spaces. In terms of space overall, the campus is also in need of research, support space, housing, and administrative space in addition to academic space. As the University continues to grow in terms of enrollment, additional space will be needed to support the students and faculty of Texas State University.

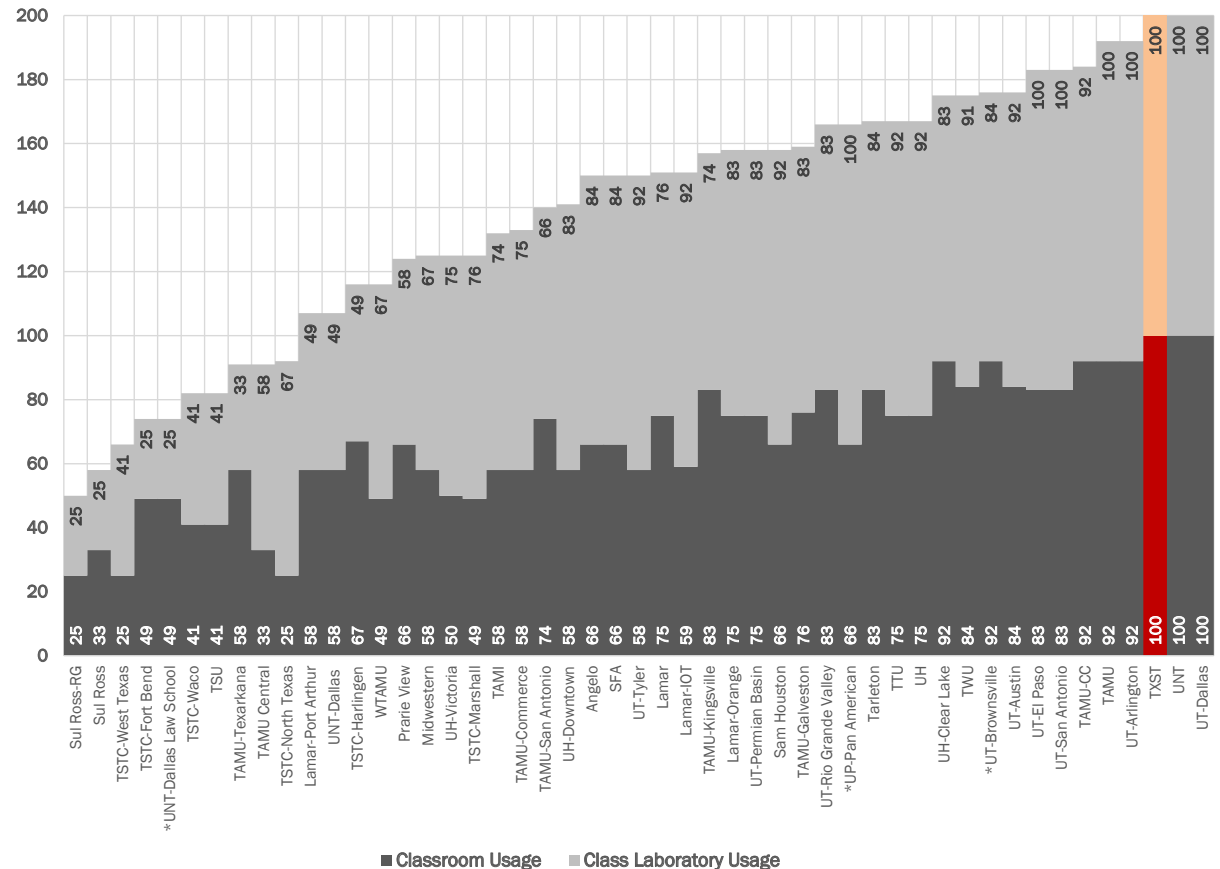
## BENCHMARKING

Texas State University is one of the leaders among higher education institutions in the state of Texas in terms of its Space Usage Efficiency (SUE) scores. In 2015, Texas State University, University of North Texas, and the University of Texas at Dallas were the only Texas Institutions that received a perfect score on the assessment from the THECB. The assessment

is comprised of a total of 200 points, divided into two categories of 100 points each for both classrooms and class laboratories.

The SUE report utilizes three variables when identifying the space and use to formulate the scores: Facilities Demand, Utilization Rate, and Average Percent Fill. Points are awarded in each

of the three categories by formulas provided by the THECB. The points are then converted into a score based on a weighted multiplying factor. The scores of each of the three categories are then summed to create the final score. The perfect score is projected to continue in the future as enrollment at the University continues to grow and the need for space only increases.



## SPACE USAGE EFFICIENCY (SUE)

The THECB measures three variables to effectively identify space need and actual use.

- **Facilities Demand** connects the supply (number of classrooms or class laboratories) with the demand (number of activities scheduled that require rooms). The total hours of classroom-type activities is divided by the total number of classrooms; the same process is used for laboratory-type activities.
- **Utilization Rate** counts scheduled course sections taught in classrooms and class laboratories, divided by 50 minutes and divided by number of classrooms and class laboratories in the facilities inventory.
- **Average Percent Fill** assesses the number of seats in a classroom or class laboratory that are occupied when the rooms are in use. This helps to determine the appropriateness of use, the need for additional facilities, and opportunities for optimization.

These calculations provide a quick view of which spaces are being under- or over-utilized in terms of scheduling and/or capacity. In the case of Texas State University, an institution which is currently in need of additional teaching spaces, these methodologies can help to identify spaces which may be available for additional scheduling or help to assist the University in future scheduling by increasing capacity in courses which were indicated to have multiple empty seats within a section.

When looking at individual classroom and class laboratory utilization, it is important to compare the overall hours per week obtained and the fill rate/capacity of those sections with the recommended minimum targets provided by the THECB.

The THECB provides the following minimum utilization guidelines (as shown in the chart below):

- Classroom: 38 hours per week
- Class Laboratory: 25 hours per week
- Average Classroom Fill: 65 percent minimum
- Average Class Laboratory Fill: 75 percent minimum

- Classroom Facilities Demand: 45 hours per week
- Class Laboratory Facilities Demand: 35 hours per week

Texas State University space usage efficiency measurements for fall 2016 are:

- Classroom: 40 hours per week
- Class Laboratory: 38 hours per week
- Average Classroom Fill: 73 percent
- Average Class Laboratory Fill: 81 percent
- Classroom Facilities Demand: 46 hours per week
- Class Laboratory Facilities Demand: 48 hours per week

### THECB VS. TEXAS STATE UNIVERSITY COMPARISON CHART

	THECB UTILIZATION GUIDELINES	TEXAS STATE UNIVERSITY MEASUREMENTS
Classrooms	38	40
Class Laboratories	25	38
Average Classroom Fill	65%	73%
Average Class Laboratory Fill	75%	81%
Classroom Facilities Demand	45	46
Class Laboratory Facilities Demand	35	48



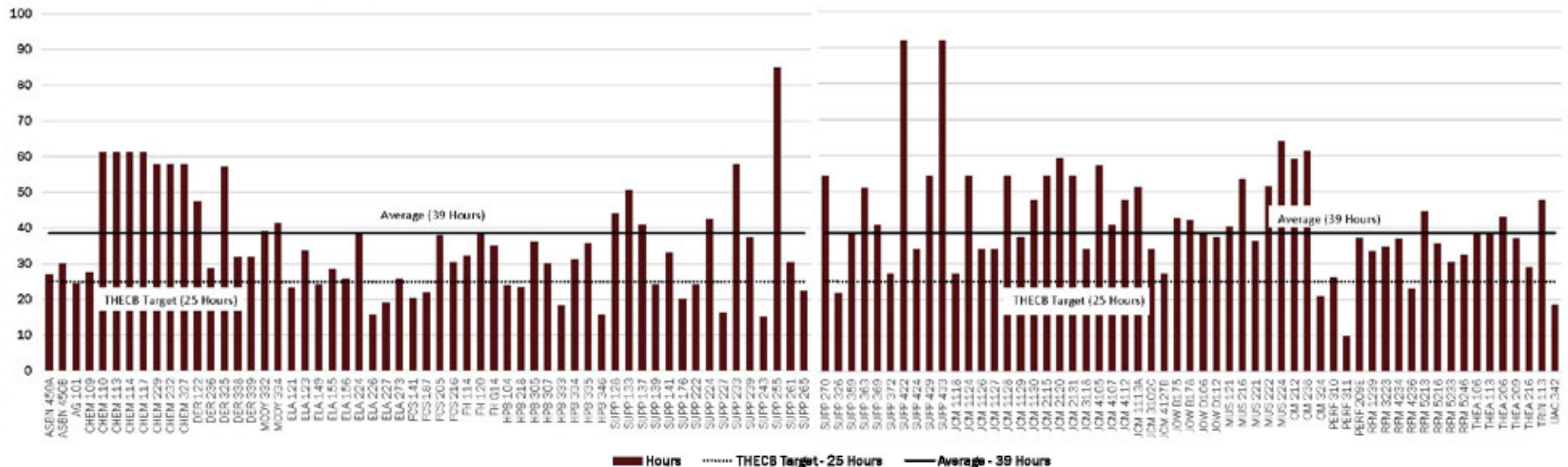




## CLASS LABORATORY UTILIZATION SUMMARY

Class laboratory utilization at Texas State University is also one of the highest in the State of Texas. Just as with the classrooms, the 124 class laboratories were utilized at a rate above the recommended minimum of 25 average hours per week provided by the THECB. Class laboratory utilization for Texas State University in fall 2016 was an average of 39 hours per week, more than one and a half times the recommended rate. Just as with classrooms, the University has also repurposed and added additional class laboratories when possible. The bulleted list to the right provide an overview of fall 2016 class laboratory use.

- 102 class laboratories (83 percent) were scheduled at 25.0 or more hours per week with an average percent fill of 79 percent.
- 12 class laboratories (10 percent) were scheduled at 21.0 to 24.9 hours per week with an average percent fill of 85 percent.
- One class laboratory (1 percent) was scheduled at 18.0 to 20.9 hours per week with an average percent fill of 94 percent.
- Nine class laboratories (six percent) had less than 18 hours per week with an average percent fill of 62 percent.



# PROGRAMMATIC SPACE NEEDS

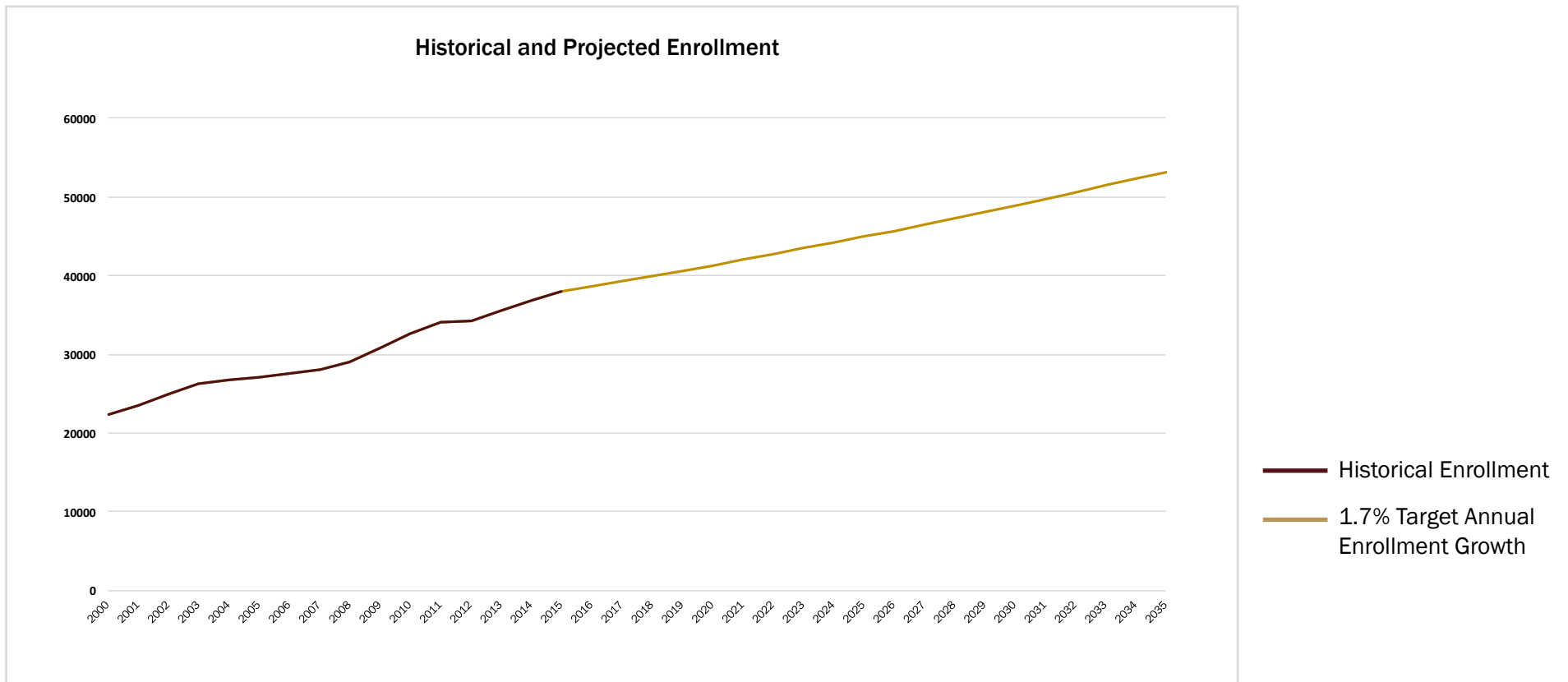
## SPACE OVERVIEW

Texas State University has and continues to experience a high growth rate in student enrollment. Climbing enrollment over the past decade has created a wonderful, flourishing, culturally diverse University. However, the rapid growth has also created space constraints at the University. Growing enrollment without sufficient additional net new space has created a shortage in all space categories at the University. In 2015, the campus was functioning at a level of 64 ASF/FTE. This utilization rate, while suggesting a highly efficient institution, is considerably below the suggested ratio of ASF to FTE as formulated by utilizing the THECB Space Projection Model.

Over the past decade, the enrollment growth rate at Texas State University has been high, at an average of just under four percent. This rate is higher than the typically projected growth rate and, looking forward, Texas State University is exploring a variety of enrollment management scenarios. For this University Master Plan, it was determined that a projected undergraduate annual growth rate of 1.5 percent combined with a projected graduate growth rate of 3 percent would provide an average annual percentage growth rate of around 1.7 percent. The chart on the following page illustrates an enrollment projection growth rate of 1.7 percent moving toward the year 2027 and beyond. This rate of enrollment will result in over 46,000

students. A number of factors play into an institution's projections for student enrollment. Residency restrictions, program growth, acceptance rates, the demography of Texas, accommodating state workforce pipeline needs, adjusting to fiscal realities, and the economy are all important factors in working to establish projected growth rate.

For planning purposes, in terms of space, traffic, services, and overall campus needs discussed throughout the remainder of the document, the metric of 1.7 percent annual growth will be utilized.



#### Projected Enrollment

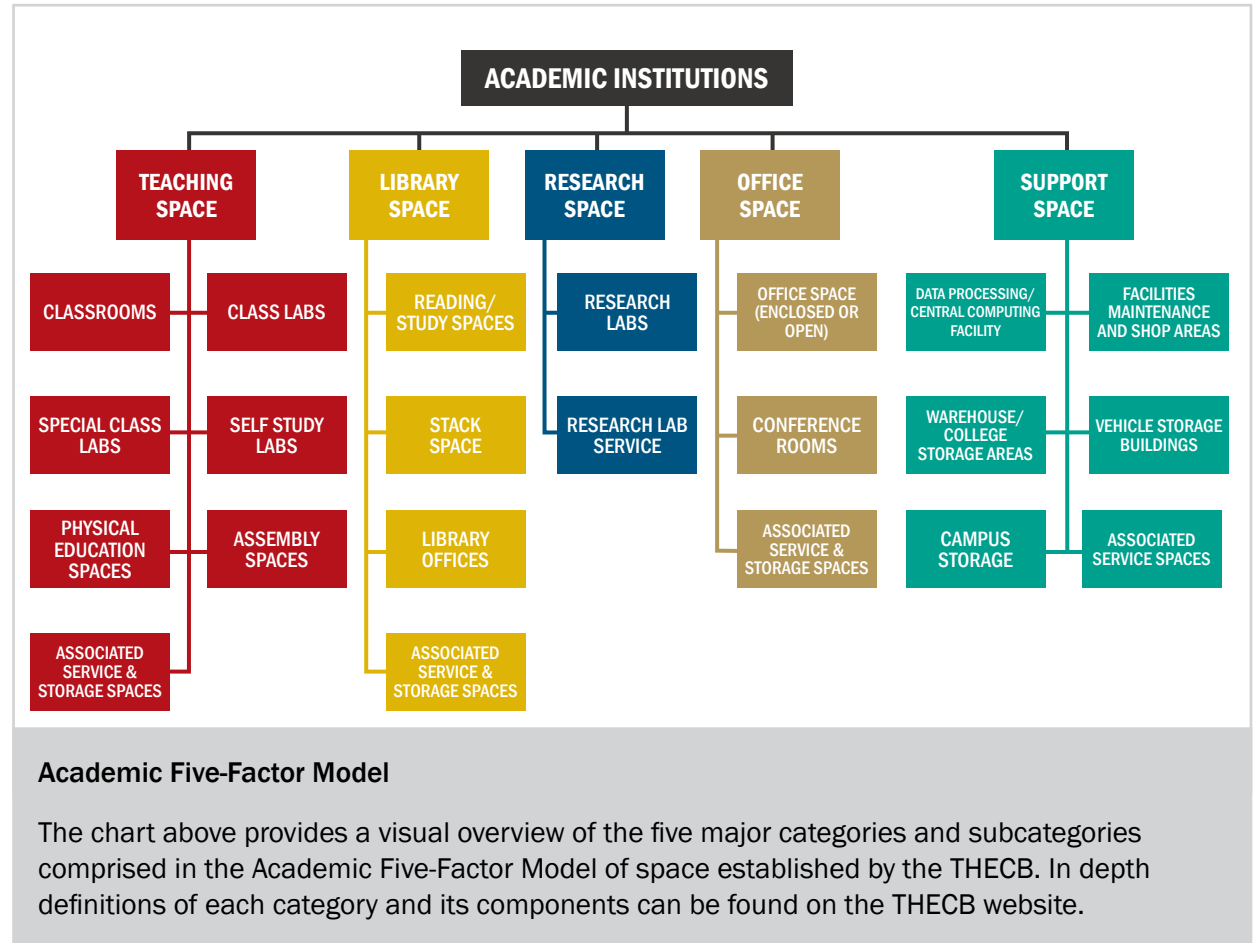
The chart above provides a visual image which tracks the Historical Enrollment of Texas State University since the year 2000 and extrapolates the projected enrollment based on the 1.7 percent Targeted Annual Enrollment Growth.

## ACADEMIC FIVE-FACTOR MODEL

Current space conditions at Texas State University are tight. Student spaces and conference rooms are being converted to classrooms and graduate-level courses are being scheduled late into the evening. University-owned student housing is full and the University-operated shuttle system is at capacity. Off-campus apartments continue to be built and provide shuttle service to students living in those complexes not currently served by the University. The expected continued growth of the University only means space will become even more of an issue.

To help higher education institutions better project and manage space needs, the THECB has created the Academic Five-Factor Model to help with space planning.

The five-factor space projection model, as published by the THECB in 2005, projects the E&G space required for a public university, technical college, or state college needed to fulfill its missions of teaching, research, and public service. Campuses are also comprised of “other” spaces such as residence halls, bookstores, intercollegiate athletics, or other auxiliary enterprises. These additional auxiliary spaces are not part of the model and should be considered on a case-by-case basis as needed to support the University’s mission, vision, and goals.



The base unit of the model is room type. Only E&G space receives state appropriations for maintenance and operations, and it is the only space considered by this model. Room types are grouped into the five space categories in the model and are associated with the specific data that drive each particular type of space.

Each of the factors are formulated based on drivers or elements used to compute the predicted space in each category. These data are developed from various institutionally provided information and their certified state reports.

### **FACTOR 1: TEACHING SPACE**

Teaching space includes rooms used for instruction and is represented in the institution's facilities inventory by room type. The following room types are considered in this factor:

- 100: classrooms
- 210-235: class laboratories, special class laboratories, and self-study laboratories
- 500: physical education, demonstration, audiovisual, and animal quarters
- 600: assembly, exhibition, lounge, meeting rooms, and locker rooms

The predicted teaching space depends on two factors:

- funded semester credit hour production by program area
- funded semester credit hour production by level of course

A FTE is calculated for each program area and course level based on credit hours. FTE are calculated using THECB's standard methodology of contact hours divided by 300 and semester hours divided by 15. A reduced allowance is made for the graduate levels.

### **FACTOR 2: LIBRARY SPACE**

Library space includes all room type 400s-reading/study rooms, stack space, and associated service areas and all room type 300s with 41 (library) usage code. Library space is calculated primarily using the Association of College and Research Libraries (ACRL) standards for college libraries.

### **FACTOR 3: RESEARCH SPACE**

Research space includes all non-class (research) laboratories and service rooms (room type 250 and 255). Predicted research space is determined using one of two methods, depending on which method yields the greatest

Net Assignable Square Feet (NASF) prediction. Method one, which is used for Texas State University, multiplies 9,000 NASF for every inflated \$1 million dollars in average research expenditures. The average of the last three years' research expenditure is used for this calculation.

### **FACTOR 4: OFFICE SPACE**

Office space includes all offices, conference rooms, and associated service areas (room type 300s). Type 300 rooms reported with a 41 (library) usage code used in the library factor formula are omitted from the office space calculation to eliminate duplication.

### **FACTOR 5: SUPPORT SPACE**

Support space is calculated at nine percent of the sum of predicted space from the teaching, library, research, and office factors. Support space includes all data processing/computer rooms, shops, storage, vehicle storage, and associated service areas (room type 700s).

Due to the space model's multipliers and factors each institution will have a slightly different targeted number of ASF to FTE for their campus. A national ratio ranges from 90 ASF to 130 ASF dependent on campus programs, services, and research. Texas State University is currently operating at a ratio of 64 ASF to FTE.

## CURRENT SPACE

Texas State University, including the San Marcos Campus, the Round Rock Campus, Freeman Ranch, and Science, Technology, and Advanced Research (STAR) Park, has a total of 255 buildings supporting 227 classrooms and 124 class laboratories. The total ASF for all E&G categories of space is nearing two million at 1,936,638 ASF. However, the E&G space on the campus, as high as the number may appear, is still well below the quantity of space the University needs as calculated by the Academic Five-Factor Model.

### WHAT DOES THE FIVE-FACTOR MODEL TELL US?

The findings based on the model indicate the current number of teaching spaces at Texas State University does not satisfy the current or future needs of the campus. A variety of types and sizes of classrooms and class laboratories are currently needed to support the current headcount enrollment of 37,979 students. By the time enrollment nears 46,500, 10 years from now in 2027, teaching, office, research, library, and support spaces will be drastically undersized to adequately accommodate the student and faculty population without new construction.

The chart on the following page indicates the current and appropriate utilization for each category as outlined by the model. Please note Texas State University has modified its five-factor projection model for the University Master Plan, recognizing a more realistic goal of

achieving 78 ASF to FTE per student and not the calculated model goal of 91 ASF to FTE. Texas State University realizes it is currently deficient in all space categories and that it is unlikely construction will add the quantity of space for each category within the 10-year period to achieve 91 ASF to FTE. Texas State University also realizes it may not be able to meet the modified ratio of 78 ASF to FTE by the year 2027. However, the modified ratio of 78 ASF to FTE is a goal the University will continue to move toward beyond the time span of this master plan document.

Texas State University reviewed and evaluated all the areas from the five-factor model, which indicated need for significant addition of new space/facilities. When working to create the space needs for the University Master Plan, Texas State University focused on the areas of highest need based on projected new programs and initiatives and on the current growth of specific programs, especially those in engineering and the sciences. In turn, the model on the following page was developed as a space guideline for the master plan projects over the next 10-year period.

It should also be noted that the projection model on the following page calculated by THECB does not take into account the University's mission of becoming a National Research University (NRU). Therefore, an additional research component has been provided in the next section of this document. The additional information outlines

the recommended components over the 10-year University Master Plan in terms of research to help the University achieve its goal of becoming a NRU. The Coordinating Board model predicts Texas State University should have 175,851 ASF of research space by 2027; however, in the next section of this document it is believed 303,542 ASF is needed to achieve the Universities goal.

## ACADEMIC FACILITIES

Texas State University currently has 255 total buildings that include academic facilities, auxiliary services, athletic components, housing, and dining. During fall 2015, 29 buildings had spaces scheduled for classroom courses and 20 buildings had spaces scheduled for class laboratory sections.

The category of Teaching Spaces within the projection model indicates, as of fall 2015, that the University has coded 818,769 ASF of space for this category. Previous review of the utilization data for the campus in fall 2015

indicated the existing teaching spaces, both classrooms and class laboratories, were already supporting the campus at a higher hour per week average than the THECB recommended standard. Teaching space is currently below the quantity needed at Texas State University. The current and projected additional enrollment growth will only add to the deficit over the next 10 years without new construction.

The student enrollment model projects a campus of over 41,000 students by fall 2020. This increased enrollment, when combined with

the current category space deficit, identifies a need for an additional 268,853 ASF of Teaching Spaces to support the projected enrollment at the ratio of 78 ASF to FTE.

Looking further down the road towards the end of the 10-year University Master Plan, the University is projected to have an enrollment which exceeds 46,000 students, creating a need for an additional 131,776 ASF of Teaching Spaces. The projected total space deficit in the Teaching Spaces category at the reduced ASF to FTE ratio to support the 10-year University Master Plan projections is 400,629 ASF.

	CURRENT SPACE (ASF) (2015)	FUTURE SPACE (ASF) (2020)		FUTURE SPACE (ASF) (2025)		FUTURE SPACE (ASF) (2027)	
Type of Space	Current Utilization	Appropriate Utilization	2020 Shortfall	Appropriate Utilization	2025 Shortfall	Appropriate Utilization	2027 Shortfall
Teaching Spaces	818,769	1,087,622	(268,853)	1,180,084	(361,315)	1,219,398	(400,629)
Research Space	118,076	156,848	(38,772)	170,182	(52,106)	175,851	(57,775)
Library Space	234,702	311,769	(77,067)	338,274	(103,572)	349,543	(114,841)
Office Space	632,349	839,988	(207,639)	911,398	(279,049)	941,761	(309,412)
Support Space	132,787	176,389	(43,602)	191,385	(58,598)	197,760	(64,973)
Total E&G ASF	1,936,683	2,572,616	(635,933)	2,791,322	(854,639)	2,884,314	(947,631)
Total GSF	2,979,512	3,957,871	(978,359)	4,294,342	(1,314,829)	4,437,406	(1,457,894)
Student FTE	30,412	32,982		35,786		36,978	
ASF per Student FTE	64	78		78		78	

# RESEARCH

## CURRENT RESEARCH, BENCHMARKING, AND GOALS

To understand the current state of research expenditures at the University, the master planning team reviewed Texas State University's Strategic Plan for Research, spoke with research leadership from across the campus, and utilized NSF data for both the University as well as identified peers.

The Strategic Plan for Research identified two primary goals for achievement: (1) NRUF eligibility and (2) R1: Doctoral Universities-Highest Research Activity designation in the Carnegie Classification of Institutions of Higher Education.

Research space was reviewed in terms of both the types of spaces that exist within each of the campus facilities and the types of spaces that exist within each of the University departments.



TEXAS STATE UNIVERSITY LABORATORY



The University utilizes two primary metrics to measure research funding: Total Research and Development Expenditures and Restricted Research Expenditures (Numbers are for 2015 per Texas State University). Total Research and Development Expenditures include:

- Education & General Funding
- Designated Funds
- Restricted Gifts
- Restricted Grants (includes indirect costs)

Restricted Research Expenditures include:

- Restricted External Gifts
- Restricted External Grants

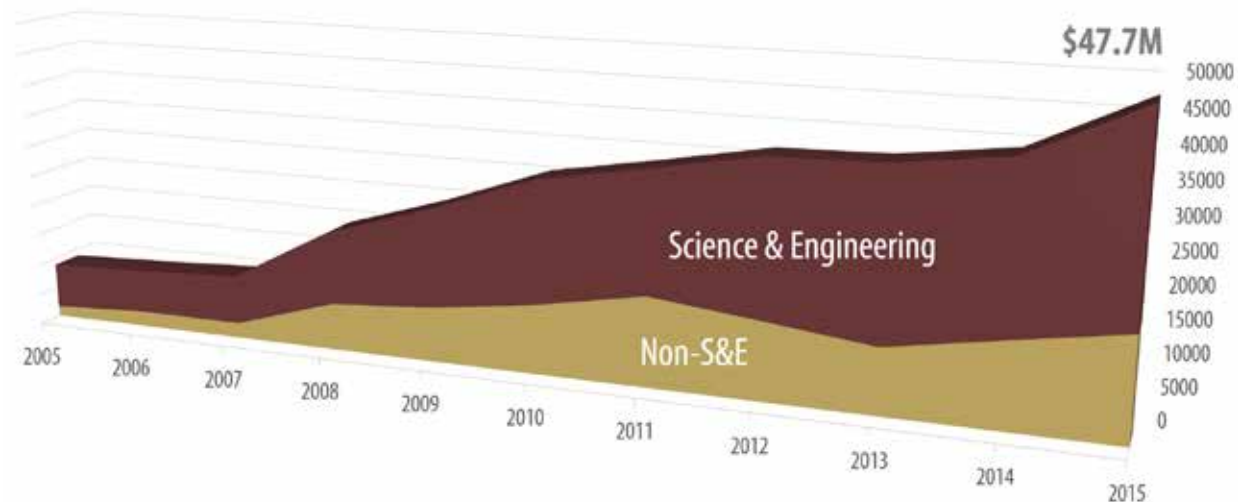
The percentage of expenditures dedicated to College of Science and Engineering and Non-College of Science and Engineering has remained consistent at roughly one-third to two-thirds over the past 10 years (per Texas State University Pre and Post Award Support Services).

# \$47.7 M

**TOTAL R&D EXPENDITURES**

# \$27.2 M

**RESTRICTED RESEARCH EXPENDITURES**



In an effort to capture a meaningful group of peers to benchmark against, Texas State University identified peers from three different groups: emerging research universities, national peers as defined by the THECB, and additional national peers.

**EMERGING RESEARCH UNIVERSITIES**

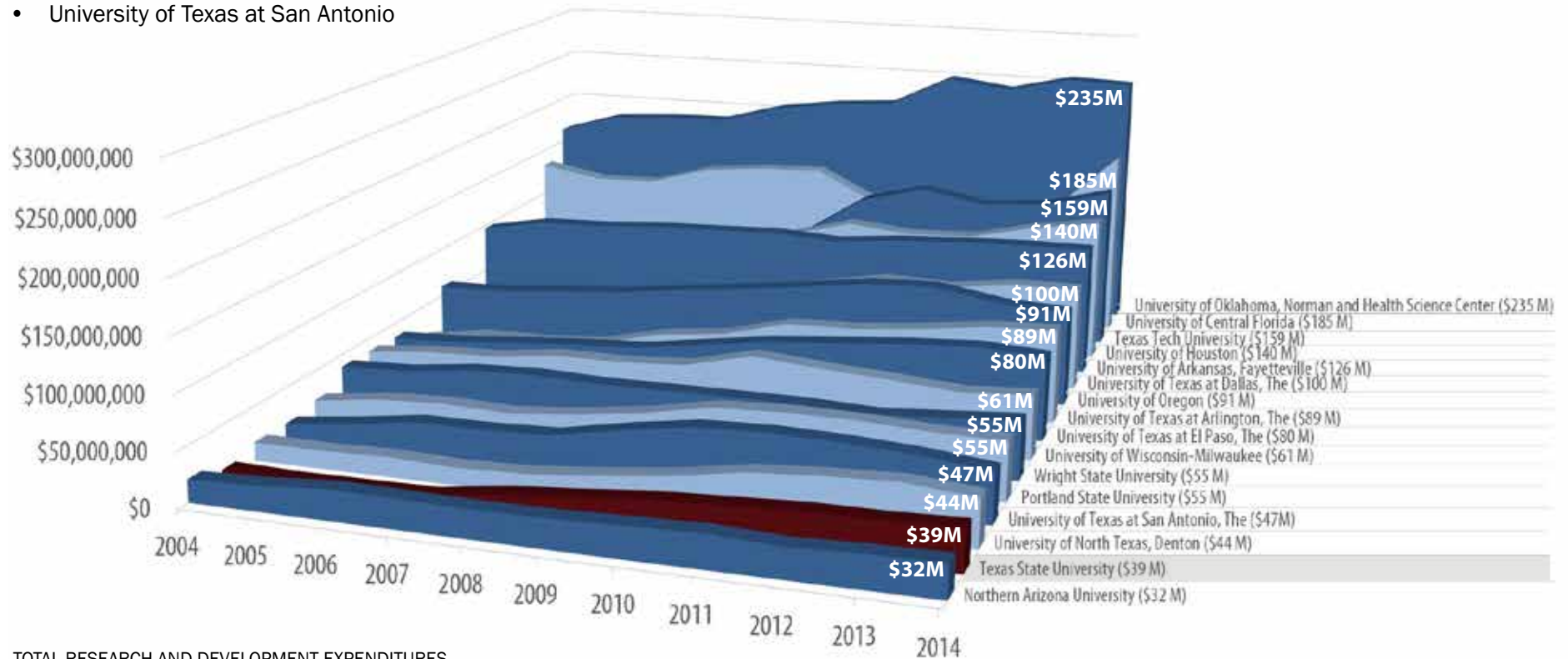
- Texas Tech University
- University of Houston
- University of North Texas
- University of Texas at Arlington
- University of Texas at Dallas
- University of Texas at El Paso
- University of Texas at San Antonio

**NATIONAL PEERS**

- University of Arkansas, Fayetteville
- University of Central Florida
- University of Wisconsin-Milwaukee
- University of Oklahoma, Norman

**ADDITIONAL PEERS**

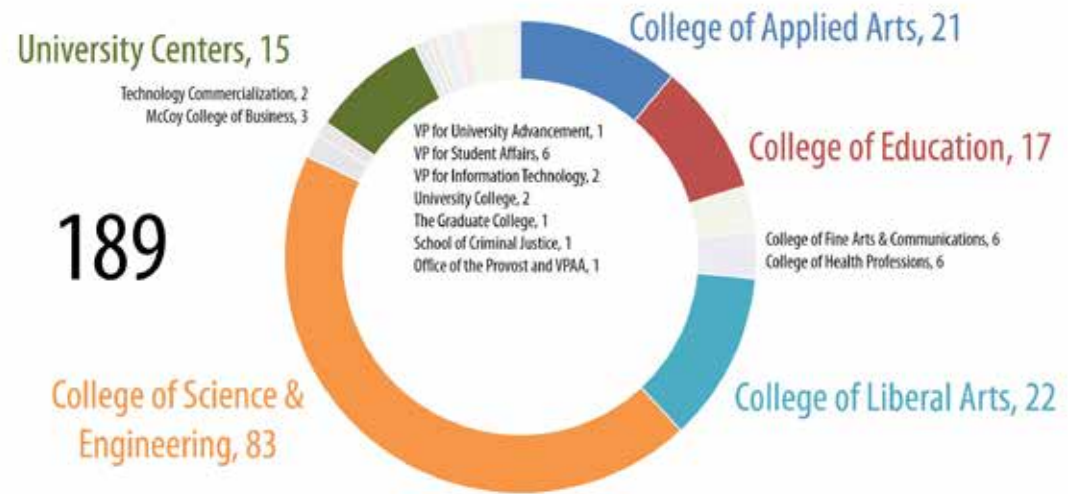
- Northern Arizona University
- Portland State University
- University of Oregon
- Wright State University



TOTAL RESEARCH AND DEVELOPMENT EXPENDITURES

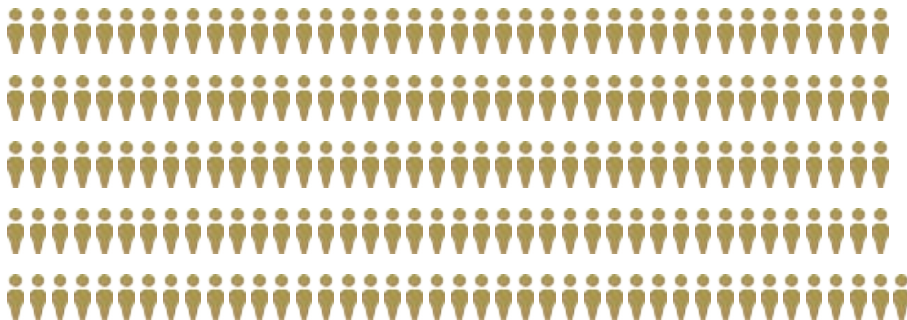
Overall for 2015, Texas State University identified 189 individual PIs across the University. In terms of PI count, there were five primary groups contributing to this number as reflected in the pie chart to the right.

Below is a graphical representation of the distribution of research expenditures among the PIs at Texas State University as reported by the institution.

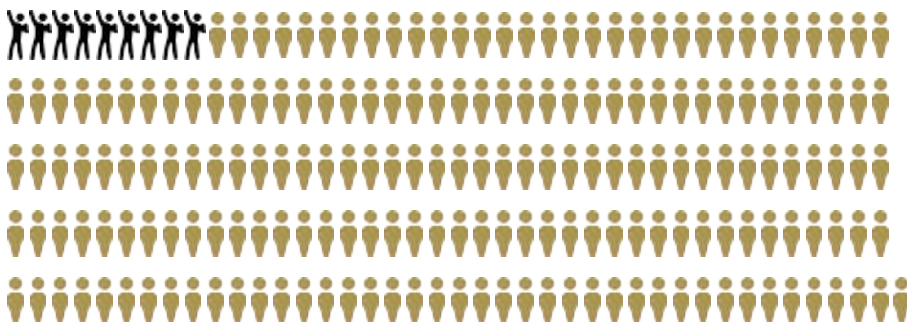


**TEXAS STATE UNIVERSITY RESEARCH FUNDING CONTRIBUTORS BY THE NUMBERS**

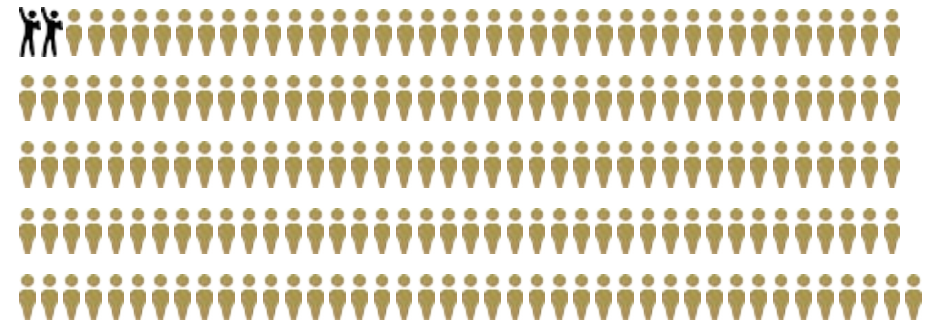
TOTAL NUMBER OF PIs = 189



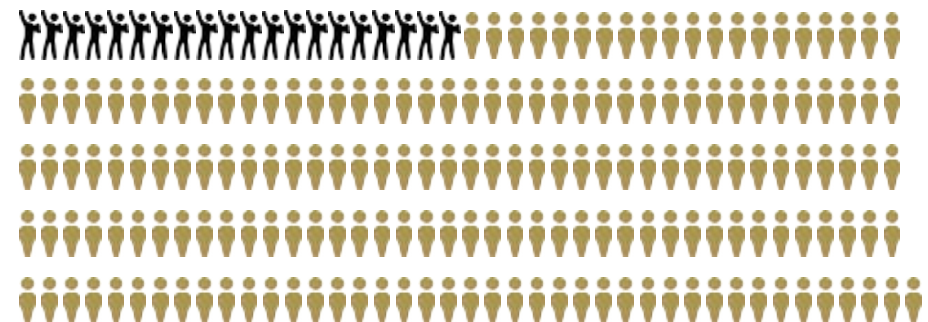
9 PIs = 50% OF ALL RESEARCH EXPENDITURES



2 PIs = 25% OF ALL SPONSORED PROGRAM EXPENDITURES

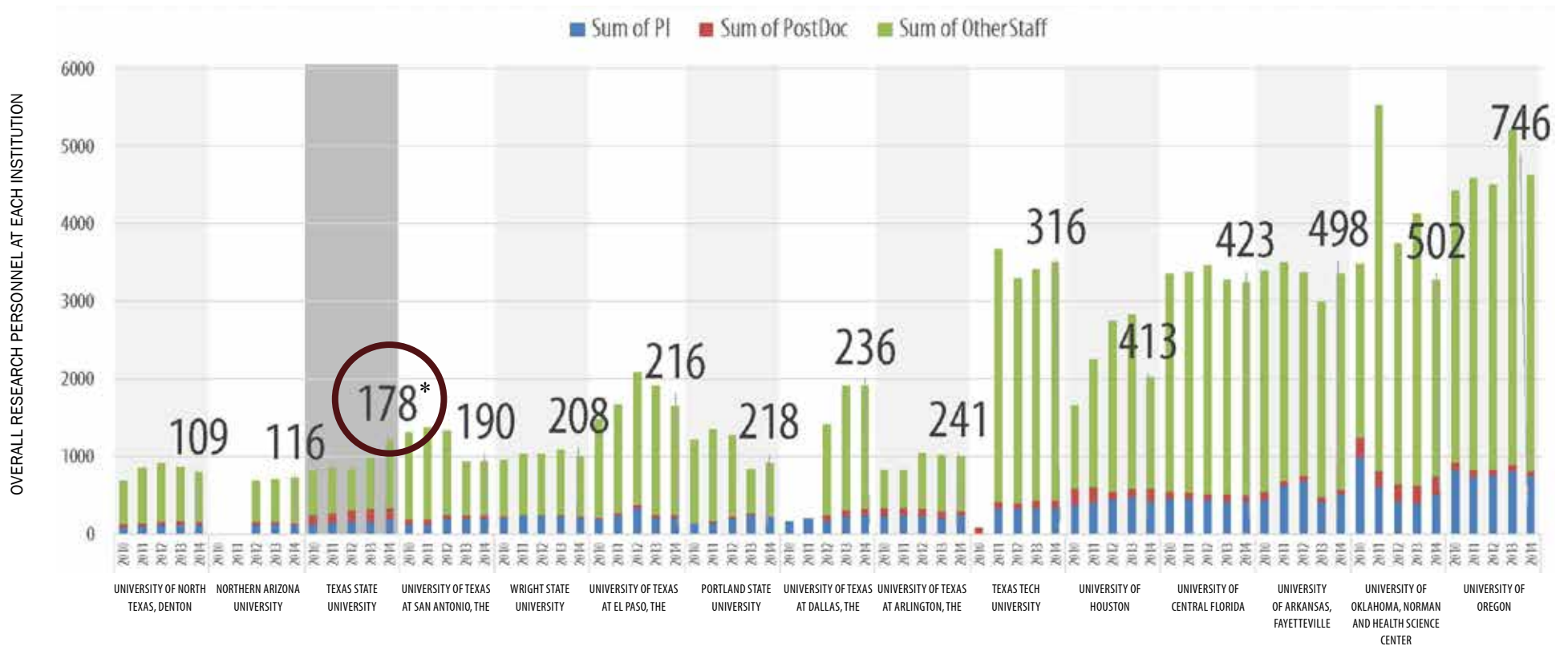


20 PIs = 75% OF ALL RESEARCH EXPENDITURES



### RESEARCH PERSONNEL METRICS

The NSF ranks research personnel in three categories: PIs, Post Doctorates (Post Docs), and Other Staff. The numbers below show total numbers of PIs (the benchmark utilized in this analysis) per institution in 2014.

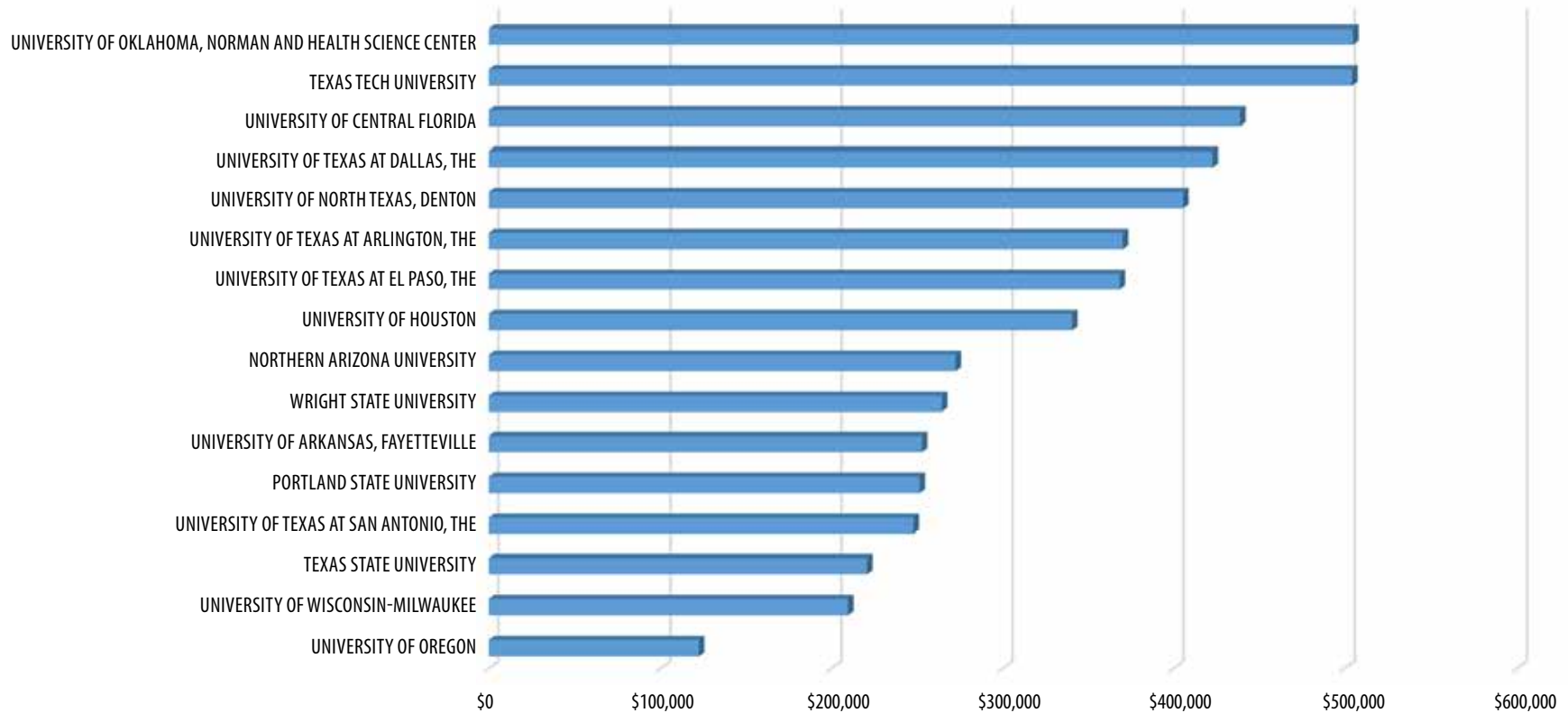


### RESEARCH PERSONNEL METRICS

PER NATIONAL SCIENCE FOUNDATION, RANKED BY 2014 PRINCIPAL INVESTIGATORS

\* 178 is as reported by NSF through 2014. The 189 indicated on page 125 is as reported by Texas State University in 2015 whereas the 2015 NSF data was not available at the time.

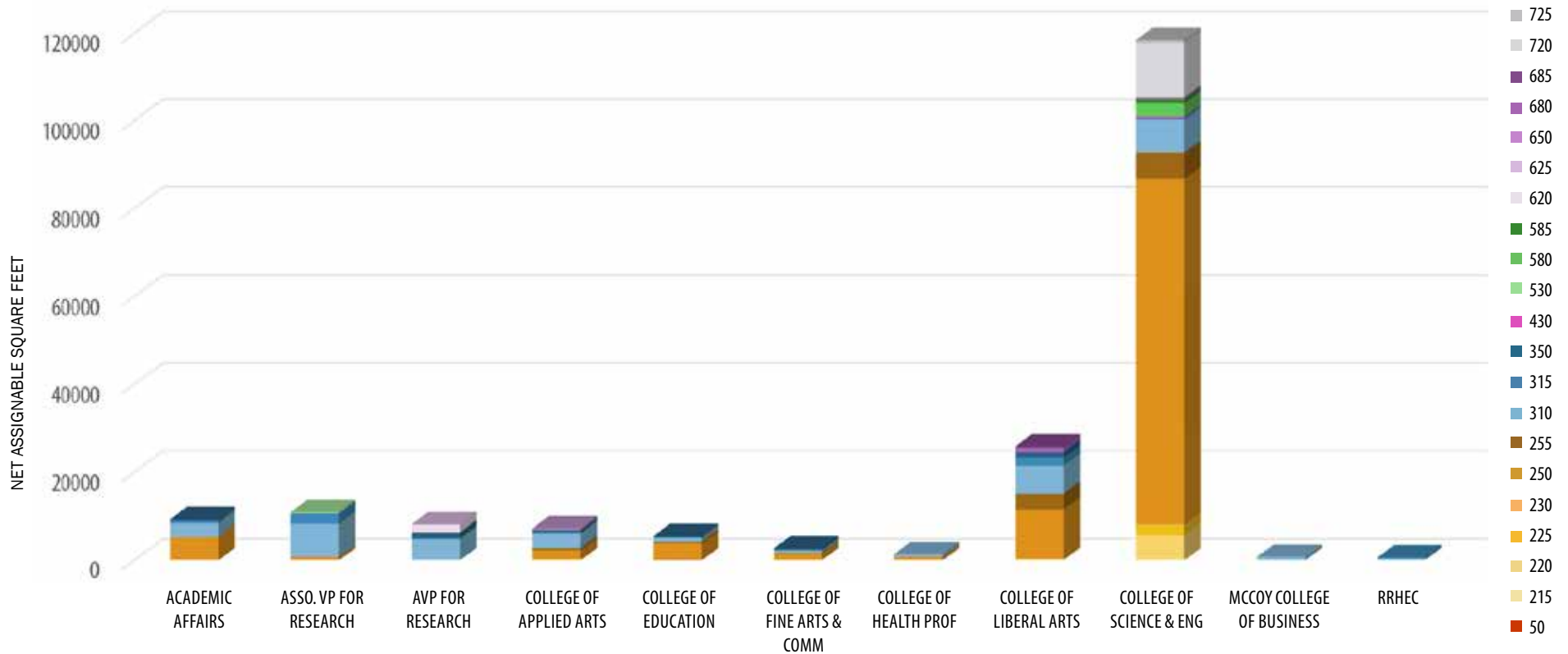
Among identified peer institutions, the average research expenditures per PI is roughly \$325,000 according to 2014 NSF data.



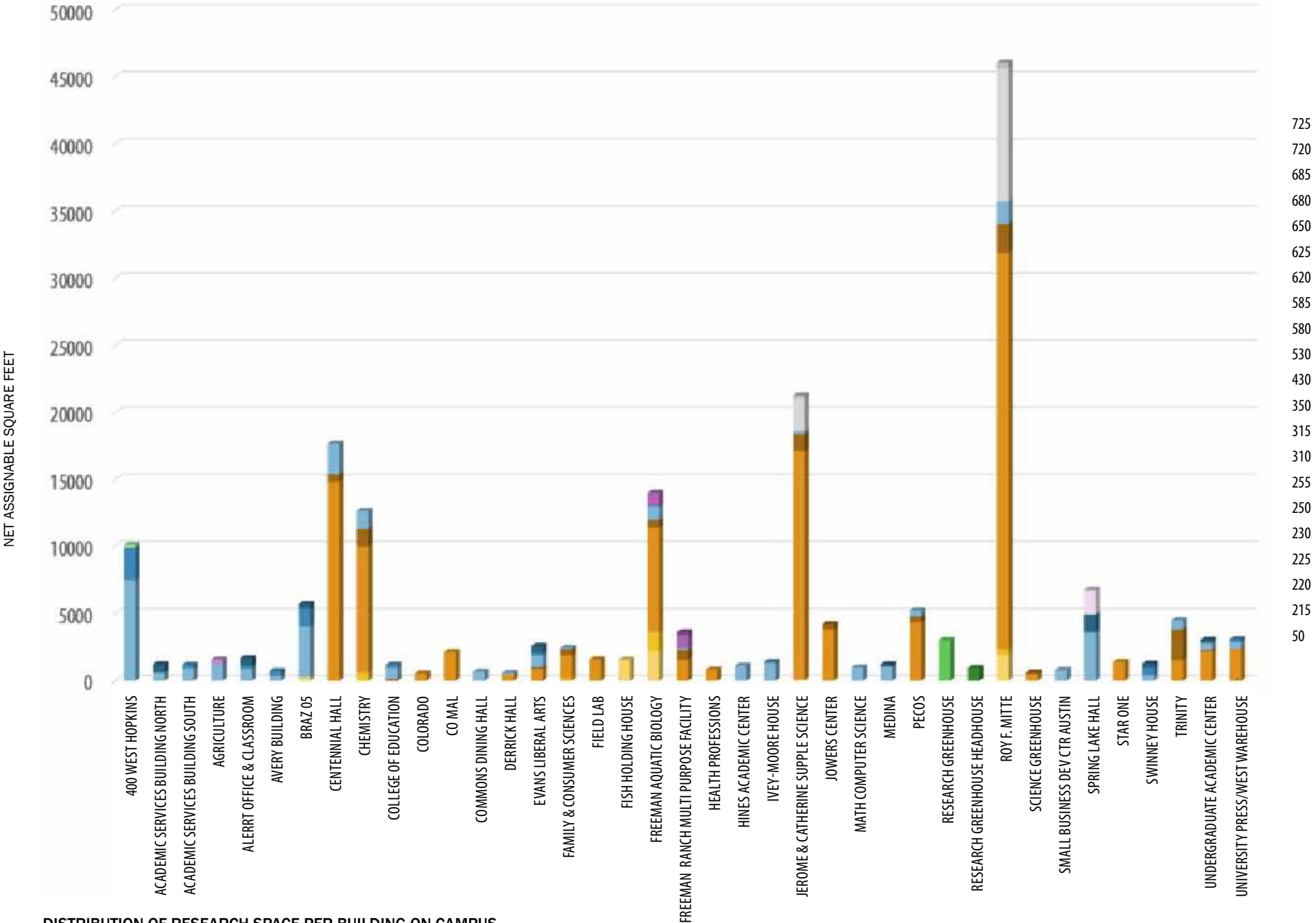
**RESEARCH EXPENDITURES PER PRINCIPAL INVESTIGATOR**  
PER NATIONAL SCIENCE FOUNDATION DATA, 2014

## RESEARCH PERSONNEL METRICS

To understand the current space use for research purposes, the master planning team reviewed quantified space across the enterprise that the University coded, per the THECB, as utilized for research. This space was reviewed in terms of both the types of spaces that exist within each of the campus facilities and the types of spaces that exist within each of the campus departments.

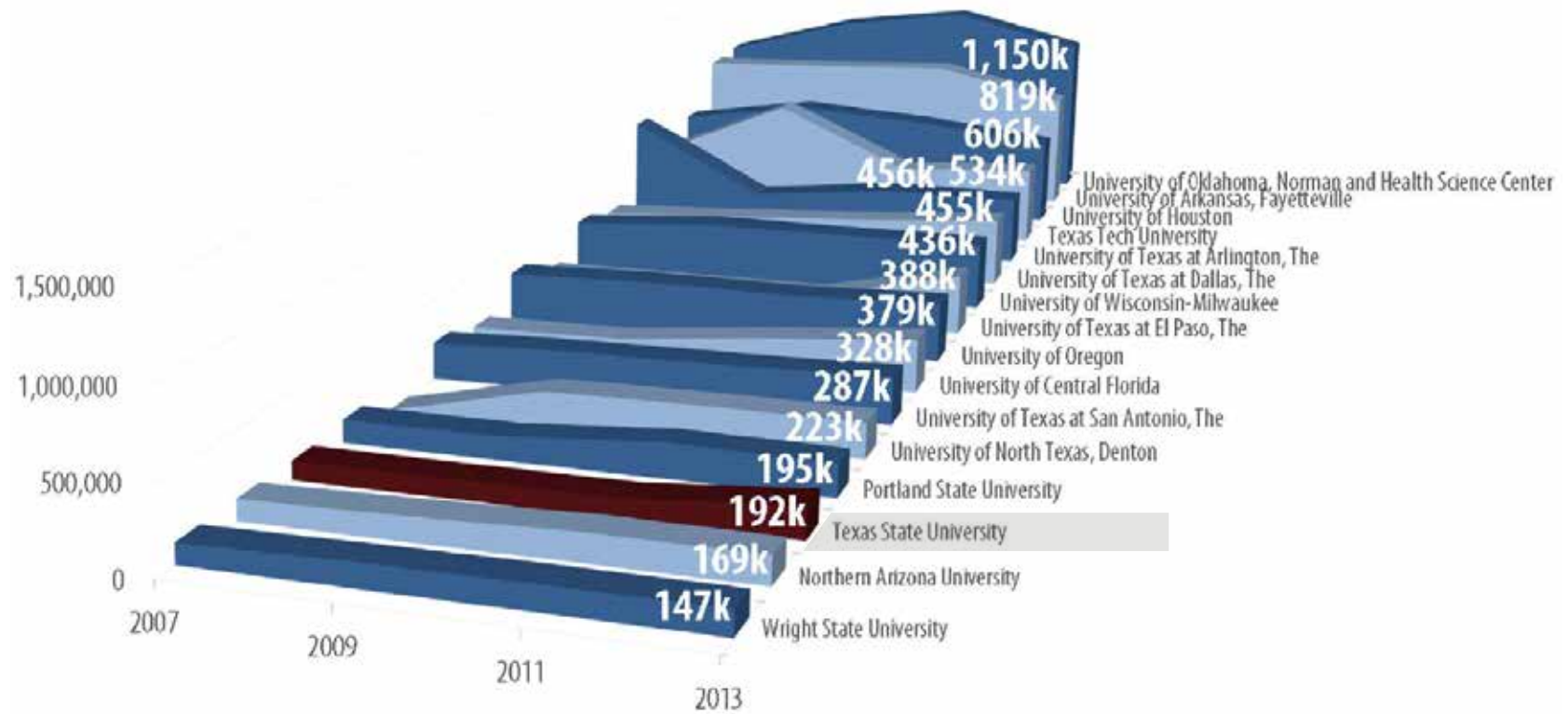


**DISTRIBUTION OF RESEARCH SPACE PER COLLEGE ON CAMPUS**  
PER NATIONAL SCIENCE FOUNDATION DATA, 2014



DISTRIBUTION OF RESEARCH SPACE PER BUILDING ON CAMPUS  
PER NATIONAL SCIENCE FOUNDATION, COLORS INDICATE ROOM USE CODE

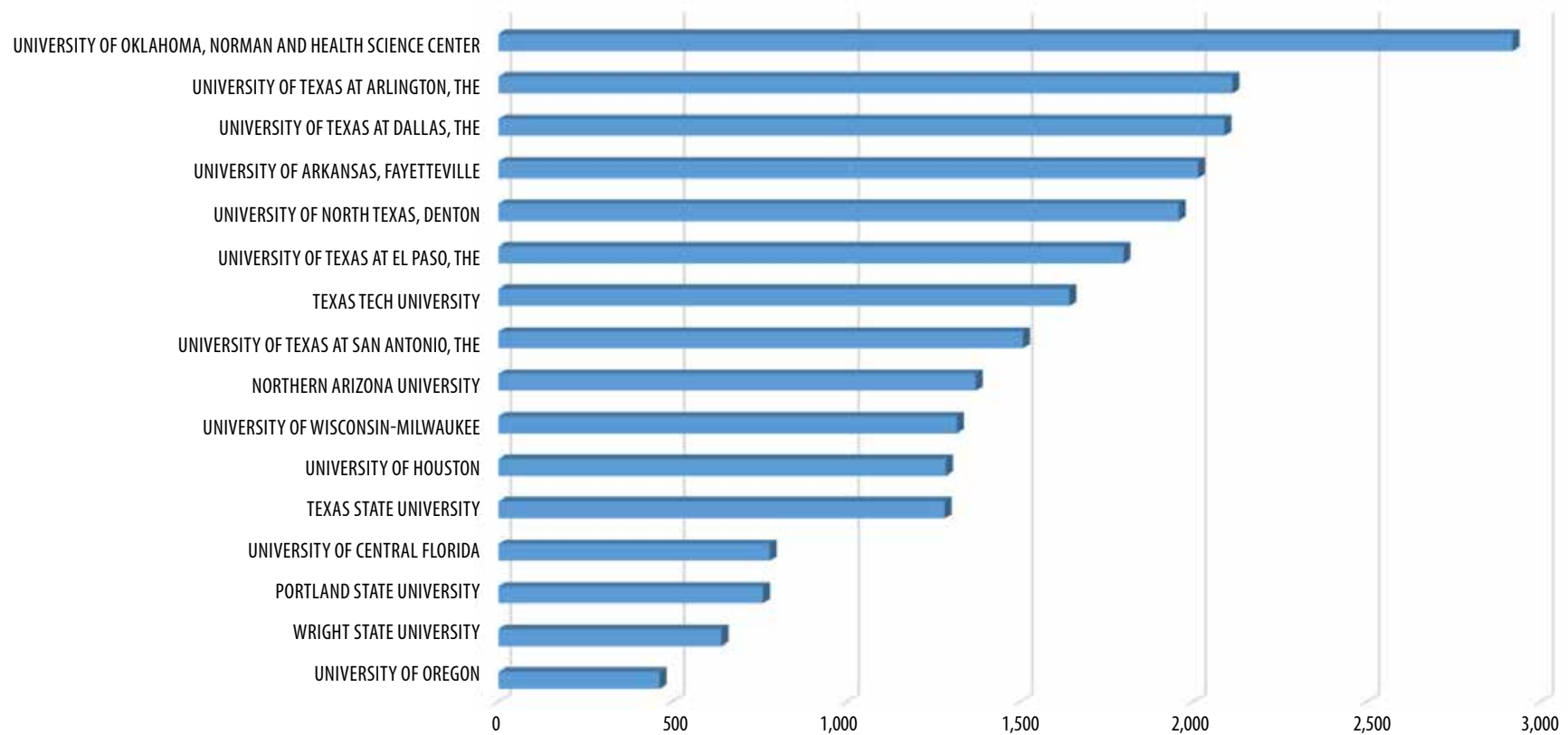
Among the identified research peers benchmarked, the average NASF for peer institutions is 444,625. Texas State University's NASF assigned to research is 192,000 NASF.



**RESEARCH NASF BY INSTITUTION**  
PER NATIONAL SCIENCE FOUNDATION DATA, 2013



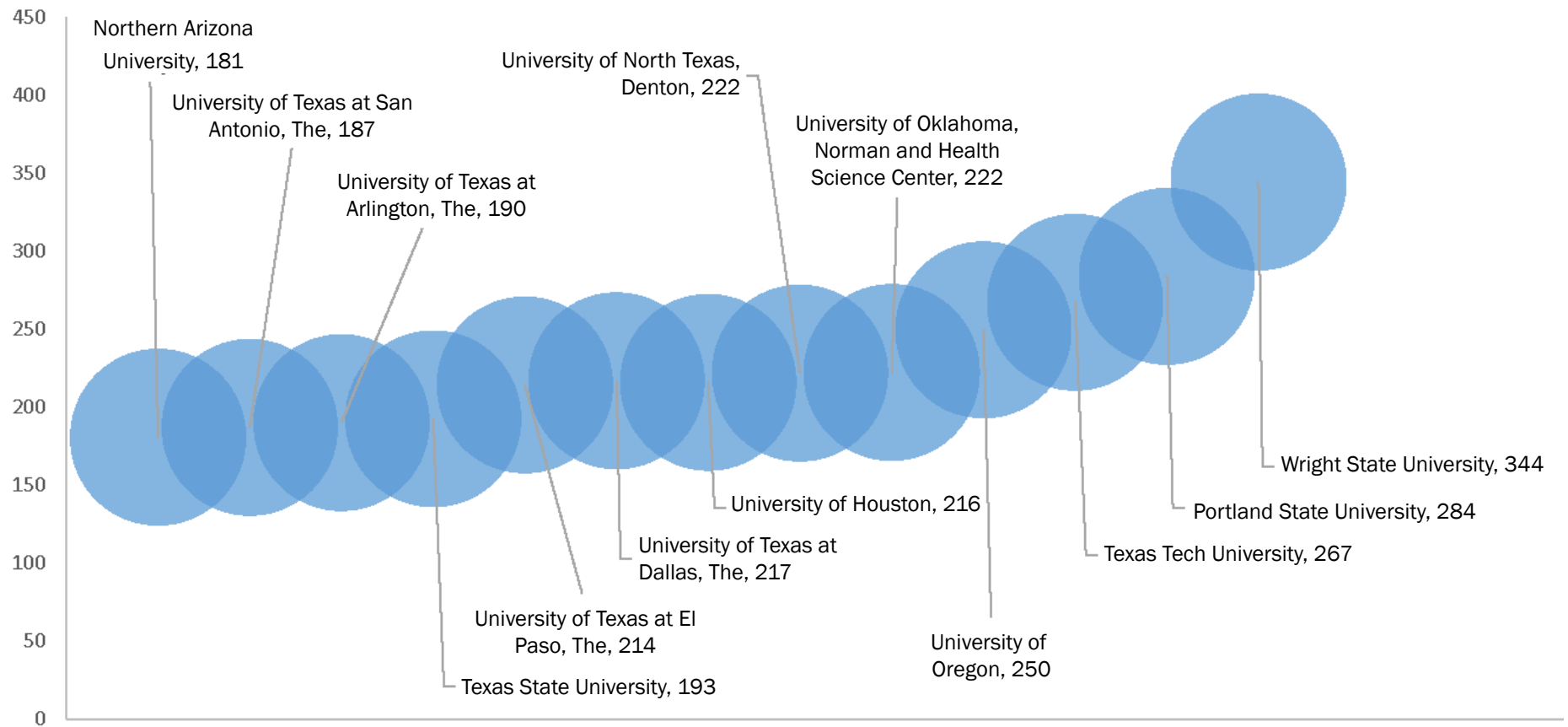
Among identified peer institutions the average NASF distribution per PI is roughly 1,500 NASF, according to National Science Foundation data. For planning purpose, Texas State University will use 1,000 NASF per PI.



**RESEARCH NASF PER PRINCIPAL INVESTIGATOR BY INSTITUTION**  
PER NATIONAL SCIENCE FOUNDATION DATA, 2013

## RESEARCH EXPENDITURES BY INSTITUTION

Among identified peer institutions the average research expenditure per NASF is roughly \$230 per square foot according to NSF data.

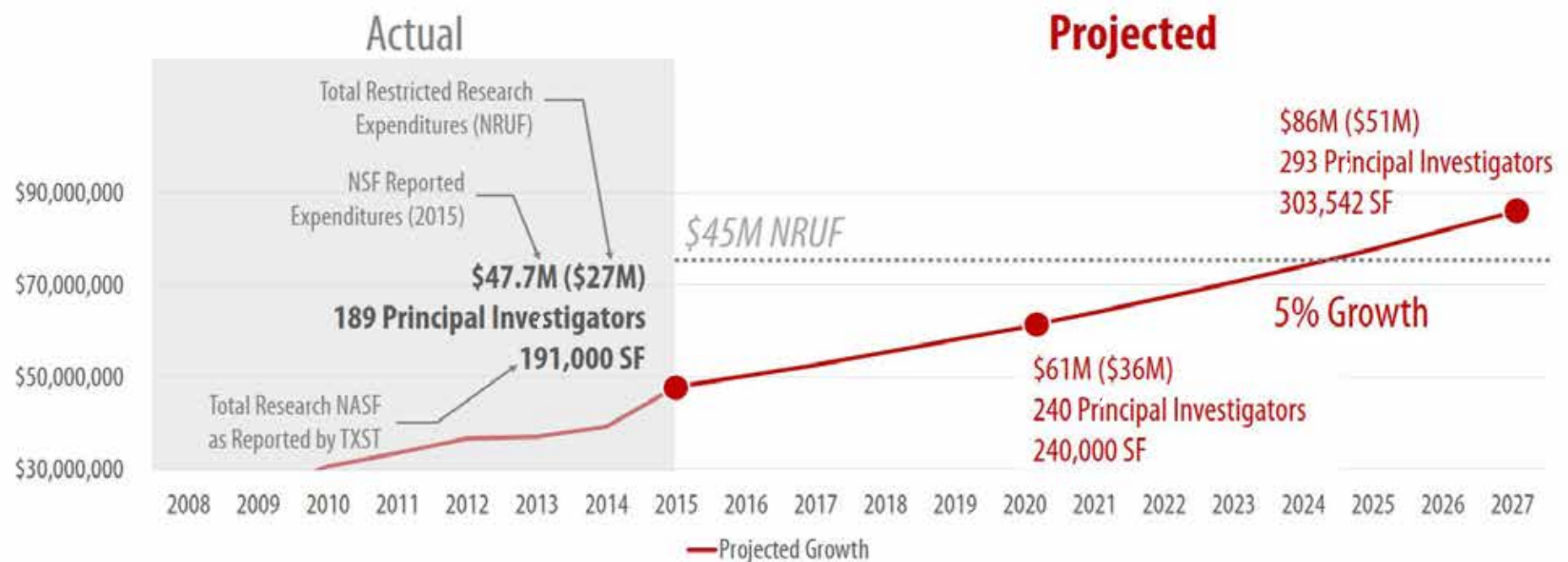


RESEARCH EXPENDITURES PER NASF BY INSTITUTION  
PER NSF DATA, 2013

## RESEARCH DEMAND

Overall, there were three primary scenarios analyzed for annual research expenditure growth at Texas State University: 2 percent, 5 percent, and 10 percent. Based on an 8-year average of 57 percent, it is projected that NRUF eligible expenditures will be 60 percent of total NSF expenditures in these projections.

A baseline of \$235,000 in research expenditures per PI was used based on Texas State University's six-year average with an increase of two percent per year.



**RESEARCH TRAJECTORY**  
GROW FROM \$47M TO \$86M

## PROJECTED NEED FOR PRINCIPAL INVESTIGATORS

Individual units have specific needs that will deviate from the overall university allotments. The analyses reviewed projected PI counts, expenditures, and NASF per unit.

It is anticipated that the overall university growth projections will result in uneven growth across all Texas State University's units as some are poised for more growth than others. As indicated below, there were 11 total units reviewed in terms of future research expenditures, PI count, and NASF space needs. Five units were identified as anticipating the highest amount of growth, they include:

1. College of Applied Arts
2. College of Education
3. College of Health Professions
4. College of Liberal Arts

	2015			2020			2027		
	PI s FY15	\$/PI	Expenditures FY15 Total	PI s FY20	\$/PI	Expenditures FY20 Total	PI s FY27	\$/PI	Expenditures FY27 Total
ACADEMIC AFFAIRS	5	220,307	1,101,535	6	250,000	1,437,500	7	285,000	1,884,563
CENTERS & INSTITUTES	15	646,000	9,690,000	17	700,000	12,075,000	20	798,000	15,830,325
MAT. SCI./ COMMERCIALIZATION (Flex)	0		0						
COLLEGE OF APPLIED ARTS	22	450,434	9,909,545	29	250,000	7,150,000	37	285,000	10,596,300
COLLEGE OF EDUCATION	17	196,876	3,346,897	22	250,000	5,525,000	29	285,000	8,188,050
COLLEGE OF FINE ARTS & COMM	6	55,532	333,192	7	75,000	517,500	8	85,500	678,443
COLLEGE OF HEALTH PROF	6	149,568	897,408	8	200,000	1,560,000	10	228,000	2,311,920
COLLEGE OF LIBERAL ARTS	22	68,291	1,502,400	29	100,000	2,860,000	37	114,000	4,238,520
COLLEGE OF SCIENCE & ENG	83	120,491	10,000,790	108	250,000	26,975,000	140	285,000	39,976,950
MCCOY COLLEGE OF BUSINESS	3	299,333	898,000	3	250,000	862,500	4	285,000	1,130,738
ROUND ROCK CAMPUS	1		0	1		0	1		0
<b>TOTAL</b>	<b>180*</b>	<b>\$209,332</b>	<b>\$37,679,765</b>	<b>230</b>	<b>\$256,917</b>	<b>\$58,962,500</b>	<b>293</b>	<b>\$289,369</b>	<b>\$84,835,808</b>

\* 180 PIs identified for 2015 does not include additional PIs that were identified in units outside of those noted here including: Office of Technology Commercialization, The Graduate College, University College, VP for Information Technology, VP for Student Affairs, or VP for University Advancement

## PROJECTED NEED FOR RESEARCH SPACE

The projected future space need is greatest within two of the units, College of Liberal Arts and College of Science and Engineering, which include high levels of projected PI growth and some of the largest NASF/PI allocations of all the units.

	2015			2020			2027		
	PI's FY15	NASF/PI*	Research NASF FY15*	PI's FY20	NASF/PI*	Research NASF FY20*	PI's FY25	NASF/PI*	Research NASF FY27*
ACADEMIC AFFAIRS	5	1,873	9,367	6	1,900	11,400	7	1,900	13,300
CENTERS & INSTITUTES	15	729	10,937	17	700	11,900	20	700	14,000
MAT. SCI./ COMMERCIALIZATION (Flex)	0		8,192			8,192			8,192
COLLEGE OF APPLIED ARTS	22	331	7,292	29	350	10,150	37	350	12,950
COLLEGE OF EDUCATION	17	326	5,536	22	350	7,700	29	350	10,150
COLLEGE OF FINE ARTS & COMM	6	471	2,827	7	500	3,500	8	500	4,000
COLLEGE OF HEALTH PROF	6	249	1,494	8	250	2,000	10	250	2,500
COLLEGE OF LIBERAL ARTS	22	1,173	25,804	29	1,200	31,900	37	1,200	40,700
COLLEGE OF SCIENCE & ENG	83	1,427	118,471	108	1,400	151,200	140	1,400	196,000
MCCOY COLLEGE OF BUSINESS	3	267	800	3	250	750	4	250	1,000
ROUND ROCK CAMPUS	1	733	733	1	750	750	1	750	750
<b>TOTAL</b>	<b>180*</b>		<b>191,453</b>	<b>230</b>		<b>239,442</b>	<b>293</b>		<b>303,542</b>

PRINCIPAL INVESTIGATOR COUNT/NASF PROJECTIONS BY UNIT  
INCLUDES RESEARCH SERVICE CENTERS AND SHARED SPACE

\* 180 PIs identified for 2015 does not include additional PIs that were identified in units outside of those noted here including: Office of Technology Commercialization, The Graduate College, University College, VP for Information Technology, VP for Student Affairs, or VP for University Advancement



## 04. THE MASTER PLAN



# VISION

## POWERFUL IDEAS

At its essence, the University Master Plan is a collection of powerful ideas to facilitate decision-making for the next 10 years.

These ideas, systematically organized, serve to establish a framework for coordinating physical change. This framework establishes simple patterns and foundational elements to maintain the University's unique spatial characteristics, while at the same time identifying opportunities for responsible growth.

Philosophically, the University Master Plan is an opportunity-based tool, not a rigid list of mandated implementation projects. The University Master Plan needs to remain flexible in the midst of changing enrollment, curricular, fiscal, and external challenges.





# SAN MARCOS CAMPUS FRAMEWORK

## PLANNING ARMATURE

The San Marcos Campus has evolved from a simple organizational structure containing Old Main and a series of buildings surrounding the Quad to a complex campus stretching more than a mile from east to west. The University Master Plan renews the earliest directives of the institution to focus on undergraduate education, meaningful student-faculty interaction, and a commitment to face-to-face instruction.

The University Master Plan recommends returning to a historically inspired framework based on the following themes:

## VITALITY: BUILD AN INTEGRATED ACADEMIC CORE

- Maintain the historic Quad as the locus of the undergraduate experience
- Concentrate all academic activities within a 10-minute walk of the Alkek Library
- Surround the academic core with mixed-use neighborhoods
- Consider offering graduate evening classes in buildings on the periphery of campus to take advantage of perimeter parking lots

## SIMPLICITY: EXPAND MIXED-USE NEIGHBORHOODS

- Maintain undergraduate housing neighborhoods within the academic core
- Expand living-learning communities in and adjacent to the academic core
- Strengthen existing residential neighborhoods on the north, south, and west
- Concentrate redevelopment activity in three neighborhoods
  - Hilltop neighborhood
  - Performing Arts neighborhood
  - Science and Engineering neighborhood

## CLARITY: STRENGTHEN CAMPUS CONNECTIONS

- Extend the east-west pedestrian corridor as the dominant campus organizational element
- Build a new diagonal connection linking the Hilltop neighborhood to the Science and Engineering neighborhood
- Enhance primary north-south connections
- Strengthen pedestrian linkages between neighborhoods
- Connect east and west athletic and recreational assets to the academic core



# GOALS OF THE PLAN AND RECOMMENDATIONS-SAN MARCOS CAMPUS

## A. INCREASE ACADEMIC CAPACITY

Develop several new facilities to address spatial and programmatic demands:

1. Multidisciplinary academic and research building on the Hilltop site
  2. Bruce and Gloria Ingram Hall across from McCoy Hall
  3. General purpose academic building at the former Music building site
  4. New Music building on the Butler Hall site
  5. Expansion of the Performing Arts Center
- Repurpose Elliott Hall for classrooms and faculty office spaces

Reposition Nueces for the Testing Center, classroom and office space, and academic transition space

Reposition Encino Hall for general academic space after programmatic migration to the Round Rock Campus

Renovate Roy F. Mitte for enhanced engineering and science offerings

Reconfigure Jowers Center for Health and Human Performance and Dance

Consider the relocation of the President's House for future academic and research expansion. Potential locations include, but are not limited to the corner of Holland and Academy Streets or moving off campus.

## B. DOUBLE RESEARCH ACTIVITY

Incorporate up to 295,000 GSF of additional research space into future academic and multidisciplinary facilities

Renovate Spring Lake Hall to include an Interpretive Research Center.

## C. ENHANCE THE STUDENT EXPERIENCE

Develop a living-learning residence hall on the Hilltop site in concert with a robust academic and research building

Remove Smith, Arnold, Burleson, and Hornsby Halls

Remove and replace or renovate Lantana, Butler, and Sterry Halls with higher density housing on Concho Green

Renovate Retama, Commons, Blanco, and Bexar Halls

Increase dining capacity by 200 seats dispersed across campus

Develop specialized amenities and necessary support systems for a diverse student body

Complete expansion of the LBJ Student Center

Expand the Student Health Center

Continue renovations to Albert B. Alkek Library

Create dedicated outdoor recreation facilities on the former golf course

Upgrade tennis, track, and football facilities

Expand the University Events Center

Improve athletic academic support facilities

Develop a cross country course

Create an indoor practice facility

Identify student athlete housing

Create an Alumni Center

## D. STRENGTHEN PEDESTRIAN CORRIDORS

Maintain the east-west Quad and Mall as the dominant campus organizational element

Enhance the east-west mall from the LBJ Student Center to Blanco Hall

Introduce a diagonal pedestrian connector between the redeveloped Hilltop and the Science and Engineering neighborhood

Strengthen north-south pedestrian connections. Priority areas include:

- North Guadalupe Street pedestrian axis
- North LBJ Drive pedestrian axis

Complete Bobcat Trail from Albert B. Alkek Library to Comanche Street

Enhance connectivity from the University Events Center and Jowers Center to the academic core

Add sidewalks where needed (See Appendix for Sidewalk Plan).

## E. SIMPLIFY PARKING AND TRANSPORTATION

Expand the parking system by up to 2,000 parking spaces

Migrate parking from the campus core to perimeter facilities. Eliminate small, centrally located surface parking lots

Reserve land for three parking structures with a minimum net parking increase of 750 cars each, using three of the following options:

- East side of campus at the University Events Center including a multi-modal transportation facility
- Northwest side of campus at Holland and Academy Streets
- Southwest side of campus at Lindsey Street
- Land adjacent to the San Marcos Campus that is currently not owned by the University

Prioritize visitor parking resources adjacent to high profile public destinations

Provide enhanced transit service from remote parking resources directly to the campus core

Enhance technologies that support transit, parking, and mobility

## F. IMPROVE INFRASTRUCTURE

Upgrade chilled water systems for continued east and west campus growth

Improve North, Hilltop, and South utility corridors to increase redundancy and capacity

Create radial distribution circuits for the electrical system

Create a distributed electrical emergency generation system

Develop a new well, pumping station, and ground storage tanks to meet the increased potable water demand on the west side of campus

Renovate boilers, pumps, tanks, and related infrastructure

Replace aging infrastructure including:

- Chillers
- Air handlers
- Steam coils
- West Plant





### ILLUSTRATIVE CAMPUS PLAN

- A** Increase Academic Capacity
- B** Double Research Activity
- C** Enhance the Student Experience
- D** Strengthen Pedestrian Corridors
- E** Simplify Parking and Transportation
- F** Improve Infrastructure



**HILLTOP NEIGHBORHOOD**

**SCIENCE AND  
ENGINEERING  
NEIGHBORHOOD**

**PERFORMING ARTS  
NEIGHBORHOOD**



## **THE BIG PICTURE: [RE]POSITION THREE NEIGHBORHOODS**

After a careful capacity evaluation, several areas of campus have been identified to absorb a majority of the change in the coming decade. They each occupy valuable locations within the 10-minute walking radii within the academic core:

- Redevelop the Hilltop as a vibrant, mixed-use (academics, research, and housing) neighborhood
- Enhance the Performing Arts neighborhood with additional undergraduate housing, a music building, and an addition to the Performing Arts Center
- Create a Science and Engineering neighborhood focused on Bruce and Gloria Ingram Hall, Roy F. Mitte, and Supple Science as a programmatic integration of the physical sciences and engineering disciplines

## HILLTOP NEIGHBORHOOD

This is the single most important land asset and highest redevelopment priority for Texas State University. It is the largest developable site situated close to the existing academic core and Quad. Fittingly, it represents a “nexus” or confluence of the existing Guadalupe Street axis and a newly envisioned diagonal walk to the Science and Engineering neighborhood. This neighborhood aspires to:

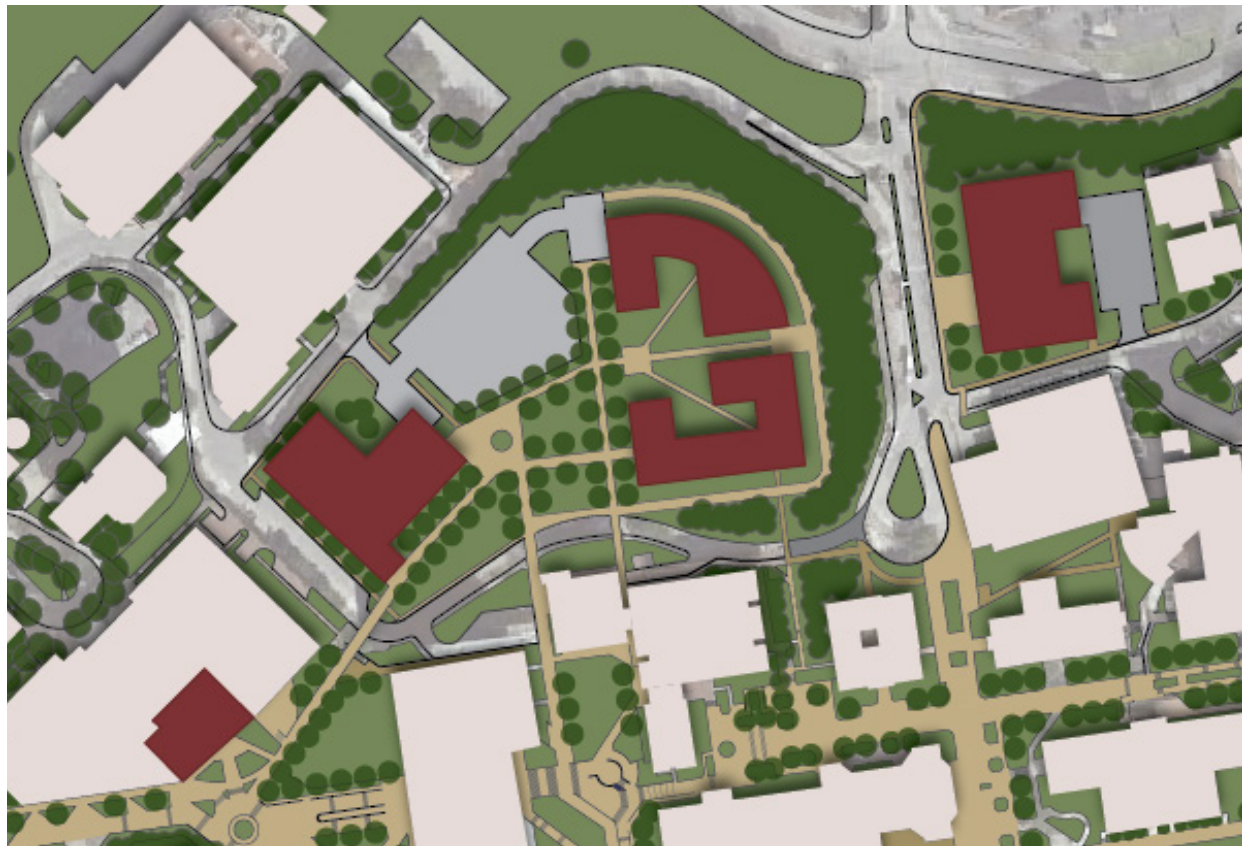
- Develop an academic and research building on the Hilltop that will:
  - Accommodate an interdisciplinary academic and research environment
  - Provide general classrooms, teaching and research laboratories, support space, and informal/collaborative learning spaces
- Be a national model for excellence in integrated and active learning communities
- Develop a vibrant living-learning residence hall community
- Explore the potential for future dining
- Provide physical and programmatic continuity between the Albert B. Alkek Library, the LBJ Student Center, the North Gateway neighborhood, and the Quad
- Develop a second academic and research building on the former Music building site in the North Gateway neighborhood



EXISTING CONDITIONS



0-5 YEAR PLAN



6-10 YEAR PLAN





**VIEW OF PROPOSED ACADEMIC/RESEARCH BUILDING AND NEW HOUSING ON HILLTOP**

- Develop a new grade-separated upper-level pedestrian walk across Student Center Drive to the plaza-level at the LBJ Student Center
- Maintain lower-level service access and parking on Student Center Drive
- Provide new open space and courtyards on the Hilltop as outdoor gathering spaces for both residents and campus users
- Provide a new utility corridor route for greater campus reliability

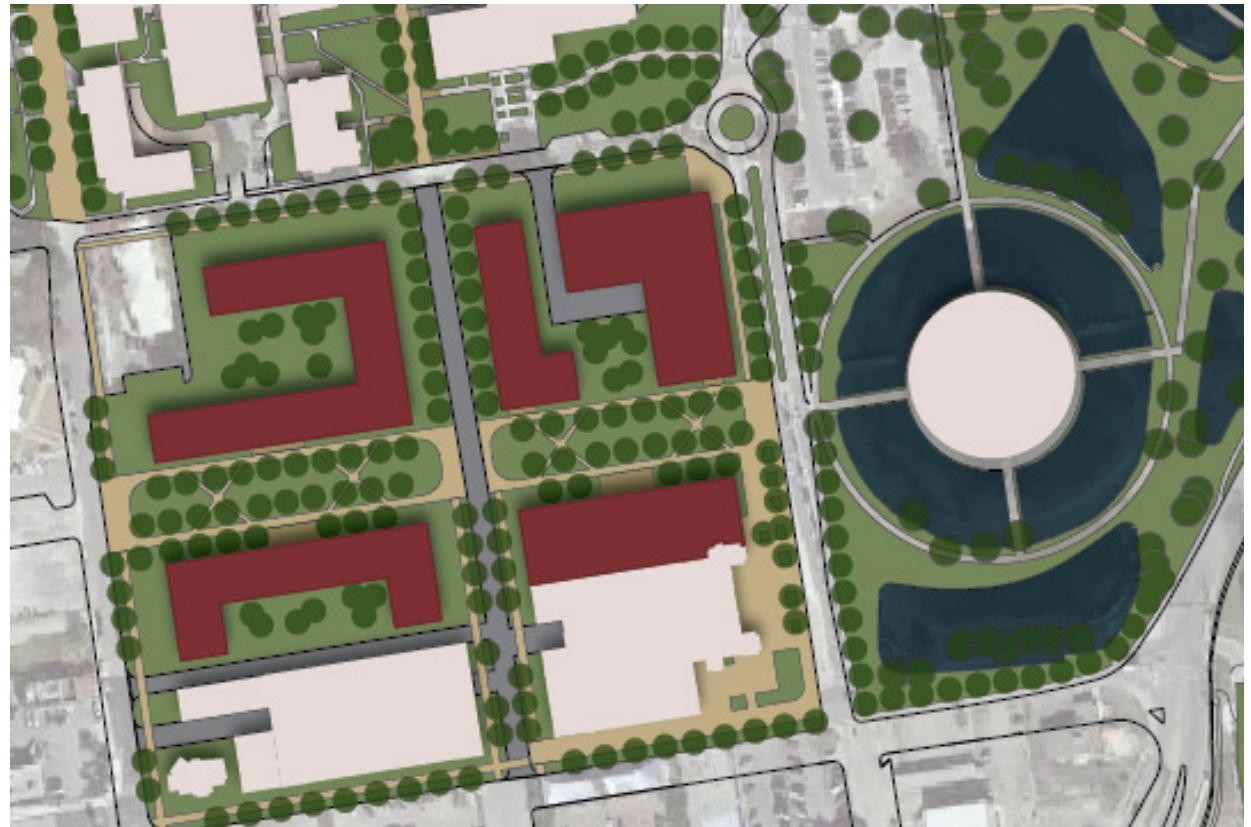
## PERFORMING ARTS NEIGHBORHOOD

With the completion of the Performing Arts Center and Edward Gary Street Garage in 2013, the University created a high profile public destination and valuable integration point with the City of San Marcos. To build on this success, the University Master Plan recommends the development of a consolidated performing arts district and the expansion of a desirable on-campus residential community. Strategic attributes of this neighborhood include plans to:

- Develop a new music building adjacent to Concho Green across from the Theatre Center
- Expand the Performing Arts Center to accommodate a third performance venue, teaching space, and music practice space
- Create a living-learning housing community adjacent to Concho Green
- Renovate or consider replacement of Lantana, Butler, and Sterry Halls with higher density student housing



EXISTING CONDITIONS



2027 MASTER PLAN



CONCHO GREEN 2027 AND BEYOND

## SCIENCE AND ENGINEERING NEIGHBORHOOD

Upon completion of Bruce and Gloria Ingram Hall in 2018, the University will realize the cornerstone for an emerging and very exciting new neighborhood on campus. This Science and Engineering neighborhood represents, in many ways, the maturation of a commitment to becoming an Emerging Research University (ERU). This vision, and the aspiration of achieving top-tier status, underscores the importance of careful planning in this neighborhood.

The precinct envisions an integration of the physical and applied sciences with the engineering disciplines. Programmatically, the University is preparing to add future offerings in other engineering degrees. Strategic aspects include plans to:

- Complete construction and move in the Engineering and Science building (Bruce and Gloria Ingram Hall)
- Improve ease of pedestrian access and safety to this district
- Develop an elevated connection (over Comanche Street) from this district to the Mall and the Hilltop neighborhood
- Re-imagine Vista Drive (partial) as a pedestrian walk with service and emergency access
- Re-configure space vacated in Roy F. Mitte for civil and other engineering programs



EXISTING CONDITIONS



2027 MASTER PLAN

- Re-configure Encino Hall to provide space for the departments in the building and additional classroom space for the University



PROPOSED DIAGONAL WALK FROM MALL TO BRUCE AND GLORIA INGRAM HALL





## LANDSCAPE AND OPEN SPACE

Texas State University has cultivated, and aims to maintain, a high-quality physical environment that inspires intellectual, physical, and social growth. As the University continues to grow in enrollment and size over the next 10 years, it will be imperative that the cultural and environmental resources of campus be preserved. Thoughtful planning and development will ensure that the character of the campus and the quality of the student experience continue to be enhanced.

Spring Lake and the natural topography of the San Marcos Campus, as well as the creation of iconic open spaces such as Bobcat Trail, Sewell Park, and Concho Green, have positioned the University for the continued development of memorable spaces that enhance student experience.

The San Marcos Campus has a variety of open space formality; from the less-formal western side of campus to the highly-formal campus core, to the informal, naturalistic east side of campus. The University Master Plan builds off of this existing landscape structure, extending the character of the core of campus into new and emerging districts and neighborhoods.

The University Master Plan proposes extending the pedestrian and landscape grid north and south, reinforcing pedestrian connectivity and views. Priority areas include plans to:

- Enhance connections between the Undergraduate Academic Center and the

redevelopment of the Hilltop along the North Guadalupe Street pedestrian axis through campus.

- Enhance the North LBJ Drive pedestrian axis from Bobcat Trail to the Pleasant Street garage

Additionally, extensions should be added to the Mall by the LBJ Student Center and McCoy Hall via new upper-level walkways that will link the Hilltop to Bruce and Gloria Ingram Hall.

Extension and completion of the Bobcat Trail from its ending point by Jones Dining Center out to Comanche Street will require realignment of existing vehicular circulation and the creation of a new walkway parallel to Comanche Street, leading to the intersection at Woods Street for a safe, at-grade pedestrian crossing.

New walks around the President's House will help facilitate movement and access to the west side of campus.

New academic and residential courtyards are envisioned with redevelopment of the Hilltop and reinforcement of the Concho Green neighborhood.

A reduction of impervious hardscape is possible on the hillside of Chautauqua Hill. The University Master Plan proposes the exploration of closing and/or limiting through traffic on parts of Hill House Circle to improve pedestrian access and safety and reduce run-off in this area.



### THE PRESIDENT'S HOUSE AREA

New walkway connections proposed west and south of the President's House help complete the primary east-west pedestrian corridor that traverses across campus. The proposed walkways shown above will allow for safe and continuous pedestrian flow, outside of parking and vehicle travel lanes.



### BOBCAT TRAIL TO COMANCHE STREET

A reconfiguration of existing vehicle circulation and parking south of McCoy Hall will improve pedestrian safety and extend the Bobcat Trail pedestrian walk past Albert B. Alkek Library to Comanche Street.

The walkway's terminus should land at the intersection of North Comanche Street and West Woods Street, rather than the current mid-block location on North Comanche Street. This may require re-alignment of existing stairs down from the second-level of the McCoy Hall south entrance parallel to Comanche Street, leading pedestrians to the intersection.

In the longer term (beyond 2027) a future second-level pedestrian walk extension could be incorporated into the redevelopment of the Elliott Hall site, connecting the upper level terminus of the Bobcat Trail from Alkek Library directly to the second level entrance to McCoy Hall.



### HILL HOUSE CIRCLE

Explore the possibility of closing or limiting vehicle traffic between Hill House and Old Main to improve pedestrian access, decrease impervious surfaces, and possibly provide additional stormwater treatment up Chautauqua Hill. Consider adding additional walks and stairs to access Old Main.





PRIMARY PEDESTRIAN CONNECTIONS

## ACADEMIC AND RESEARCH FACILITIES

- A** Academic A-Bruce and Gloria Ingram Hall
- B** Academic B-Elliott Hall (Repurpose)
- C** Academic C-Hilltop Site
- D** Academic D-Current Music Building Site
- E** Academic E-Performing Arts Center Expansion
- F** Academic F-Proposed Music Building (Butler Hall Site)



## ACADEMICS AND RESEARCH SPACE

### CHANGE THE QUALITY AND TYPOLOGY

To accommodate anticipated growth and diminish the current spatial deficits, Texas State University will need to invest in additional new space. The University Master Plan identifies priority growth in teaching space (classrooms and teaching laboratories), research, and office space. In addition, the University will need to invest in a distributed model of student collaboration and support space, incrementally adding this space type to all future facilities.

More importantly, Texas State University has the opportunity to rethink the typology of space added to campus. Specifically, the University should emerge as leaders in interdisciplinary and flexible space for the next generation of learners. Future programming and planning considerations should include plans to:

- Integrate research into future academic buildings
- Embrace interdisciplinary learning and integrated curricula: blending disciplines and collegiate departmental units
- Invest in immersive learning and non-traditional learning spaces to foster innovative pedagogies
- Create student-to-student, student-to-faculty, and faculty-to-faculty collaboration spaces in all new facilities
- Develop curricula-appropriate maker-spaces, incubators, and industry partnerships

- Increase participation of undergraduate students in research

### IMPLEMENTATION OPPORTUNITIES

The University Master Plan identifies a series of physical opportunities in the 2017-2027 horizon to accomplish the aforementioned objectives. Moving forward, the expectation is that new facilities will embrace this shift in teaching and learning spaces. Specific opportunities cluster improvements within a 10-minute walking distance of the academic core. They include plans to:

- Reposition Elliott Hall for teaching, and faculty office space
- Develop an academic and research building at the Hilltop site
- Create a new general purpose academic and research building at the Music building site
- Consolidate performing arts activities by adding a new music building and an addition to the Performing Arts Center
- Create a science and engineering building (Bruce and Gloria Ingram Hall) as a programmatic integration of the physical sciences and engineering disciplines. Allow for adequate facilities expansion and connectivity to future facilities
- Renovate Spring Lake Hall to provide research and educational opportunities and to enhance the visitor and user experience



## STUDENT LIFE

### ENHANCE THE STUDENT EXPERIENCE

Texas State University is committed to offering a unique residential experience with quality student life amenities. That commitment, however, is being compromised by a growing student body outpacing the amount and type of student life infrastructure available. This challenge has created campus-wide spatial deficits in housing, dining, student center, student services, and related student life space needs.

Housing constitutes the largest overall space need to support student life. At present, the overall housing demand exceeds operating capacity. Full-time freshman occupancy constitutes a majority of total beds—providing returning sophomores limited access to beds. This has generated an unmet housing demand. With a larger target population in 2027, the demand is only exaggerated.

### PROGRAM SUMMARY

To align future demand and capacity for housing, dining, and student life offerings, the University Master Plan has established the following programmatic targets based on future (2027) enrollment.

- Increase the total housing bed count by up to 700 beds to accommodate first-time, full-time freshman students and 33 percent of returning sophomore students
- Renew approximately 1,600 beds, including plans to:
  - Renovate and/or replace beds at Lantana, Butler, and Sterry Halls
  - Renovate Retama, Blanco, and Bexar Halls
  - Demolish Arnold, Smith, Burleson, and Hornsby Halls
- Repurpose Elliott Hall for academic use
- Provide approximately 200 additional dining seats in multiple venues
- Expand the LBJ Student Center
- Expand the Student Health Center
- Complete the renovation of the Albert B. Alkek Library





## STUDENT HOUSING

- A** Student Housing A-Hilltop Site
  - B** Student Housing B-Lantana Site\*
  - C** Student Housing C-Sterry Site\*
  - D** Student Housing D-Butler Site\*
- \* Potential for renovation





## RECOMMENDATIONS

Following freshmen, sophomores and transfer students often stand to gain the most from the campus residential experience. The University's desire is to continue addressing the needs of first-time, full-time freshmen and expand capacity to address the needs of sophomore and entering transfer students. See Student Life appendix for a table showing current and planned beds.

If campus housing continues to serve first-time, full-time freshmen and an increasing percent of returning students:

- Residents should continue to be required to participate in a campus dining plan
- No new campus apartments (with full kitchens) should be added
- A continued emphasis or even expansion of structured, residential, and living-learning communities should be offered
- Impact on affordability for residents should be a key component in all future decisions regarding renovations or new residence hall construction

Due to limited space and to enhance efficiencies, new residential development should consist of more than 400 residents per unit. To

help achieve a goal of communities of more than 400 beds in capacity, more mixed-use designs could be considered to combine residential use with one or more of the following: teaching, academic offices, recreation/fitness, dining, retail, parking, or possibly other University functions.

As the University moves to expand capacity and/or renovate or re-purpose some of its existing housing, emphasis should be on the creation of double rooms. The primary unit type in housing projects has been comprised of double rooms with designated bathrooms for a group of rooms, or traditional style double rooms with community bathrooms. Both styles would be most suitable for first-year students, and the existing stock of suite style and apartments could be reserved for upper-class and returning students.

### LEGEND

-  Existing
-  Planned

### STUDENT LIFE AND DINING

- A** Student Health Center Expansion
- B** LBJ Student Center Expansion
- C** University Events Center (Dining Venue)
- D** Ingram Hall (Dining Venue)
- E** Alkek Library (Dining Venue)
- F** Alumni Center







## STUDENT LIFE / DINING RECOMMENDATIONS

The need for an additional 700 beds on campus by 2027, combined with additional enrollment growth, will drive the need for additional dining space on campus. A change in the dining program, however, might result in improved efficiencies using the current capacity and may partially address the need.

### Demand Projections

Texas State University does not believe another “all you care to eat” dining hall is needed in this 10-year plan. For retail food venues, approximately one seat is needed for every five additional residents. This amounts to approximately 200 dining seats needed in multiple venues.

Future dining should focus on an expansion of healthy food options and the education of consumers. Future dining planning, for both facilities and meal plan programs, should enhance opportunities for student-to-student and student-to-faculty interactions throughout the day, designing space and operations to encourage lingering rather than quick turnover.

### LEGEND

	Existing
	Planned





## BUILDING RENOVATION AND REPURPOSING CANDIDATES

- A** Blanco Hall
- B** Commons Hall
- C** Elliott Hall
- D** Health Professions
- E** Jowers Center
- F** Nueces
- G** Roy F. Mitte
- H** University Events Center
- I** West Warehouse (not pictured)
- J** Albert B. Alkek Library
- K** Bexar Hall

### LEGEND

- Renovations/Repurpose
- Building Infrastructure
- Demolition

## REPOSITIONING ASSETS

Since 1903, Texas State University has a long-standing tradition of maintaining and continually repositioning building assets on campus. This is a reoccurring process that allocates and prioritizes financial resources to improve the academic and student-life environments on campus. Moreover, the University is steadfast in preserving relevant and significant structures that contribute to the character of the campus. Looking ahead to 2027, the University Master Plan highlights candidates for renovation, repurposing, and/or demolition. The University Master Plan recommends a series of facility interventions by using a synthesis of building age, building condition, and facility use—paired with location, density, and overall land value.

The University Master Plan has identified three levels of facility intervention:

- Building Renovation and Repurposing Candidates – these facilities reflect a visible change of use and/or a significant renovation
- Building Infrastructure Improvement Candidates – these facilities will remain visibly unchanged, but will receive a significant investment in major building infrastructure systems
- Demolition Candidates – These facilities have reached the end of their useful life with renovation costs exceeding replacement value; or location and overall campus land use suggests removal





## BUILDING INFRASTRUCTURE IMPROVEMENT CANDIDATES

- A** Albert B. Alkek Library
- B** Aqua Sports Center\*\*
- C** Derrick Hall
- D** Evans Liberal Arts
- E** Hines Academic Center
- F** JCK Administration
- G** LBJ Student Center
- H** Old Main
- I** Physical Plant
- J** Centennial Hall
- K** Theatre Center

\*\* Potential candidate for demolition

### LEGEND

- Renovations/Repurpose
- Building Infrastructure
- Demolition








### DEMOLITION CANDIDATES

- A** Arnold Hall
- B** Burleson Hall
- C** Butler Hall\*
- D** Hornsby Hall
- E** Lantana Hall\*
- F** Music Building
- G** Smith Hall
- H** Sterry Hall\*

\* Potential candidates for renovation

### LEGEND

-  Renovations/Repurpose
-  Building Infrastructure
-  Demolition

## PROPOSED CAMPUS ATHLETICS

With the recent major improvements to Bobcat Stadium and the upgrade to the University Events Center, this 10-year University Master Plan envisions comparatively minor improvements to the athletic venues as funding becomes available.

Athletics has identified a series of minor improvements that could be made during the course of this University Master Plan, if funding becomes available.

The University Events Center (Strahan Arena) is being upgraded with a large addition and renovations that will accommodate the needs of the basketball and volleyball teams in the future. It is also being designed to include locker rooms and support facilities for additional sports.

Cross country athletes have the ability to practice anywhere. For competition they need a three-mile course. One option would be the Spring Lake area where the former golf course was located. A single path could be constructed and would not affect nor detract from the open use of this area.

For track and field, the existing seats are on the southwest side of the track. Spectators are impacted due to the heat and intensity of the sun and more shade is needed over those seats. The facility also needs storage at the southeast end, near the curved end part of the track.

The tennis team plays at the existing indoor and outdoor courts. The courts need to be redone with post-tensioned slabs because there is significant cracking of the courts. The tennis locker room has no restroom and needs to be improved. The number of tennis courts works for practice, but the University cannot host championships because of the number of courts and caliber of facilities. Consider adding more tennis courts if existing courts are replaced or upgraded.

The football team needs a larger strength and conditioning room. It would be good to have a grass tailgating area close to the stadium. Circulation in the Bobcat Stadium needs to be analyzed because there are a number of choke points that stop pedestrian flow. Athletics would like more chair back seats in priority seating areas. An addition on the east (visitors) side of the stadium has been designed, as well as a project to fully enclose the south end. While both of these projects are viable, implementation would likely occur after 2027.

For baseball and softball locker rooms, the plan is to move into renovated facilities at the University Events Center. Athletics still needs improvements at the baseball and softball stadiums as outlined in the previous University program plan. Adjacent to third base at the baseball stadium, a two- to three-story support

facility should be built. It would include locker rooms, a weight room, sports medicine, and offices for both baseball and softball. The support facility could also include fan hospitality areas such as suites and indoor/outdoor viewing terraces. Although desirable, these additions are more likely to occur beyond 2027.

For academic support of student athletes, there are some spaces that are located in the Bobcat Stadium Bill Miller Room. The main academic facility, however, is underground at Harris Dining Hall, next to the current soccer field. Athletics has more athletes than that space can accommodate. It is not ideally located for athletes and has no parking. A remodel of the existing space and/or additional academic support is needed.

Athletics has identified a future need for Student Athlete Housing and an Indoor Practice Facility in the six- to 10-year timeframe, however, the locations for both facilities and funding have not been determined at this time. Ideally, all athletic facilities would be located on the east side of campus. Should the opportunity present itself, the Bobcat Soccer Field will be relocated there as well.





PROPOSED UNIVERSITY EVENTS CENTER









## ATHLETICS AND RECREATION

- A** Tennis Facilities Upgrade
- B** University Events Center
- C** Football Facilities Upgrade
- D** Track Facilities Upgrade
- E** Recreation Fields at Spring Lake
- F** Baseball/Softball Facilities Upgrade (beyond 2027)
- G** Bobcat Stadium Expansion (beyond 2027)

### LOCATION TO BE DETERMINED:

- Athletic Academic Support Facilities Improvements
- Cross Country Course
- Indoor Practice Facility
- Student Athletic Housing
- New Soccer Venue (Beyond 2027)

### LEGEND

-  Existing Athletics
-  Planned Athletics
-  Existing Recreation
-  Planned Recreation

## PROPOSED CAMPUS RECREATION

With the relatively recent expansion of the Student Recreation Center, there is little need for another expansion of indoor recreation facilities over the next 10 years.

There is, however, a need for outdoor recreation fields and spaces. Compared to other college campuses across the country with similar student populations, there is a shortage of fields for outdoor games and activities. The Department of Campus Recreation and those interviewed during the master planning process see a need for numerous on-campus fields. The fields should be lighted since the evening and dusk hours are important times for student recreational and intramural activities. There will be many uses of the fields including flag football, soccer, lacrosse, softball, and baseball. The Department of Campus Recreation also sees the need for passive type recreation spaces, including frisbee and catch. Passive recreation areas should be located close to student residential areas in the current open spaces that exist across campus.

The West Campus Fields, located just off Academy Street, provides two large fields that are used by the University Varsity soccer team as well as for recreation use. The complex is located adjacent to the Student Recreation Center, creating a strong complex of indoor and outdoor activities and sports and recreational opportunities.



To create a large addition of recreational fields, a number of on-campus and off-campus sites were investigated. The preferred site is located just off Aquarena Springs Drive at the intersection of Post Road and Bert Brown Street. The site was the University golf course until it suffered extensive damage during floods in recent years. The location has traditionally been a green space and the recreational fields

provide a similar use, but with a smaller footprint than a golf course. The fields can be designed to not impact floodways and still absorb water during future high water events.



#### PROPOSED RECREATION FIELDS

The fields, currently in design, create a large L-shaped open space area for a series of fields that will allow for a wide variety of recreational and intramural uses needed for the growing student population. The concept is to light the fields with energy efficient directional lighting to allow evening use. By creating a large L-shaped complex, the lines for each field can change over time. The L-shaped complex will minimize wear patterns and allow flexibility in the layout of the

fields as well as the types of games able to be played.

There are recreational fields just to the west of the Bobcat Village Apartments on the east side of campus and recreational fields next to Sewell Park North closer to the core of campus. The desire is to maintain that use as open space and recreational fields over the term of this University Master Plan.

Creating an east side on-campus field complex will complement the west side Student Recreational Center and Bobcat Soccer Complex, thereby serving both ends of the campus and distributing recreational opportunities across the entire campus.

## MOBILITY AND PARKING

### RECOMMENDATIONS

By 2027, Texas State University envisions a campus accommodating more than 50,000 people (faculty, staff, commuter and residential students, and visitors) daily. Creating a more efficient parking system and interdependent transit system is critical to accommodating this growth. The University Master Plan recommends the following physical improvements:

- Expand the parking system by up to 2,000 parking spaces by 2027. This growth trajectory accommodates an increase in the residential and commuter student, faculty, staff, and visitor populations
- Reserve land for three new parking structures. Design structures with a minimum net parking increase of 750 cars each, using three of the following options:
  - East side of campus at the University Events Center including a multi-modal transportation facility
  - Northwest side of campus at Holland and Academy Streets
  - Southwest side of campus at Lindsey Street
  - Land that may be acquired by the University in the future
- Incrementally migrate parking from campus core to perimeter facilities:
  - Eliminate small, centrally located surface parking lots in favor of green space and/or academic building footprints
  - Repurpose small and inefficient parking garages to alleviate internal roadway congestion
- Prioritize visitor parking resources adjacent to high profile public destinations
- Provide enhanced transit service from remote parking resources directly to the campus core
- Enhance technologies that support transit, parking, and mobility

### TRANSIT – CIRCULATION AND SHUTTLE STOPS

- Support the movement of staff, faculty, and students via the Bobcat Shuttle, bicycles, or walking within the campus core, rather than use of personal vehicles
- Acknowledge the interdependency of parking and transit systems. Provide transit service that shuttles people directly from remote parking locations to key locations on campus
- Interface with the community bus service at the campus edges and encourage system ridership, particularly for distant apartment complexes
- Modify existing shuttle routes to limit roadway delay at congested intersections, minimize left-turns, and reduce bus dwell time (scheduled time points). Continually evaluate routes with low-ridership for reduced service hours or shift service to the community bus system where practical
- Establish a Bobcat Shuttle service area at the maximum distance from campus that will be provided with transit



TEXAS STATE UNIVERSITY WOODS STREET BUS HUB





## VEHICULAR AND PEDESTRIAN CIRCULATION

Change is constant in a dynamic setting like the San Marcos Campus. The need for coordinated mobility improvements is a direct result of the rapid student enrollment growth that has been occurring over the past 10 years. The University Master Plan also recognizes that change will continue in the future, so the strategies outlined need to be flexible enough to accommodate future needs as they emerge.

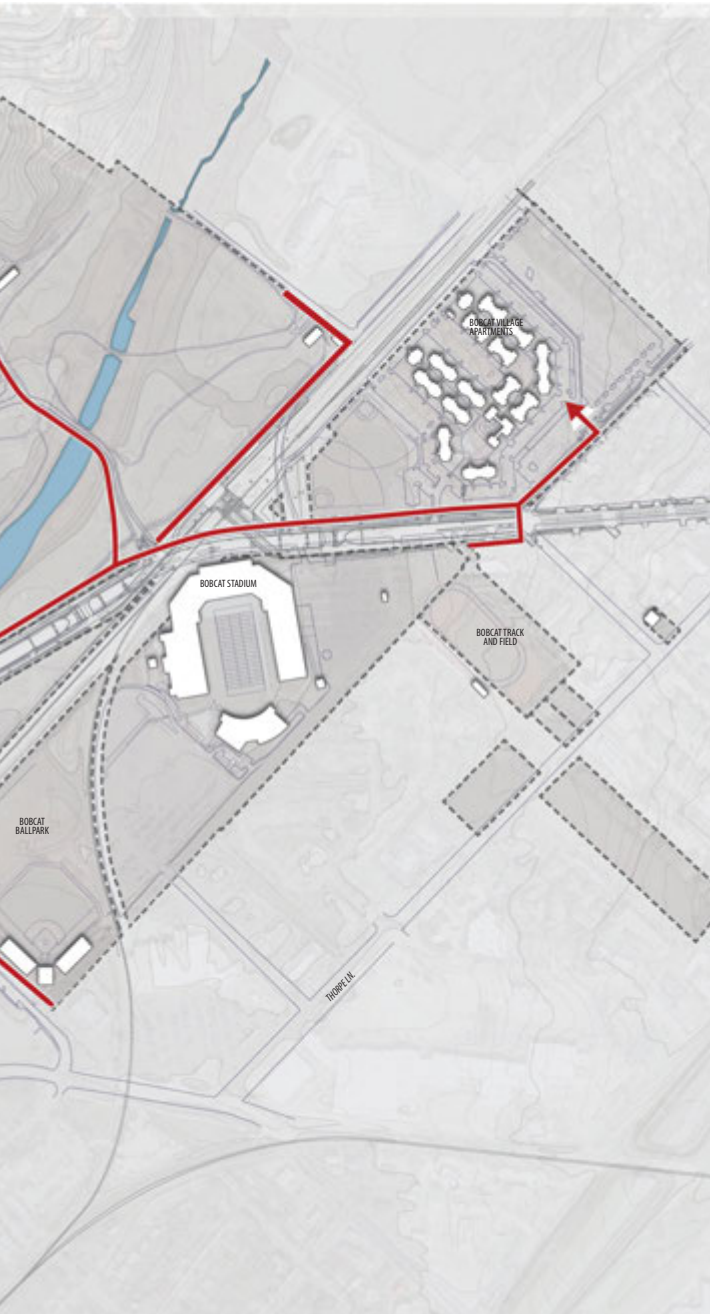
To this end, the following planning-level strategies have been presented, discussed, and shaped by feedback from University stakeholders during this master planning process. The individual capital projects identified by this University Master Plan have been shaped by the guiding principles for improving campus mobility, described below.

### RECOMMENDATIONS

- Work closely with the Texas Department of Transportation (TxDOT), City of San Marcos, and the Capital Area Metropolitan Planning Organization (CAMPO) to implement upgrades to the regional roadway system including expansion of road capacity, design of campus gateways, sidewalk improvements, bicycle facility connections, signage, and wayfinding systems for visitors
- Work with the City of San Marcos to limit potential vehicular-pedestrian conflict intersections
- Design intersections to support effective entry and exit from campus onto the City of San Marcos roadway network for vehicles, buses, bicycles, and pedestrians
- Identify streetscape improvement projects for a more detailed traffic engineering feasibility study
- Improve the on-campus pedestrian pathway network. See the Sidewalk Improvements Plan in the Appendix
- Directly connect with all off-campus sidewalk facilities and improvement projects managed by the City and TxDOT
- Directly connect campus property to the San Marcos River Pathway project near the River House and Hutchinson Street
- Provide bicycle parking including covered bicycle parking where practical
- Develop a Bicycle Plan

### LEGEND

- 5-Minute Walking Radius
- 10-Minute Walking Radius
- Proposed Pedestrian Routes







## PARKING MANAGEMENT STRATEGIES

- Actively manage the parking inventory, zoned permit system, and permit prices to ensure that permit revenue will be sufficient to cover annual debt service and operations. Parking losses due to construction must be mitigated by the construction of parking elsewhere
- Reinforce a park-once strategy that limits permit flexibility to park on all portions of campus
- Encourage the use of the Bobcat Shuttle, cycling, or walking for on-campus mobility needs
- Identify the location of future capital building projects and utilize the sites as temporary short-term parking (e.g. Hilltop)
- Consider short-term parking, remote parking areas, or potential sites for park-&-ride, to support immediate growth needs
- Seek design of a multi-modal transportation facility across from the University Events Center
- Plan for transit hub, bicycle storage facility, vehicle drop-off, and structured parking facilities in the medium- to long-term
- Provide on-street or special parking near buildings to meet specific requirements such as accessible (ADA) parking, valet needs, and deliveries. Evaluate the utilization and need for individual ADA spaces within the campus core on a semi-annual basis
- Minimize, to the extent feasible, the conflicts between every day parking needs and event related (irregular) parking needs. Identify a flexible parking area or overflow lot, for use during irregular high-demand parking events

### LEGEND

-  Existing
-  Planned

## ELECTRIC AND THERMAL

The estimated cooling, heating, and electrical loads for the building additions proposed in the University Master Plan are shown in the table to the right. These values are based on proposed building square footage and anticipated usage. Note that the chillers required to meet this cooling load will further increase the electrical load at the Medium Voltage switchgear.

Analysis of the effect on chilled water, steam, and electrical system capacity are given below. Discussion of specific master plan recommendations relating to these systems follow the capacity analyses.

### ELECTRICAL SYSTEM CAPACITY

Concerns and planning for the electrical system have focused on reliability and should through 2027. However, beyond 2027, capacity becomes a concern as loading on some feeders may reach 80 percent, a traditional benchmark for maximum safe loading of circuits. Additionally, the total loading at each substation will likely surpass 50 percent of capacity. This is a critical benchmark for main-tie-main equipment because the tie cannot be closed if the bus on each side of the tie is already loaded beyond 50 percent of its rating. Closing the tie means all of the load flows through either the A or B bus to the other side. Once the load is over 50 percent of capacity, closing the tie to serve both

### 2027 ESTIMATED LOADS

2017–2027 BUILDINGS	Cooling Load (tons)	Heating Load (lbs/hr)	Electrical Load (kW)
Academic and Research Building at Music Site	360	2,770	450
Elliott Hall Repurposing	70	570	85
Hilltop Multipurpose Academic & Research	410	3,150	472
Bruce and Gloria Ingram Hall	440	2,800	336
Music at Butler Site	190	1,690	231
Housing at Butler Site	80	1,060	77
Housing at Lantana Site	360	4,585	286
Hilltop Housing	540	6,925	504
Housing at Sterry Site	210	2,700	196
Holland, Charles Austin, & Lindsey Parking Decks	0	0	56
LBJ Student Center Expansion	130	1,220	145
Student Health Center Expansion	50	500	60
Performing Arts Center Expansion	220	1,800	150
University Events Center Expansion*	250	2,200	157
Alumni Center*	40	400	23
<b>Total Added</b>	<b>3,350</b>	<b>32,370</b>	<b>3,226</b>

\* These buildings are not served by the main campus chilled water, steam, or medium voltage electric systems.

busses from one utility feed will require load shedding and/or shifting load between plants, a complicated and time consuming exercise.

For these reasons, preliminary planning to address capacity concerns to include

increased frequency of automated data collection of main electrical feeds and possible limited automatic switching for the purposes of redundancy, fast restoration in key locations, and possible demand reduction should begin in the Beyond 2027 period.

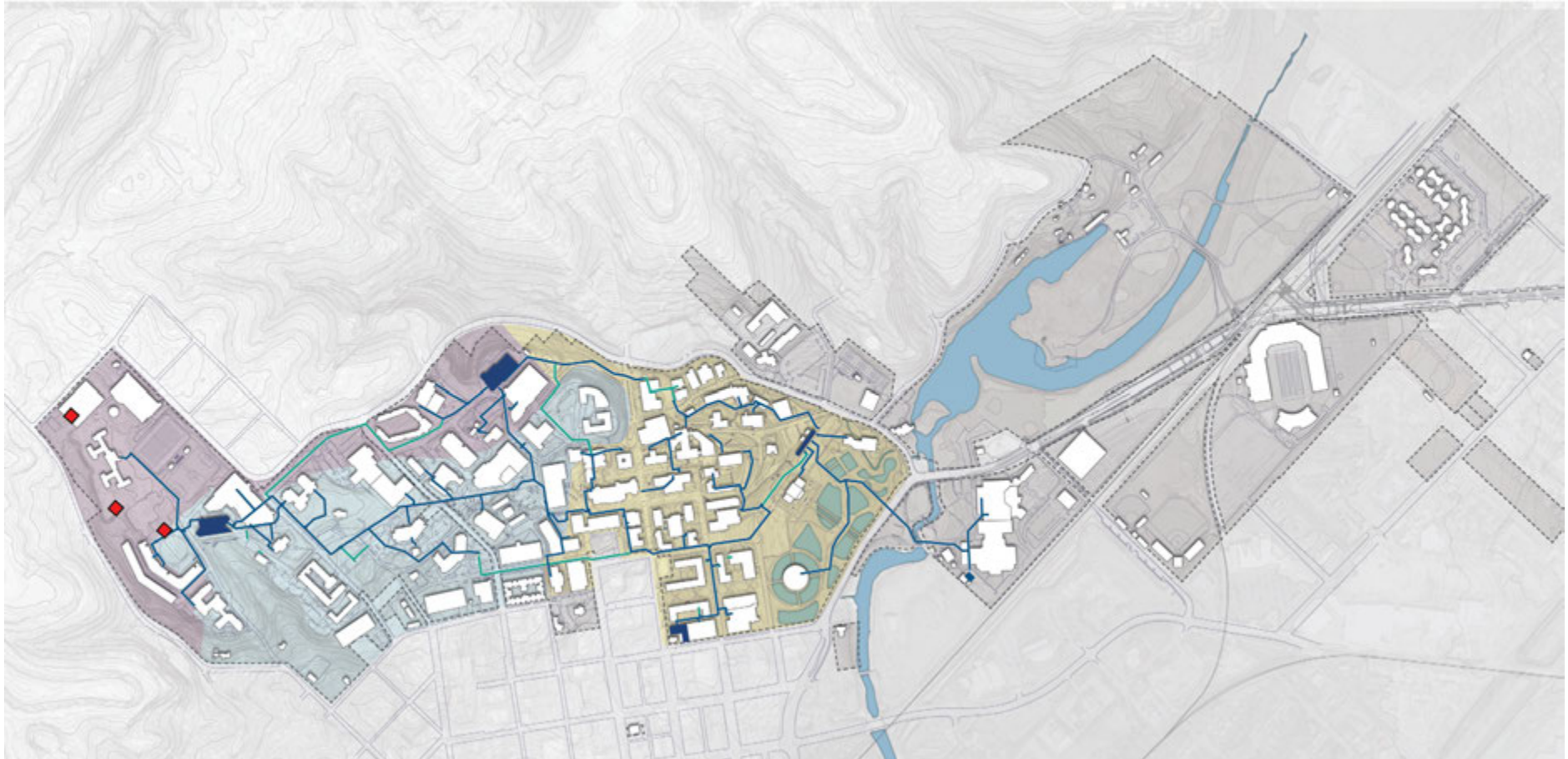
**BEYOND 2027 ESTIMATED LOADS**

2027+ BUILDINGS	Cooling Load (tons)	Heating Load (lbs/hr)	Electrical Load (kW)
Academic and Research (Academy St. #1)	690	3,540	529
Academic and Research (Academy St. #2)	360	2,770	207
Academic and Research (Academy St. #3)	340	2,600	414
Academic and Research (Academy St. #4)	18/0	1,390	391
Academic and Research (Elliott Hall Site)	180	1,400	212
Academic and Research (Hilltop Site)	440	3,385	506
Academic and Research (Music Site)	320	2,460	368
Bruce and Gloria Ingram Hall Expansion	80	500	60
Student Housing #1,#2 (Glade Site)	350	4,520	378
<b>Total Added</b>	<b>2,940</b>	<b>22,565</b>	<b>3,084</b>






**FUTURE ELECTRICAL SYSTEM CAPACITY**

CIRCUIT ID	FEEDER DESCRIPTION	2016 % CAPACITY USED	2027 % CAPACITY USED	BEYOND 2027 % USED
Central Plant	Single Bus (tie Closed)	35%	44%	66%
South Chill Plant	Single Bus (tie Closed)	25%	35%	41%
2/16 (A3A/B3A)	Central Campus Feeder	60%	72%	76%
4B/14B (A3B/B3B)	East Campus Feeder	67%	73%	80%
6/10	North East Camps Feeder	40%	54%	63%
3A/15A	North Campus Circuit (wells)	10%	10%	10%
3B/15B	West Campus Circuit 1	15%	15%	45%
4A/14A	West Campus Circuit 2	50%	57%	60%

The primary concerns will be the central and the east side of campus circuits, which may be loaded as high as 80 percent of their rated capacity. Fortunately, these are the circuits already connected to both plants. The addition of isolation switches at key points in the system would allow these feeders to operate more like open loop circuits, eliminating the need to consider them as parallel redundant circuits. For example, if a fault on circuit 2 can be isolated using switches distributed across the campus, many of the loads on circuit 2 can remain on line and on circuit 2 even when part of circuit 2 is down due to a fault in a manhole or duct-bank. This eliminates the need to consider circuit 16 as a back-up for circuit 2, essentially doubling the capacity along these feeder corridors. Fully converting the campus feeders to an open loop design would require replacing all the pad-mounted switches at the buildings, which is currently cost prohibitive. All new electrical utility designs and improvements should use looped distribution instead of radial distribution. However, consideration should be given to replacing some source selector switches with loop feed through/isolation switches and/or adding stand-alone isolation switches. This approach would both increase capacity and reduce the complexity of switching during faults since only buildings in the isolated zone would have to be switched to the parallel redundant circuit.



**CHILLED WATER**

-  Existing Chilled Water
-  Proposed Chilled Water
-  Thermal Plant
-  Potential Future Well and Storage Tank Location
-  Water Service Zones

## CHILLED WATER SYSTEM

The table below summarizes how the building demolition, renovation, and construction projects presented in the University Master Plan will affect the chilled water plants. Each column indicates load on plant, redundant equipment capacity within the plant, and calculated percent utilization. Percent utilizations above 100 percent indicate that the plant cannot fully meet load if the largest piece of single plant equipment fails.

As discussed in the Infrastructure Analysis section, the Central Plant and South Plant do not currently have plant equipment redundancy.

The entirety of the load additions in this plan for the 2017-2027 period will be served by

the Central and South Plants. The addition of the University Events Center Plant will reduce load on the East Plant, providing more usable capacity at that plant. However, the current chilled water pumps and current piping configuration from the East Plant would not allow it to utilize its full capacity to any extent that would relieve significant load off of the Central Plant.

In order to regain equipment redundancy at the Central Plant and South Plant and serve the new 2017-2027 loads, capacity increases at the Central and South Plants, as indicated in the table below, are recommended.

The load additions indicated for beyond 2027 are largely focused on the central to west portions of campus, and as such, are anticipated to be served by the Central and West Plants. Due to the amount of capacity increase, however, the full build-out of the Central Plant and current West Plant would not be sufficient. In order to serve the Beyond 2027 buildings and significantly increase campus plant-level redundancy, replacement of the existing West Plant is recommended.

The table below provides current and recommended increases for campus distribution capacity and chilled water system efficiency for the Short-Term, Mid-Term, and Beyond 2027 in the chart below.

### FUTURE CHILLED WATER CAPACITY

PLANT	2016 Load/Capacity/Util. <sup>1</sup> (Tons/Tons/%)	2027 Load/Capacity/Util. (Tons/Tons/%)	2027+ Load/Capacity/Util. (Tons/Tons/%)
West Plant	1,810/2,200/82%	1,810/2,200/82%	5,330/8,000 <sup>5</sup> /66%
Central Plant	4,370/3,500/125%	6,050/7,000 <sup>(2)(3)</sup> /80%	5,560/7,000/74%
East Plant	1,740/2,065/84%	1,210/2,065/59%	1,210/2,065/59%
South Plant	1,530/750/204%	2,240/3,000 <sup>4</sup> /75%	2,240/3,000/75%
University Events Center Plant	N/A	1,190/2,250/51%	1,190/2,250/51%

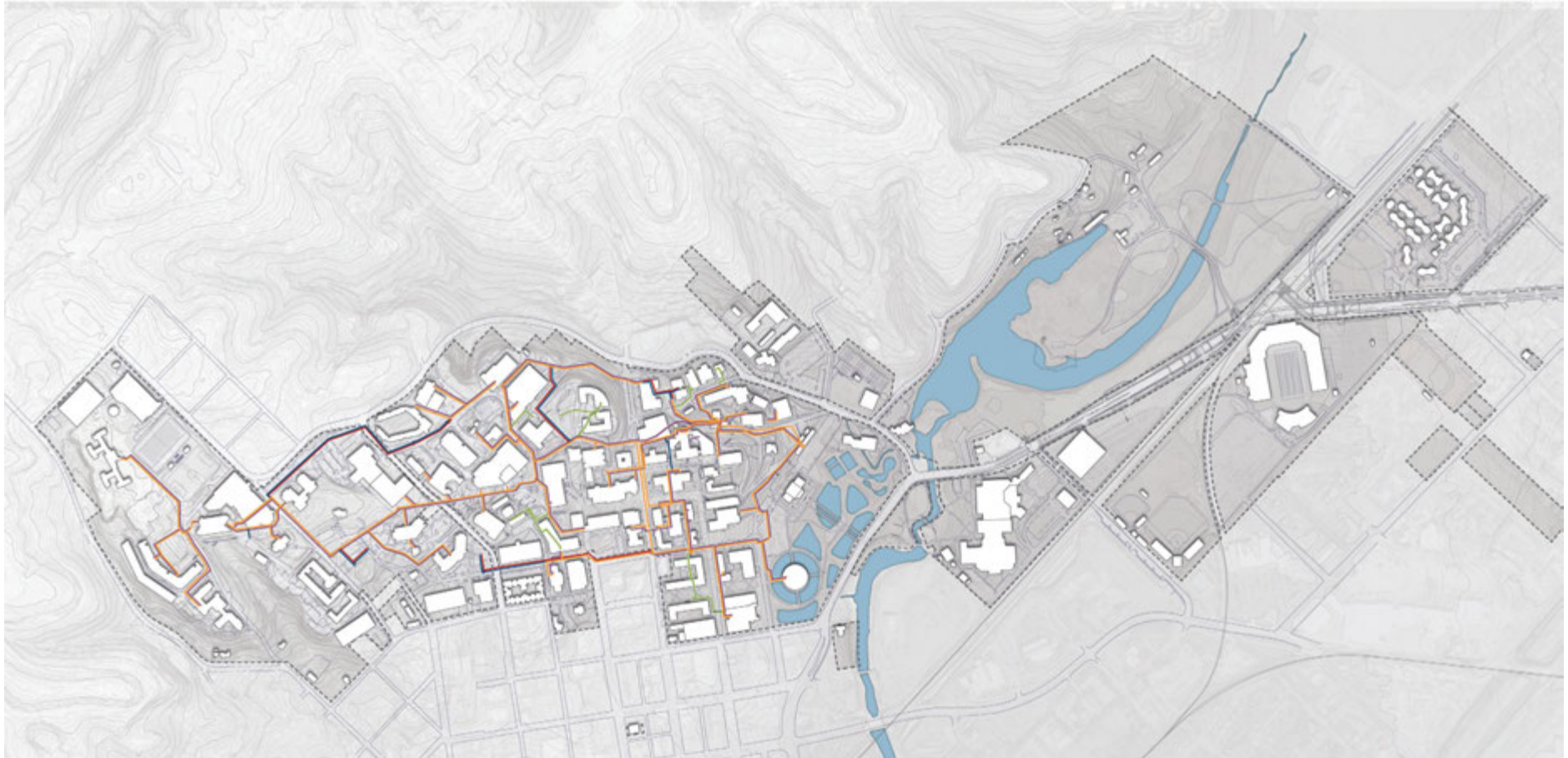
<sup>1</sup> Plant load, N+1 capacity, and calculated percent utilization

<sup>2</sup> Capacity upgrade at Central Plant. 2 x 2,000 ton chillers






<sup>3</sup> Cooling towers become N+1 limiting factor at Central Plant

<sup>4</sup> Capacity upgrade at South Plant. 2 x 1,500 ton chillers

<sup>5</sup> Existing 2,750-ton West Plant replaced with new 8,000-ton West Plant



**STEAM SYSTEM**

-  Existing Steam
-  Proposed Steam
-  Steam to be Demolished
-  Existing Steam Condensate
-  Proposed Steam Condensate



## STEAM SYSTEM

The table below summarizes the effect of the University Master Plan on the steam generating plant's West Plant.

As discussed in the Infrastructure Analysis section, the Central Plant does not currently have boiler redundancy.

The entirety of the load additions for the 2017-2027 period will be served by the Central Plant. New facilities in locations that require large extensions of steam and condensate return

pipings may be better served by in-building, modular heating water boilers.

In order to regain equipment redundancy at the Central Plant and serve the new 2017-2027 loads, the installation of smaller capacity modular steam boilers at the Central Plant is recommended. These smaller boilers, which can be added incrementally as load increases, will also allow the West Plant boilers to remain in operation over the non-heating seasons. Currently the West Plant boilers have to be shut

down over summer so that the Central Plant boilers have more load and can operate stably.

The load additions beyond 2027 will be served by both the Central and West Plants. The West Plant is expected to maintain equipment redundancy, but addition of one or more modular boilers may be required at the Central Plant.

## FUTURE STEAM GENERATION CAPACITY

Plant	2016 Load/Capacity/Util. <sup>1</sup> (lbs/hr/lbs/hr/%)	2027 Load/Capacity/Util. (lbs/hr/lbs/hr/%)	2027+ Load/Capacity/Util. (lbs/hr/lbs/hr/%)
West Plant	26,900/40,000/67%	26,900/40,000/67%	38,200/40,000/96%
Central Plant	61,700/50,000/123%	80,300/90,000 <sup>2</sup> /89%	90,400/100,000 <sup>3</sup> /90%

<sup>1</sup> Plant load, N+1 capacity, and calculated percent utilization

<sup>2</sup> Capacity upgrade at Central Plant. 4 x 10,000 lb/hr modular boilers

<sup>3</sup> Capacity upgrade at Central Plant. 1 x 10,000 lb/hr modular boilers

## CAMPUS STEAM DECENTRALIZATION/ HEATING WATER DISTRIBUTION

Ownership of a large distributed steam system like the one present on the San Marcos Campus presents several significant operational and maintenance challenges as described in the Infrastructure Analysis section. Installation of new steam systems on campus settings in this climate was far more common in the past than at present. From nearly any standpoint, distribution of heating water, as opposed to steam, is more advantageous. Even a distributed steam system that is thoroughly maintained and returns nearly all available condensate will consume far more natural gas and water than a typical distributed heating water system. Conversion from distributed steam to distributed or local hot water heating is a regular occurrence in today's industry.

Preliminary calculations indicate that full conversion on campus from distributed steam to heating water could result in \$700,000 of annual natural gas savings and a 10 million gallon per year reduction in water drawn from the Jackson Well. Total annual water withdrawal from the Jackson Well, for all uses, is approximately 250 million gallons.

The five steam generating boilers, 10 miles of distribution piping, and hundreds of steam consuming devices represent a large amount

of capital currently invested in the San Marcos Campus' steam system. Immediate and comprehensive conversion to distributed heating water would be extremely expensive and is not recommended. However, a phased long-term approach to reducing and eventually eliminating distributed steam generation and consumption on campus may be justified.

The concept of steam decentralization and conversion to distributed heating water is recommended for further investigation into feasibility. Generation of detailed life-cycle cost analyses for "Business as Usual" and several "Phased Conversion" scenarios of various durations containing capital, operating, maintenance, staffing, and permitting costs is recommended.

Several of the Mid-Term Priority recommendations indicate some dependency on implementation of phased future conversion to a heating water system. However, the core recommendations and analysis presented are not dependent on either strategy. The potential future use of a combined heating and power system is also not dependent on either strategy. Distributed steam or heating water systems have the ability to utilize waste heat streams.

Regardless of the timeline for eventual conversion to heating water distribution, it is recommended that steam be converted to a heating water system and/or domestic hot water system as soon as possible within entering an end-use building. This reduces the number of steam traps and condensate return equipment required and reduces overall maintenance required for the building. This standard is recommended for all new buildings on campus, as well as any major mechanical renovations.

### Short-Term Priorities (0-5 Years)

- **Replace Central Plant Chiller CH 2 with 2,000-ton Electric Chiller.** Replacement of this chiller would regain equipment redundancy at the Central Plant. Project would involve removal of existing 1,400-ton steam absorption chiller and installation of new 2,000-ton electric chiller with variable speed drive.
- **Install Modular Boilers in Central Plant.** Installation of this equipment would regain redundancy at the Central Plant and improve steam system efficiency through reduced standby losses. Project would involve installation of three new 10,000-lb/hr boilers.

- **Install Chiller CH 3 and Cooling Tower CT 3 at South Plant.** Installation of this equipment would regain redundancy at the South Plant. Project would involve installation of the new 1,500-ton chiller with variable speed drive, chilled water pump, 1,500-ton field-erected cooling tower, and condenser water pump.
- **Replace Central Plant Chiller CH 4 with 2,000-ton Electric Chiller.** Replacement of this chiller would provide capacity at the Central Plant for new buildings while maintaining equipment redundancy. Under current loading, this chiller should be added when more than 200,000 square feet of building space are added to the Central Plant loop. Project would involve removal of existing 1,400-ton steam absorption chiller and installation of new 2,000-ton electric chiller with variable speed drive.
- **Various Air Handling Unit Replacements.** Replacement of these air handlers at or beyond their anticipated service life would improve space conditioning performance and reliability, increase campus chilled water differential temperature, and increase campus chilled water and steam system performance. Air handling units recommended for replacement are in: Albert B. Alkek Library, Theatre Center, J.C. Kellam Administration, Academic Services Building, Agriculture Building, Blanco Hall (currently in planning), and the LBJ Student Center (currently in design).
- **South Campus Utility Corridor.** This utility distribution improvement project would provide additional interconnection between the Central, South, and West Plants, and will provide additional service paths to critical buildings in the west to central campus area. Additionally, this utility corridor provides the much needed path to connect the west campus electrical feeders to the South Chill Plant, eliminating the dead end condition. This would greatly reduce outage times when utility feeds are lost at the central plant as the circuits can be quickly switched to be fed from the South Chill Plant. Project would involve installation of 14-inch chilled water, eight-inch steam, six-inch steam condensate lines, and medium voltage feeders 3B/15B and 4A/14A. Installation of the steam piping is recommended regardless of potential conversion to distributed heating water. Corridor route is shown on the utility maps.
- **Hilltop Utility Corridor.** This utility distribution improvement project would provide service to the Hilltop complex and also allow for reliability improvements to the campus medium voltage electrical system. Currently, the electrical system has a significant single point of failure at the Central Plant where all the feeders share a duct-bank and pull box. This high risk failure point continues down Student Center Drive in front of the Mathews Garage where many of the feeders leaving the Central Plant pass through common manholes and share duct-banks. Project would involve installation of 10-inch chilled water, eight-inch steam, and six-inch steam condensate lines to serve the Hilltop complex. Installation of the steam piping is recommended regardless of potential conversion to distributed heating water. Medium voltage circuits 4B and 14B would be re-routed through the new corridor, and a new loop with circuits 6 and 10 would be created around the Matthews Street Parking Garage and the Hilltop. Corridor routes are shown on the utility maps.
- **Repair South Campus Condensate Return Route.** This project would improve condensate return percentage and reliability by replacing the steam and steam condensate lines from the Pleasant Street Parking Garage and beneath Flowers Hall to the Commons area. Installation of the steam piping is recommended regardless of potential conversion to distributed heating water.

- **Building Chilled Water dT Monitoring and Retro-Commissioning.** This project would focus on improving campus chilled water system performance (and increasing existing capacity) by improving campus chilled water differential temperature. Project would involve monitoring and trending of building dT and flowrate to identify poor performing buildings, and then taking corrective action through controls retro-commissioning.
- **Electrical Rate Structure Modifications/ Demand Control.** The campus currently purchases electricity from the San Marcos Electric Utility based on consumption only (kWh). The utility has informed the campus that the rate structure will be changed to one based on consumption (kWh) and demand (kW). After the ramifications of this change are fully understood, options for demand control should be investigated. Chilled water thermal storage should be investigated as a viable option for demand control, particularly if a time-of-use rate structure is implemented. Centralized or distributed natural gas micro-turbines or reciprocating engines may also provide opportunities for combined heating and power or emergency electrical backup.
- **Medium-Voltage Electrical Feeder Replacements.** As noted in the condition assessment, the existing underground feeders are reaching their end of life and an on-going replacement program is needed to address this issue. Replacement work is in progress on circuits 2/16, 6/10, and 4B/14B, but a more concerted and better funded effort to replace these feeders should

be evaluated within the next five years. The need for immediate action is driven partly by the immediate risk of failure, but more by the volume of cable replacement that needs to be completed in the next 15 years. There is an estimated 100,000 feet of conductor to be replaced at a rate of roughly 10,000 feet per year.

- **Replace Emergency Generators.** Of the 29 generators on the San Marcos Campus, nine have been identified as being in need of replacement in the near future. The oldest, at Albert B. Alkek Library, was installed in 1990, making it 27 years old. Diesel engines over 20 years of age become less reliable and cannot be depended upon to start at a moment's notice, especially in the extreme heat or cold that usually causes power outages. The selection of generators to be replaced within each time frame should be reevaluated on an on-going basis as new maintenance records become available. Currently, it is recommended that the Albert B. Alkek Library, Student Recreation Center, and Physical Plant generators be replaced first.

#### Mid-Term Priorities (6-10 Years)

- **Chilled Water Piping Replacement, East Plant to ASB/EDB/Old Main.** This project would involve replacement of ~1,200' of chilled water piping at the end of its anticipated service life.
- **Various Air Handling Unit Replacements.** Air handling units recommended for replacement are in: Centennial Hall, Education Building,



**STUDENT RECREATION CENTER GENERATOR**

Health Professions Building, Jackson Hall, McCoy Hall, Student Recreation Center, and Tower Hall.

- **Install Chiller CH 4 at South Plant.** Installation of this chiller would allow service for new buildings and maintain plant redundancy. Project would involve installation of new 1,500-ton electric chiller with variable speed drive.
- **Central Plant Cooling Tower Renovations.** Renovate cooling towers at the end of their anticipated service life.

- **East Plant Cooling Tower Replacements.** Replace existing fiberglass cooling towers at the end of their useful service life with new stainless steel towers.
- **North Campus Utility Corridor.** This utility distribution improvement project would provide additional interconnection between the Central and West Plants and will provide additional service paths to critical buildings in the west to central campus area. This utility corridor provides an opportunity to bring a new feed to west campus, re-route existing west campus feeders, and or loop the existing west campus feeders back to the Central Plant. Project would involve installation of 16-inch chilled water, eight-inch steam, four-inch steam condensate, and medium voltage feeders. Final medium voltage feeder design will depend on what has occurred prior to this work, but the current recommendation is to bring a new circuit to west campus via this corridor and extend existing circuit 3B/15B through this corridor as an alternate path west to segregate it from 4A/14A. Installation of the steam piping is dependent on potential conversion to distributed heating water. Corridor route is shown on the utility maps.
- **Begin Medium-Voltage Electrical Feeder Replacement Along Main East-West Corridor.** During the six to ten year time frame, the central and east campus feeder replacements should be wrapping up and work should begin to replace conductors in

circuits 3B/15B and 4A/14A in the critical east-west corridor. Note that replacing 3B/15B may be unnecessary if this feeder is rerouted through the new north corridor.

- **Replace Remaining 1990s Era Emergency Generators.** The generators at J.C. Kellam Administration, LBJ Student Center, and Supply Science should be replaced in this time frame. Additionally, the generators at Flowers Hall, Math Computer Science, and Nueces should be high on the priority list for replacement.

#### **Beyond 2027 (11+ Years)**

- **Replace Existing 2,750-ton West Plant with New 8,000-ton West Plant.** The existing West Plant and Central Plant are not large enough to support anticipated growth beyond 2027 and still maintain equipment redundancy. The anticipated west campus chilled water load is large enough to justify a large chilled water plant in that area in lieu of using chilled water routed from the Central Plant. The potential research nature of the new facilities also justifies the second chilled water source. The new plant will also need to house steam or heating water generating equipment to serve the surrounding buildings. Estimated square footage required for the plant is 30,000 square feet.

- **Continue Medium-Voltage Electrical Feeder Replacement Along Main East-West Corridor.** Though it would be best to have completed the replacement of all the 1980s conductors by 2027, this is likely not feasible due to budgetary and other constraints. It is estimated that there is around 100,000 feet of conductors to be replaced, which would require replacing 10,000 feet per year to finish by 2027. If this goal is set and maintained, then the remaining 1980s cable will be replaced in the first few years beyond 2027 and efforts can shift to replacing 1990s and early 2000s cables.

- **Continue Regular Generator Replacements.**

Beyond 2027, all of the existing generators will be near their end of life. An on-going plan of replacing approximately one per year will need to be in place. The possibility of using a cogeneration plant as an alternate means of emergency power that would eliminate the need to consider replacing generators has been proposed. However, this approach should be considered with caution. It would require some significant and costly infrastructure to deliver the emergency power to the correct locations, and the reliability and start up time must meet stringent code requirements for life safety systems. If central on-site generation is made the only source of emergency power, the University will face a significant hurdle when the on-site generation facility is at the end of its life. Then a new facility or 30 to 40 generators would be required in a very short time frame.

The following items were identified as priority recommendations in the October 2015 Utility Infrastructure Master Plan. While not master plan-level projects, they are included for reference.

1. Electrical System
  - Medium Voltage feeder and building metering projects
  - Replace aging Medium Voltage switches at East and West Plants with automated switches
2. Chilled Water System (CHW)
  - General CHW distribution repairs
3. Steam/Hot Water Systems
  - Steam Trap survey and repairs
  - Renovate Boiler Plant
  - Repair CP 2 and DA tank
  - Manhole safety improvements
  - Jowers heating system upgrades
4. Plant and Building Automation Systems
  - Building metering projects
  - Central Plant steam/condensate metering
  - Distribution Loop steam/condensate metering
  - Upgrade Campus BAS platform
  - Implement Central Plant optimization
  - Building HVAC DDC upgrades

# POTABLE WATER

## WATER MANAGEMENT

Based on the Potable Water Study prepared by Bury+Partners in July 2012, the current water supply is adequate through 2020. A secondary well is required to support the additional growth anticipated over the next ten years. The well, pumping station, and storage tank should be located within the 940-foot pressure plane. The site for the well and storage tank will be approximately 0.5-acre. The following locations have been identified as possible sites for the new well, pumping station, and storage tank. Based on permitting and construction limitations, this well should be initiated early in the University Master Plan.

- Holland Street near Ivey Moore site
- West end of campus
- Moore Street near Blanco Hall

### Water Management Recommendations:

1. Acquire water well permit for one additional water well
2. Construct additional water well, pumping station, and ground storage tank on approximately 0.5 acres site. The site should be within the 940-foot pressure plane
3. Update the existing water model based on current conditions and projected growth to determine if any additional infrastructure is required
4. Provide preliminary engineering evaluation to develop an improvement plan for the Jackson water well site

## POTABLE WATER SYSTEM

Although there are no known deficiencies in the potable water system, the campus water piping is aged, with 50 percent to 75 percent of the system exceeding its design life. In addition, improvements to the existing wells and storage tank are recommended.

### Potable Water Recommendations:

1. Plan for the replacement of aging water pipes
2. Update the campus water model and analyze for projected growth and demands to determine whether infrastructure improvements or upgrades are necessary
3. Provide added protection and security for the Jackson Well
4. Develop a maintenance plan for the existing elevated storage tank. This should address inspections and re-coating, while not disrupting the service. City of San Marcos interconnection should be enlarged and pressure increased to accommodate existing and future buildings six stories or taller

## FIRE DEMAND

### Fire Demand Recommendations:

1. Add a new pressure reducing valve on the eight-inch water main in Moore Street, near Blanco Hall
2. Determine minimum fire flow requirements for all buildings on campus, including those that are part of the University Master Plan. Prepare a fire flow analysis to identify specific areas that do not meet the minimum required fire flow

## CITY OF SAN MARCOS INTERCONNECTION

The interconnection between the Texas State University campus water system with the City of San Marcos water supply system is located near the Speck Parking Garage at Speck Street and Academy Street. There is a four-inch water meter, eight-inch check valve and backflow preventer, and six-inch by-pass line. This interconnection is not currently used. Improvements such as increase in size as well as increased pressure are recommended to maximize the possible future benefit from the interconnection.

## WASTEWATER AND WASTEWATER MAINTENANCE

### Wastewater Recommendations:

1. Evaluate improvements that result in large wastewater demand increases in conjunction with the City of San Marcos capacities.
2. Develop a maintenance plan to address the repair and replacement, as well as testing and inspection, of the existing utility systems. Allocation of funds for infrastructure maintenance should be appropriately based on the student population and building square footage.
3. Adopt a maintenance program for the water distribution system, pumping station, and storage facilities. For the water distribution system, the existing system should be documented with size, age, pipe material, and number of breaks for each section of pipe. As a maintenance budget becomes available, distribution piping should be replaced based on number of breaks, age, and then material. Distribution replacement should be coordinated with drainage, pavement and street projects to minimize impacts to new infrastructure. Create a program for the water distribution system to routinely exercise valves and flush hydrants on dead end lines two times a year. Fire hydrants should be inspected semi-annually.
4. Maintain pumping stations and storage facilities. Well and high service pumps should be maintained on the specific manufacturer's maintenance schedule. Steel ground and elevated storage tanks should be inspected every two years. Concrete ground storage tanks should be inspected and cleaned every five to 10 years. Tank inspections should be performed according to the Texas Commission on Environmental Quality Rule 290.46(M).
5. Begin a wastewater maintenance program by documenting manholes and collection system piping. Pipe sections should be documented with the size, age, material, and length of each section. Manholes should be documented with depth of invert, diameter, and if it is coated or lined for corrosion protection. Once documented, overflows and line breaks should be recorded. Closed-circuit television (CCTV) pipe inspection can be utilized for potential problem sections to determine line breaks, sags, adverse slopes, or clogging of the sewer main. Manholes should be inspected for corrosion, crack rims, or structural damage. As a maintenance budget becomes available, the collection system should be replaced based on overflows, breaks, age, and then material. Additionally, replacement should be coordinated with drainage, pavement, and street projects to minimize impacts to new infrastructure.



## STORMWATER MANAGEMENT

Future stormwater management improvements on the campus will be driven by the addition of impervious cover. In areas where there is existing impervious cover being replaced by new buildings, an increase in peak flow runoff is not expected; therefore, additional stormwater detention or stormwater management strategies are not anticipated. However, the proposed projects located in existing lawn areas (pervious) will increase the peak flow runoff from existing conditions. Mitigation of the increase in stormwater runoff will be required by 1) providing increased stormwater detention storage capacity in existing detention facilities within the same drainage basin, 2) adding new detention facilities, or 3) implementing other stormwater management strategies such as rain gardens, vegetated swales, rainwater harvesting, or other measures that promote infiltration, reduction of runoff, or the peak flow rate.

### Storm Management Recommendations:

On-site detention for the following projects is recommended:

1. Hilltop Academic and Research Building: the addition of approximately 160,000 GSF located at the existing Arnold Hall site
2. Addition to the Performing Arts Center
3. Hilltop Housing: the addition of approximately 263,000 GSF at the existing Burleson and Hornsby Hall sites
4. Parking Garage on Holland: the addition of a 750-1050 space parking garage located on Holland Street between Academy Street and Old Ranch Road 12
5. Music Building at Butler Hall site: the addition of approximately 110,000 GSF. The required detention for this project will depend on how much of the existing student housing will remain in use.
6. Alumni Center: construction of approximately 10,000 GSF for an Alumni Center southeast of the University Events Center on an existing surface parking lot

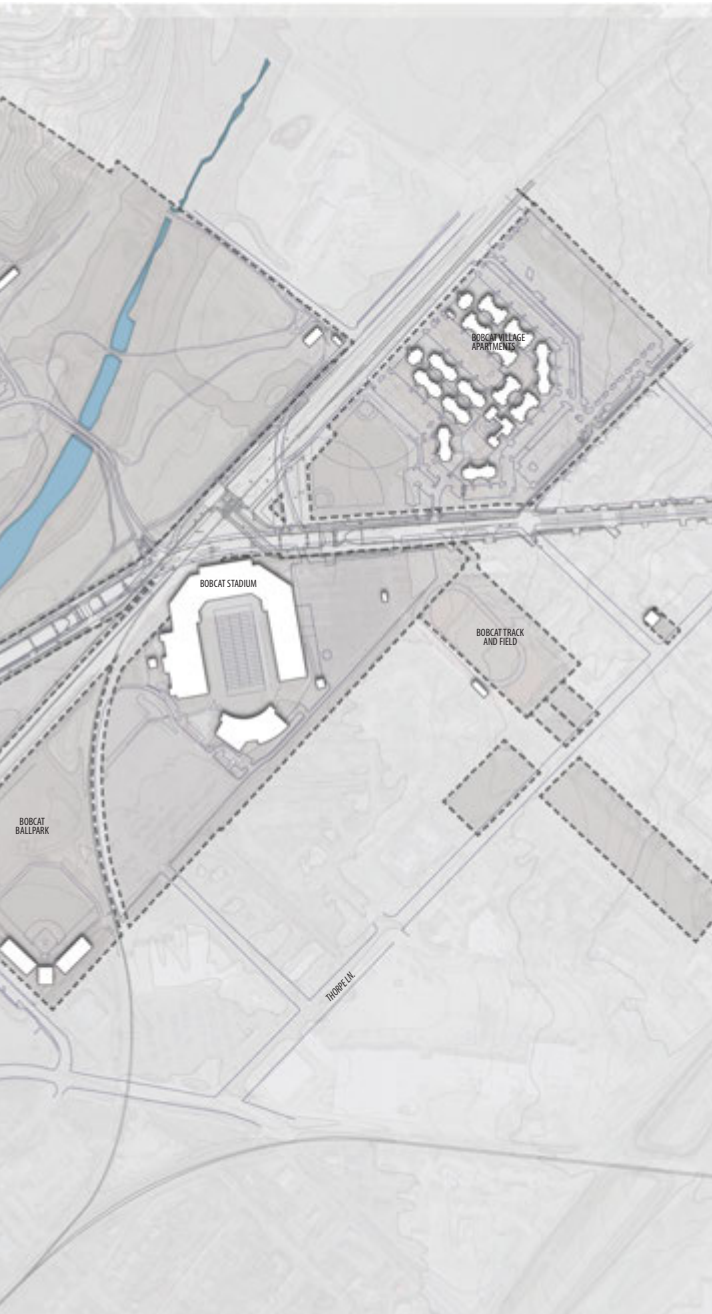
## BEST MANAGEMENT PRACTICES

The increase in peak flow runoff from the proposed Master Plan projects will require Best Management Practices (BMPs) to be included as part of the projects. Examples of BMPs to consider implementing on campus include detention ponds, wet ponds, bioswales, and rain gardens.

In certain areas, it may be advantageous to implement a “regional” BMP, where a single BMP is able to serve more than one project. This could be implemented at the proposed Hilltop Student Housing and Hilltop Multidisciplinary Academic building projects. In addition, existing areas on campus may be retrofitted to provide additional mitigation or provide a more aesthetic feature on campus. For example, the existing area around “The Glade” could be modified and converted to a wet pond, with a permanent pool elevation and native or adaptive landscape planting to create a water feature in this area of campus. Another example is where existing surface parking lots are replaced with parking garage structures. There will be a reduction in impervious cover and a decrease in peak flow runoff, but the campus also gains land area that can be repurposed with a BMP.

In addition, existing site improvements may be retrofitted to provide extra mitigation for the campus. An example of this would be to look at the existing parking lot areas and determine if improvements can be made to add a BMP around the perimeter or in the interior landscape islands.





## INFORMATION TECHNOLOGY

### OUTSIDE PLANT RECOMMENDATIONS

Outside Plant (OSP) consists of the pathways, spaces, and media that provide telecommunications external to buildings. OSP is used to support voice, data, video, electronic security, building automation, fire, life, safety, and other low voltage systems as they evolve.

The primary focus has been to work on eliminating single points of failure, providing campus-wide redundancy, and addressing dual services into all new buildings.

New construction should be planned with adequate conduit connectivity that will provide redundant pathways to buildings and areas of the campus. That is, new conduit and hand hole/manhole pathways will need to be of sufficient size and number to accommodate adding cabling over decades. It is easy to lose sight of the fact that a building's life cycle is in multiple decades, and planners now will not often be at the campus for any building's full life cycle. To address these life cycle issues, the industry has adopted standards that show four four-inch conduits to each building from a local manhole. At the very least, it is recommended that three four-inch conduits be installed to each building. The new lateral connection across campus should be collocated with the mechanical, electrical, and plumbing (MEP) utilities to consist of eight four-inch conduits.

#### PROPOSED INFORMATION TECHNOLOGY SYSTEM ADDITIONS

— Communication

Telecom manholes are concrete enclosures with a removable lid that permits internal access. Manholes house splice closures, racking, a grounding and bonding system, drainage, sump, and other components and are placed to facilitate placement of fiber and copper cables. Manholes are considered confined spaces containing possible hazardous atmospheres such as flammable, explosive, asphyxiating, or toxic environments. Prior to entry, all manholes shall be checked for hazardous atmospheric conditions. Ensure the area is free of other hazards such as engulfing, immersion, entrapment, and auto emissions. Manholes on or near roadways require signage and safety cones to prevent vehicular accidents. Joint use of manholes is prohibited. Telecom manholes are not shared with other utilities except if expressly approved by Owner representatives.

Typical sizing of telecom manholes is 10-foot wide x 10-foot long x 7-foot high and should be placed no less than every 600-feet. Physical placement of the telecom manhole should be out of the roadways, if possible. The desired placement for manholes is under sidewalks paralleling campus roads. The telecom manholes shall be placed so their four walls are oriented north-south and east-west. Manhole bells shall be sealed to preclude water infiltration and seepage and automatic sump pumps may be specified to mitigate unusual conditions. Manholes should include 110 volt

outlets to support operation of potable sump pumps. Manhole-to-building underground conduit runs shall be placed uphill so that water infiltration and seepage flows to the manhole. A minimum drain slope of 12.5 inches per 100 feet is required when extending conduits away from building structures. Manhole-to-manhole conduit runs shall be bowed upwards to preclude manhole-to-manhole water infiltration and seepage. A minimum drain slope of 12.5 inches per 100 feet shall extend from the middle of the span to each manhole.

### **BUILDING SPECIFIC OUTSIDE PLANT STRATEGIES**

- For new academic/research buildings dual OSP services:
  - Each four four-inch conduits
  - Each conduit complete with two three-inch three-cell fabric innerduct
- Parking facilities/residence halls
  - Primary service via four four-inch conduits

### **PARKING NEAR HOLLAND AND ACADEMY SITE**

- 700–1,050 parking deck spaces
- Service feed via existing telecom manhole T622
- Three four-inch conduits fed to a telecom room and/or lockable enclosure

- Alternative, feed via abandoned conduit pathway telecom manhole T622
- Redundant OSP pathway via handhole adjacent to West Water Tower, conduit connection to Speck Street Garage Main Distribution Frame (MDF) and thereby handhole T9615-6

### **BLANCO HALL RENOVATION/FUTURE BUILDING SITES AT THE GLADE**

- Primary Service feed via existing telecom manhole T616
- Three four-inch conduits fed to a new building MDF
- Secondary conduit feed connection via three four-inch conduits to Blanco Hall
- Secondary conduit feed connection via three four-inch conduits to adjacent future building site at the Glade
- New telecom manhole at the intersection of Lueders Court and Llano Circle
- Extension of four four-inch conduits to telecom manhole T613

### **BRUCE AND GLORIA INGRAM HALL/ FUTURE BUILDING SITES:**

- New telecom manholes:
  - One at the intersection of James Street/ North Street/Vista Street
  - One at Vista Street

- One at the intersection of North Comanche Street and Vista Street
- One at the intersection of North Comanche Street and Utility Tunnel
- Connection between manholes via four four-inch conduits
- Tie in connection to existing manholes:
  - Four four-inch conduits to existing telecom manhole T610
  - Tie-in between utility tunnel and new telecom manhole, to thereby provide relief at tunnel pinch point

### **MECHANICAL, ELECTRICAL, AND PLUMBING UTILITY CORRIDOR**

- Beginning approximately at North Street and West Woods Street and extending to existing telecom manhole T004
- Eight four-inch conduits with 48-inch separation from adjacent steam/electrical utilities
- New telecom manholes:
  - Intersection of North Comanche Street and West Woods Street
  - Intersection of Talbot Street and West Woods Street
  - Intersection of North Guadalupe Street and West Woods Street

### **HILLTOP HOUSING/HILLTOP MULTIDISCIPLINARY ACADEMIC BUILDINGS**

- Full development of site will require the creation of a new conduit/telecom loop
- New telecom manhole adjacent to existing handhole T010
- Four four-inch conduits from new telecom manhole to existing telecom manhole T009
  - Hilltop Multidisciplinary Academic Building OSP service via four conduits to new telecommunications and a separate four four-inch conduits to existing telecom manhole T009
- In order to address the future academic building:
  - New telecom manhole at the intersection of Elm Street and Matthews Street
  - New telecom manhole on Matthews Street
  - Connect via four four-inch conduits to existing telecom manhole T014
  - Connect via four four-inch conduits to existing telecom manhole T110
  - Provide service to new developments
  - Provide connection from existing telecom manhole T110 to new telecom manhole

### **ACADEMIC BUILDING AT CURRENT MUSIC SITE BUILDING**

- Development of site will require the creation of a new conduit/telecom loop
- Three new telecom manholes along West Sessom Drive provide primary service for new development along the north side of the facilities
- New telecom manhole provides connectivity to existing telecom manhole T110
- New telecom manhole at the intersection of Pleasant Street and West Sessom Drive. New manhole to connect to existing telecom manhole T104
  - Secondary connection from the new manhole to existing telecom manhole T135 provides secondary south telecom loop for site development
- New telecom manhole at the intersection of North LBJ Drive and Pleasant Street. Telecom loop is completed via connection to existing telecom manhole T108

### **STUDENT HOUSING AT STERRY HALL SITE/LANTANA HALL SITE/BUTLER HALL SITE AND PROPOSED MUSIC BUILDING AT BUTLER HALL SITE**

- Sterry: Primary feed via four four-inch conduits to existing telecom manhole T102
- Lantana: Primary feed via four four-inch conduits to existing telecom manhole T003
- In order to improve congestion at existing telecom manhole T003
  - New telecom manhole at Moon Street Circle
  - Extend six four-inch conduits from new telecommunications manhole to telecom manhole T003
  - Extend six four-inch conduits from new telecom manhole to existing telecom manhole T027
- New telecom manhole to provide services to:
  - Three four-inch conduits to proposed Music building at Butler Hall site
  - Three four-inch conduits to Student Housing at Butler Hall site

## BEYOND 2027

### PLANNING FOR FUTURE UNCERTAINTY

***“The greatest danger for most of us is not that our aim is too high and we miss it, but that it is too low and we reach it.”***

***- Michelangelo***




Ultimately, the real value proposition of the Texas State University Master Plan is to illuminate long-term and often obscured opportunities. With that as a goal, it is important to look beyond the 10-year vision—to a place of relative uncertainty—with the express aim to articulate aspirational University interests. Things change: academic priorities, funding opportunities, political policies, and administrative leadership. The purpose of the University Master Plan is to establish a vision, independent of these change variables, for long-term land use, preferred building adjacencies, future academic program locations, and

preservation of future land assets. It is expected that some of these proposed initiatives will advance more quickly, and some may not advance at all.

Beyond 2027, the San Marcos Campus vision should embrace several bold themes. They include:

- Complete the Hilltop and Academic Core
- Re-Imagine the North Gateway
- Expand the Science and Engineering Neighborhood
- Grow Student Housing and Amenities
- Protect Existing Land Assets

#### LEGEND

-  Proposed Building to 2027
-  Future Building beyond 2027
-  Primary Pedestrian Connection





## COMPLETE THE HILLTOP AND ACADEMIC CORE

- Develop a second (Phase II) academic and research building at the Hilltop
  - Accommodate an interdisciplinary academic and research environment
  - Provide general classrooms, teaching laboratories, support space, and informal/collaborative learning spaces
  - Create a vertical focal point (tower element) to terminate the view from the Undergraduate Academic Center
- Remove the Math and Computer Science building and Derrick Hall
  - Rebuild and augment programs in-place with a new, contemporary facility on the Quad
- Widen and rebuild the east-west Quad between Evans Liberal Arts and the rebuilt Derrick Hall
- Complete the Guadalupe Street pedestrian axis from Albert B. Alkek Library northward to the Phase II multidisciplinary academic building
- Complete upper and lower pedestrian connections between Phase I and II multidisciplinary academic buildings
- Terminate Student Center Drive at Matthews Street
  - Create a lower level, dedicated service drive to access the LBJ Student Center and the Albert B. Alkek Library
  - Transition Pickard Street from an open access through street, to limited access service and pedestrian corridor
- Repurpose Centennial Hall and the Chemistry building for expanded core undergraduate programs
  - Relocate College of Science, Chemistry, and related programs to the Science and Engineering Neighborhood
- Remove Elliott Hall and replace with a new academic and research building





THE HILLTOP-BEYOND 2027

## **EXPAND THE SCIENCE AND ENGINEERING NEIGHBORHOOD**

Redevelop the land area between Comanche and Academy Streets for an expanded Science and Engineering neighborhood

- Create an interdisciplinary STEM environment that integrates various academic units and research activities
- Prioritize the implementation of additional classroom and teaching laboratory spaces
- Prioritize support spaces for growth of faculty office space and collaborative student spaces

Strengthen the primary east-west campus corridor through this neighborhood between Comanche and Academy Streets

- Focus future development around a centrally located, signature open space
- Maintain a majority of the existing tree canopy
- Celebrate and accentuate the diagonal walk connecting back to the Hilltop

Relocate the College of Science and Engineering office, Chemistry, and related programs from the Chemistry Building and Centennial Hall

Prepare new facilities for offerings in mechanical, chemical, and other engineering degrees

Expand and/or renovate Supple Science

Expand Bruce and Gloria Ingram Hall

## **GROW STUDENT HOUSING AND AMENITIES**

Develop two additional residence halls to compliment the Falls Sayers Housing Complex

- Embrace the topographic changes of the “Glade”
- Create connections to the Student Recreation Center, Harris Dining Hall, and Blanco Hall

Complete the recreational, club sports, and intramural fields at Spring Lake

## **PROTECT EXISTING LAND ASSETS**

Protect the land area at the bottom of the “Glade” for long-term redevelopment

- Evaluate the long-term efficacy of maintaining the Strahan House, Recycling Center, and Moeller House




Relocate the Bobcat Soccer Complex to the east side of campus

- Repurpose this land area for expanded outdoor recreation offerings and/or a future building site



**BEYOND 2027 PLAN ENLARGEMENT**

**LEGEND**

-  Proposed Building to 2027
-  Future Building beyond 2027
-  Primary Pedestrian Connection

## ROUND ROCK CAMPUS

### MIGRATE THE HEALTH PROFESSIONS

During this 10-year plan, the University's strategic priority is to position the Round Rock Campus to become a focal point for health professions education, while ensuring the community is served for high demand disciplines and professions. To accomplish this addition, the University is orchestrating a multi-phase migration of departments, programs, and clinical functions from the San Marcos Campus to the Round Rock Campus. This migration has several important implications including:

- Increased overall student population
- Increased daytime population
- Increased utilization of classrooms and teaching laboratories, particularly during the day
- Increased utilization of evening classrooms and teaching laboratories
- Increased demand for additional student services, academic support, and related functions
- Increased demand for student, faculty, and staff amenities
- Increased public-facing clinical functions

### Develop Two Phases: 2017-2027

Migrate the Health Professions programs from San Marcos to Round Rock

- Create a consolidated College of Health Professions in Round Rock
- Backfill Encino Hall, the Health Professions Building on the San Marcos Campus, with academic and research space

### Develop Willow Hall (Phase One)

Plan for 100,000 Gross Square Feet (GSF)

Migrate three of seven academic units from San Marcos

- Communication Disorders
- Physical Therapy
- Respiratory Care

Migrate clinical and research functions from San Marcos

- Physical Therapy clinical space
- Respiratory Care research laboratories and Sleep Center
- Speech, language, and hearing clinics

### Develop Esperanza Hall (Phase Two)

Plan for 100,000 GSF

Migrate the remaining academic units from San Marcos:

- Clinical Laboratory Science
- Health Administration
- Health Information Management
- Radiation Therapy
- College of Health Professions Dean's Office
- College of Health Professions Advising Center

### Augment the Round Rock Campus Support Systems

Augment existing classroom inventory with several venues of 60-120 seats

Incrementally add additional faculty office space

Create support spaces for a testing center and disability services

Expand the Library, including collaborative study/work and office space

### Augment the Round Rock Campus Support Systems Continued

Expand materials management space

Develop dedicated University Police Department (UPD) office space

Develop dedicated office space for Parking Services

Consider adding auditoria seating for 250-500

Consider developing a wellness center

### Complete the Campus Mall

Implement Willow Hall and Esperanza Hall to frame the mall

- Embrace the axial and linear development pattern
- Reinforce the symmetrical development centered on the Avery building
- Extend the pedestrian sidewalk system and landscape fabric as the campus expands

Incrementally add surface parking as population of student, faculty, and staff increases

- Maintain an adequate ratio of population to parking space
- Designate clinical parking space locations proximate to patient destination
- Expand surface parking lots and road network when supply exceeds demand



AVERY BUILDING

## ROUND ROCK CAMPUS: 2017-2027

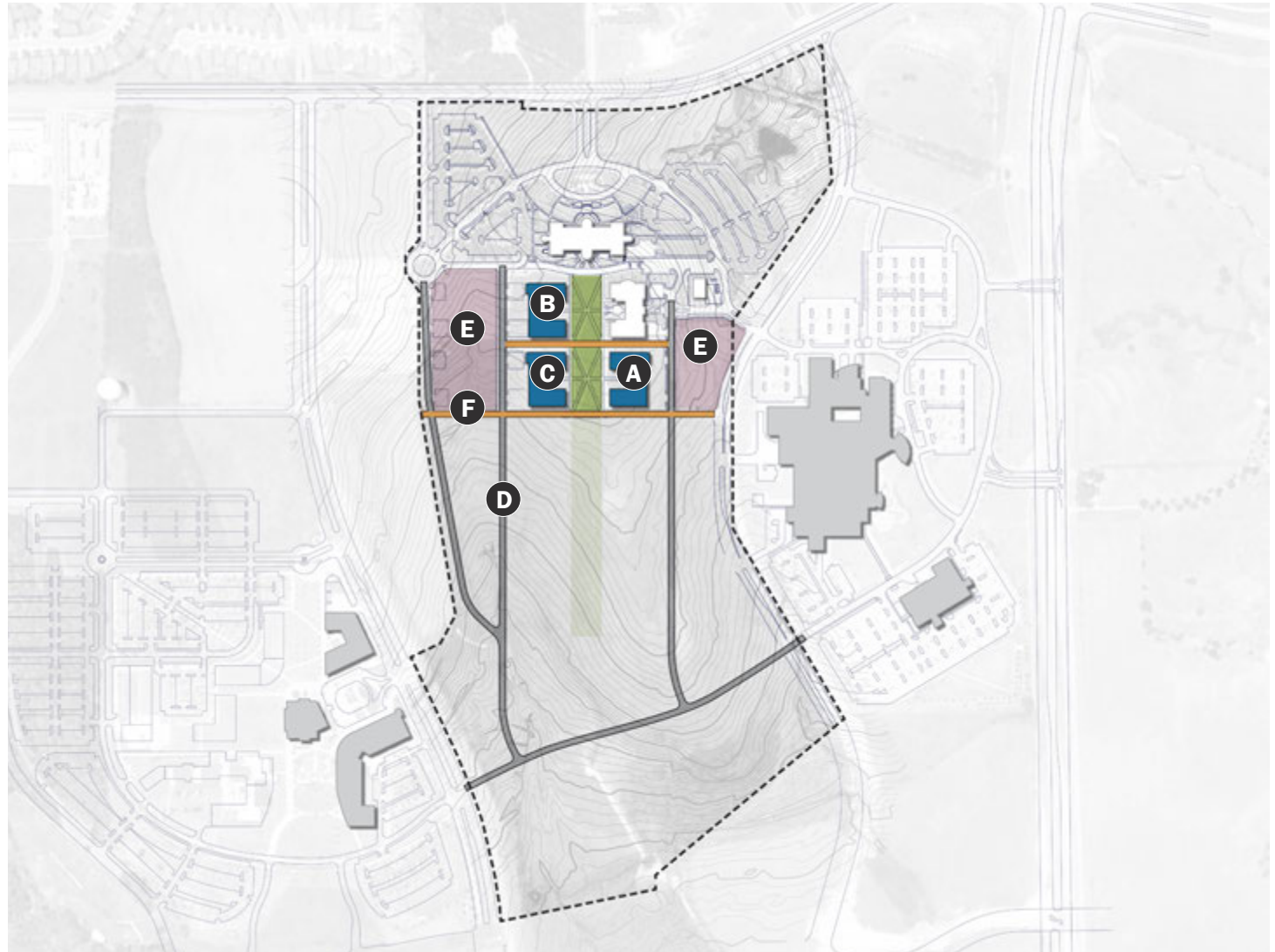
- A** Willow Hall
- B** Esperanza Hall
- C** Extend the Campus Mall
- D** Improve Infrastructure



## ROUND ROCK CAMPUS: BEYOND 2027

### PROGRAMMED BUILDINGS

- A** Willow Hall
- B** Esperanza Hall
- C** Building #5
- D** Extended Road Network
- E** Expanded Parking
- F** Second Campus Utility Building



## CHILLED WATER AND HEATING WATER SYSTEMS

Generating capacity for the Round Rock Campus chilled and heating water systems currently consists of three water cooled chillers, five heating water boilers, and associated ancillary equipment located in the Central Utility Building. The system also utilizes direct-buried chilled and heating water distribution piping with valve vaults to serve the two connected buildings. A third building for the campus (Willow Hall) is currently in construction, and a fourth building (Esperanza Hall) is planned for the campus. Both buildings are to be served by the Central Utility Building.

A capacity analysis for the Central Utility Building's chilled water system is shown below.

The Central Utility Building currently has chilled water equipment redundancy, but after completion of Willow Hall, it will be at nearly full utilization. Construction of Esperanza Hall will require installation of another 800-ton chiller. A capacity analysis for the Central Utility Building's heating water system is shown below.

The Central Utility Building currently has heating water equipment redundancy. Construction of Willow Hall will also include installation

of new boilers in the Central Utility Building, which will slightly increase the firm capacity. Construction of Esperanza Hall will require installation of another modular boiler. A corridor should be reserved for high pressure natural gas to support flexible heat, steam, or power generation.

Beyond construction of Esperanza Hall, any connection of a building larger than ~120,000 square feet to the chilled water system and connection of any building larger than ~7,500 square feet to the heating water system, may require an expansion of the Central Utility

### CENTRAL UTILITY BUILDING CHILLED WATER CAPACITY

PLANT	2016 Load/Capacity/Util. <sup>1</sup> (Tons/Tons/%)	HP-1 Load/Capacity/Util. (Tons/Tons/%)	HP-2 Load/Capacity/Util. (Tons/Tons/%)
Central Utility Building	350/800/44%	750/800/94%	1,150/1,600 <sup>2</sup> /72%

<sup>1</sup> Plant load, N+1 capacity, and calculated percent utilization

<sup>2</sup> Capacity upgrade at CUP. 1 x 800-ton chiller. Plant now at full build-out

### CENTRAL UTILITY BUILDING HEATING WATER CAPACITY

PLANT	2016 Load/Capacity/Util. <sup>1</sup> (MBh/MBh/%)	HP-1 Load/Capacity/Util. (MBh/MBh/%)	HP-2 Load/Capacity/Util. (MBh/MBh/%)
Central Utility Building	7,000/11,345/62%	10,900/11,945 <sup>2</sup> /91%	14,800/15,145 <sup>3</sup> /98%

<sup>1</sup> Plant load, N+1 capacity, and calculated percent utilization

<sup>2</sup> Boiler replacement planned with HP-1

<sup>3</sup> Capacity upgrade at CUP. 1 x 3,200-MBh boiler. Plant now at full build-out



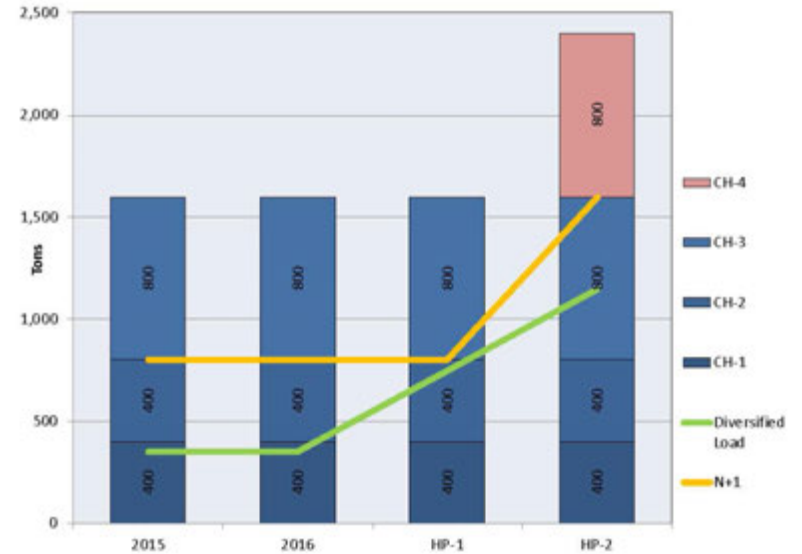
Building or a new satellite plant. A satellite utility plant would provide some plant-level redundancy for the campus and could house more capacity for future campus growth than a Central Utility Building expansion is likely to afford. A potential satellite Central Utility Building location is shown on the graphic on the following page. This location is along a planned utility corridor and could complete a loop between the two plants.

The plant, distribution, and end-use components of the system are relatively new and in good condition and should have no issues serving the campus through the life of this University Master Plan.

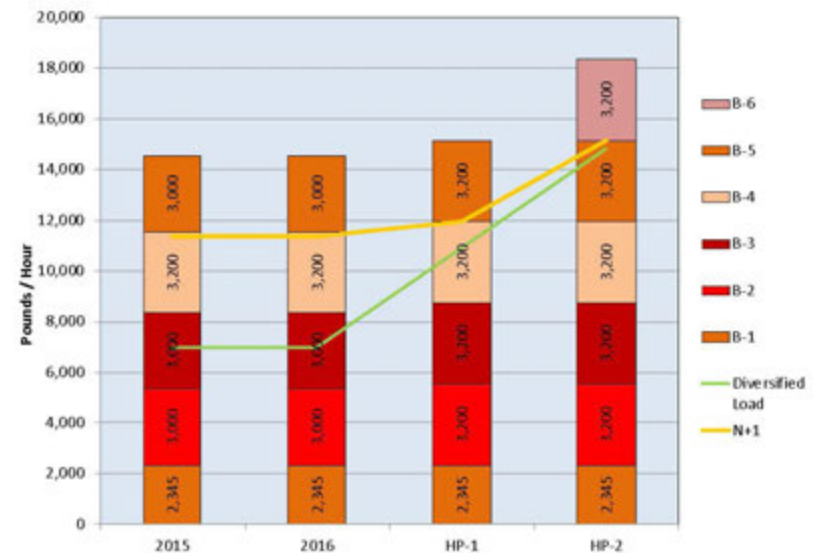
Recommendations:

1. Extend chilled water and heating lines from the Central Plant to Willow Hall and Esperanza Hall
2. N+1 equipment redundancy through addition of Willow Hall
3. Boiler replacements being performed with Willow Hall
4. Esperanza Hall requires additional heating water boiler
5. Build-out beyond Esperanza Hall requires additional Central Utility Building

**CHILLED WATER SYSTEM  
GENERATING CAPACITY ASSESSMENT**



**HEATING WATER SYSTEM  
GENERATING CAPACITY ASSESSMENT**



## ELECTRICAL SYSTEM

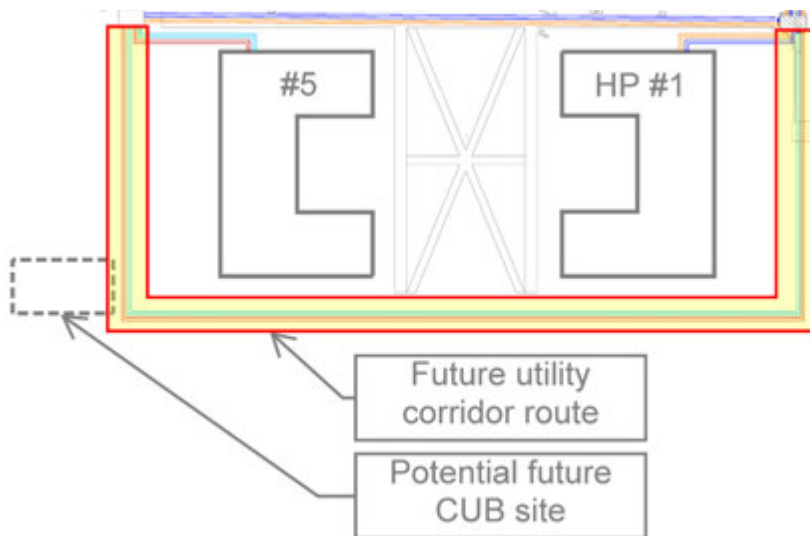
The Round Rock Campus electrical infrastructure is new and in good condition. Capacity is not a concern for the foreseeable future. The underground system is laid out for expansion along the path of the new buildings. The existing infrastructure can be extended to the new buildings without major modifications to the system. The MV switchgear is located outside, which will shorten its life. It is likely to need replacement by the end of the 2040s. The existing building electrical equipment is in good condition and serviceable.

There are two generators at the site. A 2005 Cummins at Avery and a 2009 maximum transmission unit (MTU) at the Nursing building.

Both are relatively new, but have not been as well maintained as the generators at the San Marcos Campus. The Cummins generator in particular was observed to be in need of painting and general overhaul.

Recommendations:

1. Future Central Utility Building location should be sited to serve expansion to the south
2. New utility corridor to connect future Central Utility Building, serve expansion to the south, and complete distribution loop
3. Willow Hall design includes backup chiller for campus and boiler replacements to achieve N+1 equipment redundancy
4. Esperanza Hall design will need to add chiller and boiler to Central Utility Building
  - Campus build-out beyond Esperanza Hall requires new satellite Central Utility Building or expansion of existing Central Utility Building
  - Additional satellite Central Utility Building is preferred to provide plant-level redundancy
5. New utility corridor extending south of Willow Hall can connect to satellite Central Utility Building and complete looped distribution



## POTABLE WATER/STORMWATER/ WASTEWATER

The Round Rock Campus is approximately 101 acres and currently has approximately 20 percent impervious cover. There are two existing buildings and site improvements, with internal circulation drives and parking lots for the two existing buildings and the next two proposed buildings. As part of the first two buildings, utility infrastructure was installed with the future buildings in mind. Below is a summary of the existing potable water/stormwater/wastewater infrastructure and recommendations for utility improvements associated with Willow Hall and Esperanza Hall.

### Willow Hall

Willow Hall is currently being designed on the south side of the existing Nursing building. There are water lines on the north and east sides of the building location. The water line on the east side is a dead end line. Domestic and fire water services to the building can be extended from either of these lines. In addition, the extension of the existing water line to the east may be required in order to provide sufficient coverage for the fire system. There is an existing wastewater service extended for this building site near the northeast corner of the proposed building. No additional wastewater improvements are anticipated for this project. The building site area generally slopes from west

to east. There are existing storm lines near the northeast corner of the building site as well as along the south side of the site.

### Esperanza Hall

Esperanza Hall is proposed on the west side of the existing Nursing building (across the quadrangle). There is an existing water line to the north. This line is a dead end water line, which may be required to be extended in order to provide sufficient cover for the fire system. Domestic and fire water services may be extended from the existing line to the north. In addition, we recommend further analysis of the water system to determine whether extending the water line and connecting to the existing line that is on the south side to create a looped system is needed. There is an existing wastewater line to the north of the proposed building site. It is a public line and is within an easement. We anticipate that service to Esperanza Hall will come from this line and will require coordination with the City of Round Rock for the connection. The building site generally slopes from northwest to southeast, towards the mall. There is an existing storm line near the southwest corner of the building site.

Recommendations:

1. Connect buildings to existing stormwater service line stubs
2. Utilize the existing stormwater detention facility. Validate capacity post-development
3. Implement sustainable stormwater practices and energy management techniques
4. Connect buildings to existing domestic water and municipal wastewater service line stubs



## INFORMATION TECHNOLOGY

For the proposed Willow Hall on the Round Rock Campus:



- Install new telecom manhole north of the proposed site location
- New telecom manhole will afford the ability to backfeed or provide a secondary feed into the existing Nursing building
- Extend three four-inch conduits from the building's new MDF to the proposed telecom manhole
- New telecom manhole will serve as a distribution point to future developments to the south

For the proposed Esperanza Hall on the Round Rock Campus:



- Install new telecom manhole south of the proposed site location
- New telecom manhole will serve as a distribution point to future developments to the south
- Extend three four-inch conduits from the building's new MDF to the proposed telecom manhole

### ENLARGED PLAN AREA

#### BUILDING LEGEND

-  Existing Building
-  10-year Plan

#### PATHWAY LEGEND

-  Existing Communications Pathway
-  10-year Plan Communications Pathway

# SCIENCE, TECHNOLOGY, AND ADVANCED RESEARCH (STAR) PARK

## OVERVIEW

Planning for the Science, Technology, and Advanced Research (STAR) Park began with a series of visioning sessions hosted by the University. From these early meetings and discussions, a Strategic Plan, Planning Principles, and Program emerged that served as the basis for developing the master plan described on the following pages.

## VISION AND GOALS

The master plan for STAR Park envisions an urban planning model where two-to three-level buildings define exterior space and work in concert with strategically placed walks, richly design roads, and usable outdoor space to create an overall vibrant campus atmosphere. A central roadway is inserted to organize the research park and to activate building entrances, giving priority to pedestrian flow in all directions. Parking is situated along this main road to provide convenient parking for visitors, drop-offs, and to help reduce the need for large expanses of parking that consume valuable buildable area and/or open space. The master plan also provides a vision for how BMPs can be incorporated into the implementation of a comprehensive rainwater management plan. A key component is the utilization of the site's natural drainage pattern to create a focus to the park. Most importantly, the physical planning

for STAR Park establishes a framework where opportunities for both formal and informal collaboration can occur outside the office or laboratory to advance the mission of Texas State University.

## PLANNING PRINCIPLES

The following planning principles were developed to articulate the planning goals into the physical layout of the STAR Park master plan:

- Create a park that is sensitive to San Marcos and connected to context
- Allow only research intensive uses that are related to Texas State University's mission activities and embrace elements which epitomize innovation, commercialization, and/or entrepreneurship
- Develop a program of uses that contribute to a high intensity corridor
- Activate edges of the Park with positive street frontage along West McCarty Lane and Hunter Road
- Envision a mid-rise/mid-density development with facilities close enough to interact and streets that are designed to put the pedestrian first

- Encourage building designs to reflect the culture and aspirations of STAR Park's innovation, commercialization, and entrepreneurial focus
- Create a variety of spaces (incidental or intentional) within and between facilities to foster collaboration and to support user wellness
- Consider a parking garage for maximum density with amenities incorporated within
- Incorporate sustainable design practices in all aspects of STAR Park's development and operations



STAR ONE

# PROGRAM

The following program was developed through consultation with University administration:

## Multi-tenant Building

- R&D ~45,000 - 90,000 GSF

## Infrastructure Research Laboratory

- ~20,000 - 30,000 GSF

## Office/R&D Uses

## Limited Retail

- Park related – commons area with “coffee house”

## Parking

- Surface
- Structured

## Open Space

- Natural Areas
- Pedestrian Nodes
- Recreation Examples:
  - Sand Volleyball
  - Basketball
  - Bocce Ball

## Infrastructure

- Roads
- Utility Corridors (Smart Grid)
- Utility Facilities
- Stormwater Management/Easements
- Energy Research Site (two acres)



URBAN PEDESTRIAN PATH



PHOTOVOLTAIC RAYS





NATURAL OPEN SPACE TRAIL



URBAN RAIN GARDEN



STORMWATER DETENTION POND

# SCIENCE, TECHNOLOGY, AND ADVANCED RESEARCH (STAR) PARK MASTER PLAN

The following diagrams represent an ideal future vision for STAR Park. It translates the goals, principles, and recommendations developed during the planning process into a framework for coordinating the growth of STAR Park for the next 10 years and beyond. It is a long-range tool that can adapt and flexibly respond to unexpected future changes. It is intended that the master plan will be reviewed over time and updated by the University on a frequent basis.

Recommendations:








The following recommendations were developed to guide the placement of facilities, roads, parking, and infrastructure to ensure the creation of a vibrant STAR Park:

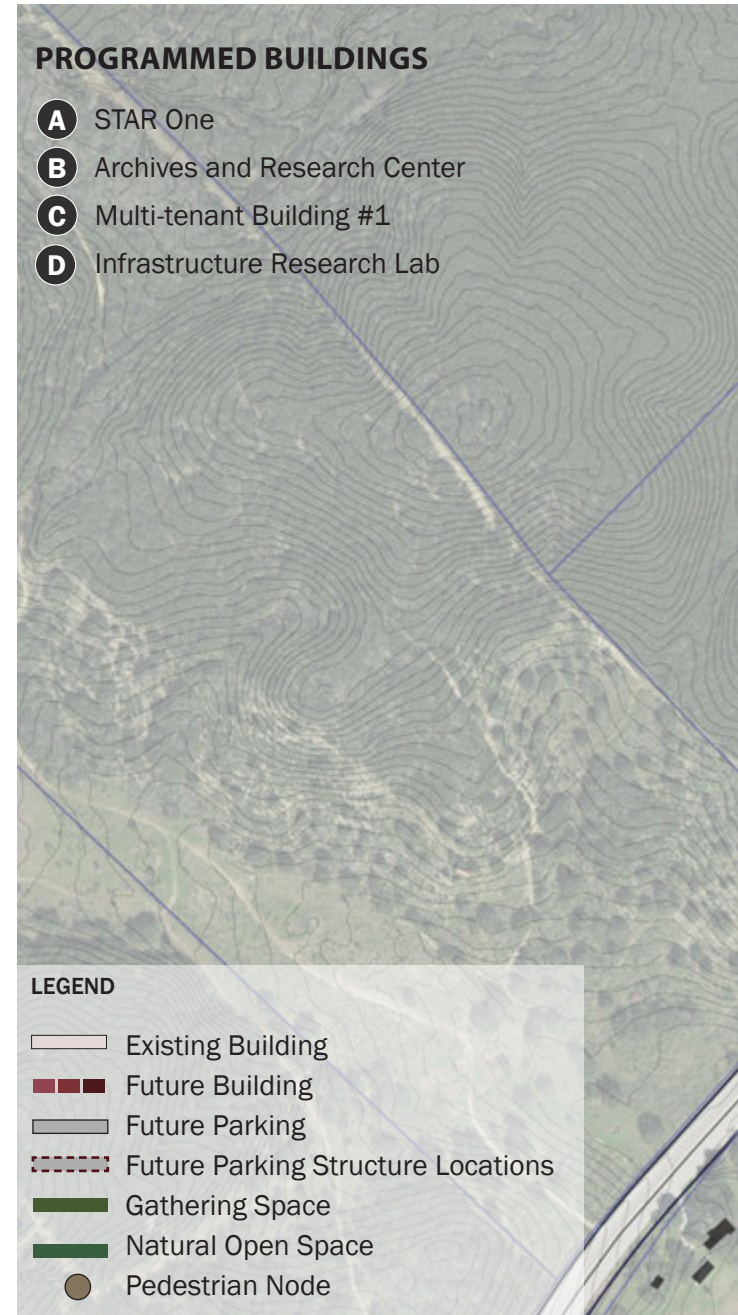
1. Create an urban-like plan for STAR Park placing buildings along a pedestrianized “main street” with parking and service behind the buildings
2. Utilize existing natural drainage way as a centrally located amenity from which pedestrian walks and green corridors emanate
3. Locate the multi-tenant building near STAR One for shared services and create indoor/outdoor places for collaboration
4. Position the Infrastructure Research Laboratory to allow integration with the multi-tenant building, STAR One, and outdoor amenities
5. Locate the Infrastructure Research Laboratory service area (“boneyard”) along railroad tracks and create drive-through building service access for large semi trucks
6. Separate STAR Park’s main access road from individual tenants’ service drives
7. Create on-street parking along roads to enhance traffic calming
8. Minimize the number of roads within STAR Park for greater land utilization and to promote a pedestrian oriented environment
9. Double load roads for maximum efficiency
10. Screen large parking lots and service areas from STAR Park and public view using a mix of landscape and architectural features

## PROGRAMMED BUILDINGS

- A** STAR One
- B** Archives and Research Center
- C** Multi-tenant Building #1
- D** Infrastructure Research Lab

## LEGEND

-  Existing Building
-  Future Building
-  Future Parking
-  Future Parking Structure Locations
-  Gathering Space
-  Natural Open Space
-  Pedestrian Node





## THERMAL AND ELECTRICAL

The existing facilities at the STAR Park site use localized HVAC equipment for building conditioning, and each are served individually from the electric utility. The recommendations in this section are based on a future-state of University owned and operated infrastructure containing centralized utilities and common distribution loops. The first privately developed and operated building at STAR Park will not be tied to campus utilities. Decisions will be made on a case-by-case basis with regard to tying future privately developed and owned buildings to the University's utilities.

Due to the scale and nature of the facilities planned for STAR Park, the installation of centralized utilities and distribution loops is recommended. These systems are similar in nature to those used at the San Marcos and Round Rock Campuses.

Distributed chilled water and heating water are recommended for building conditioning, and an underground medium voltage distribution loop is recommended for power.

The thermal and electrical loads anticipated for STAR Park, based on building square footage and typical usage, are shown in the table below.

Two thermal generation plants are recommended for STAR Park. One plant is to be constructed in Phase I and the other in Phase II. The plants may also hold the medium-voltage switchgear needed for the electrical infrastructure, but the location of the utility service feed and scheduling may drive the MV gear to be located in one of the earlier buildings constructed along West McCarty Lane or Hunter Road.

The recommended chilled water system for each plant consists of water-cooled chillers and associated cooling towers. Heat pump chillers may be suitable for the plants and would allow simultaneous generation of chilled and heating water. Thermal storage may also be suitable in the future if rate structures accounting for time of day usage or demand control are available from the electric utility. To support full plant-level redundancy, recommended preliminary capacity for each plant is 4,000 tons. Installation of

generating equipment should be phased to coincide with campus growth. Recommended distribution piping is direct-buried HDPE piping with below grade vaults for isolation valves. Anticipated distribution main sizes range from 16 inches to 24 inches.

The recommended heating water system for each plant consists of natural gas modular heating water boilers. To support full plant-level redundancy, recommended preliminary capacity for each plant is 55,000 MBh. Installation of generating equipment should be phased to coincide with campus growth. Distribution piping with below-grade vaults and isolation valves is recommended. Anticipated distribution main sizes range from 12 inches to 18 inches.

A campus-owned underground medium-voltage distribution system is recommended for Star Park to avoid utility easements on site and give the University control over their power distribution system and the response to outages. To minimize future rework, it is advisable that the MV gear be installed and the campus loop established as soon

## THERMAL AND ELECTRICAL LOADS

	Cooling (Tons)	Heating (MBh)	Power (MW)
Phase I (2 – 10 Years)	1,600	22,000	3.5
Phase II (10+ Years)	2,400	33,000	5.0
<b>Total</b>	<b>4,000</b>	<b>55,000</b>	<b>8.5</b>

as feasible. The MV gear should be in place prior to or concurrent with the construction of the Infrastructure Research Laboratory on the interior of the property to avoid a utility easement to serve that building. Prior to installation of the MV gear, new buildings along West McCarty Lane and Hunter Road can be temporarily fed from utility owned transformers.

To assist with remote monitoring and control of the electrical system, as well as provide reliability and resiliency beyond that of a standard medium-voltage system, “smart grid” elements are recommended for use where appropriate and cost effective. This should certainly include power usage, service, and quality monitoring for individual buildings, but should also extend to remotely controlled switchgear and breakers to minimize service interruptions upon an outage event. If there is a need for additional backup power for critical facilities and diesel emergency generators are not desired, natural gas driven micro-turbines located within individual buildings could be considered.

The electrical system should also have capability to connect to local alternative energy sources such as solar arrays. Even if these local sources are not large enough to contribute heavily to campus demand, they may provide research and outreach opportunities to campus staff, students, and visitors.



STAR ONE

## PHASE I (2-10 YEARS)

Installation of the first thermal plant and distributed utility corridors are recommended in Phase I. Thermal load large enough to justify the plant and cooling loop will likely not occur until after the Infrastructure Research Laboratory and multi-tenant building are completed and ~100,000 square feet of additional buildings are added. Until the loop is added, the Infrastructure Research Laboratory and multi-tenant building can utilize stand-alone HVAC equipment in the form of air-cooled chillers and local modular boilers.

Though the plant is a logical location for the MV gear, it is not necessary that the installation of the MV loop wait until thermal load justifies a plant. The MV gear could be installed in one of the new buildings, outdoors, or a dedicated structure and the loop extended to new buildings as they are constructed. Coordination with the utility provider should begin prior to programming the multi-tenant building to determine the direction for the campus feed so that a decision can be made as to whether the MV gear should be located near the existing utility distribution easements at the intersection of McCarty Lane

and Hunter Road or adjacent to the transmission easement bisecting the site (i.e. at the central plant).






Connection to the future distributed utilities should be considered in design of these early stand-alone buildings, including consistent chilled and heating water usage temperatures and taps for future connections to the distributed thermal utilities. Additionally, service transformers should be located to be accessible from the future loop, conduit stub outs provided at the transformer pads in the direction of the future loop, and a location allotted on the building site for a pad mounted loop feed through switch.

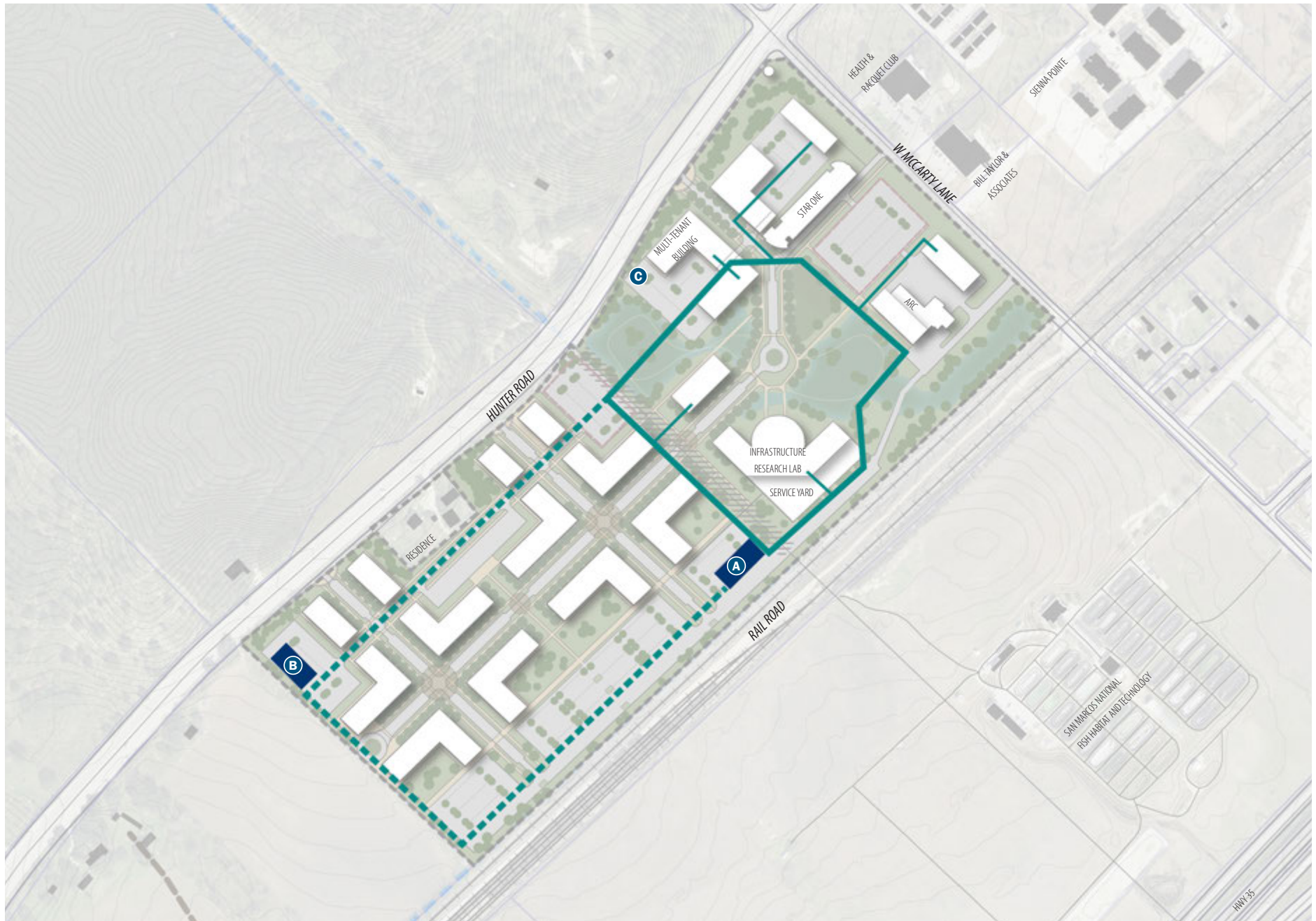
Location of future utility corridors should also be considered while improving the site prior to installation of the distributed systems. The recommended Phase I plant location and distribution is shown in the graphic on the next page. The thermal plant is located adjacent to the Infrastructure Research Laboratory site. The utility corridor loop extends both directions from the plant. The intent of plant-level redundancy should be considered when sizing these main distribution lines.

## PHASE II (BEYOND 2027)

Installation of the second thermal plant and additional utility distribution corridors are recommended in Phase II. The plant location and distribution are shown in the graphic on the next page. The second plant is located on the opposite corner of the Phase II campus from the first plant to maximize benefit of the distribution loop. As additional buildings are added in Phase II, the distribution lines are to be extended from the Phase I corridors until adequate thermal and electrical load exists to justify the second plant. At that time, the second plant should be constructed and the distribution loop completed.

### THERMAL AND ELECTRICAL SYSTEM

-  Distribution corridor with 1st plant
-  Distribution corridor added with 2nd phase buildings
-  1st central plant location and Option 1 MV gear location
-  2nd central plant location
-  Option 2 MV gear location



\* Distribution corridors include chilled water supply and return, heating water supply and return, and medium voltage electrical feeders.

## DRAINAGE

The proposed development of STAR Park will require stormwater management improvements. The goal is to provide innovative and sustainable BMPs that provide the required mitigation. The proposed development will increase peak flow runoff on the site, and therefore, the proposed BMPs shall reduce peak flows and infiltration through the use of bioswales and rain gardens. Additional innovative techniques that may be explored, include green roofs and pervious pavement.

### Assumptions

- 100-year storm design criteria
- Modified Rational Method used for detention calculation

### Findings

- 50 percent site impervious cover: +/- 800,000 cubic feet
- 80 percent site impervious cover: +/- 1,000,000 cubic feet

### Pond(s) Sizing options

- 50 percent site impervious cover: +/- 800,000 cubic feet = 18.37 acre-feet
- 80 percent site impervious cover: +/- 1,000,000 cubic feet = 22.96 acre feet







### Area needed to allocate for pond(s)

- Two foot depth: for 50 percent IP = 9 acres; for 80 percent IP = 11.5 acres
- Four foot depth: for 50 percent IP = 4.6 acres; for 80 percent IP = 5.75 acres
- Six foot depth: for 50 percent IP = 3 acres; for 80 percent IP = 3.8 acres

For size comparison, the existing detention pond is four-feet deep and two acres in area. There is adequate fall (slope) down in the southeast corner of the site where the existing pond is located. Therefore, it would not be unreasonable to achieve four-to six-foot depth in the pond, if not more.

If an adequately sized pond is not feasible due to the layout of the proposed buildings and structures on the site, there is opportunity for underground detention in the parking lot areas to collect and hold storm water prior to entering the park's main detention pond. Another option would be to reanalyze the layout of the proposed buildings and structures to accommodate a larger detention pond area.

### STORMWATER MANAGEMENT

-  Opportunity for rain garden/bid swale
-  Opportunity for underground detention
-  Proposed detention pond area  $\pm$  5 acres
-  Storm trunk line (42"-72")
-  Area drain and roof drain lines ( 18"-24")
-  Existing detention pond  $\pm$  2 acres





## WATER SYSTEM

The proposed development of STAR Park will require the expansion of the existing water system. The goal is to provide a water system that is capable of serving a variety of building sizes and building uses.

### Assumptions

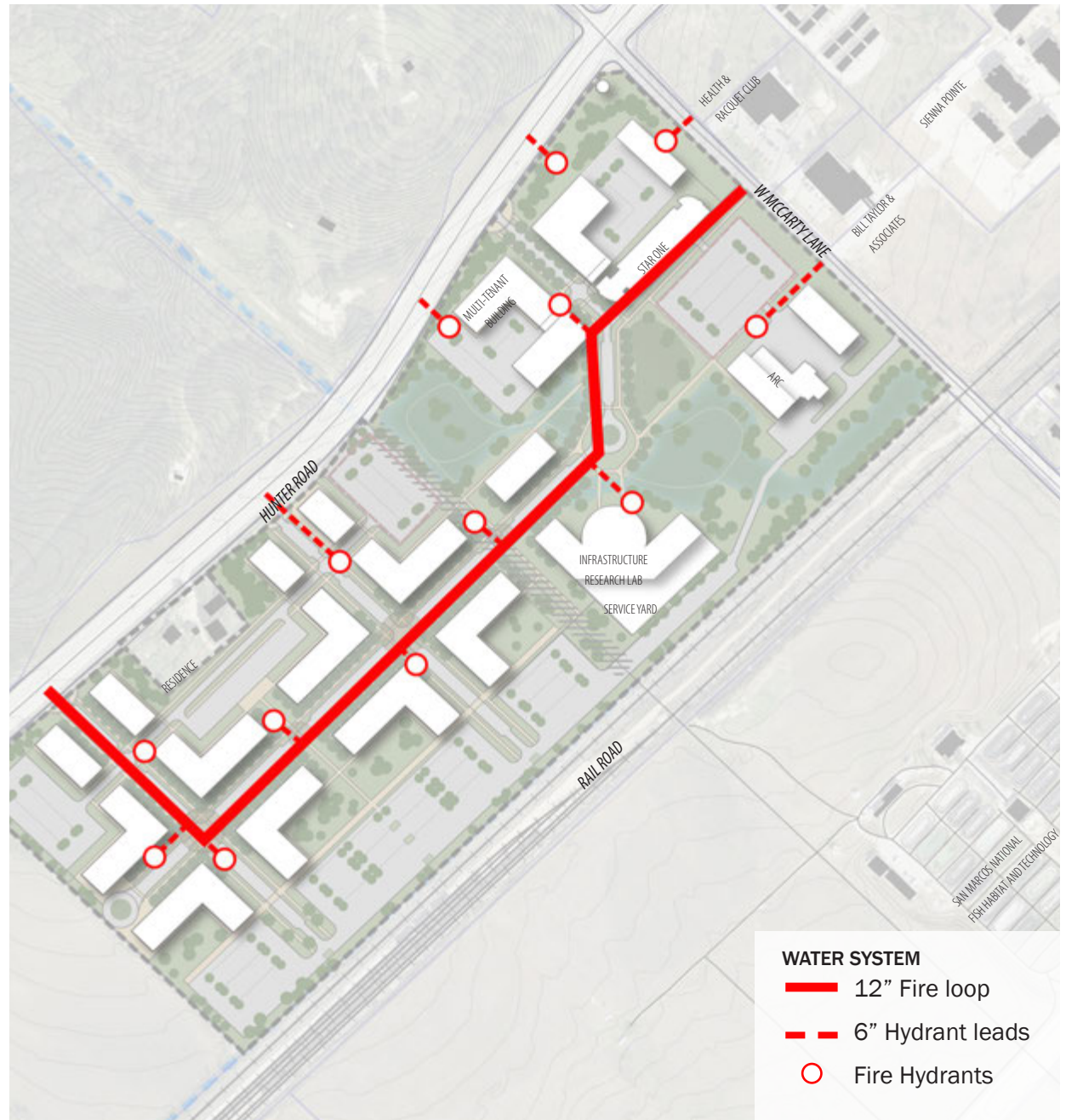
- 125,000 maximum assignable square footage per building
- Buildings will be Construction Type IIB or IIIB and will be sprinkled
- Building Uses will be mainly office with some laboratory and some warehouse space

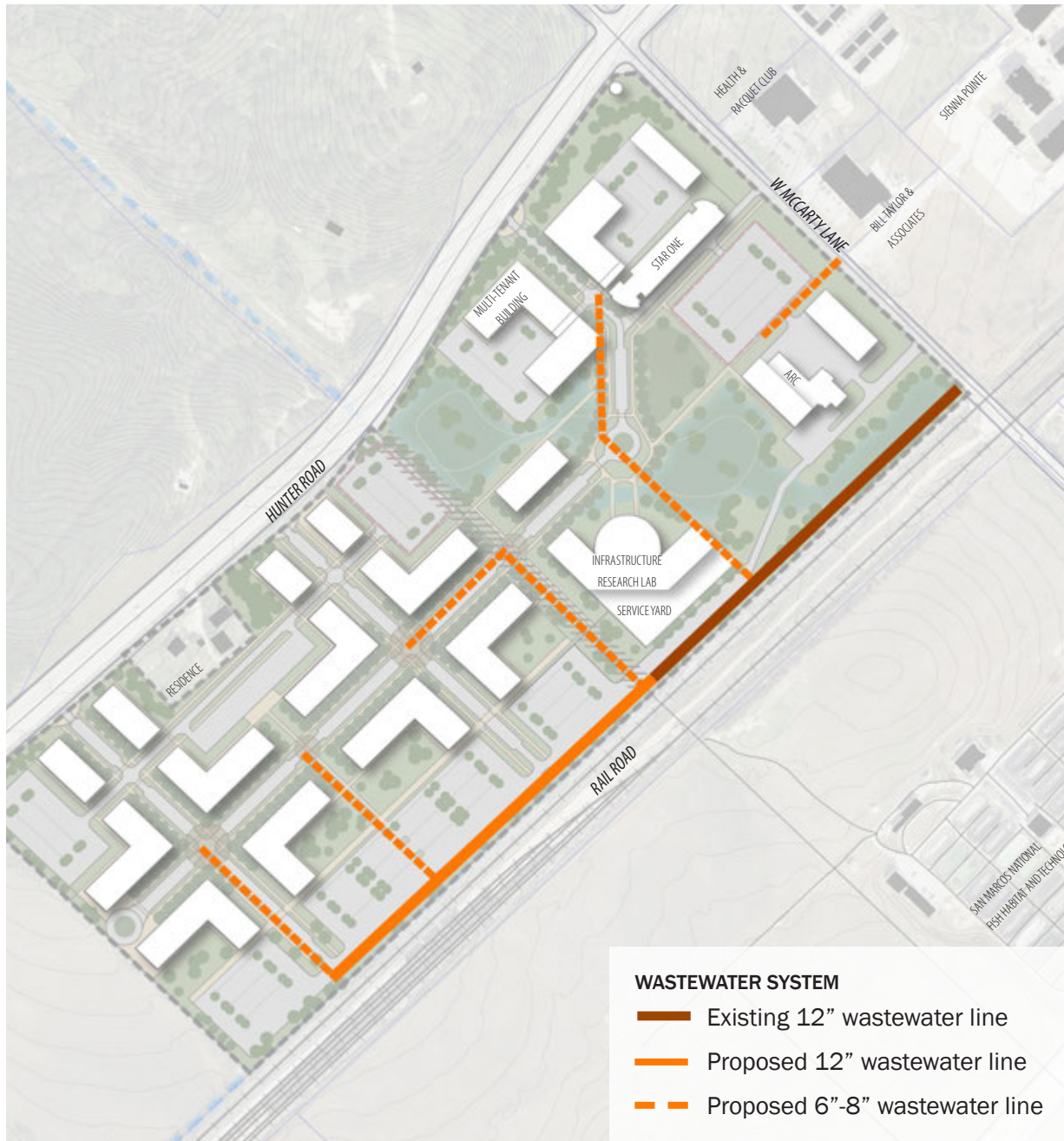
### Findings

- Domestic peak hour demand: 1,000 gallons per minute (gpm)
- Required fire flow: 1,875 gpm
- Total required water demand: 2,875 gpm

### Recommendations:

- A water model and analysis are recommended to verify the capacity of the existing system and confirm required improvements for proposed development
- A 12-inch looped system is recommended, with two connections to the existing 16-inch water line in Hunter Road and a connection to the existing 12-inch water line that extends to West McCarty Lane





## WASTEWATER SYSTEM

The proposed development of STAR Park will require the extension of the existing wastewater service on-site. The goal is to extend the existing line and provide services to the future buildings, using assumptions for building finished floor elevations and depths of services.

### Assumptions

- Building uses will be primarily for office space

### Findings

- Existing 12-inch wastewater has a capacity of 2.5 cubic feet per second (cfs)
- Fully developed wastewater water demand is 450 gpm, yielding a capacity of one cfs
- We do not anticipate that the existing line will require an upgrade

### Recommendations:

- Minimum pipe slopes of 0.5 percent
- The existing 12-inch wastewater line needs to be extended approximately 1,500 linear feet to the south in order to serve the proposed buildings in the master plan

## FIBER SYSTEM

### Existing Primary Fiber Service:

- Primary fiber (Grande Communications) connects to the main campus along Hunter Road
- Fiber service enters STAR Park from aerial cable to below grade at northwest corner of site near Hunter Road and McCarty Lane intersection
- Four four-inch OSP conduit pathway routed below grade from service pole to STAR One MDF room
- STAR One MDF houses the entrance facility and service provider demarcation point

### Existing Secondary Fiber Service:

- Secondary fiber connects Consolidated Communications Inc. (CCI) node to Dallas and San Antonio along Interstate Highway 35 (IH-35)
- Fiber service enters STAR Park from aerial cable to below grade at McCarty Lane northwest of Archives and Research Center
- Four four-inch OSP conduit routed below grade from service pole to STAR One MDF room

### Existing Fiber Loop Pathway:

- Existing OSP pathways connecting STAR One demarcation point to Archives and Research Center with dual service fiber loop

### Expanded service redundancy and requirements:

- Communications pathways supporting dual services supporting STAR Park expansion will require physical separation to maintain redundancy in the event of service loss or damage to a service line
- Dual service fiber loop will allow the tenants to connect to either service provider and ensure a level of reliability and redundancy
- Main service utility corridors will facilitate expansion beyond the 10-year University Master Plan

### Multi-Tenant Building:

- Dual service entrance facility
- Separate demarcation for each tenant space

### Infrastructure Research Laboratory:

- Dual service entrance facility

### Parking and Open Spaces:

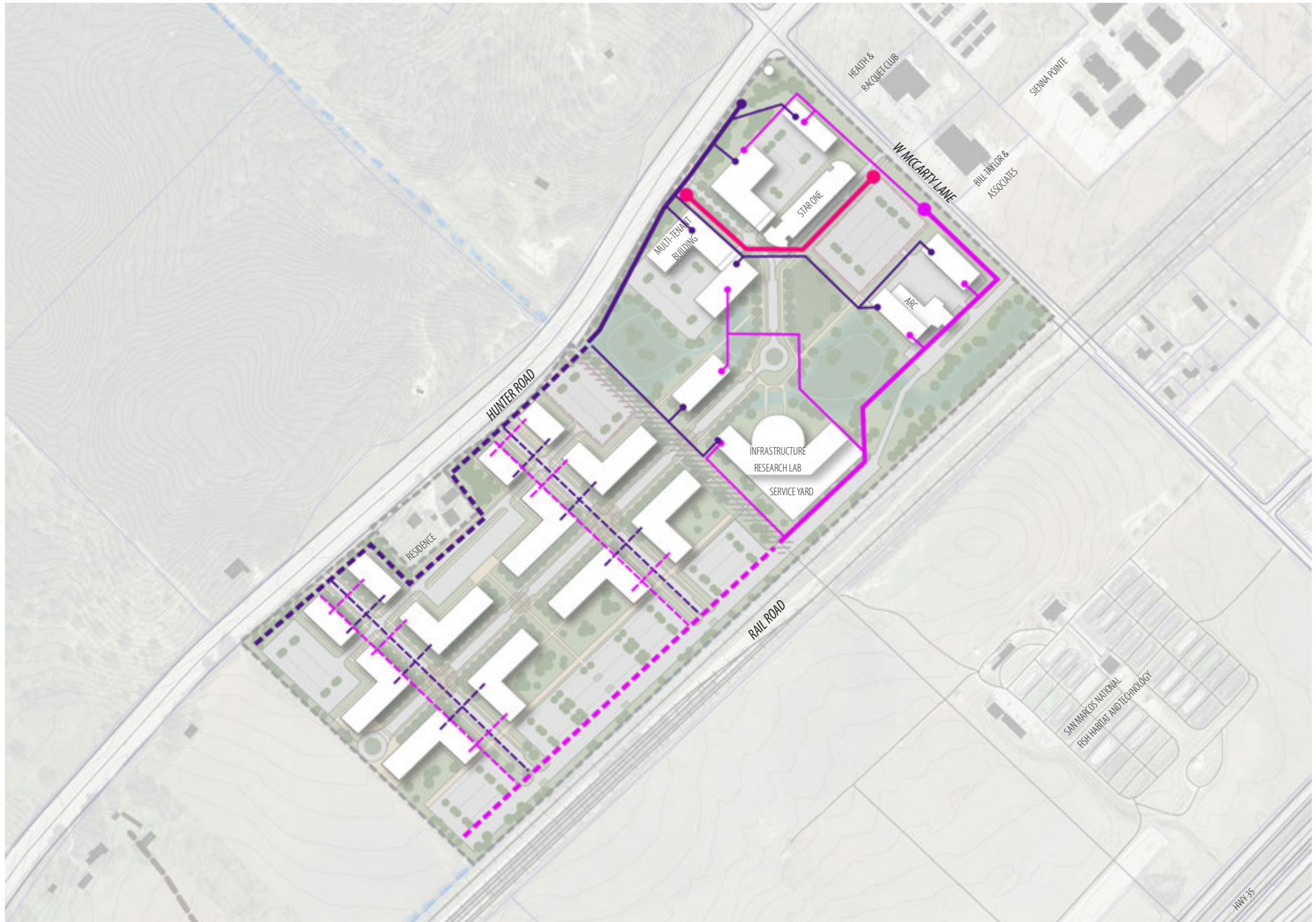
- Campus connectivity for wireless access at common spaces
- Security surveillance and access control

### Campus Smart Grid Utility Corridor:

- Support for central location and control of campus-wide systems
- Security surveillance and access control
- Remote monitoring of building automated systems
- HVAC load management
- Chilled water distribution and monitoring
- Real-time analysis of sub metering to each building and tenant
- Provide facilities management with user trends to each building, tenant zone, and high demand spaces
- Redundant services for critical infrastructure systems

### FIBER SYSTEM

- Existing fiber loop
- Proposed primary fiber pathway
- Future primary fiber pathway ( beyond 10 years)
- Proposed secondary fiber pathway
- Future secondary fiber pathway ( beyond 10 years)





PROPOSED VISION FOR STAR PARK MAIN STREET





## 05. PHASING & IMPLEMENTATION





# SHORT-TERM RECOMMENDATIONS (0-5 YEARS)

- |   |                        |   |                            |
|---|------------------------|---|----------------------------|
|  | 2027 Development       |  | Existing Campus Facilities |
|  | Pedestrian Circulation |  | Parking Garages            |
|  | Student Life           |  | Athletic and Recreation    |
|  | Academic and Research  |  | Campus Support             |
|  | Student Housing        |   |                            |





New Construction		Loss/Gain	Units	Cost Estimate <sup>1</sup>
1	University Events Center Expansion	78,440	GSF	\$62,500,000
2	Bruce and Gloria Ingram Hall	166,851	GSF	\$120,000,000
3	Recreation Fields at Spring Lake	4	Fields	\$3,000,000
4	Parking Garage at Charles Austin and Aquarena Springs Drive	925	Spaces	\$34,965,000
5	Hilltop Residence Hall	1,025	Beds	\$79,040,408
6	LBJ Student Center Expansion	63,500	GSF	\$41,425,366

Building Renovation		Loss/Gain	Units	Cost Estimate
7	Elliott Hall (Gain Academic GSF)	37,293	GSF	\$6,500,000
8	Elliott Hall (Loss of Student Housing)	-186	Beds	Included above
9	Jowers Center	13,561	GSF	\$3,500,000
10	Nueces for Testing Center	13,351	GSF	\$2,750,000
11	Roy F. Mitte Reconfiguration	19,000	GSF	\$9,600,000
12	Retama Hall	129	Beds	\$10,937,378
13	West Warehouse for UPD (TBD)	9,904	GSF	\$7,000,000
14	LBJ Student Center	221,001	GSF	\$20,070,000
15	Encino Hall Reconfiguration	17,239	GSF	\$5,400,000
16	Albert B. Alkek Library Learning Commons	40,488	GSF	\$12,612,894
17	Albert B. Alkek Library Wittliff Collections Expansion	36,664	GSF	\$7,400,000
18	Commons Hall for Swing Space	8,070	GSF	\$2,090,130
19	Blanco Hall	-120	Beds	\$24,000,000

Building Infrastructure Improvements		Loss/Gain	Units	Cost Estimate
20	Albert B. Alkek Library	313,581	GSF	\$9,400,000
21	Taylor-Murphy History (Structural)	27,574	GSF	\$3,100,000
22	Theatre	57,932	GSF	\$4,311,000
23	Hines Academic Center (Structural)	33,336	GSF	\$6,000,000
24	Derrick Hall	89,904	GSF	\$4,000,000
25	Centennial Hall (Structural)	106,964	GSF	\$1,500,000
26	Evans Liberal Arts	109,905	GSF	\$2,500,000
27	Old Main (Structural)	39,880	GSF	\$2,500,000
28	Physical Plant Administration (Structural)	11,780	GSF	\$824,600
29	J.C. Kellam Administration	209,521	GSF	\$4,883,000

Demolition		Loss/Gain	Units	Cost Estimate
30	Burleson Hall	-13,521/-68	GSF/Beds	\$283,941
31	Hornsby Hall	-13,650/-68	GSF/Beds	\$286,650

Pedestrian Improvements		Loss/Gain	Units	Cost Estimate
32	East to West Mall Connection from Supple to Blanco		LS	\$1,212,700
33	Diagonal Pedestrian Connector from Hilltop to Ingram Hall		LS	TBD
34	Improve North-South Pedestrian Connections		LS	TBD
35	Complete Bobcat Trail from UAC to Comanche Street		LS	TBD
36	Complete Pedestrian Connector from Bobcat Stadium to Recreation Fields		LS	TBD

Infrastructure Improvements <sup>2</sup>		Loss/Gain	Units	Cost Estimate
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<sup>1</sup> Cost estimates are calculated using current construction costs without escalation (summer of 2017). For escalation purposes, we recommend using 0.5% per month (6% per year)

<sup>2</sup> See Page 240 for detailed explanation of Infrastructure Improvements

# MID-TERM RECOMMENDATIONS (6-10 YEARS)

- |   |                        |   |                            |
|---|------------------------|---|----------------------------|
|  | 2027 Development       |  | Existing Campus Facilities |
|  | Pedestrian Circulation |  | Parking Garages            |
|  | Student Life           |  | Athletic and Recreation    |
|  | Academic and Research  |  | Campus Support             |
|  | Student Housing        |   |                            |





New Construction		Loss/Gain	Units	Cost Estimate <sup>1</sup>
1	Hilltop Academic and Research	221,000	GSF	\$120,000,000
2	Performing Arts Center Expansion	65,000	GSF	\$38,675,000
3	Music Building at Butler Hall Site*	110,000	GSF	\$61,365,000
4	Living Learning Community at Butler Hall Site <sup>2</sup>	100	Beds	TBD
5	Student Athlete Housing (not pictured)	TBD	Beds	TBD
6	Student Health Center Expansion	26,000	GSF	\$13,650,000
7	Alumni Center	10,000	GSF	\$4,620,000
8	Cross Country Practice Course (TBD)		LS	TBD
9	Indoor Practice Facility (TBD)	86,500	GSF	\$13,000,000
10	Parking Garage at West Holland Street	765	Spaces	\$28,917,000
11	Parking Garage at Lindsey Street	925	Spaces	\$34,965,000
12	Academic and Research (Music Site)	180,000	GSF	\$97,000,000

Building Renovation		Loss/Gain	Units	Cost Estimate
13	Supple Science	107,526	GSF	\$31,612,644
14	Spring Lake Hall for Interpretive Research Center	17,000-	GSF	\$4,522,000
15	Athletic Academic Support Facility Improvements	25,000-	GSF	\$6,475,000
16	Sterry Hall <sup>2</sup>	380	Beds	TBD
17	Lantana Hall <sup>2</sup>	200	Beds	TBD
18	Bexar Hall	45,390/185	GSF/Beds	\$11,120,550
19	Tennis Facilities Upgrades	-	LS	TBD
20	Football Facilities Upgrades	-	LS	TBD
21	Track Facilities Upgrades	-	LS	TBD

Demolition		Loss/Gain	Units	Cost Estimate
22	Music Building	-74,048	GSF	\$1,555,008
23	Arnold Hall	43,709/-113	GSF/Beds	\$917,889
24	Smith Hall	29,269/-163	GSF/Beds	\$614,649
25	Butler Hall <sup>2</sup>	49,687/-136	GSF/Beds	TBD

Infrastructure Improvements <sup>3</sup>		Loss/Gain	Units	Cost Estimate
--	--	-----------	-------	---------------

<sup>1</sup> Cost estimates are calculated using current construction costs without escalation (summer of 2017). For escalation purposes, we recommend using 0.5% per month (6% per year)

<sup>2</sup> Sterry, Butler, and Lantana Halls may be candidates for either demolition or renovation

<sup>3</sup> See Page 240-241 for detailed explanation of Infrastructure Improvements

# LONG-TERM RECOMMENDATIONS (BEYOND 2027)

- |   |                        |   |                            |
|---|------------------------|---|----------------------------|
|  | 2027 Development       |  | Existing Campus Facilities |
|  | Pedestrian Circulation |  | Beyond 2027 Development    |
|  | Student Life           |  | Parking Garages            |
|  | Academic and Research  |  | Athletic and Recreation    |
|  | Student Housing        |  | Campus Support             |





New Construction		Loss/Gain	Units
1	Academic and Research 5 (Elliott Hall Site)	92,000	GSF
2	Academic and Research 6 (Hilltop Site)	220,000	GSF
3	Academic and Research 7 (Derrick Hall/Math Computer Science Site)	130,000	GSF
4	Academic and Research 8 (Bruce and Gloria Ingram Hall Expansion)	26,000	GSF
5	Academic and Research 9 (Supple Science Expansion)	30,000	GSF
6	Athletic Soccer Field Relocation (TBD)	1	Field
7	Baseball/Softball Facilities Upgrade	-	GSF
8	Bobcat Stadium Expansion	-	GSF
9	Residential 1 (Glade Site)	325	Beds
10	Residential 2 (Glade Site)	425	Beds
11	President's House (Site TBD)	5,000-	GSF

Demolition		Loss/Gain	Units
12	Elliott Hall	-26,814	GSF
13	Derrick Hall	-89,904	GSF
14	Math Computer Science	-39,960	GSF

Decision Pending		Loss/Gain	Units
15	Academic and Research 1 (President's House Site)	180,000	GSF
16	Academic and Research 2 (President's House Site)	170,000	GSF
17	Academic and Research 3 (President's House Site)	90,000	GSF
18	Academic and Research 4 (President's House Site)	230,000	GSF
19	President's House	-5,448	GSF
20	Academic and Research 10 (Sessom Drive)	180,000	GSF
21	Academic and Research 11 (Aqua Sports Site)	180,000	GSF
22	Aqua Sports Center	25,573	GSF

Infrastructure Improvements <sup>1</sup>	Loss/Gain	Cost Estimate <sup>2</sup>
--	-----------	----------------------------

<sup>1</sup> See Page 241 for detailed explanation of Infrastructure Improvements

<sup>2</sup> Cost estimates are calculated using current construction costs without escalation (summer of 2017). For escalation purposes, we recommend using 0.5% per month (6% per year)

## INFRASTRUCTURE IMPROVEMENTS - SHORT-TERM RECOMMENDATIONS (0-5 YEARS)

Infrastructure Improvements	Loss/Gain	Units	Cost Estimate
Spring Lake Dam Repairs		LS	\$4,500,000
Hilltop Utility Corridor		LS	\$8,000,000
South Campus Utility Corridor			\$8,000,000
Central Plant Chiller CH 2 with 2,000-ton Electric Chiller Replacement	2,000	Ton	\$2,000,000
Central Plant Chiller CH 4 with 2,000-ton Electric Chiller Replacement	2,000	Ton	\$2,000,000
Chiller CH 3 and Cooling Tower CT 3 Installation at South Plant			\$2,500,000
Modular Boiler Installation in Central Plant			\$1,000,000
Various Air Handling Unit Replacements			\$8,000,000
South Campus Condensate Return Route Repairs			\$750,000
Building Chilled Water dT Monitoring and Retro-Commissioning			\$750,000
Electrical Rate Structure Modifications/Demand Control			TBD
Medium-Voltage Electrical Feeder Replacements	10,000	LF	TBD
Emergency Generator Replacement			TBD

## INFRASTRUCTURE IMPROVEMENTS - MID-TERM RECOMMENDATIONS (6-10 YEARS)

Infrastructure Improvements	Loss/Gain	Units	Cost Estimate
Steam Campus Loop-North	1,800	LF	\$2,160,000
Steam Campus Loop-South	1,600	LF	\$2,092,800
CHWS/R Campus Loop-North	1,800	LF	\$738,000
CHWS/R Campus Loop-South	1,600	LF	\$438,400
New Potable Water Well <sup>1</sup>		LS	\$950,600
New Potable Water Pump Station with Ground Storage Tank <sup>2</sup>		LS	\$1,753,500
Campus Electric Loop-North	1,800	LF	\$1,227,600
Campus Electric Loop-South	1,600	LF	\$1,110,400
IT Campus Loop			TBD
Fiber Optic Network-3,400 LF	3,400	LF	\$ 1,101,800
West Plant-Demo/Replace with New 8,000 Ton Plant	8,000	Ton	\$52,640,000
New 2,000 Ton Medium-Voltage Electric Chillers in Central Plant	2	Each	\$3,381,644 (at \$1,690,822 each)
Chilled Water Piping Replacement, East Plant to ASB/EDB/Old Main			\$1,350,000
Renovate Existing Concrete Towers-Replace Fans, Motors, Replace Fill and Lateral Distribution Piping (1,700 Tons Each) Renovation	3	Each	\$378,000 (at \$126,000 each)
Various Air Handling Unit Replacements			\$15,000,000



## MID-TERM RECOMMENDATIONS (6-10 YEARS) CONTINUED

Infrastructure Improvements	Loss/Gain	Units	Cost Estimate
Chiller CH 4 Installation at South Plant	1	Each	\$2,000,000
Central Plant Cooling Tower Renovations			\$1,750,000
East Plant Cooling Tower Replacements	4	Each	\$1,011,200
North Campus Utility Corridor			\$12,000,000
Medium-Voltage Electrical Feeder Replacement Along Main East-West Corridor			TBD
Remaining 1990s Era Emergency Generator Replacement			TBD

## INFRASTRUCTURE IMPROVEMENTS - LONG-TERM RECOMMENDATIONS (BEYOND 2027)

Infrastructure Improvements	Loss/Gain	Units	Cost Estimate
West Plant Replacement		LS	\$52,640,000
Secondary Well			TBD
Central Plant Chillers	2	Each	\$3,381,644
Central Plant Cooling Towers	3		\$378,000
East Plant Cooling Towers	4		\$1,011,200
New 8,000-Ton at West Plant	8,000	Ton	\$15,000,000
Medium-Voltage Electrical Feeder Replacement Along Main East-West Corridor			TBD
Emergency Generator Replacements			TBD

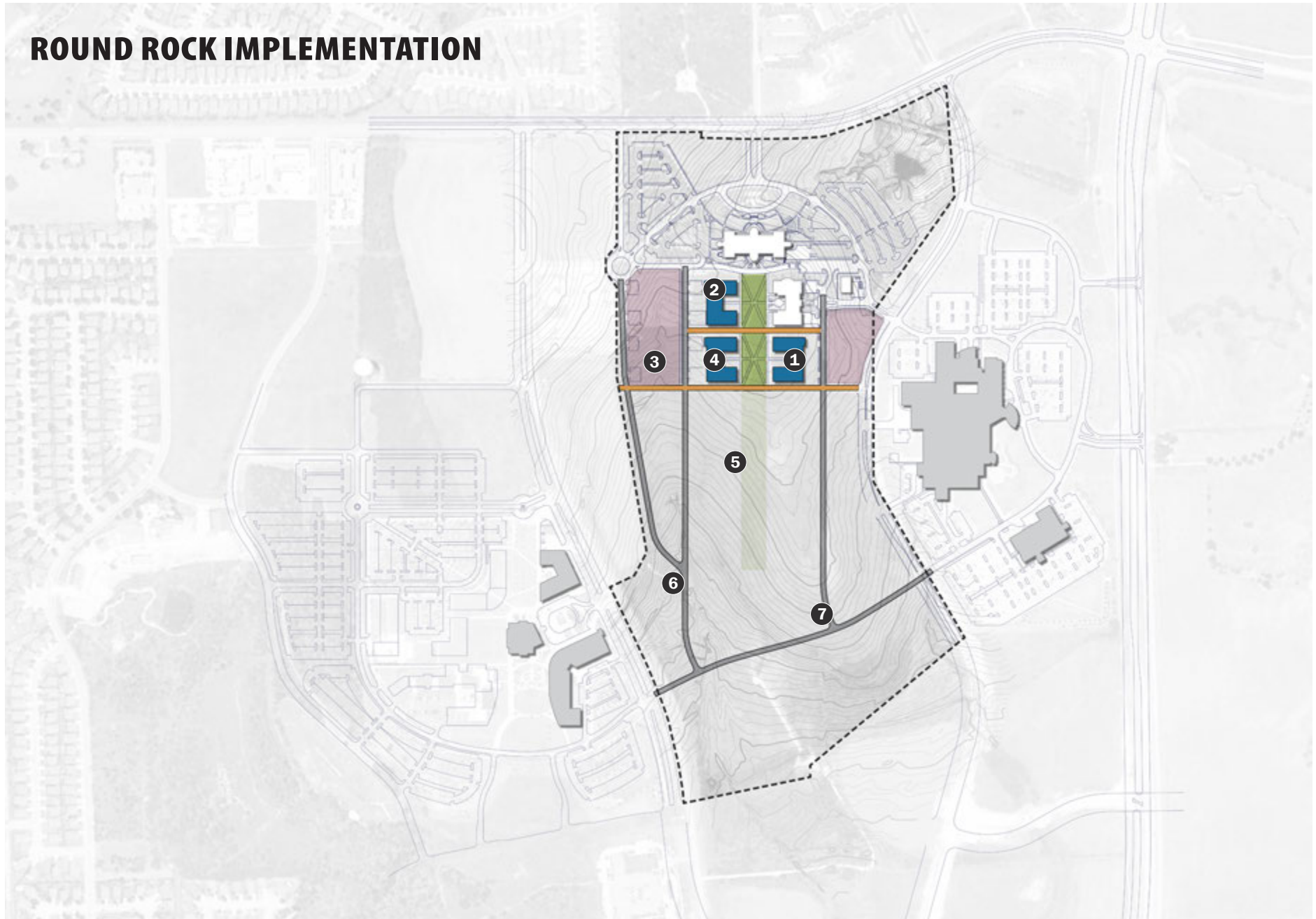
### ASSUMPTIONS/QUALIFICATIONS

- Pricing is based on 2017 dollars and typical of Texas State University work.
- These concept pricing numbers are developed as full project costs including “soft costs.”
- No escalation is included in these numbers. Three percent per year should be added for escalation.
- Utility cost estimates were developed using the scope narrative provided by EEA Engineers.

<sup>1</sup> The number for a new “potable water well” includes a well house, 200-foot well, pump and motor, piping, controls and telemetry, electrical connections, and emergency generator.

<sup>2</sup> The number for a new “potable water pump station” includes a 0.5MG ground storage tank, well house, transfer pumps, piping, controls and telemetry, electrical connections, and emergency generator.

# ROUND ROCK IMPLEMENTATION



**0-5 YEARS**

<b>New Construction</b>		<b>Loss/Gain</b>	<b>Units</b>	<b>Cost Estimate</b>
<b>1</b>	Willow Hall	107,708	GSF	\$67,500,000

**6-10 YEARS**

<b>New Construction</b>		<b>Loss/Gain</b>	<b>Units</b>	<b>Cost Estimate</b>
<b>2</b>	Esperanza Hall	45,000	GSF	\$45,000,000

<b>Infrastructure Improvements</b>		<b>Loss/Gain</b>	<b>Units</b>	<b>Cost Estimate</b>
<b>3</b>	Central Plant Improvements for Esperanza Hall			\$1,067,800

**BEYOND 2027**

<b>New Construction</b>		<b>Loss/Gain</b>	<b>Units</b>	<b>Cost Estimate</b>
<b>4</b>	Building #5	100,000	GSF	TBD
<b>5</b>	Build Out Campus Mall			TBD
<b>6</b>	Build Out Road Structure			TBD
<b>7</b>	Complete Campus Infrastructure Loop			TBD

# SCIENCE, TECHNOLOGY, AND ADVANCED RESEARCH (STAR) PARK IMPLEMENTATION

The master plan for the Science, Technology, and Advanced Research (STAR) Park represents an ideal vision. It translates the key goals, principles, and systems recommendations developed during the three-month planning process into a single graphic and supporting materials. Both short- and long-term opportunities are represented in the plan. On a detailed level, the University Master Plan proposes the placement of new features such as future buildings, roadways, pedestrian corridors, open space, and parking. However, the fundamental function of the plan is to suggest a principle driven, flexible framework for managing STAR Park's growth opportunities over time. The following Phasing Plans outline a framework to guide growth proposed within the University Master Plan. The diagrams seek to convey an order of prioritization for when initiatives should happen within STAR Park as opportunities present themselves and/or when funding for previously planned projects become available. Careful consideration has been taken to ensure that the phasing order makes the best strategic use of University resources.

## DEVELOPMENT CALCULATIONS

### Total STAR Park Area

- Acres: 58
- Site Square Feet: 3,397,680

### Footprint/Ground Area Coverage (SF)

- Existing Buildings: 56,000
- Proposed Buildings: 503,000
- Existing Parking & Roads: 105,000
- Proposed Parking: 450,000
- Proposed Roads: 572,500
- 1,686,000

### Building Area (GSF)

- Existing Buildings: 56,000
- Proposed Buildings: 1,324,000 (assumes all are three level buildings)
- 1,380,000

### Parking Requirement (Spaces)

- At one space per 500 GSF: 2,760 (assumes a portion of this total will need to be accommodated in a structure)
- At one space per 1000 GSF: 1,380 (assume surface parking in lots and along roads)



### APPROXIMATELY 0-5 YEARS

New Construction		Loss/Gain	Units	Cost Estimate
1	Archives and Research Center	19,111	GSF	\$15,415,900
2	Infrastructure Research Laboratory	5,000	GSF	\$12,000,000
3	Multi-Tenant Research Facility #1	45,000	GSF	TBD



### APPROXIMATELY 6-10 YEARS

New Construction		Loss/Gain	Units	Cost Estimate
4	Multi-Tenant Research Facility #2	45,000	GSF	TBD



### BEYOND 2027

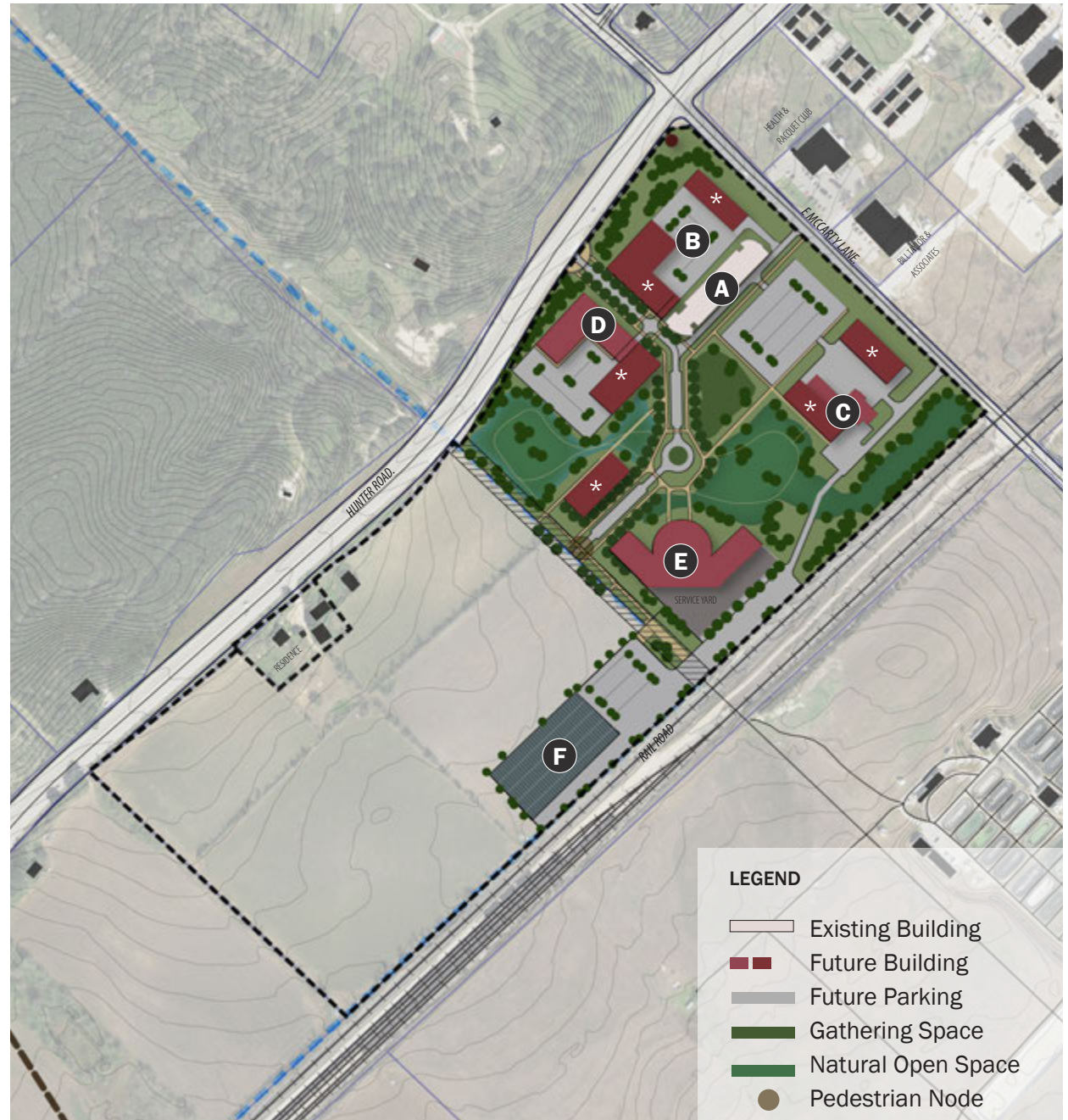
New Construction		Loss/Gain	Units	Cost Estimate
5	Multi-Tenant Research Facility #3	45,000	GSF	TBD

# APPROXIMATELY 2017-2027 EXISTING BUILDINGS

- A** STAR One
- B** Surface Parking

## FUTURE BUILDINGS

- C** Archives and Research Center
- D** Multi-tenant Building #1
- E** Infrastructure Research Lab
- F** Energy Research Site (~ two acres)
- \* Potential Building Sites



# BEYOND 2027

## PROGRAMMED BUILDINGS

\* Potential Building Sites





SECTION CUT OF THE VISION FOR STAR PARK MAIN STREET



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## 06. ACKNOWLEDGEMENTS





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Mr. Chris Reynolds, Mr. Bob Stafford, and Mr. Jason Boyd for providing AutoCAD and Geographic Information System data

Mr. Alberto Aguilera, Texas State Student, for developing the Sidewalk Plan

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# 07. APPENDIX





# HISTORY OF TEXAS STATE UNIVERSITY

With the founding dates just half a century apart, Texas State University and the City of San Marcos have literally grown up together. The City and the University share many common bonds, not the least of which is a picturesque setting, complete with the crystal-clear San Marcos River. There is a shared sense of community, a commitment to education and a sense of history. Were it not for the good citizens of San Marcos, there would not be a Texas State.

Beginning in 1886, San Marcos hosted a Texas summer normal institute where educators gathered to study and earn advanced certification. Teachers received credit by passing exams or completing normal school work. This entitled them to teach more advanced students or to become administrators. Those who came to San Marcos for study saw its promise as a site for a permanent normal school to serve teachers in South Texas. In December 1892, a teachers' institute meeting in San Marcos petitioned the legislature "to establish at least one more state normal in this state, to be located in southwest Texas."

The Texas Legislature voted in 1899 that a normal school could be started in San Marcos if local citizens would furnish the land. The San Marcos City Council, meeting in special session on October 16, 1899, voted to give an 11-acre tract of land, plus several lots, to the State for the normal school campus. Official

state approval of the Normal School was given in 1901.

Work on the first building, Main Building, began in 1902 in spite of construction difficulties caused by what appeared to be a deep cave in the hill. The normal school was ready for



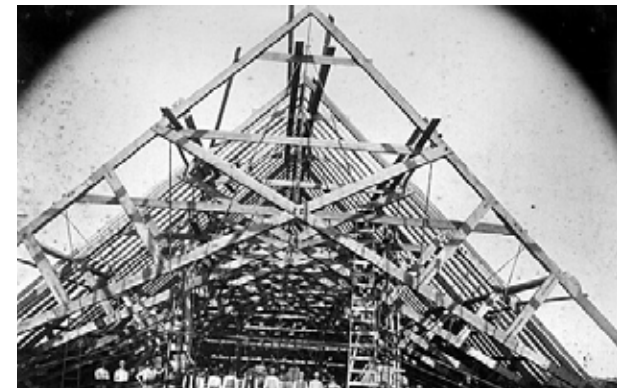
STUDENTS OUTSIDE HINES GYMNASIUM



US FISH HATCHERY PRE 1906



SAN MARCOS 1882



CONSTRUCTION OF OLD MAIN 1902



FISH HATCHERY FROM OLD MAIN



RIVERSIDE PARK



PRESIDENT FLOWERS WITH CAMPUS MASTER PLAN MODEL



FIRE STATION AND CITY HALL



CAMPUS AERIAL PRE 1958



CAMPUS AERIAL 1940

the 303 students and 17 faculty members who were there when Southwest Texas State Normal School opened its doors in 1903. Over the years, the Texas Legislature broadened the institution's scope and changed its name, successively, to Southwest Texas State Normal College, Southwest Texas State Teachers College, Southwest Texas State College, Southwest Texas State University, and in 2003 to Texas State University. Each name reflects the University's growth from a small teacher preparation institution to a major multipurpose university.



HAYS COUNTY COURTHOUSE



CAMPUS AERIAL PRE 1951

Texas State's original purpose was to prepare Texas public school teachers, especially those of the south-central Texas area. It became well known for carrying out its mission. Today Texas State is far different from what it was even ten years ago. What started out as little more than a high school now has 98 baccalaureate, 91 master's, and 13 doctoral degree programs offered by the colleges of Applied Arts, McCoy College of Business Administration, Education, Fine Arts and Communication, Health Professions, Liberal Arts, Science and Engineering, University College, and The Graduate College. While teacher preparation remains an important responsibility of the University even today, the scope of its mission has greatly expanded as have the prestige, prominence, and recognition of the University.

Although university officials have implemented enrollment management strategies, including rigorous academic standards that have helped control growth, Texas State's student population increased from 303 in 1903 to 38,849 in fall 2016. In the '60s, '70s and early '80s, the numbers grew by double-digit percentages

year after year, taxing university resources and prompting stricter admission standards. The standards are now among the highest in the state for public universities.

The original 11-acre main campus has grown to over 491 acres, plus almost 4,000 off-site acres of ranch land and a recreational camp have been added. Several major acquisitions have been made since 1903. In 1951 the 126-acre University Camp on the Blanco River was donated to the University. Established in 1897, and located near the headwaters of the San Marcos River, was the San Marcos National Fish Hatchery, the oldest federal fish hatchery west of the Mississippi River. In 1965, the US Fish and Wildlife Service donated the hatchery to Texas State. Other acquisitions include the 79-acre former San Marcos Baptist Academy campus in 1979, the 3,485-acre Freeman Ranch in 1985, and the 90-acre Aquarena Springs Resort in 1994. In 2004, 101 acres in Round Rock were donated to the University to establish the Round Rock Campus and in 2014 Texas State University purchased 20 acres contiguous to the Science, Technology and Advanced Research (STAR) Park.

## UNIVERSITY PRESIDENTS

Thomas G. Harris	1903 - 1911
Cecil Eugene Evans	1911 - 1942
J. Garland Flowers	1942 - 1964
James H. McCrocklin	1964 - 1969
Billy Mac Jones	1969 - 1973
Lee H. Smith	1974 - 1981
Robert L. Hardesty	1981 - 1988
Jerome H. Supple	1989 - 2002
Denise M. Trauth	2002 - Present



QUAD APPROXIMATELY 1939



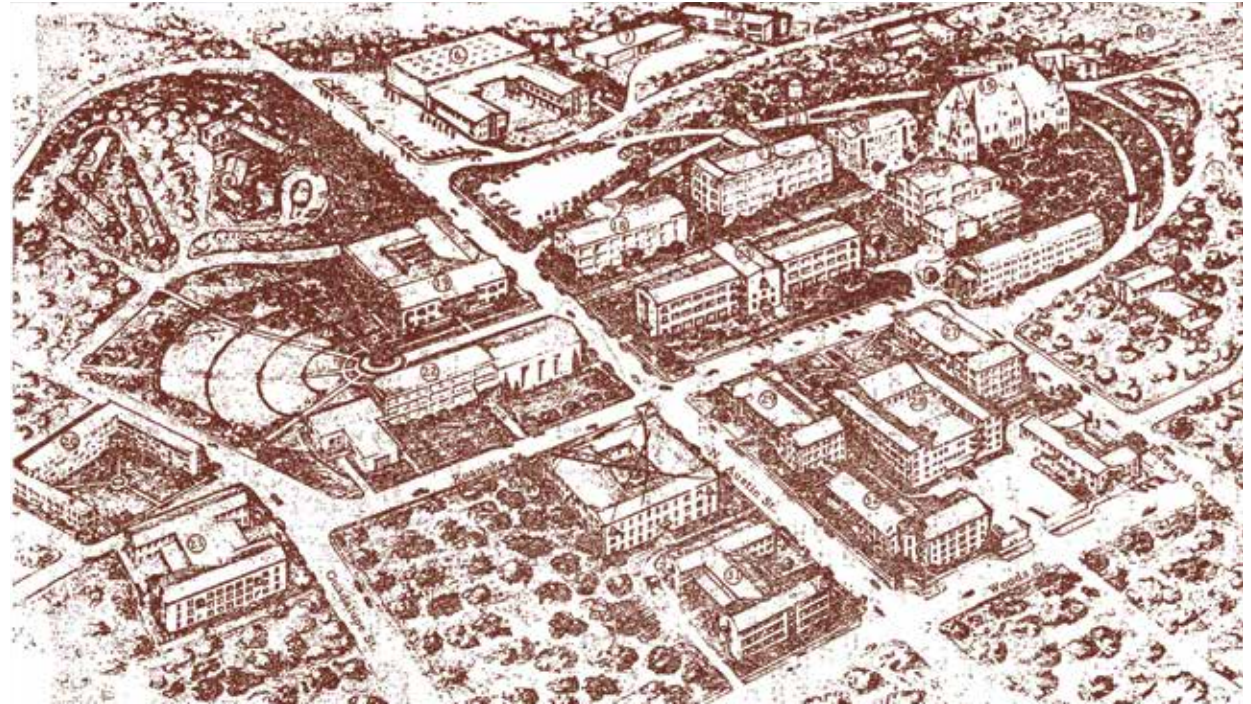
CAMPUS AERIAL PRE 1951



CAMPUS AERIAL 1950

## PREVIOUS CAMPUS MASTER PLANS

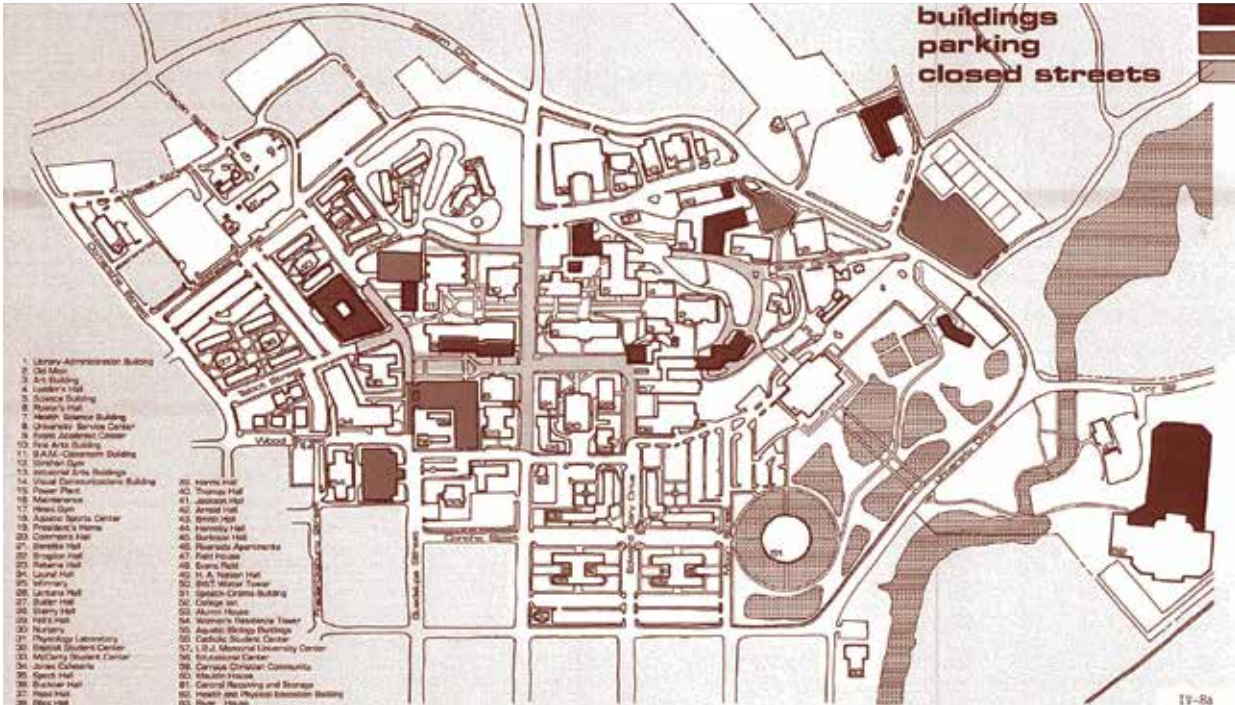
The physical plant could not be improved during the Depression and World War II. It was recognized that the end of the war would result in large numbers of students enrolling and there would not be enough buildings to take care of the expected increases. All of these concerns resulted in the need for a master plan to meet the requirements of an expanding campus. In 1942, the Board of Regents approved President Flowers' request to employ an architectural firm, Harvey P. Smith and Associates of San Antonio, Texas, to aid in immediate and long-range planning and determine the type of architecture that should be used. Between 1944 and 1966 there were modifications to the plan as the campus expanded outwardly from the central core, but essentially the basic principles of that plan were followed. Mr. Smith, who studied Latin-American architecture and played a major role in the restoration of many of the missions around San Antonio, aided in the remodeling and construction of 76 buildings on campus. A conscious effort was made to follow one type of architecture throughout, modifying it in some cases to meet specific requirements and to add some variety to the buildings. In general, the new buildings carried out the Spanish Colonial motif to mirror the history of the Spanish discovery of the river and the near-identical look of the hills, limestone, and native vegetation to that of similar parts of Spain. A major part of the plan was taking existing buildings, the Art



**1944 PLAN BY HARVEY P. SMITH AND ASSOCIATES**

Building and Flowers Hall, and adding Spanish-style elements to match the new planned buildings. Hence, gables, arches, columned porticos, hand painted Mexican floor tiles, and wrought iron elements were retrofitted to these buildings.

In 1958, a land acquisition was approved by the Board of Regents. As a result of the acquisition of the National Fish Hatchery, a long range planning study was approved by the Board of Regents in 1965 for the construction of the Speech/Drama building, Aqua Sports, Women's Residence Tower, Classroom/Office Building, and the expansion of the Student Center.



1972-77 AND 1977-82 PLANS BY LOCKWOOD, ANDREWS AND NEWNAM

The firm of Lockwood, Andrews and Newnam prepared the 1972-1977 and 1977-1982 Campus Master Plans for the University. The first plan called for a split-level three-building Education Center, Art Building and Student Center complex, a multi-purpose dome-topped sports arena (which never materialized), an addition to the University's Industrial Arts Building, expansion of the campus power plant, the construction of pedestrian walkways, and the development of additional hard-surface parking areas on campus. Linking the mini-dome and a solution to commuter parking problems, plans were to construct a 2,000-car commuter parking lot near the dome, a major pedestrian

overpass walkway that would link the dome area with the center of the campus, and the removal of the automobile from campus. The first plan also called for the low profile of buildings to preserve the view of Old Main from downtown and from other sections of the campus. The materials for the new buildings would respect existing structures in color and texture. Sand colored bricks were selected for the exterior and natural red Mexican tile was chosen for use on all pedestrian malls, recalling the existing tile roofs and the Spanish influence of the campus' early architecture.

The 1977-82 Plan recommended adding 500,000 square feet of classroom space, including eleven new structures and the renovation of many other campus facilities. Several considerations guided the development of the plan: a need for additional classroom and office space, the desire to preserve the central campus academic core, removing vehicular traffic from the campus (except for service and emergency vehicles), removing more parking, building landscaped pedestrian walkways, and preserving as much of the open green space as possible. These considerations resulted in the second plan calling for a high rise approach on several buildings to preserve current open green space and the closure of LBJ, Roanoke, Old Main, and State streets. Also included in the plan was a study regarding the purchase of the San Marcos Baptist Academy.

The 1984-1990 Campus Master Plan, prepared with the assistance of Spencer Associates, Inc. of Austin, Texas, provided general guidelines for development of the campus. The University's high enrollment growth rate, its low ratio of square-foot-per-student, the hilly terrain of much of the campus, and the age of many campus buildings were primary factors of the Master Plan. The plan identified the need for eleven new campus buildings and renovation of nine existing structures. University administration at that time wanted a plan that would include efficient, cost-effective, long-term plan design, and harmonious building and landscape design throughout the campus.

Aesthetic satisfaction and pride in tradition were also planning considerations, as were protection of the environment and flexibility. It had been decided that the new university library would be built on the western periphery of the academic core since the land was largely undeveloped and contained many building sites. Early deliberations resulted in the decision to plan for a direct westward expansion with a new mall corridor rather than establish a separate academic area west of Comanche. Along the mall corridor, buildings, including a Human Resource Center and the University Center, were sited in an orderly progression toward the Learning Resources Center. The extension of the academic mall was the unifying concept of the 1990 Plan.



**1984-1990 PLAN BY SPENCER ASSOCIATES, INC.**

Planned botanical displays were to feature vegetation native to the diverse ecological zones in the state. In conjunction with the Lady Bird Johnson Natural Wildflower Research Center, these displays would provide for ongoing research opportunities exploring the uses of Texas natural vegetation. A major goal of the plan was to reduce conflicts between pedestrians and automobiles and to facilitate pedestrian movement within the interior of the

campus. An automobile circulation concept was expressed in the plan, calling for the realignment of the intersection of Sessom Drive, Academy Street, and Moore Street. Two parking structures, and three additional surface parking lots were proposed to address the parking needs.





**1990-2000 PLAN BY PIERCE GOODWIN ALEXANDER AND LINVILLE AND 1995-2005 PLAN BY JPJ ARCHITECTS, INC.**

The 1990-2000 Plan was prepared by the architectural firm of Pierce Goodwin Alexander and Linville. Proposed facilities were outlined in a two-phase plan. Phase I included the construction of five new buildings, fourteen major renovations, and ten minor renovations. Improvement of three recreational fields and four major demolitions were also proposed. Phase II included three new educational and general buildings and one new auxiliary structure.

With the 1995-2005 Plan, the University moved to a ten year review and update cycle. The plan prepared by JPJ Architects, Inc. of Dallas, Texas, included a comprehensive Facilities Analysis

and ADA Survey Report. Fundamental design concepts incorporated in the plan included reinforcing the existing campus fabric with the incremental addition of necessary academic and support space, strengthening vehicular circulation at the campus perimeter while reinforcing the pedestrian environment within, and creating a sense of arrival on campus at major entry points. The plan preserved open space as a valued asset to the quality of student life and put forth the premise that parking lots do not qualify as open space. The plan promoted the knitting together of living and learning relationships with the renovation of close-in housing. It called for the expansion of

the pedestrian mall concept, the continuance of multiple entry conditions to disseminate traffic, and the location of control booths and information services.

Within the context of the Landscape Master Plan prepared in 1980 by Schrickel, Rollins and Associates, Inc., it was recommended that the campus core have a formal landscape while the east and west ends would have an informal, natural treatment. Plantings were to provide both clearly developed intimate spaces and broad indigenous areas sympathetic to climatic conditions of the region. Some 454,477 square feet of new educational and general construction was proposed. Due to a leveling in demand for additional residential space on campus, recommendations in previous master plans for the west campus were put on hold until the end of the planning period. Expanded recreational use of the west campus was encouraged instead.

In 2004, Texas State hired Broaddus and Associates, an Austin-based program management and consulting services firm, and Ayers/Saint/Gross, a Washington DC Architecture and Planning firm, to provide guidance throughout the master planning process. Texas State had already launched the campus master planning process to identify critical success factors to ensure the success of the process and that the Plan itself would service the University well. Key planning assumptions and planning constraints were identified, and Guiding Principles were written which focused on identify, community, natural environment, architecture, and mobility.

Throughout the master planning process, every land parcel was evaluated to determine if it was achieving its highest and best use. The analysis highlighted the fact that many areas designated as surface parking lots could be better utilized as building sites or as open space. It was determined that surface parking lots totaled 85 acres which was equivalent in area to the historic core of the campus. The underlying goal of the Master Plan was to reverse the trend of creating impervious surfaces and actively work toward the reduction of existing impervious surfaces. This goal became known as the Gray-to-Green Transformation.

The 2006-2015 Plan supported new and ongoing programmatic initiatives with specific recommendations for additional academic space while respecting the long-term aspirations of enhancing the university's image. It defined opportunities for accommodating growth and addressed access and vehicular management.



TEXAS STATE  
UNIVERSITY  
SAN MARCOS  
Campus Master Plan  
and Guidelines  
2006 - 2015

It achieved both a functional and attractive student centered campus environment.

Knowing first impressions sometimes convey unintended messages, design guidelines for both architecture and landscape to connect the different parts of the campus and create a sense of place were formalized. The plan provided suggestions for unifying the campus with appropriate entrances and borders to indicate arrival on campus.

A long term vision was included that reflected the potential for development and land use

strategies for the campus. The ten-year Master Plan was based on the financial planning and space needs analysis and represented the first set of changes necessary in achieving the long term vision. Some of the projects included a new Performing Arts Center; the Undergraduate Academic Center; additions to Family and Consumer Sciences, the Student Recreation Center, and the Cogeneration Plan; three parking garages, a residence hall complex; several building renovations; and several grounds improvements.

Five years into the 2006-2015 Campus Master Plan and Guidelines, Texas State University made significant progress developing the campus. The University completed, or had in progress, 67% of the projects listed in the master plan. More than ten of those were major construction projects, including two parking garages, Bobcat Stadium West Side Complex, the expansion of the Student Recreation Center, and design of both a 600-bed student housing facility and a new Undergraduate Academic Center. Grounds projects, such as the conversion of Concho Green, transformed pedestrian movement on campus, while roads projects, such as the Tomás Rivera and Student Center Drive realignment, clarified vehicular flow.

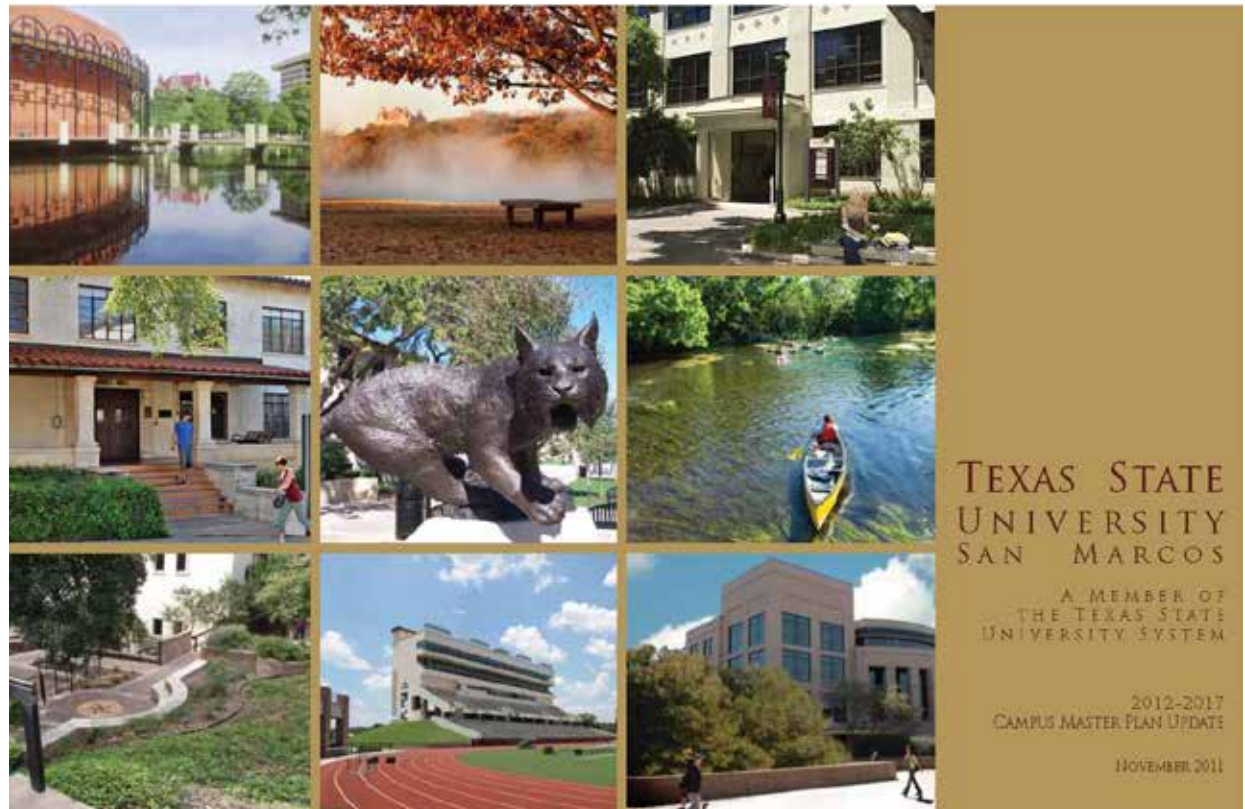
However, half-way through the 2006-2015 planning window, the University was facing some significant changes that altered several of the implementation recommendations identified in the plan. With student enrollment reaching new highs each year, priorities for on-campus student housing, athletics and recreation fields, complete transportation systems and expanded utilities infrastructure capacities came to the forefront, postponing, or in some cases replacing, projects initially identified within the ten-year span.

Led by Broaddus Planning of Austin, Texas, the Campus Master Plan Update was not a full-fledged master plan and did not attempt to revise the previous plan. Rather, the Update focused on advancing elements of the Campus Master Plan the University had identified as needing further evaluation,

addressing the following five aspects: sustainability, transportation system, utility and communication infrastructure, residence life and on-campus housing, athletics, campus recreation, and the department of Health & Human Performance.

Ultimately, the goal of the Campus Master Plan Update was to identify and prioritize a revised list of implementation projects for the upcoming five- to seven-year horizon. The Campus Master Plan Update was focused on the 475-acre

San Marcos Campus, which included the 101-acre Round Rock Campus, and a 38-acre undeveloped tract, which became known as STAR Park. The Round Rock campus and STAR Park were not part of the 2006-2015 Campus Master Plan but were specifically addressed in the Update.



# ARCHITECTURAL DESIGN GUIDELINES

## SITE AND MATERIALS

While the Texas State campus does not have a single, strong, coherent architectural vocabulary, it does have historic buildings such as Old Main that have great symbolic value. The design of new buildings within the campus is an act that needs to be carefully considered. In order for new buildings to be integrated into the existing fabric, care must be taken to understand what has already been built, the circumstance that made it possible, and how it impacts the overall campus environment.

With the creation of new buildings comes the opportunity to be critical and offer ways to improve upon precedent. The creation of new places and spaces on the campus should be an occasion to reaffirm what it means to be on the Texas State campus and appreciate what a campus in the hill country can be.

The text aspires to provoke a discourse about what it means to design buildings in a particular place. The various guidelines in this section are conceived as part of a precedent study and as part of a typological study - both essential to the process of designing buildings.

The character of the architecture on a campus reinforces the idea of pedestrian scale. Buildings shall be articulated to break down the scale into a tripartite vertical organization. The building facade that addresses an open space, pedestrian corridor, or a street shall be articulated with windows and entry ways that provide interest and stir curiosity. Carefully articulated architectural elements help to define and beautify buildings and in turn enliven the public realm.

Texas State is committed to building a campus of architectural, engineering, and environmental excellence. It will follow nationally recognized sustainability principles and practices. The University will strive to demonstrate good environmental stewardship by achieving Green Building Council objectives.



Buildings shall be oriented to open spaces, pedestrian corridors, and streets. These guidelines prescribe the major building face that must be built on the build-to-line.



Site utility structures such as HVAC equipment, utility meters, satellite dishes, transformers, and other mechanical equipment shall be located in designated service areas so as not to be visible from open spaces on campus, pedestrian corridors, or primary streets.

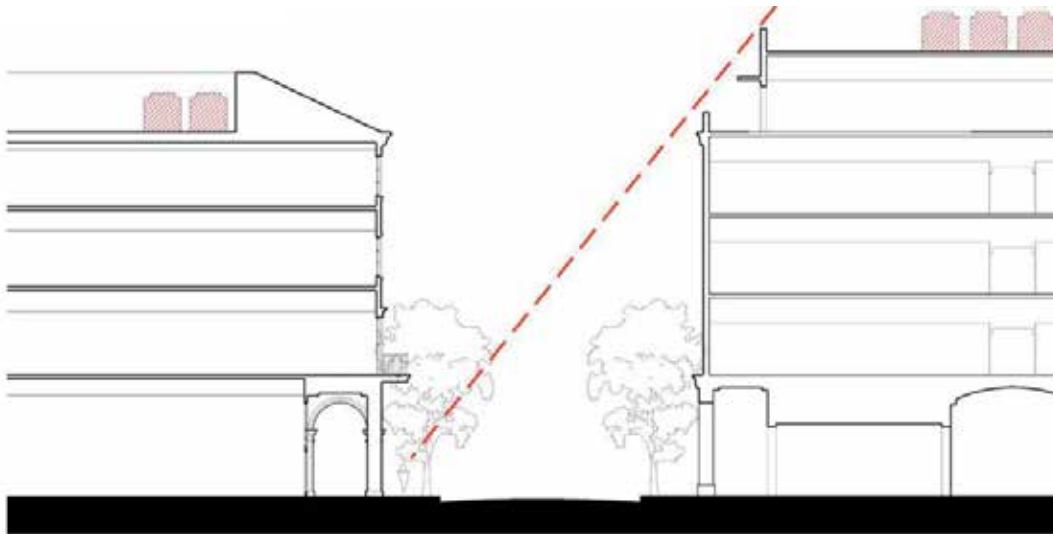


Build-to-lines must have a minimum 60% of their frontage occupied by the building facade. When the build-to-line is fronting a public space, major pedestrian corridor, or street the facade must occupy a minimum of 90% of the build-to-line.

Buildings facades should align with one another to form a continuous edge when facing open spaces, pedestrian corridors, and streets.



All roofs on the San Marcos Campus shall have the appearance of terra cotta red tile. The roof shall be fairly uniform in color and no speckled texture is permitted.



Service and mechanical units located on the roof of buildings should not be visible from the pedestrian perspective. They should be shielded with a parapet or set back from the building edge.



Exterior materials of new buildings should have tan brick with contrasting accents. Examples are Old Main and McCoy Hall. Painting the exterior of buildings is discouraged.

# ARCHITECTURAL DESIGN GUIDELINES

## FACADE ARTICULATION

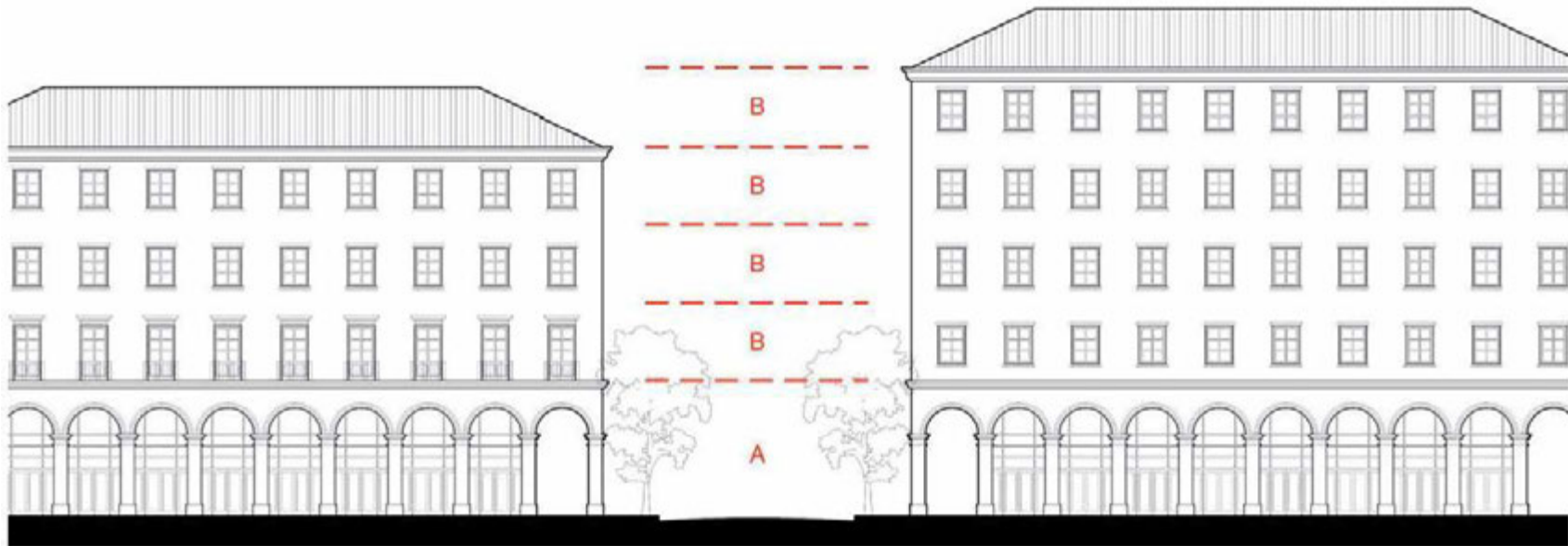


Facades that address an open space, pedestrian corridors, or streets, should not have blank unarticulated wall surfaces.

Brick articulation is encouraged as a way to create visual interest and hierarchy. Door and window lintels, sills, and floor coursing should be articulated.



Buildings should mediate the slope of a site. The first story of a building may be as high as 20'.

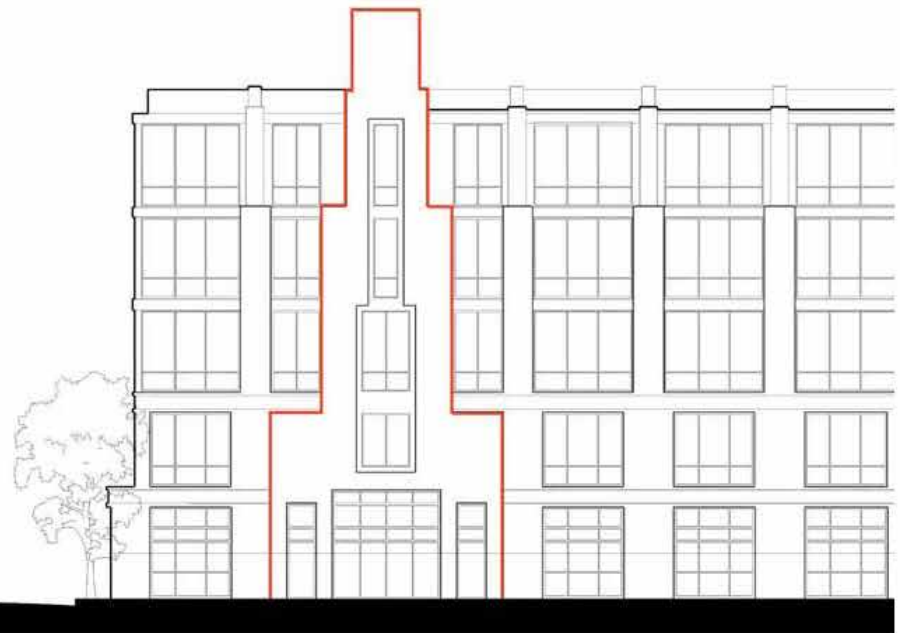


Ground level floor-to-floor dimension (A) should be greater than upper level floors (B).





The facade should clearly express the distinction between the ground level and the upper floors of a building to create a clear base.



The facade of a building should clearly indicate the location of the main entrance.





Maximum height shall be six stories, except for figural elements or architectural embellishments, such as a tower.



To avoid a monolithic appearance, facades shall be vertically articulated with bays no larger than 25 feet in width.

# ARCHITECTURAL DESIGN GUIDELINES

## FENESTRATION AND ENCROACHMENTS



Arcades and colonnades shall provide a minimum width of 10 feet clear for pedestrian passage.



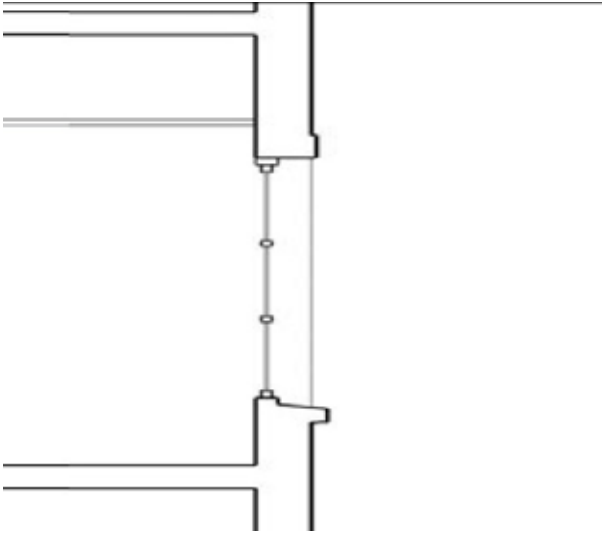
On the ground level, when a facade faces an open space, pedestrian corridor, or street, the minimum percentage of surface that is glazed shall be 60%. No reflective or tinted glass is permitted.



Maximum height shall be six stories, except for figural elements or architectural embellishments, such as a tower.



Upper story windows may be smaller and have less detail and embellishment than windows on lower levels.



Windows shall be recessed from the exterior plane of the facade and have the appearance of a punched opening in the wall surface.



Lintels above windows should be expressed, especially in exposed masonry construction. Window sills must be expressed on the facade and shall protrude beyond the plane of the facade so as to form a drip edge.



Horizontally proportioned openings and windows shall be discouraged.



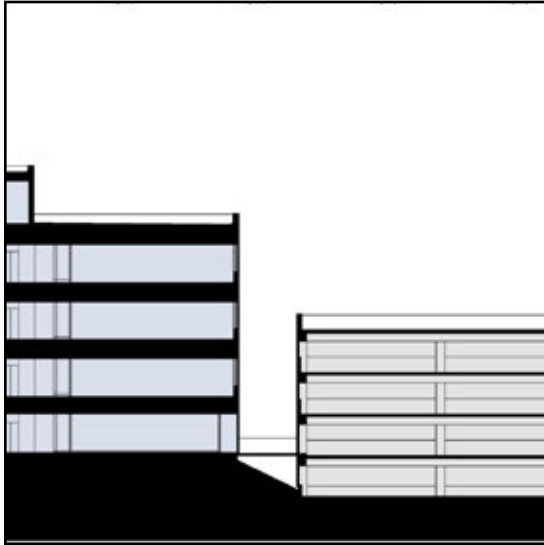
Openings in walls and windows shall be vertically proportioned.

# ARCHITECTURAL DESIGN GUIDELINES

## STRUCTURED PARKING GARAGE

The visual impact of parking should be minimized. Surface parking lots should be screened from view by vegetation, brick or stone walls, or metal railings. Various methods can be employed to improve the appearance of structured parking garages.

- The building facade of the parking structures should be designed to screen views of automobiles and sloped parking decks. Place level parking decks against exterior walls with sloped decks in the center of the structure.
- Safety and security should be primary considerations. Location and visibility of stairs and elevators, graphics, vehicle access control, call boxes, lighting, and any camera surveillance should enhance safety. Structure design should include wayfinding for pedestrians and disabled, with measures such as color coding by floor, easily identifiable entrances/exits and elevators, and legible signage.
- Materials selection and structure design should reflect the all-weather nature of most structures, especially control of water and drainage.
- Parking structures should be planned to have a minimum of at least two access and egress points. Turn pockets are recommended for left turns from adjacent streets into the structure.
- Incorporating pedestrian-oriented uses at street level can reduce the visual impact of parking structures. Sometimes a depth of 12-feet along the front of the building is enough to provide space for newsstands, service retail, and other viable uses.
- Design strategies such as similar materials, a continuous frieze, cornice, canopy, overhang, trellis, or other devices on the facade of the building can visually integrate the parking structure with adjacent buildings.
- The structured parking garage should incorporate a well-lit pedestrian walkway, stairway, or ramp from the sidewalk to the upper level of the building.
- Parking structures tend to be massive. Therefore, special consideration should be given to building materials, detailing, landscaping, and topographic changes. Parking structures should be built into the topography whenever possible.
- The height of the parking garage should be no greater than that of the adjacent buildings or tree canopy. A building lining a parking garage should always be taller than the garage it is shielding.



The liner building (blue) is taller than the adjacent garage (grey) shielding it from view. Lowering the ground level of the garage helps to minimize its appearance.



Siting a garage below a plaza reduces the visual impact of the automobile.



The Matthews Street Parking Garage accommodates a 40-foot grade change. The topographic change eliminates the need for an internal ramp, each level has a separate entrance.



Articulating a window pattern with vertical rather than horizontal patterns reduces the perceived mass of a garage.

## GUIDELINES FOR HISTORIC BUILDINGS

The guidelines for existing historic buildings on the San Marcos Campus aim to reinforce those positive elements, patterns, and character-defining features that help create a unique sense of place, and are intended to serve as a framework for sensitive rehabilitation of these properties. These recommendations are compatible with the Secretary of the Interior's Standards for Rehabilitation and nationally recognized preservation practices.

### CARE AND MAINTENANCE OF HISTORIC CAMPUS PROPERTIES

Conduct an annual inspection of the historic campus properties to determine maintenance needs. Examine the integrity of building materials including roof and drainage systems, paint films, masonry and mortar conditions, metalwork, windows, and doors. Use this information to implement a maintenance schedule to ensure the long-term sustainability of all historic properties on campus.

Clean masonry to halt deterioration or heavy soiling. Clean buildings using the gentlest means possible. Do not use sandblasting or high-pressure water blasting to clean masonry under any circumstances.

Repaint deteriorated masonry using new mortar that matches the historic mortar in color, composition, texture, and tooling.



Adjust sprinkler heads to avoid spraying building foundations. Move planting beds away from building foundations to the extent possible.

Maintain building gutters and downspouts through an annual inspection and cleaning program.

### RETAINING AND PRESERVING HISTORIC FEATURES AND DESIGN ELEMENTS

Maintain and preserve original building materials that define the character of the historic buildings on campus, including the masonry, wood and steel window sash systems, copper gutters and downspouts, solid and paneled wood entry doors, original door and window hardware, ceramic and concrete tile, clay tile roofs, and other features as identified in the 2005 historic resource survey.

Replace severely deteriorated materials in kind, matching the historic building fabric in shape, dimension, color, and material.

Preserve existing trees and landscape features, with particular attention to the mature oak trees throughout campus.

### RECONSTRUCTING MISSING HISTORIC FEATURES AND DESIGN ELEMENTS

Replace materials to match the historic materials, dimensions, detailing, and installation methods, where original building materials are deteriorated beyond repair. Salvage and archive samples of removed building materials for the historical record.

Review original construction documents for the building on file at Texas State University, prior to any substantial rehabilitation of a historic building on campus to determine where missing





historic features may be reconstructed, including open loggias, windows, doors, balconettes, gutters and downspouts, and other architectural detailing.

Remove modern infill of exterior porches and loggias to restore the original appearance of the historic building.

### **ACCESSIBILITY IMPROVEMENTS**

Achieve universal accessibility to historic campus buildings in a manner that does not alter or destroy the historic integrity of the building.

Review and implement alternate accessibility requirements as referenced in the Texas Accessibility Standards in the design phase of any accessibility project.

### **NEW ADDITIONS TO HISTORIC PROPERTIES**

As the San Marcos Campus evolves, it may be desirable to add on to a historic building. In these cases, the following recommendations should be taken into consideration:

- Make additions to the secondary or tertiary facades of historic buildings in a manner that does not overshadow the historic building.
- Avoid replication of historic details in new construction. The new work should be differentiated from the old, and should be compatible with the massing, size, scale, and architectural features of the historic building.

- Undertake new additions and building alterations in a manner that does not remove or irreversibly obscure character-defining features of the historic building.
- Secure formal review by the Texas Historical Commission of all additions and alterations to historic properties.

### **DOCUMENTATION OF REMOVAL**

Contact the Texas Historical Commission to determine the appropriate level of recordation of a building when it is determined that an older or historic building must be removed from campus. This recordation typically follows the guidelines developed by the Historic American Buildings Survey, and ranges from photographic documentation to full plans and elevations of the building. This documentation should be safely stored in the university archives to preserve the historical record of the university.

# LANDSCAPE DESIGN GUIDELINES

## DEFINITIONS

- **Open Space:** Open spaces define the character of the University. At Texas State University landscape is a unifying element that integrates the San Marcos Campus' eclectic styles of buildings. The Quad anchors Old Main at one end to the Albert B. Alkek Library on the other. Future open spaces will be clearly identifiable, each with its own characteristics.
- **Amphitheater:** An oval or round space with tiers of seats rising gradually outward from a central area.
- **Athletic and Recreation Field:** A piece of land prepared for playing a game.
- **Frontage:** An area in front of a building. Adjacent buildings, especially those along the Concho Green and the Quad, will be unified with consistent plantings and furnishings.
- **Garden:** A garden is a planned space, usually outdoors, set aside for the display, cultivation, and enjoyment of plant material and nature.
- **Interstitial Area:** An area without precise use, located between functionally determined built configurations.
- **Lawn:** A lawn is a field of cultivated and mowed grass acting as a gathering point. Sewell Park and Concho Green currently serve as campus lawns.
- **Plaza:** An open public space often, defined by buildings at its edges, which are primarily paved. Bobcat Trail is an example of a plaza.

## LIGHTING

Lighting focuses on functionality, efficiency, and style. Functionally, luminaries serve as a source of light and safety for pedestrian and vehicular needs. They also accent and enhance buildings and landscape elements. They may be used to light nighttime events at athletic fields. Stylistically, each type of luminaire acts to transform the overall environment in which it is placed. They provide an architectural accent during the day and highlight the architecture and open space elements at night. There are two primary lights, one for pedestrian walkways and one for vehicular use.

## PEDESTRIAN PAVING

Paths are identified as primary, secondary, and tertiary walkways. The primary walkway will form the central spine through the campus. This walkway begins at the circle in front of Blanco Hall and extending east through the Mall until it reaches Old Main; it is interrupted by the Student Center plaza. The secondary walkways typically lead to the primary entries of buildings. The tertiary walks are preferred pedestrian routes that connect the other walks together. Plazas are variations on the path design and should respond to the surrounding buildings and allotted space. A hierarchy of materials that define these zones will be implemented over time with intermediary measures used as well.

The sidewalk paving standard on the Texas State University campus shall be blended terra cotta concrete pavers edged with bands of brushed concrete paving. It shall be the dominant material for primary and secondary walkways and plazas. When a pattern is used on primary and secondary walkways, it may be articulated with bands of concrete

or concrete accent pavers. Over time much of the aggregate concrete will be replaced. While the conversion to the new standard is being implemented there may be some areas where aggregate concrete shall be edged with the standard brushed concrete. If possible, aggregate concrete square shall be larger than 3-feet by 3-feet. Bike parking zones are paved with the Eco pavers filled with gray stone chips to increase on-site water infiltration. Custom pavers with the Texas State University logo will be used selectively as appropriate. These will be placed at corners and street crossings to alert pedestrians that they have entered the campus.

Primary walkways are major pedestrian routes and should be a minimum of 18-feet wide. Secondary walkways should be 10-feet wide, while tertiary walks should be six-feet wide. To ensure that paving construction supports necessary loads, paving is defined as pedestrian or vehicular.

Typical pedestrian paving is any path six-feet or less in width. For this application, concrete pavers are to be four-inch by eight-inch by 2 3/8 inch thick with a one-inch sand setting bed, filter fabric and six-inch aggregate base for pedestrian applications. Eco pavers are 4 1/2 inches by nine inches by 3 1/8 inch thick, have the same setting bed as the previous application, and have gray gravel chips in the exposed crevasses. Concrete paving is four inches thick over a six-inch aggregate base.

Typical vehicular paving includes all paths over six-feet in width. Concrete pavers are to be four-inch by eight-inch by 3 1/8 inch thick with a one-inch sand setting bed, six-inch concrete base and eight-inch aggregate sub-base.

# LANDSCAPE DESIGN GUIDELINES CONTINUED

## SITE FURNISHINGS

The use of standardized furnishings and amenities throughout the campus unifies the outdoor spaces and helps to establish an identity unique to Texas State University. Standards are established and are adhered to when adding new building or open space constructions.

- **Finishes:** All exterior products shall have a powder coating of black. Black is timeless. Black also complements the Spanish Colonial style of architecture found on campus.
- **Tables and Chairs:** Victor Stanley Steelsites Series RND-363 or equivalent in designated study or relaxation areas. Victor Stanley Steelsites Series PRSCC-8 with PRSCT-36R or equivalent for use near dining facilities with outside seating (e.g., The Den)
- **Benches:** Victor Stanley Steelsites RB Series-RMFC-24 6 foot bench or equivalent. Benches should be placed over a pad of the same material as the adjacent paving and anchored with concrete footings.
- **Bollards:** Landscapeforms “Annapolis” six inch bollard or equivalent without light, removable or embedded.
- **Bike Racks:** Dero Hoop Rack or equivalent. Bike racks are to be spaced 36 inches on center. A minimum three-foot aisle is allowed if arranged vertically.
- **Receptacles:** Victor Stanley Ironsites Series S-45 and S-42 or equivalent. The S-45 is a 45-gallon receptacle appropriate for both litter and recycling. The S-42 is a 36-gallon receptacle which will be used for lower traffic areas and buildings. All receptacles will have the Texas State logo on their top horizontal band. The recycling containers will have a designated recycling lid.
- **Ash Urns:** Victor Stanley Ironsites Series S-20 or equivalent.
- **Pedestrian Lights:** The Texas State pedestrian light is the AAL Providence series PROV-H3 or equivalent with a 12-foot DB8 pole. Installation shall follow Texas State Design Construction Standards. Typical installation spaces poles at 60 feet on center. Lamp ballast is 100-watt metal halide (100MH) for primary walkway areas to achieve .75 -1.5 foot-candles and 175 watt metal halide (175MH) for plazas, entrances, and bus stops to achieve 0.5-1.0 foot-candles.
- **Vehicular Lights:** The Texas State vehicular light is the Gardco Gullwing series G18 or equivalent with a 25-foot light round aluminum pole (RA5 with base STB). Installation shall follow Texas State Design Construction Standards. Typical installation spaces poles at 120 feet on center. Lamp ballast is 320 watt metal halide for parking areas to achieve 0.5 -1.0 foot-candles.

## DESIGN REVIEW

To ensure that the guidelines and University Master Plan are being interpreted in the spirit that they are intended, a Design Review Process was established. The guidelines are provided to architects, planners, and landscape architects, who wish to build on this campus. Decisions affecting the physical and aesthetic qualities of the campus are not the province of any one individual or position. All project designs are approved by the President.

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# REVISED PLANT PALETTE

Regional landscape zones define the campus landscape. The plateau and the prairie create two distinct landscape typologies. The presence of the San Marcos River and the ponds add a third landscape zone to the Texas State University campus wetlands.

## PLATEAU

If any loose cover ever cloaked the Edwards Plateau, it has long since been carried away by erosion. As an elevated, comparatively level expanse of land, it is an erosional region with thin soil over limestone.

## PRAIRIE













Topography of the Blackland Prairies region is gently rolling to nearly level and well dissected for rapid surface drainage. It is an extensive tract of level or rolling land covered with coarse grass and characterized by a deep, fertile soil, a dark-colored alkaline clay interspersed with some gray acid sandy loams.

## WETLAND













Wetlands are areas where water covers the soil or is present either at or near the surface of the soil all year or for varying periods of time during the year, including during the growing season. Water saturation largely determines how the soil develops and the types of plant communities living in and on the soil. Wetlands may support both aquatic and terrestrial species. The prolonged presence of water creates conditions that favor the growth of specific plants and promotes the development of characteristic wetland soils.

The plant palette, that follows, is structured to reflect these three landscape zones with a predominance of native plants. Plant material should be selected from the plant list that follows. Variations from this list must be submitted to the Director of Grounds Operations and approved by the Associate Vice President for Facilities.

# PLANT PALETTE













SHADE TREES		SCIENTIFIC NAME COMMON NAME	ZONE/ LANDSCAPE APPLICATION	DECIDUOUS/ EVERGREEN	HEIGHT/WIDTH	EXPOSURE	GROWTH RATE	FRUIT/BERRY	FLOWER	BLOOM TIME	RECOMMENDED PLANTING SIZE	GENERAL COMMENTS
		Acer Sp	W/PL/Pr	D	80'hx40'w	Sun	Fast-Medium	Samara Seeds	N/A	N/A	5-20 gal.	Desirable shade tree with reliable fall.
		<i>Carya illinoensis</i> / Pecan	PR/W	D	70'hx60'w	Sun	Medium	Pecans in Fall	N/A	N/A	3" cont.	Official State of Texas tree; best used away from sidewalks & cars due to sticky sap drip & nuts; great shade tree; long-lived. (Replacement & infill)
		+ <i>Cupressus arizonica</i> / Arizona Cypress	PL	E	40'hx30'w	Sun	Fast	N/A	N/A	N/A	20 gal.	Dense plant; blue-green foliage; very feathery.
		+ <i>Fraxinus texensis</i> / Texas Ash	PL	D	40'hx40'w	Sun/Part Shade	Medium-Fast	Seeds	N/A	N/A	3" cal.	Beautiful fall color (red/orange/yellows).
		Liquidambar styraciflua / Sweetgum	W	D	100'hx60'w	Sun	Medium	Thorny Balls	N/A	N/A	15 - 20 gal.	Fall color of red, yellow, orange, maroon. Contained growth habit.
		<i>Magnolia grandiflora</i> / Southern Magnolia	PR	E	60'hx30'w	Sun	Medium	Red Seeds	Creamy White	April-July	30 gal.	Good for screening; beautiful flowers; grows in wide habitat in Texas.

# PLANT PALETTE








		SCIENTIFIC NAME COMMON NAME	ZONE/ LANDSCAPE APPLICATION	DECIDUOUS/ EVERGREEN	HEIGHT/WIDTH	EXPOSURE	GROWTH RATE	FRUIT/BERRY	FLOWER	BLOOM TIME	RECOMMENDED PLANTING SIZE	GENERAL COMMENTS
		<i>Platanus mexicana</i> / Mexican Sycamore	PR	D	80'hx70'w	Sun	Fast	Brown Balls	N/A	N/A	15 - 20 gal.	Exfoliating bark. Large silver leaves.
		<i>Platanus occidentalis</i> / American Sycamore	W	D	80'hx70'w	Sun	Fast	Brown Bal	N/A	N/A	15 - 20 gal.	Exfoliating Bark.
		<i>Populus deltoides</i> / Cottonwood	W/PR	D	100'hx80'w	Sun	Fast	Silky White	N/A	N/A	15 - 20 gal.	Yellow Fall color. Very large tree.
		<i>Prosopis glandulosa</i> / Mesquite	PR	D	40'hx40'w	Sun	Medium	N/A	N/A	N/A	15 - 20 gal.	Open canopy with light shade cast. Drought tolerant.
		<i>Quercus spp</i> / Oak	PL/PR	D/E	100'hx80'w	Sun	Medium	Acorn	N/A	N/A	15 - 20 gal.	Sturdy desirable shade trees. Various sizes.
		<i>Sabal texana</i> / Texas Palm	W/PR	E	30'hx10'w	Sun	Slow-Medium	Seeds	N/A	N/A	5 - 20 gal.	Native Texas Palm-winter hardy.









# PLANT PALETTE

SCIENTIFIC NAME COMMON NAME	ZONE/ LANDSCAPE APPLICATION	DECIDUOUS/ EVERGREEN	HEIGHT/WIDTH	EXPOSURE	GROWTH RATE	FRUIT/BERRY	FLOWER	BLOOM TIME	RECOMMENDED PLANTING SIZE	GENERAL COMMENTS
  <i>Sapindus drummondii</i> / Western Soap- berry	PL/PR	D	40'x20'w	Sun	Medium	Showy Fruit	N/A	N/A	5 - 20 gal.	Good native with fall color and nice fruit
  <i>Taxodium distichum</i> / Bald Cypress	PR/W	D	70'x30'w	Sun	Medium	Small Cones	N/A	March	3" cal.	Best known river edge shade tree in San Marcos; tolerates dry & moist soils; coppery fall color.
  + <i>Taxodium mucronatum</i> / Montezuma Cypress	PR	E	45'h	Sun	Medium-Fast	Small Cones	N/A	March	3" cal.	Can tolerate drier conditions than Bald Cypress; mostly evergreen.
  <i>Ulmus crassifolia</i> / Cedar Elm	PL/PR	D	60'x30'w	Sun	Medium	Winged Seeds	N/A	N/A	3" cal.	Best tree for shade & lack of required maintenance; no pests; gold & yellow fall color; plant in clumps / patterns. Native
  <i>Ulmus parvifolia</i> / Lacebark Elm	PL/PR	D	50'x40'w	Sun	Fast	N/A	N/A	Fall Seeds	3" cal.	Good fast-growing shade tree; few pests; bark is wonderful: flaky, reddish tan - its best feature.
<b>ORNAMENTAL TREES</b>										
  <i>Acacia farnesiana</i> / Huisache	PL	D	25'x25'w	Sun	Fast	Small Seeds	Yellow-Gold	March-April	10-20 gal.	Very tough, fast-growing xeric tree; usefull for slope stabilization.













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		<i>Aesculus pavia</i> / Red Buckeye	PL/PR	D	20'hx20'w	Sun/Shade	Slow	Large Brown Rounded	Red	March	5-10 gal.	Understory small tree with ornamental flowers. Drought tolerant.
		<i>Bauhinia congesta</i> / Anaconcho Orchid Tree	PL/PR-A	D	10'hx8'w	Sun/Part Shade	Fast	Flat Legume, Small & Inconspicuous	White or Pale Pink	Spring	20 gal.	Usually multi-trunked with beautiful light green leaves; best used as an understory tree; seems to like limestone conditions; drought tolerant.
		<i>Cercis canadensis 'texana'</i> / Texas Redbud	PL/PR	D	25'hx25'w	Sun/Shade	Medium - Fast	N/A	Pink	Feb-Mar	20 gal.	Herald of Spring; use in masses
		<i>Cercis canadensis 'mexicana'</i> / Mexican Redbud	PL/PR	D	20'hx20'w	Sun/Shade	Medium-Fast	N/A	Pink - Lavender	Feb-Mar	20 gal.	Same as Texan, but Mexican redbud is best as multi-trunk and leaves are crinkled.
		<i>Cornus drummondii</i> / <i>Roughleaf dogwood</i>	W-PR	D	20'hx20'w	Sun/Part Shade	Medium-Fast	White Drupe	Creamy White	April-May	5-15 gal.	White spring flowers; red fall color; understory; moist areas; wildlife plant
		+ <i>Chilopsis linearis</i> / Desert Willow	PL	D	20'hx20'w	Sun	Medium-Fast	Long Seed Pods	Pink to Violet	Late Spring - Early Fall	20 gal.	Prefers dry locations; good for hot parking lots; striking when up-lit.













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 <i>Cotinus obovatus</i> /Smoketree	PR	D	25'hx25'w	Sun	Medium-Fast	N/A	Pink - Lavender	Feb-Mar	20 gal.	Same as Texan, but Mexican redbud is best as multi-trunk and leaves are crinkled.
 <i>Cupressus sempervirens</i> / Italian Cypress	PL	D	30'hx4'w	Sun	Medium-Fast	White Drupe	Creamy White	April-May	5-15 gal.	White spring flowers; red fall color; understory; moist areas; wildlife plant
 + <i>Diospyros texana</i> Texas Persimmon	PL	E	15'hx10'w	Sun	Medium-Fast	Long Seed Pods	Pink to Violet	Late Spring - Early Fall	20 gal.	Prefers dry locations; good for hot parking lots; striking when up-lit.
 <i>Hibiscus syriacus</i> / Rose of Sharon cultivars	PL/PR	D	8'hx6'w	Sun	Medium	N/A	Give Smoky appearance	Spring	10 - 15 gal.	Beautiful Fall color hold. Orange, interesting flowers.
 <i>Cupressus sempervirens</i> / Italian Cypress	PL	D	30'hx4'w	Sun	Medium-Fast	N/A	N/A	N/A	5 - 20 gal.	Upright evergreen. Good for small vertical spaces.
 + <i>Diospyros texana</i> Texas Persimmon	PL	E	15'hx10'w	Sun	Slow	Small Round Fruit / Black	White	Early Spring	20 gal.	Beautifully shaped & multi-trunked; good small tree for dry locations; excellent native; flaky exfoliating trunk.













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 	<i>Hibiscus syriacus</i> / Rose of Sharon cultivars	PL/PR	D	8'hx6'w	Sun	Slow-Medium	N/A	Many Colors	Late Spring	10 - 15 gal.	Many colors with very ornamental blooms. Accent plant.
 	<i>Ilex decidua</i> / Possum Haw	PL-PR	D	15'hx10'w	Sun/Shade	Medium - Fast	Bright Red	N/A	Late Fall to Winter	6 ft. Container	Under used Winter-time tree; one of the best for red Christmastime color; good for wildlife food
 	<i>Ilex vomitoria</i> / Yaupon Holly	PL-PR	E	15'hx10'w	Sun/Shade	Medium - Fast	Bright Red	N/A	Winter	20 gal.	Good for screening and accent
 	<i>Juniperus virginiana</i> / Eastern red cedar	PL-PR	E	50'hx40'w	Sun	Medium - Fast	Blue berries	N/A	Winter	5-15 gal.	Fast growing evergreen-screen plant -valuable to wildlife
 	<i>Lagerstroemia indica</i> / Crape Myrtle	PL-PR	D	25'hx15'w	Sun	Fast	Seeds follow flowers	White/Pink/ Purple/Red	Summer	15-45 gal.	Light-colored bark; good silhouette; blooms when most other trees don't; grows everywhere
 	<i>Leucaena retusa</i> / Goldenball Leadtree	PL-PR	D	25'hx15'w	Sun	Slow	Green apple fruit; very bitter but can be used in jellies.	White	April	5 gal.	Rare plant, but excellent Hill Country native; hard to find; multiple colors on Fall foliage; wonderful fragrance.



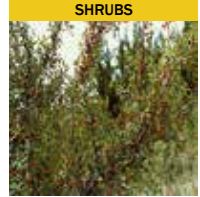



# PLANT PALETTE

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  <i>Myrospermum sousanum</i> / Arroyo Sweetwood	PL-PR	D	25'hx15'w	Sun	Medium - Fast	Flat brown pods	Creamy white	April - May	5-15 gal.	Very heat and drought tolerant, small tree with light shade
  <i>Parkinsonia aculeata</i> / Retama	PL	D	20'hx15'w	Sun	Fast	N/A	Yellow	Spring	20 gal.	Frangrance! Drought tolerant; airy feel; low maintenance native clusters; good for holding slopes
  <i>Pistacia texana</i> / Texas Pistachio	PL	E	30'hx15'w	Sun/Part Shade	Medium	Red to Dark Blue/ Black	White Clusters	Spring	10-20 gal.	Often multi-trunked, this bushy evergreen is easy to grow in well-drained soil & is drought tolerant.
  <i>Prunus caroliniana</i> / Cherry Laurel	PL/PR	E	20'hx15'w	Sun	Medium	Black seeds	White	Spring	10-20 gal.	Bush and drak green; good for screening; wildlife food; prune into shapes.
  <i>Prunus mexicana</i> / Mexican Plum	PL/PR	D	25'hx20'w	Sun/Shade	Slow	Fruits 1" diameter, late Summer to Fall	White	March	20 gal.	Yellow Fall color with orange painted in; best companion to Redbud for Spring bloom; few pests.
  <i>Prunus trifoliata</i> / Wafer Ash	PR	D	15'hx10'w	Sun/Shade	Slow	Samaras	Green-White	Spring	5 gal.	Winged fruit is the most distinctive feature; very aromatic foliage; drought tolerant; good wildlife food & shelter.













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		<i>Punica granatum</i>	PL/PR	D	15'hx8'w	Sun/Shade	Medium	Fruit Apple Size Edible	Orange	April / May	5 - 20 gal.	Beautiful orange flowers; edible fruit; good habitat
		<i>Rhus lanceolata</i> / <i>Flameleaf Sumac</i>	PL-A	D	15'hx15'w	Sun	Fast	Dark Red	White	Summer	5 -10 gal.	Bright red-orange Fall color; wildlife food.
		<i>Sophora secundiflora</i> / Texas Mountain Laurel	PL/PR	D	20'hx10'w	Sun	Slow	Bright Red Seeds	Violet	March	5 gal.	Great fragrance; the best small evergreen native tree; good in rocky soil; good for uplighting
		<i>Sophora affinis</i> / Eve's Necklace	PR	D	20'hx15'w	Sun	Slow	Black Pod	Pink-White	Late Spring	10 - 15 gal.	Black seed pods form necklace. Legume family.
		<i>Ungnadia speciosa</i> / Mexican Buckeye	PL	D	20'hx20'w	Sun/Shade	Medium	Shiny Black	Pink-Purple	March	5 or 10 gal.	Good for planters or hillside clumps; blooms look like Redbuds
		+ <i>Viburnum Rufidulum</i> / Black Haw Viburnum	PLA	D	15'h	Sun	Medium	Shiny Black	White	Late Spring	5 gal.	Maroon Fall Color

# PLANT PALETTE













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 <i>Vitex agnus-castus</i> / Chaste Tree	W	D	20'hx20'w	Sun	Fast	Strong Scented	Blue / White	Late Spring	5 - 10 gal.	Deer proof and drought tolerant.
<b>SHRUBS</b>										
 <i>Berberis swaseyi</i> / Texas Barberry	PLA	E	3'hx3'w	Sun/Part Shade	Slow	N/A	Yellow	March	1-5 gal.	Rare plant - very lush evergreen understory shrub.
 <i>Berberis trifoliolata</i> - Agarita	PR\PL	E	5'hx6'w	Sun/Part Shade	Slow	N/A	Yellow	March	1-5 gal.	Green evergreen screen.
 <i>Caesalpinia-red &amp; yellow</i> / Bird of Paradise	PL	D	10'hx10'w	Sun	Medium	Bronze Seed Pods	Red & Yellow	May-Aug	20 gal.	Very colorful blooming in hot summers
 <i>Callicarpa americana</i> / American Beauty Berry	PL	D	4'hx5'w	Sun/Shade	Medium	Purple Berries - Fall	White	Late Spring	5 gal.	Fascinating native shrub; purple berries are a curiosity and good wildlife food
 <i>Cassia lindeheimeriana</i> / Lindeheimer Senna	PR	D	3'hx3'w	Sun	Medium	N/A	Yellow	Late Summer	1 - 5 gal.	

# PLANT PALETTE













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		- <i>Eleagnus pungens</i> / Eleagnus	PL	D	7'hx7'w	Sun	Fast	N/A	Silver	Fall	5 gal.	Ebbenji' is the best variety; fast and large dense hedge for screening; can be sheared into box hedge
		- <i>Fatsia japonica</i> / Fatsia	PL-PR	E	6'hx5'w	Shade	Slow	N/A	White	Fall	5 gal.	Shade plant; tropical foliage; good for accent
		<i>Feijoa sellowiana</i> / Pineapple Guava	PR	E	7'hx7'w	Sun/Shade	Medium	3" Long	Pink-White	Early Summer	5 gal.	Attractive white in bloom. Evergreen / silver foliage.
		+ <i>Hibiscus militaris</i> / Rose Mallow	W	D	3'hx5'w	Sun/Part Shade	Medium	White to Pink	White /Red	May-Oct	5 gal.	Prefers moist locations & blooms all summer.
		<i>Jasminum mesnyi</i> / Primrose Jasmine	PL-PR	E	6'hx6'w	Sun/Shade	Fast	N/A	Yellow	March	5 gal.	Cascading shrub; spills over walls; deer-resistant
		<i>Leucophyllum fru- tescens cenizo</i> / Greencloud Sage	PL/PR	E	4'hx4'w	Sun	Medium	N/A	Pink	Summer	5 gal.	Greenish-grey foliage; heat and drought tolerant









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  <i>Leucophyllum frutescens</i> / Texas Sage	PL/PR	E	6'x6'w	Sun	Medium	N/A	Pink	Summer	5 gal.	Silver-grey foliage; soft foliage; blooms after Summer rains; specimen in a mass
  <i>Mimosa Borealis</i> / <i>Fragrant Mimosa</i>	PL/PR	D	3'h	Sun	Medium	N/A	White-Pink	March Early Summer	1-5 gal.	For difficult soils. Drought tolerant.
  <i>Maphigia puniceifolia</i> / <i>Barbados Cherry</i>	PR/PL	E	5'x4'w	Sun/Part Shade	Fast	Red	Pink	Spring - Summer	3-5 gal.	Evergreen during mild winters. Good small hedge with nice flowers-fruit.
  <i>Nerium oleander</i> 'Petite' / <i>Dwarf oleander</i>	PR – use at a minimum	E	4'x4'w	Sun	Fast	N/A	Red - Salmon	Early Summer	5 gal.	Evergreen and could be used as hedge. Nice flower color.
  + <i>Rhus aromatica</i> / Fragrant Sumac	PL/PR	D	5'x6'w	Sun/Part Shade	Medium	Red Seeds	Yellow	March	5 gal.	Understory shrub with good fall color; tolerates any soil.
  <i>Rhus virens</i> / Evergreen Sumac	PL/PR	E	6'x8'w	Sun	Slow	Red	White	Summer	5 gal.	Hard to establish, but very good low-maintenance shrub; wildlife food & screening shrub.













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  <i>Rhus aromatica</i> / Sumac	PL	D	5'hx8'w	Full Sun	Slow - Medium	Orange Berries	Yellow	Climbs via tendrils; very showy in early Spring. Early Spring	1 gal.	Fragrant Flowers, Good Cover for Banks
  <i>Rose Spp.</i> Cultivars	PL/PR/A	D	Many Sizes	Sun/Part Shade	Fast	N/A	Many Colors	Spring-Summer	5 gal.	Antique roses, thorn- less, many different flower colors. Should be used.
  <i>Rosmarinus</i> <i>officinalis</i> / Rosemary	PL	E	24"hx36" w	Sun	Medium	N/A	Blue or White	Winter	1 gal.	Spills over walls; god spreading shrub/ groundcover; very heat tolerant.
  <i>Sabal minor</i> / Dwarf Palmetto	PR/W	E	6'hx6'w	Shade	Slow	N/A	N/A	N/A	5 gal.	Native palm; occurs on Blanco River; good on riversides or in deep shade
  <i>Salvia Sp.</i>	PL/PR	E	3'hx3'w	Sun/Part Shade	Fast	N/A	Red, White, Blue & Pink	Spring/Fall	1 gal.	Many desirable Salvias are available. Good flower color during hot weather.
  <i>Senna Corym- bosa</i> / Flowering Senna	PLA	D/E	8'hx8'w	Sun	Medium	Small Seeds	Yellow	Apr.-Sept.	5 gal.	Bright ornamental shrub; colorful & heat tolerant.







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 <i>Xylosma congestum</i> / <i>Xylosma</i>	PR	E	12'hx12'w	Sun/Part Shade	Medium-Fast	N/A	N/A	N/A	5 gal.	Evergreen hedge plant with glossy green leaves.
<b>PERENNIALS</b>										
 <i>Achillea millefolium</i> / <i>Yarrow</i>	PR/PI	E	2'hx2'w	Sun/Shade	Medum	N/A	White, Yellow & Pink	Late Spring	1 gal.	Fern like ground cover with good seasonal color
 <i>Agave spp.</i> / <i>Agave cultivars</i>	PL	E	3'hx4" w	Sun/Part Shade	Fast	N/A	White-Red	Spring/Summer	1-5 gal.	Tolerate of dry and hot locations. Many colors and textures.
 <i>Anisacanthus wrightii</i> / <i>Flame Acanthus</i>	PL	D	3"hx3" w	Sun	Fast	N/A	Orange-Red	Summer	1 gal.	Good summer and hot weather bloomer. Drought tolerant.
 <i>Aquilegia spp.</i> / <i>Columbine</i>	PL/PR	D	2"hx2" w	Part Sun/Shade	Medum	N/A	Yellow-Yellow Red	Early Summer	1 gal.	Unique flower in shade.
 <i>Artemesia sp.</i> / <i>Artemesia</i>	PL	D	24"hx30" w	Sun	Fast	N/A	N/A	N/A	1 gal.	'Powis Castle' preferred variety; best gray foliage perennial for Central Texas.







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		<i>Aster frikartii</i> / Fall Aster	PL	D	24"hx36"w	Sun	Fast	N/A	Purple	Sept-Oct	1 gal.	Colorful perennial; great for odd spaces; low-maintenance
		<i>Chasmanthium latifolium</i> / <i>Inland Sea Oats</i>	PR	D	3'hx1'w	Part Shade/ Shade	Slow	Ivory Seeds	Green-Gold	June-October	1 gal.	Prevent creek banks from eroding. In fall seed and leaves turn warm ivory.
		<i>Coreopsis lanceolata</i> / Coreopsis	PL	D/E	20"hx12"w	Sun	Medium	N/A	Gold - Yellow	May	1 gal.	Showy and tough.
		<i>Chrysactinia mexicana</i> / Damianita	PL	D/E	18"hx18"w	Sun	Fast	N/A	Yellow	May-Sept.	1 gal.	Vibrant yellow flow- ers; bouquet-like shape.
		<i>Dasyliiron spp.</i> Sotol	PL/PR	E	4"hx4"w	Sun/Part Shade	Fast	N/A	White	Early Summer	1-5 gal.	Green to blue-green foliage. Drought tolerant.
		<i>Echinacea purpurea</i> / Purple Cone Flower	PL/PR	D	2"hx2"w	Sun/Part Shade	Fast	N/A	Purple	Spring	1-5 gal.	Long flowers stay purple.













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 <i>Equisetum hyemale</i> / Horsetail	W	E	1'hx3'w	Sun/Part Shade	Fast	N/A	N/A	Summer	1 gal.	Spreads by underground roots; erect form makes an excellent accent plant.
 <i>Eupatorium spp.</i> / Mistflower	PL/PR	E	3'hx3'w	Sun/Part Shade	Fast	N/A	Purple-White	Spring-Fall	1 gal.	Good fall bloomer with white flowers.
 <i>Gaillardia pulchel- la</i> / Firewheel, Indian Blanket	PL/PR	D	18"hx18"w	Sun	Fast	N/A	Maroon & Gold	April - July	.4" - 1 gal.	Wild flower; Texas State colors
 <i>Hesperaloe parviflora</i> / Red Yucca	PL	E	24"hx24"w	Sun	Slow	N/A	Coral flowers on 4' stalk	May	5 gal.	Coral color bloom spike; use in mass- es; good for drought locations; very heat & sun tolerant
 <i>Hymenocallis liriosme</i> / Spider Lily	W	D	15"-25"hx1'-2'w	Sun/Part Shade	Medium	N/A	White	Spring-July	1 gal.	Beautiful flowers; plant in large colonies.
 <i>Iris spp.</i>	PL/PR	E	2"hx2'w	Sun/Part Shade	Medium	N/A	White, Yellow & Blue	Spring	1 gal.	Many different varieties and colors. Mostly Spring blooms.













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	<i>Lantana sp.</i>	PL/PR	D	36"hx48"w	Sun	Fast	N/A	Red, Yellow, Orange & Pink	Mar.-Oct.	1 gal.	Great low-maintenance color perennial.
	<i>Liriope muscari /</i> Big Blue Liriope	PL/PR	E	1"hx1"w	Sun/Shade	Medium	N/A	Purple	Summer	1 gal.	Good evergreen ground cover for shade. Needs more water in sun.
	<i>Liriope gigantea /</i> Giant Liriope	PL/PR	E	24"hx24"w	Sun/Shade	Slow	N/A	N/A	Summer	1 gal.	Large version of old favorite; can tolerate prolonged dry periods after established; use for accents and ground cover.
	<i>Malaviscus arboreus /</i> Mexican Turk's Cap	PR	D	5'hx4'w	Sun/Shade	Fast	Red	Red	May-Oct.	1 gal.	Hummingbird attractor; seed good for birds; Mexican native very adapted.
	<i>Miscanthus sinensis /</i> Madengrass	PR	E	4'hx3'w	Sun	Fast	N/A	Seed Head	Late Summer-Fall	1 gal.	Attractive clumping with ornamental grass.
	<i>Muhlenbergia capillaris /</i> Gulf Coast Muhly	PL/PR	D	30"hx30"w	Sun	Fast	N/A	Seed Head	Fall	1 gal.	Spectacular purple-pink bloom of seed heads in Fall; use in groups; nice mixed with perennials; low maintenance.

# PLANT PALETTE













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  <i>Muhlenbergia capillaris</i> / Bamboo Muhly	PL/PR	D	36"hx30"w	Sun	Medium	N/A	Seed Head	Fall	1 gal.	Fine texture grass; lovely wind-blown look; banding on stalks attractive.
  <i>Muhlenbergia lindheimeri</i> / Lindheimer's Muhly	PL/PR	D/E	48"hx48"w	Sun	Fast	N/A	Spikes	Fall	5 gal.	Replaces pampas grass in many landscapes; one of the best new native plants in cultivation now; seed heads very striking in Fall & should be left on.
  <i>Muhlenbergia reverchoni</i> / Seep Muhly	PL/PR	D	12"hx12"w	Sun	Slow	N/A	Spikes	Fall	1 gal.	Low native clump grass; use on xeric slopes with gayfeather.
  <i>Muhlenbergia rigens</i> / Deer Muhly	PL/PR	D	30"hx30"w	Sun	Medium	N/A	Long Spikes	Fall	1 gal.	Striking clump grass with long beautiful seed heads all Fall and Winter.
  <i>Nolina lindheimeriana</i> / Devil's Shoestring	PL/PR	E	18"hx6"w	Sun	Slow	N/A	White	Spring	5 gal.	Cascading grassy foliage spills over stone walls; use as accent plant for sloping locations.
  <i>Nolina texana</i> / Basketgrass	PL/PR	E	48"hx48"zw	Sun/Shade	Slow	N/A	White	Spring	5 gal.	Similar to N. Lind., but is more clump-like; flower heads burst out in Spring; foliage is like long wire strands.

# PLANT PALETTE







		SCIENTIFIC NAME COMMON NAME	ZONE/ LANDSCAPE APPLICATION	DECIDUOUS/ EVERGREEN	HEIGHT/WIDTH	EXPOSURE	GROWTH RATE	FRUIT/BERRY	FLOWER	BLOOM TIME	RECOMMENDED PLANTING SIZE	GENERAL COMMENTS
		<i>Ophiopogon japonicus</i> / Monkey Grass	PL/PR	E	10"hx10"w	Part Shade/ Shade	Medium	N/A	N/A	N/A	1 gal.	Evergreen clumping. Perennial, simply use to liriopae.
		<i>Panicum virgatum</i> / Switchgrass	PR/W	E	5'hx5'w	Sun	Fast	N/A	Seed Head	Fall	1 gal.	Tall upright clumping grass. Tolerates extremes in soil conditions.
		<i>Plumbago auriculata</i> / Plumbago	PR	D	3'hx4'w	Sun/Part Shade	Fast	N/A	White/Blue	Summer	1 gal.	Good summer bloomer and dependable color. White to dark blue.
		<i>Poliomintha longiflora</i> / Mexican Oregano	PR	D	3'hx4'w	Sun	Fast	N/A	Lavender	Summer	1 gal.	Flowers in clusters during summer months with ever-green foliage.
		<i>Rudbeckia spp.</i> / Black-eyed Susan	PR	D	2'hx1'w	Sun/Part Shade	Fast	N/A	Yellow	Summer	1 gal.	Short perennial yellow flowers with several cultivars available.
		<i>Ruellia spp.</i> / Mexican Petunia	PL/PR	D	1'hx3'w	Sun/Shade	Fast	N/A	White/Blue/Pink	Summer	1 gal.	Tough drought tolerant. Summer blooming perennial dwarf to tall cultivars.















# PLANT PALETTE

SCIENTIFIC NAME COMMON NAME	ZONE/ LANDSCAPE APPLICATION	DECIDUOUS/ EVERGREEN	HEIGHT/WIDTH	EXPOSURE	GROWTH RATE	FRUIT/BERRY	FLOWER	BLOOM TIME	RECOMMENDED PLANTING SIZE	GENERAL COMMENTS
  <i>Salvia Sp</i>	PL/PR	D/E	2'hx3'w	Sun/Part Shade	Fast	N/A	Pink/White/Blue/ Red/Orange	Apr.-Oct.	1 gal.	Dependable, perennial color, drought tolerant, humming bird plant
  <i>Scutellaria suffrutescens / Skullcap</i>	PL/PR	D	1'hx2'w	Sun	Fast	N/A	Pink-White	Summer	1 gal.	Colorful low growing mounding plant.
  <i>Stipa tenuissima / Mexican Feathergrass</i>	PR	D	1'hx2'w	Sun	Fast	N/A	Seed Heads	Summer	1 gal.	Very soft weeping growth habit. Drought tolerant.
  <i>Tagetes lemmonii / Copper Canyon Daisy</i>	PL	D/E	3'hx4'w	Sun	Fast	N/A	Yellow Gold	Fall	1 gal.	Combine with Salvia Leucantha & Asters for Fall color display.
<b>VINES</b>										
  <i>Yucca recurvifolia / Weeping Yucca</i>	PL	E	3'hx3'w	Sun	Medium	N/A	White	Apr.-May	1 gal.	Good Yucca color (blue-green) and does not have sharp tips; use for accents; drought tolerant.
  <i>Verbena x hybrida / Verbena</i>	PR	E	6"hx2'w	Sun/Part Shade	Fast	N/A	Purple/Red-White	Spring - Summer	1 gal.	Low growing perennials with good color during summer.









# PLANT PALETTE

SCIENTIFIC NAME COMMON NAME	ZONE/ LANDSCAPE APPLICATION	DECIDUOUS/ EVERGREEN	HEIGHT/WIDTH	EXPOSURE	GROWTH RATE	FRUIT/BERRY	FLOWER	BLOOM TIME	RECOMMENDED PLANTING SIZE	GENERAL COMMENTS
 <i>Wedelia texana</i> / Zexmenia	PL/PR	D	2'hx2'w	Sun	Fast	N/A	Yellow	Spring - Fall	1 gal.	Very good yellow color during summer. Drought tolerant.
 <i>Bignonia</i> / Crossvine	PL/PR	D/E	20'	Sun/Shade	Fast	N/A	Yellow-Red	Mar-Apr.	1-5 gal.	Climbs via tendrils; very showy in early Spring.
 <i>Campsis radicans</i> / Trumpet creeper	PL/PR	D	40'	Sun/Part Shade	Fast	N/A	Orange	Summer	1-5 gal.	Aggressive vine with colorful flowers during summer.
 <i>Ficus pumila</i> / Fig Ivy	PL/PR	D	30'	Sun/Part Shade	Fast	N/A	N/A	N/A	1-5 gal.	Aggressive evergreen vine attaches itself to almost anything.
 <i>Gelsemium sempervirens</i> / Carolina Jessamine	PL/PR	D	20'	Sun/Part Shade	Fast	N/A	Yellow	Early Spring	1-5 gal.	Bright yellow flowers in very early spring with aggressive evergreen vine.
 <i>Lonicera sempervirens</i> / Coral Honeysuckle	PL/PR	D/E	15'	Sun	Fast	N/A	Coral Pink	Spring-Summer	1-5 gal.	Vigorous vine with trumpet-like flowers; good for climbing or spilling over walls.

# PLANT PALETTE

		SCIENTIFIC NAME COMMON NAME	ZONE/ LANDSCAPE APPLICATION	DECIDUOUS/ EVERGREEN	HEIGHT/WIDTH	EXPOSURE	GROWTH RATE	FRUIT/BERRY	FLOWER	BLOOM TIME	RECOMMENDED PLANTING SIZE	GENERAL COMMENTS
		<i>Mascagnia macroptera</i> / Butterfly Vine (limited basis)	PL/PR	E	20'	Sun/Part Shade	Fast	Chartreuse/ Brown	Yellow	Summer/Fall	1-5 gal.	Very aggressive with yellow flowers followed by chartreuse fruit (best asset).
		<i>Parthenocissus quinquefolia</i> / Virginia Creeper	PL/PR	D	25'	Sun/Shade	Fast	N/A	N/A	N/A	1-5 gal.	Scarlet Fall color; persistent fruits eaten by Gray Squirrel & many bird species; very graceful & lush.
		<i>Podranea Ricasoliana</i> /Pink Crossvine	PL/PR	D/E	25'	Sun/Part Shade	Fast	N/A	Pink/White	Summer	1-5 gal.	Flowers during summer months in clusters of soft pink/white.
		<i>Trachelospermum jasminoides</i> / Confederate Star Jasmine	PL/PR	E	Climbs to 15'	Sun	Fast	N/A	White	Spring	1-5 gal.	Wonderful fragrance & color in Fall.
		<i>Wisteria frutescens</i> / Texas Wisteria	PL/PR	D	20'	Sun/Shade	Fast	N/A	Pale Lavender	Apr-May	1-5 gal.	Native to East Texas; very vigorous; extremely fragrant flowers.
		<i>Trachelospermum asiaticum</i> / <i>Asian Jasmine</i>	PL/PR	E	1'hx3'w	Sun/Shade	Fast	N/A	N/A	N/A	1 gal.	Good evergreen ground cover and easy to maintain.

# PLANT PALETTE

LAWN		SCIENTIFIC NAME COMMON NAME	ZONE/ LANDSCAPE APPLICATION	DECIDUOUS/ EVERGREEN	HEIGHT/WIDTH	EXPOSURE	GROWTH RATE	FRUIT/BERRY	FLOWER	BLOOM TIME	RECOMMENDED PLANTING SIZE	GENERAL COMMENTS
		<i>Bermuda grass</i>	PL/PR	D	N/A	Sun	Fast	N/A	N/A	N/A	Sod/Seed	Turfgrass for full sun.
		<i>St. Augustine grass</i> <i>(where currently located and in shady areas)</i>	PL/PR	D	N/A	Shade/Sun	Fast	N/A	N/A	N/A	Sod	Turfgrass for shade to sun.
		Buffalo Grass Var. 609	PL	D	Mow to 3"	Sun	Slow	N/A	N/A	N/A	Sod only	Drought tolerant sod for 6-hours sun min.; needs good soil prep. - 6" min.; requires weeding in year 1&2; use in lowerpriority turf grass zones.
		Zoysia	PL/PR	D	Mow to 2"	Sun/Part Shade	Slow	N/A	N/A	N/A	Sod only	Use only in low traffic areas. Adapted for some shade situations as well as sun; low-maintenance mowing. NB: Bermuda & St. Augustine are acceptable in some situations.

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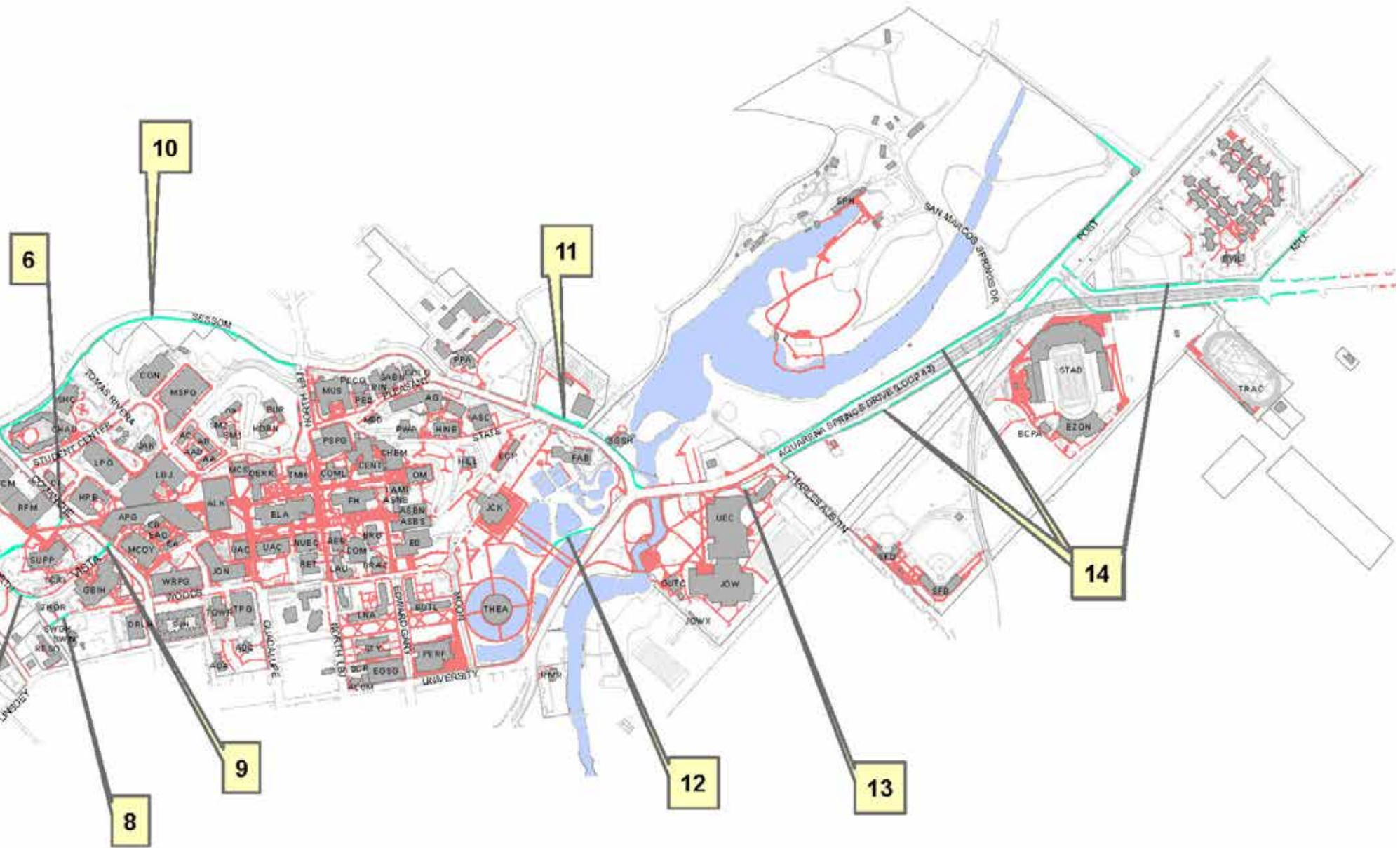
# SIDEWALK PLAN

Texas State University provides a network of pedestrian facilities within the campus core and immediate surrounding areas. These networks do not always provide connection within the core of campus or direct connection to off-campus sidewalks. The University identified the most obvious gaps shown to the right and on the following pages.

## LEGEND

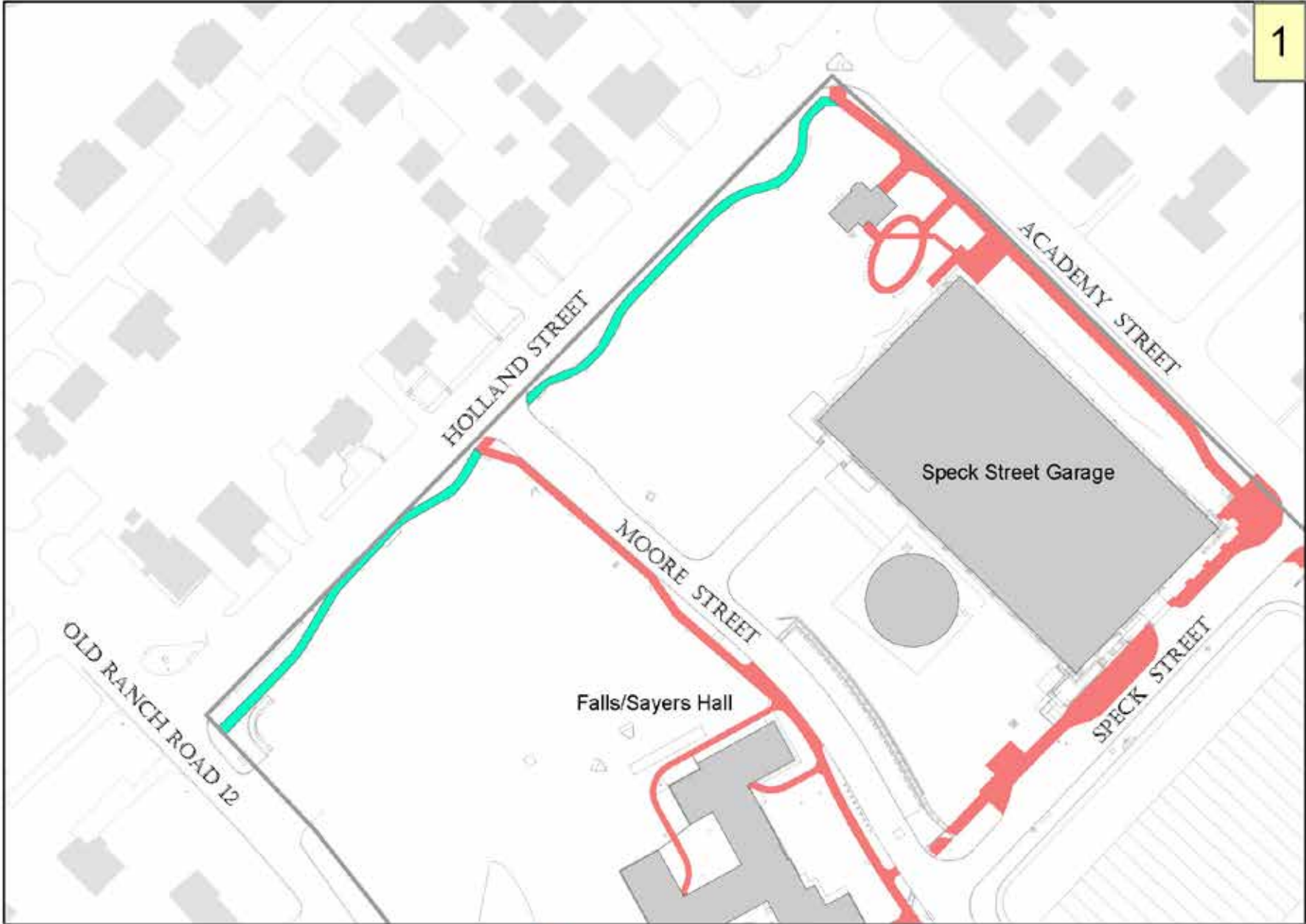
- Existing Sidewalk
- Proposed Sidewalk
- Campus Building
- Pond/River
- Campus Property Boundary










PROPOSED SIDEWALKS





TEXAS STATE UNIVERSITY  
CAMPUS MASTER PLAN PROPOSED SIDEWALKS

	EXISTING SIDEWALK		CAMPUS BUILDING		CAMPUS PROPERTY BOUNDARY
	PROPOSED SIDEWALK		POND/RIVER	0 25 50 100 150 200 Feet	

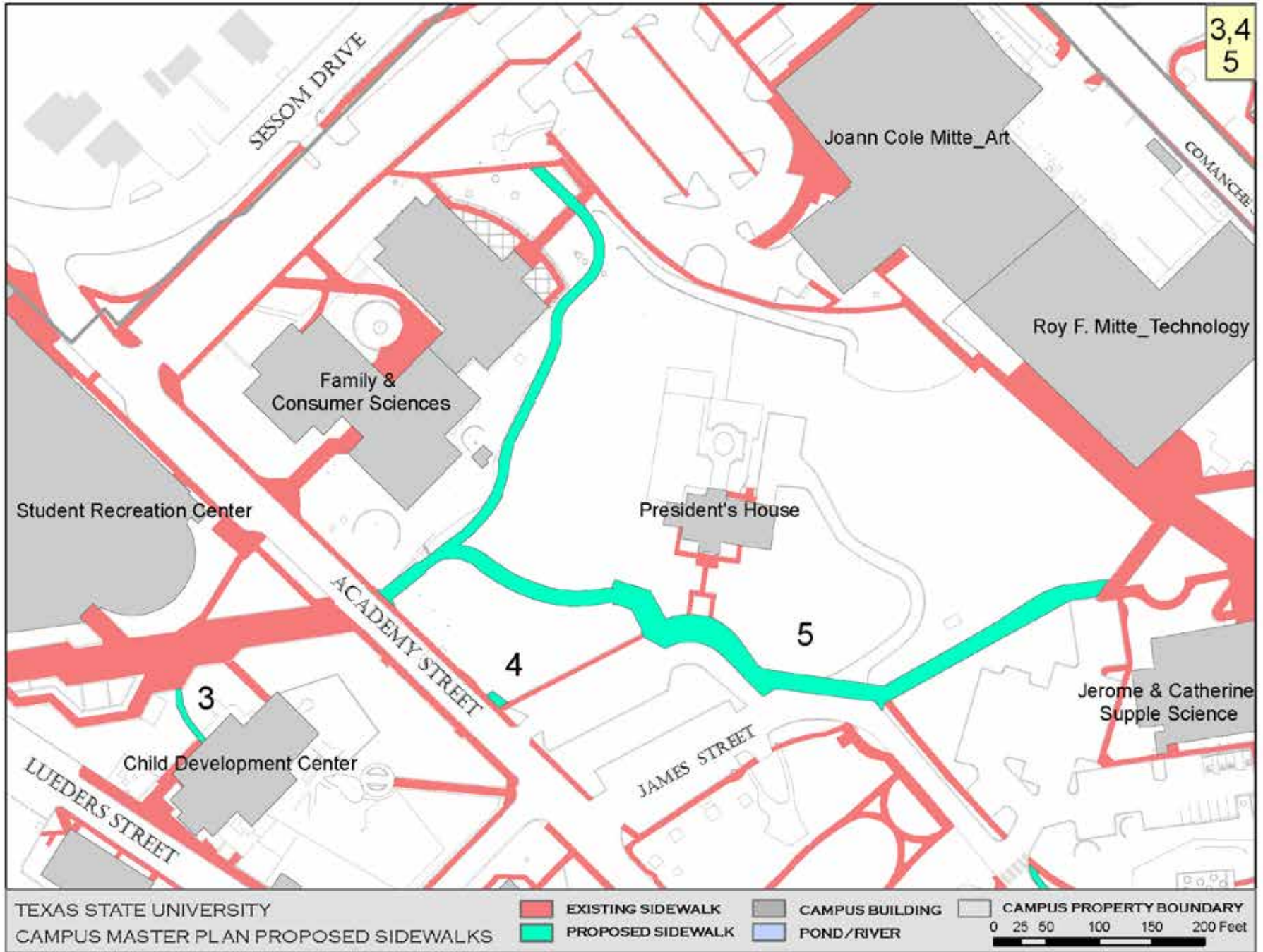




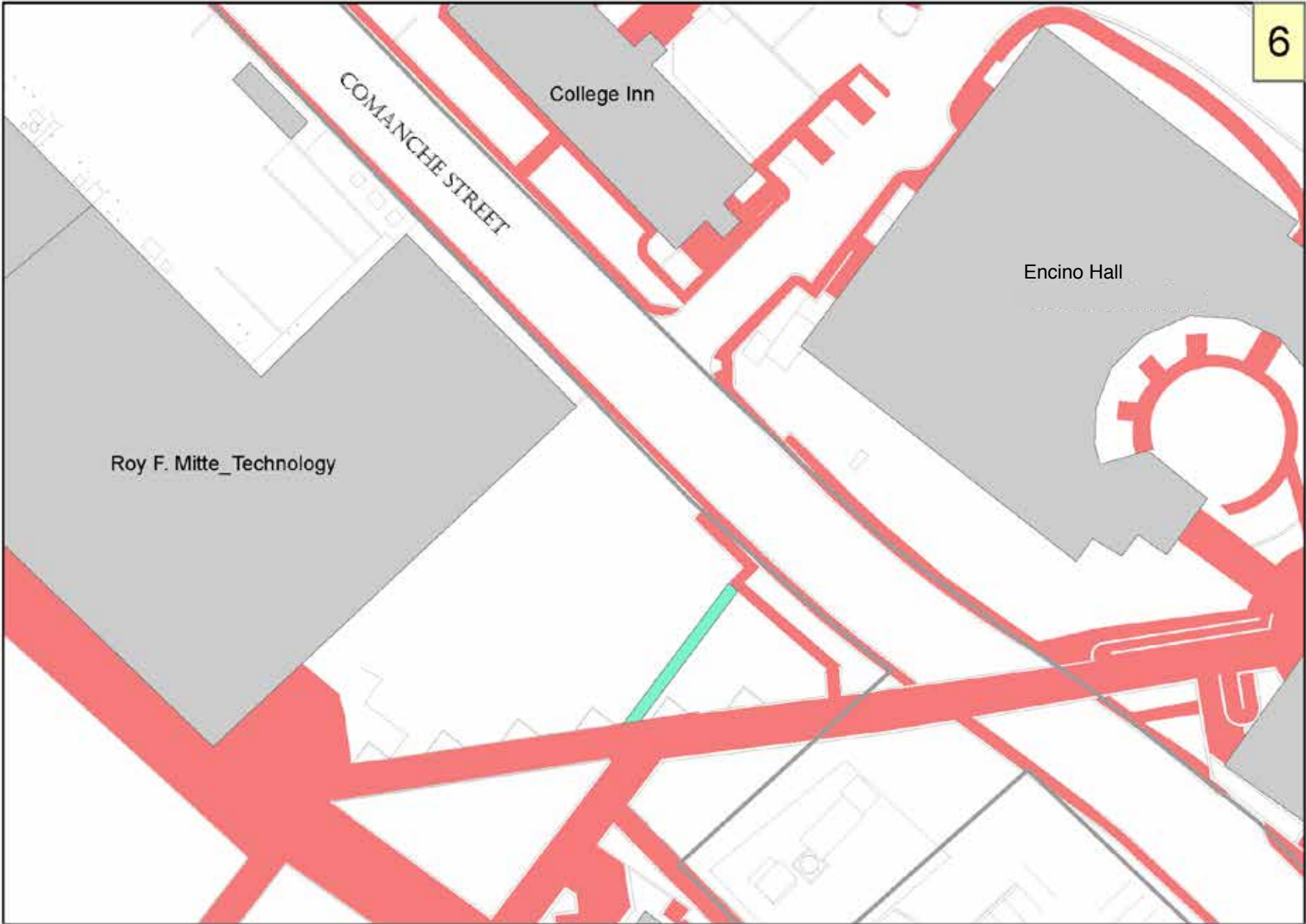
TEXAS STATE UNIVERSITY  
CAMPUS MASTER PLAN PROPOSED SIDEWALKS

 EXISTING SIDEWALK	 CAMPUS BUILDING	 CAMPUS PROPERTY BOUNDARY
 PROPOSED SIDEWALK	 POND/RIVER	0 25 50 100 150 200 Feet











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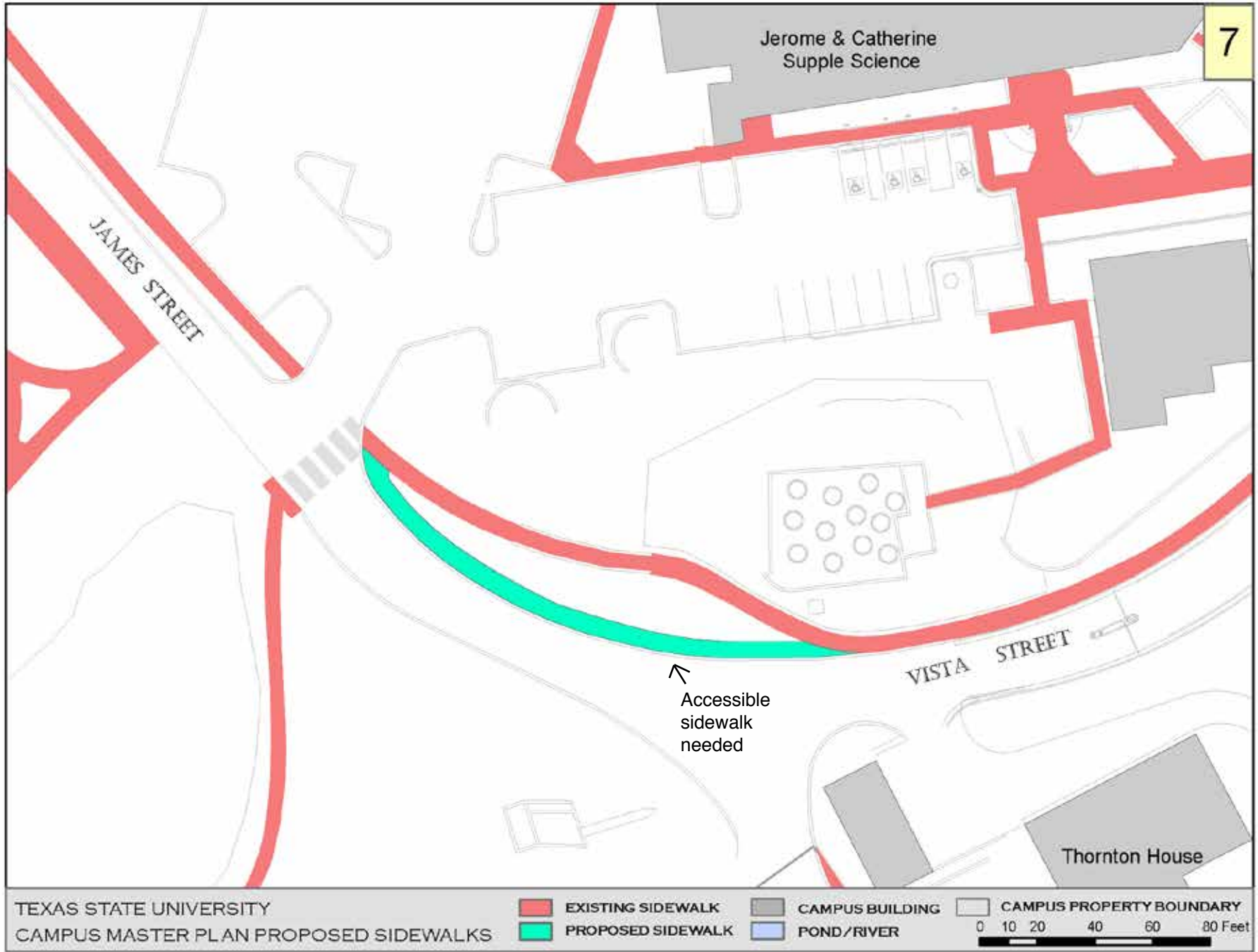


TEXAS STATE UNIVERSITY  
CAMPUS MASTER PLAN PROPOSED SIDEWALKS

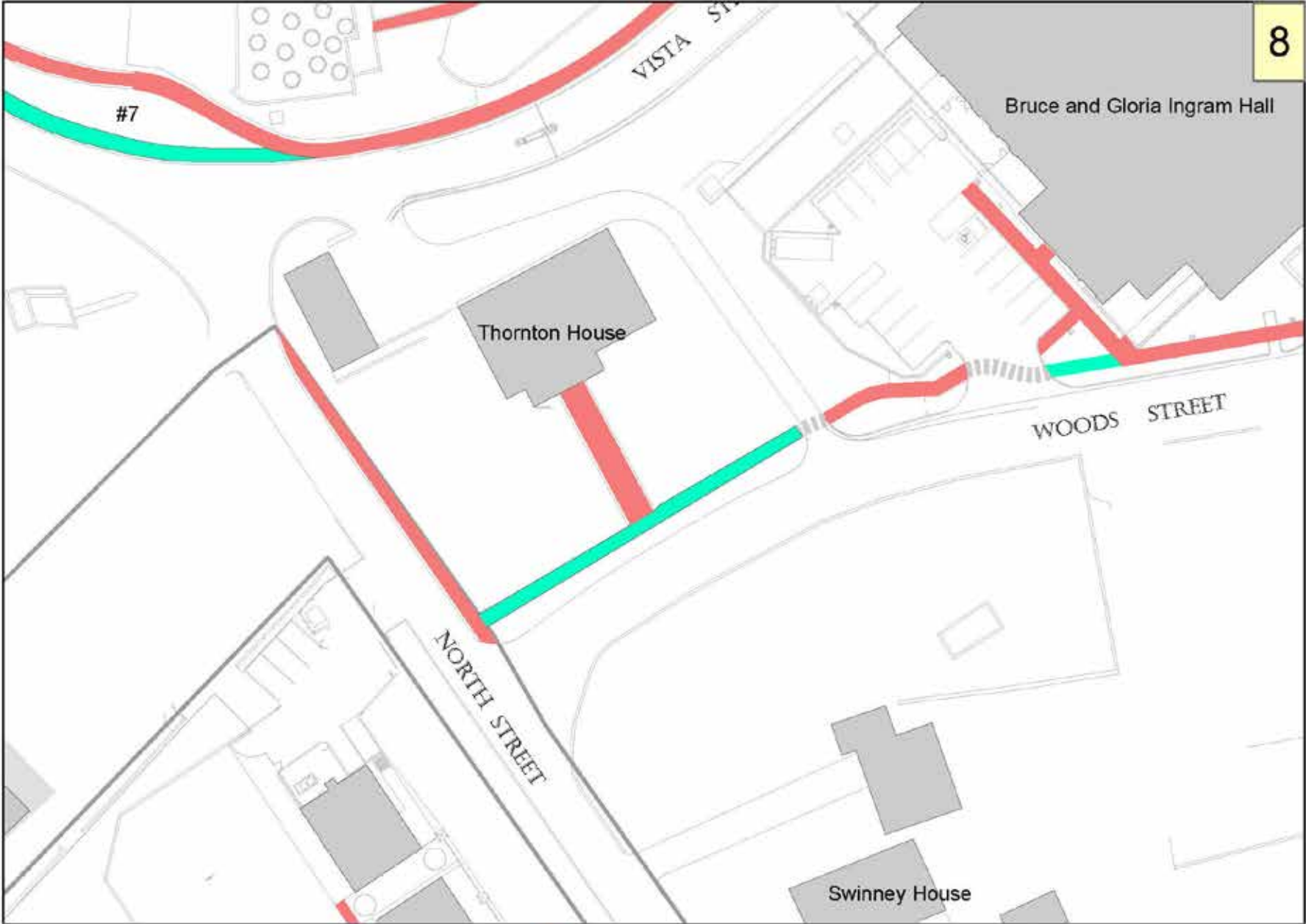
 EXISTING SIDEWALK	 CAMPUS BUILDING	 CAMPUS PROPERTY BOUNDARY
 PROPOSED SIDEWALK	 POND/RIVER	

0 12.5 25 50 75 100 Feet








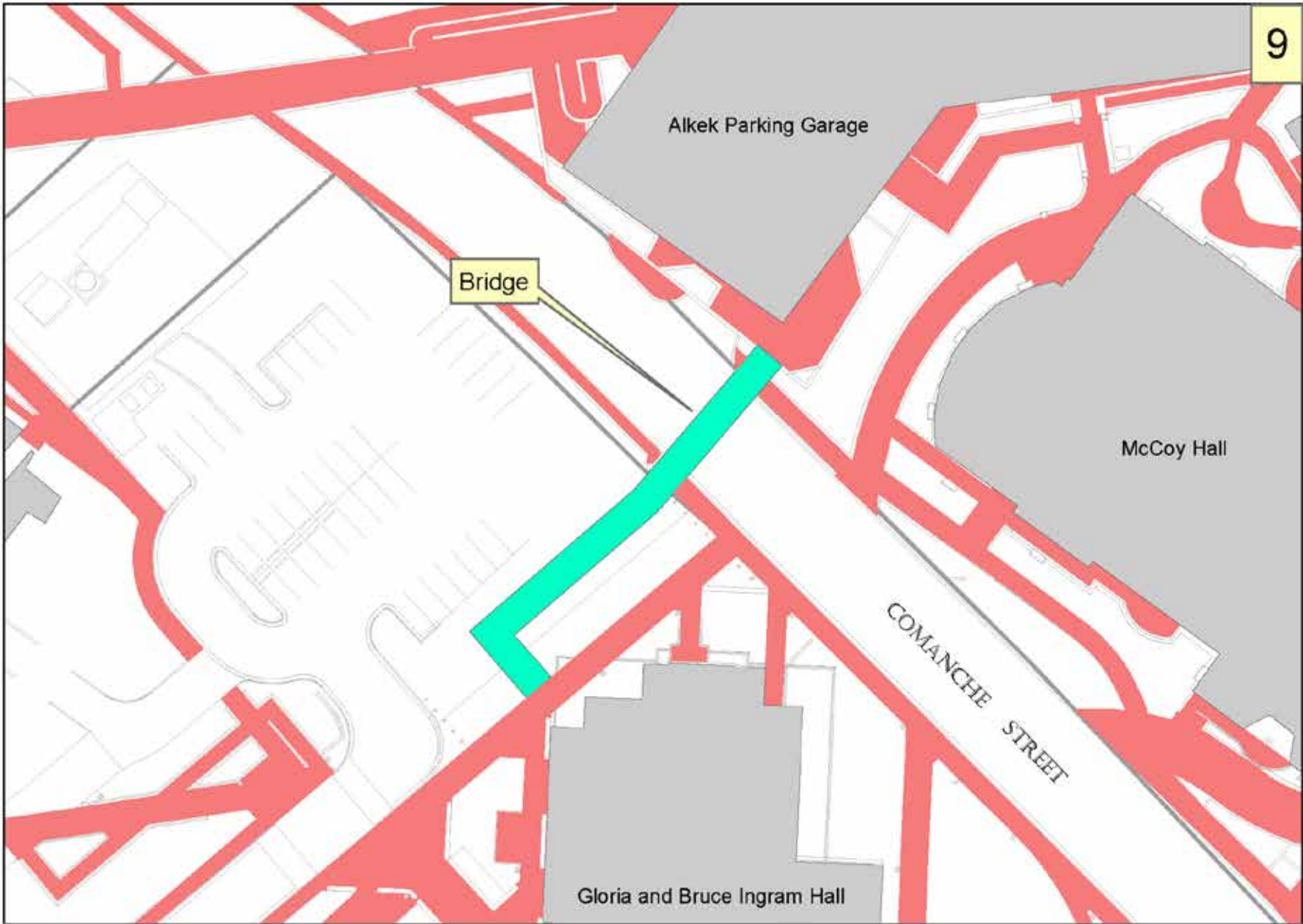


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TEXAS STATE UNIVERSITY  
CAMPUS MASTER PLAN PROPOSED SIDEWALKS

 EXISTING SIDEWALK	 CAMPUS BUILDING	 CAMPUS PROPERTY BOUNDARY
 PROPOSED SIDEWALK	 POND/RIVER	0 10 20 40 60 80 Feet



TEXAS STATE UNIVERSITY

CAMPUS MASTER PLAN PROPOSED SIDEWALKS

EXISTING SIDEWALK

PROPOSED SIDEWALK

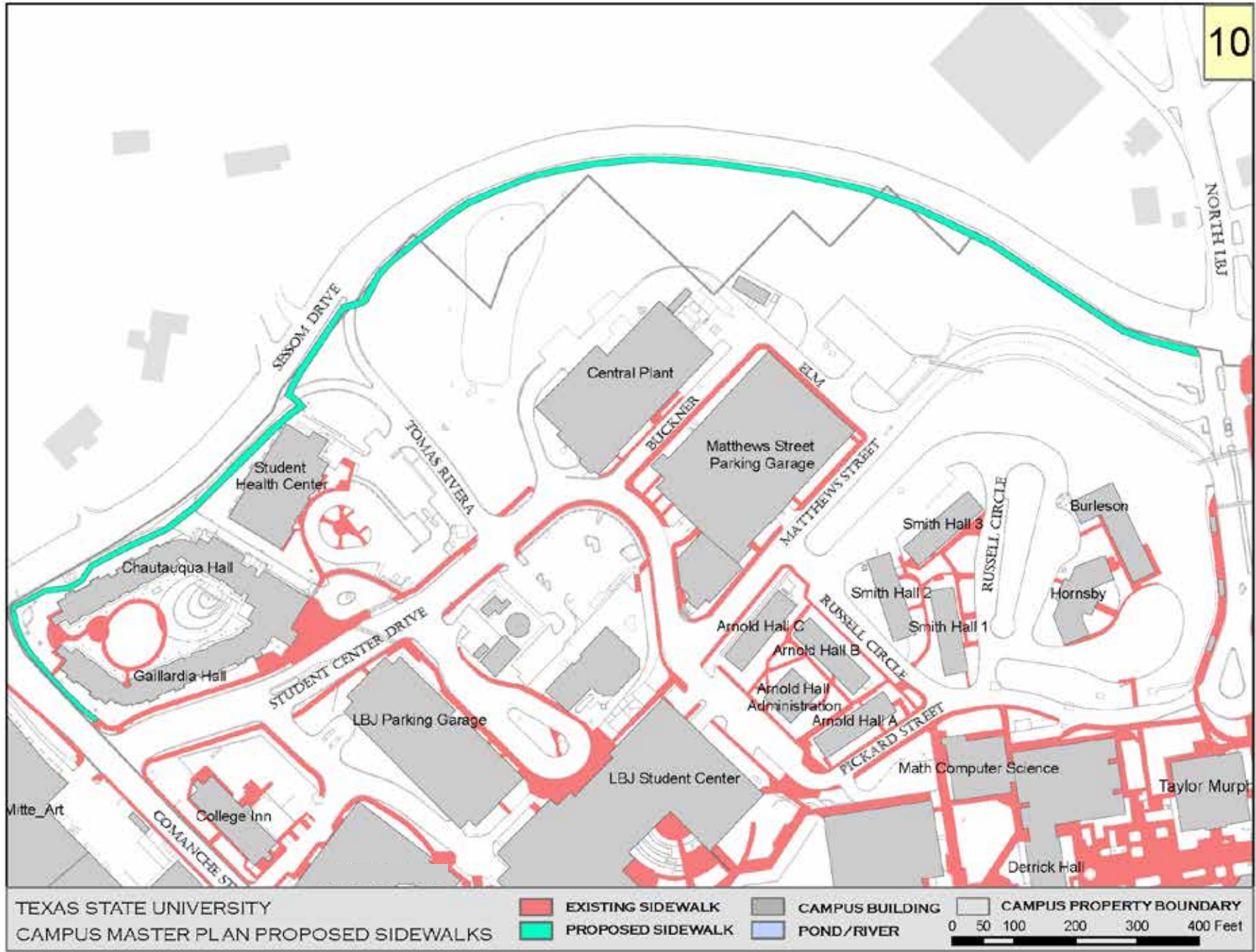
CAMPUS BUILDING

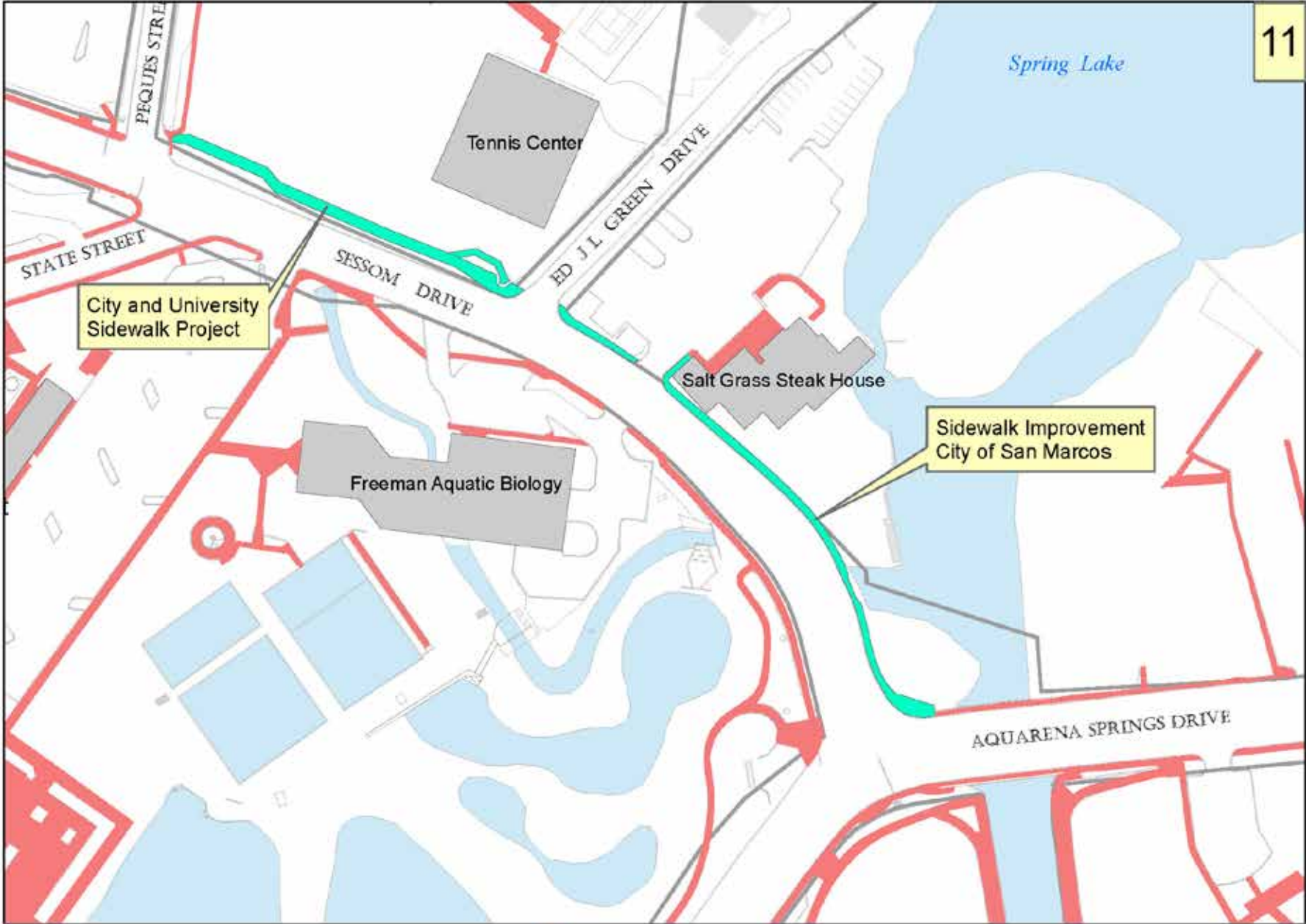
POND/RIVER

CAMPUS PROPERTY BOUNDARY

0 10 20 40 60 80 Feet







TEXAS STATE UNIVERSITY  
CAMPUS MASTER PLAN PROPOSED SIDEWALKS

EXISTING SIDEWALK	CAMPUS BUILDING	CAMPUS PROPERTY BOUNDARY
PROPOSED SIDEWALK	POND/RIVER	0 25 50 100 150 200 Feet



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TEXAS STATE UNIVERSITY

CAMPUS MASTER PLAN PROPOSED SIDEWALKS

EXISTING SIDEWALK

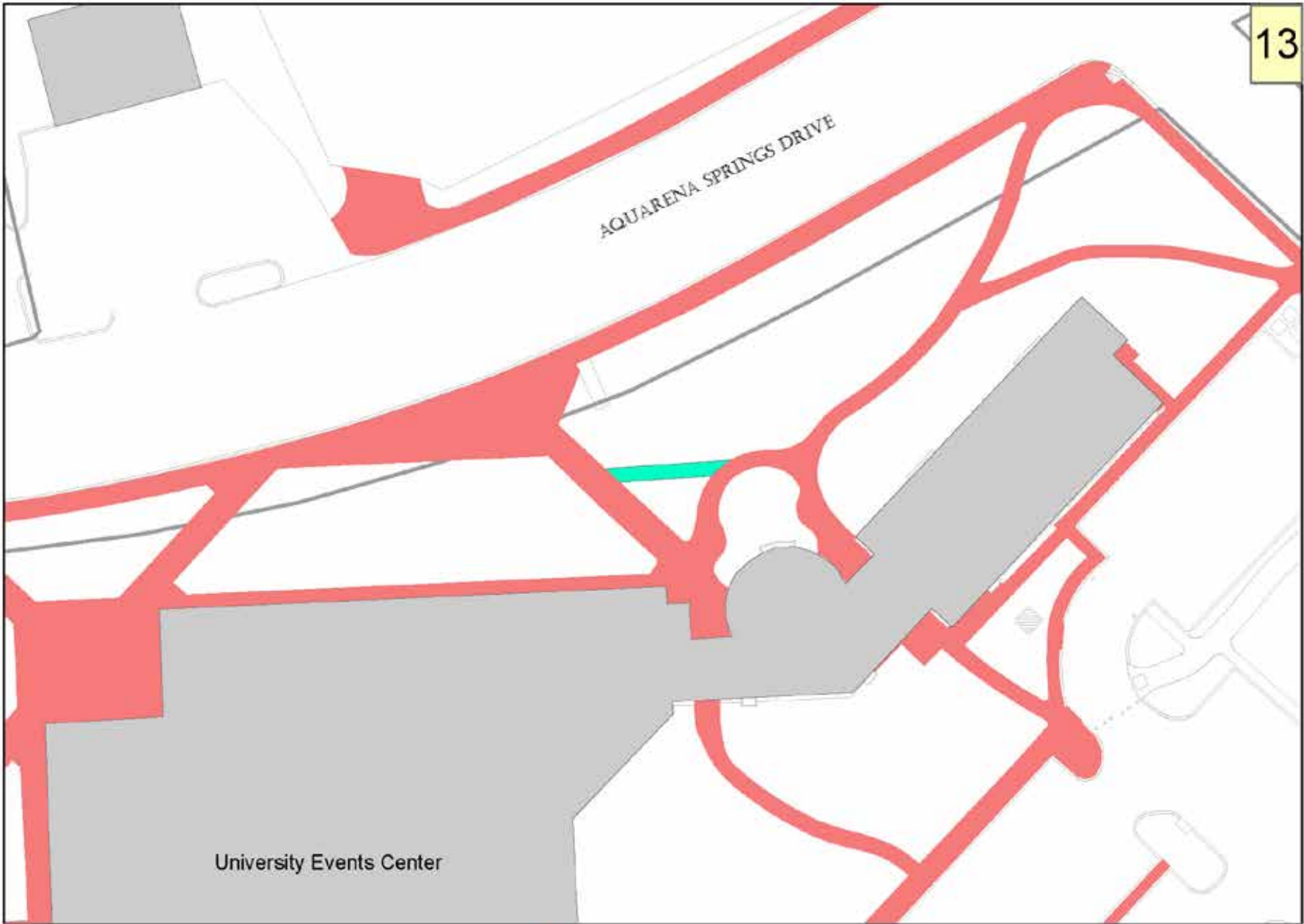
PROPOSED SIDEWALK

CAMPUS BUILDING






POND/RIVER

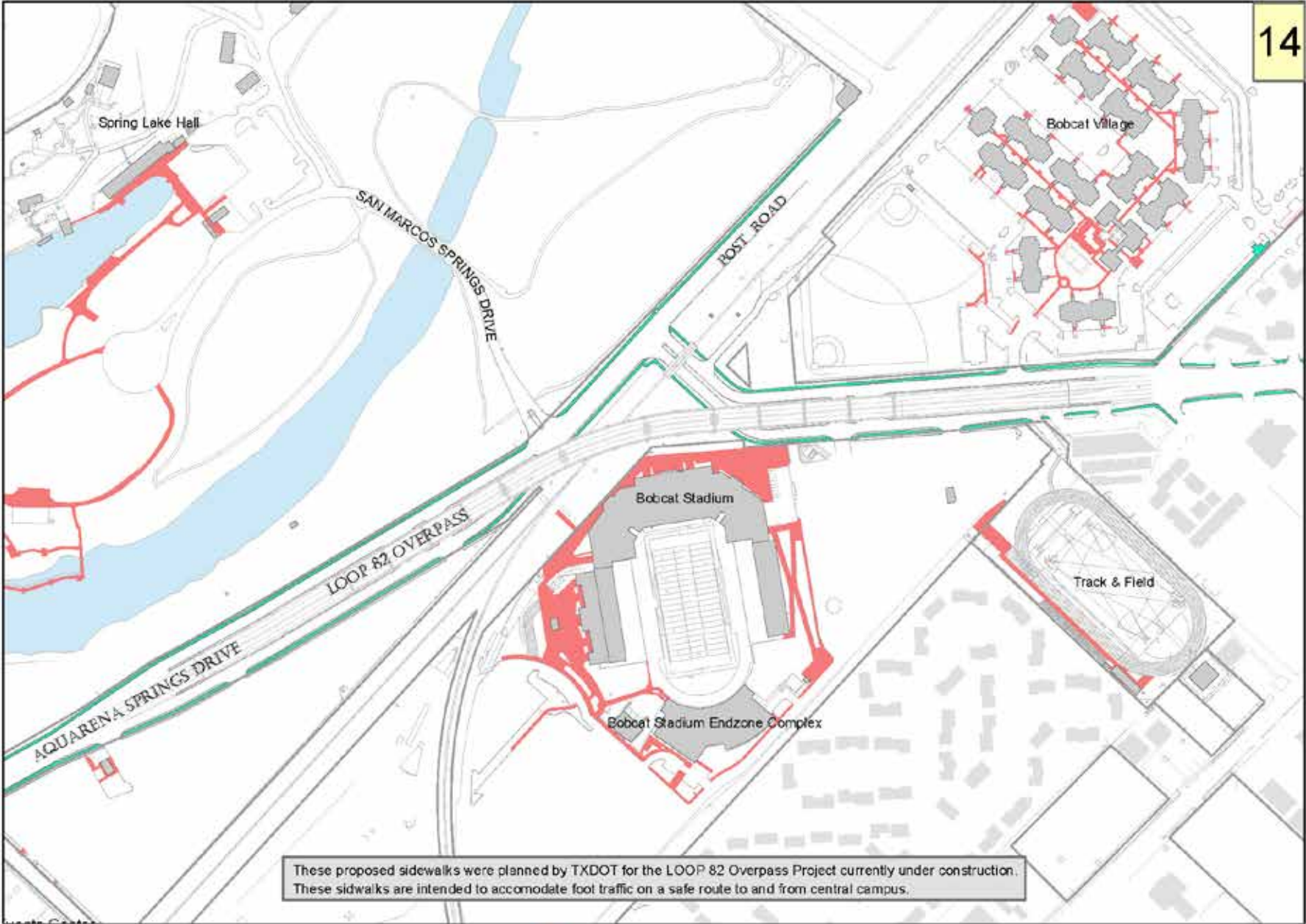
CAMPUS PROPERTY BOUNDARY

0 25 50 100 150 200 Feet



TEXAS STATE UNIVERSITY  
CAMPUS MASTER PLAN PROPOSED SIDEWALKS

 EXISTING SIDEWALK	 CAMPUS BUILDING	 CAMPUS PROPERTY BOUNDARY
 PROPOSED SIDEWALK	 POND/RIVER	0 12.5 25 50 75 100 Feet



These proposed sidewalks were planned by TXDOT for the LOOP 82 Overpass Project currently under construction. These sidewalks are intended to accommodate foot traffic on a safe route to and from central campus.

TEXAS STATE UNIVERSITY  
 CAMPUS MASTER PLAN PROPOSED SIDEWALKS

	EXISTING SIDEWALK		CAMPUS BUILDING		CAMPUS PROPERTY BOUNDARY
	PROPOSED SIDEWALK		POND/RIVER	0 75 150 300 450 600 Feet	





	2015 - 16	2016 - 17	2017 - 18	2018 - 19	2019 - 20	2020 - 21	2021 - 22	2022 - 23	2023 - 24	2024 - 25	2025 - 26	2026 - 27
“Freshmen” based on 1% population increase per year	5,476	5513	5819	5877	5936	5995	6055	6116	6177	6239	6301	6364

Based on Texas State University 2015 Housing Occupancy, **92%** of Freshmen live on campus

Freshmen Demand @ 92% Occupancy		5498	5353	5407	5461	5516	5571	5627	5683	5740	5797	5855
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“Sophomores” reflect those students who lived on campus during the previous year

“Sophomore” population based on previous year’s occupancy			4,398	4,283	4,326	4,369	4,413	4,457	4,501	4,546	4,592	4,638
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Based on **33% Target** “Sophomore” Housing Occupancy

Housing for Sophomores @ 33% Occupancy			1451	1413	1427	1442	1456	1471	1485	1500	1515	1530
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Total Housing Capacity with New Construction	6818	6926	6918	6732	6862	7516	7516	7694	7418	7128	7128	7428
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Excess/Deficit for Freshmen and Sophomores with planned construction			113	(88)	(27)	559	489	597	250	(112)	(184)	43
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