TEXAS A&M UNIVERSITY

SAN ANTONIO

2017 MASTER PLAN

UNIVERSITY CORE VALUES

The Texas A&M University-San Antonio's Core Values are central to everything we do.

EXCELLENCE
We strive for excellence above all else. Those who represent the A&M-SA family—faculty, staff, students, and alumni—do so with the highest standards of integrity and characterize the grit, honor, and traditions of the campus community.

STUDENT FOCUSED
We use a number of co-curricular activities, including experiential learning, as catalysts to achieve active student learning. We use intentional and innovative teaching and applied learning methods to educate a diverse student body, enhance retention, and encourage timely graduation.

AUDACIOUSNESS
We think big and work diligently to fulfill our aspirations. We are an agile, innovative, and entrepreneurial university that prepares students to create a better future and transform the world, starting with our local community, region, and state.

OPPORTUNITY
We create opportunities for a diverse student body by embracing the demographics of our region and the military-connected community. We are inclusive of all learners and welcome students where they are, socially, economically and academically. We prepare traditional and nontraditional students with marketable skills and undergraduate research experiences that contribute to a meaningful life and a fulfilling career.

COLLABORATION
We value interdisciplinary approaches, partnerships, and research opportunities that respond to needs across public and private industries, the military community, school districts, other colleges and universities, and the Texas A&M University System.

It is with great excitement that I share a plan that visualizes the next 20 years of growth and development at Texas A&M University-San Antonio (A&M-SA). Our campus serves as a cornerstone to higher education in South Texas and our leadership is committed to smart growth that will enhance the Texas A&M System investment at the San Antonio campus. As you peruse the pages of the 2017 Master Plan you will find a thoughtful approach to land usage that supports academic expansion, research development, athletic programs and a vibrant student life. As we grow, we shall remain committed to environmental sustainability and a focus on sharing the rich story of our land.

From its inception in the late 1990s, the University has been deliberate in its intent to become a comprehensive university. In the fall of 2016, we celebrated the inaugural class of first-year students, a milestone in campus history. As we expand, we are establishing new campus traditions and shifting our presence to include a residential population along with our traditional commuter student body. The faculty and staff are leading the way, through research and impactful instruction while serving as mentors to our students.

As a vital member of the South San Antonio community, the University remains committed to maintaining the architectural design and framework of the UNESCO World Heritage Missions located in close proximity to campus. The university community continues to create and openly invite opportunities for city-wide participation in outdoor events that showcase the campus assets as an important member of La Familia! Furthermore, the 2017 Campus Master Plan is centered on five guiding principles: Academic Prominence, Campus Community Wellbeing, Environmental Stewardship, Culturally Rich, Access and Connection.

In addition to the University's goals, we are supportive of the City of San Antonio's comprehensive plan, SA Tomorrow. The University's work directly contributes to two important elements in the comprehensive plan: economic competitiveness and education. As a distinct member of the land grant University System, we embrace its mission, core principles and vision it has established. There is no doubt that A&M-SA has audacious plans for the future. Our faculty, staff and administration are committed to the success of this great university. I encourage you to follow our progress and become a part of our future.

Sincerely,

Dr. Cynthia Teniente-Matson
President

2017 MASTER PLAN

TEXAS A&M UNIVERSITY-SAN ANTONIO

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PROJECT COST RESOURCES
Cost Estimation

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EDITOR'S NOTE:

This Master Plan report document uses the layout, text, and graphics of the 2012 Development Plan Update report and only updates the graphics and text sections that were impacted by the 2017 Master Plan.

STRATEGIC GOALS & SITE ANALYSIS

STRATEGIC GOALS

Texas A&M University-San Antonio (A&M-SA) is now the first comprehensive four-year university on the South Side of San Antonio. This opens the door for economic development and educational options as the City and the County continue their growth. From the time of the 84th Texas Legislative Session's approval in 2015 to expand enrollment to freshman and sophomore students, the University has moved at a Jaguar pace providing greater educational access to individuals from historically underserved communities. Today, A&M-SA is strictly a commuter campus and serves as home to a diverse population of more than 5,500 students. Rapid growth at the main campus is projected to continue over the next ten years.

The University is laser-focused on becoming a National Model for Student and Academic Success by providing an enriching and high-quality education to students, particularly a first generation and underrepresented population. The University is leveraging our geographical location and A&M System excellence to meet the educational needs of a growing student body and regional workforce demands. We embrace the need to be responsive to the communities we serve as a prominent Hispanic-Serving Institution in San Antonio.

The 2017 Texas A&M University-San Antonio Master Plan's role is to guide campus development in a manner that accommodates growth while balancing academic programming, environmental, financial, cultural and other considerations. The Master Plan aligns with the University's Strategic Plan and focuses on achieving outcomes associated with the four University Goals, which include:

1. Become a National Model for Student and Academic Success for serving under-represented students and to achieve graduation and retention rates above the national average.
2. Implement an academic plan.
3. Achieve enrollment growth through strategic enrollment management, student-focused academic experiences, co-curricular programs, and student support services.
4. Engage in partnerships that advance student growth, as well as opportunities for faculty and staff engagement, scholarship, and research.

A&M-SA's core values are central to everything that is done across campus. The A&M-SA family strives for **excellence** above all else and does so with the highest standards of integrity. The University is **student focused** and utilizes intentional and innovative teaching and applied learning methods to educate our diverse student body, enhance retention, and encourage timely graduation. Through **audacious** thinking, our faculty and staff prepare students to create a better future. **Opportunities** exist for both traditional and non-traditional students. And through **collaboration** of various interdisciplinary approaches, students gain valuable marketable skills contributing to a meaningful life and a fulfilling career.

As a Jaguar family, we are growing by leaps and bounds, not only in population, but also in the strength that binds us.

OUR JOURNEY
Becoming a Four-Year Comprehensive University

2000
Established as Texas A&M University-Kingsville System Center.

2009
Texas Governor Rick Perry signed SB 629.
University became a stand-alone institution.

2011
Main Campus Opened
Permanent home ready for students.

2015
Expansion approved by the 84th Texas Legislative Session.

2016

February 3
Southern Association of Colleges and Schools Commission on Colleges approved downward expansion.
Began offering lower-division courses and accepting first-year student applications.

February 5
Inaugural cohort of freshmen students accepted as class of 2020.

July 5
39 new full-time faculty and 37 new full-time staff were hired to support the comprehensive expansion.

August 22
Inaugural class of first-year students and new transfer students began school. The 2016-2017 academic year began.

August 23
Received a Bexar County proclamation from the Bexar County Commissioners Court.
A prestigious honor recognizing the University for strengthening the Bexar County community by broadening our academic reach and becoming a comprehensive four-year university.

2017
DRT Collection expected opening.
Presidio Gallery will house the Daughters of the Republic of Texas Collection.

Esperanza Hall expected opening.
Student housing with 382 beds ready in the fall.

2018
Science & Technology Building expected opening.
Three-story building with classrooms and laboratories ready in the fall.

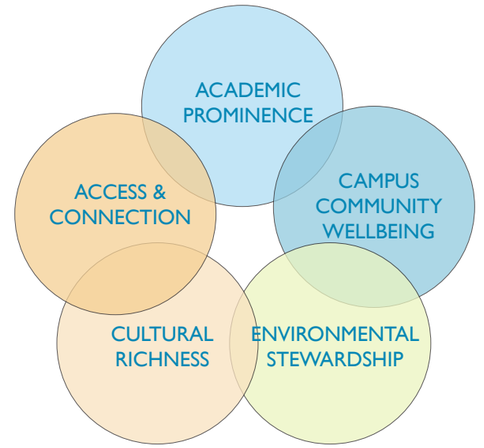
Texas A&M University-San Antonio Central Academic Building

ENROLLMENT PROJECTIONS

	Fall 2016	Fall 2017	Fall 2018	Fall 2019	Fall 2020	Fall 2021	Fall 2022	Fall 2023	Fall 2024	Fall 2025	Fall 2026	Fall 2027	Fall 2028	Fall 2029	Fall 2030
STUDENT ENROLLMENT	**5,511**	**6,514**	**7,546**	**8,451**	**9,305**	**9,770**	**10,258**	**10,771**	**11,309**	**11,874**	**12,468**	**13,091**	**13,746**	**14,433**	**15,155**
ENROLLMENT GROWTH RATE		18.2%	15.8%	12.0%	10.1%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%

ASSUMPTIONS:

1. Projections of 2017-2020 student enrollment based on actual fall 2016 enrollment numbers.
2. Projections are inclusive of undergraduate, graduate, and transfer students.
3. Projections for enrollment growth from 2021-2030 calculated at a flat 5% increase.



PLANNING & DESIGN PRINCIPLES

The Steering Committee developed five guiding principles to inspire the creation of the 2017 Master Plan.

ACADEMIC PROMINENCE

A&M-SA is a beacon for our community, and academics are placed at the helm of future campus development. Our facilities, spaces, and resources are optimized to promote student success and accommodate program and enrollment growth across the university.

CAMPUS COMMUNITY WELLBEING

The plan inspires health and wellness in our campus community by encouraging outdoor learning and activities, walking and biking, and interaction with our indigenous landscape and architectural heritage. The plan provides our students with a variety of residential and recreational experiences alongside academics.

ENVIRONMENTAL STEWARDSHIP

Our campus is a role-model for sustainability: the plan for growth embraces our local ecosystem through careful placement of built systems; use of passive and active design strategies; inclusion of native plantings and habitat restoration; and incorporation of outdoor learning laboratories.

CULTURAL RICHNESS

A&M-SA celebrates San Antonio's heritage, drawing from the missions, military, ranches of south Texas, and the built environments of Latin America for design inspiration. The architectural and landscape vocabulary of our campus features quiet courtyards, formal plazas, decorative brickwork, deep overhangs, and other traditional characteristics, creating a safe, engaging, and beautiful university setting.

ACCESS & CONNECTION

The campus infrastructure is designed to facilitate connections to neighboring institutions and our broader community. Our local transportation network links to the regional system and promotes use of trails, greenways, buses, and rail. Our high-tech infrastructure provides cutting-edge resources that connect our students to the A&M System and a global network of learners.

Texas

Bexar County

SITE ANALYSIS

A&M-SA is located in the heart of south San Antonio on approximately 700 acres within the Verano master development. The university lands are contained within four parcels:

- Two, five-acre parcels are located adjacent Loop 410 and University Way
- The main campus is approximately 581 acres and is located at the end of University Way along Verano Parkway
- The 104-acre south campus parcel is located south of Mauermann Road near Leon Creek.

ENVIRONMENTAL FACTORS

A&M-SA is located south of downtown San Antonio, a city of 1.4 million people. This large population influences air quality, hydrology, water quality, pests, scenic vistas, and soundscape/noise. The character of the area is currently quite rural and pastoral, but the land surrounding the site is planned as an urban center, complete with medium-to-high-rise buildings, concrete sidewalks and asphalt streets. The area to the north of Loop 410, however, includes significant man-made environmental impacts, such as fuel emissions, heat island temperature increases, stormwater runoff, city noise, and artificial light. Due to the location of the property and the significant buffer of undeveloped land between the site and the city, however, these man-made impacts do not have a significant effect on the site at this time.

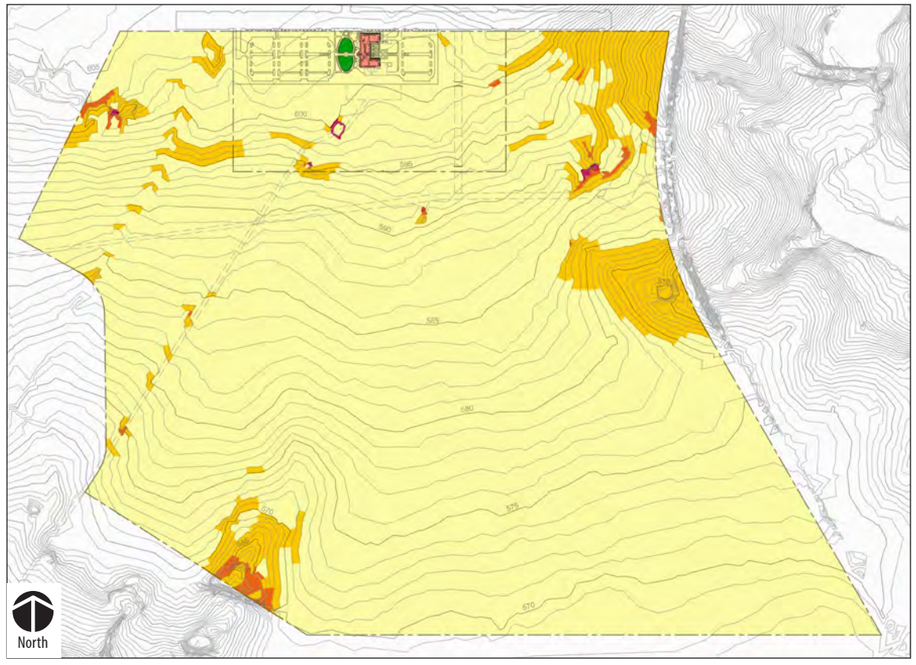
DISTURBED LAND

Since the 1930s, the property's primary use has been farming and cattle ranching. Topographic maps indicate oil wells on parts of the property were discovered between 1953 and 1967. Production continues in some areas today. The surrounding area is primarily rural, used for ranching, farming, and oil production.

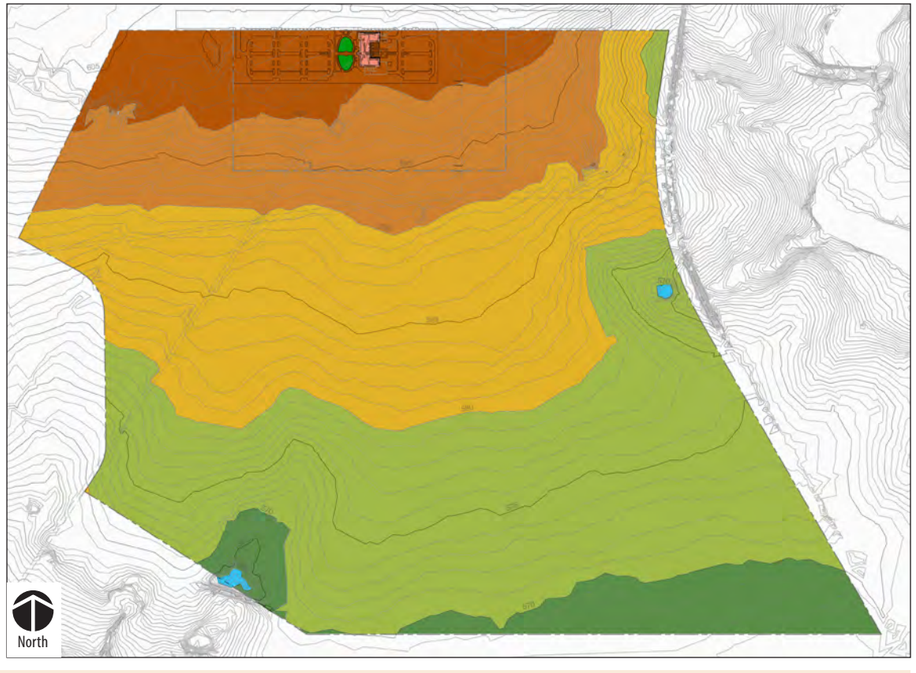
Much of the area in and around the campus can be classified as "disturbed land," or land that has been manipulated for various uses. Many of the previously plowed fields have become Huisache Tree Uplands. Other areas of the site were at one time dry scrublands. The site has been vacant with little or no improvements for many years, with the exception of new roadways, utilities and the first phase of development of A&M-SA. The new roadways - Verano Parkway and University Way - both have significant, established landscaping in the medians and along the parkways. A newly-established landscape with trees, turf and shrubs also surrounds the Main Building. As part of that design project, the campus green was created and the new parking lots were planted with trees.

CLIMATE, GEOLOGY, AND SOILS

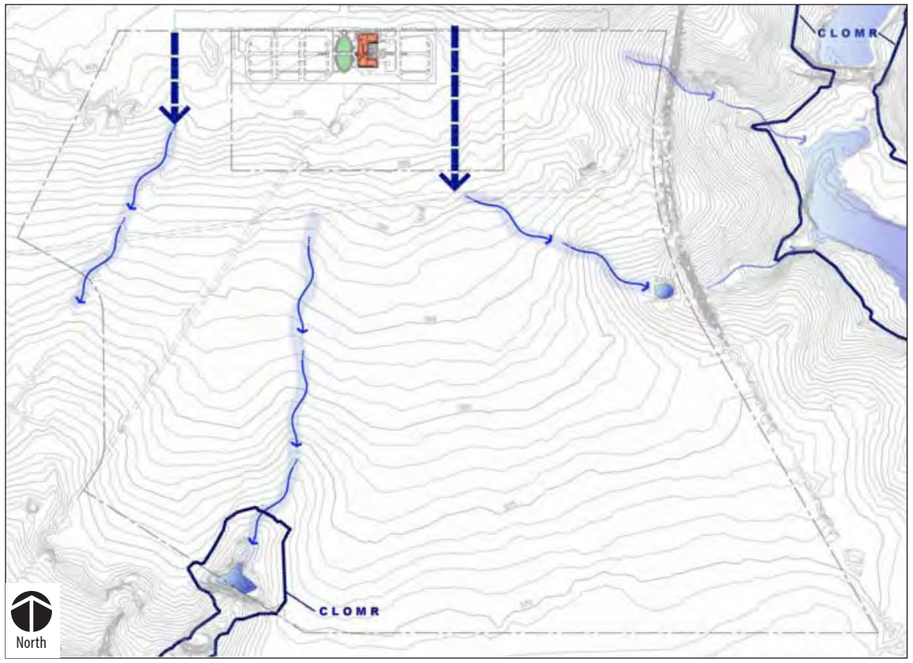
Climate and geology are two of the most significant factors on the site's environment, an area known as the South Texas Plains. South Texas is in the subtropical zone, with high heat and humidity in the summer and mild winters. Although the area averages approximately 30 inches of rain annually, much of it comes in brief storm events with long periods of drought. San Antonio is on the upper edge of the Gulf Coastal Plain where it meets the Edwards Plateau. These areas are separated by the Balcones



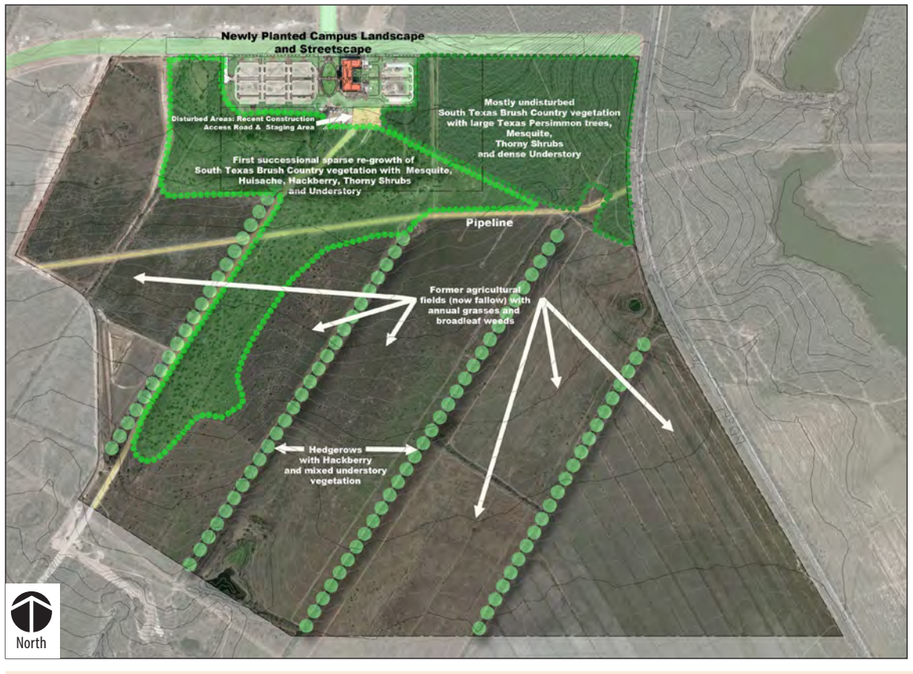
Site Slope Diagram



Site Elevation Diagram



Site Drainage Diagram



Site Vegetation Diagram

Escarpment, a series of faults which can affect local weather with its slight uplift.

Heat and humidity characterize San Antonio summers, with temperature rising to 90°F or above on an average of 116 days per year. Temperatures of 32°F or below occur on an average of 21 days per year, often for only an hour or so in the early morning. Humidity averages about 80% in the early morning during most of the year, dropping to about 50% in the late afternoon. In San Antonio, the sun shines 50% of the day in the winter and more than 70% in the summer.

Rainfall is fairly well dispersed throughout the year. Thunderstorms occur during the late spring and throughout the summer. Precipitation during winter usually occurs as light rain or drizzle, and snowfall is rare. Heavy fog occurs mostly in the winter months. Because San Antonio is only 140 miles from the Gulf of Mexico, it is affected by tropical storms with heavy rainfall and the potential for tornadoes. Storms can cause flash-flooding in many areas, and extended rainfall occasionally causes severe flooding in areas along rivers and creeks.

San Antonio is a unique location ecologically: the Edwards Plateau, Oak Woods and Tallgrass Prairie and Tamaulipan Thornscrub ecosystems all meet here. This, along with the presence of numerous streams and associated riparian vegetation, creates a great deal of biodiversity.

The site is located in an area designated by the U.S. Department of Agriculture as the "San Antonio-Crockett" soil association, characterized by deep clay loams and sandy loams with a clay pan. The specific soils found on the site include:

- Houston Black Gravelly Clay, 1-3% slope
- Houston Black Clay, terrace, 1-3% slope
- Venus Clay Loam, 1-3% slope
- Willacy Loam, 0-1% slope

These soils are generally deep, slowly-permeable calcareous soils. The climax vegetation on these soils consists of a wide variety of grass species and some scattered stands of Live Oak trees. As range conditions decline, these soils are invaded by woody species such as Mesquite, Condalia, Whitebrush, Spiny Hackberry, Blackbrush, Acacia, Agarita, Persimmon, Prickly Pear and Tasajillo Cactus.

These soils are susceptible to erosion on steeper parts of the site or where vegetation is removed. The soils are highly fertile, but intake of water is slow due to the clay surface layer.

DRAINAGE & WETLANDS

The main campus site drains at a gentle 2% slope to the south, with the western portions of the campus sloping toward Comanche Creek and Leon Creek while the eastern portions slope south toward Leon Creek and east toward Canvassback and Mitchell Lakes. Storm water detention is required for areas of the site that flow into Mitchell Lake, which can be incorporated into the campus plan through low-impact bioswales, rain gardens or other methods that incorporate native vegetation.

A portion of the south campus and a small portion of the main campus are within a 100-year flood plain, and drainage areas are subject to flash flooding. The EPA regulates the tributaries and wetlands leading into Leon Creek, so drainage areas will need to be formally surveyed to delineate wetlands prior to development occurring. Notably, the existing drainage and wetlands areas have been least disturbed by agricultural activity and, therefore, feature native habitats that could provide outdoor learning and recreational opportunities (such as the Leon Creek Preserve).

Site construction must include a clear plan for moving stormwater runoff away from developed areas, which may be a challenge with the low slope conditions. An additional consideration is the presence of an established stormwater drainage culvert under Verano Parkway leading to a channel on the northeast side of the site. Any stormwater runoff to the east toward Mitchell Lake will require mitigation using detention ponds and low-impact development elements, such as cisterns, bioswales, and other practices to reduce the impacts of heavy rains.

PLANTS

The campus resides within two natural regions: the Blackland Prairie natural region, which predominates the south part of downtown San Antonio, and the South Texas Brush Country, which encroaches from the south.

Blackland Prairie can be described as oak savannah, where patches of oak woodland are interspersed with grassland. Much of the original prairie has been plowed to produce forage crops, a practice that began during the early Spanish Colonial times in the 1700s. Typical vegetation on the Blackland Prairie consists of Pecan, Post Oak, Texas Persimmon, Sugarberry (Hackberry), and Buttonbrush.

South Texas Brush Country vegetation is characterized by plains of thorny shrubs and trees. Deeper soils can support tall brush like Mesquite, Huisache and Spiny Hackberry.

Although a great deal of the vegetation is the same as it was more than 250 years ago, the vegetative landscape has been altered by the increase in settlement, which transplanted exotic vegetation, and the increase in biomass along the edges of drainageways, ponds, and lakes.

Most of the trees and shrubs in South Texas have thorns or spines, but many also produce fruits and nuts, which is an important food source for birds and wildlife. In the spring, depending on the weather, many colorful wildflowers bloom, including Texas Bluebonnet, Indian Blanket, Baby Blue Eyes, and Turk's Cap.

Non-native plants, such as Johnson grass, Privet, Catclaw Vine and Japanese Honeysuckle, have been observed on the project site. Most non-native plants are also invasive; they often spread quickly and

create monocultures, forming dense stands or patches that displace native flora and eliminate wildlife habitat. The design of new landscapes should use native vegetation wherever feasible. The proposed building site has few significant established trees or vegetation to consider when locating the proposed new buildings. However, as the site is developed, careful consideration of all vegetation will be important in the re-vegetation of disturbed areas, maintaining the character of the property and reducing soil erosion.

PROTECTED SPECIES

Although several federally-listed endangered species are named for Bexar County, no habitats for these species exist today at the A&M–SA campus. However, habitats for a few state-listed species do occur within in the vicinity of the university campus; birds such as the White-faced Ibis and the Wood stork may utilize ponds on the campus occasionally. Additionally, migrating species may move through the site, including Monarch butterflies and various migrating birds. Reintroducing native vegetation to the campus may encourage repopulation by nearby native species and support migration patterns.

For detailed environmental and ecosystem assessments, refer to SWCA Environmental Consultant's report from June 2012, which is found in the Appendix.

CULTURAL RESOURCES

Although much of the site has been previously disturbed by agricultural activity and major cultural findings are not anticipated, the region is known for early Native American occupancy and artifacts may be discovered during campus development. Some points within the wetlands areas have been previously surveyed, yet nothing from the early era of Native American occupancy has been discovered. However, the south parcel contains a historic site recognized by the City of San Antonio: the Mitchell-Mauermann Cemetery & House Site.

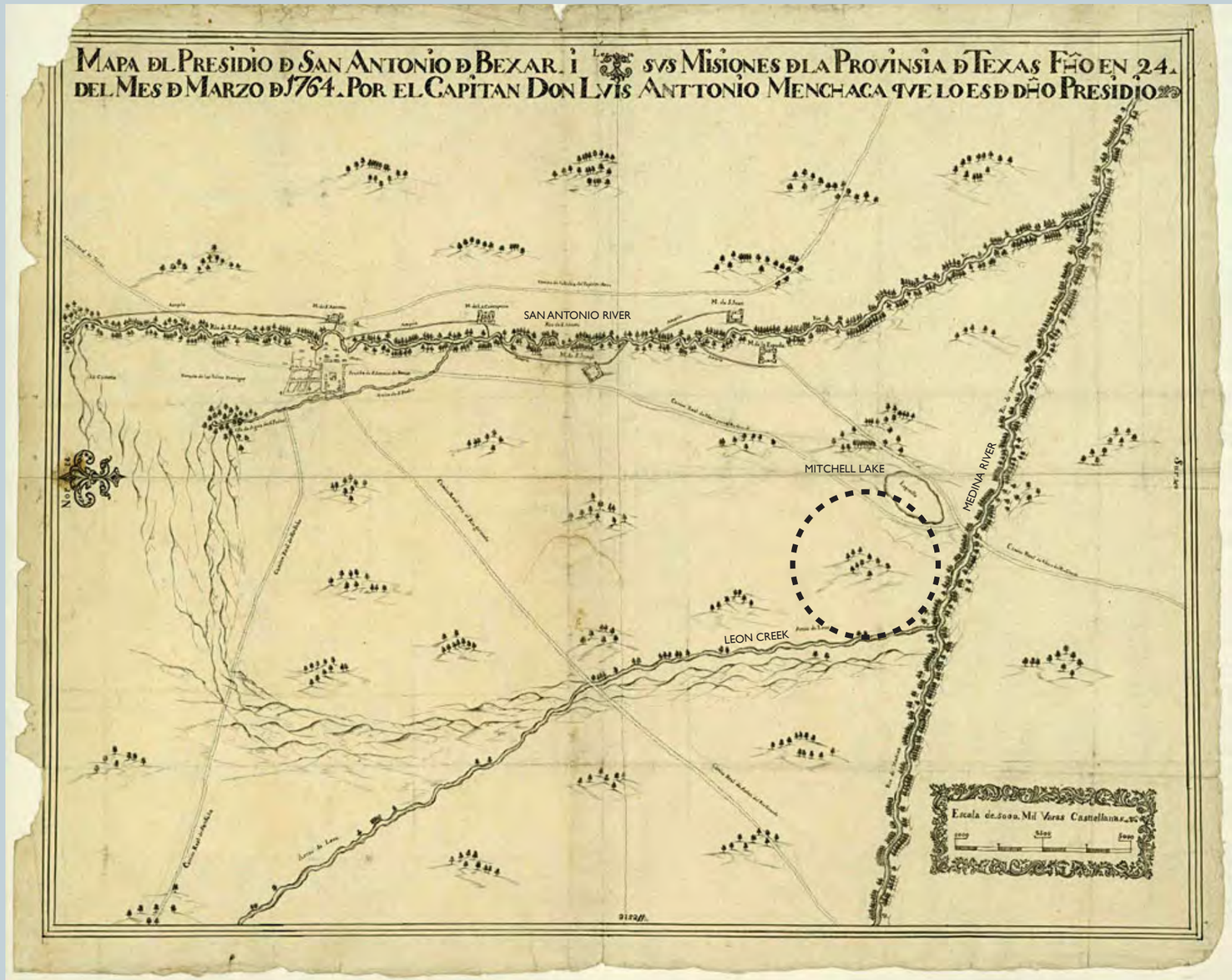
HISTORY OF CAMPUS LANDS

It should come as no surprise that the land on which the A&M-SA campus is located has ties to Texas' early history. Physical evidence of this legacy is present on the South Parcel, where a cemetery and abandoned homestead are located; this site, known as the Mitchell-Mauermann Cemetery & House site, was designated as a historic site by the City of San Antonio in 2008.

When the area was first settled, many families from the Canary Islands located their estates south of San Antonio along the San Antonio river, near the Mission de San Jose, Mission de San Juan, and Mission Espalda. Although many records are not available from that time period (early 1800s), we believe that the land within which A&M-SA is now located was once attributed to the Ignacio Perez family.

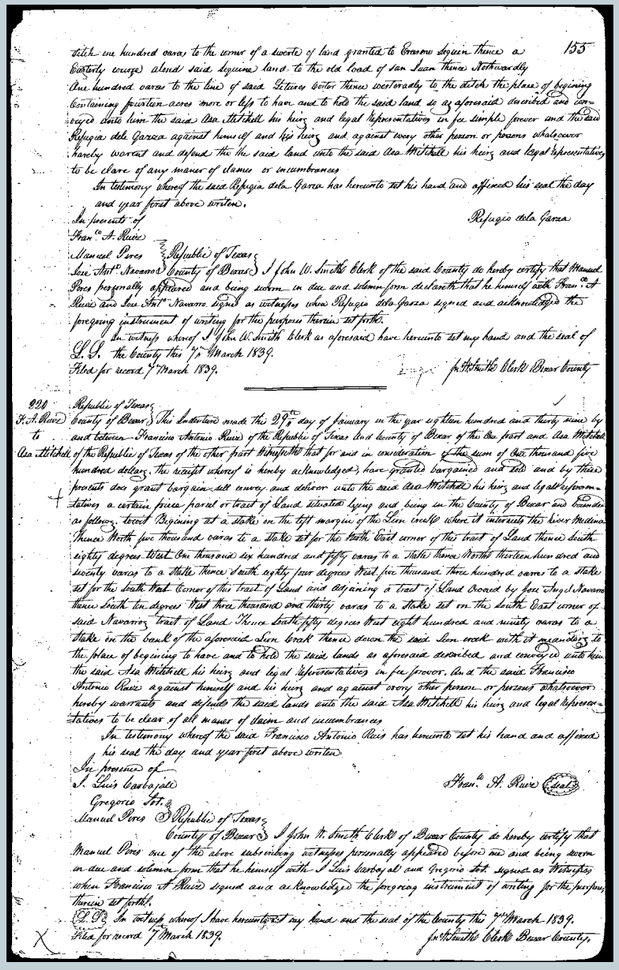
Maps from the Texas General Land Office, which were created in the 1870 and 1880s (opposite page), denote some of Ignacio Perez's land bordering on Leon Creek, at the current location of the Toyota manufacturing facility. The lands north of Leon Creek are attributed to Fernando Rodriguez, who is believed to be a son-in-law of Ignacio Perez.

Much of the land in southern Bexar County remained in the hands of the Canary Island settlers as the area transitioned from Spanish to Mexican rule, but changes of ownership occurred rapidly during the struggles associated with the Texas independence movement. According to Bexar County archives (opposite page), Asa Mitchell, one of Stephen F. Austin's "Old 300", acquired approximately 8,700 acres of Rodriguez's land north of Leon Creek in 1838 for 1,500 dollars; an agent, F.A. Ruiz, acted on behalf of Rodriguez during the sale.



"Mapa del Presidio de San Antonio de Bexar, Misiones d'la Provinsia d'Texas, 1764," courtesy of the John Carver Brown Library, Brown University; retrieved 21 March 2016 from Texas Beyond History online; the general area affiliated with Ignacio Perez and Asa Mitchell is encircled. Note that the San Antonio River, which runs north-south, is illustrated horizontally across the top of the page; the future Mitchell Lake is also depicted.

1887 Map of Bexar County, Texas General Land Office: the land area associated with Ignacio Perez and Asa Mitchell is encircled.



1838 Transcation Record for Sal of Land from F.A. Ruiz to Asa Mitchell, Bexar County Archive. (top)

Burial marker for Asa Mitchell located on the South Parcel; image by Texas A&M University-San Antonio.

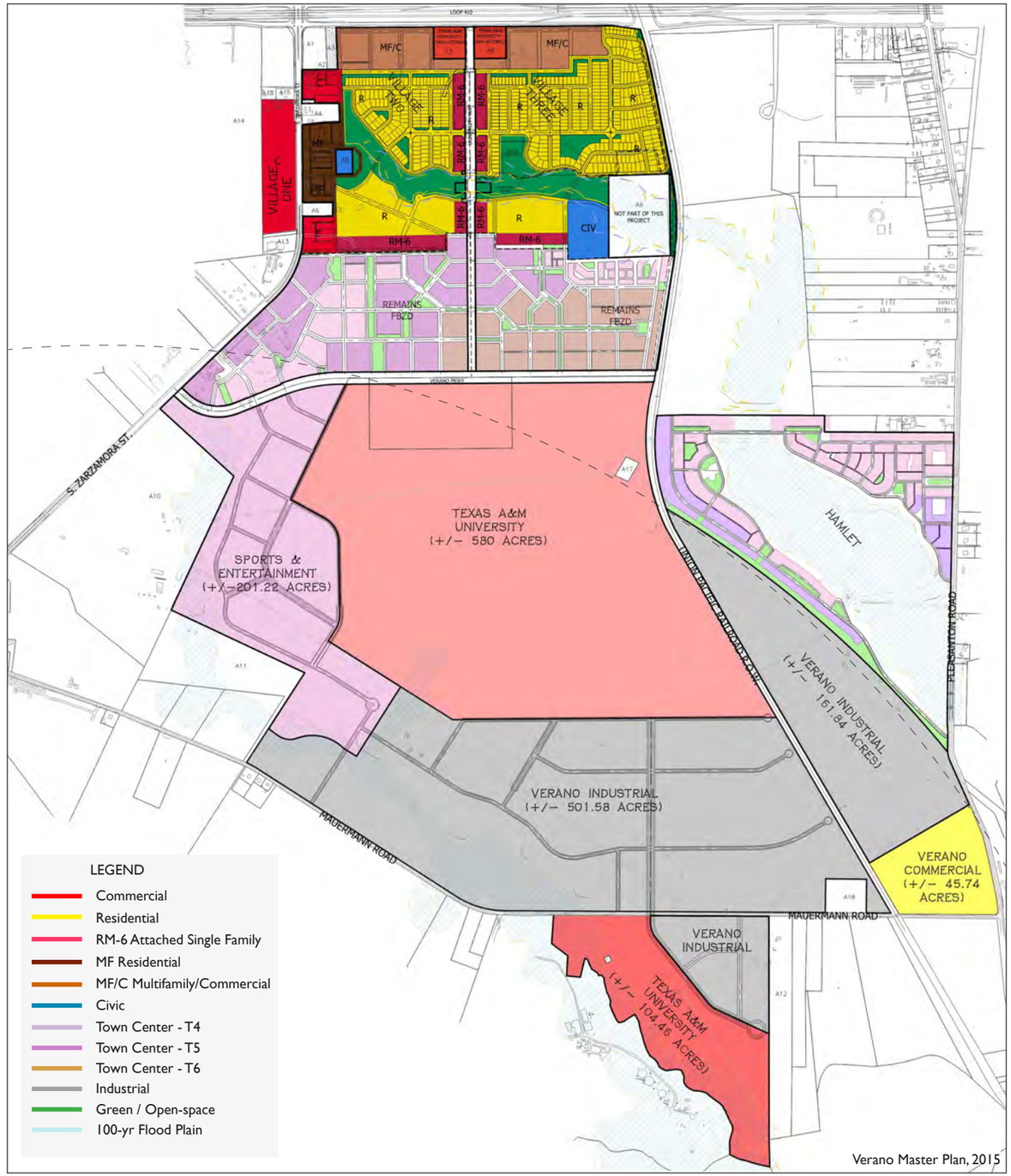
Today, the area associated with Mitchell's acquisition roughly extends from Palo Alto Road on the west to Pleasanton Road or Mitchell Lake on the east and from Leon Creek on the south to a line in between Verano Parkway and Loop 410 at the northern border.

Mitchell was born in Pennsylvania in 1795 and had come to the newly independent Mexico in 1824 as a part of Austin's colony, originally settling on the Brazos River near Goliad. Mitchell was active in the fight for Texas' independence, and he both served as a member of the General Council of the Provisional Government of Texas and fought with Sam Houston at the Battle of San Jacinto. Asa Mitchell's brother, Eli, is attributed with firing the first shot in the Battle for Texas independence from the "Come and Take It" cannon. Mitchell Lake is named for the Asa Mitchell family, and Mitchell County, Texas, is named for Asa and Eli Mitchell.

Asa Mitchell relocated his family to San Antonio in the early 1840s and lived there until he died in 1865. Following his death, his land was subdivided but remained in the hands of Asa Mitchell's decedents for many decades. The parcels most closely associated with the homestead passed to Asa's grand-daughter Ella, whose son, Gus B. Mauermann became Mayor of San Antonio from 1942-1947.

Several Mitchell-Mauerman decendents are buried at the cemetery on the South Parcel.

Campus Location Diagram



Verano Master Plan, 2015

AREA DEVELOPMENT

The A&M–SA campus is located within the Verano development in south San Antonio. Verano is envisioned as a new urbanist style development, featuring a dense, walkable, and mixed-use development pattern. The university serves as Verano's anchor, and the main campus is positioned at the end of a long, north-south boulevard named University Way, which connects to Loop 410. The intersection of University Way and Loop 410 is flanked by two, five-acre university parcels.

Verano Parkway, an east-west arterial corridor, defines the university's main campus parcel on the north side and connects to Zarzamora Road. The eastern edge of the main campus is bound by a railroad line, which may provide commuter transit within the next 20 years. The western edge of the campus is undeveloped but will ultimately connect with the Verano development. A tributary to Leon Creek touches the southern edge of the university's main parcel; Mauermann Road will provide access to the main parcel's southern edge while also servicing the university's south parcel at the edge of Leon Creek.

San Antonio's long-range transportation plan calls for major improvements to Mauermann Road to create an east-west arterial corridor. The plan calls for phased implementation of the improvements.

Beyond the Verano development, area neighbors include the Toyota plant, a City Wastewater Recycling Plant (WWTP), and mixed lands dedicated to agriculture and industry. The main campus parcel is bifurcated by a natural gas easement and is also subject to a three-mile overlay related to the Toyota Plant that limits residential uses to the northeast corner of the campus.

Generally, the main campus is currently served by utilities stemming from Verano Parkway: water, wastewater, storm water, electrical, natural gas and communications infrastructure are present within the road's right-of-way. As the campus continues to develop, the southern portions of the main campus site will need to be supplemented with utilities infrastructure from additional points. Recycled water from the WWTP may become available for irrigation over the next few years; Verano Parkway is already outfitted with a recycled-water trunk line.

CAMPUS COMPARISONS

To get an idea of what size and proportion would best suit the core green space for A&M-SA, aerial images of the other campuses were overlaid onto an aerial of the 581-acre A&M-SA site, outlined in red. The core spaces are highlighted in yellow and copied onto the area between the Main Building and the west parking lot to understand their relative size. Many of the core spaces that were examined are well known to the University campus community of faculty, staff and administration, and provided a good sense of scale and quality of space that can be expected as the core develops.

TEXAS A&M-COLLEGE STATION
Fall 2011 Enrollment: 49,961 | Campus Size: 5,500 acres

Campus size comparison: A&M-College Station vs. A&M-SA

Campus core open-space A&M-College Station

A&M-College Station open-space compared to available A&M-SA open-space

TEXAS A&M-INTERNATIONAL
Fall 2011 Enrollment: 7,039 | Campus Size: 300 acres

Campus size comparison: A&M-International vs. A&M-SA

Campus core open-space A&M-International

A&M-International open-space compared to available A&M-SA open-space

TEXAS A&M-KINGSVILLE
Fall 2011 Enrollment: 6,737 | Campus Size: 250 acres (main campus)

Campus size comparison: A&M-Kingsville vs. A&M-SA

Campus core open-space A&M-Kingsville

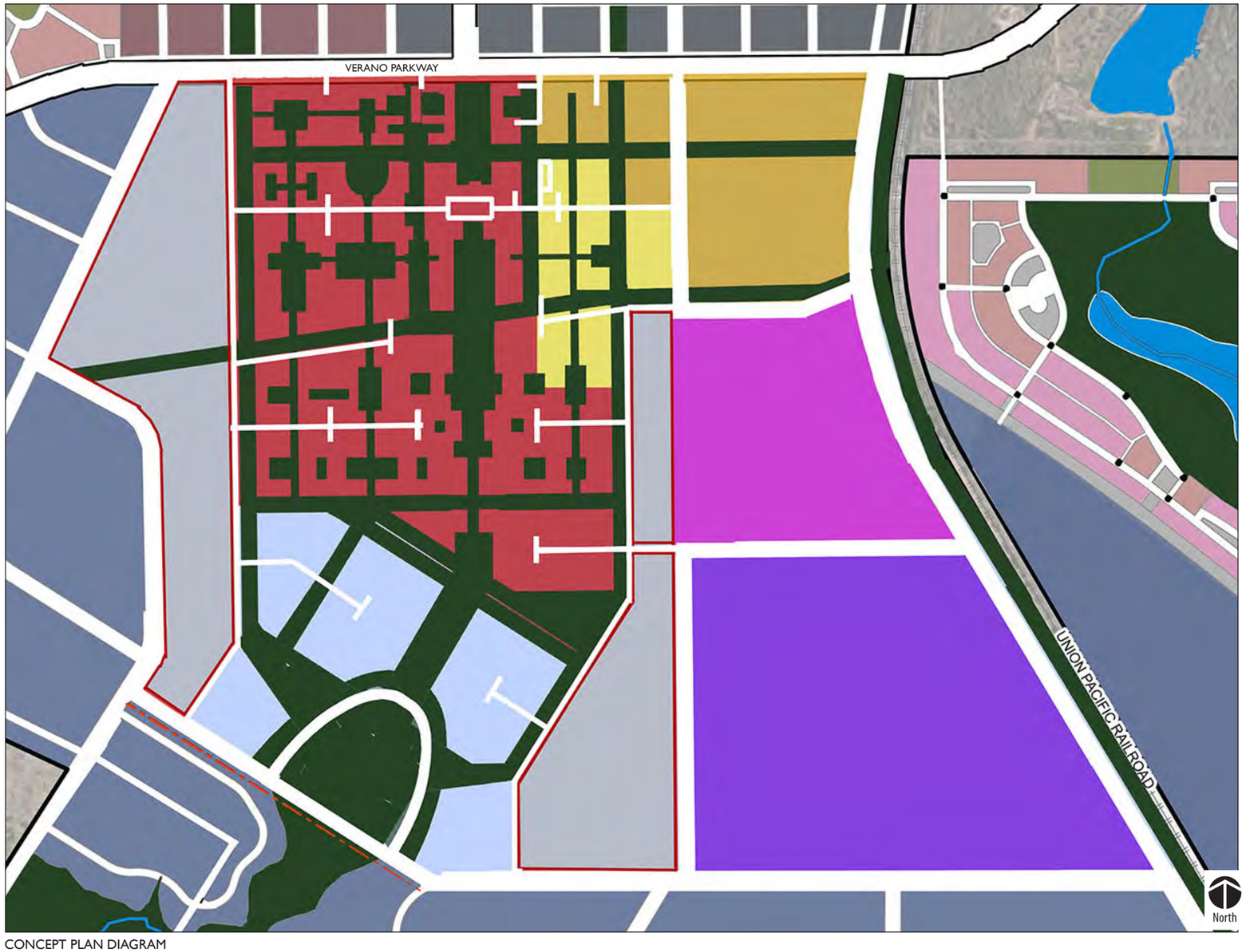
A&M-Kingsville open-space compared to available A&M-SA open-space

UNIVERSITY OF TEXAS SAN ANTONIO
Fall 2011 Enrollment: 31,114 | Campus Size: 725 acres (main campus)

Campus size comparison: UTSA vs. A&M-SA

Campus core open-space UTSA

UTSA open-space compared to available A&M-SA open-space



CONCEPT PLAN DIAGRAM

CONCEPT PLAN

Using the strategic goals, planning and design principles, and site analysis as a guide, the Concept Plan describes an early working framework for the 2017 Master Plan.

The Concept Plan features the following elements:

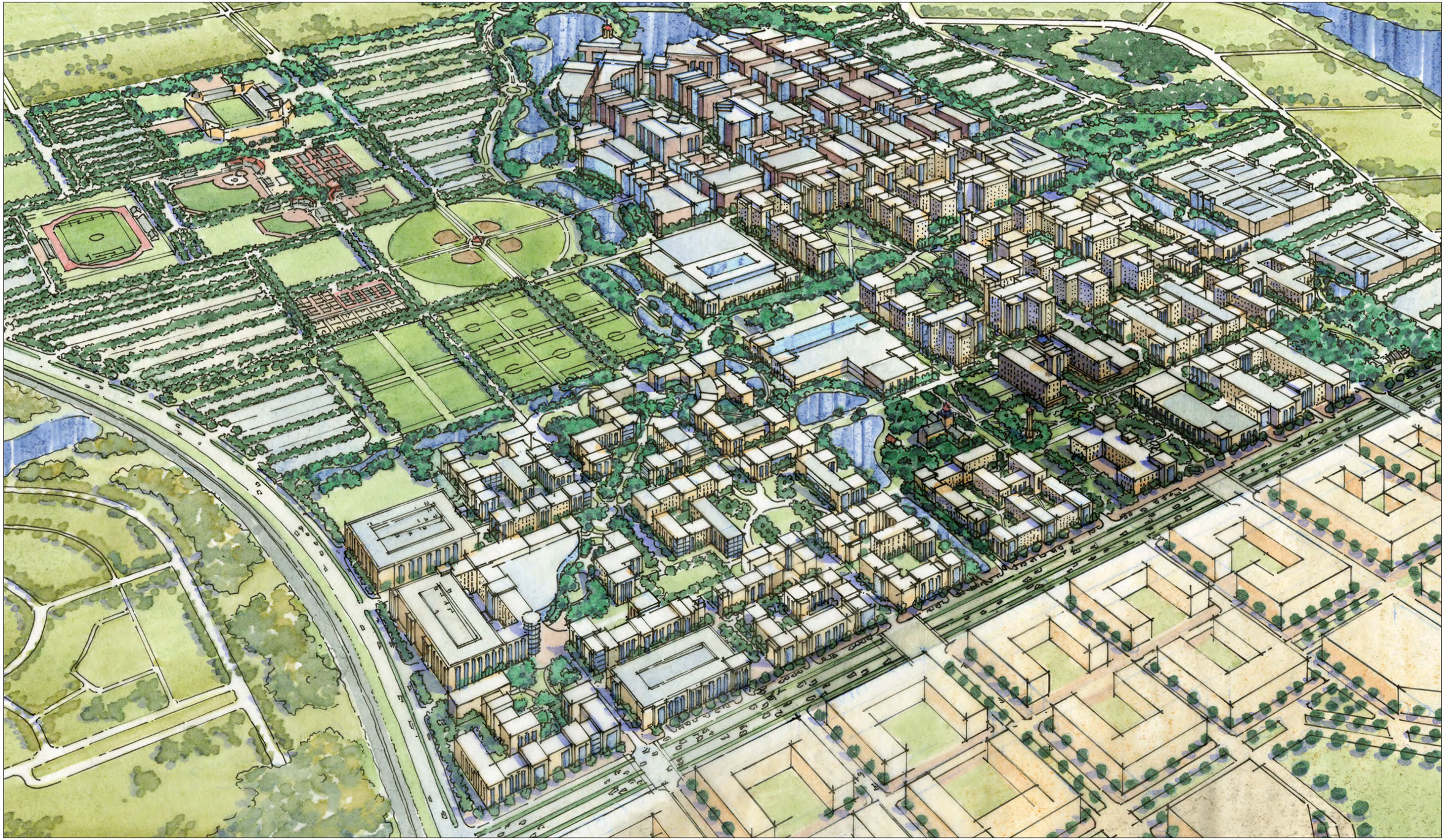
- Programmatic Districts, which organize University uses into discreet areas of the campus
- Street networks and open-space patterns that align with neighboring development
- Greenbelts and eco-corridors that tie the campus into regional water, habitat, and recreation systems
- Pedestrian-friendly core with limited vehicular access to the interior
- Parking areas at the edges of the campus

The Concept Plan builds upon the existing campus gateway, which is centered on the Central Academic Building (CAB), and stretches the academic core of the campus to the south and west of this existing node. The Plan locates on-campus student residences to the northwest corner of the campus, which is outside of the three-mile Toyota exclusion zone. The student life district, which will contain the student innovation center and dining facilities, is placed centrally between housing and academics. Recreation and athletics facilities are positioned on the southeast portion of the campus, and research is located to the southwest.

Across the 581-acre main campus site, the Concept Plan offers the following space allocation:

- Academic Core, 140 acres
- Student Housing, 57 acres
- Student Life, 24 acres
- Athletics, 115 acres
- Research, 84 acres
- Parking, 100 acres (appx. 12,445 spaces)

MASTER PLAN: LONG-RANGE VISION



MASTER PLAN OVERVIEW

The 2017 Master Plan builds upon the best elements of the 2012 Development Plan and the 2009 Master Plan, while incorporating updates to the University's strategic goals for growth, revised planning and design principles, and changes to plans for development adjacent the campus.

The 2017 Master Plan is designed for a potential enrollment of 50,000 students and features:

- 4.8-6.0 Million gross square feet (GSF) Academic Facilities
- 500,000 GSF Student Life Facilities
- Student Residences for 10,000 students (20% of student population; 3.0 Million GSF)
- 16,000 Parking Spaces (30% ratio)

Texas A&M University-San Antonio (A&M-SA) anticipates high growth in student enrollment over the next 10 years, increasing from approximately 5,500 students today to nearly 12,500 students by 2026. The Master Plan provides a framework for rapid expansion and construction of new facilities in the near-term, directing the development that occurs today to responsibly consider the long-term vision for campus development.

Drawing from the revised Planning Principles, the 2017 Master Plan features more density than previous plans and incorporates more connections to regional ecological and recreational systems. It features architectural and landscape elements that draw from San Antonio's and South Texas' cultural heritage, and anticipates future growth and connectivity with regional transportation infrastructure. Additionally, it celebrates the role of the University as a beacon within the community: the plan strategically utilizes landmarks, nodes, and edges to both orient and define the campus as a place for academic pursuit.

MASTER PLAN DISTRICTS

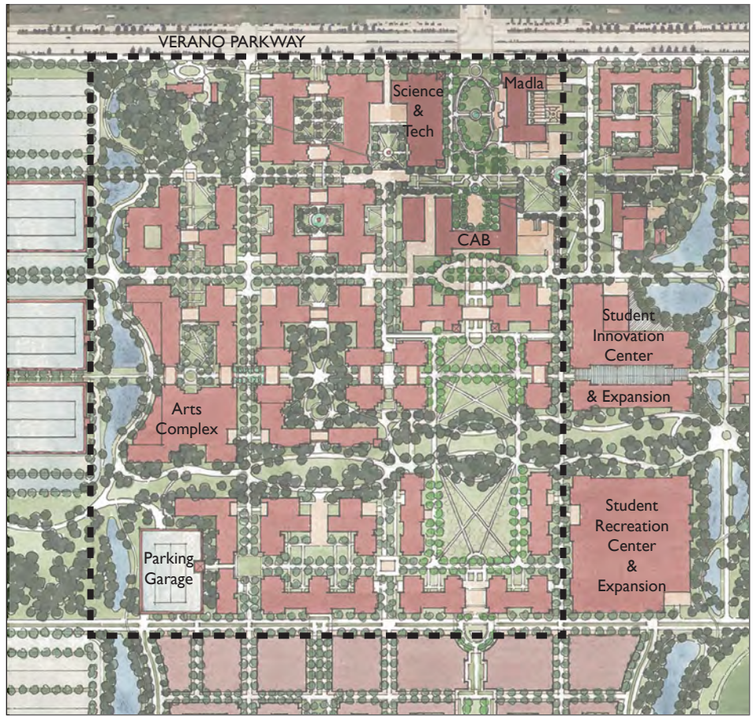
The 2017 Master Plan is organized into six districts, each of which is generally defined by its programmatic usage. These are: Academic Core, Student Housing, Student Life, Student Recreation, Athletics, and Research. While similar architectural elements and plant palettes unify the campus, each district's scale, proportion, and development pattern varies in order to accommodate the area's function.

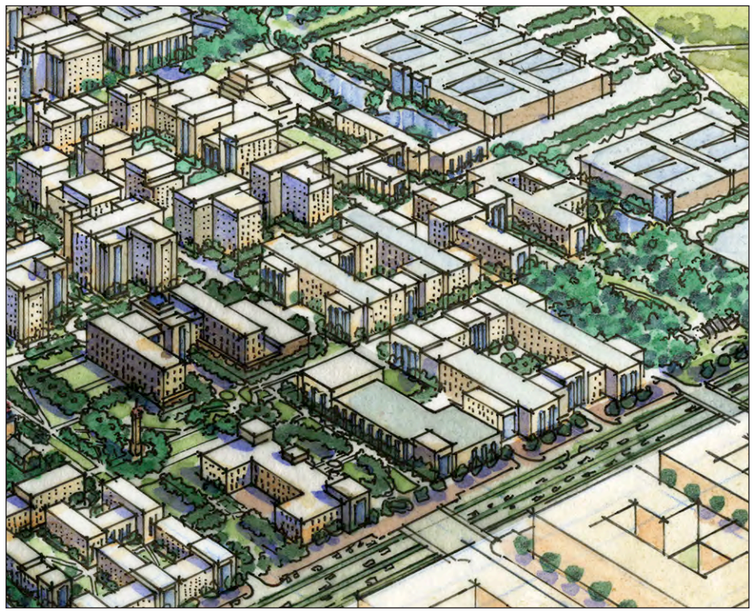
The districts are woven together by a layered network of pedestrian and landscape patterns. Structured quadrangles, plazas, courtyards, and gardens are distributed throughout the campus to create a spectrum of spaces ranging from large and public to quiet and more private. A softer, less-structured greenway winds its way through the campus, providing a eco-corridor for recreational (hike and bike), stormwater management, habitat restoration, and educational uses.

In order to enhance walkability, the center of the campus is dominated by pedestrian movement, featuring many sidewalks, trails, and pathways for access. The primary streets and parking areas serving the campus are located at the campus' perimeter; vehicular access at the center of the campus is limited to service and emergency uses only. In this way, conflicts between pedestrian activity and vehicular movement are reduced.

CAMPUS ORGANIZATION:

1. ACADEMIC CORE DISTRICT
2. STUDENT HOUSING DISTRICT
3. STUDENT LIFE DISTRICT
4. STUDENT RECREATION DISTRICT
5. ATHLETIC DISTRICT
6. RESEARCH DISTRICT





ACADEMIC CORE

The Master Plan utilizes the strong axial relationship created by University Way as an organizing feature: the grand view from University Way terminates in the four-story Central Academic Building (CAB), which is situated at the edge of a formal quadrangle and framed by two, three-story academic buildings (Madla and the future Science and Technology Building). This ceremonial front door creates a recognizable landmark for the community and a gateway into the university.

The academic core's northern boundary is Verano Parkway, and is envisioned by both the University and Verano development master plans as a traditional "town-gown" streetscape. The University's buildings on the south side of the Verano Parkway should frame the street and incorporate pedestrian-friendly elements such as shaded arcades and active corner functions. Buildings that are positioned at the visual termination of planned streets should incorporate towers, gateways or other landmark features to complement the surrounding development's character. The Master Plan aligns vehicular entries to the University with the Verano Development's proposed streets to create clear circulation patterns. The University's parking lots, service driveways, and maintenance yards should be screened from view along Verano Parkway; the University's agreement with the Verano Development articulates further design guidelines.

Behind the formal gateway at the intersection of University Way and Verano Parkway, the academic core of the campus unfolds. The plan concentrates primary academic functions in several six- to eight-story buildings, which encircle an expansive green space. A series of meandering pathways crisscross this green space on an east-west axis at the center; this greenbelt of trees and paths effectively divides the larger green space into two distinct areas, which should be landscaped in a manner that draws from regional heritage. For example, these two spaces could be realized as large parade grounds, landscaped as an open lawn for performances, Fiesta, or annual Festival De Cascarones; alternately, they could be planted as botanical gardens or orchard spaces, reminiscent of mission or convent gardens and used for educational or research purposes (see the Jardín Etnobotánico de Oaxaca in Oaxaca City, MX).

On the western edge of the academic core district, the master plan envisions a complex of art and performing art buildings; these types of uses typically draw visitors, so locating them near the edge of the campus close to parking and roads is ideal. The president's house is currently shown along Verano Parkway, adjacent the future arts complex.

STUDENT HOUSING DISTRICT

The northeast quadrant of the main campus is reserved for student housing facilities, which are planned to accommodate 10,000 students (20% of the planned maximum student population). The three-mile residential exclusion zone surrounding the nearby Toyota manufacturing plant dictates this campus organization. While most student residences are able to be accommodated outside of this three-mile zone, a few are shown within in order to meet the 20% on-campus goal; the University will need to address this with the Toyota plant at a future date.

Buildings and outdoor spaces within the student housing district are smaller in scale compared to those within the academic core. Residence halls should be a minimum of four stories tall, and, as shown in the plan, should be densely organized around small, interior-facing courtyards. The first story of residence halls may be taller than the upper stories to accommodate programmatic elements such as classrooms, student lounges, or multi-purpose space.

The Master Plan proposes that the cadence of residences located along Verano Parkway match with the block pattern proposed by the Verano Development. Vehicular entries, where present, should align with Verano's streets; residence halls located along Verano Parkway should feature a taller first floor to match the size and scale of proposed commercial activities across the street.

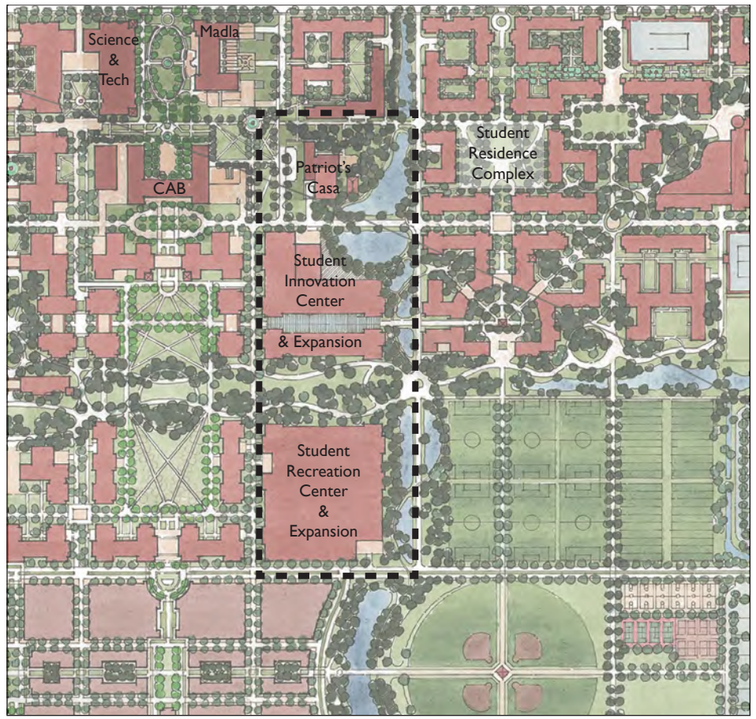
Architectural references should draw from regional residential character, and interior courtyards should feel private and quiet compared to the larger spaces on campus. A variety of landscaping, screens and low walls should be used to create a sense of transition between the public and private; these transitional elements may take the form of colonnades or arcades, arbors, porches, and patios.

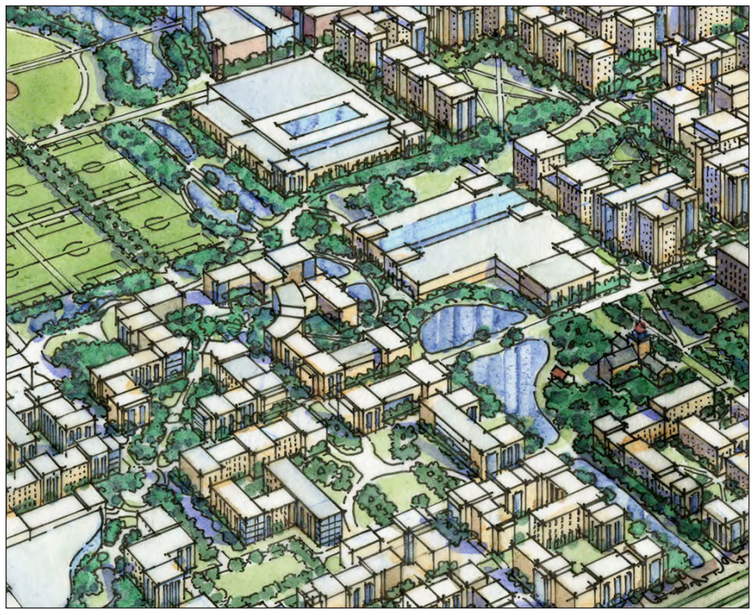
In contrast to the smaller, interior-facing courtyards, the master plan also locates some larger quadrangles within the residential district to provide for informal recreation fields and to encourage student gathering and interaction. These spaces should be landscaped as multi-purpose open lawns and surrounded by sidewalks and shade trees.

The open-space network connects the student housing district to the rest of the campus. A primary pedestrian corridor runs east-west and connects to the academic core of the campus; this pedestrian spine is anchored by a monumental clock-tower, which is located at the intersection of the student housing district, the student life district, and the academic core.

A second pedestrian corridor runs diagonally through the student life district (northeast to southwest) and connects to the student life district near the student innovation center (student dining, services, multi-purpose spaces) and student recreation building. This corridor should be landscaped with shade-trees and tie into the north-south greenbelt that runs on the western edge of the student housing district. A second student dining facility is located as an anchor to the northeastern end of this diagonal corridor.

The student housing district is primarily pedestrian-only, although some wide sidewalks within this zone do provide for service and emergency vehicle access. The Master Plan locates parking garages at the northern and far eastern edge of the district. While construction of these garages is not anticipated for many years, the student housing district shall be developed in a manner to preserve density: surface parking should not be distributed throughout the student housing district and, if needed prior to building structured parking, should only be provided at the eastern edge of the campus.





STUDENT LIFE DISTRICT

The most active elements of any University are its student life facilities, and the Master Plan for A&M-SA locates these functions together in a centralized hub at the heart of the campus. The student life district includes buildings such as the student innovation center, the student recreation center, and the dining hall. The district's physical placement between the academic core and the student housing district reinforces its high-frequency use; it is envisioned that this node of the campus will be constantly bustling with activity as students move between their residence halls and classrooms or laboratories.

The student innovation center is located at the northern end of the student life district. This building will function as a student union, incorporating dining, student services, student life, library and multi-purpose uses under one roof. The master plan anticipates that this facility will be built in two phases: the northern portion of the building will be built initially and the southern portion will be added as necessitated by enrollment growth. Since student-union type buildings tend to be grand in scale and size, the plan envisions that the structures be physically separated by an exterior atrium, which creates a shaded breezeway through which east-west pedestrian traffic may easily flow.

The University's first central plant will be incorporated into the northeastern corner of the student innovation center complex. Architecturally, the central plant should complement the student innovation center to create a unified appearance; care shall be taken during design to either visually screen the central plant or "display" the plant's technological features (e.g., with a glass façade). The placement of the central plant here aligns with the University's existing utility corridors, allowing for easy expansion of the thermal utility loop. The location also enables the central plant to be accessed from an east-west service vehicle corridor.

The student recreation building is located south of the student innovation center and is in close proximity to the recreation fields on the eastern edge of the campus. The Master Plan also anticipates that this facility will be expanded over time and allots additional space accordingly. Parking for the student recreation center is located just to the east of the student life district, adjacent to the recreation fields.

A landscaped greenbelt weaves through the student life district, appearing as both an east-west band at the center and a north-south band at the eastern edge. The east-west corridor coincides with a natural gas easement that restricts vertical construction; sidewalks, trails, and landscaping within this zone will create a naturalistic and meandering eco-corridor (greenbelt). The north-south greenbelt also features hike and bike trails and connects into the regional recreation network. The greenbelt builds upon the existing drainage channel to create an engineered ecosystem that helps to manage stormwater runoff and connects to native creeks nearby; numerous stormwater catchment basins and retention ponds are planned within and adjacent to the greenbelt to divert runoff during large rain events. Facilities located in the student life district will have both views and physical connections to this naturalistic landscape.

STUDENT RECREATION & ATHLETICS DISTRICTS

The Master Plan locates the recreation district to the east of the student life district and south of the student housing district. Soccer, football and baseball fields, tennis courts, and basketball courts are all shown in the plan. The recreation district will have strong pedestrian connections back to the student recreation building located in the student life district; the sidewalks within the district will also connect to the hike and bike trails located in the University's greenbelt.

The Master Plan locates the University's athletics district on the southern edge of the campus and adjacent to the recreation district. Competition baseball, softball, tennis, football, track and soccer fields are positioned centrally within the district; these facilities are surrounded by surface parking lots, which can be used by University students and staff during non-event times. The district is placed closest to the future expansion of Mauermann Road in order to ease access and congestion during and after events.

The Master Plan does not depict a convocation center or multipurpose arena on the campus, although one could be accommodated within this district if needed at a later time. It may be preferable for the University to explore co-developing a convocation center north of Verano Parkway within the Verano development's civic center. If co-located in the civic center, the arena could be utilized by groups outside the university and surrounded by supporting restaurant, retail, or housing functions (refer to the Convocation Center at Old Dominion University as an example).

RESEARCH DISTRICT

To the west and south of the academic core district lays the research district, which will feature laboratory and research buildings of various sizes. The scale and density of the research district should match the academic core: buildings should be six- to eight-stories tall and should frame exterior courtyards and green spaces. The usage pattern, however, will be more mixed-use in nature; cafés, sundry shops, retail and service-oriented businesses should appear on the ground floors while upper stories should be reserved for professional office or research laboratory use. Oftentimes, these buildings will be multi-tenant structures, occupied by a mix of University-sponsored, private businesses, or non-profit organizations.

The open-space network within the research district takes on a different pattern as well, featuring a combination of both local streets and pedestrian-only corridors. This more urban pattern is better suited to the mixed-use and multi-tenant facilities of the research district than a pedestrian-only network would be. Therefore, the Master Plan wraps a local street around the research district to create a slight boundary and acknowledge this change of use. Most corridors within the district are smaller streetscapes with both vehicular and pedestrian access to service the businesses and offices located here. However, a north-south pedestrian-only spine sits at the vertical center of the research district to serve as a primary and formal conduit for connections to the academic core. This central north-south connector should be raised as it crosses any vehicular intersections.

A landscaped eco-corridor (greenbelt) winds through and around the research district, providing both recreational opportunities and stormwater management solutions. This ribbon of trails and paths connects the research district back to the core areas of the campus and weaves it into the regional trails and landscape system.

SOUTH PARCEL

A&M-SA also owns a 108-acre parcel of land located south of the main campus along Leon Creek. This parcel is influenced by several environmental considerations, including portions of the site that are located within a 100-year flood plain, the presence of cultural artifacts associated with a historic site (Mitchell-Mauerman cemetery and associated historic buildings), and the site's immediate adjacency to a wastewater recycling plant (wastewater treatment).

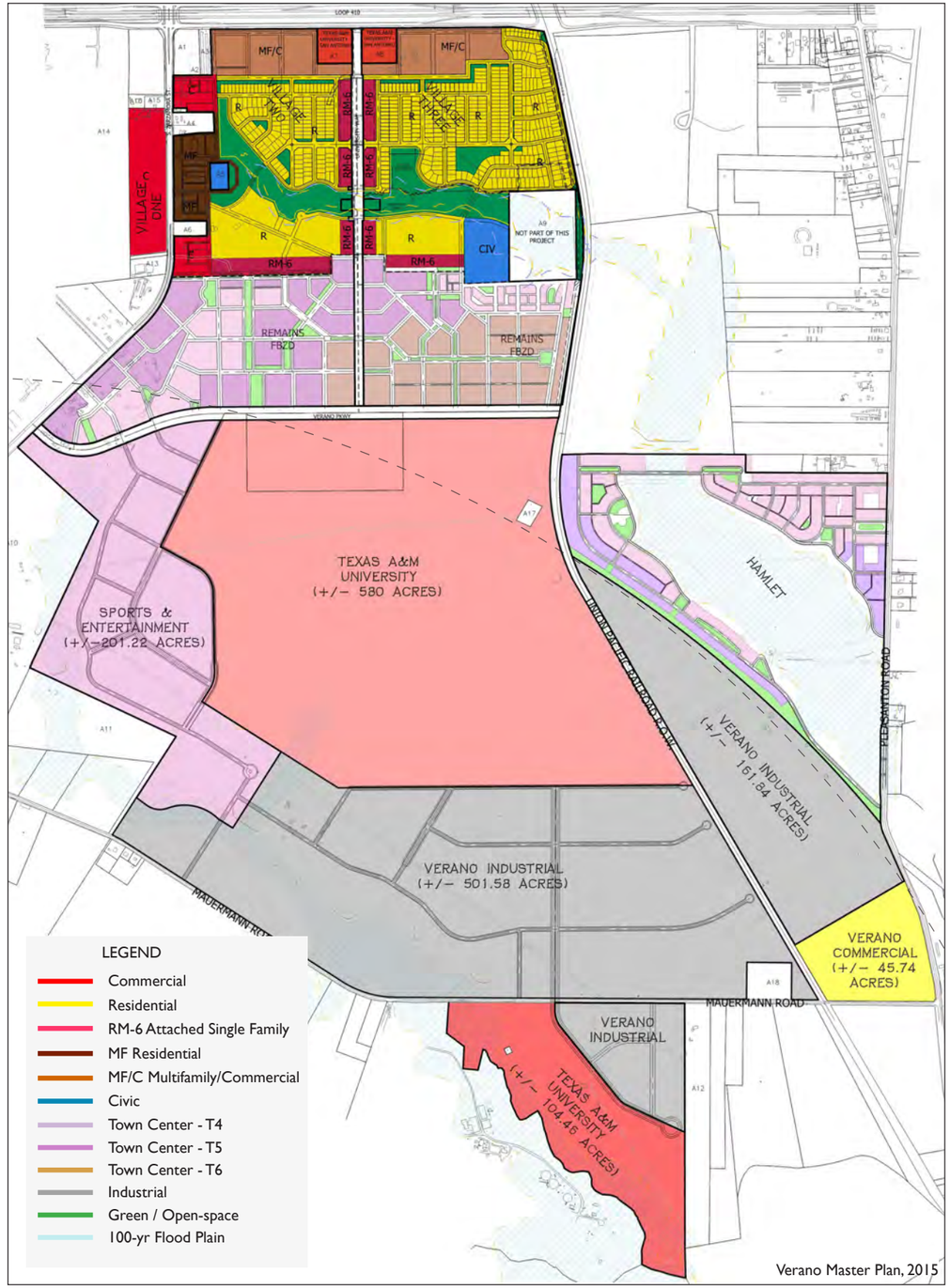
For these reasons, the Master Plan recommends that this site be utilized for research, whether for irrigation, test plots for turf grasses, or stormwater treatment or other research projects. The University should provide continued access to the Mitchell-Mauermann cemetery (as per an easement), and any redevelopment should take care to preserve and restore the historic buildings on the site. As a consideration, the University may wish to create a visitor or educational center commemorating the land's historic usage.

NORTH PARCELS

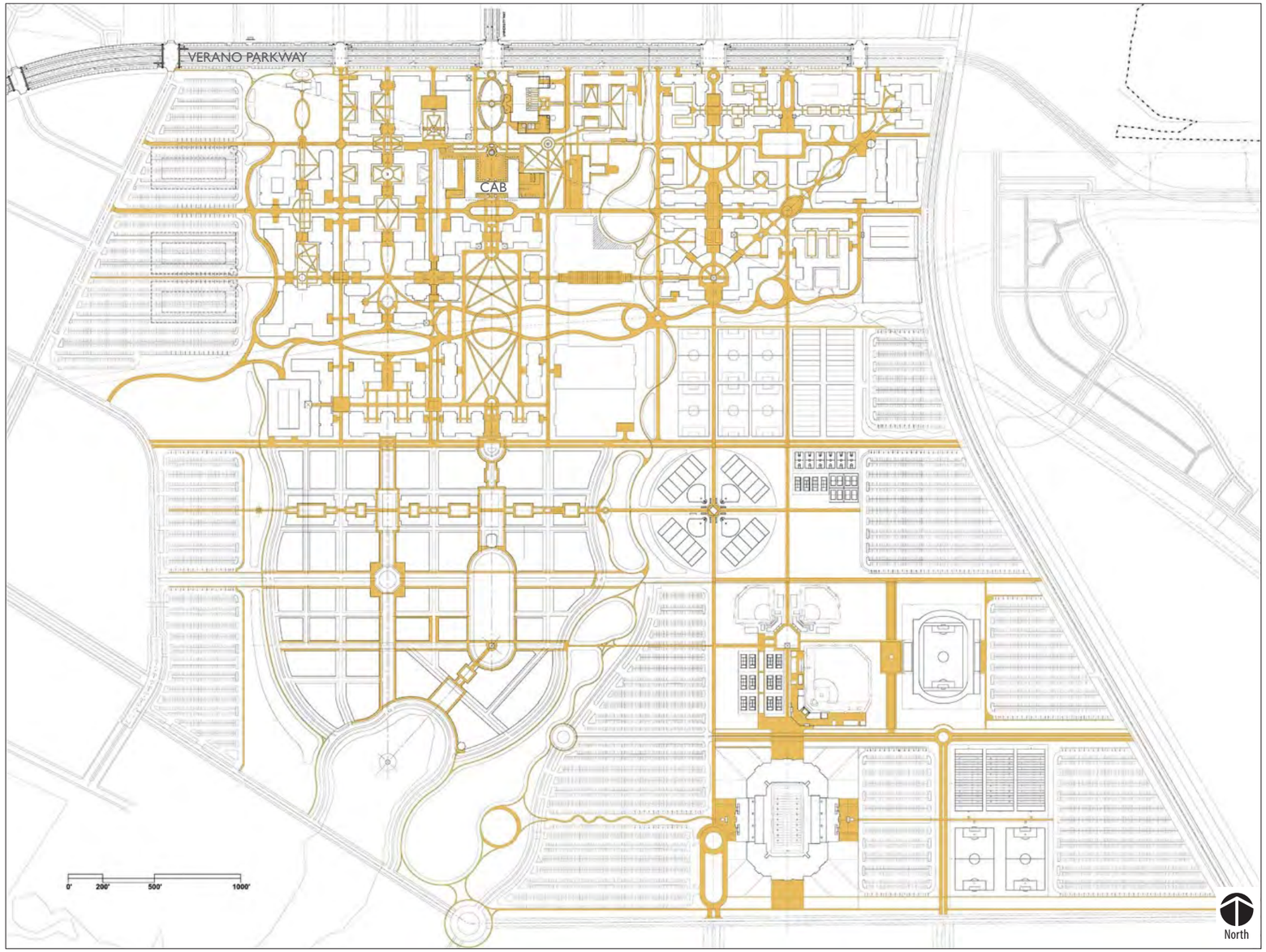
Additionally, the University owns two, five-acre parcels north of the main campus within the Verano Development. These parcels flank University Way as it intersects Loop 410; an A&M-SA gateway marker resides in the median of University Way in-between the parcels. Currently, these tracts of land are not utilized, and the University is considering options for their future use.

The Verano Master Plan calls for parcels adjacent to these University-owned ones and along 410 to be developed as mixed-use commercial facilities. With their prime location at the entryway to the entire Verano Development, the University should consider developing these tracts to support the adjacent town development.

A&M-SA "Torre de Esperanza" located at Loop 410 and University Way



Verano Master Plan, 2015



PEDESTRIAN SYSTEM: SIDEWALKS & TRAILS PROVIDE PEDESTRIAN-CENTRIC MOVEMENT AT THE CENTER OF CAMPUS

TRANSPORTATION & LANDSCAPE NETWORK

OPEN-SPACE NETWORK

As with any University campus, the open-space network is one of the most important features of the Master Plan. The open-space network encompasses vehicular, bicycle, and pedestrian routes, courtyards, plazas, quadrangles, recreation fields, greenways, natural areas, and gardens.

As stated in the guiding principles, the campus Master Plan inspires health and wellness by encouraging people to walk, bike, and experience the landscape. To accomplish this goal, the plan locates the majority of vehicular traffic and parking lots at the edges of the campus to create a pedestrian-friendly core. Roads and streets on campus should be complete with sidewalks and bicycle lanes. Where required, service and emergency vehicles will share the campus' pedestrian-friendly pathways to gain access to interior loading zones, but these routes shall be designed to be used as all-pedestrian during high-traffic hours.

PEDESTRIAN SYSTEM

At A&M-SA, the open-space network design draws upon the region's cultural heritage to create a pattern of exterior spaces that is reminiscent of the plazas, courtyards, streets, and squares that can be found in San Antonio and colonial cities in Latin America. In the core of the campus, the Master Plan renders these patterns in a variety of ways, playing with scale, materials, and function to knit together the network. In the academic core, the plan utilizes large, formal quadrangles and plazas framed by multi-story buildings.

Wide pedestrian walkways and promenades link the larger spaces of the campus together, providing for high-volume pedestrian flow. Smaller-scale, quieter courtyards and gardens are embedded within "letter shaped" buildings and residential compounds; these spaces are connected to the major pedestrian routes via narrower breezeways and paths.

LANDSCAPE SYSTEM

The Master Plan envisions two distinct landscape types within the concept plan. The first is more formal and largely inhabits the "urban" space of the campus: it includes framed quadrangles, hard-scaped pedestrian pathways, courtyards, and plazas. The second type is romantic and naturalistic, and it generally follows the site's existing drainage patterns to create "eco-corridors."

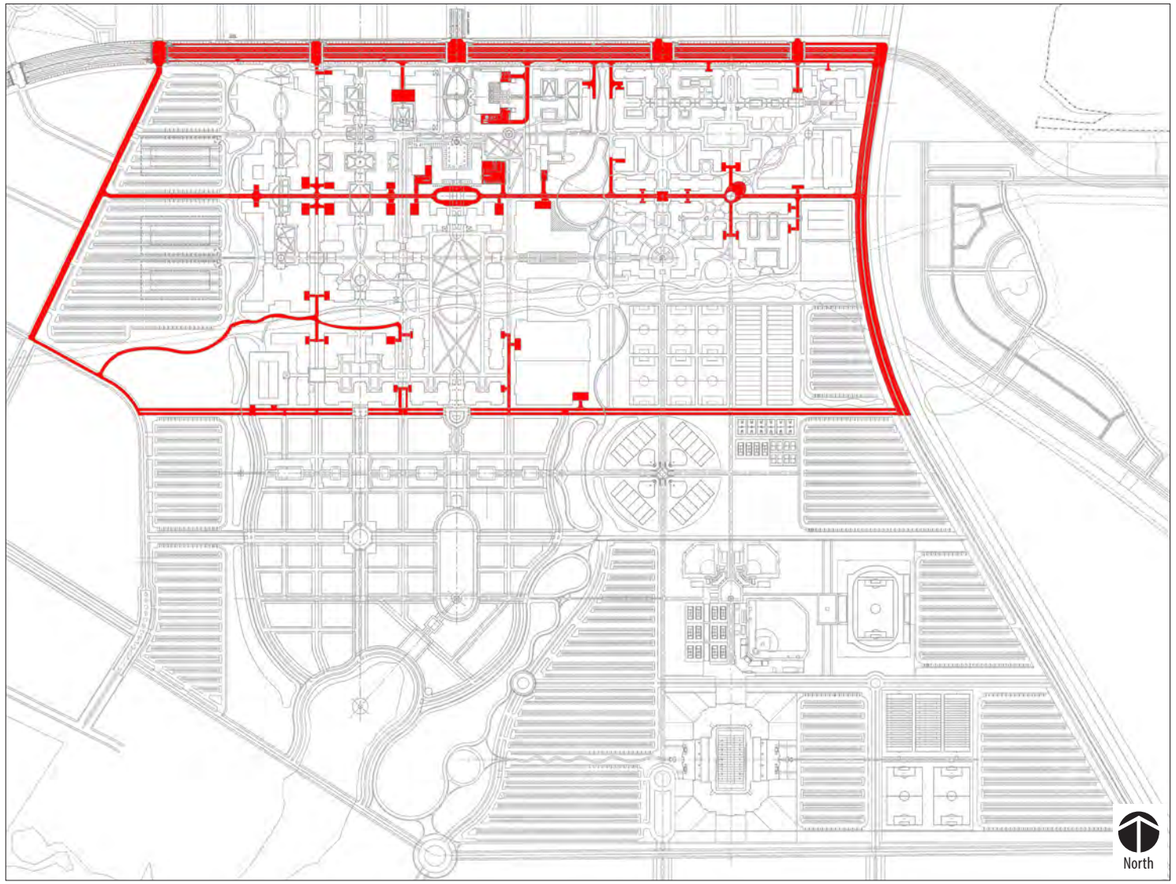
The more-structured landscape areas should play with a variety of scales and materials that draw from the area's cultural heritage and architectural styles. This system links the University to its urban setting. Plants, trees, shrubs, and grasses shall be selected for use in south Texas and feature a wide array of colors, textures, and heights.

In order to connect the campus' landscape with the region's surrounding natural areas, the Master Plan incorporates eco-corridors (greenbelts) into the campus open-space network. These eco-zones encircle the academic core and student life districts and weave their way southward towards the research and athletics districts along existing drainage corridors.

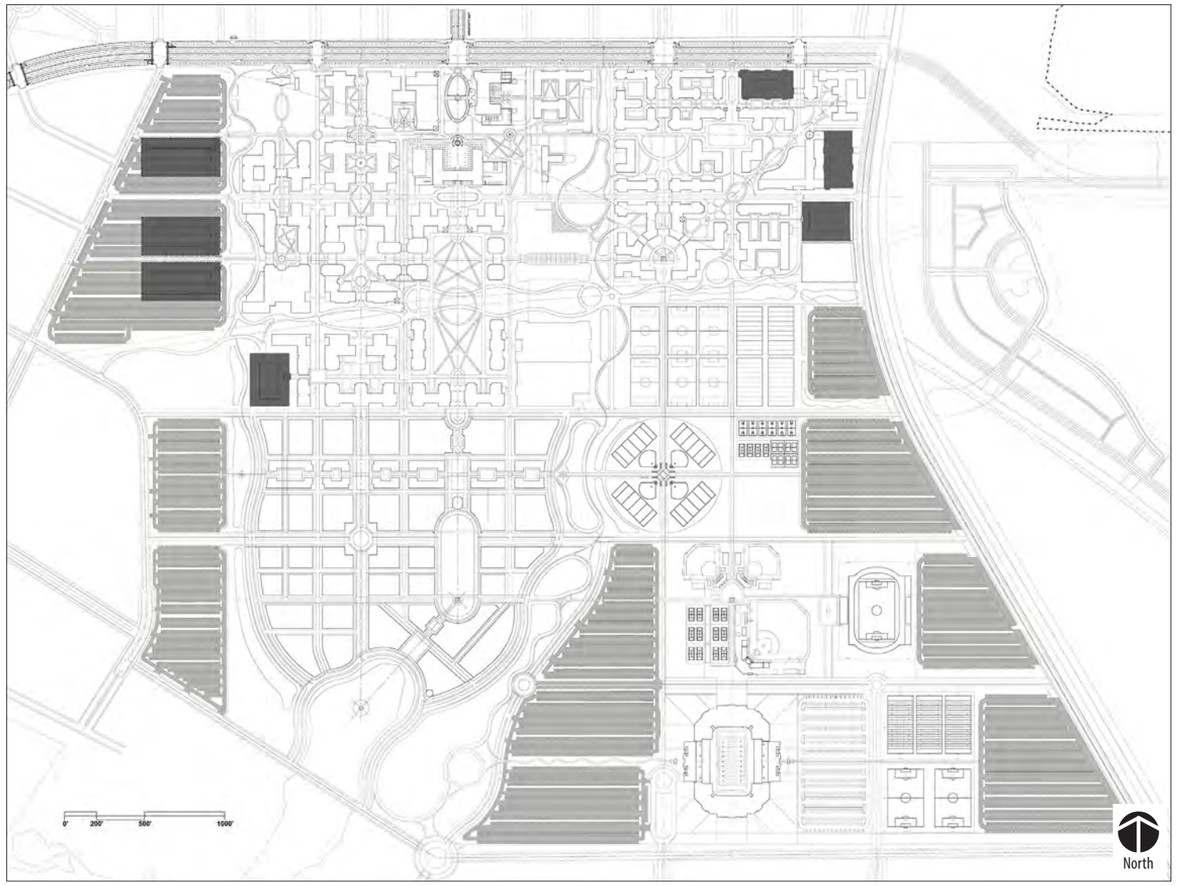
The eco-corridors shall be planted in a more naturalistic manner, featuring native trees and shrubs. A landscaped stormwater management system and a hike-and-bike network should also be incorporated into this eco-zone system. The stormwater management system will hold water during rain events (will be dry during non-rain events) and will provide detention and filtration for the surface runoff on campus; the system will tie into the Leon Creek drainage system to the south. The eco-zones shall be planted with native vegetation that supports habitats for local and migrating wildlife populations.

Within the eco-corridors, a system of sidewalks and trails shall be implemented; this recreational network will support the campus' pedestrian network and tie into the regional trails system. Opportunities for outdoor learning, laboratories, and classrooms should also be explored within the eco-zones.

LANDSCAPE SYSTEM : STORMWATER MANAGEMENT, HABITAT RESTORATION, & RECREATION



SERVICEWAYS SYSTEM: SHARED WITH PEDESTRIAN PATHWAYS IN KEY AREAS



PARKING SYSTEM: PARKING AT PERIMETER OF CAMPUS

ROADWAYS & STREETS SYSTEM

In order to promote a pedestrian-friendly core, the Master Plan restricts the majority of streets to the edge of the campus. Primary access to the campus will stem from Verano Parkway on the north and Mauermann Road on the south. The plan proposes north-south vehicle corridors at the edge of campus, which will serve as connectors between Verano and Maeurmann.

Some local connectors cross the campus between the academic core and the research district and run alongside the eco-corridors near the research district. The design of these roads should allow for numerous pedestrian-friendly crossing points and include dedicated bicycle lanes.

In the research district, the Master Plan employs a street pattern that is more urban in nature. Streets should feature on-street parking and wide sidewalks to support the mixed-use nature of this district.

LOADING & SERVICE SYSTEM

Loading, service, and emergency access in the academic core, student life, and student housing districts shall be provided via the pedestrian network. In key locations, pedestrian pathways shall be designed to support fire-truck and service vehicle access; these shared pedestrian and service routes will alternate with pedestrian-only routes to minimize vehicle-pedestrian conflict in the center of campus.

The University should schedule routine deliveries, trash pick-up, and other services to occur during early morning or mid-evening hours to minimize disruptions during prime class change or rush-hour periods for pedestrians. During student resident move-in or move-out dates, the University may make some service zones available to students and families for convenience and efficiency.

PARKING & BUS ROUTES SYSTEM

The Master Plan proposes that the University limit parking areas to the edge of the campus. For economy, the plan illustrates the majority of parking as surface parking, located on the east and west sides of the campus near to the academic and research districts and the student recreation and athletics districts. The plan does locate a few structured parking garages at the edge of the student housing district and the academic core, but these sites are limited.

The plan currently illustrates 16,000 parking spaces, or 30% of a campus population of 50,000 students. As the campus develops beyond this threshold, these surface parking lots may be replaced by structured parking, buildings, or landscaped areas.

A network of bus routes and stops works in concert with the campus' perimeter parking strategy to provide efficient access to and from parking lots. Stops are evenly spaced along the main vehicular routes, offering points of service within a five minute walk of most locations. Refer to the bus routes and stops diagram in the Design Guidelines chapter.

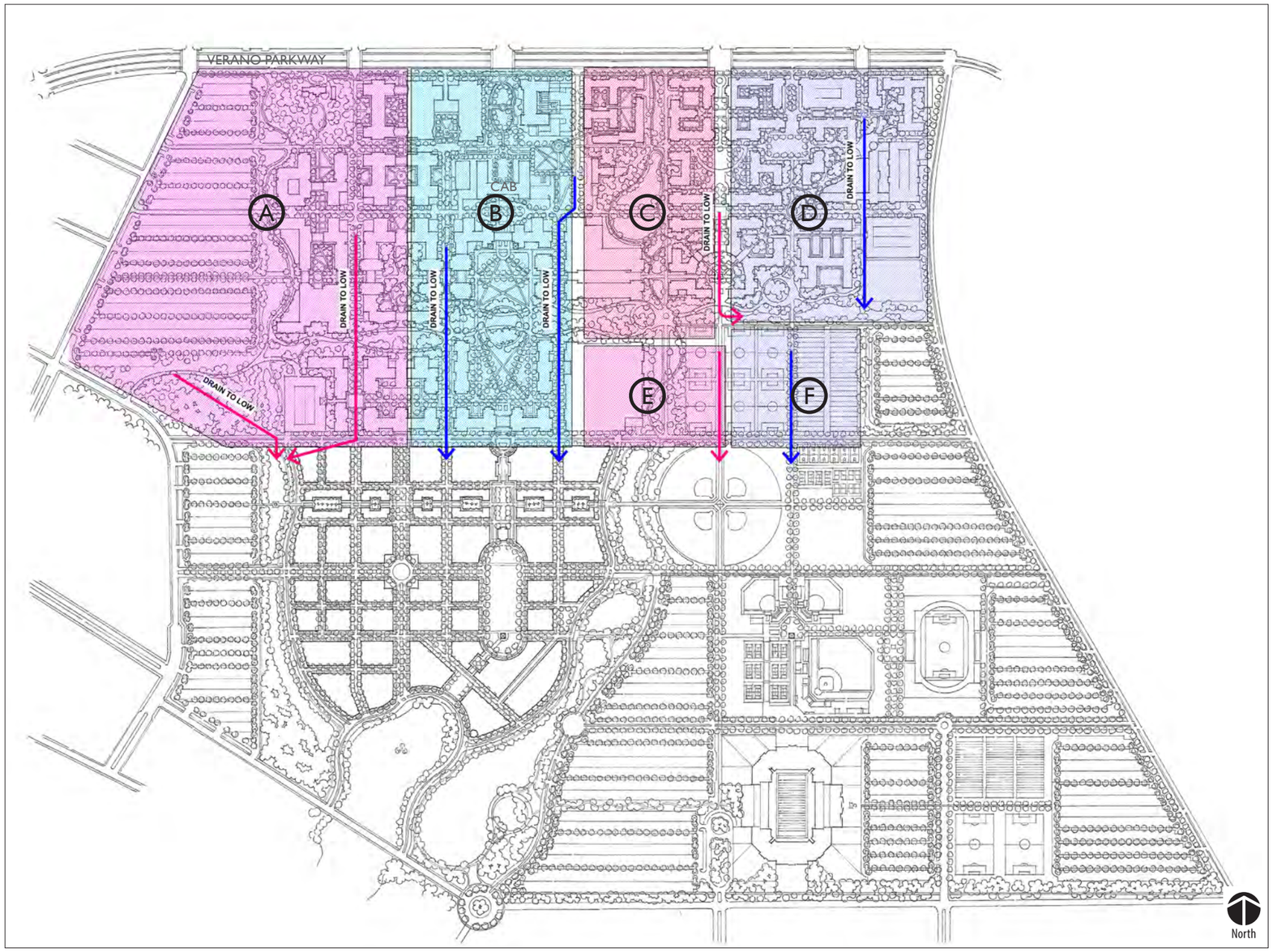
DRAINAGE SYSTEM

DRAINAGE TRIBUTARY AREAS

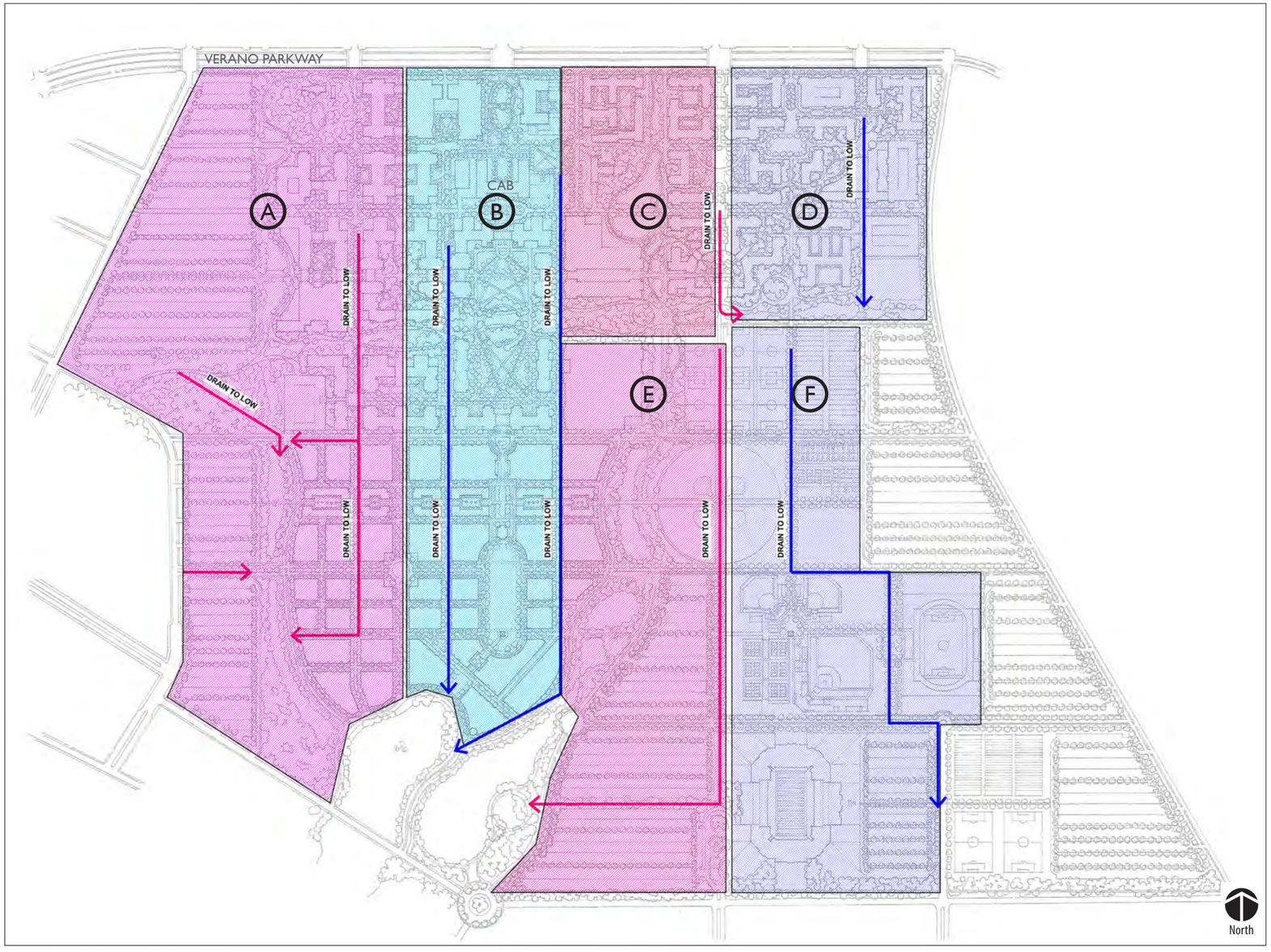
The A&M-SA campus is located within two stream watersheds. Storm water runoff from the eastern portion of the site flows to the Elm Creek watershed, towards Mitchell Lake. Storm water runoff from the western portion of the site flows to the Lower Leon Creek watershed. Mandatory detention is not required in this watershed.

Watersheds noted by the City of San Antonio as having mandatory detention are those known to have existing infrastructure and/or habitable structures with existing or significant potential for flooding impacts. According to the City of San Antonio maps, the portion of the Elm Creek watershed within the campus is in a mandatory detention area due to it being upstream of Mitchell Lake, which is owned and operated by the San Antonio Water System (SAWS) and was part of the historical sewer outfall for San Antonio and Bexar County. SAWS is required by the State of Texas and the Environmental Protection Agency (EPA) to monitor the quality of discharge from Mitchell Lake due to the historical use and the potential for sediment discharge from the lake.

Within the site, drainage can be categorized into three major drainage basins. The eastern 216-acres of campus naturally drains towards Mitchell Lake. Drainage areas "C" and "D" total 55-acres and are within this 216-acres. Detention/retention basin(s) will need to be provided for this portion of the campus. It can be assumed that approximately five-acres of the 216-acre drainage area will need to be used for the detention/retention pond(s). The ultimate size and location of a detention/retention basin will be based on multiple factors, including the potential re-use of storm water runoff for irrigation and other non-potable applications and the potential use of the basin as an amenity feature for the campus.



NEAR TERM DRAINAGE CONCEPT



LONG RANGE DRAINAGE CONCEPT

The middle portion of the site, which includes part of drainage area "A" as well as drainage areas "B", "E", and "F", totals approximately 193-acres and drains directly south to the Lower Leon Creek through the middle of campus. The remaining portion of drainage area "A", approximately 15-acres, will also drain to the Leon Creek; however, storm water from this portion of drainage area "A" flows to the southwest away from the center of campus. A portion of the site, about 11 acres along the southwest of the property, lies within the 100-year and 500-year Federal Emergency Management Agency floodplain.

Two large, existing earthen channels convey runoff from the Verano property through the campus. These channels drain from north to south and currently discharge approximately 1,000 feet into campus. These channels will likely be extended as the campus is developed eventually discharging into Mitchell Lake to the east and Leon Creek to the southwest. Per the subdivision plat for Verano Parkway, these drainage channels are located within drainage easements because they are conveying water from off-site property and a public right-of-way onto campus.

SURFACE DRAINAGE CONCEPT

When possible, A&M-SA should evaluate the use of underground drainage systems to prevent storm water runoff from building up above ground and to avoid using large surface areas for drainage facilities. Four storm drain trunk lines will likely be required to convey storm water through the site to Leon Creek. These four lines will increase in size as the development moves closer to Leon Creek. A network of interceptor inlets and storm drains will tie into these trunk lines as development on the campus progresses from north to south. These four storm drain systems will discharge into Leon Creek and convey water from the sites central 200-acre watershed, as described above. The first portions of the trunk line will be constructed within the next phases of development.

ELECTRICAL SYSTEM

GENERAL

Campus development is divided into two zones, corresponding to the areas served from two proposed Central Utility Plants. Approximately half of the planned academic buildings will be served by each of these plants.

Electric service to each academic building is planned to be provided by an underground, medium voltage distribution system to pad mounted transformers served from a Trayer brand primary selector switch in the nearest electrical manhole. For redundancy, a pair of primary voltage feeders supply the selector switches. These feeders will ultimately originate at distribution switchgear at the Central Utility Plant.

Presently, two circuits from the electric utility, CPS Energy, provide service to the academic buildings on site. Because the Central Utility Plant switchgear does not exist, the CPS Energy feeders provide the source to the primary selector switches directly from utility switchgear. Construction of manholes and the underground distribution is accomplished as necessary to provide service to buildings being developed. This process should continue, enabling future tie-in to the Central Plant switchgear when available.

ZONE 1 DEVELOPMENT

Campus development in the eastern part of the campus is noted on the site plan as "Zone 1", and will be served by a Central Utility Plant facility with capacity for that projected load. Requirements for the near-term implementation plan are a subset of Zone 1.

The existing primary voltage feeder pair will be adequate for approximately half of the Zone 1 development area. When the Central Utility Plant for Zone 1 is constructed, provisions for two sets of main-tie main switchgear to accommodate four utility feeders should be planned, however, only one of these is necessary to support the ten year development plan. When the Central Utility Plant switchgear is built, branch circuits from this switchgear will provide feeder pairs back to existing selector switches. The Central Utility Plant electric capacity for Zone 1 is recommended to be sized to accommodate the first 25% of development of Zone 2. This will allow development of the second Central Utility Plant to be delayed.

Electric utilities for campus residential dorm development may be served from distribution at the Zone 1 Central Utility Plant. By serving these buildings from the primary voltage source, more favorable rates would apply to electric energy cost. Alternatively, if development occurs in such manner that it is contractually advantageous to have this campus residential development directly served and metered from the electric utility, that option may be used.

ZONE 2 DEVELOPMENT

Campus development in the western part of the campus is noted on the site plan as "Zone 2", and will be served by a Central plant facility with capacity for that projected load. Zone 2 development will likely be such that some of the buildings are needed in advance of the second Central Plant. The interim needs would be met by an expansion of circuits from switchgear at the Zone 1.

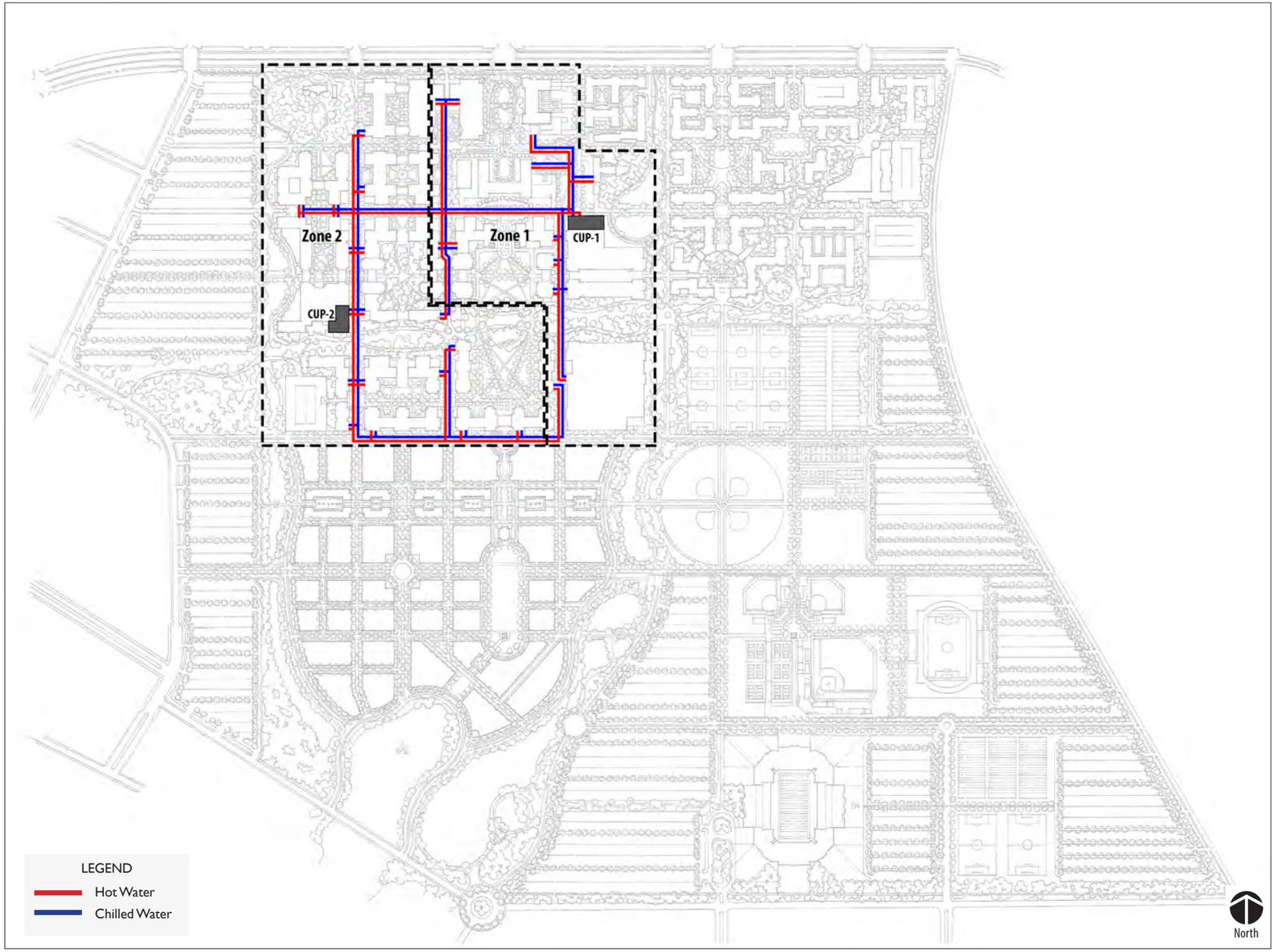
When the Central Plant for Zone 2 is constructed, provisions for two sets of main-tie main switchgear to accommodate four utility feeders should be planned. When the Central Utility Plant switchgear is built, branch circuits from this switchgear will provide feeder pairs back to any then, existing selector switches that may have been served from the Zone 1 switchgear.

Refer to the electrical site drawing of the overall campus for a conceptual diagram of the proposed Zone 2 electrical distribution system.

SOUTH PARCEL DEVELOPMENT

Buildings within the South Parcel are planned to receive utilization voltage through utility company transformers.

ELECTRICAL UTILITIES



THERMAL UTILITIES

THERMAL UTILITIES

MAIN CAMPUS

This Thermal Utilities Plan addresses facilities growth in a logical and compact manner and builds an infrastructure that supports the growth in a resource-efficient way. In general, major piping should be routed adjacent to streets to reduce infrastructure conflict with future building sites and limit the maintenance impact of this infrastructure with paving and trees. Design of distribution piping capacity should anticipate the development densities prescribed in the Master Plan.

Currently there are no central plants on campus. The existing Madla Building has two (2), 230 Ton, air cooled chillers and two (2), 1.5 MMBH, condensing boilers with total capacity of 3.0 million BTUh that provide the thermal utilities to this building. The Madla Building's existing air-cooled chillers have approximately 200 Tons of redundant chilled water capacity. Over-sizing of the Madla Building thermal utilities may have been to provide redundant capacity for the Central Academic Building, approximately 185,000 GSF and Patriots' Casa, approximately 20,000 GSF. The Central Academic Building and Patriots' Casa are served by two (2), 500 Ton, air cooled chillers and five (5), 1.275 million BTUh, non-condensing, forced draft boilers. The Science and Technology Building is currently in design. It is anticipated that the thermal utilities requirements for the new Science and Technology Building will be met by dedicated air cooled chillers and condensing boilers located adjacent to, or within, the building.

The A&M-SA campus Master Plan proposes building two (2) central plants for future campus growth. In order to centralize building maintenance functions and to provide energy efficient and cost effective thermal utilities to the developing campus, Central Utility Plant 1 will be needed for service to Zone 1 buildings with an anticipated final build-out of 1,000,000 GSF. As the campus development grows beyond its current point, the cost effectiveness of local air cooled chillers will begin to be outweighed by considerations of energy efficiencies and electric utility costs. At this stage, the construction of a modular Central Utility Plant 1 should be strongly considered to serve the existing and the future planned development loads. The plant would consist of water cooled chillers and matching cooling towers that are modular and "right" sized for the current loads, yet expandable to feed future loads. The full build-out chilled water capacity of Central Utility Plant 1 to serve Zone 1 buildings and early Zone 2 buildings is estimated at 4,500 tons.

Similar to the campus cooling system, local condensing boilers at each building are being used for heating hot water in all current construction and are anticipated for the new Science and Technology Building. Each building shall be piped so that it can be fed by a future centralized heating hot water system. Unlike the cooling system, the centralized boiler system will not provide any sort of energy payback to justify the additional pumping equipment and piping cost; however, it will allow the maintenance staff to service the majority of their equipment from one location in addition to possibly reducing the total quantity of boilers by utilizing larger boilers. A central hot water heating plant will also allow the total campus boiler redundancy to be minimized since individual building boiler redundancy will not need to be maintained.

The University will need to determine which of the following options they would prefer:

1. each building maintains its own heating hot water condensing boilers, including all existing and new buildings;
2. consolidate production of heating hot water for all new buildings from a central plant, but allow existing buildings to continue being fed from local boilers;
3. consolidate production of heating hot water for all buildings from a central plant, including existing buildings, which would involve the decommissioning of the existing local condensing boilers.

The full build-out Central Plant 1 condensing

boilers capacity is estimated at 35 million BTUh. The Central Plant 1 chilled water and heating hot water piping needs should be designed in such a manner that it will allow service to Zone 2 buildings that will be built before Central Plant 2 construction occurs.

When the campus development exceeds approximately 2,000,000 GSF, construction of a second modular plant (Central Utility Plant 2) servicing Zone 2 buildings would appear to be cost effective. In order to serve all of the Zone 2 buildings, the chilled water capacity of Central Utility Plant 2 will need to be approximately 9,000 Tons. The complete condensing boiler heating capacity is estimated at 100 million BTUh.

Thermal utilities for campus residential building development are encouraged to be served from distribution at the Central Utility Plant due to the higher efficiency that may be realized from placing these buildings on the Central Utility Plant. However, one factor affecting the choice of thermal utility source is a lower installation cost associated with building equipment from systems local to these buildings. The heating and cooling capacity estimates provided herein do not account for campus residential development.

SOUTH PARCEL DEVELOPMENT

Building and process cooling load requirements at the South Parcel are likely to be variable with programming of the space and inconsistent over the life of the buildings. Facilities located within the South Parcel are not considered as having good potential for a combined central plant, therefore, the campus development in this area is proposed to be served by thermal utility equipment local to each facility.

WATER SYSTEM

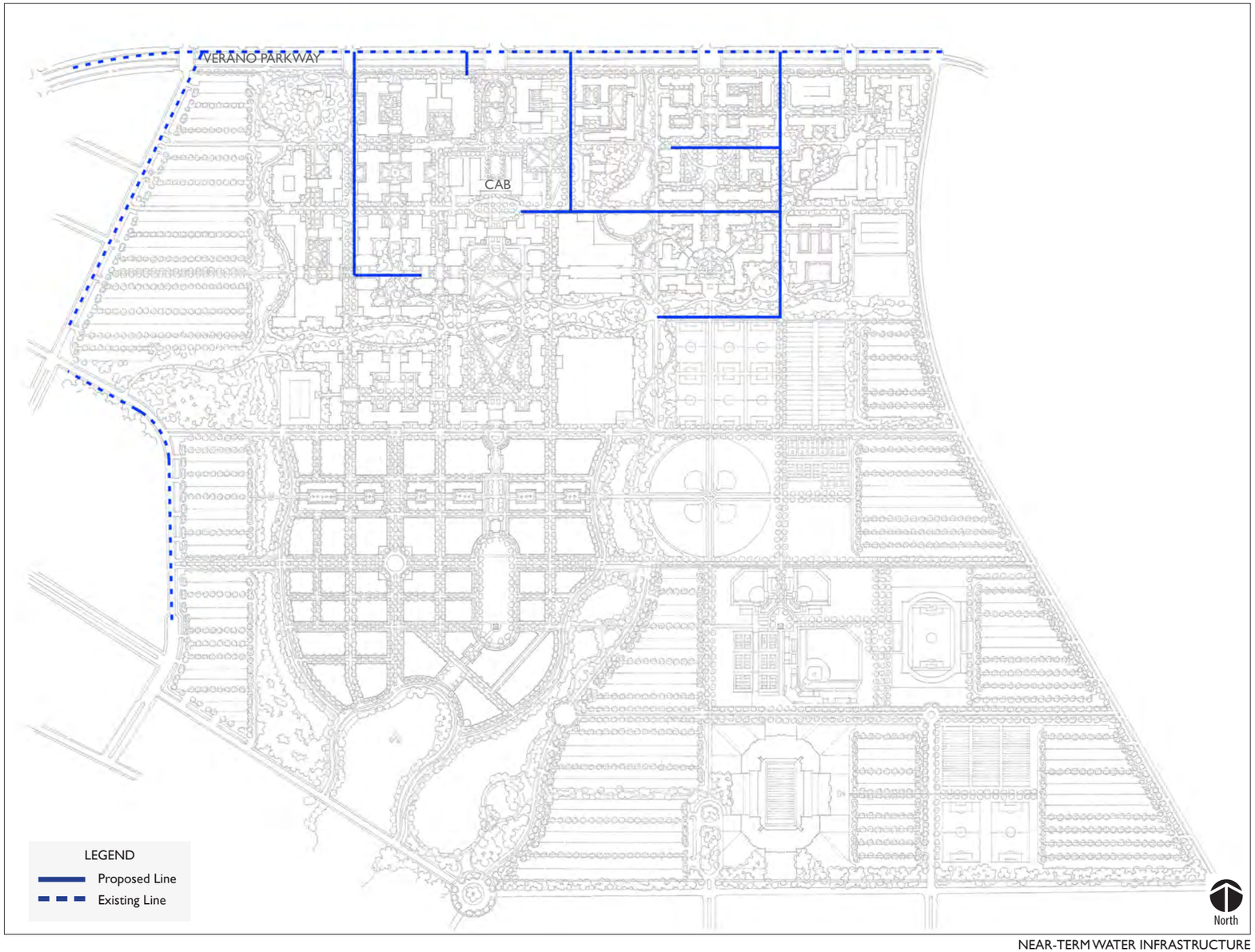
DOMESTIC WATER

The campus was originally served by the Bexar Metropolitan Water District. BexarMet has since been dissolved, and the San Antonio Water System (SAWS) has taken over its operations. SAWS is obligated to assume all existing contracts, agreements, and financial obligations entered into or executed by its board or general manager prior to June 2011; therefore, the utility service agreement executed between BexarMet and the University is still in effect. Landowners do retain the right to pursue amendments to their agreements with SAWS or to request a new agreement under SAWS regulations if it desires.

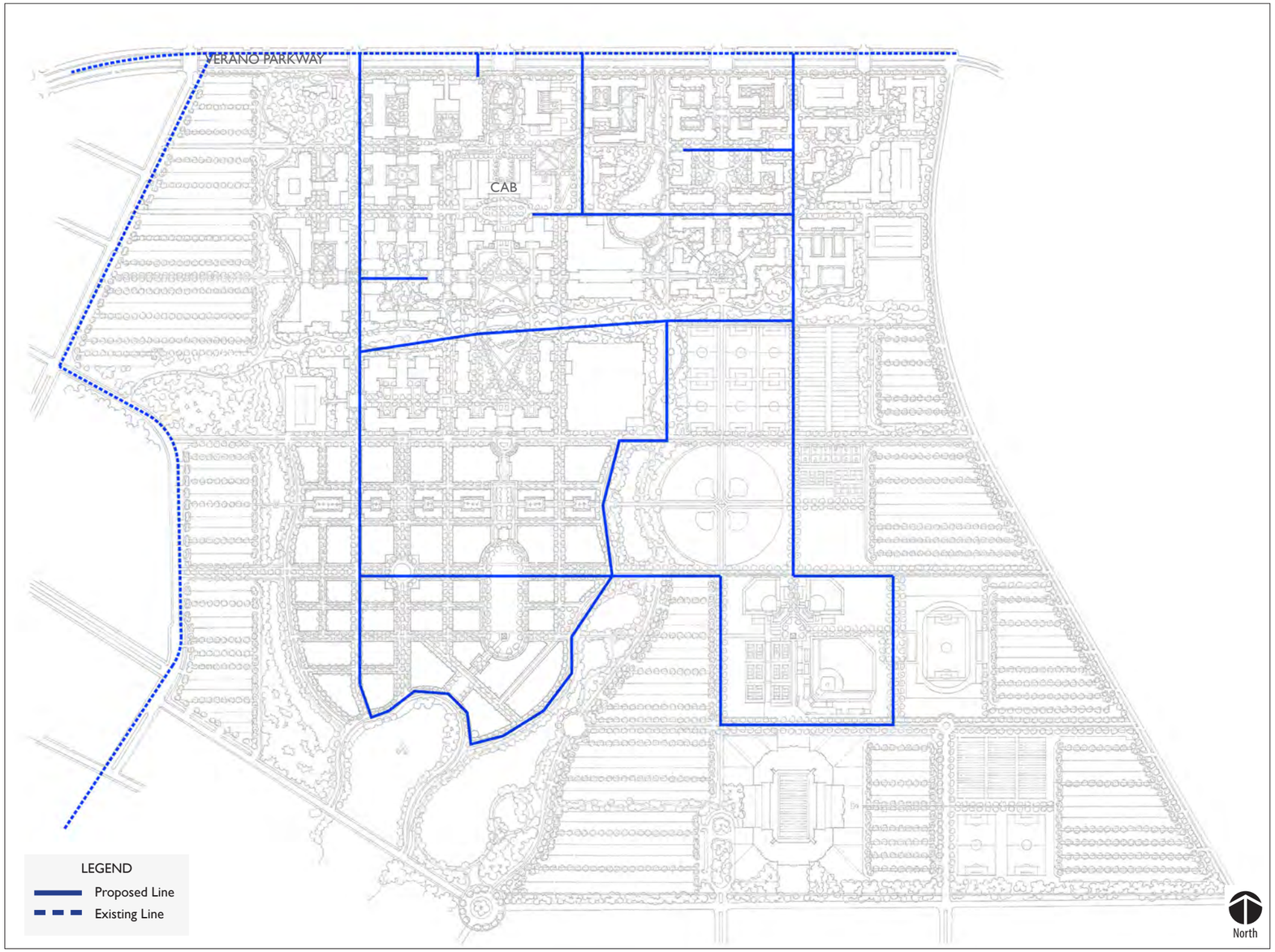
All new water construction projects supporting development within the former BexarMet service area are to be designed and constructed in accordance with SAWS guidelines. These guidelines are not substantially different from those adopted by BexarMet in 2011.

Under the terms of the existing utility agreement, the campus is provided an allocation of water service which reserves capacity for the University's use. BexarMet was to provide for the offsite water system infrastructure to the campus and related facilities within its service area. The onsite connections and water mains are to be constructed by the university for its ownership and use.

The BexarMet Utility Service Agreement reserves the campus, as well as its two five-acre parcels along Loop 410, capacity for 2,800 water Equivalent Dwelling Units (EDUs). This is equivalent to approximately 875,000 gallons per day (GPD) of water use. SAWS provides data for universities and colleges, which estimates a use of approximately 10 GPD per student. At a 25,000 enrollment level, this would equate to 250,000 GPD, well below the 875,000 GPD reserved though the utility agreement.



NEAR-TERM WATER INFRASTRUCTURE



LONG-RANGE WATER INFRASTRUCTURE

As indicated in the 2012 Development Plan study, and enrollment of 25,000 students will require the following facilities to be constructed on-site:

- 90,000 GSF Main Building (14 EDUs)
- 171,000 GSF Central Academic Building (30 EDUs)
- 20,000 GSF Patriots Casa (15 EDUs)
- 966,000 GSF Academic Space (110 EDUs)
- 276,000 GSF Physical Education Buildings (60 EDUs)
- 337,000 GSF Student Buildings (Food, Social, etc.) (45 EDUs)
- 115,000 GSF Library (15 EDUs)
- 96,000 GSF Administration (15 EDUs)
- 45,000 GSF Facilities and Field (Armory, Green House) Buildings (15 EDUs)
- 1,500,000 GSF Student Housing (16 Buildings) (1,000 EDUs)

Based on the above number of estimated equivalent dwelling units (EDUs), the estimated amount of water use in Gallons Per Day (Domestic/Potable Use) is 412,000, which is well within the 875,000 GPD allowance from SAWS.

If peak month irrigation demand estimates are included for a campus of 25,000, the University would require approximately 1,083,000 gallons per day, which would exceed the SAWS allowance of 875,000 GPD. However, the irrigation demand estimates are conservative and do not reflect the use of recycled water for irrigation.

Therefore, we believe the 2,800 EDUs referenced in the agreement to be adequate for the campus' future needs; we estimate that with an average use of 10 GPD per student, an total enrollment of 41,000 students could be supported with the existing agreement's 2,800 EDUs limit. If recycled water is fully implemented, the 2,800 EDUs would stretch further: a cursory estimate indicates that a student population of 87,000 could be supported.

Payment of impact fees will be in accordance with SAWS policies at the time of platting and/or water meter installation and actual number of EDUs will be based on the size of water meters that are installed to serve each building.

As required under the terms of the agreement, BexarMet constructed 16" water mains under Verano Parkway and University Way. These mains are interconnected with an existing 20" main along SW Loop 410 and a 16" main along Zarzamora that will provide service to university properties along Loop 410. A 12" SAWS main along Mauermann Road will provide service to the southern parcel. These water mains will provide for the service connections to the A&M-SA properties and its main campus.

Verano Parkway was constructed with a 16" water main on the north side of the street. This water main contains stub outs to the south side of Verano Parkway at most of the major cross streets/drives for the campus to tie in. Water mains within the development will tie into these stubs, range in size, and loop around the campus streets. A network of water mains will extend to each building as development occurs.

WASTEWATER

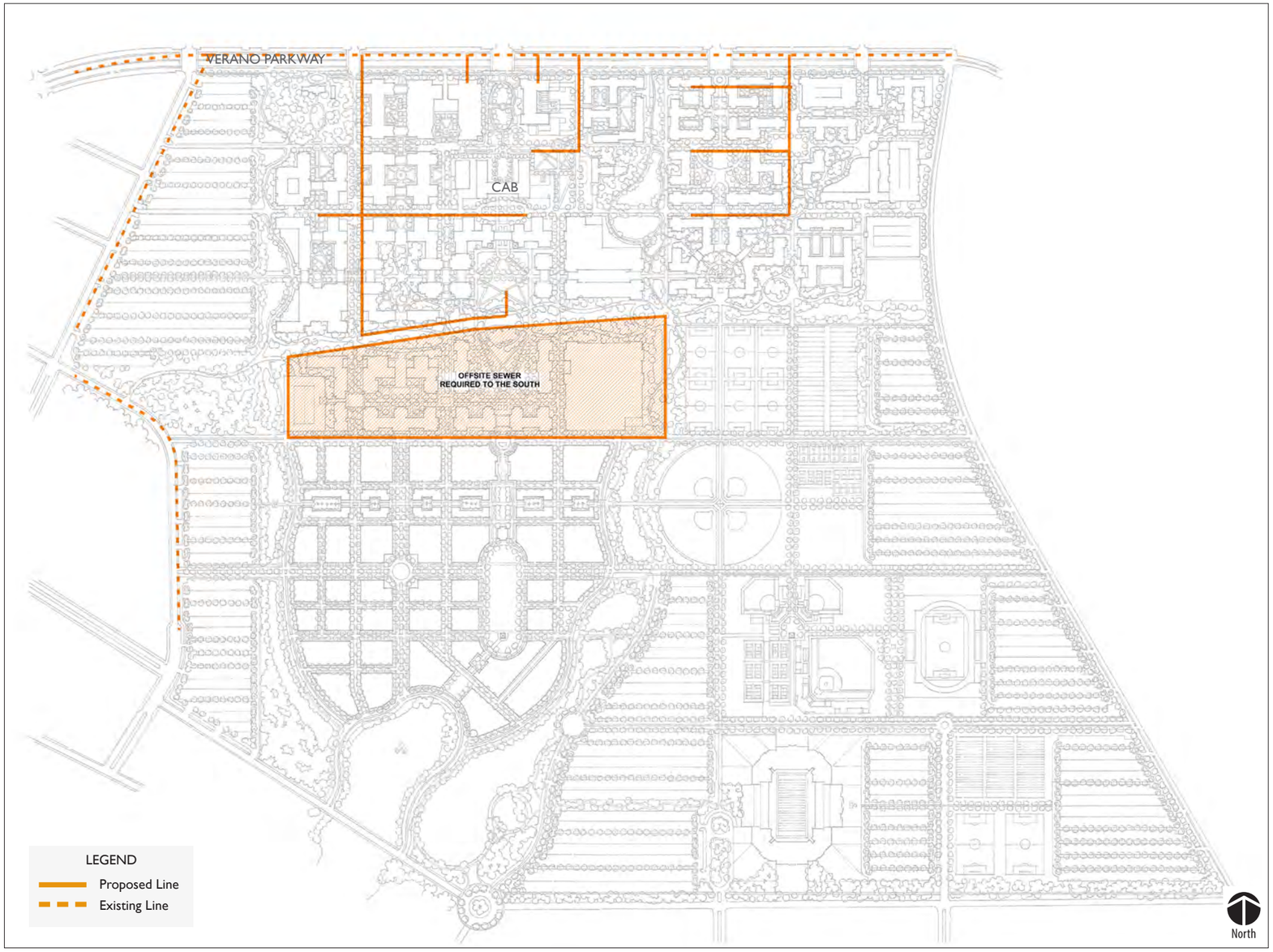
The campus falls within SAWS' sewer service area. The Leon Creek Water Recycling Center lies less than one mile to the south of campus, and sewer lines serving the surrounding developed areas lead to the treatment plant. The existing sewer lines include 8" and 21" mains along Applewhite Road, a 72" main flowing into the treatment plant, an 8" main along Pleasanton Road, and an 8" force main along the eastern portion of Mauermann Road. A network of private sewer mains will be constructed within the A&M-SA campus and will ultimately flow to the Leon Creek Water Recycling Center.

The utility service agreement between SAWS and Verano, including the University campus, outlines the terms of sanitary sewer service to the properties. The campus was provided an allocation of sanitary sewer from Verano that reserves capacity for the university's use. SAWS, through its agreement with Verano, is to provide for all offsite sanitary sewer infrastructure to the campus. The offsite sewer infrastructure will consist of four phases.

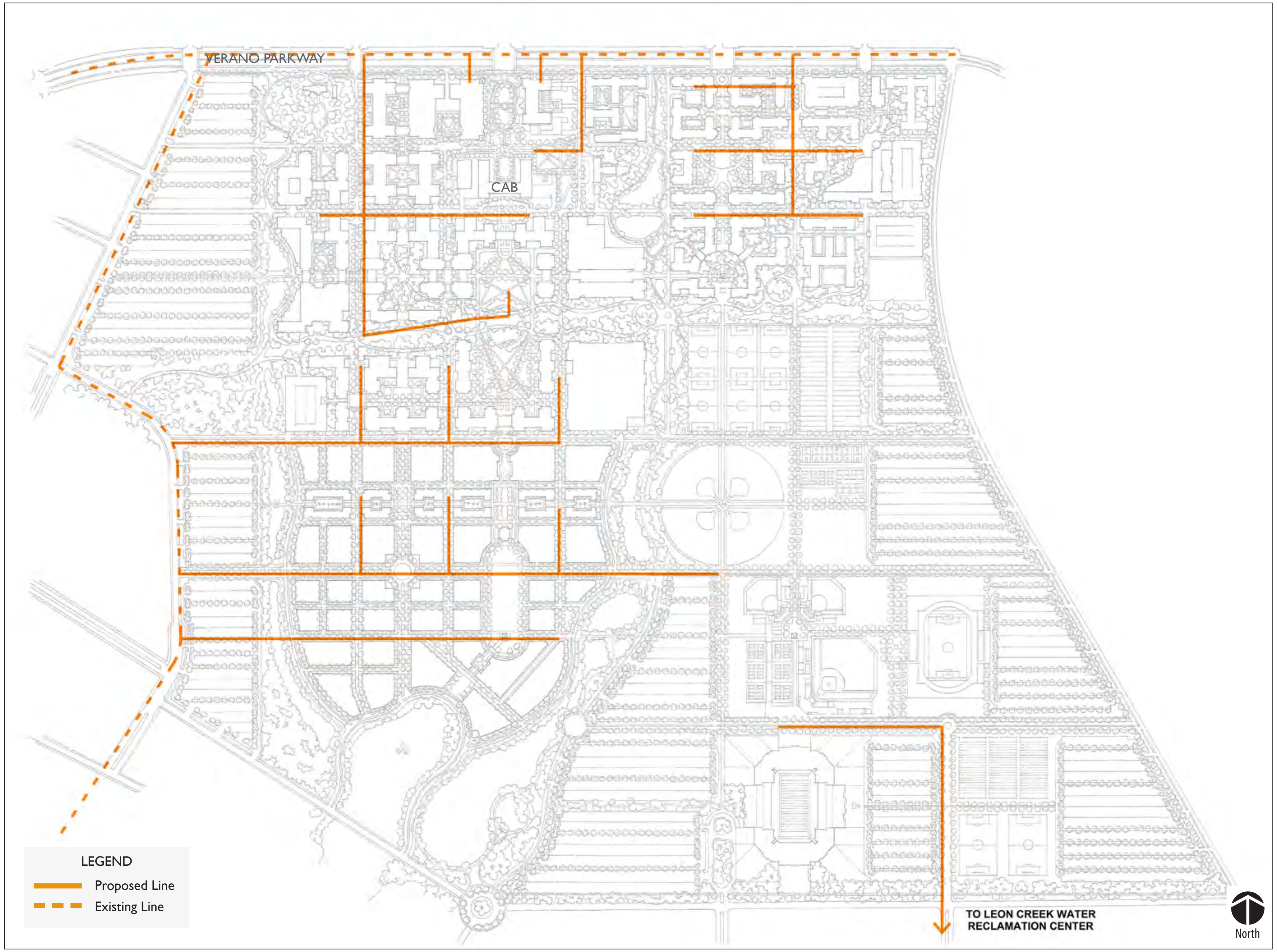
- Phase 1, which was completed in June 2011, provides sewer service to the initial buildings of the campus site through an 18" main along Verano Parkway. It is designed to support future buildings within the first phases of campus development, and will serve future buildings within approximately 1,200-feet south of Verano Parkway without any additional major sewer main extensions.
- Phase 2 extended sewer service to the campus' two 5-acre tracts along Loop 410.
- Phase 3 will include construction of a new gravity sewer main extending from the southern boundary of the campus, connecting to the existing Phase 1 sewer main. SAWS will construct this off-site main when development of the campus extends beyond the initial 1,200-foot distance from Verano Parkway.
- The final phase of the offsite infrastructure will provide a connection for the South Campus parcel, south of Mauermann Road. SAWS has scheduled construction of a new sewer main extending from the Leon Creek through the South Campus parcel to the Dos Rios Water Recycling Center. This main will provide sewer service to the South Campus when required. Onsite connections and sewer mains are to be constructed by the University for their ownership and use.

Once the campus is developed beyond the initial 1,200-feet south of Verano Parkway, an onsite sewer main will be required, which will extend to the future connection point of the Phase 3 sewer main described above. The University will need to keep SAWS apprised of its development schedules to allow adequate time for the utility to design and construct the Phase 3 sewer main in accordance with the agreement.

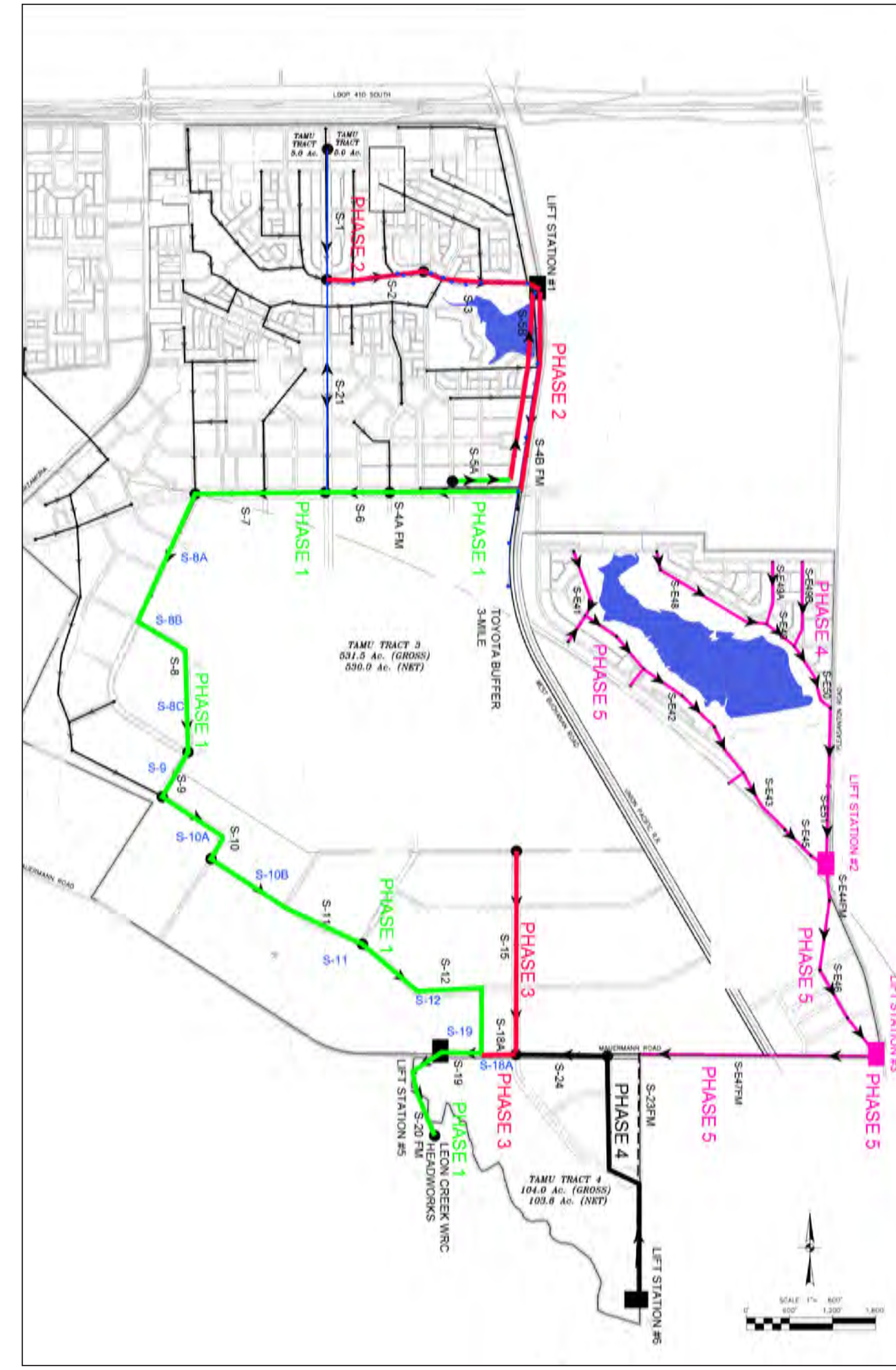
SAWS has constructed a gravity sewer main and a lift station to transfer generated sewer flows from the Verano development and the A&M-SA campus to the Leon Creek Water Recycling Center. This sewer main parallels the western edge of the campus, and is sized to support the Verano development and the campus.



NEAR-TERM WASTEWATER INFRASTRUCTURE



LONG-RANGE WASTEWATER INFRASTRUCTURE



REGIONAL WASTEWATER INFRASTRUCTURE

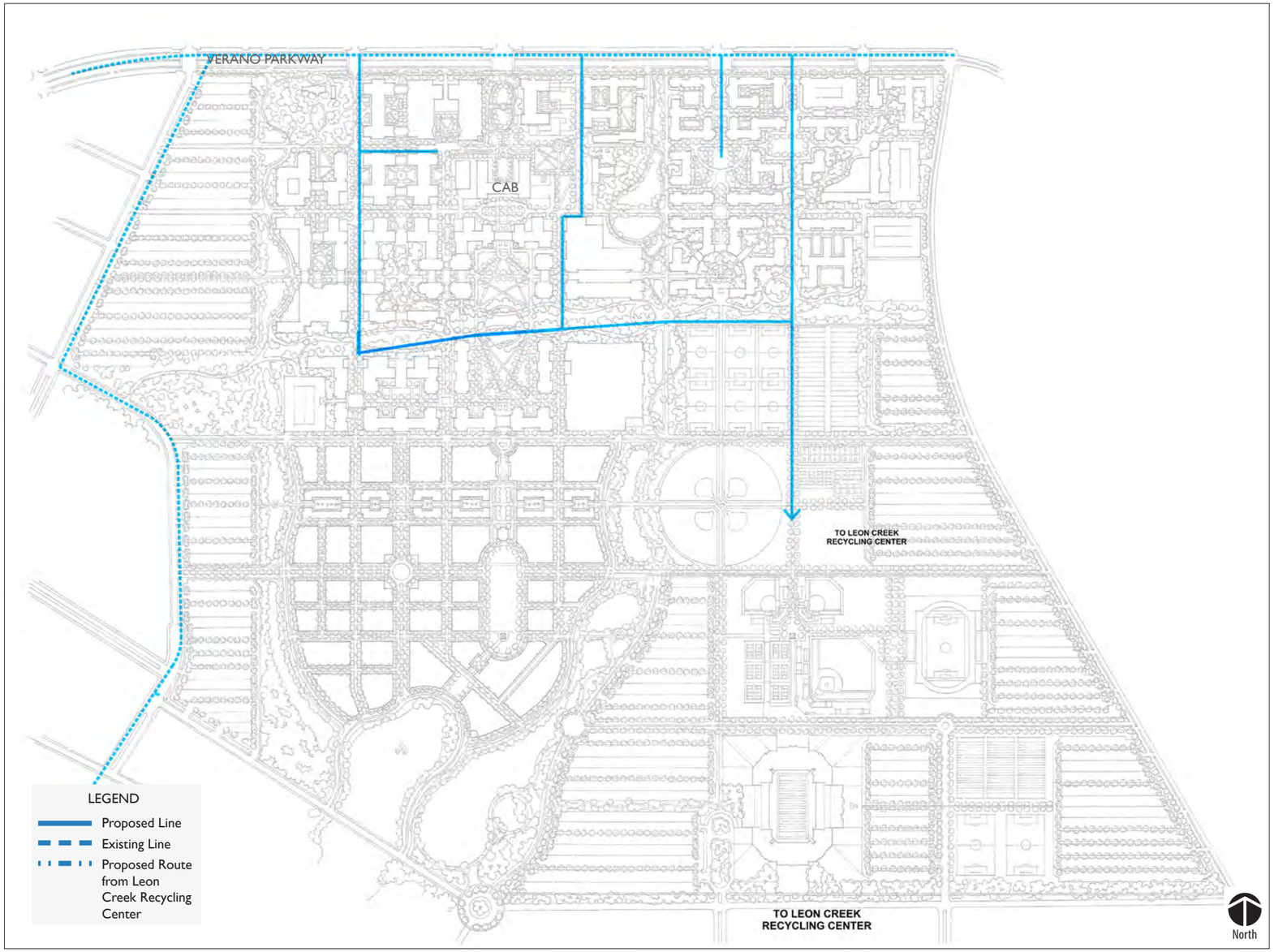
RECYCLED WATER

SAWS has indicated that approximately 2,000 acre-feet per year of recycled water is available from the Leon Creek Water Recycling Center. An existing 42" purple pipe (recycled water) main extends west from the treatment plant and could be tapped to serve the A&M-SA site. Using recycled water is advantageous because recycled water users aren't limited to water use restrictions during droughts. The campus could realize a cost savings as well: irrigating with recycled water is roughly half to two-thirds the cost of using potable water. Many SAWS customers also use recycled water in cooling systems, chiller plants, etc. The University should consider this option as the campus grows.

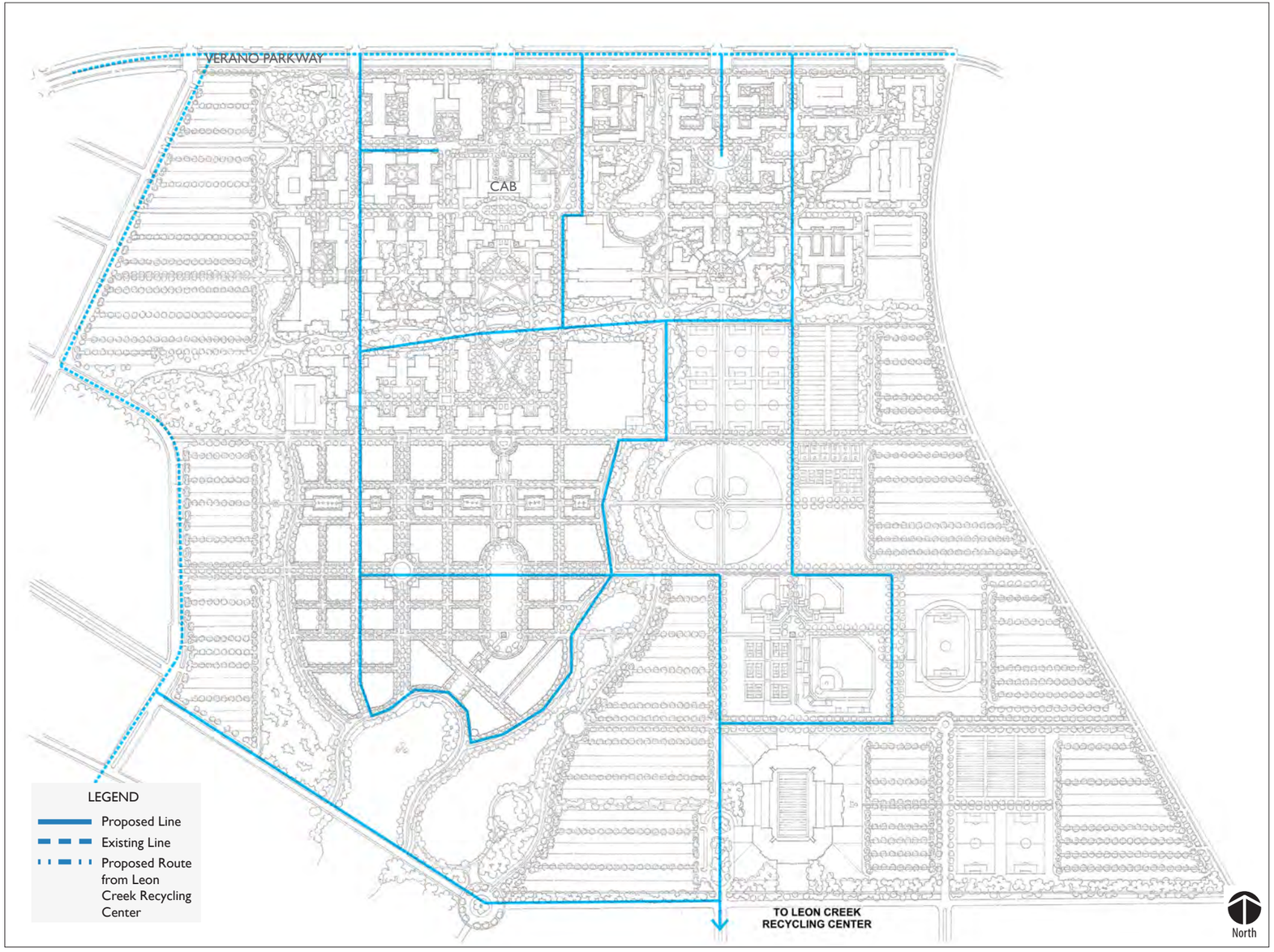
Typically in the San Antonio area, landscape and turf require 30-36 inches of supplemental irrigation per year above annual rainfall levels of roughly 30 inches per year. Most of this irrigation is needed during the April-October period. Most irrigation systems in San Antonio are designed to provide from 1 to 1.5 inches per week for turf and landscape needs. Based on these needs, and assuming 50 percent of the 300-acre campus will require irrigation, the campus will ultimately require 460 acre-feet of recycled water per year, less than the 2,000 acre-feet available from the Leon Creek Water Recycling Center.

It is also important to understand the required flow demand for the campus. If recycled water was not available or obtained from SAWS, the campus would be subject to drought restrictions and, during stage 1 water restrictions, would be required to irrigate the entire campus in one night of the week. Furthermore, in stage 2 water restrictions, the campus would only be allowed to irrigate once every two weeks. In order to irrigate the entire campus in one night, large water mains would be required to provide the necessary pressure to all irrigation zones within the campus. Since recycled water is not subject to drought restrictions, this would not be an issue if purple pipe was extended to the site. The campus would require a flow pressure of 17,000 gallons per minute (GPM) if subject to drought restrictions and only 2,500 gallons per minute (GPM) if recycled water were extended to the campus. It is estimated that, at ultimate build out of the site, having recycled water could save the campus between $200,000 and $300,000 per year.

Although SAWS has indicated that the required 460 acre-feet of recycled water can be made available to the campus. SAWS has indicated that any user requiring more than 100 acre-feet per year will be required to construct on-site storage tank(s) or other surface storage facility to support the irrigation needs of the campus. Storage facilities could be phased to accommodate development. In 2016, Pape-Dawson Engineers completed a detailed recycled water analysis, which outlines the University's recycled water needs and the associated infrastructure and costs in order to meet the campus demands. It is recommended that the 2016 report be referenced for more detail on this subject.



NEAR-TERM RECYCLED WATER INFRASTRUCTURE



LONG-RANGE RECYCLED WATER INFRASTRUCTURE

DATA NETWORK

The Master Plan outlines technology service to each of the new A&M-SA campus buildings.

The following was considered:

- Current industry standards
- Texas A&M Red Book
- Local codes
- Best practices

DATA CENTER

The campus data center is located in the Central Academic Building, and it is sized to serve the campus in a scalable/expandable manner allowing for phased growth as the campus grows. All mechanical, electrical and plumbing service capacities were planned during the design and construction phases of the Central Academic Building to meet the needs of the fully expanded data center.

PRIMARY AND REDUNDANT SERVICES

Fiber optic cable will be installed from the new data center to each building on the campus in a "hub and spoke" configuration, providing primary and redundant connectivity. These fiber optic connections will leave the Central Academic Building at opposite ends and enter each building at opposite ends, providing diverse pathways. Fiber optic cable shall consist of both 50 Micron OM4 and single mode cables in every pathway to each building.

A multi-pair copper cable will also be installed from the entrance rooms of the Central Academic Building to each building on the campus. This cable will be protected at both ends from electrical surges and spikes using building entrance terminals properly ground to the main grounding bus. This cable will be used for miscellaneous analog services that may be required.

REMOTE TRACT BUILDINGS

Other buildings not located on the main campus tract shall be served where feasible by extending a conduit duct bank from the new campus duct bank system and installing fiber optic cable from the new data center to each location. Where not feasible to extend conduits and cables, a high speed data connection will be leased from the local service provider to serve these locations.

CONDUIT DUCT BANK

A system of 4" conduits and manholes will form separate duct banks for primary and redundant service connection to each building. The duct banks will originate at the Central Academic Building and travel south across the campus with lateral connections from each side to every building. Every duct bank and lateral conduit shall be encased in stained concrete for protection and identification. A metallic cable will also be placed along each pathway to allow for pathway tracing. Each 4" conduit will be filled with a fabric 6-cell innerduct to allow for cables to be pulled through separately. All duct bank components shall be properly grounded. Communication conduits may not run parallel to electrical conduits without a minimum of four-feet separation.

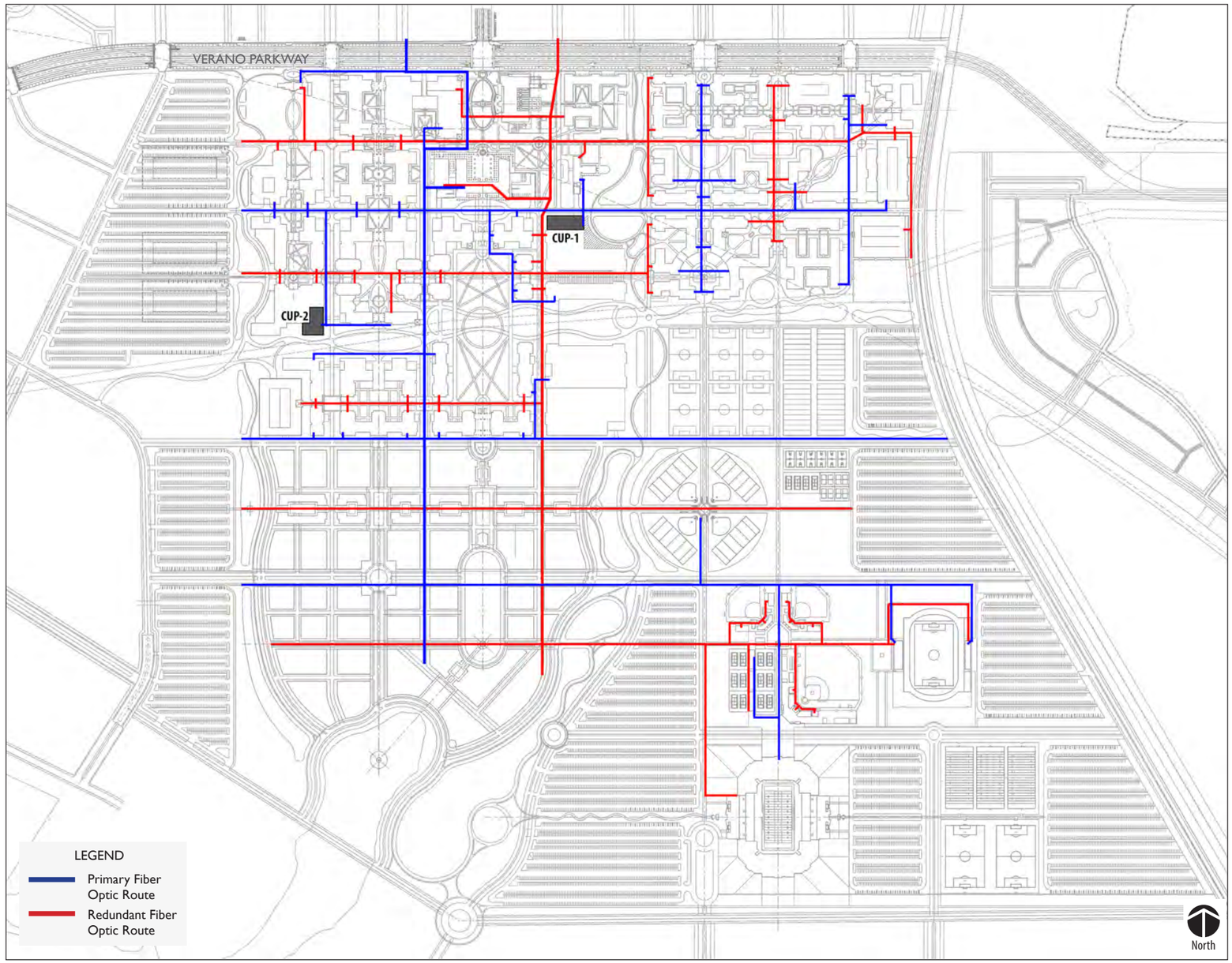
BUILDING ENTRANCES

A lateral conduit will extend from both the primary and redundant duct bank systems into each building at opposite ends, providing diverse pathways. The conduits will enter each building into the nearest intermediate distribution frame (IDF)/entrance rooms or the main distribution frame (MDF) where no separate IDF is located. Cables entering each building will be properly supported and terminated in the entrance room. All fiber optic cables will be terminated into rack-mounted fiber optic termination shelves. All copper cables will be terminated on wall mounted building entrance terminals to protect them from electrical surges and spikes. All conduits entering each building shall be capped to prevent water or gasses from entering the buildings from outside sources.

SITE SECURITY DEVICES

Emergency call stanchions with integral cameras will be placed throughout the campus to provide emergency communications directly to the campus police dispatch center. These stanchions shall be connected via the nearest building IDF. Cameras and call boxes shall be IP-type, using twisted pair copper cable, which allows for a high quality both in speech and video. If the nearest building IDF exceeds 270 feet in conduit distance, then fiber optic cable and media converters shall be installed.

Additional cameras will be placed throughout the campus on buildings and light poles to provide complete visual coverage of the campus from the police dispatch center.



DATA NETWORK: PRIMARY & REDUNDANT PATHWAYS

NEAR-TERM IMPLEMENTATION

PARKING STUDY

As enrollment at Texas A&M University-San Antonio (A&M-SA) rapidly grows over the next five years, the campus will need to construct more on-campus parking to accommodate the increased population.

The Master Plan makes its recommendations for on-campus parking based on the following considerations:

- A&M-SA is currently a commuter campus: 100% of the campus population commutes to and from the campus, which creates high demand for parking.
- Options for alternative transportation are currently limited but will increase over time to mitigate demand.
- On-campus housing will also expand over time, mitigating growth in demand.
- Currently, many parking spaces are available off-campus along Verano Parkway and University Way; the availability of these spaces will change over time as the development is realized.
- The guiding principles strive to create a dense, walkable campus with a "park once" philosophy.

RECOMMENDATIONS:

- Target an on-campus parking ratio of 0.33, which reflects that of a suburban institution according to the Institute of Transportation Engineers (ITE).
- Invest in parking areas one time: build parking at the edges of campus (or as a place-holder for future structured parking garages) so that the center of campus is reserved for buildings and pedestrian-friendly landscapes.
- Utilize the availability of off-campus parking as an interim solution, but do not rely upon it for the long-term. Make adjustments to on-campus inventory if off-campus parking spaces become more limited.
- Manage user expectations by tailoring the number of on-campus parking permits sold with the available inventory of on-campus spaces.

2016 ACADEMIC YEAR

Based on existing parking conditions for the year 2016, the University has a total of 1,069 on-campus parking spaces and access to an additional 687 parallel parking spaces located on Verano Parkway and University Way. Adequate parking exists for the 2016-2017 academic year, but the University may choose to prepare for the loss of 257 spaces associated with the construction of the Science and Technology Building.

2017 ACADEMIC YEAR

In 2017, A&M-SA anticipates increased enrollment from freshmen and undergraduate transfer students; also, the first on-campus housing will open. The University will need to add approximately 1,000 parking spaces to keep pace with demand.

2018 & 2019 ACADEMIC YEARS

The parking added to the supply for the 2017 academic year will support the demand for 2018. In 2019, the University should prepare for another year of enrollment increases by constructing an additional, 750-space lot. The availability of on-street parking may supplement for demand until additional lots are constructed.

GROWTH TO 10,500 STUDENTS & 12,500 STUDENTS

To reach an enrollment of 10,500, the campus will need an inventory of approximately 3,750 parking spaces. As the University grows beyond 12,500 students, a campus inventory of just over 5,000 spaces will be needed.

PARKING CALCULATIONS

	Fall 2016	Fall 2017	Fall 2018	Fall 2019	Fall 2020	Fall 2021	Fall 2022	Fall 2023	Fall 2024	Fall 2025	Fall 2026	Fall 2027	Fall 2028	Fall 2029	Fall 2030
Total Student Enrollment	5,511	6,514	7,546	8,451	9,305	9,770	10,258	10,771	11,309	11,874	12,468	13,091	13,746	14,433	15,155
Faculty & Staff	500	575	650	700	750	800	850	875	900	925	950	975	1,000	1,025	1,050
Total Campus Population	**6,011**	**7,089**	**8,196**	**9,151**	**10,055**	**10,570**	**11,108**	**11,646**	**12,209**	**12,799**	**13,418**	**14,066**	**14,746**	**15,458**	**16,205**
Target Parking Count (ITE Recommendation)	1,984	2,339	2,705	3,020	3,318	3,488	3,666	3,843	4,029	4,224	4,428	4,642	4,866	5,101	5,348
On-Campus Parking															
Existing On-Campus Parking	1,069	1,012	2,012	2,012	2,762	4,262	4,262	4,262	4,262	4,262	4,262	4,262	5,012	5,012	5,012
Proposed New On-Campus Parking	200	1,000	0	750	0	0	0	1,500	0	0	0	750	0	0	0
Total On-Campus Parking	**1,269**	**2,012**	**2,012**	**2,762**	**2,762**	**2,762**	**2,762**	**4,262**	**4,262**	**4,262**	**4,262**	**5,012**	**5,012**	**5,012**	**5,012**
On-Campus Surplus / Deficit	-715	-327	-683	-258	-556	-726	-904	+419	+233	+38	-166	+370	+146	-89	-336
Actual Parking to Campus Population Ratio	**0.21**	**0.28**	**0.25**	**0.30**	**0.27**	**0.26**	**0.25**	**0.37**	**0.35**	**0.33**	**0.32**	**0.36**	**0.34**	**0.32**	**0.31**
Regional Parking															
Existing Off-Campus Parking	687	687	687	687	687	687	687	687	687	687	687	687	687	687	687
Total Parking (On-Campus & Off-Campus)	1,956	2,699	2,699	3,449	3,449	3,449	3,449	4,949	4,949	4,949	4,949	5,699	5,699	5,699	5,699
Regional Suplus / Deficit	-28	360	-6	429	131	-39	-217	1,106	920	725	521	1,057	833	598	351

ASSUMPTIONS:

1. Total Student Enrollment based on growth projections provided by A&M-SA.
2. ITE Recommends a Parking to Campus Population minimum ratio of 0.33 and a maximum ratio of 0.55, which reflects an average university campus located in a suburban area. Parking ratios at urban campuses may be as low as 0.22, while commuter campuses average a ratio of 0.55.
3. The availability of off-campus parking was considered and is shown separately from on-campus parking counts: the lower 0.33 ratio for on-campus parking was selected to reflect availability of off-campus parking spaces.
4. Off-campus parking currently consists of parallel on-street parking spaces along Verano Parkway and University Way (all the way to Loop 410), and is assumed here to remain steady over the duration. However, as the Verano development grows, the availability of off-campus parking will both increase and decrease over time as new streets are constructed and additional users arrive.

PHASING PLAN:
Growth to 12,500 Students

NEAR-TERM IMPLEMENTATION

Over the next several years, A&M-SA anticipates growth from a 2016 enrollment of approximately 5,500 students to 12,500 students. The near-term implementation plan accommodates this enrollment milestone by expanding existing academic facilities; adding on-campus student housing, recreation, and student life functions; and identifying critical infrastructure projects and parking needs.

KEY PROJECTS:

1. Temporary Offices & Classrooms, Greenhouse & Grass Turf Research
2. Residence Hall #1
3. Parking Lot C (200 spaces) & Road
4. Science & Technology Building
5. Basketball Pavilion
6. Parking Lot D (1,000 spaces), Road, & Eco-Zone
7. Academic & Administration Building #1
8. Student Innovation Center & Central Plant
9. Recreation Fields
10. Residence Halls #2 & #3
11. Temporary Parking Lot (750 spaces)
12. Landscape Project: Pedestrian & Emergency Vehicle Access
13. Academic Building #2
14. Parking Lot E (1,500 spaces) & Eco-Zone Expansion
15. Residence Halls #4 - #8
16. Recreation Center & Recreation Fields Expansion
17. Parking Lot F (750 spaces) & Road
18. Landscape Project: Pedestrian & Emergency Vehicle Access & Eco-Zone

PHASE ONE: Growth to 8,000 Students

In addition to expanded undergraduate enrollment (the addition of freshman classes), one of the major drivers causing increases in A&M-SA's on-campus population is the closure of the Brooks campus. Faculty, staff, and students from Brooks moved to the main campus at the beginning of 2017.

In order to accommodate this immediate growth, the University installed a series of temporary portable offices & research laboratories south of the existing Central Administration Building. This complex will remain in-place until Academic Building #3 is online.

During this period, the University will also:

1. Install Temporary Offices & Classrooms, Greenhouse & Grass Turf Research
2. Construct Student Residence Hall #1 (adds 370 beds)
3. Build Parking Lot C & Access Roads - 200 spaces
4. Design & Construct the Science & Technology Building
5. Create Basketball Pavilion & Recreation Fields
6. Build Parking Lot D - 1,000 spaces

The completion of the projects outlined above will support University growth to an enrollment of 8,000 students.

PHASING PLAN:
Growth to 8,000 Students

PHASING PLAN:
Growth to 10,000 Students

PHASE TWO: 8,000 to 10,500 students

In order to support enrollment increases beyond 8,000 students, additional capital improvements will be required in all programmatic areas.

The completion of the following projects will accommodate enrollment growth to 10,500 students, which the University projects meeting in 2022:

7 Design & Build Academic & Administration Building #1

8 Design & Construct Student Innovation Center & Central Utility Plant #1

9 Build Recreation Fields

10 Add Residence Halls 2 & 3 (adds residences for 680 students; brings total to 1,050)

11 Construct Temporary Parking Lot - 750 spaces

12 Design & Complete Landscape Project for Emergency Vehicle Access & Pedestrian Connectivity

13 Design & Build Academic Building #2

PHASE THREE: 10,500 to 12,500 students

The University projects enrollment to surpass 10,500 students in 2023. In order to accommodate enrollment up to 12,500 students, the University will need to complete the following capital improvements projects:

14 Construct Parking Lot E - 1,500 spaces

15 Design & Build Residence Halls #4 - #8

16 Design & Construct the Student Recreation Center & Expand Recreation Fields

17 Design & Build Parking Lot F (750 spaces) and Access Road

18 Landscape Project: Connect Recreation Center, Fields and Academic Core

With these investments, the University campus will reach the following totals:

- Total Academic GSF = 325,000
- Total Student Life GSF = 350,000
- Total Campus Population = 12,500
- Parking = 5,000 spaces
- Total Residential GSF = 700,000
  - Total Residential Beds = 2,500 (20% On-Campus Housing)

PHASING PLAN:
Growth to 12,500 Students

CAMPUS DESIGN GUIDELINES

ARCHITECTURAL

VOCABULARY

The current architectural vocabulary of the Texas A&M University-San Antonio (A&M-SA) campus is rich and creates a strong foundation for new building development. The existing palette of materials in the campus design, including natural stone, brick masonry and ornamental tile, should be the starting point for the new portions of the campus, while still allowing for a diverse variety of building types.

There should be clear hierarchy of buildings and their importance in the campus plan. For example, the library should be distinct from an academic building, while the fine arts center should look different from the student commons and so on.

There are a few ways to achieve this diversity and richness:

- All the new buildings should settle gracefully into the landscape with steps, ramps, plazas and stairs that acknowledge the site and slopes.
- Brick color and patterns and color accents should be used to bring a vibrant color palette to the campus, using existing materials as a starting point. These more colorful areas can be associated with entries, important exterior spaces and other architectural features.
- New roofs and roof shapes, while referring to the existing shapes, need not be the same. They can be flat, sloped or hipped.
- Trellises, canopies, overhangs and arcades should form a part of each building to protect the glazing, reduce glare, and allow visibility to the inside of the buildings. This also helps reinforce the connection to the landscape and eases the transitions between inside and outside spaces.
- Sun angles and building orientation also inform the design of the fenestration - windows and building openings - as well as the number of openings in each building. Each building face reflects its condition and relationship to the sun.
- Glazing, especially at the ground floor, should be transparent or lightly tinted (and properly shaded) wherever possible to allow the connection from the inside to the outside and to help activate the public spaces.
- Entrances, lobbies, stairwells, and large public areas should be used as areas of architectural expression, where these elements inform the shape, material, and design of these features.

As the campus is built out, it should retain the culture, history and feel of the Texas A&M University System while at the same time expanding on that tradition to create something unique to A&M-SA. Each campus, and each building within that campus, is a part of a family, with individual traits and features while still retaining a distinct family resemblance.

Existing buildings provide guidance for architectural vocabulary

COURTYARDS AND GATHERING SPACES

Development of courtyards and landscaped areas is as significant as the buildings themselves. These spaces define the public areas and often serve as the entrance or the first impression of the campus. In these spaces, it is necessary to incorporate pedestrian scale and transition from exterior to interior.

Items for consideration are:

- Paving and articulated paths
- Lighting type
- Definition of paths and entrances
- Architectural elements such as trellises and other shade devices
- Hardscape with formal and casual areas
- Landscaping with native, historical and accent plants

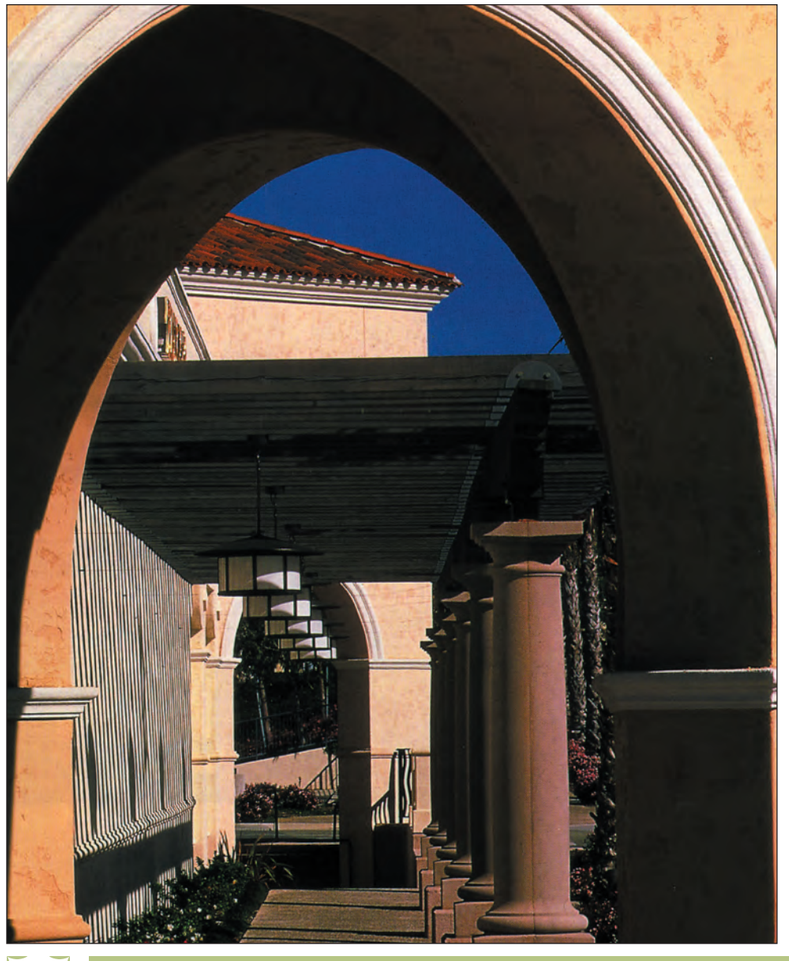
Examples of traditional courtyard and gathering spaces

ARCADES AND PASSAGEWAYS

Trellises, overhangs, arcades, and shading should be encouraged and used to protect glazing, reduce glare, and allow visibility inside of buildings. They also allow the building to settle into the landscape and gently transition between inside and outside spaces.

Arcades and passageways protect pedestrians from the elements, especially direct sunlight. They can be used to mark important places on campus. They also soften the edges of existing buildings and structures, giving them have a stronger connection to the landscape.

Trellises may be used at gathering spaces and at building entrances, plazas, walkways and other pedestrian routes. They should be built of long-lived and easily maintained materials, and covered with vines such as Texas Wisteria, Crossvine or improved varieties of Trumpet Vine, planted at the base of the trellises vertical supports. Seating should be provided in the shade of the trellis where possible.



Examples of traditional arcades and passageways

MATERIALS AND PALETTE

The richest and most natural materials should be concentrated on the lower areas of buildings, closest to pedestrians, where look, feel, and texture are most keenly observed.

San Antonio brims with colorful and ornamental tile work. It is used in the first buildings on campus and should be continued as the campus grows. Tile does not need to be limited to floors: it can also be used as a decorative element on façades, bringing color and variety to these buildings.

Examples of materials and textures

WATER

Everyone is attracted to water and water-based environments. On the A&M-SA campus, water should be used as a design element to bring a sense of place to the campus. The site features two major drainage elements, which will be naturalized as part of the overall Master Plan. Beyond just moving water, the enhancements will become part of the defining look and feel of the campus, with the potential to positively impact people's perception of it.

Preserving the natural environment of the site while integrating the University's educational facilities is part of the challenge of the development plan. The naturalization of the existing drainage channels will also facilitate the creation of green belts, pools and other features that will make the outdoor parts of the campus more attractive and inviting.

Examples of water features

Facade of the Central Academic Building showing top, middle, and base elements

MASSING AND SCALE

The organization and massing, or shape and scale, of the buildings should follow a simple and classic style. Buildings should have a base, middle, and a defined top. The fenestration of the new buildings can be used to reinforce this classic relationship and give character and energy to the new buildings. Articulation of the ground floor will enhance the connections to adjacent public spaces.

Generally, buildings should be four- to six-stories tall as appropriate to the building program and placement in the campus. In some areas of the academic core and research district, taller structures of six- to eight-stories may be utilized. The design of the building facades should support the architectural form of the campus, defining not only the buildings but the spaces in between.

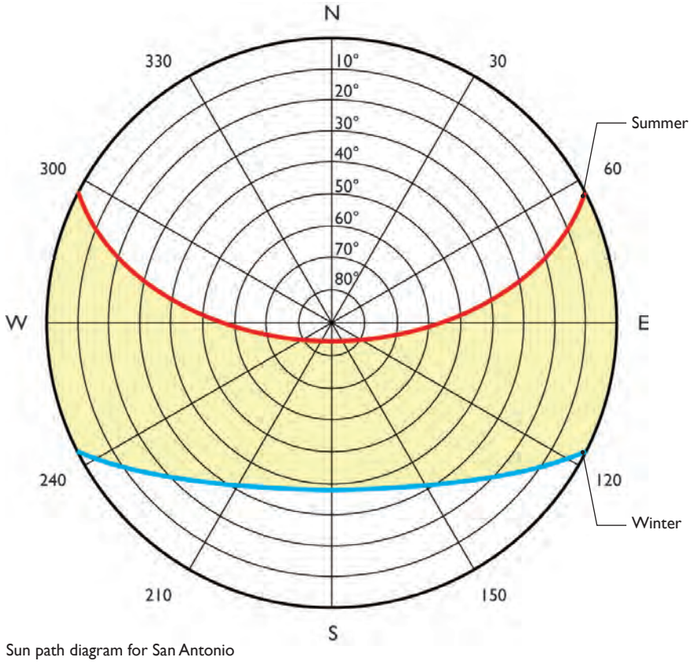
ORIENTATION AND SUN ANGLES

All new buildings should carefully consider sun angles and building orientation, minimizing harsh east/west sun exposure while still maximizing natural light. This should also inform fenestration design and the number of openings in each building.

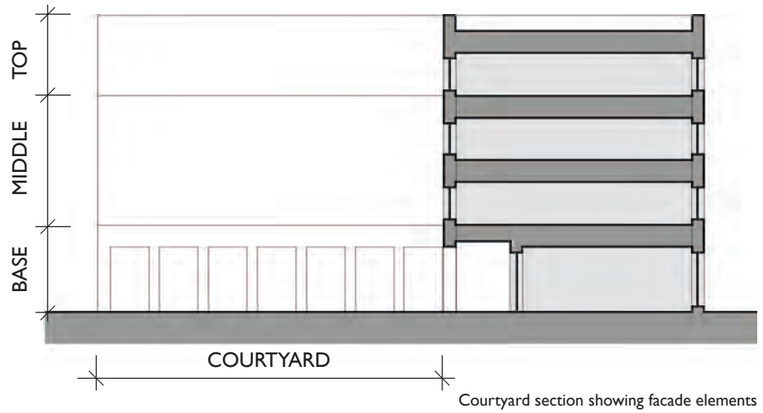
Building size and height should also be taken into account, as they can cast shadows on exterior spaces at different times influencing the comfort of these outdoor spaces. In general, it is desirable to have more sunlight during the winter and more shade during the summer.

INDOOR & OUTDOOR RELATIONSHIPS

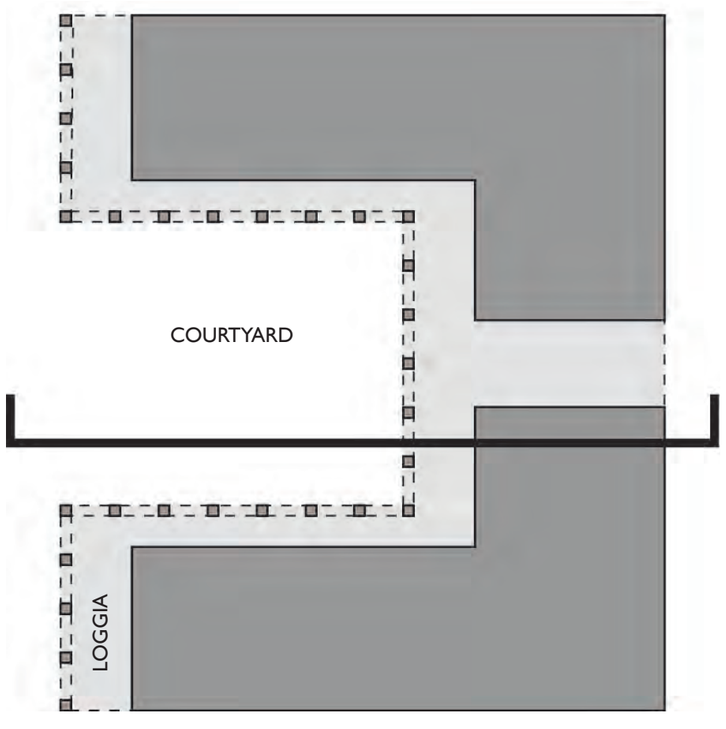
Glazing, which includes windows and glass walls, should be used throughout, with energy efficient coatings. Glazing should be transparent or lightly tinted when possible, to allow for connection from inside to the outside, and to help energize public spaces. Glazing should also be used to help identify important parts of each building and the campus. Entrances, lobbies, stairwells, and large public areas, especially those with views, should be appropriately glazed.



Sun path diagram for San Antonio



Courtyard section showing facade elements



Courtyard Plan

SUSTAINABILITY

Successful sustainable design and building should significantly reduce or eliminate the negative impact of buildings on the environment and the people that use them. Studies have shown the benefits of sustainable building practices include:

- Reduced operating costs
- Enhanced occupant comfort
- Higher test scores
- Reduced absenteeism and turnover
- Reduced material use
- Reduced energy use
- Increased use of renewable resources

The United States Green Building Council Leadership in Environmental and Energy Design (LEED) rating system can be used as a design tool, modified as necessary for A&M-SA. LEED Silver certification should be the goal for all new campus buildings. The LEED system rates buildings in five categories:

- Sustainable site planning
- Safeguarding water/water efficiency
- Energy efficiency/renewable energy
- Conservation of materials and resources
- Indoor environmental quality

Green Building Recommendations for the A&M-SA Master Plan are as follows:

SUSTAINABLE SITE PLANNING

1. Design buildings to respond to topography:
    a. Integrate pedestrian paths into the landscape
    b. Design buildings with entries on multiple levels, dictated by grade changes as appropriate
2. Protect natural areas and reduce site disturbance:
    a. Establish “no build” zones
    b. Connect campus to wildlife areas
3. Orient buildings and plazas to take advantage of natural breezes
4. Include arcades along main pedestrian paths to reduce weather impacts on pedestrians
5. Use proposed site features to satisfy storm water management requirements
6. Encourage alternative transportation:
    a. Provide bike racks
    b. Give preferred parking to carpool users and electric vehicles
    c. Make bus shelters pleasant
    d. Locate a VIA bus stop on campus
    e. Plan on-campus shuttle bus route
7. Reduce heat island effect:
    a. Provide shade for parking and pedestrian areas
    b. Use light-colored paving materials and open paving design
    c. Use ENERGY STAR-rated roofing materials
8. Design building facades and windows to respond to solar orientation:
    a. Calculate overhangs to shade walls and windows
    b. Use low-e or insulating glass to limit ultraviolet light penetration.
    c. Design windows to respond to building orientation:
        i. South – horizontal shading
        ii. North – vertical shading
        iii. East – horizontal and vertical shading
        iv. West – horizontal and vertical shading

WATER EFFICIENCY

1. Examine the possibilities to use water efficient landscaping and adaptive and native plant materials
2. Connect campus to SAWS recycled water system for:
    a. Irrigation
    b. Chilled water system
    c. Proposed lake and water features
    d. Gray water systems within buildings

3. Continue harvesting rainwater to supplement recycled water use
4. Continue collecting HVAC condensate to supplement recycled water and/or gray water
5. Reduce water use within the buildings:
    a. Use low-flow plumbing fixtures
        i. Consider waterless urinals
        ii. Consider dual-flush toilets

ENERGY AND ATMOSPHERE

1. Develop and utilize a commissioning plan
2. Establish a minimum level of efficiency for building systems:
    a. Comply with ASHRAE 90.1
    b. Comply with current IECC
3. Optimize energy performance:
    a. Recommend exceeding ASHRAE 90.1 by 20%
    b. Set minimum R values for building envelope:
        i. Roof - R 30
        ii. Walls - R19
        iii. Windows - R4
4. Consider on-site energy generation:
    a. Solar photovoltaic panels
    b. Solar hot water system
    c. Wind generation
5. Implement campus-wide energy management system:
    a. Lighting system and controls
    b. Constant and variable motor loads
    c. Chiller efficiency
    d. Air static pressures and ventilation air volumes
    e. Cooling load
    f. Air and water economizer and heat cooling recovery cycles
    g. Outdoor irrigation systems
6. Green Power: consider joining CPS Energy's Windtricity program

MATERIALS AND RESOURCES

1. Implement and maintain a campus-wide recycling:
    a. Provide easily accessible areas within buildings
    b. Develop and implement a construction waste management program
2. Use building materials with high recycled content
3. Use regionally-manufactured building materials
4. Use rapidly-renewable building materials and products

INDOOR ENVIRONMENT QUALITY

1. Establish minimum indoor air-quality performance by complying with ASHRAE 62-199
2. Eliminate smoking on campus or provide designated smoking areas 15 feet away from building entrances
3. Provide Indoor Air Quality (CO_2) monitoring and connect to energy management system
4. Provide for effective delivery and mixing of fresh air within the buildings
5. Implement a construction Indoor Air Quality management plan
6. Use low-emitting materials inside buildings
7. Implement a indoor chemical and pollutant source control system
8. Provide a high level of individual thermal and lighting controlled by individual or specific groups
9. Provide for a thermally comfortable environment:
    a. Comply with ASHRAE Standard 55-1992
    b. Install a permanent temperature and humidity monitoring system
10. Provide a connection to the outdoors for building occupants:
    a. Introduce daylight into regularly occupied areas of the building
    b. Achieve a direct line of sight to vision glazing
    c. Introduce daylighting but control glare in the teaching spaces
    d. Utilize evenly distributed, indirect artificial lighting within buildings

TRANSPORTATION NETWORK

ON-CAMPUS STREET SYSTEM

A street plan consists of a hierarchy of streets ranging from those that connect to regional thoroughfares to smaller ones that penetrate the core of the campus. The Master Plan employs a street network that uses a variety of scales to efficiently and effectively move vehicles through and around the University campus.

As previously discussed, the Master Plan is designed to promote pedestrian circulation in the interior of the campus. In order to accomplish this goal, the plan relegates the primary roads and parking areas to the perimeter of the campus.

The plan proposes an outer ring-road, which loops around the campus and connects to the regional thoroughfare system. It conveys traffic to parking lots and other destinations on the campus. These campus edge roadways should be designed as boulevards with two lanes of traffic in each direction and dedicated turn lanes for access to parking areas. These perimeter streets should also incorporate dedicated bike lanes and a planting-strip before pedestrian sidewalks.

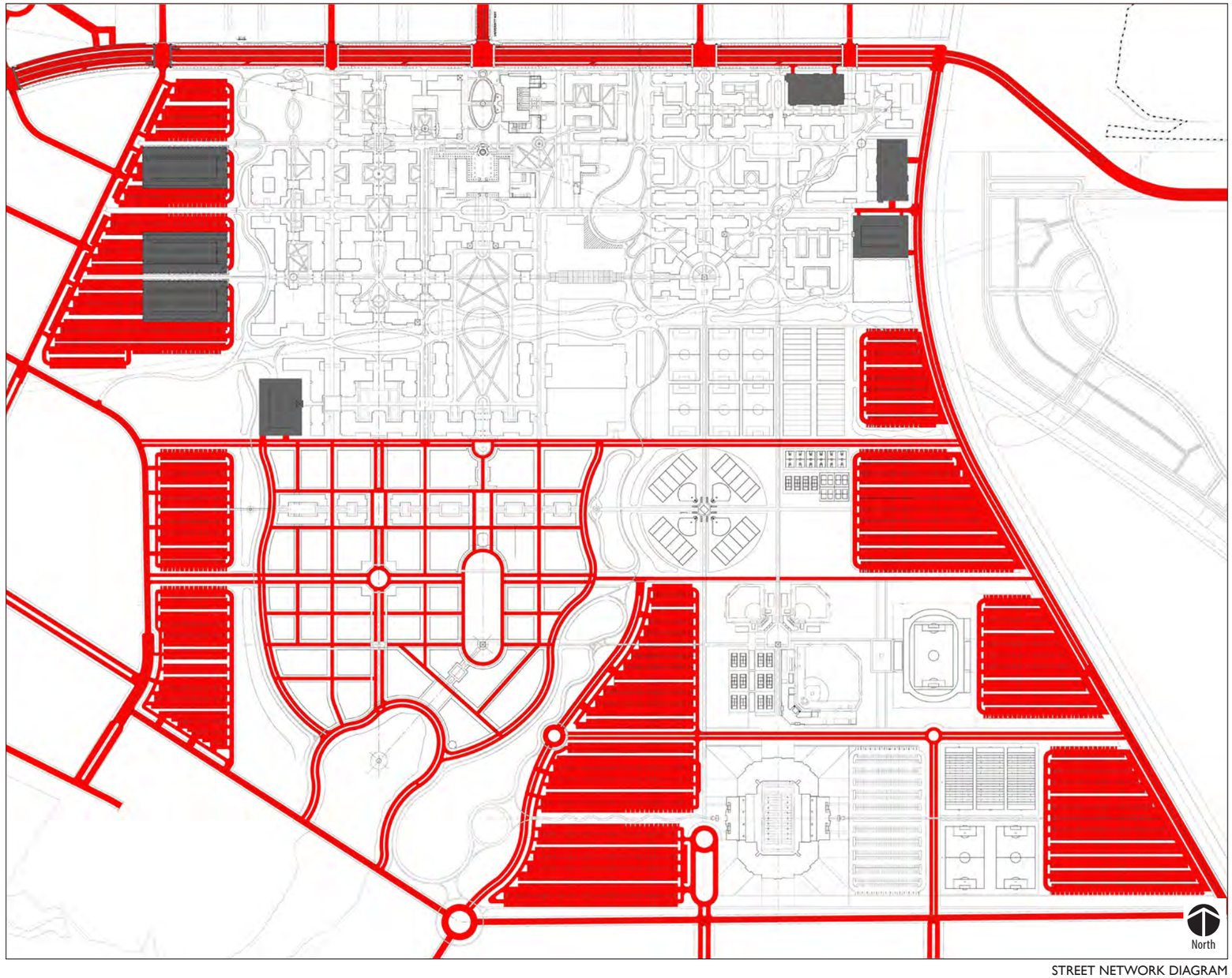
The Master Plan does not incorporate streets or roads within the academic core, student life, student housing, and recreation districts. Instead, pedestrian pathways and promenades double as service roads and emergency vehicle access paths. These key routes should be a minimum of 20-feet wide and be structured to adequately support fire truck access. Deliveries, trash, and small shuttles will utilize these multi-purpose pathways in the campus' interior.

Within the athletics district, the plan illustrates a few vehicular routes to provide access to parking lots within the campus. These streets should allow for high-volume traffic flow during events and rush hour.

The plan renders the roadway network within the research district as more urban in nature; it is intended to resemble a mixed-use downtown with standard-size city blocks. As the University continues to grow, road designs will need to be selected to allow for both adequate flow of vehicles, pedestrians, bicycles, and buses.

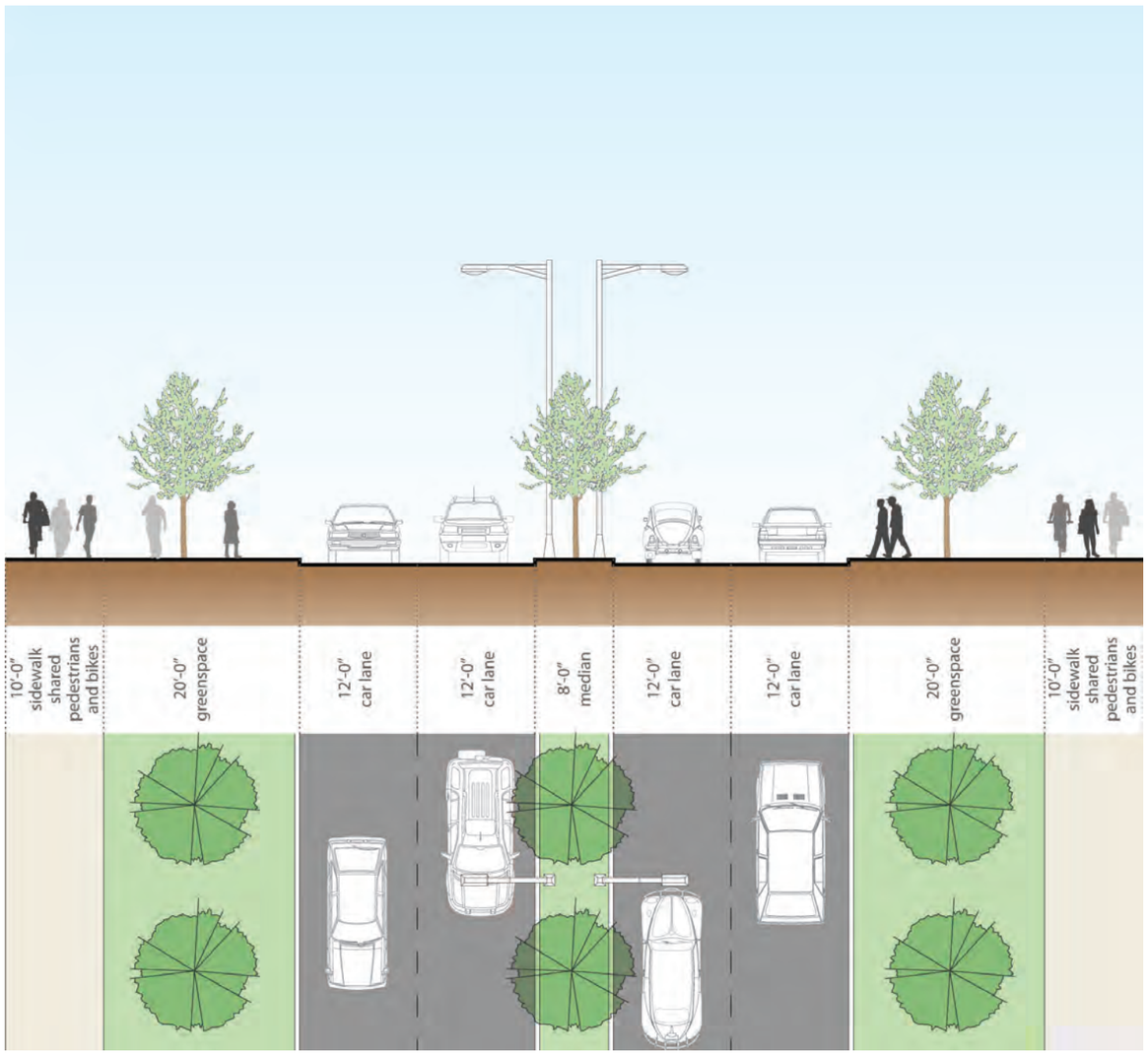
Larger streets that cross the campus and frame the research district are illustrated as boulevards. These streets should allow traffic to flow in each direction, should incorporate a dedicated bike lane and bus stops, and should feature wide pedestrian sidewalks on both sides of the street. Within these active boulevards, on-street parking should be limited. Smaller streets within the research district should be narrower in cross-section yet feature on-street parking and wide sidewalks for pedestrians. Within the narrower streets, bicycles may share vehicular lanes and move with the flow of vehicle traffic.

The 2012 Master Plan provided several street types for consideration by the University (Type A through F on the following pages). In general, the University should consider smaller street cross-sections (smaller lanes), which naturally slow the speed of vehicles, in pedestrian-heavy zones. The University should deploy wider street cross-sections, which naturally allow for faster vehicle speeds, at the edges of campus or where less pedestrian movement is anticipated. At intersections, the University should take care to include pedestrian-friendly crossing features, such as raised walkways, bulb-outs, and flashing signage.



STREET NETWORK DIAGRAM

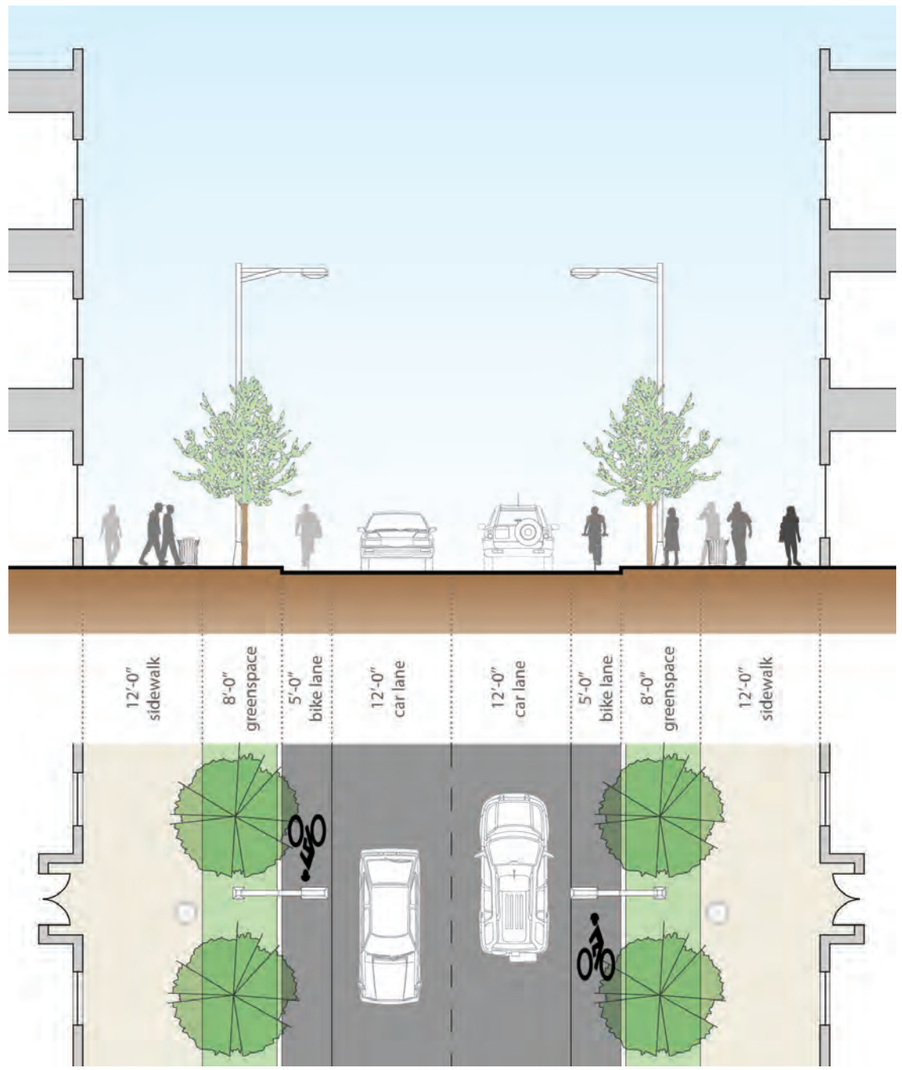
ROAD SECTIONS



ROAD TYPE A

Four-Lane Divided, Two 24'-0" Pavements

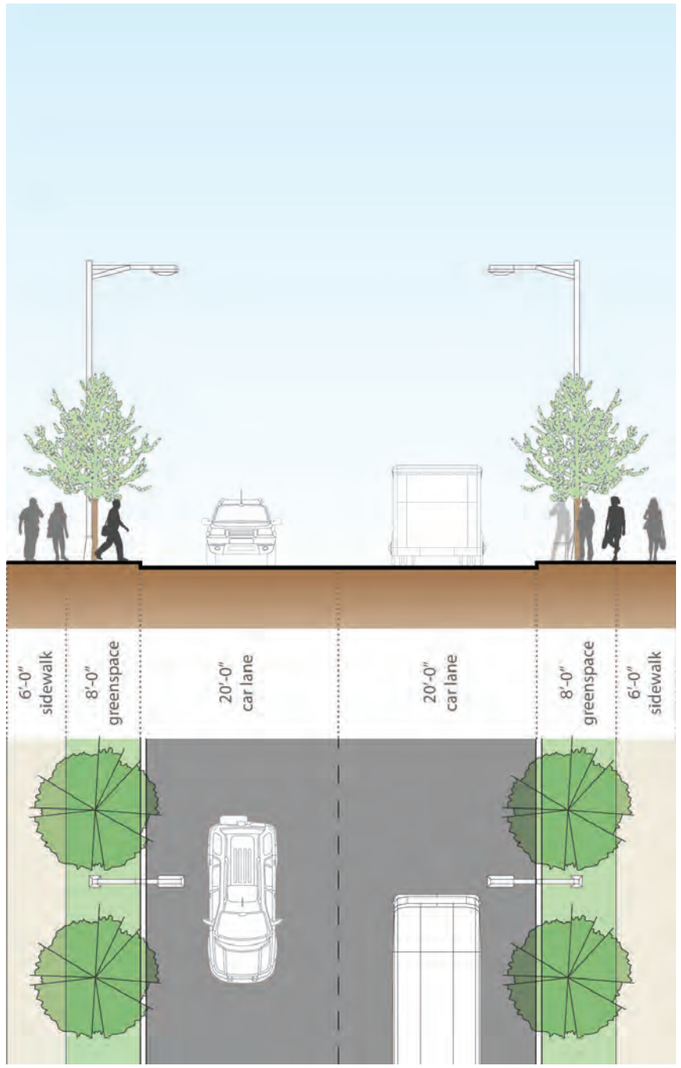
These roads are part of a loop street that will collect traffic from the regional thoroughfare system and convey it to destinations on campus. The Type A road provides four traffic lanes separated by a landscaped median divider. This standard will mainly be used at campus entryways from Verano Parkway and Mauermann Road. This road type will accommodate moderate volumes of traffic at speeds of 25 mph. Buses will operate along the collector loop. Pedestrians and bicyclists will use the two-way path separated from the road by a landscaped buffer.



ROAD TYPE B

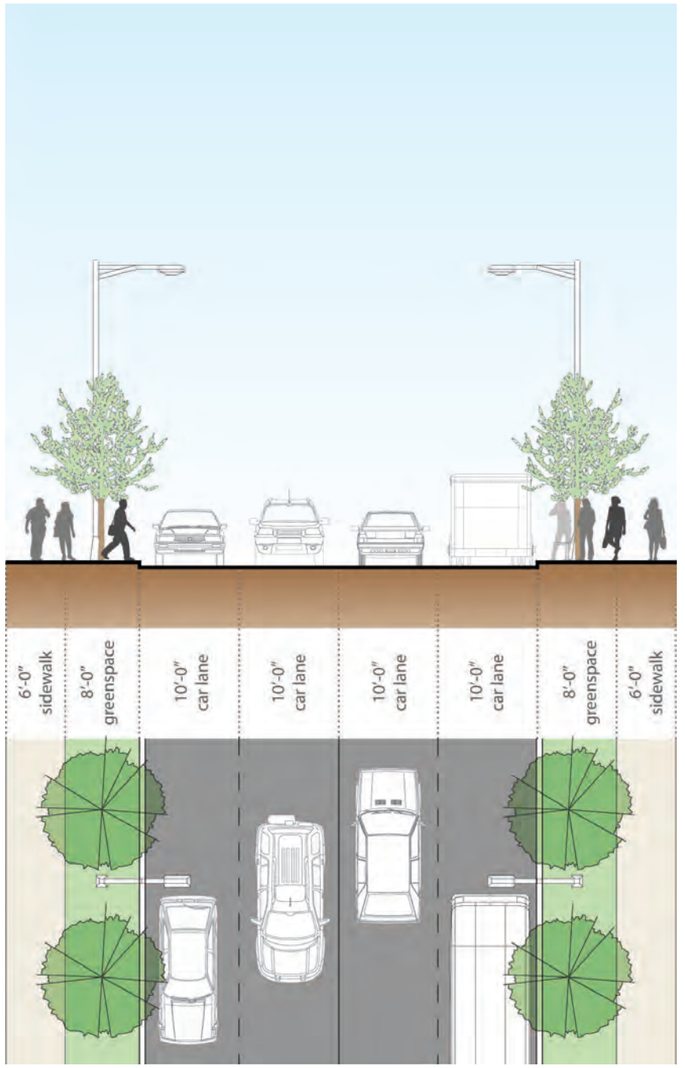
Two Lanes, Two Bike Lanes 34'-0" Pavement

These roads are local campus streets that loop around the core of the campus near the front door of many major buildings. The Type B street has a travel and a bike lane in each direction. Bike lanes are delineated on the pavement. Both bike and pedestrian traffic will be relatively heavy. Traffic speeds on the Type B network will be in the range of 20 mph.



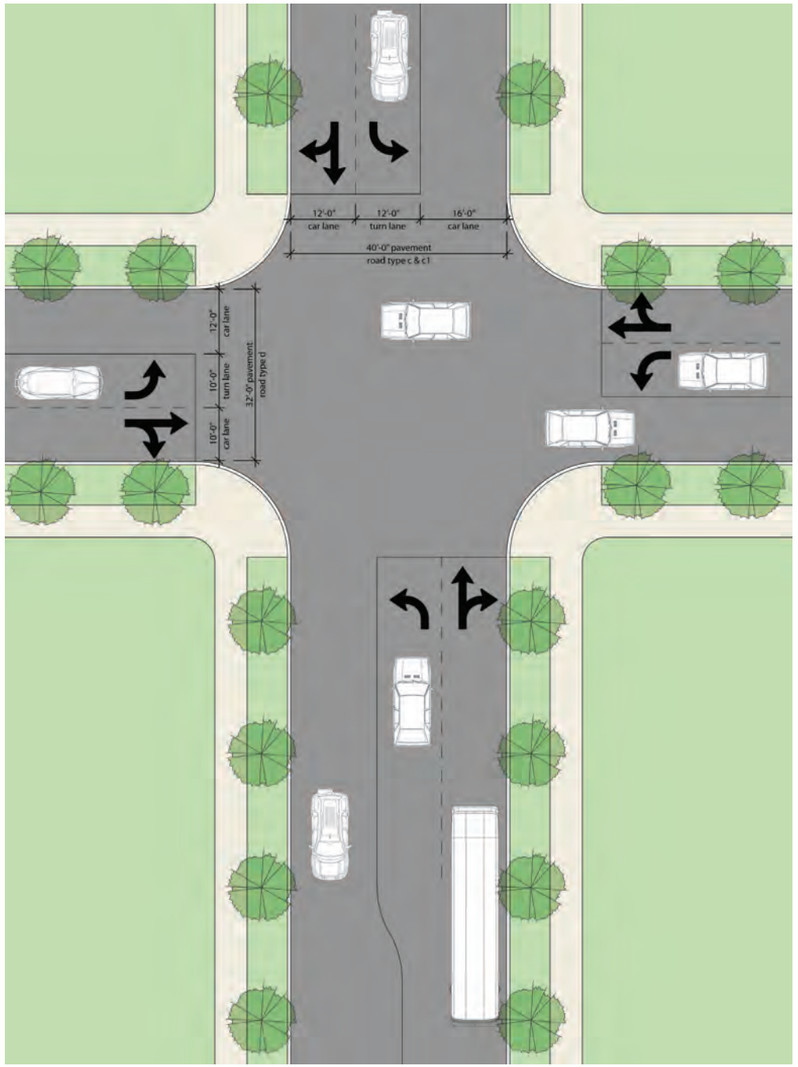
ROAD TYPE C
Two Lanes, 40'-0" Pavement

These roads form the remainder of the campus connector system. The Type C street provides a 40-foot, undivided, paved road. The road will accommodate VIA and campus bus routes, bus stops, and goods-and-service movements. Although bicyclists are encouraged to use the inner campus loop (Road Type B) around the campus core, they can operate in mixed traffic on the inner Type C road. Pedestrians are accommodated on adjacent sidewalks. The Type C road will accommodate moderate traffic flow at speeds of 25 mph.

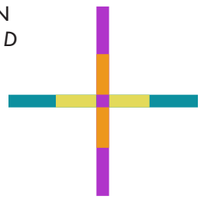


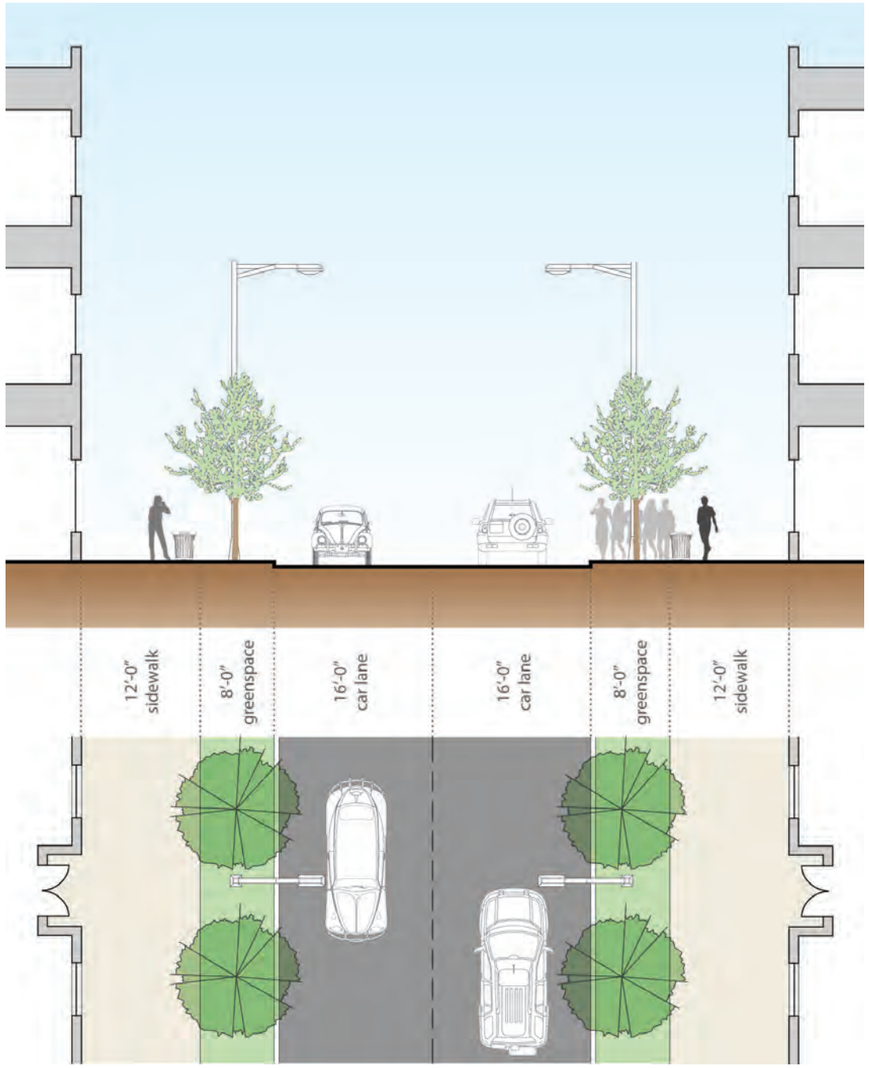
ROAD TYPE C-1
Four Lanes, 40'-0" Pavement

Sections of the connector loop (Road Type C) have the flexibility to be striped for four lanes to accommodate increased traffic demands with the full build-out of the campus. Bus pullouts may be required in these areas as needed.



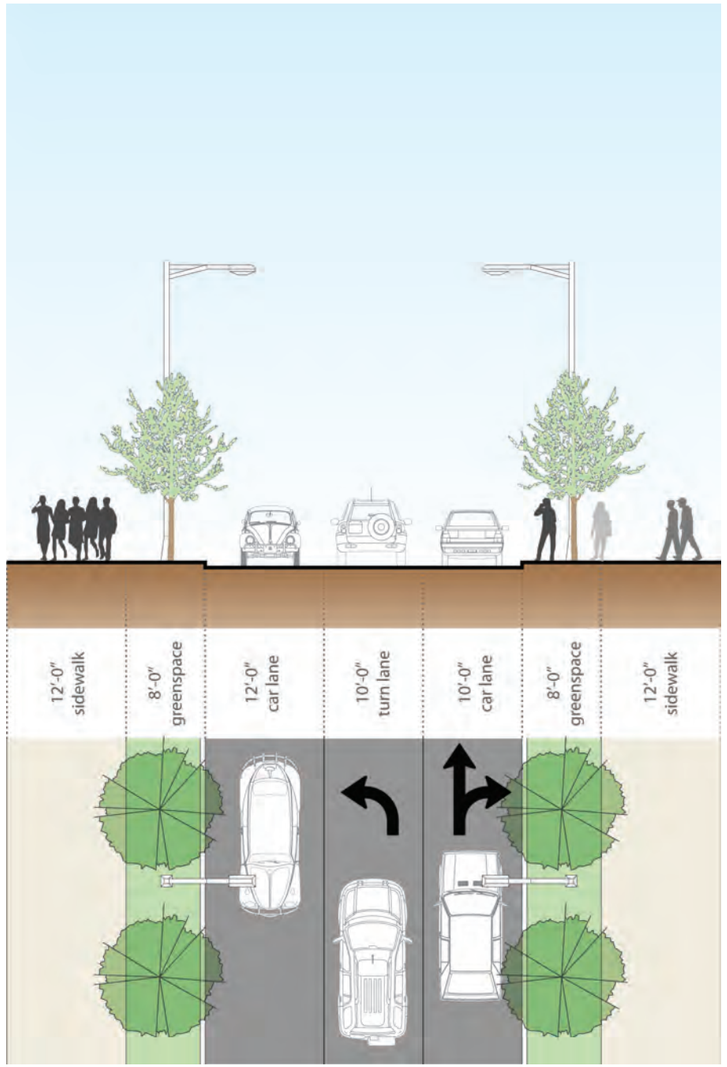
INTERSECTION
Road Type C and D





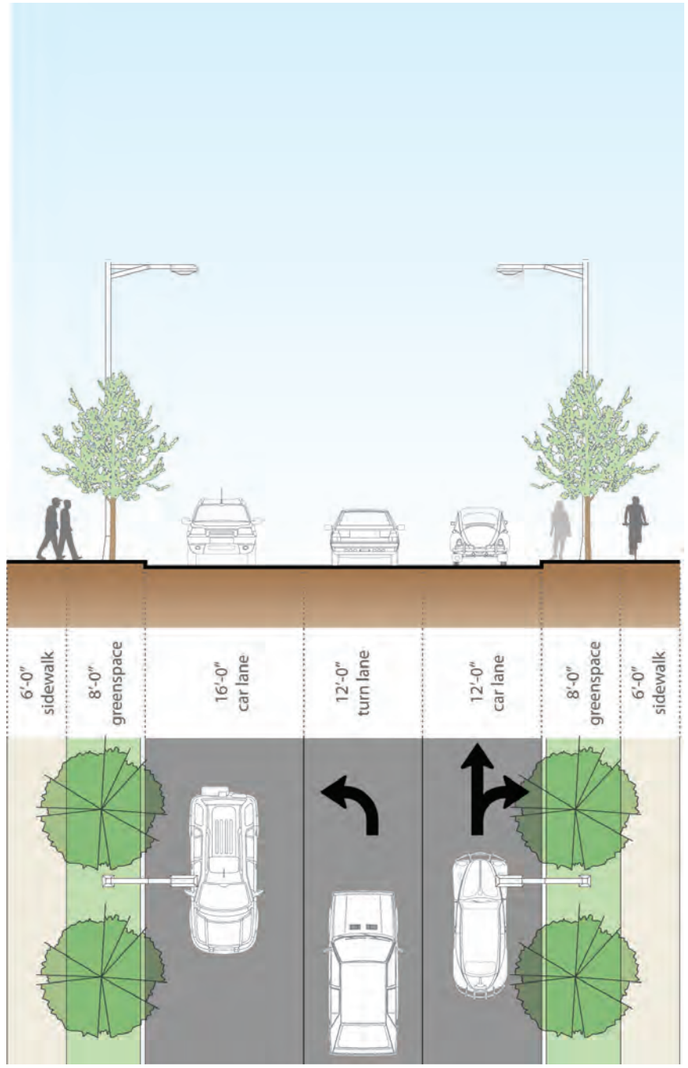
ROAD TYPE D
Two Lanes, 32'-0" Pavement

Short roads are used to provide a connection between the campus road network and parking lots. These short, low-volume roads can accommodate both automobile and bike traffic. This type of road will accommodate traffic at speeds of 20 mph.



ROAD TYPE E
Three Lanes, 32'-0" Pavement

The pavement markings in advance of campus intersections along Road Type D may be striped to accommodate a left-turn lane.



ROAD TYPE F
Three Lanes, 40'-0" Pavement

The pavement markings in advance of campus intersections along the connector loop (Road Type C) may be striped to accommodate a left-turn lane.

SIDEWALK CONDITIONS

Sidewalks are defined as the space between roadways and buildings. As illustrated with road types B & D, sidewalk width is recommended at 20-feet. In general, sidewalks should be divided into two areas parallel to the roadway. The first, at 8-feet wide, will be landscaped; the second, at 12-feet wide, will be paved.

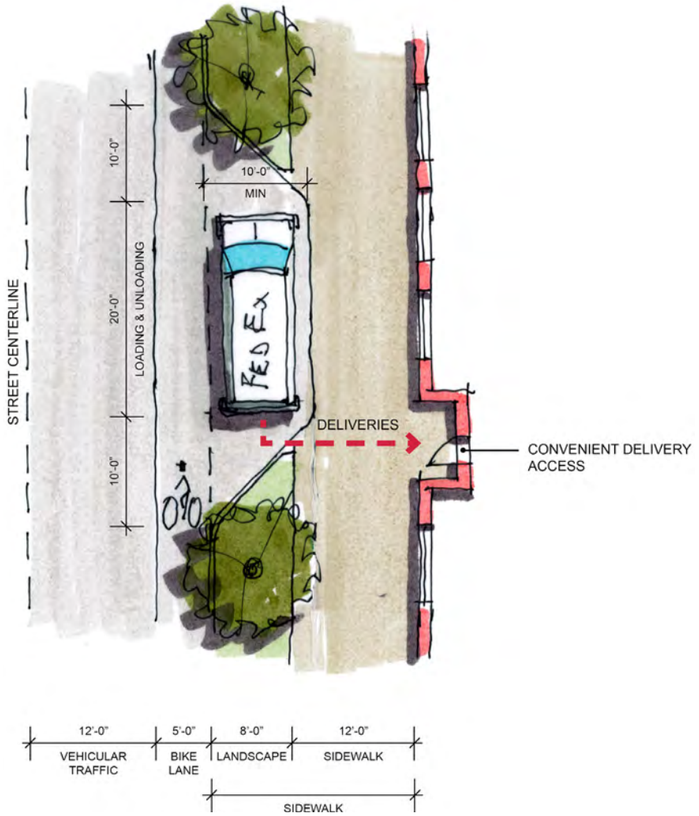
Sidewalks will contain much of the human activity happening along the streets, and as the diagrams illustrate, it is important to recognize what those activities are and make accommodations for them.

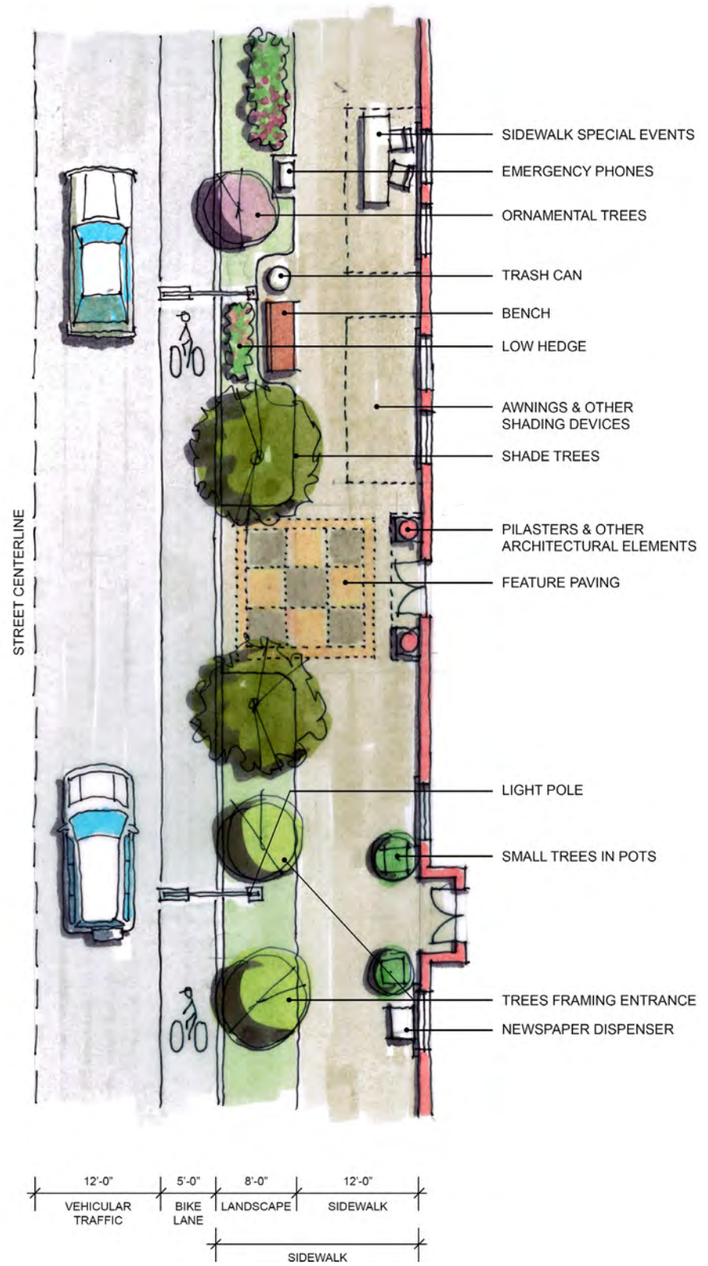
The 8-feet wide landscape area is perhaps the most important feature of sidewalks. Trees and plants provide not only a human scale to the streets, but shade, noise protection, visual screening, emphasis, rhythm, and a sense of continuity that helps knit the urban fabric of the campus together. Sidewalk features that occur in this landscaped zone, such as light poles, require some distance away from the faces of buildings; other features are better located here as to not interfere with the pedestrian traffic of the paved zone.

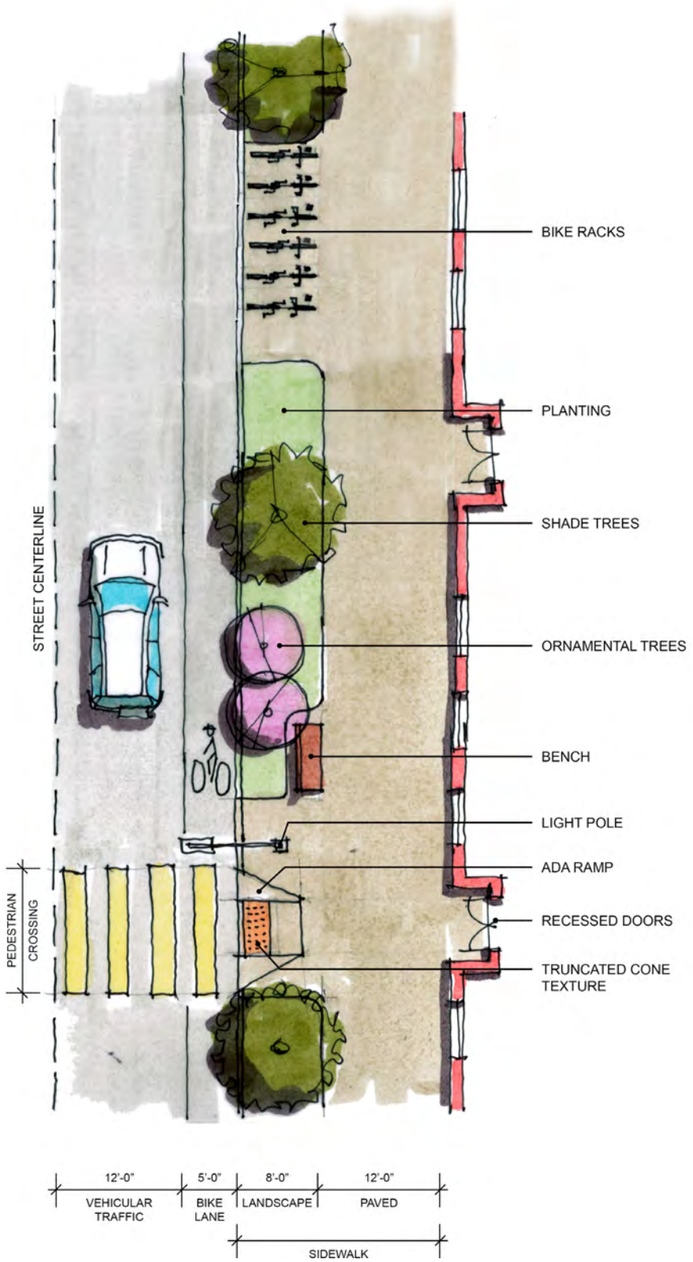
The 12-feet wide paved zone is designed to accommodate all pedestrian travel. While 12-feet wide may seem like an overly generous walking surface, this width offers the space to accommodate small groups of people traveling in opposite directions as well as protruding building features such as porticos or stepped porches. Depending on the orientation of the adjacent buildings and location of trees, additional shade may be desirable over this zone; awnings and arcades are good alternatives for this purpose.

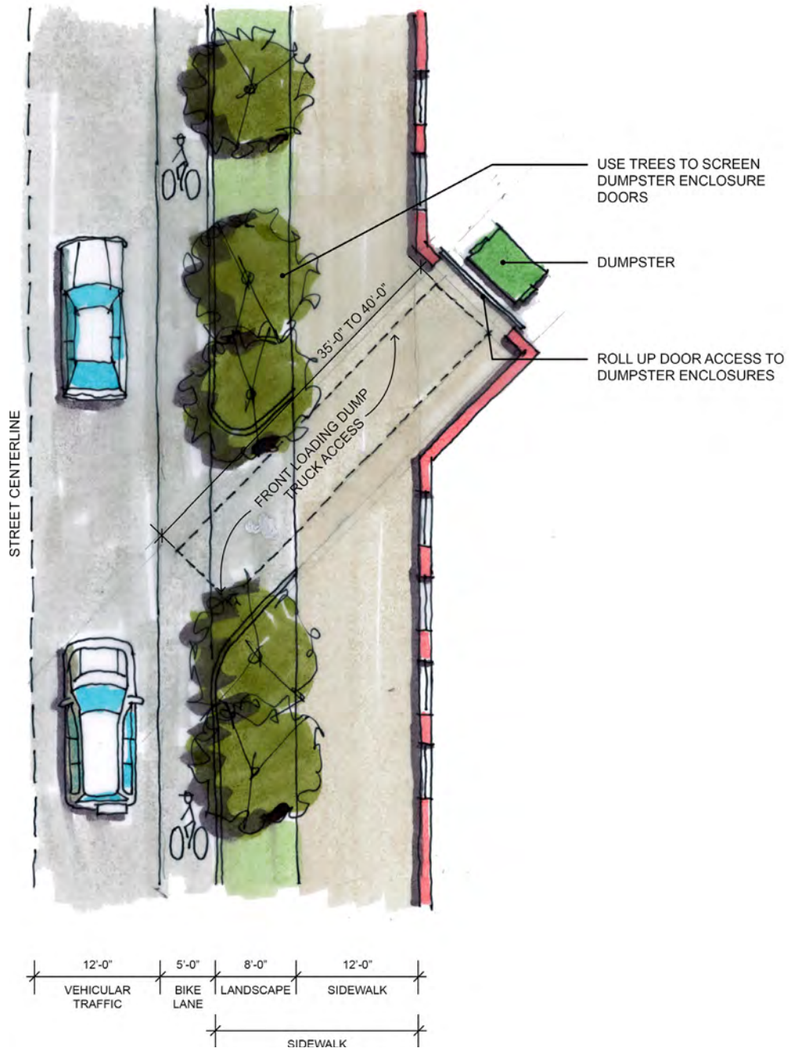
SERVICE AREAS

Service areas are necessary but in tight urban settings they can be difficult to disguise. Ideally, service areas are located away from high-traffic sidewalks whenever possible; however, there will be times when this is unattainable. In those cases, it is better to locate service area inside buildings. The adjacent diagram illustrates a solution for locating a dumpster, for example, inside a building. By using a diagonal service apron and some strategically planted trees along the planting zone of the sidewalk, the dumpster's impact on sidewalk activity is minimized.









EXTERIOR LIGHTING STANDARDS

EXTERIOR WALL AND LANDSCAPE LIGHTING:

- Wall mounted fixtures will be a full cutoff, die cast wall sconce with smooth lens and dark bronze finish, provided with pulse start metal halide lamp and ballast.
- Landscape lighting will be controlled by photocell controls through building management system.
- Exterior wall mounted lighting will be controlled by photocell controls through building management system and will be provided with emergency power at points of egress.
- Lighting levels at path of egress will be one foot-candle minimum.

PEDESTRIAN WALKWAY LIGHTING:

- Fixtures will be a post-top mount, full cut-off, 17-inch circular, aluminum head, flat lens, and silver finish. Fixtures to include LED source and drivers, matching current A&M System standards. Provide in-line, break-away fusing in each fixture.
- Lighting will be controlled by photocell controls through a building management system.
- Average lighting levels will be three (3) foot-candles at finished surface.
- Lighting pole will be tapered, round, hinged base, aluminum pole, clear duranodic anodized finish with options and accessories necessary to comply with applicable LEED requirements. In-Line break-away fusing will be provided in each pole base.

PARKING LOT LIGHTING:

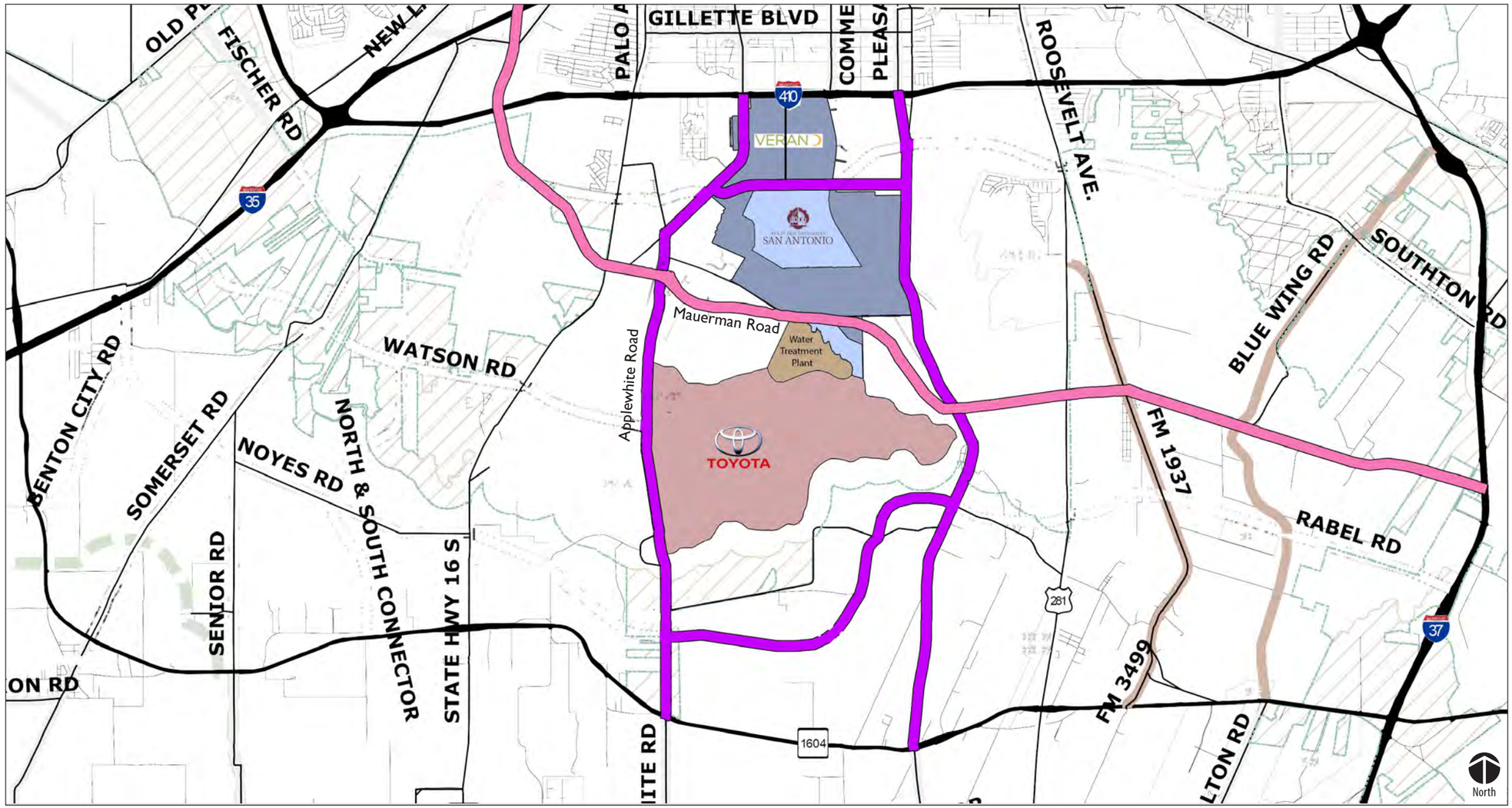
- Fixtures will be a full cut-off, 22-inch circular aluminum head, flat lens, rigid arm mount and silver finish. Fixtures to include LED source and drivers, matching current A&M System standards.
- Lighting will be controlled by photocell and time based programming through building management system.
- Two levels of lighting are to be provided. Most lighting fixtures are controlled by photocell 'ON' and timeclock 'OFF' at a pre-selected time. Selected light fixtures are to remain on from dusk till dawn per photocell controls for security lighting.
- Average lighting levels will be three (3) foot-candles at finished surface. Light trespass from exterior lighting to be minimized to comply with applicable LEED requirements.
- Lighting poles will be round, tapered aluminum, with clear anodized finish with options and accessories necessary to comply with applicable LEED requirements. In-line break-away fusing will be provided in each pole base.

OFF-CAMPUS STREET SYSTEM

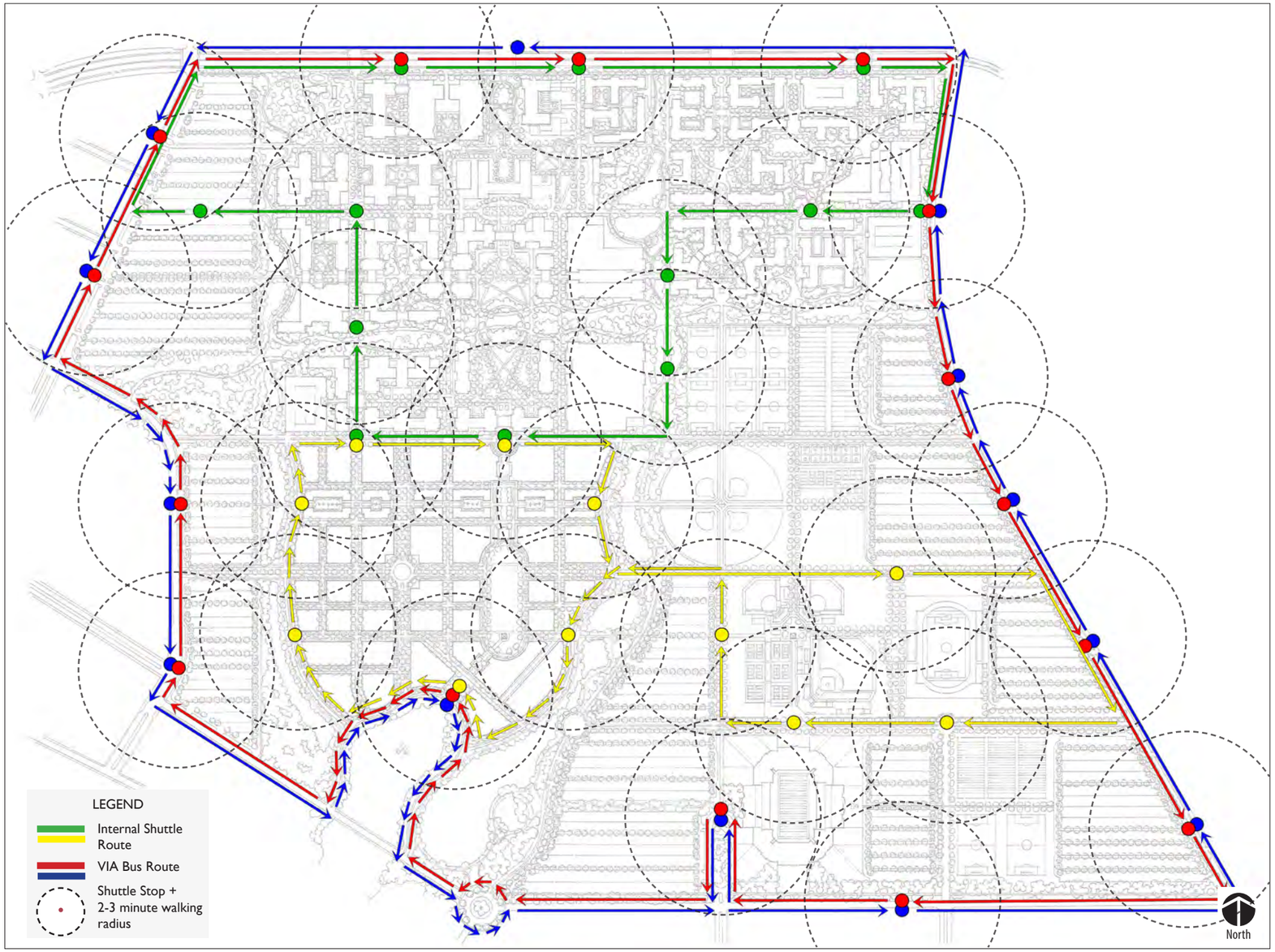
On the 2016 City of San Antonio Thoroughfare Map, neither Verano Parkway nor University Way are classified; however, Kelly Parkway and Mauermann Road are. Mauermann Road is classified as an Enhanced Secondary Arterial with 120 feet to 142 feet of right-of-way and is anticipated to extend from Blue Wing Road to Somerset Road, south of the A&M-SA campus. Kelly Parkway is classified as a Super Arterial Type A with 200 feet to 250 feet of right-of-way and is anticipated to extend from IH-37 to Loop 410.

The City of San Antonio is in the process of updating its Thoroughfare Plan. Roadways surrounding A&M-SA are anticipated to be constructed or improved as the area surrounding the campus develops, consistent with the City Border Street Policy.

San Antonio recently conducted a traffic study to evaluate potential thoroughfare improvements that could facilitate access to and from the Toyota plant. That study identified a series of potential improvements that could be programmed into future capital and/or bond project listings. The current list of projects recommended for inclusion in the 2017-2022 Bond contains a project for intersection improvements on Applewhite Road at the entrance to the Toyota facility and the reconfiguration of the intersection of Zarzamora and Applewhite. No other projects are programmed for the area at this time.



REGIONAL ROADWAYS DIAGRAM



ON-CAMPUS BUS ROUTES & STOPS

BUS ROUTES & STOPS

In order to move commuters efficiently through the campus and support and encourage walking, three bus routes are proposed to serve the campus: a large bidirectional outer loop that passes through the major parking facilities, a second that gets closer to the center of campus and a third that connects the research area to central campus. The VIA bus route runs down University Way, west along Verano Parkway and south along the ring road. This route is responsible for bringing commuters to the campus from downtown San Antonio.

Commuters on a VIA city bus will arrive on campus at the central hub, located at the intersection of the north/south and east/west axes shown on the diagram. Because the internal shuttle route also runs through the central hub, those arriving to campus on a VIA bus will have easy access to the rest of the campus.

Located mostly along the ring road, shuttle stops are positioned to pick up commuters who park in the outer parking lots and get them to their destination quickly and efficiently. In order to decrease waiting times at these stops, two shuttle routes operate clockwise and counterclockwise around the ring-road. Shuttle stops are positioned around the ring road so that most of the campus buildings are within a five-minute walking radius from the stop. The smaller, clockwise running routes that operate in the interior of campus also connect to the outer loop route, but provide closer access to the heart of campus.

Concept sketch of central hub

TRAIL SYSTEMS

The proposed trail system on the A&M-SA campus will serve as a connection between academic and residential buildings (purple dashed lines, opposite page).

The goal of the campus trail system is to provide a 12-foot wide paved and accessible pedestrian and bicycle path to all points of the campus which, working in conjunction with sidewalks, reduces the need for vehicle use.

The trail system is the on-campus component of a much larger system of trails that will ultimately tie together the Medina River Greenway System, the Mitchell Lake Audubon Center, the Mission Trails and the San Antonio River, among other destinations (yellow dashed lines, opposite page).

The current public trail system (light blue dashed lines, opposite page) runs along a seven-mile stretch of the Medina River, starting at the Medina River Natural Area, with plans for expansion eastward. This trail connects to the Land Heritage Institute, which provides 1,200 acres of open-space along the banks of the Medina River. The LHI works to preserve, maintain and interpret 10,000 years of continual human habitation.

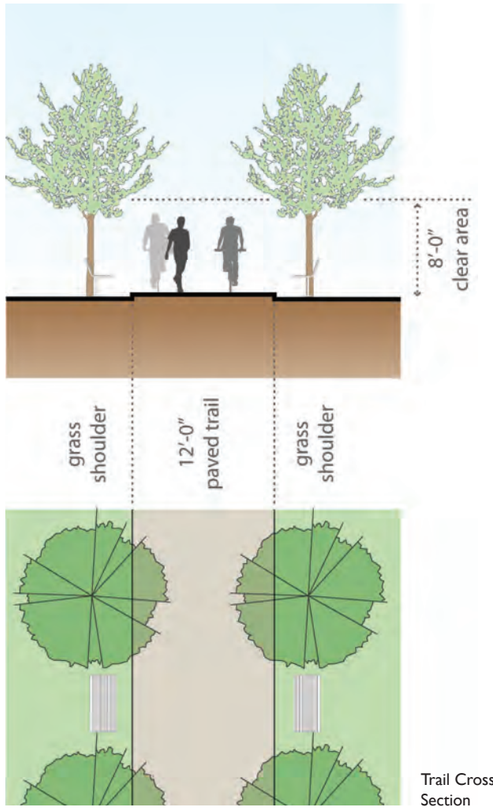
The Mitchell Lake Audubon Center has five miles of trails throughout the 1,200-acre natural area, which includes the 600-acre Mitchell Lake, 215 acres of wetlands and ponds, and 385 acres of upland habitat. More than 300 bird species and 120 plant species have been identified at the site.

The Mission Trails and San Antonio River trails will ultimately connect San Antonio's five Spanish colonial missions along with 13 miles of San Antonio River improvements.

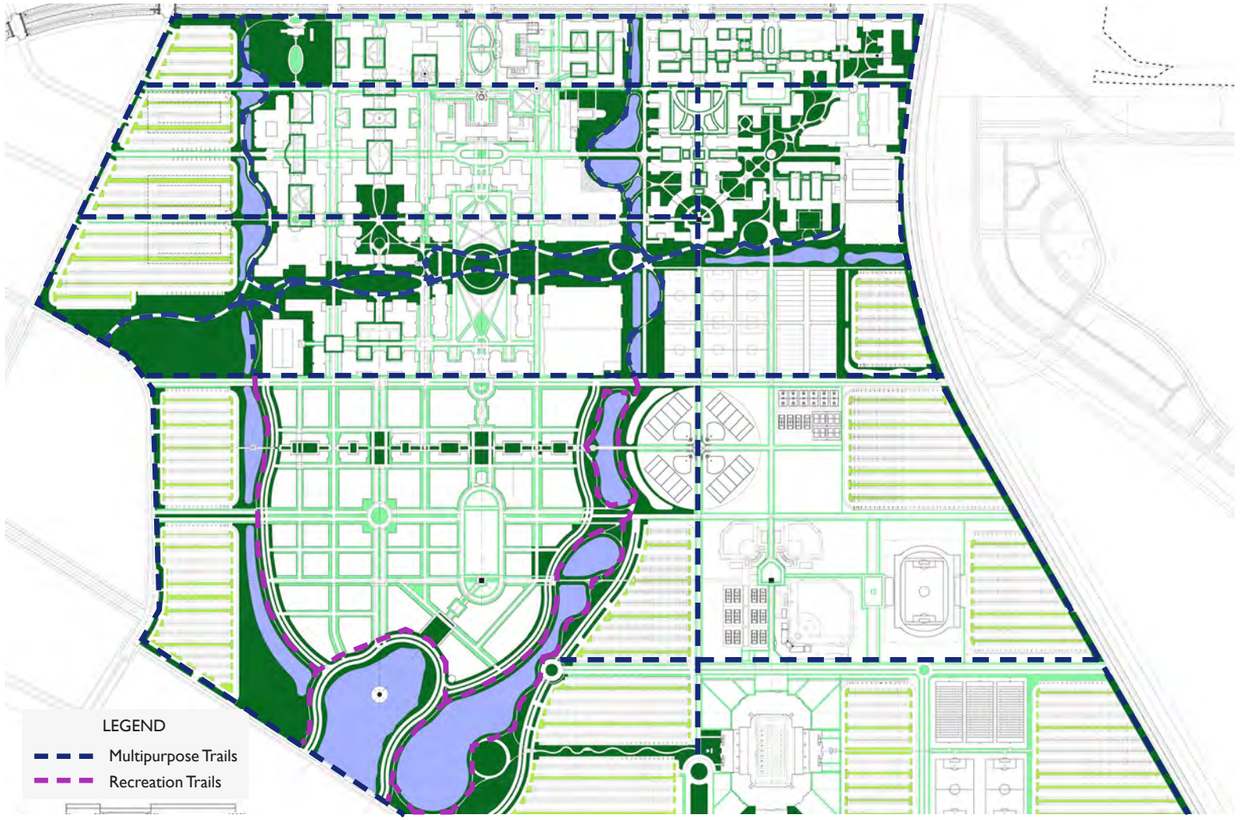
The proposed on-campus trail network is divided into recreational trails, which will be located mostly around the periphery of the campus, and multipurpose trails, which will run between buildings and other essential campus facilities.

Multipurpose trails will be used at all hours of the day and night. These trails function as sidewalks and should be treated as such for the purposes of illumination and security.

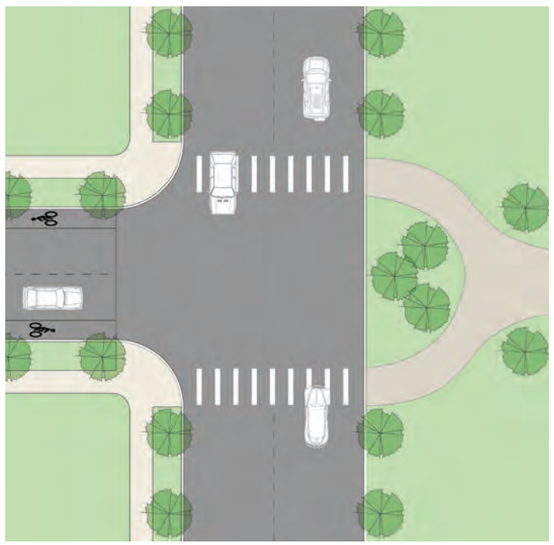
The recreational trails will provide an extended trail network for exercise and relaxation; they run mostly through native grasslands and are not essential to the pedestrian traffic of campus. A&M-SA should evaluate the need for policies dealing with illumination, security, and wildlife control along these trails. If night lighting of these trails is unaffordable or not desired, it is possible to close the recreational trails at dusk by using signs and/or access controls. It may also be necessary to have adequate signs alerting users about the existence of wildlife. If trails are closed at night, it will be important to post clear notices that explain these policies at all trail access points.

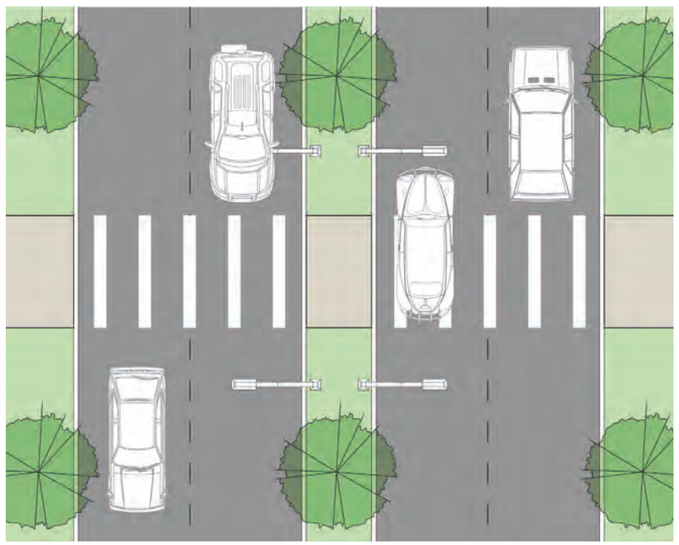


Trail Cross Section



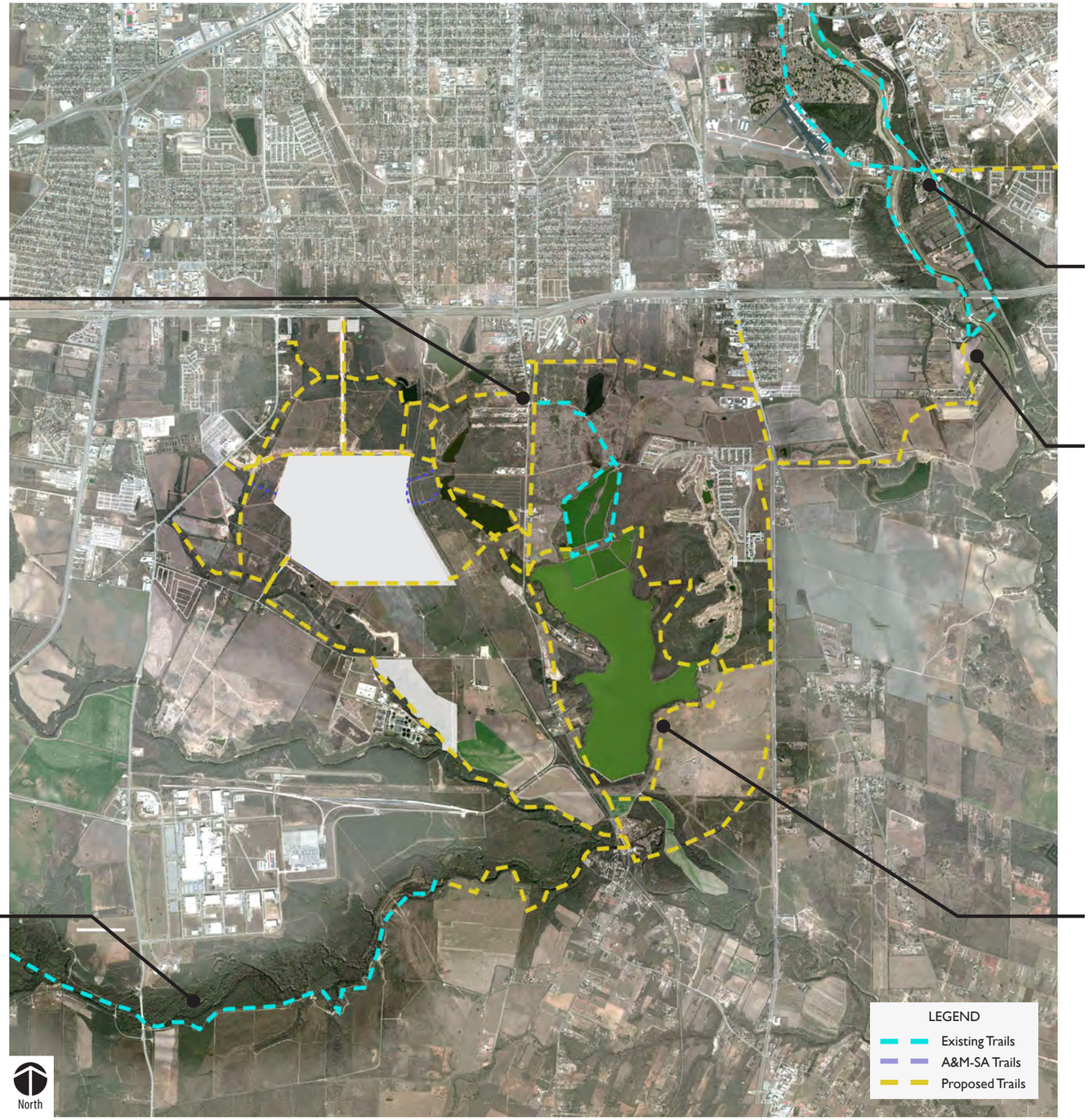
On-campus Trails Diagram





Trail Intersection Conditions

Mitchell Lake Audubon Center



Mission San Juan

Mission Espada

Medina Greenway Trail

Mitchell Lake

LANDSCAPE PLAN

INTRODUCTION

The natural environment of the campus and the buildings on the campus, the landscape, makes a powerful first and long-term impression. This can play a key role in recruiting and retaining students, faculty, and staff. A study funded by the Carnegie Foundation for the Advancement of Teaching found that for 62 percent of prospective students, "the appearance of the grounds and buildings was the most influential factor during a campus visit".

A high level of care and design consideration should be given to the developed areas of the A&M-SA campus. The campus landscape should provide a model of sustainability while creating a sense of place. It will include active and passive open-spaces, streetscape edges, plazas and other gathering areas and entry points. The Master Plan recommends the central core of the campus and interior courtyards include lush plantings to provide shade while complementing the architectural design of the buildings. Natural undeveloped areas should be preserved and managed as natural resources.

Goals of the Master Plan with respect to plant materials include:

- Maintain and respect native biodiversity
- Restore native vegetative communities
- Increase knowledge and understanding of native plant communities and associated habitats as an important campus amenity by providing opportunities for public access, recreation and education.

The Landscape Plan is a broad blueprint of guiding principles, goals and actions for the development and preservation of the campus. Its implementation should increase the native diversity of plants, reduce routine maintenance and water use, limit stormwater runoff and have a minimal disturbance of local ecological processes.

PLANTING

The campus is surrounded by both natural and urban areas. The natural/urban interface is both a challenge and an opportunity. The use of sustainable South Texas native plants should be emphasized across the campus, whether in formal settings or in naturalized areas. Formally arranged plantings should be limited to those intended to reinforce formal spaces associated with campus buildings. Informal planting arrangements should connect to the surrounding natural landscape.

Open lawn space should be limited to areas near high activity that will be used for informal sports or outdoor classrooms adjacent to buildings. Campus entries should be planted more intensively with low, colorful native shrubs and groundcovers. The use of native grasses and wildflowers may be appropriate for areas with low use, particularly on the edges of natural areas and on the perimeter of developed areas of the campus. Streets and paths should be planted to provide shade and reinforce the linear patterns of campus circulation.

PLANTING GUIDELINES

- Use color, texture and form of plants in the composition of landscape spaces.
- In confined plazas and courtyards, make planting areas a minimum of 5 feet by 8 feet for ground cover and shrub beds.
- Provide a minimum of 40 square feet of water-and-air-permeable landscape at the base of each tree using either a tree grate, decomposed granite gravel, unit pavers in pedestrian areas, or groundcover, shrub, or mulch at the base of trees. Parking lot trees should be provided with a minimum of 180 square feet of permeable area.
- In open planting areas, plant trees a minimum of 5 feet from the edge of pavement, buildings and structures.
- Maintain trees along sidewalks and in parking lots with a clear zone of 8 feet above the ground and 14 feet above the street or drive.

- Comply with all fire safety standards.
- Create a simple ground plane of lawn in areas of active use.
- Design lawns for efficient maintenance.
- Do not install lawn on slopes greater than 3:1.
- Install ground cover and shrubs with the ability to retain soil on slopes steeper than 3:1.
- Use low maintenance ground cover or native grasses in low use areas.
- Conduct soil tests in the early site development stages of the projects to obtain recommendations to improve soil.
- Test for sub-surface drainage, and install drains in planting pits if necessary, to maintain the growth of trees.
- For security, locate tree and shrub masses where sight lines, lighting or views are not obscured.
- Stormwater retention and detention areas should be lined with trees and appropriate riparian vegetation, and should be naturalistically designed to blend in with the surrounding landscape.
- Use the campus plant material selections list for trees, shrubs, groundcover and vines.

PARKING AREA PLANTING

Parking lots and parking structures should include shade trees and shrub planting enhancements, along with native grasses and flowering shrubs. Groups of trees should be planted in landscape islands to break up the expanse of pavement and provide shade. Larger pavement cutouts offer trees a better chance for healthy growth. Irrigation should be extended to the edges of parking lots and to large islands within parking areas to promote the establishment of new plantings, but may be considered temporary for the establishment of native drought-tolerant plantings.

Align parking lot planting areas to assist in directing pedestrians to destinations on campus. The ratio of planting area to paved parking surface should be carefully considered in the development of any new parking surfaces. The pattern of recent parking area improvements include wide buffers between parking areas to provide shading and screening vegetation, allow for changes in elevation, and mitigate the impact of large paving areas on storm water runoff. Stormwater infiltration should be considered within large parking lot islands. Planting areas should be designed to collect and direct storm water runoff for treatment and may be designed to include bioswales to absorb and cleanse runoff as much as possible.

The character of plantings within parking areas will depend upon specific conditions. Where existing native vegetation may be preserved and protected, little supplemental planting may be needed, with the exception of the disturbed soil at the edges of the parking areas.

Where planting islands are provided, soils should be improved and the islands planted with trees. Planting of diverse colorful native grasses, groundcovers and shrubs should be provided as an understory planting. Some areas may not be appropriate for tree planting due to the size of the planting area or other conditions. As a minimum, these areas should be planted with colorful native and xeric plantings.

GATHERING SPACES: SHADE DEVICES AND SEATING

Gathering spaces help establish and reinforce the image and character of the central core of the campus. These gathering spaces should be cool, comfortable "outdoor rooms" for use by students, staff and faculty. Seating should be provided throughout the campus, but particularly within these highly social settings. Seating may be a combination of fixed and movable elements, depending on the character of the gathering space. Gathering spaces should have shade and protection from harsh climate to the maximum extent possible. Large trees and other plantings will help to moderate the microclimate of these areas.

These areas should be easily surveilled for safety and security reasons, but should also provide a sense of intimacy to the largest extent possible. Many of these spaces are just off of busy paths and provide an interesting place to watch the activities of the campus.

Trellises and overhead canopies may be provided at gathering spaces and at building entrances, plaza, walkways and other

pedestrian routes to provide shade and/or protection from rain, and to provide landmarks and identity. Trellises should be built of long-lived materials with stone, metal or stained wood members. Plantings could include vines such Texas Wisteria, Crossvine or improved varieties of Trumpet Vine, planted at the base of the trellises vertical supports. Seating should be provided in the shade of the trellises where possible.

PLANTING & DEVELOPMENT OF SITE DRAINAGE & EROSION CONTROL FEATURES

Development of the campus invariably alters the drainage pattern of the existing landscape. The effects are both local and off-site. It's the goal of the campus landscape plan to have a minimal impact on off-site drainage. On-site drainage should emulate natural drainage patterns whenever possible.

Site drainage should be considered a part of the landscape design rather than a separate aspect of site engineering. Strategies for the drainage of a site should be formulated during the design process and should be strongly related to the spatial, functional and visual concepts of the plan.

A "soft approach" to the engineering of site drainage has gained acceptance as a viable means for solving drainage problems. This approach typically means a minimum of engineering techniques and devices to achieve control and potential reuse of runoff water. When designed in conjunction with the natural drainage, cost savings may be significant. Typical methods of drainage design often attempt to remove runoff water as quickly as possible from a site. Natural means of delay or interception by vegetation, temporary ponds and infiltration may be used to minimize unnecessary concentrations of water. The primary purpose of site drainage is to prevent flooding or water damage to buildings and site elements in high-use areas. Drainage should be directed away from these areas, from circulation, or other use areas. Consequently, site design often involves the diverting runoff from low areas by creating ponds or wetland areas. Low use areas such as recreation areas may accept temporary flooding. The on-site delay of runoff is an effective technique to prevent flash flooding downstream and a sweep of sediment and other pollutants into water systems. Although the runoff quantities may be greater after development, their impacts may be less if water is released in a controlled manner over time.

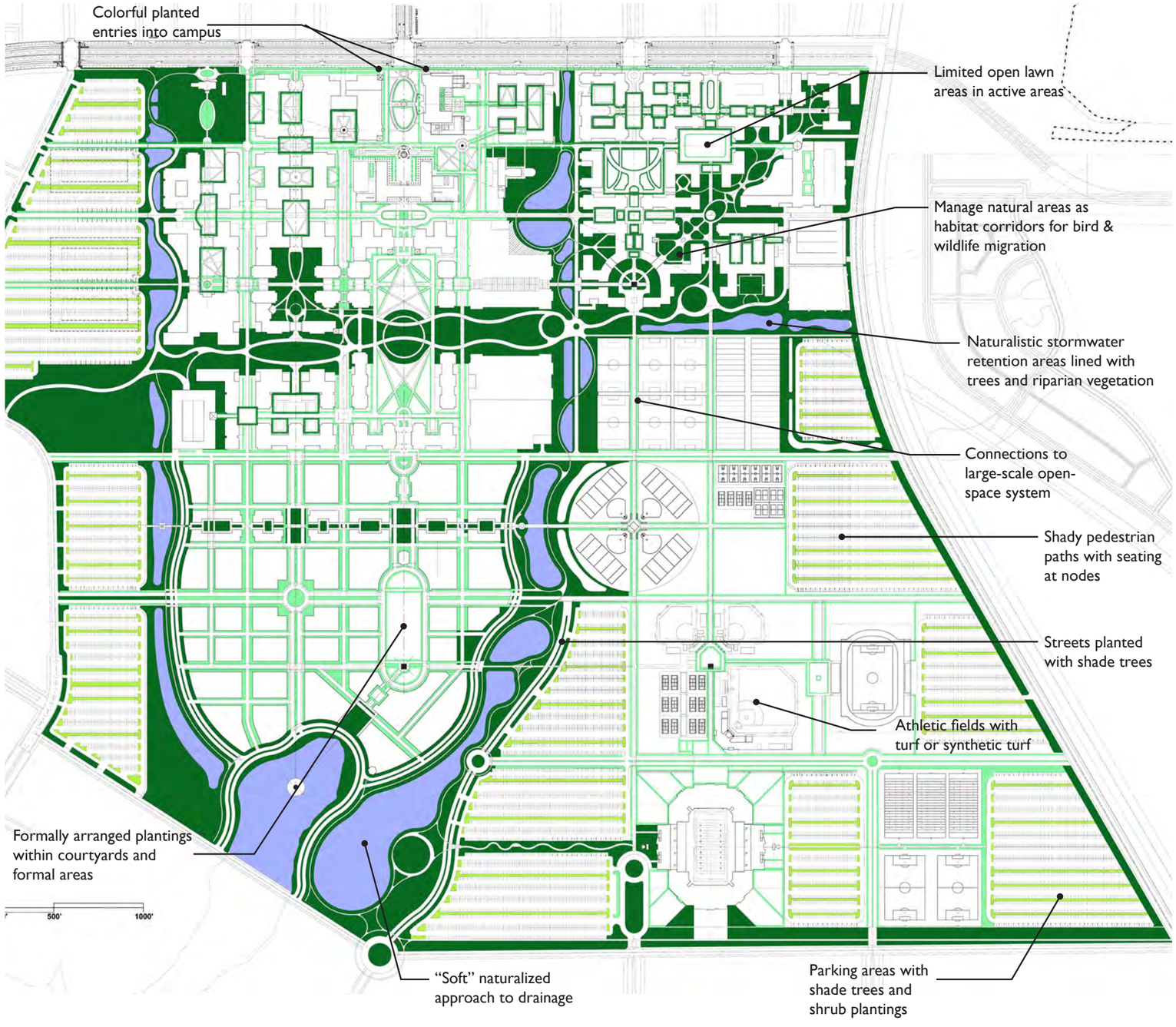
PREVENTION OF EROSION

Erosion at the university site can be a serious problem. Thin clay soils are easily degraded and, if left unchecked, erosion can undermine structures and paved areas, degrade the environment of stream corridors and fill basins with sediment. These deposits also damage the aesthetics of planted areas.

Sediment, composed of loose particles of clay, silt and sand, is generated by natural weathering of rocks and soils, accelerated erosion of lands and water courses caused by development, and by the re-suspension of previously eroded sediments that may be stored in stream corridors or sedimentation basins. Major sediment sources in the campus watershed include upland or watershed surfaces and stream corridors.

Excess sediment may be carried downstream, clogging drainage channels and introducing sediments to downstream water features on site. Stream banks which have been developed to carry flash floods, with engineered characteristics as a result of new grading, should be protected, planted and reinforced with a means of stabilization. During construction, sediment controls must be put in place and routinely checked. Sediment at the source should be retained by means of vegetative cover, proper grading, and sediment traps or sediment ponds. Sedimentation in stream beds should be minimized because it decreases the flow capacity, increases the rate of flow moving downstream, decreases the health of the stream by covering aquatic and riparian plants and changing soil depths.

The prevention of erosion at the source is important. Prevent soil erosion by planting vegetation, trees, ground cover, shrubs and other plants, and apply mulch to retain moisture. Roots from these plants will help hold soil in place. Open areas of topsoil are



not as likely to be washed or blown away when covered by mulch or planting.

Once established, native plants should require very little maintenance or irrigation as compared to ornamental plants. Native grasses are particularly good in combating soil erosion. The University should encourage native grasses to develop deep roots and full top growth, particularly in late summer as seed is set on the plants. Native grasses should not be cut between September and March in order to allow them to develop to their full potential.

One of the best practices for the campus may be to conserve natural areas, which maintain existing upland vegetation. These areas, such as tree and understory areas and meadows, encourage stormwater infiltration and filtration.

Street cleaning can remove dust and other particles from paved surfaces before they reach the water system. Methods to counter pollution are most effective in combination with each other.

The armoring and protection of stream banks on the campus will be critical to the protection of the conveyance of drainage ways. Detention ponds and sedimentation ponds may be put into place to accept concentrated runoff so sediments can settle out of the water. These may be placed along drainage ways and in the sequence of flow so that they are used prior to other systems, such as detention ponds or bioswales. In addition, paved storage may be used. Where impervious paved areas are used to accumulate and receive runoff, impound it temporarily and release it by means of an outflow device. This can allow downsizing of storm water systems and result in cost savings.

Bioswales may be considered together with swales within grass areas. Providing an infiltration area such as a terrace covered with grass that is periodically mowed may serve as a diversion or impoundment area of the sheet flow coming down slope in moderate rainfalls. Needless to say, all of these systems must be designed to allow for large storm events, which are typical within the South Texas region. South Texas and the Gulf Coast has one of the highest 24-hour rainfall rates of anywhere in the country. Flash floods will occur from time to time. The design of detention ponds and open channels must be calculated with storm events in mind.

IRRIGATION

The majority of formal landscape areas associated with the developed portions of the campus shall be provided with irrigation systems connected to a central control system. The goal of the Master Plan is to serve the entire campus with recycled water that is provided from air conditioning condensate, storm water runoff, and SAWS recycled water system. Irrigation should be as efficient as possible.

GRADING & DRAINAGE

Parts of the A&M-SA campus will need grading to minimize erosion and provide an accessible environment for people. Goals include:

- Sculpt landforms to blend with the surrounding landscape
- Create bioswales to collect surface runoff before it crosses pavement areas to reduce puddling and damage to walkways. Bioswales may be grass-lined where adjacent to a lawn or meadow area, or planted with low shrubs and native grasses. They should be graded to direct water away from paved areas.
- Direct stormwater runoff away from circulation routes and buildings.
- Locate drainage basins throughout hard surfaces to collect stormwater.
- Design buildings and site improvements to minimize the need for retaining walls.
- Slopes greater than three feet should be terraced with planting areas a minimum of five-feet wide along the tops of slopes.
- Retaining walls should include seating where appropriate. In such cases, walls should be 16-18 inches tall and as wide.
- Forms and materials used for fences and site walls should complement the adjacent architecture and site design.
- Retaining walls should be constructed of stone, cast-in-place concrete or pre-cast concrete masonry units. Forms should be simple and modern with no ornamental pattern or caps. Colors and finishes should be consistent across each wall and in concert with existing walls on the campus.
- Where possible, integrate seating and stairs at gathering areas.
- Pre-cast concrete masonry units used for retaining walls should be rectangular units with a flat face. The color of pre-cast concrete blocks should match the soil color, adjacent pavement, and complement the adjacent buildings.

SITE FURNITURE & LIGHTING

Benches

Metal benches are preferred. Subject to specific selection, all benches should be powder-finish coated metal. Multiple manufacturers offer product lines meeting this general requirement, including Columbia Cascade, Conceptual Site Furnishings, Landscape Forms and Victor Stanley.

Bike Racks

- Painted or galvanized steel, "ribbon" racks, by various manufacturers.
- Embed or anchor to a concrete surface.

Trash Receptacles

- Metal, powder-coat finish
- Coordinate internal container type and size with campus maintenance personnel. Multiple manufacturers offer product lines meeting this general requirement, including Columbia Cascade, Conceptual Site Furnishings, Landscape Forms and Victor Stanley.
- Match trash receptacles types and styles with other site furnishings.

Pole-Mounted Light Fixtures & Indirect Landscape Lighting

- Minimize use of pole-mounted light fixtures, which may be damaged by maintenance activities.
- Select from square vs, round and/or tapered poles as standard. Match existing poles and fixtures.
- Lamp type should be coordinated with other campus fixtures for visual uniformity.
- Multiple manufacturers offer product lines meeting this general requirement, including Architectural Area Lighting, Bega, Condaz, Gardco, Hubbell and Quality Lighting.
- Pedestrian pathways and gathering places should be indirectly lit using directional tree-mounted downlights.

Emergency Telephone Kiosks

Design consultants should work with campus police to determine the campus-specific requirement for these. A specific manufacturer is used by the campus.

MAINTENANCE PRACTICES:

GUIDELINES FOR LANDSCAPE GROUNDS MAINTENANCE

TURF MAINTENANCE

Mowing

During periods of cool weather, mow lawns to 1-1/2-inch. During hot weather, lawns should be allowed to grow to 2-3 inches from the soil. Lawns should be mowed weekly from May through September and a maximum of twice a month from October through April. Do not cut more than half of the existing top growth in one mowing. Where new sod has been installed, mow one week to 10 days after at no lower than 2 inches, until sod is established.

Wild flower meadows and native grass areas follow different mowing guidelines. During cool weather months, native grass areas should not require mowing. In the spring, native grass areas should be mowed and maintained at a length of 9-12 inches. Native grass areas should be allowed to develop full growth prior to the dry and hot months of summer (June, July and August). By allowing these grasses to grow and develop, the soil will receive more shade and the forbs and new grasses will be protected from heat and drought. A mowing of native grass areas in the fall is recommended. Typically, native grass areas should not require mowing more than three or four times per year.

Where native grass is combined with wildflower plantings, care should be taken in the mowing and maintenance during the spring. Wildflowers should be allowed to develop forbs over the winter and to grow and bloom in the spring. Once wildflower blooms have been spent and seed has been allowed to set and drop into the soil, wildflowers may be mowed and mulched in place. This will allow seeds to be protected from sun scald and to some degree from birds and insects. Overseeding of wildflower areas is recommended in the period between September 15th and October 15th, particularly after rains, which allows for ideal soil moisture. Seed should be put in direct contact with the soil.

Edging

Edge lawns at walkways, curbs, planting beds, and buildings at least every other time the lawn is mowed. Cut grass at the base of trees with care not to damage the bark of trees with mowers or edgers. Protective collars may be placed on trees to prevent edger damage. Cut grass and edge around signposts, fire hydrants, manholes, telephone pedestals, and other structures.

Watering

Provide a regular, deep watering program to adequately provide for the growing needs of turf. The established turf should not be kept wet but should dry out somewhat between watering. A once or twice weekly watering schedule is acceptable under regular conditions, but may be adjusted for weather conditions. Watering of shrubs and trees should be separate from turf irrigation.

Monitor soil moisture and the extent to which lawns may show browning, wilting, or other signs of drought.

Fertilizing
Fertilize lawns as required throughout the year with an acceptable organic amendment, except during the hot summer months of July and August. A complete organic fertilizer, as approved by the Texas Organic Research Center, should be used with chelated iron, if necessary.

Weed Control
Use extreme care in the use of chemicals for any weed control. Organic products such as citrus oil or vinegar should be utilized primarily. Before any applications are made, turf should be well established and in vigorous condition. Broadleaf weeds can be controlled with applications of selected and recommended organic herbicides. Remove all grass growing through pavements and pavement joints.

Insects
Control noxious insects in turf with applications of organic insecticides such as a garlic pepper-tea insect repellent. Spray for insects only as necessary from mid-spring through summer. (See Pest Management, below).

Diseases
When they first appear, spray for diseases with an approved organic fungicide, strictly according to the manufacturer's recommendations.

Trees in Turf Areas
Provide a saucer rim with deep mulch around the base of tree trunks.

Over-seeding with Rye Grass
Over-seeding with Rye Grass in winter months is not recommended in established turf areas. A cold season Rye may be used as an erosion control measure in disturbed areas, with re-seeding of the areas in the spring.

TREE MAINTENANCE
Trees are an important resource. Protect trees and other plant materials from any damage caused by chafing or breakage of foliage or limbs coming in contact with equipment. Remove stakes or guys from trees once established.

Annual tree pruning should be performed only as needed and only on trees outside of the forested perimeter of the campus. Always paint cuts to trees immediately, and clean tools after pruning each tree to prevent potential spread of Oak Wilt.

Do not top trees. Branch removal should be limited to lifting up the base of trees in lawn areas. Do not prune lower branches until sufficient age may require it naturally.

Guidelines for Specific Trees
- Understory trees: Annually thin out interior branching and dead wood to reinforce branching quality. Do not shear trees. Do not remove bottom branches.
- Oaks: Annually thin out interior branching and dead wood to reinforce branching quality for Oaks in high use areas. Do not shear horizontally. Remove branches interfering with lawn areas by tipping back randomly to the nearest branch fork.
- Sycamores: Annually thin out interior branching and dead wood to reinforce branching quality. Do not shear horizontally. As necessary, remove branches showing stress fractures or other indications of die-back. Consider the annual assessment of tree health by certified arborist.

Deeply water all trees as necessary with tree bubblers until established. Once established, irrigation may not be necessary for native species.

Shrubs Areas and Groundcovers
- Complete weeding, tree trimming, edging and cultivating of all shrub and groundcover areas should be performed once per month to promote growth and maintain an orderly appearance. As groundcovers cover open soil, cultivating shall be discontinued.
- It may be necessary to thin groundcover planting once every two years during the late fall or early spring prior to the growing season. Groundcover beds bordering on paved surfaces must be trimmed as needed to retain a neat edge. Do not trim vertically, so as to expose stems and thatch, but prune edges of groundcover back at an angle.
- Apply an organic fertilizer for shrubs and groundcovers twice a year during early spring and early fall. Provide compost amendment around the bases of shrubs and groundcovers. This should be done with a fully composted and decomposed material. Replant all damaged or thin areas in groundcover and shrub beds at the proper spacing.
- Pruning of shrubs should create a uniformly dense plant. Shrubs should be pruned only as necessary from March to October or as seasonal variations require. Prune to enhance the natural branching effect of the plant. Do not change the shape of shrubs by pruning.
- Shrubs should not be sheared under any circumstances.
- Ornamental grasses and native bunch grasses (as opposed to native meadow grasses) should be pruned to half their height in mid-February, and should require no other pruning throughout the year.

INTEGRATED PEST MANAGEMENT

A well-managed landscape, incorporating efficient watering, planting of native species, protection of natural vegetation and ecosystems, soil building and mulching will typically have reduced pest problems. Despite good practices and best efforts, however, unwanted insect pests sometimes become a problem. A strategy to control pests with a minimum level of harm to human health and the ecosystem should be employed.

Before considering what control measure to use, identify what is harming the plants in the landscape. Insect infestations and diseases are often not the main problem, but rather a symptom of stress caused by other factors: poor growing conditions such as sterile or compacted soils, nutrient deficiencies, too much or too little moisture, or a poorly adapted plant for the particular landscape conditions. Simply correcting the stressful condition may control the pest and prevent further infestations.

- Identify the problem before taking action. Look for plant stress caused by conditions such as poor soils, nutrient deficiencies, irrigation or soil moisture conditions, or the wrong plant for the location. If so, the first step is to address the cause of plant stress.
- There are a number of landscape features that attract and support natural predators to keep pests under control, particularly a water source and a variety of perennial plants.
- Use the least-disruptive and least-polluting protections against a pest before resorting to more polluting methods.
- In general, try the following methods as applicable: first, physical removal using barriers and traps; next, biological controls; then appropriate botanical and mineral pesticides (Herbal pest repellents include garlic and hot-pepper sprays); and finally, the least toxic chemical pesticides.

GENERAL MAINTENANCE

Clean Up: Properly dispose of all waste materials or refuse. Organic materials should be reused, recycled, or composted as an organic soil amendment.

LANDSCAPE IRRIGATION SYSTEM MAINTENANCE

- A thorough check of each irrigation zone, controls, valves and pumps should be performed on a bi-monthly basis.
- Monitor and program the automatic controlling devices to provide optimum moisture levels in all planting areas.
- Irrigation cycles should be set to take place overnight (usually between 10 p.m. and 5 a.m.) unless otherwise instructed.
- Grounds maintenance personnel should operate and observe the function of each irrigation zone on a bi-monthly basis. Operation of sprinklers should be monitored to assure proper cover and operation.
- Complete sprinkler system servicing should be performed as required to maintain sprinklers in correct operating condition.
- Adjust sprinklers to avoid damage to windows, buildings, automobiles, pedestrian pavements, streets and driveways, and facilities. Make any needed repairs and alterations to the sprinkler system and water lines.
- Supplemental irrigation of areas not served by an automatic irrigation system may be required in times of drought, in order assure optimal moisture levels.

SOILS

Samples should be taken from planting locations from time to time and examined for their chemical properties and organic material content. Areas of existing soil to be amended should include all areas to be planted. Modify and amend soil without tilling in areas of 3:1 slope or greater. Turf and grass should receive full soil preparation prior to planting.

Soil Preparation

Do not work the soil when the moisture content is so great that excessive compaction will occur, nor when it is so dry that dust will form in the air. Soil clods should break readily. Apply water if necessary to bring soil to an optimum moisture content for any tilling and planting operations.

Preparation of Existing Soil

For cultivation of new planting areas, rip or cultivate planting areas to a depth of 6 inches immediately prior to amending existing soil. Roto-till areas to reduce soil clods to a maximum diameter of 1 inch within the top 6 inches, but do not roto-till near existing trees or shrubs.

Soil Conditioning

Incorporate amendments thoroughly into the top 6-inches of the soil layer and bring the amended soil to a finished grade. Near existing trees, amendments may be broadcast at 1/3 of the specified rate prior to any hand soil conditioning or raking. Do not otherwise incorporate soil amendments. Organic amendments should include a compost amendment with an ash content of at least 15% but not more than 25% by volume. Iron sulfite, organic fertilizer, corn gluten meal, black strap molasses, lava sand and Texas green sand may be used as organic amendments. Amendments to the soil should be based on an on-site agricultural soil analysis after rough grading has been completed.

Any topsoil brought to the site should match the native soil. Samples should be tested and evaluated based on tests of existing soil.

MULCHING

The college campus is located in an area with particularly thin soils over rocky mineral substrate. Soils are extremely fragile, and where disturbances have taken place, much of the existing soil has eroded away. It takes soil to grow plants and sustain life and it takes decaying life to make and sustain soil. In order to build up the soils a process that introduces dead and decaying plant remains in the form of compost is necessary.

All of the dead grass and leaves, fallen limbs and trees, and other organic material may be consumed by the soil. These materials must be ground into a smaller particle size and placed upon the surface of the soil as mulch. This layer of mulch will draw nitrogen out of the air as it decays and the bottom layer will release stored nitrogen back into the soil.

The decomposition of mulch also benefits soil by trapping and conserving moisture. Mulching any brush and trees is preferred to piling materials or hauling them off.

The planting of native grasses can also contribute greatly to deeper soils. Grass roots extend far into the soil and begin to break down the substrate. Native grass areas should not be mulched, nor should they be mowed more than a few times a year.

Management of Mulch

Apply mulches in a layer from 3-6 inches thick. The thickness of the mulch depends on the mulch material. Coarser mulches should be applied more thickly. Four inches of loose fibrous material should be applied around trees and shrubs each year. The finer and smaller the particle size, the thinner the layer needs to be.

Organic mulching material should be added regularly to maintain the desired level of thickness. Shredded branches from tree trimming and large two-inch bark is a fibrous or loose mulch. Leaves or leaves mixed with grass clippings and one inch bark is a medium-sized mulch. When using medium mulch, the layers should be about 2-inches thick. Materials smaller than 1/2-inch, such as screened and double ground bark, should be applied in thin layers: when piled too thickly, these small particles can settle together and prevent air and water from penetrating into the soil.

RECOMMENDED PLANT LIST

Common Name	*Scientific Name*	native	LID	Size: height	Size: spread	deciduous	evergreen	bloom color	Seasonal Color: J F M A M J J A S O N D	Water Use: low	Water Use: medium	Water Use: high	drought tolerant	Light: sun	Light: part sun/shade	Light: shade	Soil Moisture: dry	Soil Moisture: moist	Soil Moisture: wet	Seasonal Interest: spring	Seasonal Interest: summer	Seasonal Interest: fall	Seasonal Interest: winter	Comments
								(inconspicuous)																
SHADE TREES																								
Bald Cypress	*Taxodium distichum*	✓	✓	50'-75'	30'-60'	✓		*(purple/brown)*			✓			✓	✓			✓	✓			✓		
Bur Oak	*Quercus macrocarpa*	✓		100'	100'	✓		*(yellow, green)*			✓		✓	✓	✓	✓	✓	✓	✓	✓		✓		One of the most drought tolerant resistant oaks; resistant to air pollutio
Canby Oak	*Quercus canbyi*		✓	20'-35'	20'-35'		✓	*(green)*			✓		✓	✓			✓	✓		✓		✓		
Cedar Elm	*Ulmus crassifolia*	✓	✓	60'	50'	✓		*(green)*			✓		✓		✓		✓	✓						fast growing, long-living
Chinquapin Oak	*Quercus muhlenbergii*	✓		45'-110'	45'-110'	✓		*(yellow, green)*			✓		✓		✓		✓			✓		✓		
Lacey Oak	*Quercus laceyi (syn. Q.*	✓		60'	60'	✓		*(yellow)*			✓		✓		✓		✓					✓		resistant to oak wilt
Live Oak (Coastal)	*Quercus virginiana*		✓	40'-80'	60'-100'		✓	*(yellow)*			✓		✓	✓	✓		✓	✓				✓		susceptible to oak wilt
Live Oak (Hill Country)	*Quercus fusiformis*	✓	✓	20'-40'	30'-60'		✓	*(yellow)*		✓			✓	✓	✓		✓							susceptible to oak wilt
Mexican Plum	*Prunus mexicana*	✓	✓	15'-35'	15'-35'	✓		white, pink		✓			✓	✓	✓		✓	✓			✓			early spring blooms, edible mauve fruit in summer
Mexican Sycamore	*Platanus mexicana*		✓	50'	35'	✓		*(green)*		✓	✓			✓	✓		✓	✓				✓		benefits from occasional deep soakings
Monterrey Oak	*Quercus polymorpha*			80'	60'		✓	*(green)*		✓				✓	✓			✓				✓		resistant to oak wilt and relatively fast growing
Montezuma Cypress	*Taxodium mucronatum*		✓	36'-72'	30'-60'		✓	*(green)*			✓				✓				✓					
Pecan	*Carya illinoinensis*	✓	✓	70'-100'	70'-100'	✓		*(yellow)*			✓	✓		✓				✓						
Shumard Red Oak	*Quercus shumardii*	✓	✓	50'-90'	30'-50'	✓		*(white/green)*			✓	✓	✓	✓	✓		✓	✓				✓		withstands short-term flooding, susceptible to oak wilt
Texas Red Oak	*Quercus alba (or P.*		✓	75'	60'	✓		*(yellow)*			✓		✓		✓			✓				✓		withstands short-term flooding, susceptible to oak wilt
Thornless Mesquite	*Prosopis alba (or P.*			40'	60'	✓		yellow		✓			✓	✓			✓			✓		✓		conspicuous flowers in spring; avoid overwatering
UNDERSTORY & SMALL TREES																								
Anacacho Orchid Tree	*Bauhinia congesta (syn.*	✓		6'-12'	6'-12'	✓		white		✓			✓		✓		✓			✓				fragrant; best on south side of building
Anaqua	*Ehretia anacua*	✓	✓	20'-45'	20'-45'		✓	white		✓			✓	✓	✓		✓			✓				edible fruit
Crapemyrtle	*Lagerstroemia x fauriei*			20'-30'	15'-25'	✓		white, pink		✓	✓		✓	✓			✓	✓			✓	✓	✓	attractive peeling bark in winter
Desert Willow	*Chilopsis linearis*	✓	✓	15'-40'	15'-40'	✓		white, pink/purple		✓			✓	✓			✓	✓		✓	✓			showy; prolonged saturation can result in rot
Escarpment Black Cherry	*Prunus serotina*	✓		25'-50'	20'-30'	✓		white			✓		✓	✓	✓	✓	✓	✓		✓		✓		spring blooms, fall foliage
Flameleaf sumac	*Rhus lanceolata*	✓		15'-20'	15'-20'	✓		white, green		✓	✓		✓	✓			✓				✓	✓		summer blooms, red edible berries in fall, bright fall foliage
Huisache	*Acacia farnesiana (A.*	✓	✓	15'-20'	15-20'	✓		orange, yellow		✓			✓	✓			✓			✓				fragrant, thorny
Mexican Buckeye	*Ungnadia speciosa*	✓	✓	5'	5'		✓	orange, yellow			✓		✓		✓			✓		✓				
Mexican Olive	*Cordia boissieri*		✓	30'	30'		✓	white		✓	✓		✓	✓	✓		✓	✓		✓	✓	✓	✓	blooms year round, sensitive to cold
Mexican Plum	*Prunus mexicana*		✓	15'-35'	15'-35'	✓		white, pink		✓			✓	✓	✓		✓	✓		✓		✓		spring blooms, purple fall fruit
Possumhaw Holly	*Ilex decidua*	✓	✓	15'-30'	15'-30'	✓		white			✓		✓	✓	✓			✓				✓	✓	fall foliage, red winter berries
Red Mulberry	*Morus rubra*	✓	✓	15'-35'	15'-35'	✓		*(white/green)*			✓			✓	✓	✓	✓	✓			✓	✓		edible purple fruit in summer, fall foliage
Retama	*Parkinsonia aculeata*	✓	✓	15'	15'	✓		yellow		✓	✓		✓	✓			✓	✓		✓	✓			spiny; spineless varieties available
Rusty Blackhaw Viburnam	*Viburnum rufidulum*	✓	✓	18'	18'	✓		white		✓			✓		✓		✓			✓		✓		spring blooms, fall foliage
Texas Mountain Laurel	*Sophora secundiflora*	✓	✓	10'-20'	10'-20'		✓	purple		✓	✓		✓	✓	✓		✓	✓		✓				fragrant blooms
Texas or Mexican Redbud	*Cercis canadensis var.*	✓	✓	10'-20'	10'-20'	✓		pink/purple		✓	✓		✓	✓	✓		✓			✓				white-flowered cultivars available
Texas Persimmon	*Diospyrus texana*	✓	✓	15'-35'	15'-35'		✓	white/green		✓			✓	✓	✓		✓			✓				smooth gray bark
Yaupon Holly	*Ilex vomitoria*	✓	✓	12'-25'	12'-25'		✓	white		✓			✓	✓	✓	✓	✓	✓		✓			✓	spring blooms, red berries in winter
Wax Myrtle	*Myrica cerifera (syn.*			6'-12'	6'-12'		✓	green			✓		✓	✓	✓			✓	✓	✓			✓	fragrant; spring blooms, blue winter berries; drought and floor tolerant
SHRUBS																								
Agarita	*Berberis trifoliolata (syn.*	✓	✓	3'-6'	3'-6'		✓	yellow		✓			✓	✓	✓	✓	✓	✓		✓	✓			spiny foliage; spring blooms clusters, edible fruit in summer
American Beautyberry	*Callicarpa americana*	✓	✓	3'-5'	3'-5'	✓		white, pink		✓				✓				✓			✓	✓	✓	summer blooms, fall & early winter magenta berry clusters
Bush Germander	*Teucrium fruticans*			3.5'	4.5'		✓	dark blue		✓			✓	✓			✓			✓	✓			gray-green foliage
Dwarf Yaupon Holly	*Ilex vomitoria 'Nana'*	✓	✓	3'-5'	3'-6'		✓	white		✓			✓	✓	✓		✓	✓		✓			✓	spring blooms, red berries in winter
Esperanza/Yellow Bells	*Tecoma stans 'Gold'*	✓		3'-6'	3'-6'	✓		yellow		✓			✓	✓	✓		✓			✓	✓	✓		
Evergreen Sumac	*Rhus virens*	✓		8'-12'	8'-12'		✓	white		✓			✓	✓	✓		✓				✓			
Firebush	*Hamelia patens*		✓	3'-6'	3'-6'		✓	red		✓	✓		✓	✓			✓	✓		✓	✓	✓	✓	

RECOMMENDED PLANT LIST

Common Name	*Scientific Name*	Size: native	Size: LID	Size: height	Size: spread	Size: deciduous	Size: evergreen	Seasonal Color: bloom color	Seasonal Color: J F M A M J J A S O N D	Water Use: low	Water Use: medium	Water Use: high	Water Use: drought tolerant	Light: sun	Light: part sun/shade	Light: shade	Soil Moisture: dry	Soil Moisture: moist	Soil Moisture: wet	Seasonal Interest: spring	Seasonal Interest: summer	Seasonal Interest: fall	Seasonal Interest: winter	Comments
								(inconspicuous)																
Indigo Spires Salvia	Salvia 'Indigo Spires'		✓	3.5'	3.5'	✓		indigo		✓			✓	✓				✓		✓	✓			
Knockout Rose	*Rosa 'Radcon' 'Radraz'*			3'-4'	2'-3'	✓		pink			✓		✓	✓	✓			✓		✓	✓	✓		use sparingly
Leatherleaf Mahonia	*Mahonia bealei*			4'-8'	4'-6'		✓	yellow		✓			✓		✓			✓			✓		✓	bright blooms in winter, and bright fruit in summer
Martha Gonzales Rose	*Rosa 'Martha Gonzales'*			2'-3'	2'-3'		✓	red		✓			✓	✓	✓		✓	✓		✓	✓	✓		intermittent blooming in summer and fall, red new-growth foliage
Mealy Blue Sage	*Salvia farinacea*	✓	✓	2'	2'	✓		blue		✓			✓	✓				✓		✓	✓			
Mexican Bush Sage	*Salvia leucantha*			3'	3'		✓	purple, white			✓		✓	✓	✓			✓				✓	✓	
Mexican Petunia	*Ruellia brittonia 'Purple'*		✓	3'-4'	2'-3'		✓	purple		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		has a tendency to naturalize/reseed in moist soils
Pitcher Sage	*Salvia azurea var.*	✓		4'	3'	✓		blue, purple		✓			✓	✓	✓		✓					✓		sloppy if too much water or shade
Plumbago	*Plumbago auriculata*			2'-3'	2'-3'		✓	blue, white			✓		✓	✓	✓		✓	✓		✓	✓	✓		
Pride of Barbados	*Caesalpinia pulcherrima*			3'-6'	3'-6'		✓	orange, yellow			✓		✓	✓	✓			✓			✓			fern-like foliage
River Fern	*Thelypteris kunthii*	✓	✓	2.5'	1'		✓	n/a			✓				✓	✓		✓						
Rock Rose	*Pavonia lasiopetala*	✓	✓	4'	4'	✓		pink, yellow		✓			✓	✓	✓		✓			✓	✓	✓		
Rosemary	*Rosmarinus officinalis*			2'-4'	2'-4'		✓	purple			✓		✓	✓			✓	✓		✓	✓			
Scarlet Rose Mallow	*Hibiscus laevis*	✓		4'-6'	4'-6'	✓		white, pink				✓		✓	✓		✓	✓			✓	✓		good for wetland gardens
Texas Lantana	*Lantana urticoides*	✓		3'-5'	3'-5'	✓		orange, yellow		✓			✓	✓			✓			✓	✓	✓		mature plants become thorny
New Gold Lantana	*Lantana x 'New Gold'*	✓	✓	1.5'-2'	2'-3'	✓		yellow		✓			✓	✓			✓			✓	✓			
Purple Trailing Lantana	*Lantana montevidensis*	✓	✓	1'-1.5'	1.5'-2'	✓		purple		✓			✓	✓			✓			✓	✓			
Texas Sage (Cenizo)	*Leucophyllum frutescens*	✓		2'-5'	2'-5'		✓	pink, purple			✓		✓	✓	✓		✓				✓			intermittent blooming (often after rainfall)
Texas Star Hibiscus	*Hibiscus coccineus*		✓	3'-6'	3'-6'	✓		red			✓			✓				✓	✓	✓	✓	✓	✓	native to swamps, marshes, ditches of coastal plains
Turk's Cap	*Malvaviscus arboreus*	✓	✓	3'-5'	3'-5'		✓	red			✓		✓		✓	✓	✓	✓			✓	✓		white-flowered cultivars available
YUCCA, AGAVE & CACTUS																								
Century Plant	*Agave americana*	✓		6'	6'-12'		✓	yellow spike*		✓			✓	✓	✓		✓							*generally blooms around 10 years of age
Giant Hesperaloe	*Hesperaloe funifera*			6'	6'		✓	white spike		✓			✓	✓			✓			✓				* generally blooms after several years of age
Harvard Agave	*Agave harvardiana*			2'-3'	3'-4'		✓	yellow spike		✓			✓	✓			✓							*infrequent blooms
Spineless Prickly Pear	*Opuntia ellisiana*	✓		5'	5'		✓	yellow, orange		✓			✓	✓	✓		✓				✓	✓		showy blooms in summer, edible fruit in fall
Red Yucca	*Hesperaloe parviflora*	✓		2'-3'	2'-3'		✓	coral spike		✓			✓	✓			✓			✓	✓			
Soft Leaf Yucca	*Yucca recurviflora (syn.*			2'-4'	2'-3'		✓	white spike		✓			✓	✓			✓				✓	✓		showy blooms; can become muti-trunked with age
Sotol	*Dasylirion texanum*	✓		2'	2'		✓	yellow spike		✓			✓		✓		✓				✓			
Twist Leaf Yucca	*Yucca rupicola*	✓		1'-3'	1'-3'		✓	white spike		✓			✓	✓	✓		✓			✓				good in dry, shady areas
Yellow Yucca	*Hesperaloe parviflora*	✓		2'-3'	2'-3'		✓	lt. yellow spike		✓			✓	✓			✓			✓	✓			
VINES																								
Coral Honeysuckle	*Lonicera sempervirens*			15'-20'	15'-20'		✓	red or yellow			✓			✓	✓			✓		✓				climbing or groundcover
Cross Vine	*Bignonia capreolata*		✓	36'-50'	36'-50'		✓	orange		✓	✓		✓	✓	✓		✓	✓		✓				climbing, tolerates brief flooding
Fig Ivy	*Ficus pumila*			15'	15'		✓	n/a		✓			✓	✓	✓		✓	✓						inconspicuous flowers; aggressive climber
Passion Vine	*Passiflora incarnata*	✓		25'	25'	✓		purple		✓	✓		✓	✓	✓		✓	✓		✓	✓			
Trumpet Vine	*Campsis radicans*	✓		6'-12'	6'-12'	✓		salmon		✓			✓	✓			✓	✓			✓	✓		summer blooms, fall foliage; aggressive climber
Virginia Creeper	*Parthenocissus*	✓		3'-40'	3'-40'	✓		white, green		✓				✓	✓	✓		✓				✓		
Star Jasmine	*Trachelospermum jasminioides*			18'-20'	1'-2'		✓	white			✓		✓		✓			✓						climbing, fragrant flowers
SMALL FORBS & GROUNDCOVER																								
Arrowhead	*Sagittaria latifolia*	✓		2'	3'	✓		white				✓		✓							✓			AQUATIC
Asian Jasmine	*Trachelospermum*			6"-18"	2'-3'		✓	white		✓			✓	✓	✓			✓				✓		groundcover, can train to climb
Autumn Sage (Salvia)	*Salvia gregii*	✓		2.5'	2.5'		✓	white, red*		✓			✓		✓	✓	✓	✓		✓	✓	✓		*also pink, orange, & purple; stems brittle- avoid foot traffic
Blackfoot Daisy	*Melampodium*	✓		6"	2'	✓		white, yellow		✓			✓	✓			✓			✓	✓	✓		
Bulbine	*Bulbine frutescens*			1'-2'	4'-5'		✓	yellow, orange		✓			✓	✓	✓		✓			✓	✓	✓		

RECOMMENDED PLANT LIST

Common Name	*Scientific Name*	native	LID	height	spread	deciduous	evergreen	bloom color	Seasonal Color J F M A M J J A S O N D	Water Use: low	medium	high	Light: drought tolerant	sun	part sun/shade	shade	Soil Moisture: dry	moist	wet	Seasonal Interest: spring	summer	fall	winter	Comments
								(inconspicuous)																
Dwarf Ruellia	Ruellia brittoniana 'Katie'		✓	6"-12"	6"-12"		✓	purple		✓			✓	✓	✓		✓	✓		✓	✓			
Purple Iris	*Iris brevicaulis*		✓	1'-2'	1'-2'		✓	purple			✓		✓		✓	✓		✓	✓	✓				
Purple Cone Flower	*Echinacea purpurea*			2'-4'	2'-4'	✓		pink, purple			✓			✓	✓		✓			✓	✓			
Mountain Pea	*Orbexilium pendunculatum*	✓	✓	8'-12'	2'-3'		✓	purple		✓			✓	✓	✓		✓			✓				good shade groundcover
Purple Prairie Verbena	*Glandularia bipinnatifida*	✓		10"	10"	✓		purple		✓	✓		✓		✓		✓	✓		✓	✓			
Pigeonberry	*Rivina humilis*	✓	✓	18"	3'	✓		white, pink			✓				✓			✓		✓	✓	✓		flowers and bears fruit simultaneously
Skullcap	*Scutellaria suffrutexcens*			8"	1"		✓	pink		✓			✓	✓	✓		✓			✓	✓	✓		
Texas Betony	*Stachys coccinea*	✓		2.5'	2.5'	✓		red spike			✓				✓			✓		✓	✓	✓		
Inland Sea Oats	*Chasmanthium latifolium*	✓	✓	2'-4'	2'-4'	✓		green			✓				✓	✓		✓			✓			green to ivory seed spikelets
Horsetail (Scouringrush)	*Equisetum hyemale var.*	✓	✓	3'	3'		✓	n/a			✓			✓	✓			✓	✓					spreads aggressively
Liriope	*Liriope muscari 'Big'*		✓	1'-1.5'	1'-1.5'		✓	purple		✓	✓		✓		✓	✓	✓				✓			
Bear Grass	*Nolina texana*			1.5'-2.5'	1.5'-2.5'		✓	white		✓			✓		✓		✓			✓	✓			spike with dense clusters of flowers
ORNAMENTAL GRASSES																								
Bamboo Muhly	*Muhlenbergia dumosa*	✓	✓	4'-5'	4'-5'	✓		n/a		✓			✓		✓		✓							good shade groundcover
Cedar Sedge	*Carex planostachys*	✓		6"	6"		✓	n/a		✓			✓				✓							can tolerate occasional mowing and light foot traffic
Gulf Coast Muhly Grass	*Muhlenbergia capillaris*	✓	✓	1.5'-3'	1.5'-3'	✓		pink				✓		✓				✓				✓		airy, pink seed spikelets in fall
Lindheimer's (Big) Muhly	*Muhlenbergia lindheimerii*	✓	✓	2'-5'	2'-5'		✓	white			✓		✓	✓			✓	✓			✓	✓		airy white spikelets summer & fall
Maiden Grass	*Miscanthus sinensis 'Adagio'*	✓		4'-5'	3'-4'	✓		white		✓			✓		✓		✓							
Mexican Feather Grass	*Nassella tenuissima*			1'-2'	1'-2'		✓	silvery white		✓			✓	✓	✓		✓	✓			✓			excessive moisture results in rot
Seep Muhly	*Muhlenbergia reverchonii*	✓	✓	1'-3.5'	1'-3.5'		✓	white, pink			✓		✓				✓	✓				✓		aged leaves from a curled mass at plant base
Switchgrass (Upland)	*Panicum virgatum*	✓	✓	4'	4'	✓		white							✓									specify 'Upland' for LD, not 'Lowland'
Texas Sedge	*Carex texenxis*	✓	✓	10'-12'	12'-18'		✓	n/a		✓			✓	✓			✓	✓						good shade groundcover
TURF GRASSES																								
Bermuda Grass	*Cynodon dactylon*		✓	1'	spreading	✓		*(yellow)*		✓			✓		✓	✓	✓	✓						recommend solid sod '419' variety
Buffalo Grass	*Bouteloua dactyloides*	✓	✓	3.5"	spreading	✓		*(yellow)*		✓	✓		✓		✓		✓							

APPENDIX

NOTE: The report appendix include portions of the 2012 Development Plan report that were not updated as a part of the 2017 Master Plan project and appendices that supported the 2012 Development Plan effort.

Enterprise Products™

July 1, 2010

10647 Gulfdale San Antonio, TX 78216
210.528.2000 www.epplp.com

Mr. Tom Belt, APM
Pape-Dawson Engineers, Inc.
555 E. Ramsey
San Antonio, TX 78216

Dear Mr. Belt:

REF: Verano Phase I Sanitary Sewer -- Line "C" - Bexar County
Enterprise Texas Pipeline, L.P. 24" Line No. 23 & 20"Line No. 9146

The Engineering Department of Enterprise Products Operating, L.P., "EPOLP", has reviewed your Phase I plan and profile drawings for the proposed installation of the Verano Sanitary Sewer Line in southwest Bexar County. This proposed sewer line will cross Enterprise's 24" San Antonio West Lateral (Line No. 23) and 20" San Antonio South Loop (Line No. 9146). Both of these high-pressure natural gas lines are owned by Enterprise Texas Pipeline, L.L.C. and are operated and maintained by EPOLP.

The proposed sanitary sewer line crosses the Enterprise 20" Line No. 9146 pipeline at Station 18+80 and Station 20+85 on your drawing titled "Verano Phase I, Sanitary Sewer – Line "C", Pre-construction Site Preparation Plan, Sheet C2.3, dated June 2010. The proposed sanitary sewer line crosses the Enterprise 20" Line No. 9146 again at approximately Station 79 +50 on your drawing titled "Verano Phase I, Sanitary Sewer – Line "C", Line "C", Plan and Profile, Sta. 71+00 To Sta. 83+00, Sheet C3.5, dated June 2010. The proposed sanitary sewer line also crosses the Enterprise 24" Line No. 23 at approximately Station 79 +50 on your drawing titled "Verano Phase I, Sanitary Sewer – Line "C", Line "C", Plan and Profile, Sta. 94+00 To Sta. 104+50, Sheet C3.7. These drawings indicate that each of the crossings will be bored and that steel casing will be installed across the gas pipeline easement. **Since the proposed elevation of the Sanitary Sewer Line at each of the crossings is below the gas pipelines with a clearance of greater than 2'-0" we have no objection to the design of these crossings.**

We request that your construction contractor be informed of the existence of the gas pipelines and that extreme care should be exercised when working near these areas. The use of heavy construction equipment directly over the gas pipelines should be limited to the areas where additional protection has been added.

In addition to the notes included on your drawings that identify the location of the pipelines and the requirements for notification of our Operations Department please add the following: "**Should any damage or accident occur regarding the pipeline, immediately notify Enterprise Products Operating, L.P., Gas Control Department, Houston, TX., Telephone number 713-803-2405".**

If you have any questions please call me at (210) 528-4015.

Sincerely,

John B. Phillips
Engineering

CC: Gary Stump
Chester Blair

TOYOTA

Toyota Motor Manufacturing, Texas, Inc.

Monday, January 15, 2007

Jelynne LeBlanc Burley
Deputy City Manager
San Antonio City Manager
P.O. Box 839966
San Antonio, Texas 78283

Re: Texas A&M and Verano

This letter reiterates Toyota's excitement and continuing support for the location of a Texas A&M University campus in the area depicted on maps presented to Toyota by Verano. We understand that Texas A&M has asked Toyota to confirm that the proposed campus and surrounding development comport with Toyota's expectations under the Project Starbright Agreement. It is our pleasure to do so.

As you know, according to the Project Starbright Agreement, the Enhanced Zoning Area comprises the land located within three (3) miles of the perimeter of Toyota's project site. The City of San Antonio's commitment to promote compatible development in the area immediately surrounding Toyota's plant was a key factor in Toyota's initial decision-making process, and will no doubt remain a material component of future expansion discussions.

Nevertheless, Toyota's commitment to San Antonio and South Texas is as strong as ever. To the extent that the requirements of the Texas A&M campus and the surrounding development proposed by Verano compete with the City of San Antonio's commitments to Toyota under the Project Starbright Agreement, Toyota's responsibility as a corporate citizen warrants that we consider the importance of a Texas A&M campus in San Antonio, including increased access to educational opportunities and, of course, the economic impact that Texas A&M will undoubtedly have on South San Antonio.

For purposes of facilitating the construction of educational facilities relating to Texas A&M's San Antonio campus, together with Verano's proposed multi-use development of the area immediately surrounding the Texas A&M campus, Toyota is pleased to welcome Texas A&M to San Antonio by confirming the following:

- Toyota agrees that the overall development may proceed as contemplated so long as no residential dwellings (to include multi-family complexes and dormitories) are located within three (3) miles from the center of Toyota's project site (as that location is depicted on the enclosed maps).
- Toyota understands from Verano that the maps attached hereto were recently submitted to Texas A&M. Those maps contemplate and depict a three mile zone measured from the center of our plant. These are the same maps that Verano has
- shared with us on three distinct occasions during which we discussed their proposal.
- A public university campus (absent residential facilities or dormitories) is a permitted use within the Enhanced Zoning Area.

The arrival of Texas A&M in San Antonio is just the latest example of a city coming into its own. While the original commitments under the Project Starbright Agreement remain an important aspect of Toyota's current and future success we hope that this letter demonstrates Toyota's willingness to evaluate similar opportunities that will mean so much to the citizens of San Antonio.

Sincerely,

MANUEL PELAEZ-PRADA
SENIOR COUNSEL

Encl.

cc: MacGregor Stephenson, J.D., Ph.D.
Associate Vice Chancellor
Office of Academics & Student Affairs
A&M System Building, Suite 1256
200 Technology Way
College Station, Texas 77845-3424

Mike Godfrey
General Counsel
A&M System Bldg., Suite 2079
200 Technology Way
College Station, TX 77845-3424

Scott Polikov, AICP, CNU
Gateway Planning Group, Inc.
101 Summit Ave, Suite 804
Fort Worth, Texas 76102

[illegible] Pecos • San Antonio, TX 78264-3413 • (210) 263-4000

Texas A&M University-San Antonio (A&M-SA) opened the first building on their new campus in Fall 2011. The new campus is located on the south side of San Antonio near Interstate 410 and South Zarzamora Street. The Texas A&M University System is the first large, public university system to open an upper-division institution of higher education on the south side of town. Eventually A&M-SA administration hope to grow the university to be the second largest campus in The Texas A&M University System.

OVERVIEW

In 2009, a team lead by Marmon Mok Architecture completed a Campus Development Plan for the creation of a brand new A&M-SA campus. At that time, The Texas A&M University System was operating a System Center at Palo Alto Community College campus. The Campus Development Plan has served to guide the campus through its early development. Since that time, A&M-SA was formally established as a university, enrollment has increased significantly, additional facilities were leased to grow operations, and the strategic plan has been developed and refined.

The opening of the first building on the A&M-SA campus, Main Building, marked an important milestone in the development of the university. Although the main campus is in its infancy, the opening of this building, coupled with the significant changes outlined above justified a reevaluation of the Campus Development Plan. It is important to have a solid plan, or foundation, upon which to grow the physical campus. In order to accomplish this, the Campus Development Plan must remain current and address the changing variables of the campus and community as a whole. Periodic development plan updates are a normal part of the growth of a campus. In 2012, The Texas A&M University System, along with A&M-SA, hired Alamo Architects to complete a Campus Development Plan Update. Alamo Architects hired Facility Programming and Consulting to complete demographic and space analysis work in support of this update. This chapter summarizes Facility Programming and Consulting's findings.

The Campus Development Plan must consider a plethora of information to guide the physical design and layout of the campus including student, faculty and staff demographics, academic and administrative plans, site, funding, and the surrounding neighborhoods, to name a few. This portion of the development plan update examines student enrollment, existing and requested space, and anticipated plans for growth of programs and services. From this information, space needs were projected and building blocks developed. The building blocks provide a general guideline on the number, size, and types of new buildings needed on campus. The building block recommendations are organized by enrollment rather than years, allowing the university to plan new construction based on actual growth rather than targets. The architects take these building blocks and use them to guide their design of the campus development plan.

The executive summary gives a brief overview of the support data Facility Programming and Consulting compiled to help guide the plan update. Also included is a discussion on benchmarks and methodologies utilized for this effort. Finally the current and projected space needs, and the resulting proposed building blocks are set out.

A&M-SA Main Building

ENROLLMENT

In the year 2000, 126 students began attending classes at Palo Alto Community College as part of The Texas A&M University System Center in San Antonio. Since that time, enrollment has grown steadily with a significant 62% increase in enrollment between Fall 2008 and Fall 2009.

In the Fall of 2010, enrollment was at 3,120 students and A&M-SA became an official entity. Today, enrollment is roughly divided equally into four areas. These areas are the three academic schools which include the School of Education and Kinesiology, the School of Arts and Sciences, and the School of Business. The remaining fourth of the students are graduate students. The graduate students are incorporated into one of the three schools.

Future planned growth is aggressive, with the university targeting a places as the second largest university in the A&M System. Several iterations of enrollment growth scenarios were examined.

An in-depth discussion of demographic findings is included in a later section of this chapter. The chart below illustrates four enrollment projections that were developed as part of this project. A&M-SAfeels that the "low" scenario is a reasonable projection to use for planning purposes.

BENCHMARKS

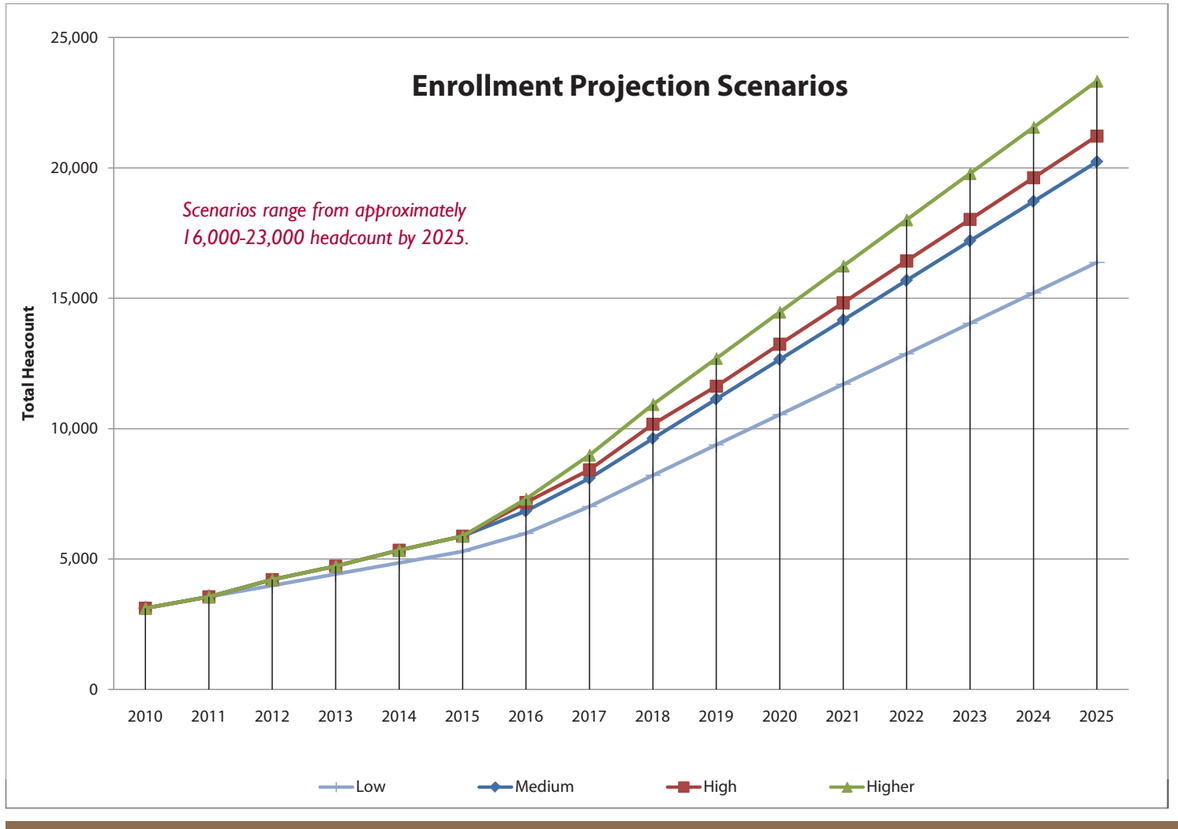
Enrollment and space projections developed for the plan update were based on, and compared to, a number of benchmarks. These benchmarks included data on enrollment growth, space utilization, space projection methodologies, and comparative data to other existing institutions.

ENROLLMENT GROWTH

Historic enrollment growth at peer institutions, as well as at other A&M System universities was examined as part of the enrollment projection exercise.

UTILIZATION

For utilization benchmarks, the Texas Higher Education Coordinating Board (THECB) guidelines on classroom and laboratory utilization were consulted. Additionally, utilization and space projection data collected from past and ongoing Facility Programming and Consulting and master plan projects was considered.



SPACE PROJECTIONS

Space projection methodologies included projections based on the Council for Educational Facility Planners International (CEFPI) guidelines and formulas, the THECB space projection formulas, and extrapolating space projections based on the published Fall 2011 THECB space projection model. Additional methodologies based on other state's higher education boards, as well as subject specific associations such as the National Intermural-Recreational Sports Association, were consulted.

Spaces were grouped into the following categories, identified numerically, that are used by both the THECB and CEFPI.

THECB and CEFPI Space Categories
100s - Classroom Facilities
200s - Laboratory Facilities
300s - Office Facilities
400s - Study Facilities
500s - Special Use Facilities
600s - General Use Facilities
700s - Supporting Facilities
800s - Health Care Facilities
900s - Residential Facilities

CEFPI provides calculations for projecting spaces in all of the categories listed in the previous table. THECB focuses on five broad groupings in their space projection calculations. These groupings are considered education and general space and are referred to as the Five Factor Model.

THECB Five Factor Model Categories
Teaching (100s, portions of 200s, 500s, 600s)
Research (250s)
Office (300s)
Library (400s)
Support (700s)

PEER COMPARISONS

Benchmark data comparing A&M-SA to other institutions was collected from reported THECB data, independent research, and an archive of benchmark data collected by Facility Programming and Consulting and its affiliates.

At this time, A&M-SA has the least amount of square feet per student of any universities reporting to the THECB. Fall 2011 reports show 67 gross square feet per student at A&M-SA. The next university on the list, at 89 gross square feet per student is the University of North Texas at Dallas. Sul Ross State University has the highest proportion of square feet per student at 558 gross square feet per student.

SPACE CONCLUSIONS

EXISTING SPACE

Before projecting future space needs, existing and programmed spaces in approved construction projects were examined.

A&M-SA is currently operating in three different locations. Classes are being offered on the Main Campus and at a leased facility on Brooks City-Base. Offices are located at these two facilities, as well as leased property at the Gillette Campus off South Zarzamora Street. Note the space projections for campus growth assume A&M-San Antonio will vacate these leased facilities and consolidate on the main campus by 5,000 student enrollment head count.

There are two funded construction projects currently in the planning stages. The first is a new Central Academic Building that will include an auditorium, food service, bookstore, student affairs spaces, student gathering spaces, administrative offices, classrooms, and the School of Arts and Sciences. This building is currently programmed at just over 103,000 ASF (nearly 172,000 GSF) and will become the iconic building for the campus. The second building is the Patriots' Casa. This building's primary function is to serve the A&M-SA student veterans and their families, and ROTC students. This building is currently programmed to be approximately 13,000 ASF (20,000 GSF) with several acres of grounds. Both of these buildings should be in use by 2014.

UTILIZATION

CLASSROOMS

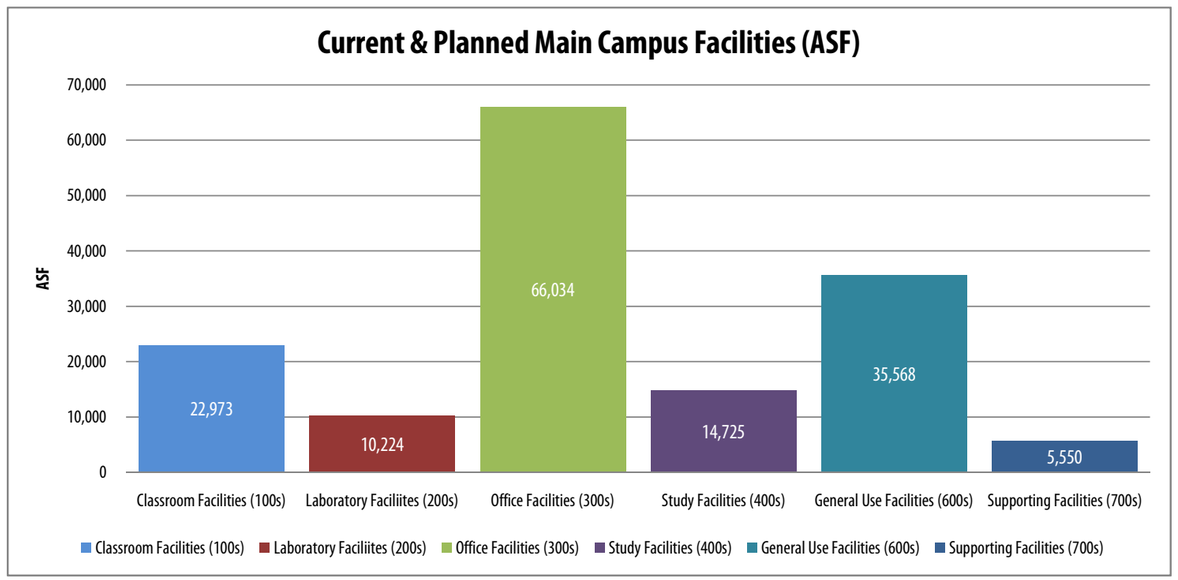
Classroom utilization will change significantly when the planned Central Academic Building is constructed and additional, larger classrooms come on line. Currently there are classroom facilities at the Main Campus and Brooks City-Base. The average utilization at the Main Campus is between 32-34 periods a week dependant upon hybrid class considerations. The average classroom utilization at Brooks City Base is between 17 and 21 periods a week dependant upon how hybrid classes are considered. The THECB targets the weekly classroom utilization at 38-45 periods a week.

It appears that the classrooms in the Main Building with capacities of 36 students are a good size for current teaching pedagogy, although section enrollments indicate there may be a demand for larger class sizes. Approximately 31 new classrooms are needed to meet the needs of a 5,000 student enrollment. The highest demand for new classrooms are larger capacity rooms and lecture halls. Classroom needs for an enrollment over 5,000 students are calculated on a broader basis resulting in a total needed ASF for classrooms rather than specific numbers and sizes of classrooms.

LABORATORIES

There is currently only one laboratory on-line in the Main Building. This laboratory is used on average 18 periods a week. The THECB targets a utilization of 25 periods a week. The general use nature of this laboratory precludes its use for more specialized courses. The new Central Academic Building currently being designed will contain nearly 9,000 ASF of laboratory facilities. Use of the class and open laboratories in this new building will need to be carefully considered as utilization numbers may be low until new courses are brought on-line that will vigorously utilize these spaces.

A&M-SA Main Building



The ASF listed includes the Central Academic Building but does not include the Patriots' Casa or Brooks CIty-Base.

SPACE PROJECTIONS

PROJECTED SPACE
5,000 ENROLLMENT

A recent effort to reprogram the Main Building and Brooks City-Base building, and to program the new Central Academic Building and Patriots' Casa, resulted in an inclusive list of spaces required for a 5,000 student enrollment. Input for this list came from interviews with, and presentations to, representatives from all departments at A&M-SA. The three schools, as well as the administrative units, listed space needs that were then vetted and right-sized. The resulting space list revealed the need for just over 181,000 ASF (302,000 GSF) of space. Outdoor space needs were also examined.

The following two documents may be consulted for further information on the proposed reprogramming of existing space, outdoor space use and organization, and the two new buildings currently being designed.

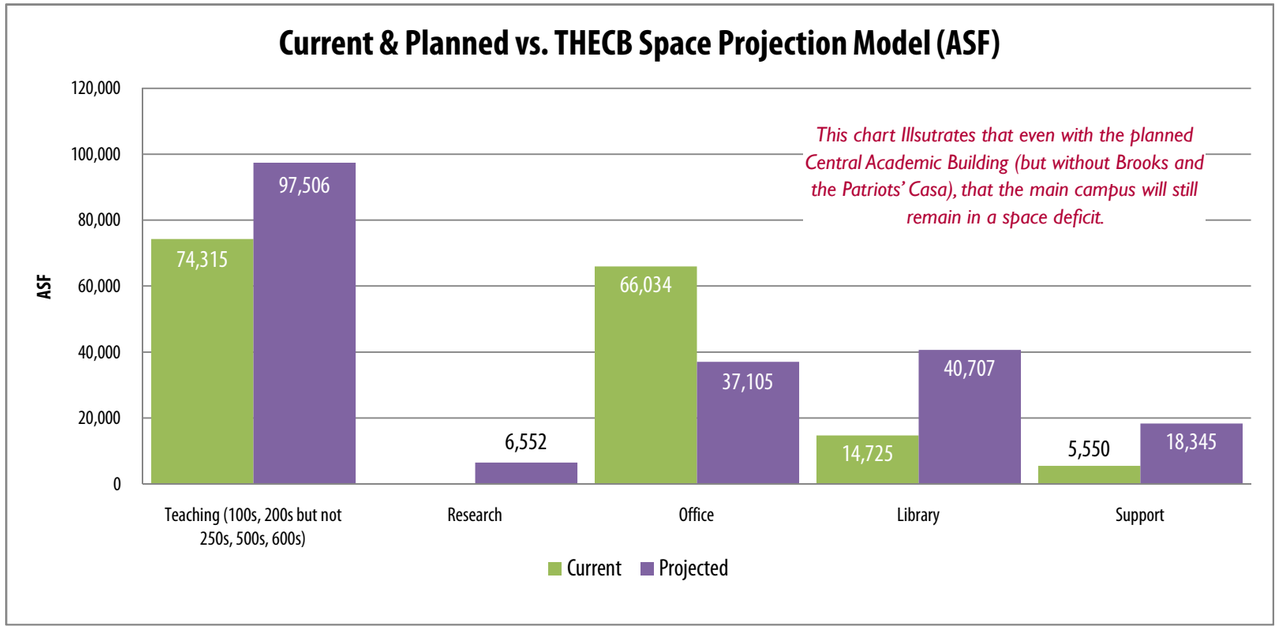
- Program of Requirements for the Central Academic Building and Patriots' Casa (Texas A&M University System Project Number: 25-3122)
- Reprogramming of Main Building and Brooks City-Base (Texas A&M University System Project Number: 25-3054)

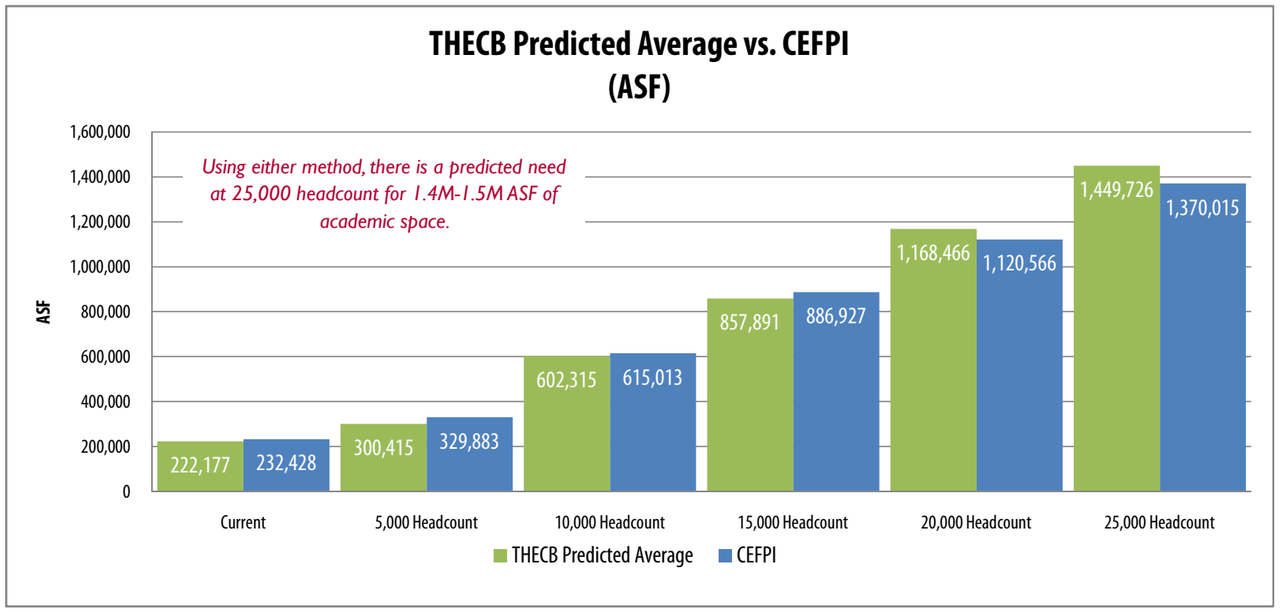
CURRENT SPACE VS. THECB
FALL 2011

The chart to the right shows the known square feet for the main campus (Main Building and forthcoming Central Academic Building) in comparison to the THECB model predicted space need. With the exception of office facilities, all the categories show a space deficit even with the addition of the new Central Academic Building.

PROJECTED SPACE NEEDS
THECB AND CEFPI

Both the THECB and CEFPI space projection models were used to predict space needs by enrollment for the A&M-SA campus. These two methodologies provided space projections within 10% of each other, validating the anticipated space needs.



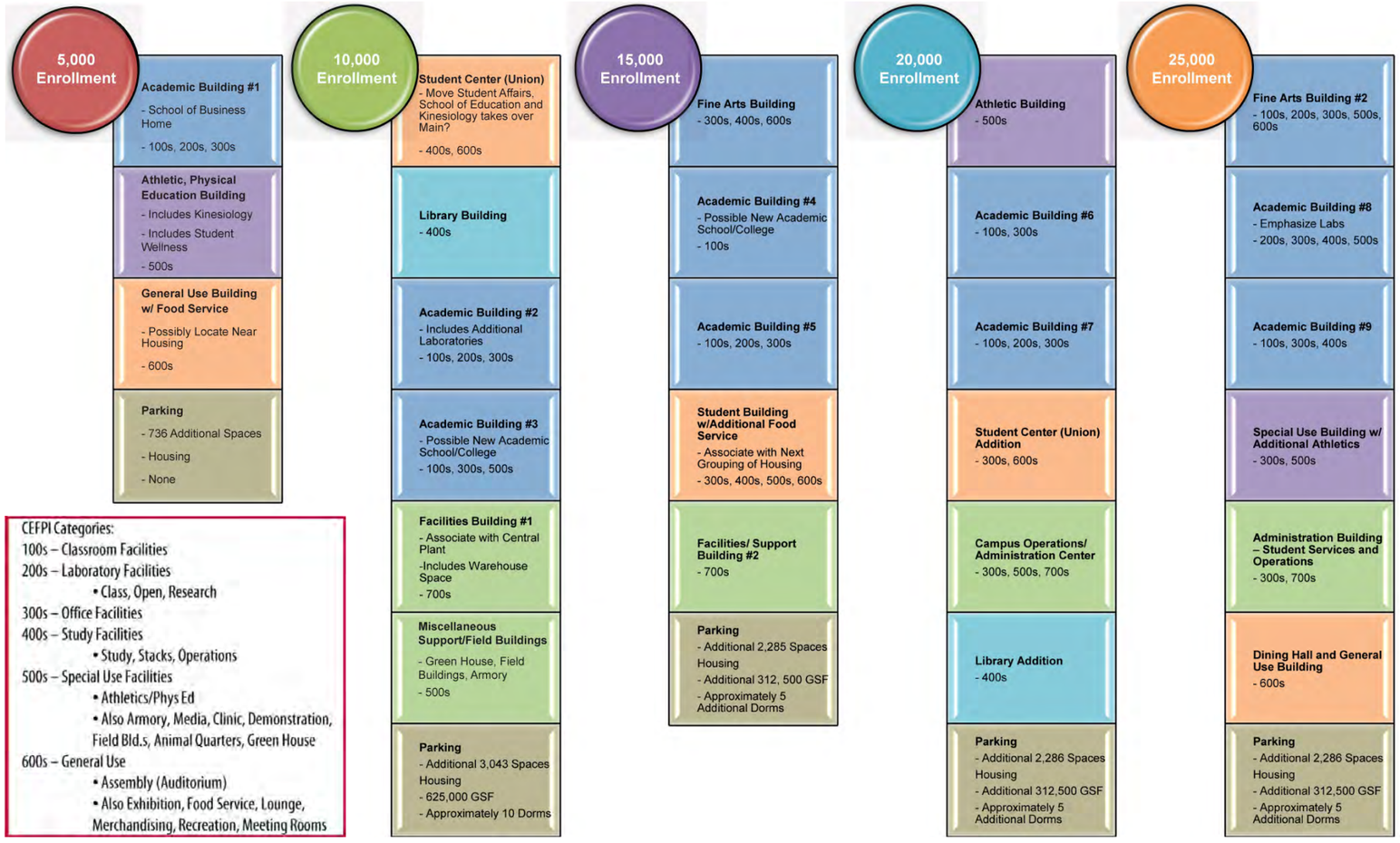


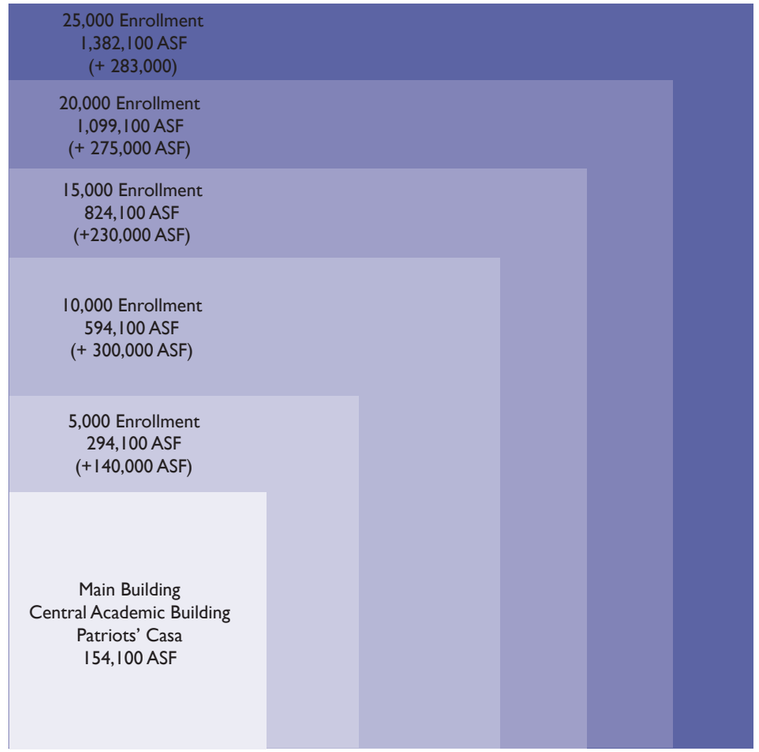
In addition to the space estimates projected using the THECB and CEFPI models, projections were calculated for parking, student housing, and recreational and athletic space needs.

BUILDING BLOCKS

Based on the developed space projections, building blocks, organized by enrollment numbers, were created in order to help guide growth on campus. These building blocks were organized based on CEFPI calculations for spaces and also include space needs for parking and student housing.

The immediate priority for the university is to create a campus core from which the campus can grow. This core should provide all needed services for students including academic and support spaces. Moving forward, priorities for the funding and phasing of new buildings will need to be determined by the university based on their academic and strategic plans.





MAGNITUDE OF GROWTH

The boxes above illustrate the magnitude of the growth of built space needed to support enrollment growth. The boxes are in proportion to each other. They do not include parking or residential housing.

PHYSICAL PLANNING

Alamo Architects has taken the building blocks as shown on the table below, as well as the residential housing projections and developed a comprehensive physical plan for the Texas A&M-San Antonio campus. This plan is presented in the Overall Development Plan chapter of this document.

Texas A&M University-San Antonio (A&M-San Antonio) contracted Alamo Architects to update their Campus Development Plan. The Campus Development Plan looks at vision, context, sustainability and land use, architectural design principles and guidelines, infrastructure, space need, growth, and phasing.

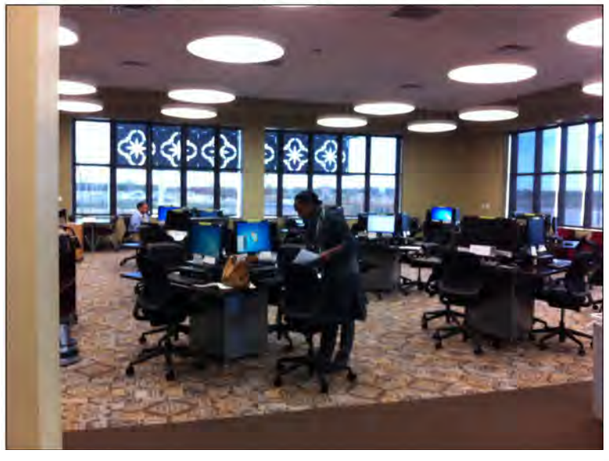
Crucial components in the creation of a development plan are the examination of university enrollment, space utilization, and subsequent projected space needs. The space needs are then converted to potential building blocks organized by enrollment growth periods. These building blocks stem from current and projected space requirements campus-wide.

Facility Programming and Consulting undertook the task of addressing these components. Their findings provided parameters and served to guide the architectural team during the planning process.

This portion of the development plan, provided by Facility Programming and Consulting, is divided into the following sections:

- Executive Summary
- Introduction
- Demographics Analysis
- Overview of Existing Space and Space Utilization Analysis
- Space Requests and Projections
- Building Blocks

A&M-San Antonio - Main Building Library Commons



This section will cover the following subjects:

- Space Analysis Process
- Team and Scope for the Development Plan Support
- Schedule
- Purpose
- Background Information on the University and System
- The Campus Environment (Location/Site)

Space Analysis Process

- Review Demographics
- Determine Capture Rate
- Project Enrollment
- Determine FTE To Enrollment Ratio
- Industry and Employment Market Analysis
- Academic Plan
- Breakdown FTE By Division
- Project Future Space Needs, Compare With Existing
- Develop Conceptual Building Blocks

A&M-San Antonio Main Building

Project Team and Scope

The project team for this portion of the development plan update consisted of staff from Facility Programming and Consulting and included a demographer. Facility Programming and Consulting worked under Alamo Architects.

Facility Programming and Consulting examined existing and projected population growth ranging from the local community to the state level. They also projected possible growth trends for student enrollment at A&M-San Antonio.

Facility Programming and Consulting conducted classroom and laboratory utilization analysis, classroom demand analysis, an examination of existing and proposed spaces, and they developed building blocks for space needs moving forward. All space needs were considered including, but not limited to, classrooms, laboratories, administrative spaces, housing, parking, recreation, dining, and student services.

The process for Facility Programming and Consulting's work is summarized in the following table.

Data Collection/Validation	Programming Effort	Space Utilization Analysis	Space Projections
• Acquire information on student demographics, current & projected student enrollment, current and projected faculty and staff counts and building and room space inventory • Review the existing Development Plan • Review and incorporation of other appropriate campus, academic, and administrative data • Meetings and questionnaires completed with chairs and department heads regarding enrollment and program growth	• Review existing facility on Main Campus • Review building program for the funded, but not yet constructed, Central Academic Building and Patriots' Casa • Summarize academic and administrative units' issues with existing space with opportunities presented for better use of space	• Review and incorporation of existing classroom utilization data, including time-of-day, weekly usage and hours per week, into recommendations • Laboratory utilization analysis • Analysis of departmental space and • Benchmarking of current space to peers and standards	• Calculation of current space and requested space for labs, offices, classrooms, and support functions • Based on the proposed enrollment, develop the projected space needs by type and department on enrollment thresholds • Translate the space projections into specific recommendations for new facilities, or "building blocks" • Review and incorporation of committee comments into the "building blocks" • Preparation of a report to support the Development Plan

Schedule

The Development Plan Update began with a kickoff meeting on December 12,2011. Additional meetings in the form of workshops, with a presentation and discussion, were conducted on January 4th and 11th, February 21st, March 7th and 20th, and April 2nd.

Purpose

The purpose of the Facility Programming and Consulting's development plan support work, summarized in this appendix, is twofold. It is to provide the university with enrollment and space growth data moving forward. It is also to provide the design team with enough information to layout the Campus Development Plan Update with the appropriate size and number of buildings, parking, and recreation. This section will outline the total space required for the initial phase of development, the campus core, through build-out. This plan serves as a working document designed to outline the basic needs required at a full-service campus and help establish a plan for future development.

The university administration can use the findings in this report to plan their future physical growth and to allocate resources accordingly. The demographic analysis and space needs projections will serve as powerful tools when identifying potential funding sources and will help to justify need.

The design team will use the building blocks to place buildings on the campus based on the building type, approximate size, and phasing of when they will need to come on-line. Building blocks were based on enrollment thresholds of 5,000, 10,000, 15,000, 20,000, and 25,000 students.

Background Information

The information contained in this section focuses on the System and the A&M-San Antonio campus.

Texas A&M University System

The Texas A&M University System encompasses 11 universities, a health science center, and seven state agencies. The main campus was established in 1876 with the newest universities, A&M-Central Texas and A&M-San Antonio being established within the last decade.

Policy Statement

The Texas A&M University System is committed to meeting the challenges and opportunities of tomorrow by fulfilling its mission, achieving its vision, and upholding its core values through a proactive, comprehensive, and coordinated strategic planning framework.

Mission

The mission of The Texas A&M University System is to provide education, conduct research, commercialize technology, offer training, and deliver services for the people of Texas and beyond through its universities, state agencies and health science center.

Vision

The Texas A&M University System will reflect the diversity of the state and will be recognized as the top land-grant system in the nation.

Core Values

The Texas A&M University System will be pre-eminent among higher education systems in America for its:

1. Core programs leading to mastery of critical thinking, verbal and written communication skills, computational competence, leadership development, and the ability to work collaboratively so that graduates may become productive and engaged citizens in their communities, states, the nation, and the world;

2. Commitment to educational opportunity and educational excellence that are foundations for a free society and its economy, the creation of knowledge that moves civilization forward, and for individual growth and fulfillment;

3. Faculty and staff whose superb communication, teaching, and research skills are continuously enriched with new instructional technologies and curricular innovations that enhance student learning, whose scholarly work demonstrates the highest intellectual standards, whose concern for students is evident, and whose entrepreneurial spirit leads them to seek new frontiers of knowledge, commercialization of technology, and opportunities for their students;

4. Learner-centered communities that stimulate intellectual attainment and development of the moral and ethical foundations that support a democratic society;

5. Focus on distinctive competencies that distinguish each member of the system within Texas and as viewed from a national and world perspective. Fostering shared services, collaboration and interconnectivity among system members that contribute to the vitality and well-being of the members individually and to the system collectively so that the system is greater than the sum of its parts;

6. Partnerships with business, industry, government agencies, public education, and non-profit groups that keep the system aware of changing economic, political, social, and cultural environments to ensure that its employees and graduates are prepared to support and serve the people of Texas;

7. Global role in higher education, research, and service with an international perspective this brings to its students;

8. Dedication to service and outreach that arises from the land-grant tradition upon which Texas A&M University was founded and that lives on in each of the universities, agencies and the health science center (HSC) of the system;

9. Commitment to outreach and development activities that nurture

the relationship between our organizations and the communities/regions of Texas; and

10. High moral and ethical standards and conduct, which all employees and appointees support and model for our students and for all whom we serve.

Strategic Planning Framework

The Strategic Planning Framework includes, but is not limited to, the following elements:

1. System Strategic Plan: The System Strategic Plan is the umbrella document that guides and aligns all planning for the system. It is certified by the Board of Regents (board). The chancellor will report annually to the board on the progress made in achieving the goals of the System Strategic Plan.

2. System Member Strategic Plans: Each system member will have a System Member Strategic Plan that aligns with the System Strategic Plan and recognizes and supports any unique strategic goals of the system member.

3. System Offices Strategic Plan: The System Offices Strategic Plan aligns with the System Strategic Plan and recognizes and supports any unique strategic goals of the System Offices.

4. Enterprise Risk Management: Enterprise Risk Management assesses and defines actions to be taken by the system members, the System Offices, and/or the system to identify, monitor, and mitigate risks that threaten the achievement of strategic plan goals and/or continuing operational programs.

The Texas A&M University System consists of 11 universities, 7 state agencies, and a comprehensive health science center, the locations of which are illustrated in the map below.

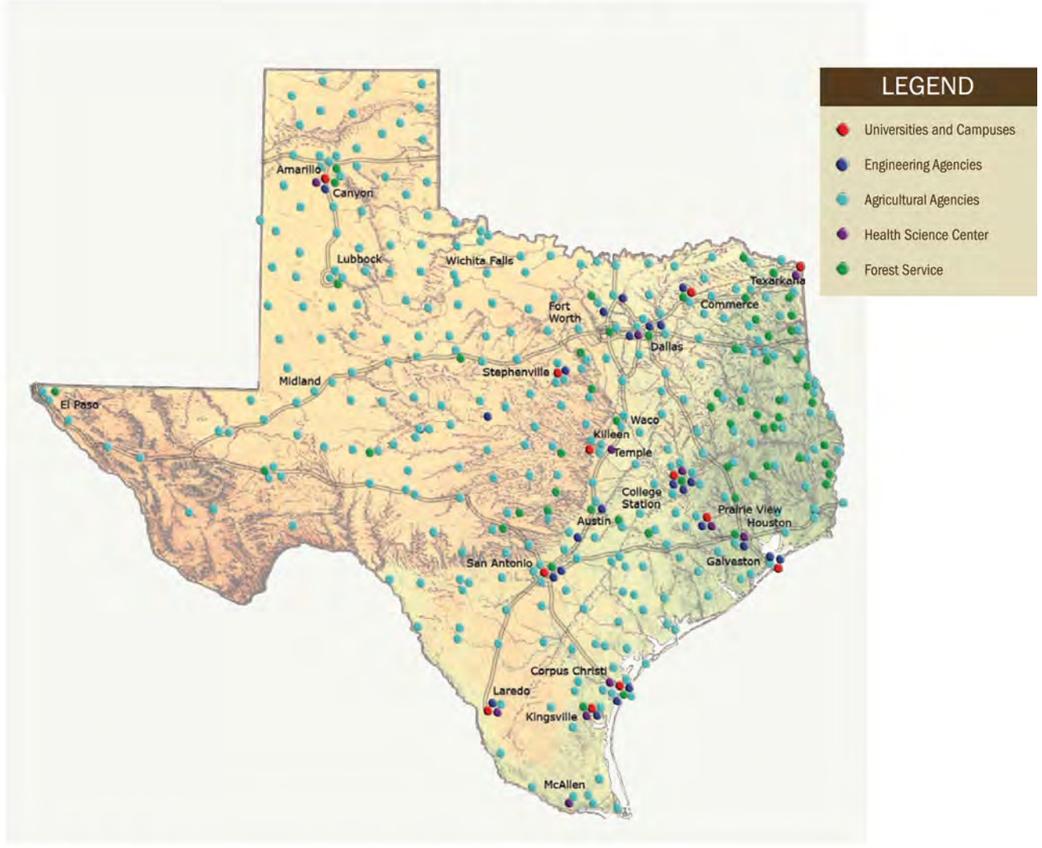


Image from: The Texas A&M University System Strategic Plan Fiscal Years 2009-2013

The Texas A&M University System Strategic Plan contains four imperatives with accompanying goals as listed below.

Imperative & Goal Summary

I. Openness and Accountability

1.1 Transparency is the Standard
1.2 Coordinated Marketing and Communications Initiatives
1.3 Safety is a Mindset
1.4 Compliance and Alignment of Policies, Regulations, Rules, and Procedures
1.5 Implementation of Strategic Planning Framework

II. Excellence through Academics and Extension

2.1 Students, Faculty and Staff Reflect the Diversity of the State
2.2 Expansion Geographically and Programmatically
2.3 Coordinated Distance Learning
2.4 Partnerships with Independent School Districts and Community Colleges
2.5 Outreach to Students, Communities, State, and Beyond
2.6 Staff and Faculty Excellence

III. Research for Tomorrow

3.1 Solving Critical State, National and Global Issues
3.2 Research Collaborations
3.3 Shared Research Facilities and Leveraged Expertise
3.4 System-Enabled Grant Collaboration and Administration
3.5 Technology Commercialization

IV. Resources Optimized and Leveraged

4.1 Affordability
4.2 Shared Services, Centers and Collaboration
4.3 Leverage Information Technology for Maximum Value
4.4 Develop Infrastructure and Facilities

Images from: The Texas A&M University System Strategic Plan Fiscal Years 2009-2013

Texas A&M University-San Antonio

A&M-San Antonio is one of the newest universities in the Texas A&M University System.

The university is "deeply committed to the development of the student and promotion of personal integrity and self-respectability" *Texas A&M University-San Antonio Student Handbook*

Mission

Texas A&M University-San Antonio faculty and staff prepare and empower students through innovative and challenging academic and co-curricular programs that contribute to and enrich the economic and social development of the community and region. A solid foundation for success is established through dynamic teaching, scholarship, research, and public service that inspire graduates to lifelong learning and responsible global citizenship.

Vision

Graduates from Texas A&M University-San Antonio are highly sought after by employers for their expertise, and they are active in developing and enriching their communities.

Strategic Planning Framework - Imperatives and Goals

A&M-San Antonio has developed a strategic planning framework in order to better understand the direction they are moving. This framework will help guide the rapid growth anticipated by A&M-San Antonio.

1. Establish university education as a fundamental part of community life to close the achievement gap in South Texas.

- Accessible and affordable education for under-served students
- Maximized graduation rates
- A culture of community service

2. Provide outstanding academic and co-curricular experiences focused on student success in a comprehensive, distinctive university environment.

- Accreditation compliance
- Student centered
- Focused scholars
- Applied research
- Work-force ready, professional graduates

3. Increase resources and develop infrastructure that enhances physical, virtual and other educational experiences for students and faculty.

- Optimal use of available resources
- Open environment of seamless communication
- Use of virtual infrastructure to enhance scholarship
- Strategic employment practices and personnel development
- Facility design and construction

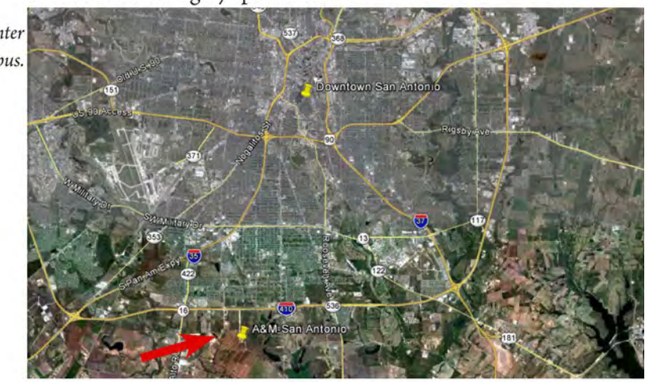
4. Establish and enhance university-wide practices that promote fiscal responsibility and allow for planned growth.

- Rules and procedures that streamline and facilitate rapid growth
- Balanced management of growth and budget
- Continuous development of financial support

Campus Environment

Location

The campus is located at One University Way, San Antonio. It can be reached from South Zarzamora and Verano Parkway or using the Interstate 410 Access Road and University Way. The primary entrance is using One University Way. The campus currently consists of one building with two more in the planning stages. It will eventually evolve into a full-service, developed campus with multiple buildings, some of which will be highly specialized.



Greater San Antonio Area showing city center and A&M-San Antonio campus.

A&M-San Antonio Main Campus.

Site Layout

The campus is set back(to the south) from Interstate 410 by more than half a mile. Other than two small plots of land belonging to A&M-San Antonio at Interstate 410 and University Way, the land between the interstate and Main Campus belongs to the Verano Development Corporation. Verano intends to create a mixed use development featuring a variety of housing options. The portion of the development bordering the Main Campus will focus on student centered retail and apartment housing. It is not known at this time when the development will begin construction and when the area bordering the campus will be complete and available to serve students.

Construction to the southwest of the site will be limited by residential building restrictions associated with the Toyota Motor Manufacturing plant in that area. These restrictions may not apply to campus housing and will be investigated further as part of the plan update.

Emphasis has been placed on creating additional shaded, comfortable outdoor spaces, a pedestrian oriented core, and parking that is pushed to the edges of campus.

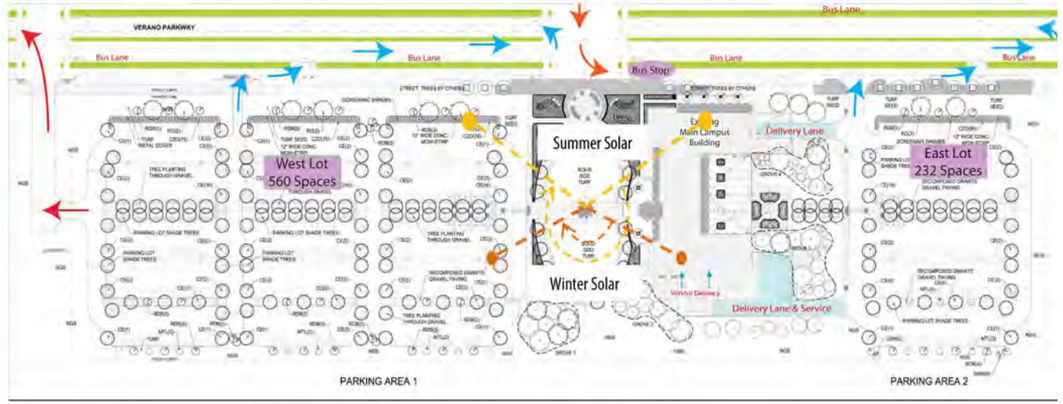
Parking

Parking needs are summarized in the table below organized by spaces to be added to existing at each enrollment threshold.

Student Enrollment	Number of Spaces at Each Stage	Approximate Acres at Each Stage	Total Number of Spaces	Total Approximate Acres
Existing	792	5.9	792	6
5,000	736	5.5	1,528	11.4
10,000	3,043	22.7	4,571	34.1
15,000	2,286	17.1	6,856	51.2
20,000	2,286	17.1	9,142	68.2
25,000	2,286	17.1	11,427	85.3

Service

Existing and near future service plans are diagramed below.



Bicycle Transportation

Currently, there are no established bicycle paths leading onto the Main Campus from the neighborhood. However, the city of San Antonio's stated goal is, "...to increase bike ridership for daily travel and improve cycling safety by making our bike network accessible, direct, and continuous." In response to that, the city has created the "San Antonio Bike Plan 2011 + Implementation Strategy." This strategy addresses the planned development of the Verano site and the A&M-San Antonio campus. A bicycle lane/buffered bicycle lane is suggested along South Zarzamora, Verano Parkway, and University Way, with multi-use and signed routes leading through the Verano site. Both University Way and Verano Parkway were constructed with bicycle lanes/bicycle right-of-way. With the improvement of bicycle routes, additional bicycle traffic onto campus can be expected and should be planned for accordingly by creating areas for bicycle racks, with the possibility of covered bicycle racks and commuter shower/changing facilities which can contribute to LEED points should the University wish to pursue LEED designation for their new facilities.

Public Transportation

VIA Metropolitan Transit buses provide service to the A&M-San Antonio Campus. Route 520 is currently the only route servicing the campus. It travels south on South Zarzamora then east along Verano Parkway to drop off at an established stop in front of the Main Building. Transfers to other bus lines occur at the Madla Transit Center at South Zarzamora and Interstate 35. Buses arrive at campus during the week beginning at 5:23 a.m. and then approximately every half hour from 6:09 a.m. The last bus arrives at campus at 9:53 p.m. Buses depart campus beginning at 5:30 a.m. with the last bus departing campus at 10:10 p.m. As the campus and the Verano development grow, additional bus lines may be established.

Topography and Vegetation

The campus is located in an area of the South Texas Plains. Slope on the site is less than 2% running north down to south. Construction on this site must include a clear plan for moving storm water runoff away from the site as this may be a challenge with the low slope conditions. An additional consideration is the presence of an established storm water drainage culvert on the east side of the site. This culvert directs water south, eventually to a detention pond, and then to a series of small lakes east of the A&M-San Antonio campus.

The site is located in an area that was previously farm land. Since farming concluded, native landscape has begun reestablishing itself. This native landscape currently includes mesquite and South Texas Plains brushy cover, thorny shrubs, and understory. The site currently has no large, established heritage trees to consider when locating the new buildings. New plantings should include the strategic integration of native trees to provide natural shade for outdoor seating and event space.

This section will cover the following subjects:

- Introduction to Demographics
- Enrollment Study
- Preliminary Enrollment Projections
- Final Enrollment

Introduction to Demographics

In order to plan for the future, the trends in enrollment and projected population growth have to be understood and analyzed. The demographics of the surrounding communities must also be understood and can offer valuable insight regarding population projections, capture rates, utilization, and enrollment projections. A demographic study was conducted as part of the Development Plan Update effort and encompasses A&M-San Antonio's historic trends from inception to the fall of 2011 and includes projections through 2025. The data was analyzed and used to establish the foundation for future "building blocks" that will aid the university in assessing current conditions and realizing future expansion.

Enrollment trends and projections are a vital piece of information integral to any campus development plan. By analyzing this data, a campus development plan can begin to address the needs of the current population and plan for future utilization. In order to analyze enrollment, historical data must be collected. A thorough review must be conducted of past trends and new department initiatives and planned programs.

A&M-San Antonio Main Building

Methodology - Demographics and Projections

The methodology employed in order to develop enrollment projections for A&M-San Antonio included several steps. The issues addressed during the development of a projection methodology help define the way the development plan evolves.

Typical methodology utilized for enrollment projections includes:

- Regression model
- Enrollment history
- Population projections
- Age/race participation rates for five years
- Multiple forecasts
- Out-of-state enrollments added after in-state enrollments

Additional methodology and assumptions:

- Graduate student projections are based on least squares trend of enrollment from 2009-2011
- Undergraduate (Jr. + Sr.) student projections are based on least squares trend of enrollment from 2009-2012
- Freshmen represent approximately 0.264 of total students
- Retention rates to Sophomore range from 0.625 (average of all Texas A&M University System branches) to 0.89 (Texas A&M University).
- The assumed Freshman enrollment implies/includes Freshmen from the groups below:
  - Assume Upper Classmen represent 50% of Undergraduates for projecting
  - International students
  - 50% of International students will be Graduate students - assumed to be between 3.5% (National avg.) and 10% (A&M avg.) of total students
  - GI Bill Veterans assume 10% of 90,000 personnel in Texas where A&M-San Antonio captures between 1% and 4% of Texas Veterans; increasing between 0.08 and 0.12 annually regression model

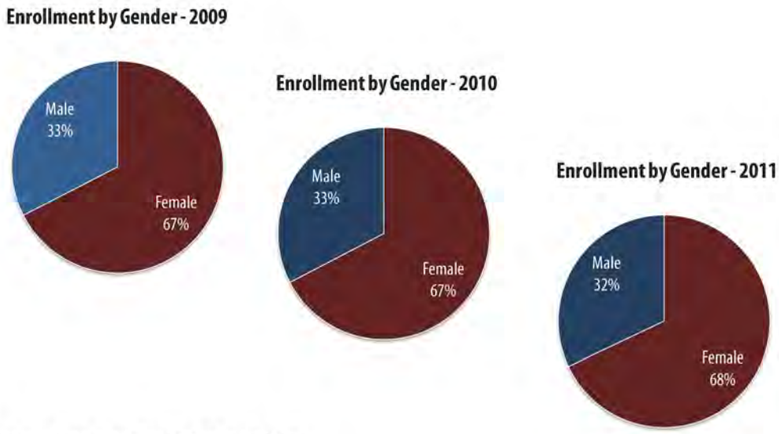
The enrollment projections were compiled using various sources which included:

- Research of long–range enrollment projections
- Review of data from Environmental Systems Research Institute Business Information Solutions (ESRI BIS) in order to enhance the population projections with specific information and the most current data
- Definition of the A&M-San Antonio capture rates (percentage of population that attends A&M-San Antonio campuses)
- Development of the likely scenarios for overall A&M-San Antonio enrollment to 2020
- Use of the Texas Higher Education Coordinating Board (THECB) projection (projections to 2020) as a model (The THECB uses an assumed constant capture rate for enrollment projections)
- Discussion of how campus enrollment projections and capture rates might be impacted based on newly planned programs and initiatives
- Inclusion of Distance Learning and Dual Education enrollment projections to 2025 as well as potential enrollment increases from the Patriots' Casa and foreign nationals
- Texas State Data Center (TSDC), county population projections by age and ethnicity to 2040
- A&M-San Antonio Office of Institutional Research
- Independent Analysis & Projections

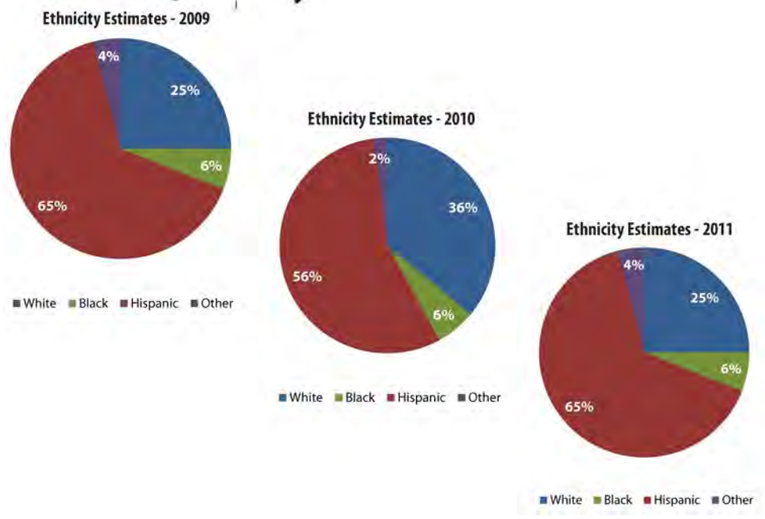
Enrollment Study

Historically, enrollment at A&M-San Antonio has remained around 67% female, with between 56% and 65% of the students identifying as Hispanic origin. At this time, the population by ethnicity in the zip codes from which A&M-San Antonio draw their most students identify primarily as being of White or Hispanic origin. Approximately 63% of the population are of Hispanic origin and this distribution is expected to remain near, or above this percentage.

Enrollment by Gender

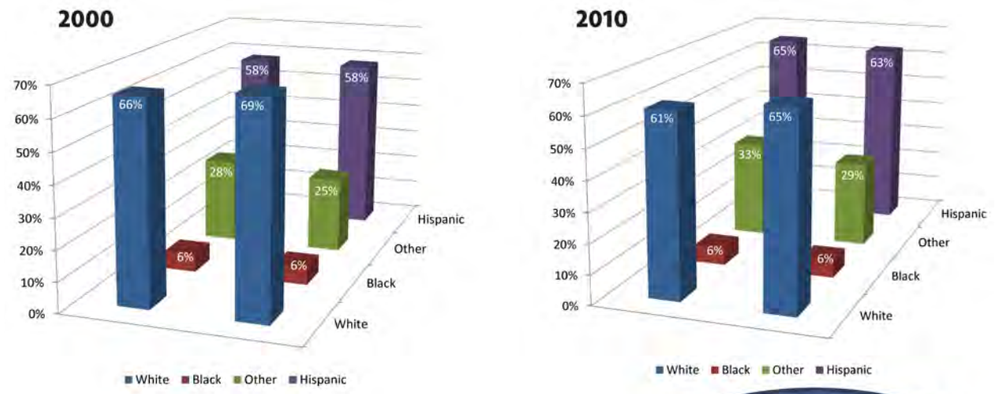


Enrollment by Ethnicity

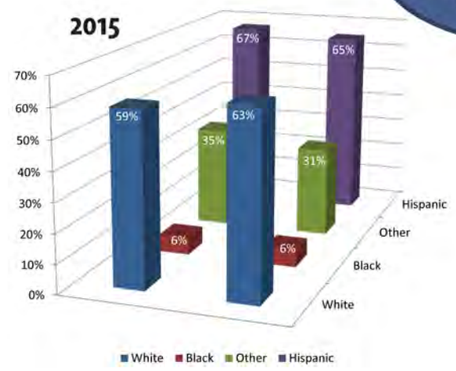


Population by Ethnicity - A&M-San Antonio Top Zip Codes

The 2010 Census does not include Hispanic Origin population as a mutually exclusive ethnic category. Hispanics are considered to be Caucasian but there are many multi-racial Hispanics as well as Black minorities. The category "Hispanic Origin" in the bar charts below is included in order to indicate the extent of the Hispanic population without providing the opportunity to add the different ethnic groups to reach 100% of the population. Approximately 63% of the population in the top zip codes catchment area in 2010 are of Hispanic Origin, the fastest growing population group. This group is expected to continue increasing as a share of the total population.

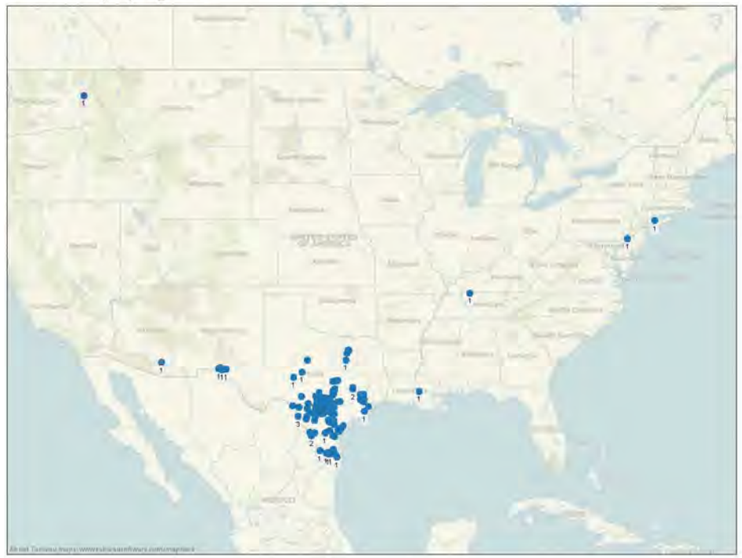


The top zip codes that feed into A&M-San Antonio are increasing in their % of residents who are Hispanic and other origins



Students by Residence: Country-Wide

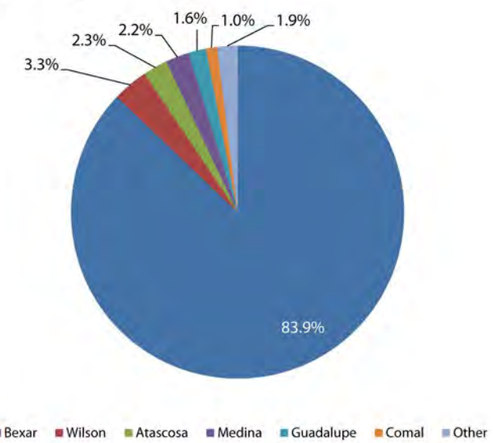
Currently, over 92% of A&M-San Antonio students come from within Texas, and 84% of the student enrollment comes from Bexar county. The map below illustrates the location and number of students across the country by zip code.



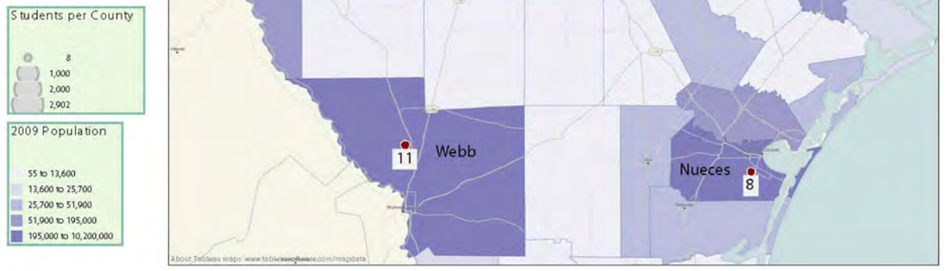
Students by Residence: County-Wide

A&M-San Antonio currently pulls the majority of its enrollment from Bexar County. The table below illustrates the number and percentage of students in the top 12 zip codes.

Rank	COUNTY	Students	Pct of Tot
1	Bexar	2902	83.9%
2	Wilson	115	3.3%
3	Atascosa	79	2.3%
4	Medina	76	2.2%
5	Guadalupe	57	1.6%
6	Comal	36	1.0%
7	Frio	19	0.5%
8	Webb	11	0.3%
9	Kendall	11	0.3%
10	Uvalde	8	0.2%
11	Nueces	8	0.2%
12	Bandera	8	0.2%
	Top Counties	3330	96.2%



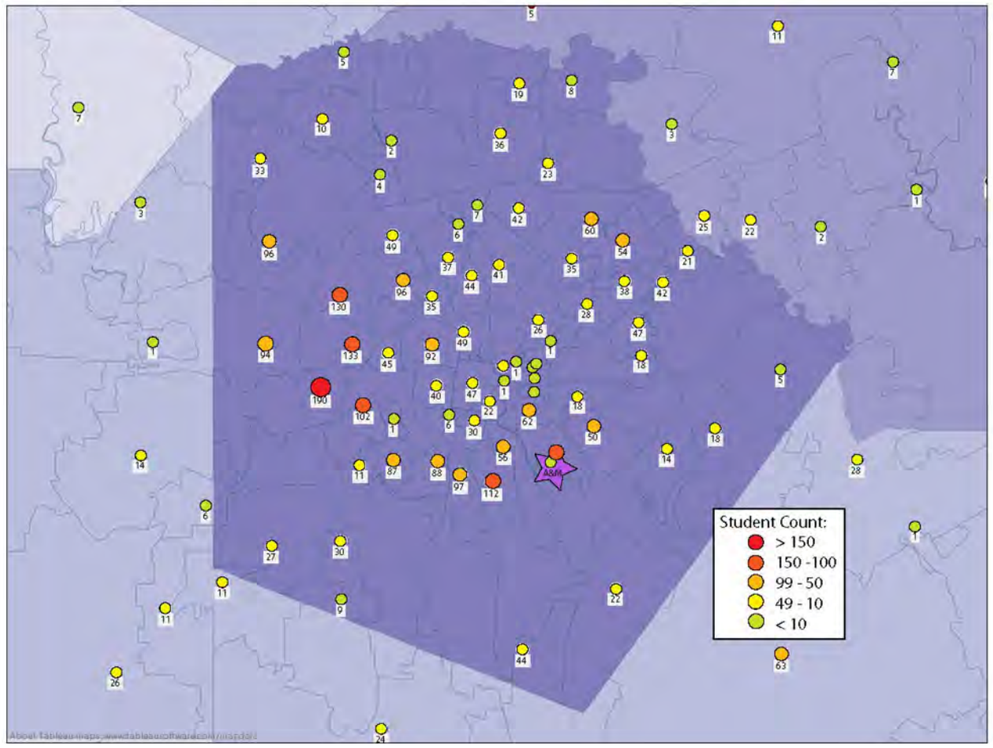
The map below illustrates the number of students by county in the top 12 counties.



Students by Residence: Zip Codes

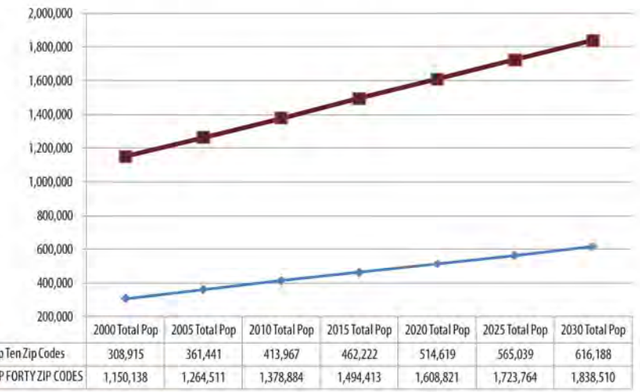
The table and map below lists student enrollment by the top 40 zip codes.

TEXAS A&M UNIVERSITY-SAN ANTONIO TOP FORTY (40) ZIP CODES OF STUDENTS BY RESIDENCE											
Rank	Zip Code	Students	Rank	Zip Code	Students	Rank	Zip Code	Students	Rank	Zip Code	Students
1	78245	190	11	78228	92	21	78249	49	31	78239	38
2	78223	146	12	78211	88	22	78207	47	32	78230	37
3	78251	133	13	78242	87	23	78244	47	33	78258	36
4	78250	130	14	78114	63	24	78238	45	34	78217	35
5	78221	112	15	78210	62	25	78213	44	35	78229	35
6	78227	102	16	78247	60	26	78264	44	36	78023	33
7	78224	97	17	78214	56	27	78109	42	37	78212	33
8	78240	96	18	78233	54	28	78232	42	38	78073	30
9	78254	96	19	78222	50	29	78216	41	39	78225	30
10	78253	94	20	78201	49	30	78237	40	40	78121	28
Top Ten Total		1,196	11-20 Total		661	21-30 Total		441	31-40 Total		335
Pct of TAMU-SA Total		34.6%	Pct of TAMU-SA Total		19.1%	Pct of TAMU-SA Total		12.7%	Pct of TAMU-SA Total		9.7%
			Cumulative %		53.7%	Cumulative %		66.4%	Cumulative %		76.1%



Projected Growth by Zip Code

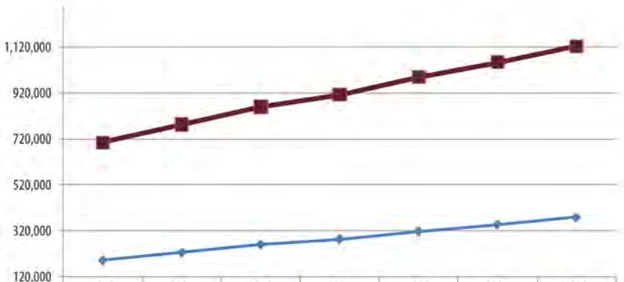
As illustrated in the table below, projected growth in the top 10 and 40 zip codes is forecasted. The top 10 zip codes is forecasted to grow 5.3% annually between 2011 and 2030. The bottom table illustrates the projected growth of the top 10 and 40 zip codes for ages 18 to 64. Growth for the top 10 zip codes in this age category is forecasted at 1.7% annually between 2011 and 2030.



	2000 Total Pop	2005 Total Pop	2010 Total Pop	2015 Total Pop	2020 Total Pop	2025 Total Pop	2030 Total Pop
Top Ten Zip Codes	308,915	361,441	413,967	462,222	514,619	565,039	616,188
TOP FORTY ZIP CODES	1,150,138	1,264,511	1,378,884	1,494,413	1,608,821	1,723,764	1,838,510

Projected growth in the top ten zip codes is forecasted to be 5.3% annually between 2011-2030.

Zip Code Divisions	2000 - 2010 Annual Rate	2011 - 2030 Annual Rate
Top Ten Zip Codes	3.1%	5.3%
Second Ten Zip Codes	0.8%	0.1%
Third Ten Zip Codes	1.3%	0.7%
Fourth Ten Zip Codes	2.3%	1.8%
TOP FORTY ZIP CODES	1.8%	1.6%



	2000	2005	2010	2015	2020	2025	2030
Top Ten Zip Codes	191,314	225,722	260,130	284,610	318,717	348,231	379,438
TOP FORTY ZIP CODES	705,246	782,330	859,415	912,780	989,147	1,054,538	1,123,974

Projected growth the population in the age range of 18-64 in the top ten zip codes is forecasted to be 1.7% annually between 2011-2030.

Zip Code Divisions	2000-11 Annual Rate	2021-30 Annual Rate
Top Ten Zip Codes	3.3%	1.7%
Second Ten Zip Codes	1.0%	0.7%
Third Ten Zip Codes	1.5%	1.0%
Fourth Ten Zip Codes	2.4%	1.4%
TOP FORTY ZIP CODES	2.0%	1.2%

Peer Comparisons

Peer comparisons are useful to gauge past growth histories as they may be relevant to future growth. They help to establish parameters and test projection scenarios.

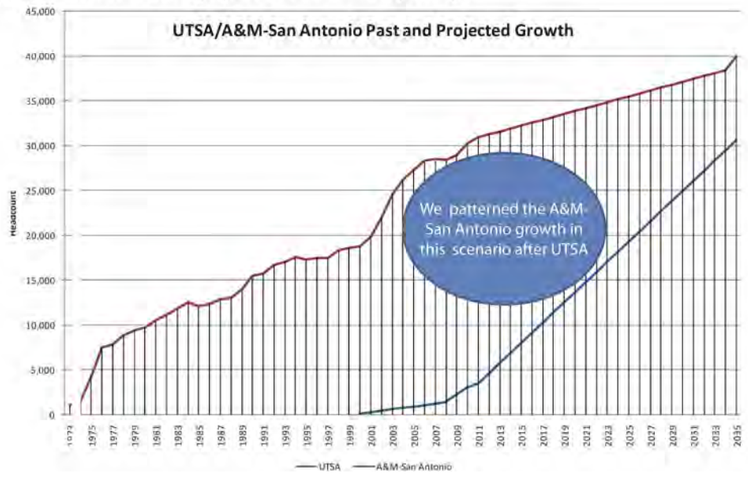
The year-on-year percentage growth is not stable in any "peer" institution. Average percent growth across the Texas A&M University System is 3%.

Institution	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993
TEXAS A&M INTERNATIONAL UNIV	6,853	6,419	5,856	5,179	4,917	4,298	4,269	4,078	3,724	3,372	3,038	3,207	3,001	2,839	2,677	2,510	1,964	1,712
TEXAS A&M UNIV AT GALVESTON	1,867	1,774	1,612	1,614	1,553	1,661	1,615	1,620	1,556	1,366	1,363	1,288	1,168	1,111	1,203	1,240	1,237	1,335
TEXAS A&M UNIV-CENTRAL TEXAS	2,317	2,188																
TEXAS A&M UNIV-CORPUS CHRISTI	10,033	9,468	9,007	8,563	8,585	8,355	8,227	7,861	7,607	7,369	6,823	6,621	6,335	6,025	5,671	5,545	5,152	4,489
TEXAS A&M UNIV-KINGSVILLE	6,586	5,892	7,134	6,547	6,700	6,662	7,126	6,841	6,554	6,148	5,942	5,832	5,935	6,048	6,113	6,046	6,548	6,570
TEXAS A&M UNIVERSITY-COMMERCE	10,280	9,075	8,787	8,879	8,496	8,677	8,547	8,353	8,483	7,934	7,483	7,762	7,754	7,661	7,457	7,650	7,941	8,096
TEXAS A&M UNIVERSITY-TEXARKANA	1,803	1,597	1,625	1,605	1,625	1,549	1,540	1,429	1,367	1,219	1,195	1,152	1,153	1,045	1,145	1,184	1,210	1,290
U. OF TEXAS AT SAN ANTONIO	30,258	28,955	28,413	28,533	28,379	27,291	26,175	24,665	22,016	19,883	18,830	18,608	18,391	17,494	17,547	17,369	17,579	17,097
TEXAS A&M UNIV-SAN ANTONIO	3,120	2,343																
TEXAS A&M UNIVERSITY	49,129	48,702	48,039	46,542	45,380	44,578	44,435	44,813	45,083	44,618	44,026	43,442	40,113	38,243	38,650	38,654	39,174	40,029

Institution	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	AVE
TEXAS A&M INTERNATIONAL UNIV	6.8%	9.6%	13.1%	5.3%	14.4%	0.7%	4.7%	9.5%	10.4%	11.0%	-5.3%	6.9%	5.7%	6.1%	6.7%	27.8%	14.7%	8.7%
TEXAS A&M UNIV AT GALVESTON	5.2%	10.0%	-0.1%	3.9%	-6.5%	2.8%	-0.3%	4.1%	13.9%	0.2%	5.8%	10.3%	5.1%	-7.6%	-3.0%	0.2%	-7.3%	2.2%
TEXAS A&M UNIV-CENTRAL TEXAS	5.9%																	
TEXAS A&M UNIV-CORPUS CHRISTI	6.0%	5.1%	5.2%	-0.3%	2.8%	1.6%	4.7%	3.3%	3.2%	8.0%	3.1%	4.5%	5.1%	6.2%	2.3%	7.6%	14.8%	4.9%
TEXAS A&M UNIV-KINGSVILLE	11.8%	-17.4%	9.0%	-2.3%	0.6%	-6.5%	4.2%	4.4%	6.6%	3.5%	1.9%	-1.7%	-1.9%	-1.1%	1.1%	-7.7%	-0.3%	0.2%
TEXAS A&M UNIVERSITY-COMMERCE	13.3%	3.3%	-1.0%	4.5%	-2.1%	1.5%	2.3%	-1.5%	6.9%	6.0%	-3.6%	0.1%	1.2%	2.7%	-2.5%	-3.7%	-1.9%	1.5%
TEXAS A&M UNIVERSITY-TEXARKANA	12.9%	-1.7%	1.2%	-1.2%	4.9%	0.6%	7.8%	4.5%	12.1%	2.0%	3.7%	-0.1%	10.3%	-8.7%	-3.3%	-2.1%	-6.2%	2.2%
U. OF TEXAS AT SAN ANTONIO	4.5%	1.9%	-0.4%	0.5%	4.0%	4.3%	6.1%	12.0%	10.7%	5.6%	1.2%	1.2%	5.1%	-0.3%	1.0%	-1.2%	2.8%	3.5%
TEXAS A&M UNIV-SAN ANTONIO	33.2%																	
TEXAS A&M UNIVERSITY	0.9%	1.4%	3.2%	2.6%	1.8%	0.3%	-0.8%	-0.6%	1.0%	1.3%	1.3%	8.3%	4.9%	-1.1%	0.0%	-1.3%	-2.1%	1.2%

UTSA Benchmark Study

The chart below graphs the University of Texas-San Antonio enrollment history and their own published projections to identify another scenario. A&M-San Antonio was graphed at a similar trajectory.



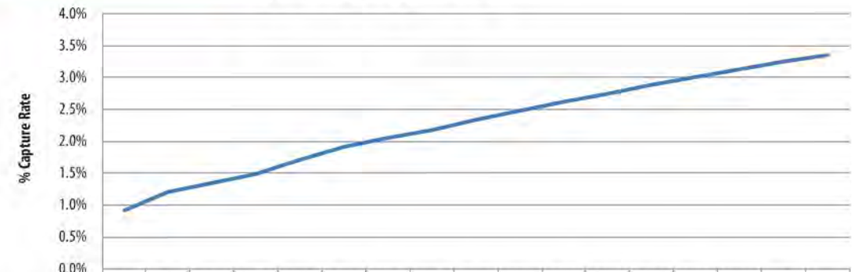
Preliminary Enrollment Projections

Projections Based on Population Growth

The chart below depicts enrollment projections based on the population growth of the top twelve zip codes and top seven counties. In order for A&M-San Antonio to meet enrollment goals they must begin to draw more regional students because the population growth in their top capture areas will not support the desired enrollment growth on their own.

Capture rates vary considerably amongst institutions.

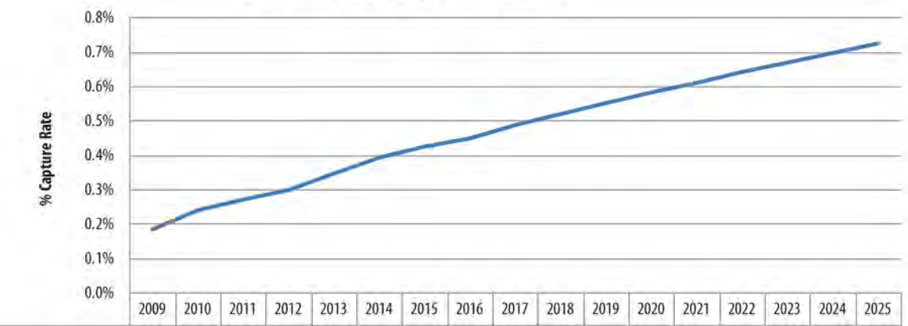
Top Ten Zips Capture Rate



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Top Ten Zips Capture Rate	0.9%	1.2%	1.3%	1.5%	1.7%	1.9%	2.1%	2.2%	2.3%	2.5%	2.6%	2.8%	2.9%	3.0%	3.1%	3.3%	3.4%

Our recent community college studies have hovered between 2-4%.

7-County Area Capture Rates



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
7-County Area Capture Rates	0.2%	0.2%	0.3%	0.3%	0.3%	0.4%	0.4%	0.5%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%	0.7%	0.7%	0.7%

THECB Published Projections

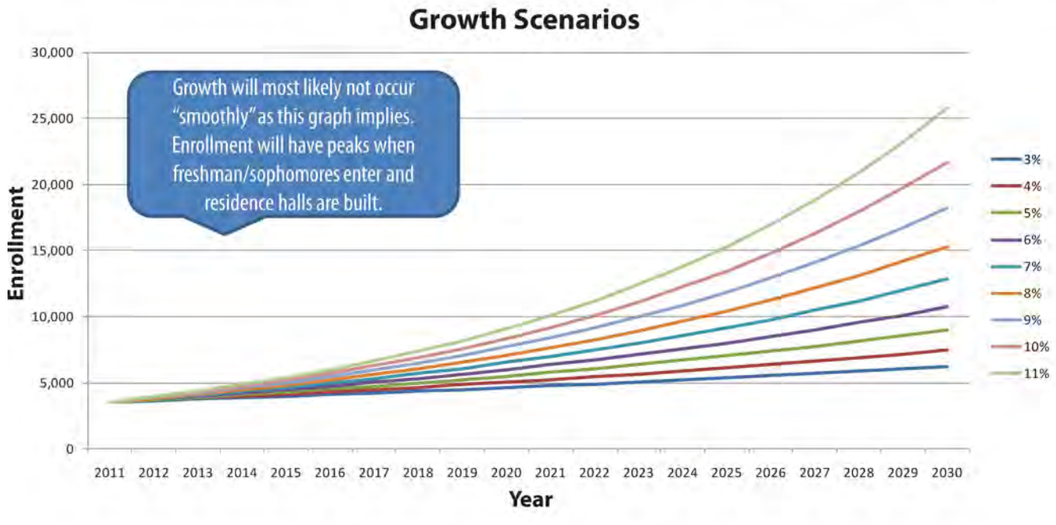
THECB has developed their own enrollment projections for A&M-San Antonio. The university feels these projections are conservative.

Year	THECB Fall Headcount Projection
2011	3,699
2012	4,114
2015	5,350
2020	7,850

Smooth Growth Scenarios

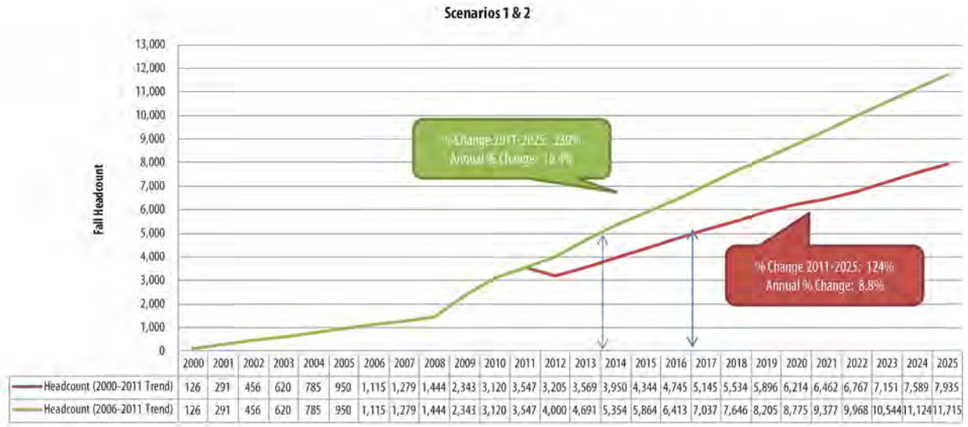
Initially, smooth growth scenarios were looked at to get a sense of the order of magnitude it would take to reach certain enrollment goals.

Growth Scenario	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
3%	3,547	3,653	3,763	3,876	3,992	4,112	4,235	4,362	4,493	4,628	4,767	4,910	5,057	5,209	5,365	5,526	5,692	5,863	6,039	6,220
4%	3,547	3,689	3,836	3,990	4,149	4,315	4,488	4,668	4,854	5,048	5,250	5,460	5,679	5,906	6,142	6,388	6,643	6,909	7,186	7,473
5%	3,547	3,724	3,911	4,106	4,311	4,527	4,753	4,991	5,241	5,503	5,778	6,067	6,370	6,688	7,023	7,374	7,743	8,130	8,536	8,963
6%	3,547	3,760	3,985	4,225	4,478	4,747	5,031	5,333	5,653	5,993	6,352	6,733	7,137	7,565	8,019	8,501	9,011	9,551	10,124	10,732
7%	3,547	3,795	4,061	4,345	4,649	4,975	5,323	5,696	6,094	6,521	6,977	7,466	7,989	8,548	9,146	9,786	10,471	11,204	11,989	12,828
8%	3,547	3,831	4,137	4,468	4,826	5,212	5,629	6,079	6,565	7,090	7,658	8,270	8,932	9,647	10,418	11,252	12,152	13,124	14,174	15,308
9%	3,547	3,866	4,214	4,593	5,007	5,457	5,949	6,484	7,068	7,704	8,397	9,153	9,977	10,874	11,853	12,920	14,083	15,350	16,732	18,237
10%	3,547	3,902	4,292	4,721	5,193	5,712	6,284	6,912	7,603	8,364	9,200	10,120	11,132	12,245	13,470	14,817	16,298	17,928	19,721	21,693
11%	3,547	3,937	4,370	4,851	5,385	5,977	6,634	7,364	8,174	9,073	10,071	11,179	12,409	13,774	15,289	16,971	18,838	20,910	23,210	25,763



Least Squares Fit - No Downward Expansion

This projection is based on the least squared methodology. It does not include downward expansion.



Downward Expansion

Assumptions:

- Upper Classmen represent 50% of Undergraduates for projecting Freshmen
- Freshman added in phases beginning in 2016 on a college by college basis
- Freshman retention rate 62.5% which is based on the table below detailing freshman enrollment and retention for Texas A&M System universities.

TAMU College/ University Branch	Total Under Graduate Enrollment	Freshmen Enrolled Fall 2002	Percentage of Freshman Enrolled	Estimate of Freshman Retained	Freshman Retention Rate
Texas A&M University	36,672	8,645	23.6%	7,729	89.4%
Texas A&M International	2,910	749	25.7%	478	63.8%
TAMU - Prarie View	5,496	2,071	37.7%	1,433	69.2%
TAMU - Galveston	1,504	589	39.2%	348	59.1%
Tarleton State	6,853	1,783	26.0%	1,098	61.6%
TAMU - Commerce	4,813	1,207	25.1%	775	64.2%
TAMU - Corpus Christi	5,955	1,597	26.8%	998	62.5%
TAMU - Kingsville	5,157	1,685	32.7%	981	58.2%
TAMU - Texarkana	872	11	1.3%	n/a	n/a
West Texas A&M University	5,344	1,359	25.4%	896	65.9%
TAMU SYSTEM OVERALL	74,704	19,685	26.4%	14,735	74.9%
TAMU BRANCHES ONLY	38,032	11,040	29.0%	7,007	62.5%

Source: Texas Higher Education Coordinating Board " Texas Public Universities' Data and Performance Report" August 2004

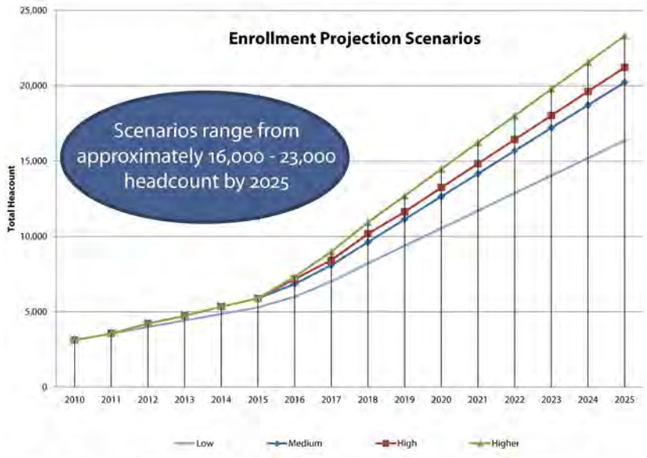
Final Enrollment Projections

Enrollment Projection Scenarios

Four projection scenarios were developed as part of the process for the Development Plan Update. These scenarios, illustrated in the graph below, were labeled: low, medium, high, higher. The medium through higher scenarios focused on what it would take for A&M-San Antonio to reach (or come close to) becoming the second largest university in the Texas A&M University System.

Meetings with the university administration revealed that the low scenario appears to be the most realistic scenario given current understanding of mitigating factors. It is important to note, that funding constraints may hinder the construction of additional facilities, which may in turn constrain enrollment growth.

The four scenarios are presented on the following pages from highest to low.

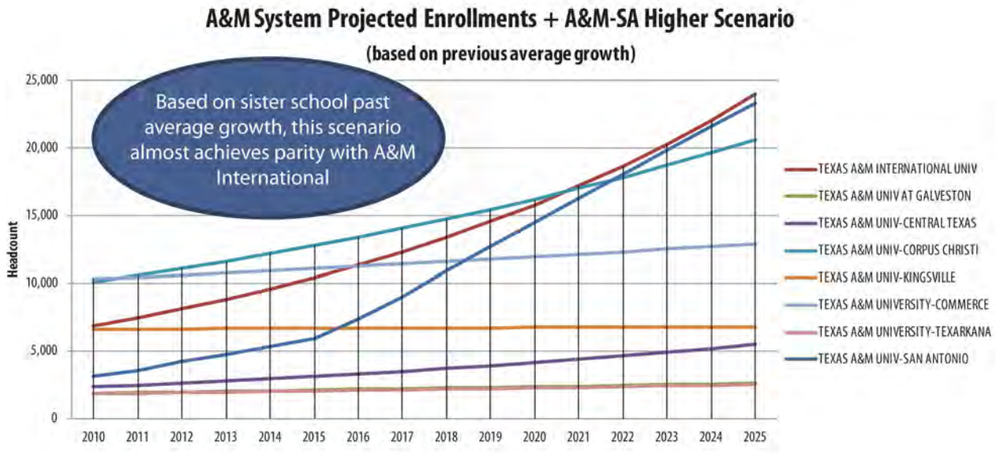


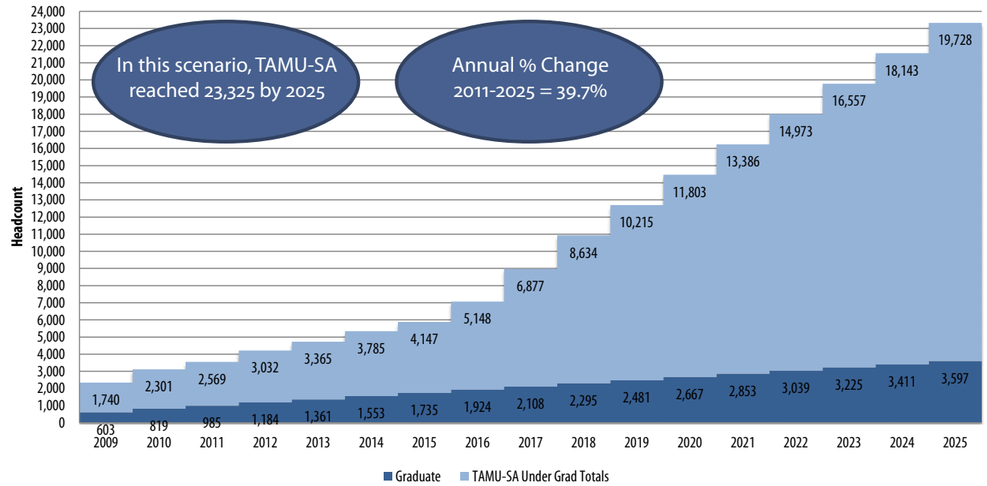
The following table highlights the assumptions which fed into the development of the enrollment projections.

	Low	Medium	High	Higher
International Students	3.5% of total enrollment	3.5% of total enrollment	7% of total enrollment	10% of total enrollment
Freshman	26.4% of undergrads	26.4% of undergrads	26.4% of undergrads	26.4% of undergrads
Veterans (beginning in 2016)	80	100	200	400
Mexican Nationals (beginning in 2016 & increasing in-line with growth scenario)	20	30	60	120
Sophomore (Freshman retention rate)	62.5%	62.5%	75%	89%

Higher Enrollment Scenario

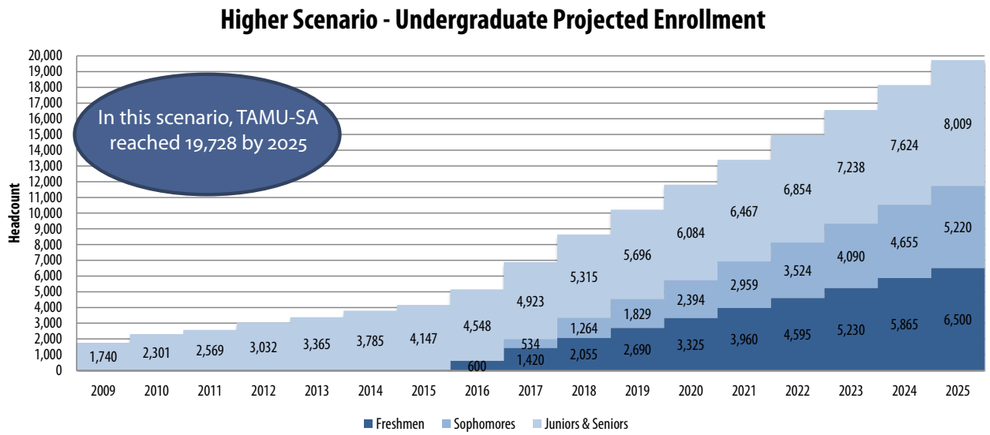
The graph below shows A&M-San Antonio nearly matching A&M-International in enrollment, reaching 23,325 students by 2025. However, even in this highest enrollment scenario, A&M-San Antonio does not become the second largest university in the Texas A&M University System.





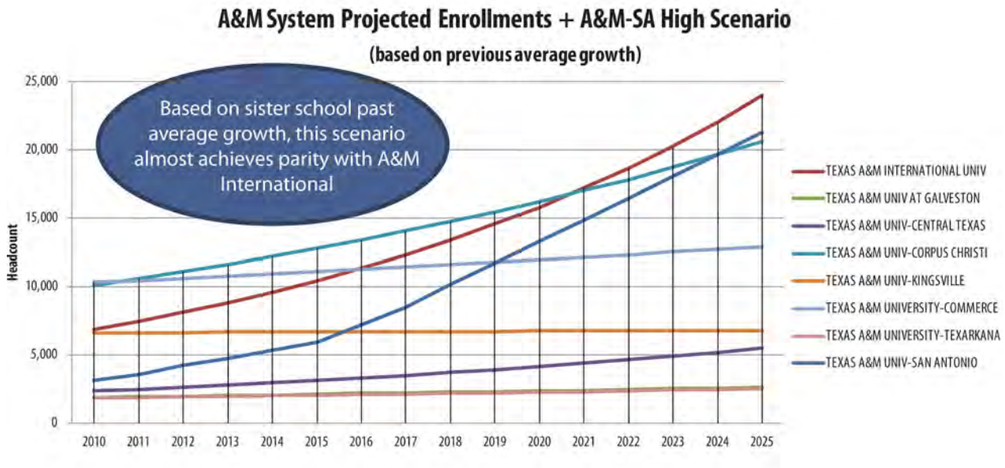
The bar graph above shows enrollment growth separated by graduate students (dark blue) and undergraduate students (light blue). There is an annual percent change of 39.7%.

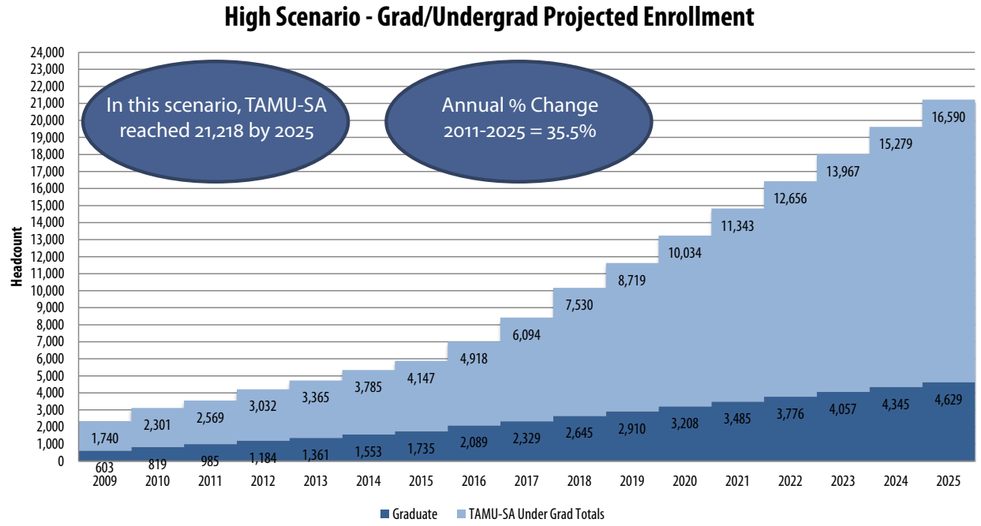
The bar graph below further breaks down projected undergraduate enrollment by freshman, sophomores, and juniors and seniors.



High Enrollment Scenario

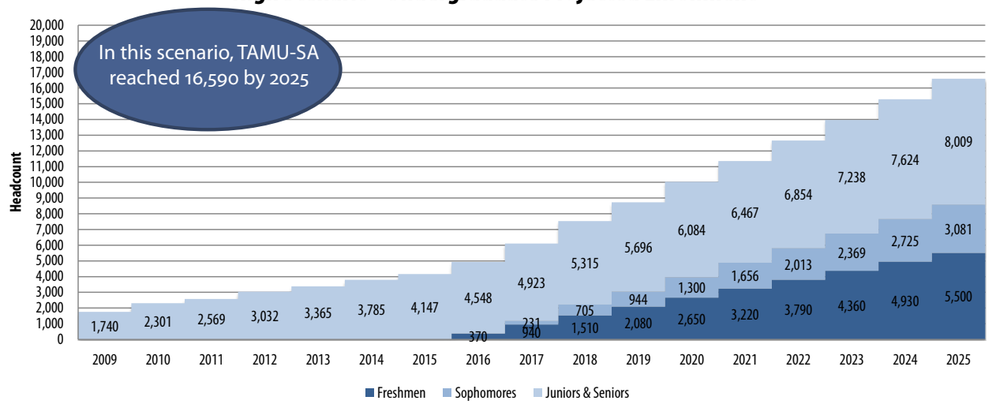
The graph below shows A&M-San Antonio exceeding A&M-Corpus Christi enrollment, reaching 21,218 students by 2025. A&M-San Antonio lags behind A&M-International in enrollment projections.





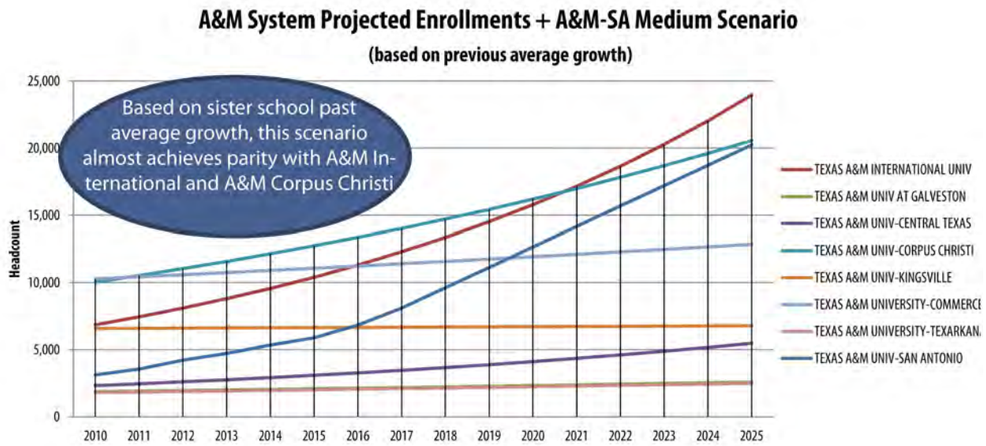
The bar graph above shows enrollment growth separated by graduate students(dark blue) and undergraduate students (light blue). There is an annual percent change of 35.5%.

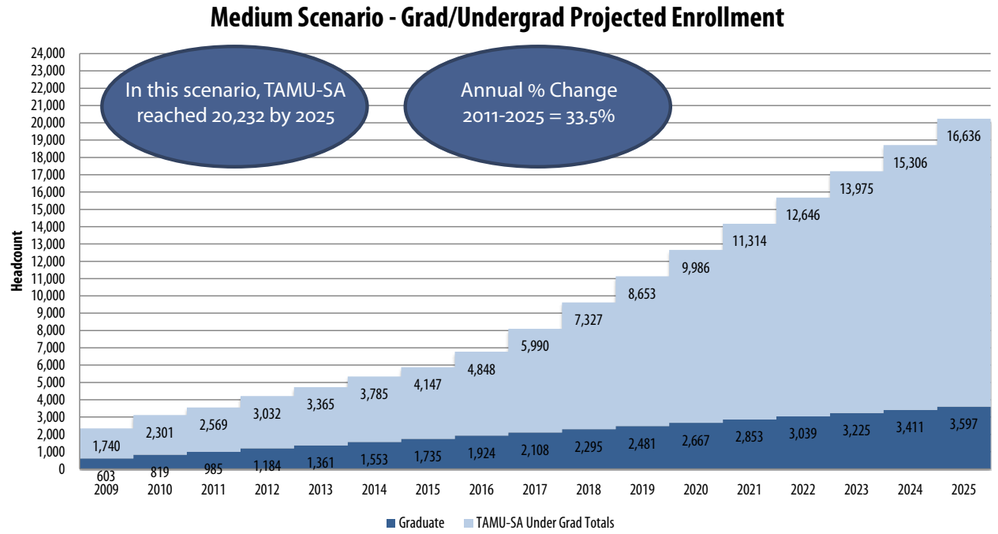
The bar graph below further breaks down projected undergraduate enrollment by freshman, sophomores, and juniors and seniors.



Medium Enrollment Scenario

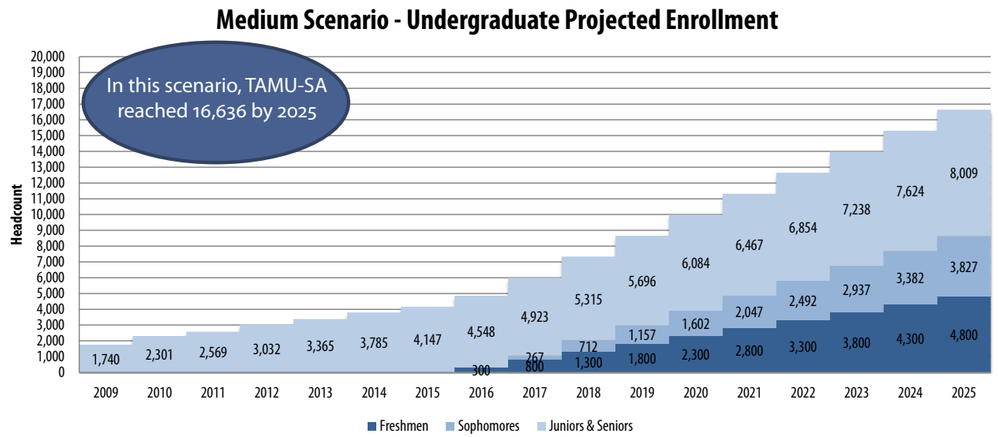
The graph below shows A&M-San Antonio just behind A&M-Corpus Christi in student enrollment, reaching 20,232 students by 2025.





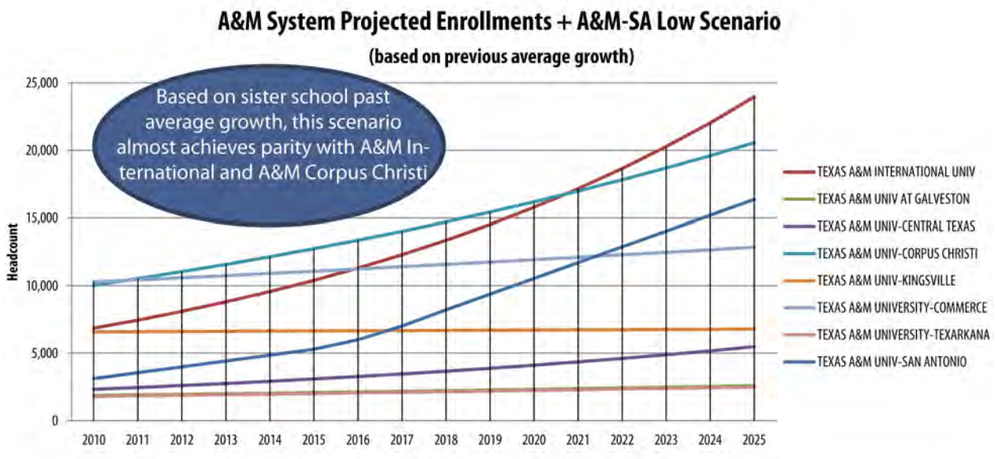
The bar graph above shows enrollment growth separated by graduate students(dark blue) and undergraduate students (light blue). There is an annual percent change of 33.5%.

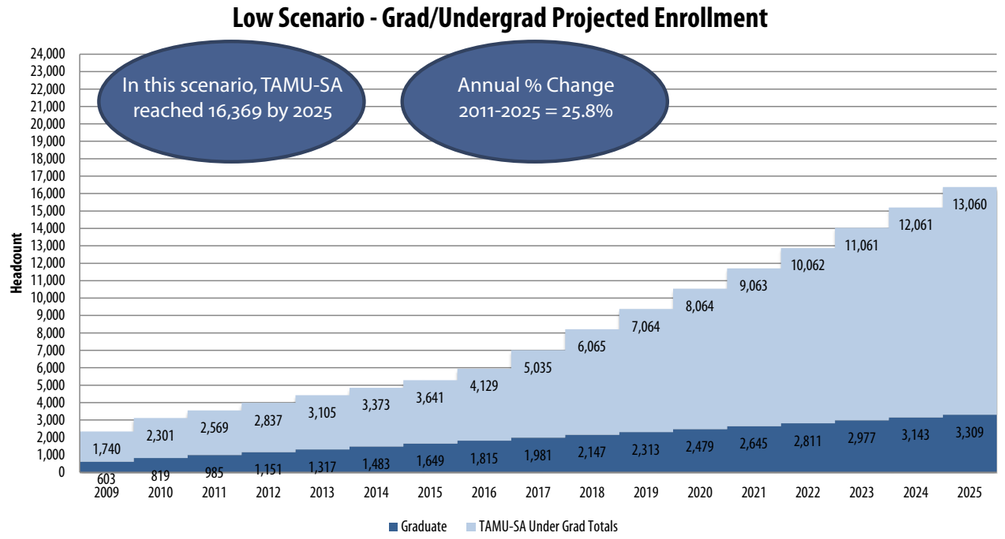
The bar graph below further breaks down projected undergraduate enrollment by freshman, sophomores, and juniors and seniors.



Low (Preferred) Enrollment Scenario

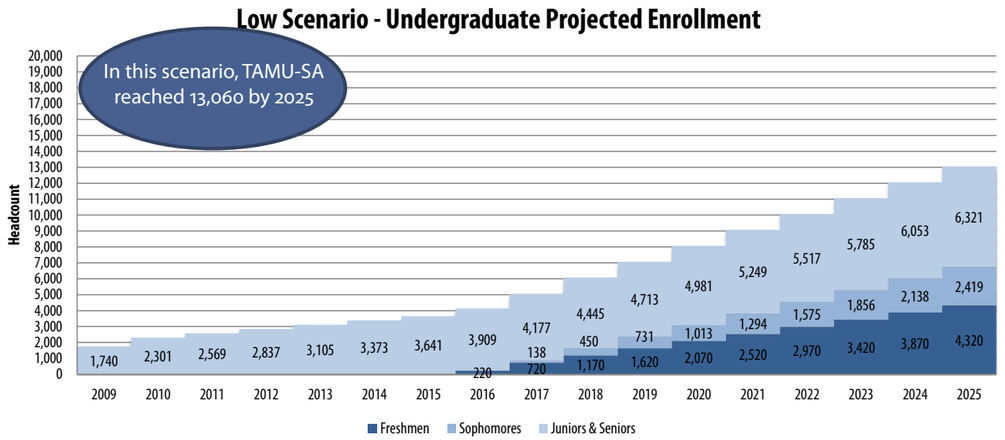
The graph below represents the preferred enrollment projection. While the projections are still aggressive, the university administration feel that they are attainable. This enrollment projection shows A&M-San Antonio well behind A&M-International and A&M-Corpus Christi in projected enrollment. A&M-San Antonio would reach 16,369 by 2025 in this enrollment scenario.





The bar graph above shows enrollment growth separated by graduate students (dark blue) and undergraduate students (light blue). There is an annual percent change of 25.8%.

The bar graph below further breaks down projected undergraduate enrollment by freshman, sophomores, and juniors and seniors.



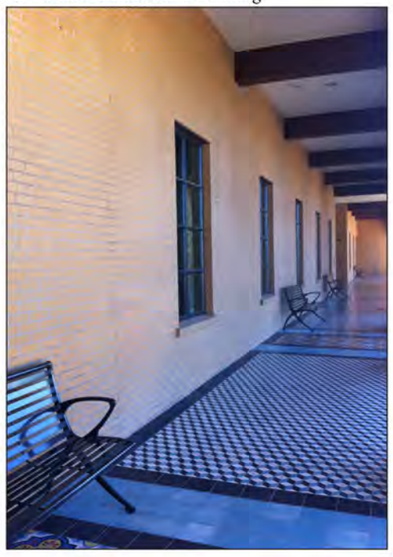
This section will cover the following subjects:

- Existing Distribution of Spaces
- Benchmarking - Space Sizes and Types, SF/Student
- Existing Space Utilization
  - Introduction
  - Classrooms
  - Laboratories

Overview

The space analyzed as part of this study examined both the academic and non-academic campus space. In most cases, the current space needs are represented in assignable square feet which describes the amount of space between walls. Assignable square feet does not include corridors, restrooms, and other building support spaces or structural elements like walls and columns. This is in contrast to gross square feet which encompasses the total enclosed area of a building. An efficiency factor of 65% was used to convert from ASF to GSF in this study.

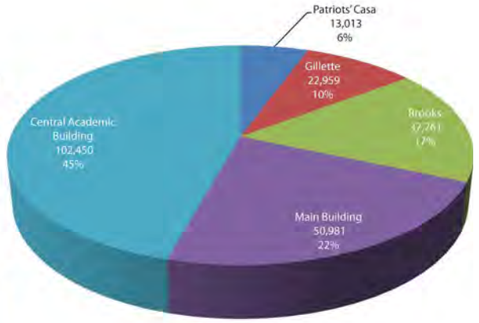
A&M-San Antonio Main Building



Existing Space Distribution

Existing space is distributed between the Main Building recently constructed on the A&M-San Antonio Main Campus and leased properties. The goal is to eventually abandon the leased properties and bring all university functions onto the main campus.

The Brooks facility is a building located on Brooks City-Base. The Gillette property is an old public school campus; currently only one of the buildings on that campus is in active use.



Building	ASF Available	ASF Future Construction
Gillette	22,959	
Brooks City-Base	37,761*	
Main Building	50,981	
Central Academic Building		102,450
Patriots' Casa		13,013
Total	**227,164**	

*THECB space inventory of 37,761 ASF does not include spaces that are off-line. Actual building ASF is more like 46,000 ASF.

The spaces listed in the table below are those published by the THECB in Fall 2011. Some of these properties are no longer in use.

Name	Departments	Status	Floor	Rooms	GSF	NASF	E&G
TEEX	N/A	Lease Expired	1	41	11,327	7,254	7,254
Gillett CLASSROOM ANNEX	Mostly empty, occasionally used for community service functions, furniture storage, alternate certification program (COE)	Lease 2015	1	24	14,861	0	0
Gillette ADMINISTRATION BUILDING	Payroll, HR, Purchasing, Accounts Payable, Comptroller, Data Analysis	Lease 2015	2	72	38,641	0	0
Gillette GYM	Not in active use, mostly used for storage	Lease 2015	1	3	3,559	0	0
Gillette PORTABLE BUILDING 1	Empty/storage	Lease 2015	1	5	1,359	0	0
Gillette PORTABLE BUILDING 2	Empty/storage	Lease 2015	1	3	1,453	0	0
BROOKS CITY BASE ACADEMIC BUILDING		Lease 2015	1	118	77,648	37,761	27,645
MAIN CAMPUS BUILDING 1		Own	3	257	90,300	50,981	45,106
			Total	523	239,148	95,996	80,005

Square Feet Per Student - Constructed Space

Benchmarking comparing existing square feet per student at A&M-San Antonio against other Texas universities was compiled in order to assess existing shortfalls and to compare against the space projections developed for A&M-San Antonio.

In Fall 2011, A&M-San Antonio fell at the bottom of the list in terms of available gross square feet per student headcount at 67 GSF/student. The University of North Texas at Dallas, another school that was recently opened, was the next institution on the list at 89 GSF/student. The average gross square feet per headcount is 225 GSF/headcount.

Projected space need using the CEFPI results in gross square feet per student ranges between 86 and 96 GSF/student. Using the THECB standards for space projections, the average gross square foot per student would be approximately 98 GSF/student. When comparing gross square feet per student of other institutions, it is important to note that universities that are heavily research oriented, and/or have space intensive programs, will have more gross square feet per student. The space calculations for A&M-San Antonio do not assume that the university will be heavily research orientated. Rather they take a conservative approach to space needs.

It is proposed that a suitable goal for built space on campus would be 100 gross square feet per student. The table on the following page illustrates the range of gross square feet per student headcount amongst Texas institutions. Currently A&M-San Antonio is at the bottom of the list.

Texas Public Universities	Prel Headcount Fall 2011	ALL GSF	GSF/HC
Texas A&M San Antonio	3,547	239,148	67
University of North Texas at Dallas	2,037	181,254	89
Sul Ross State University Rio Grande College	970	93,222	96
University of Houston-Clear Lake	8,188	820,510	100
Texas A&M University-Central Texas	2,100	220,097	105
University of Houston-Downtown	12,918	1,424,440	110
The University of Texas-Pan American	19,041	2,429,840	128
Texas A&M International University	7,176	943,744	132
University of Houston-Victoria	4,331	575,633	133
The University of Texas at San Antonio	30,968	4,610,847	149
The University of Texas at Arlington	33,421	5,222,007	156
Texas Woman's University	14,459	2,496,335	173
The University of Texas at Tyler	6,650	1,175,498	177
The University of Texas at Dallas	18,854	3,347,260	178
Texas A&M University-Texarkana	1,942	354,736	183
Lamar University	14,021	2,684,454	191
Texas A&M University-Corpus Christi	10,192	1,971,331	193
University of North Texas	35,722	7,079,179	198
Tarleton State University	9,885	2,055,214	208
Texas State University - San Marcos	34,113	7,151,536	210
The University of Texas at El Paso	22,640	4,750,194	210
Texas A&M University-Commerce	11,152	2,357,261	211
Sam Houston State University	17,950	3,954,953	220
Midwestern State University	6,182	1,544,889	250
The University of Texas at Brownsville	8,539	2,214,418	259
Texas Southern University	10,026	2,630,875	262
University of Houston	39,824	10,465,106	263
The University of Texas of the Permian Basin	3,824	1,005,587	263
Angelo State University	7,084	1,927,300	272
Texas Tech University	32,327	8,821,821	273
Prairie View A&M University	8,623	2,453,746	285
West Texas A&M University	7,902	2,489,950	315
Texas A&M University at Galveston	2,034	681,037	335
Texas A&M University-Kingsville	6,737	2,272,299	337
Stephen F. Austin State University	12,903	4,748,289	368
Texas A&M University	49,861	21,173,893	425
The University of Texas at Austin	51,145	24,055,811	470
Sul Ross State University	2,035	1,135,900	558

Space Utilization Analysis

Utilization measures the current use of existing facilities, benchmarked against standards that are informed by THECB guidelines. A thorough understanding of the university's space utilization serves as an analytical tool to determine space requirements and measure the viability of existing or proposed alternatives. The process also assists in identifying where deficiencies exist in scheduling practices or where facility shortages occur. The intent of the analysis is to survey the efficiency of existing space. Due to the fact that A&M-San Antonio is a fairly young campus, the utilization study evaluates a relatively small number of classrooms and only one laboratory. Because of this, classroom and laboratory need moving forward will need to be guided based on pedagogy and course offerings as the university develops its programs.

Determining efficiency is accomplished by exploring usage trends and evaluating patterns by multiple factors. The factors which are considered are scheduling, occupancies, and space functionality. The current inventory of space was reviewed alongside the Fall 2011 class schedule to determine the weekly usage of classrooms and lab.

Utilization was determined for Fall 2011 classes and lab.

Classroom Utilization

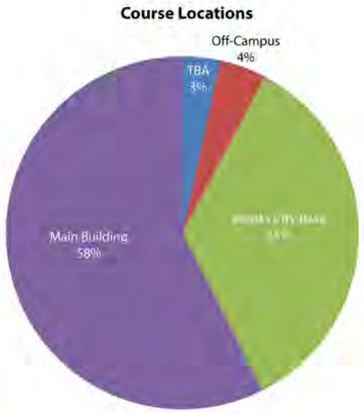
Currently A&M-San Antonio holds class at the Main Building and Brooks City-Base. Although the classrooms at Brooks City-Base were examined, they were not included when calculating future need.

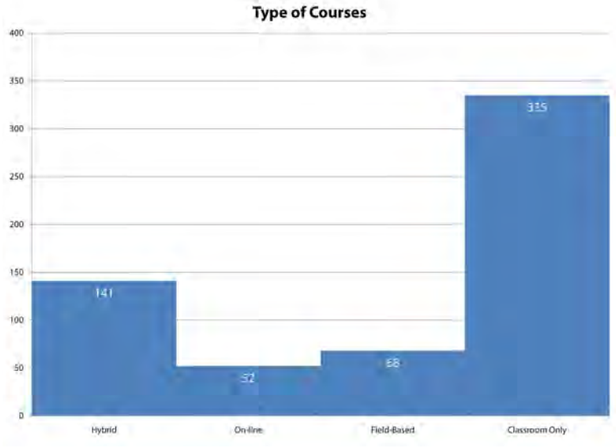
Findings

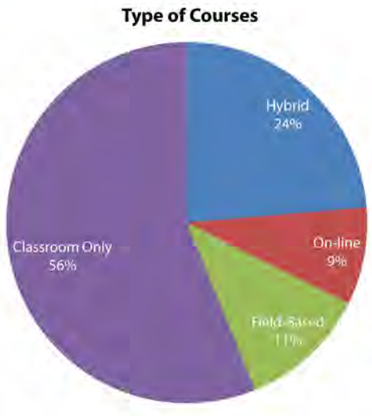
- Overall utilization is 28 periods/week
  - Main Building utilization is 34 periods/week.
  - Brooks City-Base utilization is 21 periods/week.
- There are currently 18 classrooms at Brooks City-Base, the majority of which have a capacity of 36
  - Brooks City-Base also has an auditorium with a capacity of 144.
  - These classrooms and the auditorium will need to be replaced with spaces on the main campus when Brooks City-Base is abandoned.
- There are 21 classrooms in the Main Building, all of which have a capacity of 36
- 20 ASF/station is the classroom average at the Main Building
  - 25 ASF/station is a more suitable standard for tables and chairs based on benchmarking.

The university has reported that the existing 36 capacity classrooms with tables and chairs in the Main Building are a good size for current pedagogy, although larger classrooms are currently needed as well. In the future it is anticipated that larger classes will be required to meet demand. Laboratory sections may be combined for the lecture portion requiring a larger classroom. Core curriculum classes will also require larger classrooms. It is anticipated that an auditorium would be scheduled for classes every semester.

Hybrid courses represent 1/4th of the courses currently offered. Hybrid classes are defined by the THECB as a minimum of 51% of instruction delivered face to face and 49% delivered via the internet.

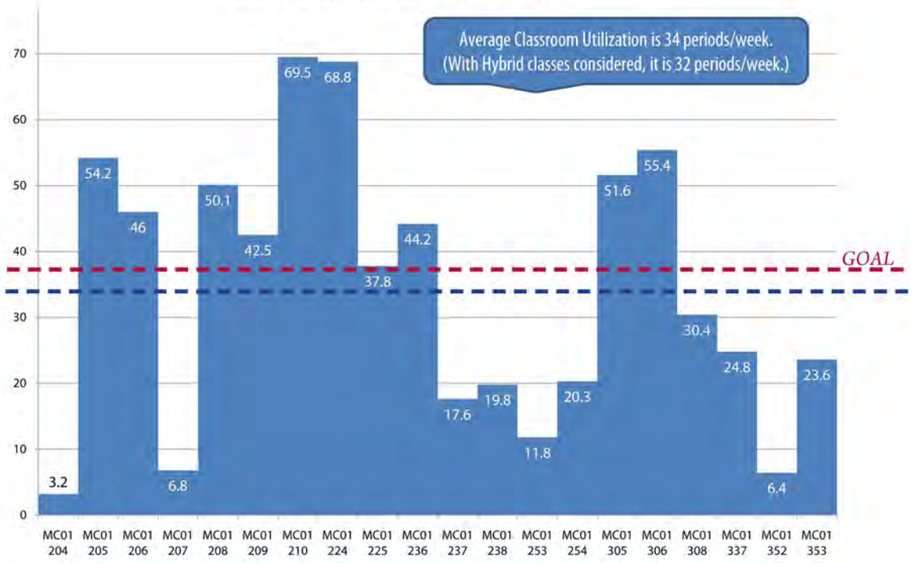




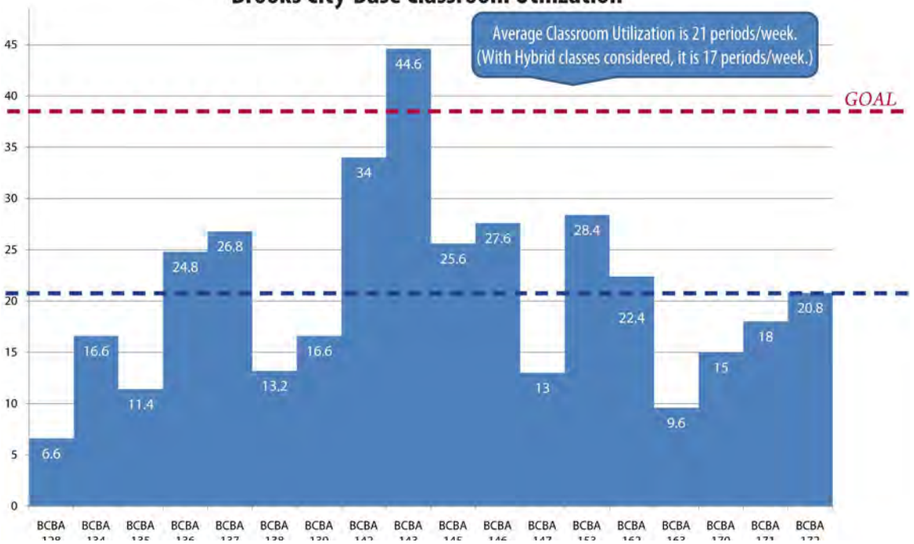


Main Building Classroom Utilization

THECB targets a utilization of 38-45 periods a week for classrooms, with credit also given for classes with high fill rates. Main Building rooms 204 and 207 has been removed from the classroom inventory. This will improve utilization numbers.



Brooks City-Base Classroom Utilization



Classroom Demand Analysis

An integral step in classroom planning is to determine the need and number for classrooms of any given capacity. Below is a profile of current class section sizing patterns and is indicative of the classroom sizes necessary to support all of the current departments. By determining the required number of rooms based on the room capacities, classroom demand is generated and deficiencies are revealed. Using a target utilization of 38 periods per week, the demand analysis indicates the need for approximately 31 classrooms for a student enrollment of 5,000.

The classroom demand analysis chart below shows that 31 classrooms are required. However, it also indicates that 38 classrooms are available. This juxtaposition can be explained by looking at the surplus and deficit of specific capacity classrooms. For example, the balance column in the table below shows a surplus of 7 classrooms overall. When looking at the need for classrooms with a specific capacity, there is a deficit of 40 capacity classrooms and the need for an additional 88 capacity classroom. The surplus in 27 capacity classrooms is what skews the total classroom balance to a positive number.

New classroom construction should focus on building classrooms that are sized appropriately. Currently there is a need for larger classrooms. As A&M-San Antonio enrollment grows, they will grow into the smaller classrooms of which there is a surplus.

Fall 2011 Classroom Demand Analysis

Section Size	Total Sections	Total Required Room Periods	Max Room Capacity	Total Required Rooms	No. of Available Rooms	Balance
001 - 013	9	18	20	1	1	0
014 - 027	141	394	40	11	37	26
028 - 040	233	661	55	18	0	(18)
041 - 053	0	0	70	0	0	0
054 - 068	0	0	90	0	0	0
069 - 088	13	26	110	1	0	(1)
089 - 131	0	0	150	0	0	0
132 - 174	0	0	200	0	0	0
175 - 196	0	0	225	0	0	0
TOTALS	396	1,099		31	38	7

Explanation of Demand Analysis Chart

The "Section Size Range" column categorizes the range of students in the course-sections. The number of sections according to the size range, requiring the use of general assignment classrooms, is listed under the "Total Sections" column. The "Total Required Room Periods" pertains to the cumulative number of scheduled weekly full-time equivalent (FTE) teaching periods of all sections included in the range. The normal teaching period is considered to be 50 minutes. Thus, 50 minutes of class time equals 1 weekly room period. The "Max Room Capacity" is the number of seats that must be in the room in order to accommodate the largest section to be scheduled in the room, the upper limit of the section size range, and must take into consideration the margin for scheduling variations. A "cushion" is applied in planning by intentionally sizing the seating capacities per room to exceed measured demand in scheduling. The "cushion" serves as a sliding scale that affords smaller rooms with a greater margin and larger rooms with less of a margin. This variable margin results in better utilization of space by over sizing larger rooms. The "Total Required Rooms" is the necessary amount of rooms required to accommodate the total number of periods in the section size range. The THECB goal of efficiency is achieved when a room is used a minimum of 38 periods per week. The "No. of Available Rooms" is the current number of rooms providing tablets or tables and chairs in the section size range. The "Balance" column indicates the current deficit or surplus of each room capacity category.

Laboratory Analysis

There is currently only one lab scheduled for laboratory classes. That lab is located in the Main Building. It is a general purpose lab with two fume hoods. This lab is used 18 periods a week.

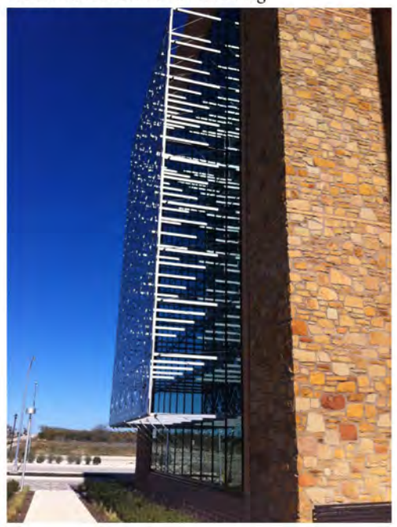
Additional laboratories are required that are more subject specific. A general studies lab such as the existing lab would be more appropriate for training science teachers.

Moving forward, laboratory demand will be driven by need based on programs. It is anticipated that the new Central Academic Building will contain molecular biology, field biology, organic chemistry, and communications labs.

This section will cover the following subjects:

- Space Requests
- Space Standards
- Space Projections

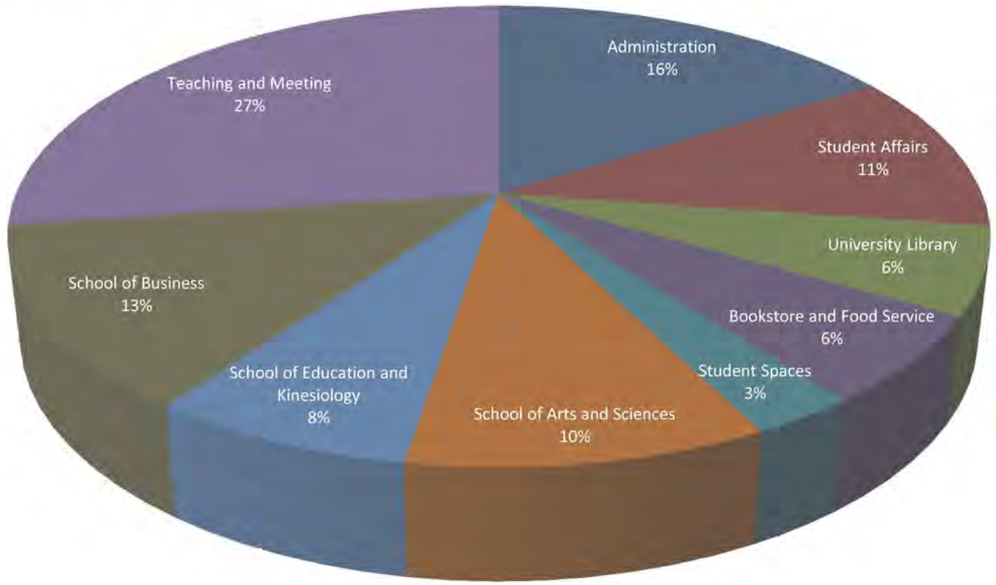
A&M-San Antonio Main Building



Space Requests

During the same time period as this development plan update effort, the university contracted with Facility Programming and Consulting to program space needs for A&M-San Antonio through 5,000 students. The resulting list of space needs, published on the following three pages, represents a vetted, conservative approach. It is not a list based on calculated space projections, rather a list intended to move the university through it's early stages of growth, identifying essential space needs. The space projections discussed later in this chapter list the ideal square feet needed per space type, organized by enrollment milestones.

Space Request Summary - Pie Chart



Space Request Summary - 5000 Enrollment

Administration	
President's Office	Total ASF
Sub-Total President's Office	2,566
Provost's Office	
Sub-Total Provost's Office	2,590
Finance and Administration - Main Office	
Sub-Total Finance and Administration - Main Office	2,074
Finance and Administration	
Sub-Total Finance and Administration Office	18,046
Campus Safety and Security	
Sub-Total Campus Safety and Security Office	2,606
University Communications	
Sub-Total University Communications Office	1,306
Administration Services - Total ASF	29,186

Student Affairs	
Student Affairs	Total ASF
Sub-Total Student Affairs Office	2,053
Student Affairs - Welcome Center/Communication Center/One Stop Shop	
Sub-Total Student Affairs Welcome Center Office	3,061
Student Affairs - Admissions	
Sub-Total Student Affairs - Admissions	1,736
Student Affairs - Registrar	
Sub-Total Student Affairs -Registrar	1,686
Student Affairs - Office of International Students	
Sub-Total Student Affairs - Office of International Students	248
Student Affairs - Financial Aid & Military and Veteran Certification Office	
Sub-Total Student Affairs - Financial Aid & Military and Veteran Certification Office	1,999
Student Affairs - Technology	
Sub-Total Student Affairs - Technology	650
Student Affairs - Student Engagement and Success	
Sub-Total Student Affairs - Student Engagement	3,776
Student Affairs - Student Life/Activities	
Sub-Total Student Affairs - Student Life Office	1,824
Student Affairs - Testing and Tutoring/Writing Center	
Sub-Total Student Affairs - Testing and Tutoring Center	3,130
Student Affairs - Total ASF	20,165

University Library	
Offices	Total ASF
Sub-Total Library Office Space	2,802
Public Areas	
Sub-Total Library Space	8,230
Library - Total ASF	11,032

Vendor Space	
Food Service	Total ASF
Sub-Total Food Service Space	7,260
Bookstore	
Sub-Total Bookstore	4,010
Vendors - Total ASF	11,270

Student Spaces	
Student Spaces	Total ASF
Sub-Total Student Space	5,325
Student - Total ASF	5,325

Arts and Sciences	
Administrative Suite	Total ASF
Administrative Suite Space	3,088
Faculty and Support Spaces	
Total Faculty and Support Space	6,042
Teaching and Support Spaces	
Sub-Total Teaching and Research Spaces	9,080
Arts and Science - Total ASF	18,210

Education and Kinesiology	
Administrative Suite	Total ASF
Administrative Suite Space	1,792
Leadership and Counseling	
Total Leadership and Counseling	1,738
Curriculum and Kinesiology	
Total Curriculum and Kinesiology	682
Teacher Preparation and Certification Center (TPCC)	
Teacher Preparation and Certification Center	767
Faculty and Support Spaces	
Sub-Total Faculty and Support Space	5,315
Teaching and Support Spaces	
Sub-Total Teaching and Support Spaces	3,088
Education and Kinesiology - Total ASF	13,381

School of Business	
Administrative Suite	Total ASF
Administrative Suite Space	2,831
Faculty and Support Spaces	
Sub-Total Faculty and Support Space	5,760
Center for Cyber Security	
Total Cyber Security	8,356
Center for International Education	
Total Center for International Education	406
Learning Technology Laboratory	
Total Learning Technology Laboratory	610
Centers Shared Spaces	
Total Centers Shared Spaces	732
Teaching & Support Spaces	
Sub-Total Teaching Spaces	4,590
School of Business - Total ASF	23,284
Teaching, Meeting and Support Spaces	
Auditorium	Total ASF
Sub Total Auditorium Space	9,350
Event Spaces	
Sub-Total Event Spaces	5,400
Classrooms	
Sub-Total Classrooms	31,305
Support Spaces	
Sub-Total Event Spaces	3,195
Teaching, Meeting and Support Spaces - Total ASF	49,250
Space Need Subtotal ASF	181,102
Net to Gross (60%)	*120,735*
SPACE NEED TOTAL	301,837

Space Standards

Standard office space sizes were developed for use when planning future construction projects. By standardizing office spaces, furnishings can be standardized. Additionally, this prevents conflicts with staffing based on office sizes.

The standardized office sizes are:

- President
  - 300 SF
- Vice President
  - 225 SF
- Dean
  - 175 sf
- Associate Dean/Associate Vice President/Department Chair
  - 150 SF
- Assistant Dean/Assistant Vice President/Director
  - 135 SF
- Faculty/Associate Director/Advisor/Counselor/Professional Staff
  - 120 SF
- Departmental Office Activity (Secretary, Technician, administrative assistant - with private offices)
  - 110 SF
- Group Support Activity - Large/Staff Workstation
  - 96 SF (8'x8' + circulation factor)
- Group Support Activity - Small Workstation
  - 72 SF (6'x8' + circulation factor)
- Student Worker/Graduate Teaching
  - 54 SF (6'x6' + circulation factor)
- Reception
  - 20 SF per person

Space Projections

Several techniques were used to predict space needs for A&M-San Antonio as the university grows. Rather than attempt to predict space needs based on a specific year, thresholds of enrollment were used. The categories were 5,000, 10,000, 15,000, 20,000, 25,000 enrollment. By associating space projections with enrollment rather than year, the campus can assess space need based on actual enrollment, rather than attempting to follow a predetermined enrollment growth prediction that may not stay on trend.

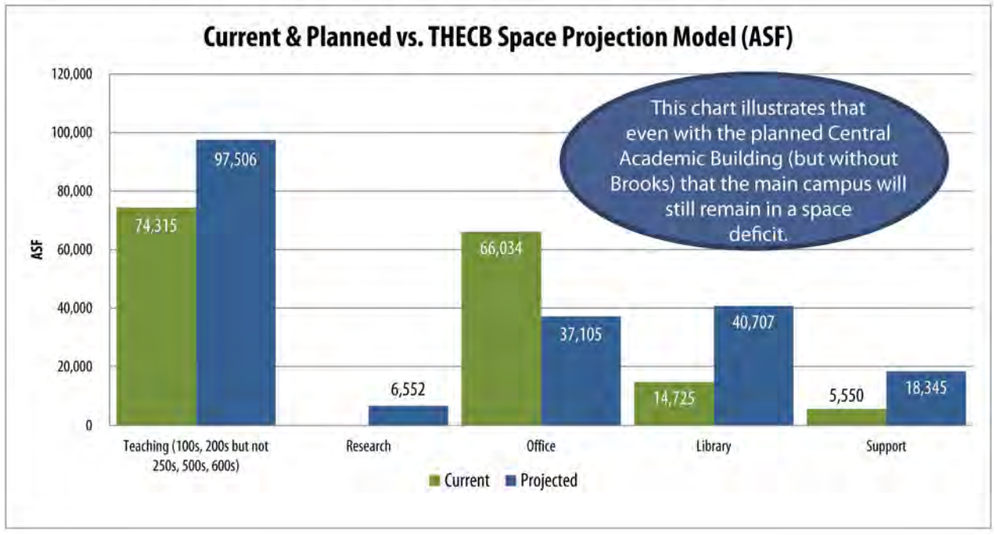
Five methodologies were used to determine space needs. These methodologies are:

- Using a predetermined gross square feet per student
- Comparing existing, published, THECB calculations for other institutions in each enrollment category
- THECB formulas to predict space
- CEFPI formulas to predict space
- Benchmark space sizes
- Professional organizations space recommendations

These various methods used to calculate space projections all resulted in space predictions within 10% of each other, validating the accuracy of the space predictions.

Known Space vs. THECB Space Projection

The bar chart below compares the existing (and funded) assignable square feet on the main campus to the Fall 2011 THECB calculations for space need. Even with the anticipated new construction, the campus is in a space deficit. The existing square feet is the bottom number listed in the bar chart while the THECB recommendations are the upper numbers. At this time, there is no pure research space programmed for the campus.



Set Gross Square Feet per Student

Using 100 gross square feet per student, the following space recommendations can be made:

- 5,000 Students
  - 500,000 GSF
- 10,000 Students
  - 1,000,000 GSF
- 15,000 Students
  - 1,500,000 GSF
- 20,000 Students
  - 2,000,000 GSF
- 25,000 Students
  - 2,500,000 GSF

Using Existing THECB Recommendations

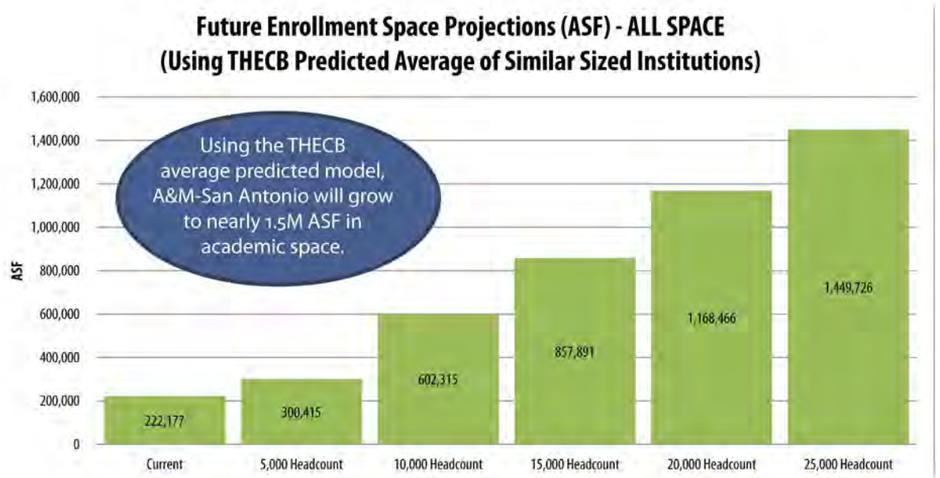
One way that space projections for the A&M-San Antonio campus were undertaken was to look at existing THECB recommendations for other Texas universities of various sizes. The averages for institutions currently at 5,000, 10,000, 15,000, 20,000, and 25,000 enrollment were used to predict the amount of space A&M-San Antonio will need at each of those enrollment categories. This was used to validate the space projections when compared to other methods.

Current Enrollment Space Projections(ASF)
(Using THECB Predicted Average of Similar Sized Institutions)

Space Type	Actual THECB Predicted	Average THECB Predicted
Teaching (100s, 200s but not 250s, 500s, 600s)	97,506	97,506
Research	6,552	6,552
Office	59,067	26,350
Library	40,707	52,905
Support	18,345	16,498
Total	**222,177**	**199,811**

There is a 10% margin of difference

Using existing THECB projections of similar sized institutions for 5,000, 10,000, 15,000, 20,000, 25,000 enrollment thresholds, space needs for A&M-San Antonio was predicted. The results are illustrated in the bar chart and table below.



Future Enrollment Space Projections(ASF) (Using THECB Predicted Average of Similar Sized Institutions)						
Space Type	**Current**	**5,000 Headcount**	**10,000 Headcount**	**15,000 Headcount**	**20,000 Headcount**	**25,000 Headcount**
Teaching (100s, 200s but not 250s, 500s, 600s)	97,506	168,750	374,500	532,500	739,500	920,875
Research	6,552	9,375	18,750	28,125	37,500	46,875
Office	59,067	37,144	74,288	111,432	148,576	185,720
Library	40,707	60,341	85,045	114,999	146,411	176,553
Support	18,345	24,805	49,732	70,835	96,479	119,702
Total	**222,177**	**300,415**	**602,315**	**857,891**	**1,168,466**	**1,449,726**

THECB and CEFPI Recommendations

The THECB predicted averages model was then compared to the CEFPI calculations. The difference in these two methods ranged between 2.1% and 9.8% difference as listed in the tables below. The bar chart on the following page visually compares the two methodologies.

5,000 Headcount Space Projections(ASF) Comparison THECB Predicted vs. CEFPI		
Space Type	**Average THECB Predicted**	**CEFPI**
Teaching (100s, 200s but not 250s, 500s, 600s)	168,750	218,279
Research	9,375	5,000
Office	37,144	35,647
Library	60,341	47,738
Support	24,805	23,218
Total	**300,415**	**329,883**

-9.8%

10,000 Headcount Space Projections(ASF) Comparison THECB Predicted vs. CEFPI		
Space Type	**Average THECB Predicted**	**CEFPI**
Teaching (100s, 200s but not 250s, 500s, 600s)	374,500	415,381
Research	18,750	5,991
Office	74,288	71,291
Library	85,045	81,148
Support	49,732	41,202
Total	**602,315**	**615,013**

-2.1%

15,000 Headcount Space Projections(ASF) Comparison THECB Predicted vs. CEFPI		
Space Type	**Average THECB Predicted**	**CEFPI**
Teaching (100s, 200s but not 250s, 500s, 600s)	532,500	607,322
Research	28,125	8,986
Office	111,432	106,939
Library	114,999	103,729
Support	70,835	59,951
Total	**857,891**	**886,927**

-3.4%

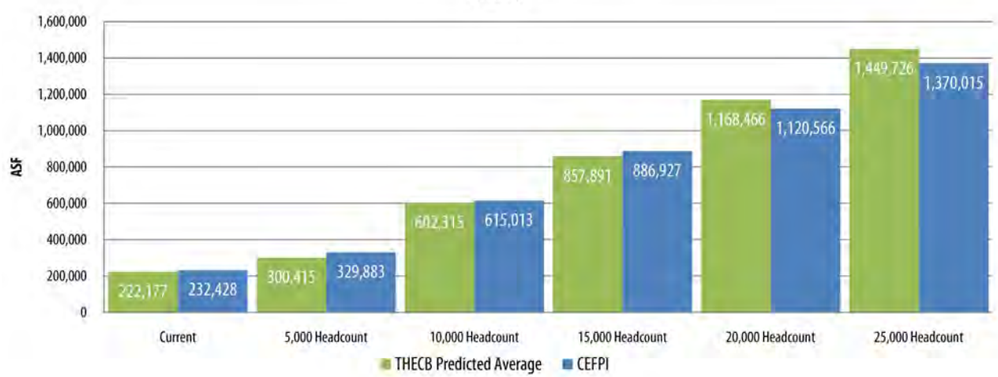
20,000 Headcount Space Projections(ASF) Comparison THECB Predicted vs. CEFPI		
Space Type	**Average THECB Predicted**	**CEFPI**
Teaching (100s, 200s but not 250s, 500s, 600s)	739,500	772,944
Research	37,500	11,982
Office	148,576	142,586
Library	146,411	116,212
Support	96,479	76,843
Total	**1,168,466**	**1,120,566**

-4.1%

25,000 Headcount Space Projections(ASF) Comparison THECB Predicted vs. CEFPI		
Space Type	**Average THECB Predicted**	**CEFPI**
Teaching (100s, 200s but not 250s, 500s, 600s)	920,875	947,642
Research	46,875	14,978
Office	185,720	178,233
Library	176,553	134,661
Support	119,702	94,502
Total	**1,449,726**	**1,370,015**

-5.5%

THECB Predicted Average vs. CEFPI (ASF)



THECB 5-Factor Model Calculations

One technique utilized to project space need for A&M-San Antonio was to calculate space needs based on the THECB five factor model for each enrollment threshold.

The five factor model calculated space needs for education and general spaces including teaching, library, research, office, and support space. Auxiliary spaces are not included in the model.

Each category is based on elements that are incorporated into their space calculations:

- Teaching Space - Level and program areas of an institution's funded semester credit hours
- Library Space - Faculty, students, approved programs, and holdings
- Research Space - Research expenditures and students' reported semester credit hours
- Office Space - Faculty, staff, and current fund E&G expenditures
- Support Space - A percentage of the total prediction for all the other categories

"The Space Planning Model provides a fair and equitable assessment of space needs at Texas' public universities, technical colleges, the Lamar State Colleges, and public health-related institutions. It is used to assess the need for new construction and to determine whether an institution's new construction will qualify for maintenance and operation funding provided by general revenue." *THECB Space Projection Model Instructions*

The space model can be found on the THECB web site, or at the following link: *www.thecb.state.tx.us/reports/Docfetch.cfm?Docid=1215&Format...*

By THECB 5 Factor Room Type (ASF)	Existing Need (Calculated by THECB)	Enrollment Existing	Enrollment 5,000	Enrollment 10,000	Enrollment 15,000	Enrollment 20,000	Enrollment 25,000
Teaching	97,506	97,506	168,750	374,500	532,500	739,500	920,875
Research	6,552	6,552	9,375	18,750	28,125	37,500	46,875
Office	59,067	26,350	37,144	74,288	111,432	148,576	185,720
Library	40,707	52,905	60,341	85,045	114,999	146,411	176,553
Support	18,345	16,498	24,805	49,732	70,835	96,479	119,702
A&M-San Antonio Total (ASF)	**222,177**	**199,811**	**300,415**	**602,315**	**857,891**	**1,168,466**	**1,449,726**

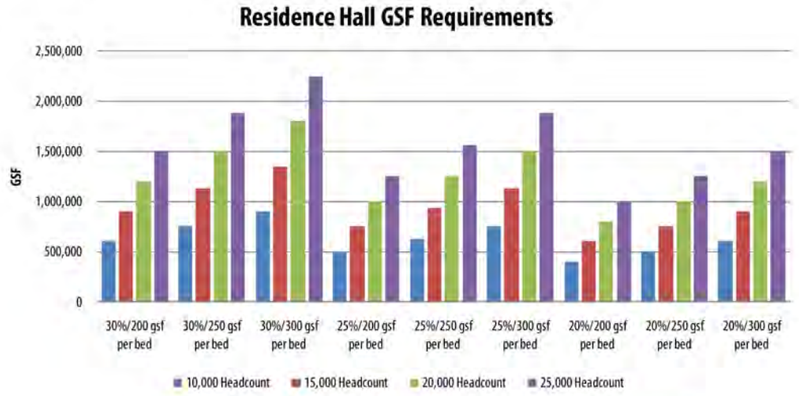
CEFPI Calculations

The following table provides details of the CEFPI space projections previously summarized. These calculations provide space needs for both education and general and non-academic space. Where the THECB groups classrooms (100s), class labs (210-235), some special use facilities (500s), and some general use facilities (600s) together as teaching space, the CEFPI model calculates all these spaces separately.

BUILDING BLOCKS Room Type	Projections for 5,000 Enrollment	Projection for 10,000 Enrollment	Projection for 15,000 Enrollment	Projection for 20,000 Enrollment	Projection for 25,000 Enrollment
Classroom Facilities					
110, 115 - Classroom	39,539	79,078	118,618	158,157	197,696
Sub-Total - Classroom Facilities	*39,539*	*79,078*	*118,618*	*158,157*	*197,696*
Laboratory Facilities					
210, 215 - Class Laboratory	33,856	67,712	101,568	135,424	169,280
220, 225 - Open Laboratory	14,881	29,762	44,643	59,524	74,405
250, 255 - Research/NonClass Laboratory	5,000	5,991	8,986	11,982	14,978
Sub-Total - Laboratory Facilities	*53,737*	*103,465*	*155,197*	*206,930*	*258,663*
Office Facilities					
310, 315 - Office AND 350, 355 - Conference Room	35,647	71,291	106,939	142,586	178,233
Sub-Total - Office Facilities	*35,647*	*71,291*	*106,939*	*142,586*	*178,233*
Study Facilities					
410 - Study	32,944	56,043	69,299	72,712	90,890
420, 430 - Stack and Open Stack Study Room	8,000	16,000	24,000	32,000	32,000
440 - Processing Room	3,500	3,500	3,500	4,500	4,500
455 - Study Service	3,294	5,604	6,930	7,000	7,271
Sub-Total - Study Facilities	*47,738*	*81,148*	*103,729*	*116,212*	*134,661*
Special Use Facilities					
510, 515 - Armory	0	1,500	1,500	1,500	1,500
520, 523, 525 - Athletic or Physical Education	51,250	88,500	120,750	153,000	185,250
530, 535 - Media Production	5,000	6,250	9,375	6,250	7,813
540, 545 - Clinic	1,250	2,500	3,750	5,000	6,250
550, 555 - Demonstration	0	625	938	1,250	1,563
560 - Field Buildings	1,500	3,000	4,000	5,000	6,000
570, 575 - Animal Quarters	0	1,250	1,875	2,500	3,125
580, 585 - Greenhouse	1,563	3,125	4,688	6,250	7,813
Sub-Total - Special Use Facilities	*60,563*	*106,750*	*146,875*	*180,750*	*219,313*
General Use					
610, 615 - Assembly	14,000	24,500	35,750	44,500	50,750
620, 625 - Exhibition	3,276	6,250	9,375	9,400	9,400
630, 635 - Food Service	22,602	45,204	67,806	82,189	102,736
640, 645 - Day Care	0	0	0	0	0
650, 655 - Lounge	7,813	15,625	23,438	25,000	31,250
660, 665 - Merchantising	6,250	12,500	18,750	25,000	31,250
670, 675 - Recreation	4,688	9,375	14,063	18,750	23,438
680, 685 - Meeting Room	10,813	18,625	26,438	34,250	38,125
Sub-Total - General Use Facilities	*69,440*	*132,079*	*195,618*	*239,089*	*286,948*
Support Facilities					
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
710, 715 - Telecommunications	4,000	4,938	7,281	9,625	11,969
720, 725 - Shop, Central Storage, Vehicle Storage	15,689	29,250	42,182	53,292	65,155
750, 755 - Central Storage	3,125	6,250	9,375	12,500	15,625
760, 765 - Hazardous Materials	404	765	1,113	1,425	1,752
Sub-Total - Support Facilities	*23,218*	*41,202*	*59,951*	*76,843*	*94,502*
Health Care Facilities					N/A
Total	329,883	615,013	886,927	1,120,566	1,370,015

Housing

As illustrated in the bar chart and table below, a variety of options for residence hall needs was explored. These options included calculating space needs for various percents of student enrollment housed on campus, and for different gross square feet per bed. Calculations for percent of student enrollment housed on campus were 20%, 25%, and 30%. With calculations for gross square feet per bed made at 200 GSF, 250 GSF, and 300 GSF. For the purpose of the development plan building blocks, an average of these calculations was used for space need. Using this data, the bottom table lists the number of dormitories required at each of the three scenarios - 30%, 25%, and 20% of student enrollment housed on campus.



Residence Hall Requirements (GSF)				
Scenarios	10,000 Headcount	15,000 Headcount	20,000 Headcount	25,000 Headcount
30%/200 gsf per bed	600,000	900,000	1,200,000	1,500,000
30%/250 gsf per bed	750,000	1,125,000	1,500,000	1,875,000
30%/300 gsf per bed	900,000	1,350,000	1,800,000	2,250,000
25%/200 gsf per bed	500,000	750,000	1,000,000	1,250,000
25%/250 gsf per bed	625,000	937,500	1,250,000	1,562,500
25%/300 gsf per bed	750,000	1,125,000	1,500,000	1,875,000
20%/200 gsf per bed	400,000	600,000	800,000	1,000,000
20%/250 gsf per bed	500,000	750,000	1,000,000	1,250,000
20%/300 gsf per bed	600,000	900,000	1,200,000	1,500,000
Average	[illegible]	[illegible]	[illegible]	[illegible]

Dorm Quantities - 2 250-bed halls in each Dorm				
Scenarios	10,000 Headcount	15,000 Headcount	20,000 Headcount	25,000 Headcount
30%	12	18	24	30
25%	10	15	20	25
20%	8	12	26	20
Average	10	15	23	25

Using either method, there is a predicted need at 25,000 headcount for 1.4M-1.5M ASF of resident hall space.

Parking

The parking infrastructure for a campus is an integral factor in student satisfaction. A metric was used to determine the amount of parking stalls required to accommodate the projected student headcount for each phase. This metric included separate calculations for residential students, commuter students, faculty, staff, and visitors. Three hundred twenty-four square feet per parking stall, which includes the area required for the parking stall and drive aisles, was used to compute the paved area required on the site. The actual required land area will be refined when the design layout of parking lots are completed. Oddly configured sites (unusual shapes, narrow sites, etc.) are more difficult to use efficiently for parking, and the land area required per stall will be higher.

Parking counts and associated square feet are enumerated in the following tables. Parking counts include spaces for students, faculty, staff, and visitors.

Required acreage for each major enrollment category is as follows, and represents total needed acres, not additional acres, per phase.

- 5,000 Enrollment
  - 11+ Acres
- 10,000 Enrollment
  - 34+ Acres
- 15,000 Enrollment
  - 51+ Acres
- 20,000 Enrollment
  - 68+ Acres
- 25,000 Enrollment
  - 85+ Acres

PROJECTED PARKING FOR A&M-SAN ANTONIO

Existing Spaces	792	(East Lot: 232; West Lot: 560)

Parking spaces calculated at 325 sf per stall

Parking A - 5,000 Headcount (With All Students On Campus)

	Headcount	% for Parking	Spaces Needed
Students	5,000	25%	1,250
Faculty	120	75%	90
Staff	216	80%	173
Sub-Total			1,513
Visitors			15
Total Parking - 5,000 Headcount			1,528
Required SF - 5,000 Headcount	496,577		

Parking A - 10,000 Headcount (With 30% of Student Headcount Living On Campus)

	Headcount	% for Parking	Spaces Needed
Students	7,000	25%	1,750
Students Living On Campus	3,000	75%	2,250
Faculty	240	75%	180
Staff	432	80%	346
Sub-Total			4,526
Visitors			45
Total - 10,000 Headcount			4,571
Required SF - 10,000 Headcount	1,485,528		

Parking A - 15,000 Headcount (With 30% of Student Headcount Living On Campus)

	Headcount	% for Parking	Spaces Needed
Students	10,500	25%	2,625
Students Living On Campus	4,500	75%	3,375
Faculty	360	75%	270
Staff	648	80%	518
Sub-Total			6,788
Visitors			68
Total - 15,000 Headcount			6,856
Required SF - 15,000 Headcount	2,228,292		

Parking A - 20,000 Headcount (With 30% of Student Headcount Living On Campus)

	Headcount	% for Parking	Spaces Needed
Students	14,000	25%	3,500
Students Living On Campus	6,000	75%	4,500
Faculty	480	75%	360
Staff	864	80%	691
Sub-Total			9,051
Visitors			91
Total - 20,000 Headcount			9,142
Required SF - 20,000 Headcount	2,971,056		

Parking A - 25,000 Headcount (With 30% of Student Headcount Living On Campus)

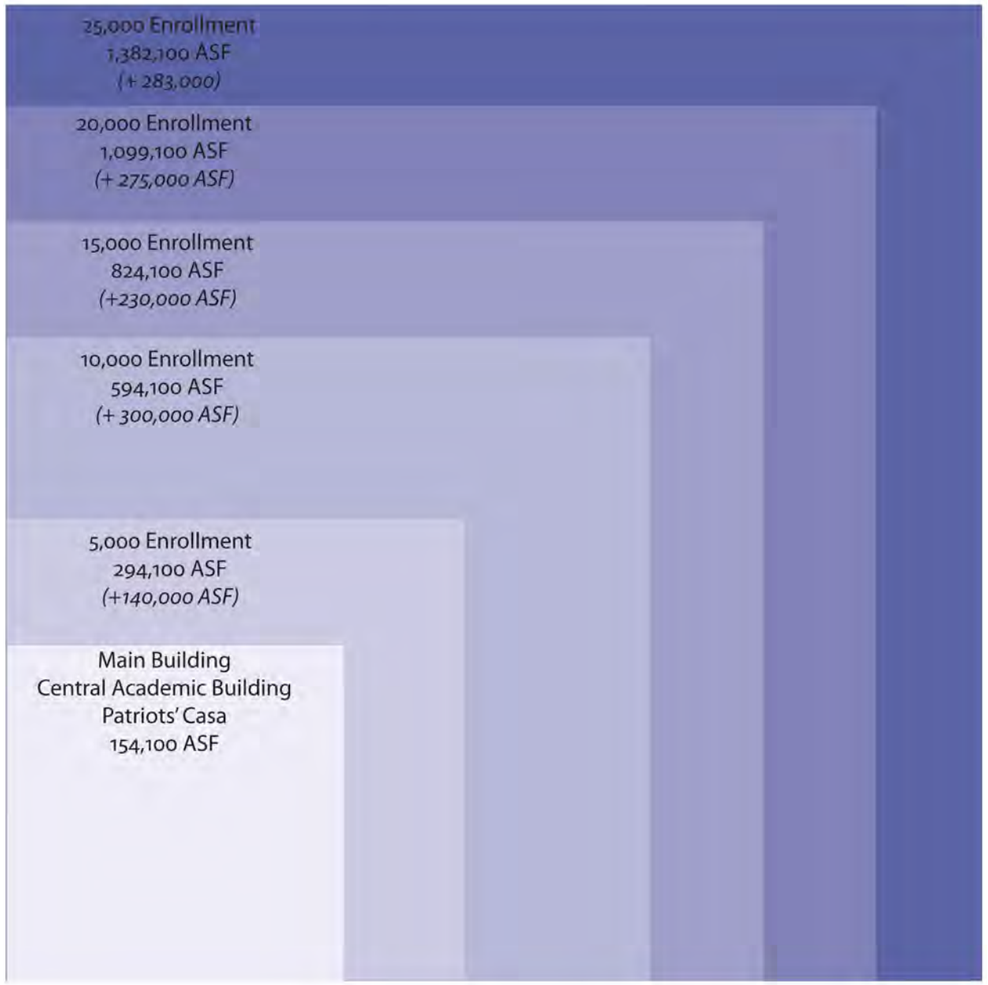
	Headcount	% for Parking	Spaces Needed
Students	17,500	25%	4,375
Students Living On Campus	7,500	75%	5,625
Faculty	600	75%	450
Staff	1,080	80%	864
Sub-Total			11,314
Visitors			113
Total - 25,000 Headcount			11,427
Required SF - 25,000 Headcount	3,713,821		

This section will cover the following subjects:

- Building Blocks by Enrollment

Overview

Overall, the campus is projected to require a total of 1,382,100 assignable square feet of buildings, not including student housing, to accommodate 25,000 students.



Building Blocks

Determining the building blocks began with examining what types of spaces should be included in a campus core. It was agreed that the core should accommodate 5,000 students.

Campus Core

Building blocks were created for set enrollment thresholds of:

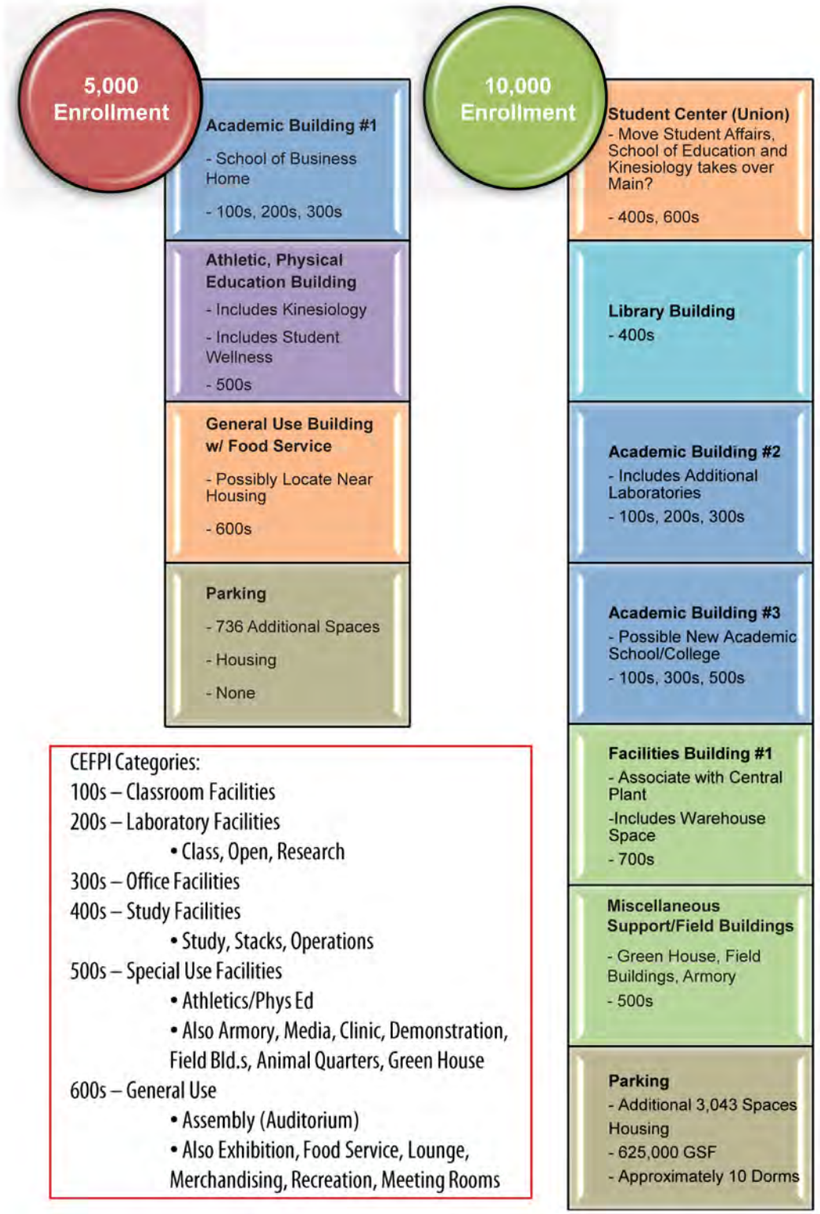
- 5,000
- 10,000
- 15,000
- 20,000
- 25,000

The building blocks take into account existing and funded buildings on the main campus:

BUILDING BLOCKS FOR MASTER PLAN

CEFPI Based Building Blocks				Housing and Parking			
Building	Space Use	Size (ASF)	Size (GSF)		#	SF	Acres
Current (Existing and Planned - Main Campus)							
Main Building		50,981	90,300				
Central Academic Building		103,119	171,866				
Patriots Casa		13,013	20,020				
				Parking (SF)	792		
				Housing (GSF)	-		

Building Block Summary

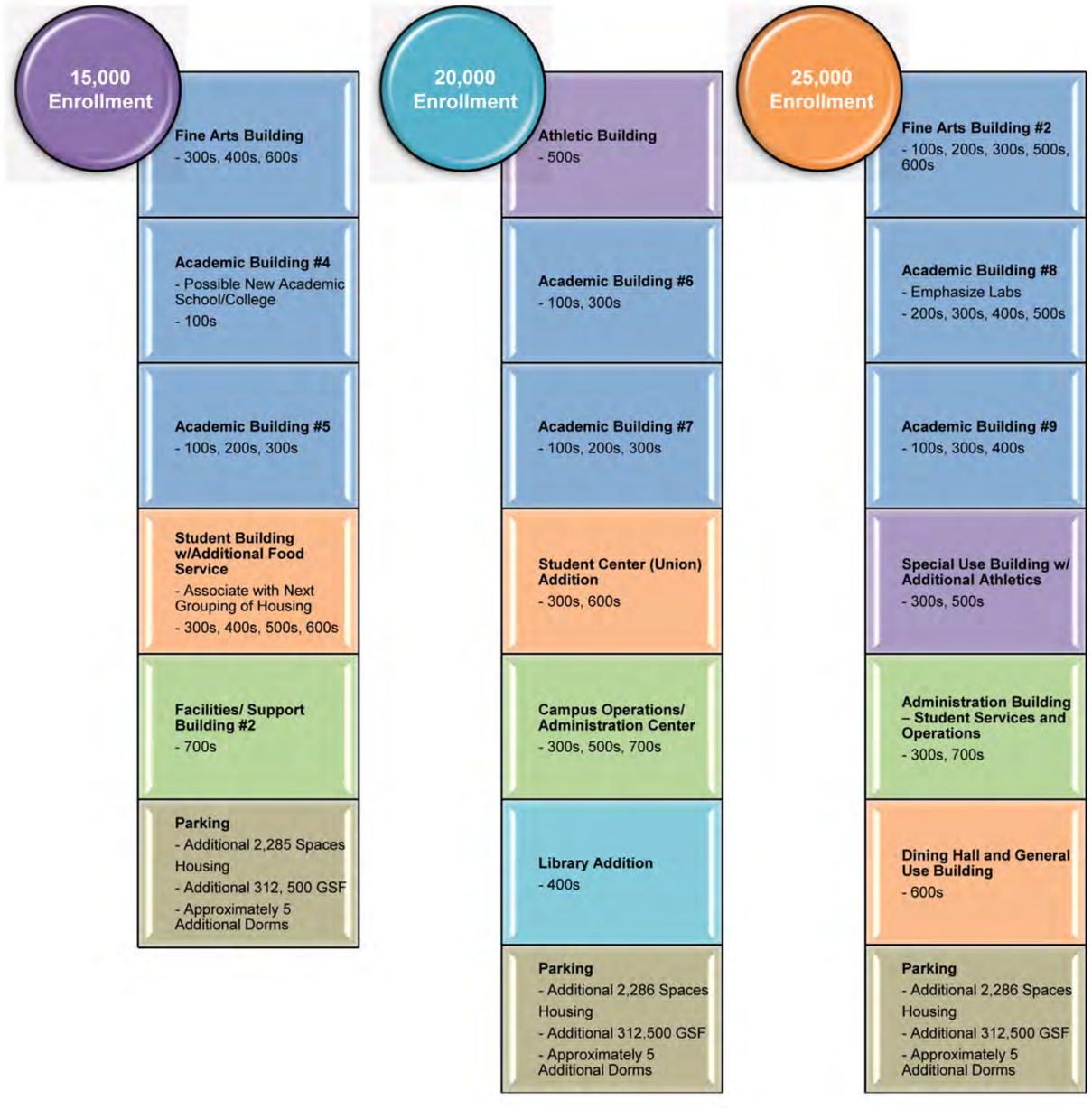


CEFPI Categories:
100s – Classroom Facilities
200s – Laboratory Facilities
- Class, Open, Research

300s – Office Facilities
400s – Study Facilities
- Study, Stacks, Operations

500s – Special Use Facilities
- Athletics/Phys Ed
- Also Armory, Media, Clinic, Demonstration, Field Bld.s, Animal Quarters, Green House

600s – General Use
- Assembly (Auditorium)
- Also Exhibition, Food Service, Lounge, Merchandising, Recreation, Meeting Rooms



Building Blocks By Enrollment Thresholds

The university will determine what buildings will be prioritized when seeking funding.

5,000 Enrollment - Space Need

At 5,000 enrollment head count, A&M-San Antonio will require an additional academic building, preferably one that will allow the School of Business to be brought on campus from its Brooks City-Base location. In addition, a physical education building will provide facilities to accommodate the Kinesiology department on campus. Currently, the Kinesiology department is at Brooks City-Base in order to utilize the gymnasium at that location. Finally, a general use building with some additional food service will be required. General use functions may include assembly, exhibition, food service, day care, lounge, merchandising, recreation, and meeting spaces. Exact functions to be included in the general use building are dependent upon university planning.

BUILDING BLOCKS FOR MASTER PLAN

CEFPI Based Building Blocks				Housing and Parking			
Building	Space Use	Size (ASF)	Size (GSF)		#	SF	Acres
5,000 Enrollment							
Academic Building #1	100s, 200s, 300s	60,000	92,308				
Athletic, Physical Education Building	520, 523, 525	60,000	92,308				
General Use Building w/ Food Service	600s	20,000	30,769				
				Parking (SF)	736	239,200	5
				Housing (GSF)	-		

10,000 Enrollment - Space Need

At 10,000 students the campus will require a stand-alone student union, and a stand-alone library. Two additional academic building, one focusing on laboratory facilities should also come on-line around this time. A facilities building with warehouse space that is associated with the campus physical plant should also be accommodated.

BUILDING BLOCKS FOR MASTER PLAN

CEFPI Based Building Blocks				Housing and Parking			
Building	Space Use	Size (ASF)	Size (GSF)		#	SF	Acres
10,000 Enrollment							
Student Center(Union)	400s, 600s	80,000	123,077				
Library Building	400s	60,000	92,308				
Academic Building #2 (Science?)	100s, 200s, 300s	60,000	92,308				
Academic Building #3 (program TBD)	100s, 300s, 530s, 540s, 550s	60,000	92,308				
Facilities Building 1 (Associate with Central Plant)	700s	30,000	46,154				
Green House/Field Buildings/Armory	500s	10,000	15,385				
				Parking (SF)	3,043	988,975	23
				Housing (GSF)	~10	625,000	

15,000 Enrollment - Space Need

The first, dedicated fine arts building, and two additional academic buildings will be required to meet the needs of 15,000 students at A&M-San Antonio. Other support buildings include a second facilities building and a building devoted to student needs and services including additional food service.

BUILDING BLOCKS FOR MASTER PLAN

CEFPI Based Building Blocks				Housing and Parking			
Building	Space Use	Size (ASF)	Size (GSF)		#	SF	Acres
15,000 Enrollment							
Fine Arts Building	300s, 400s, 600s,	60,000	92,308				
Academic Building #5	100s, 200s, 300s	60,000	92,308				
Student Building (w/Food Service)	300s, 400s, 500s, 630s,	60,000	92,308				
Academic Building #4 (Program TBD)	100s	30,000	46,154				
Facilities Building 2	700s	20,000	30,769				
				Parking (SF)	2,285	742,625	17
				Housing (GSF)	~5	312,500	

20,000 Enrollment - Space Need

At 20,000 enrollment, a large, dedicated athletic building is required. Two additional academic buildings and an building focused on operations are required. Additions to the union (student center) and library or other accommodations to expand related services will also be required.

BUILDING BLOCKS FOR MASTER PLAN

CEFPI Based Building Blocks				Housing and Parking			
Building	Space Use	Size (ASF)	Size (GSF)		#	SF	Acres
20,000 Enrollment							
Athletic Building	520, 523,525	80,000	123,077				
Academic Building #6	100s, 300s	60,000	92,308				
Academic Building #7	100s, 200s, 300s	60,000	92,308				
Student Center (Union) Addition	300s, 600s	30,000	46,154				
Campus Operations Center	300s, 500s, 700s	30,000	46,154				
Library Addition	400s	15,000	23,077				
				Parking (SF)	2,286	742,950	17
				Housing (GSF)	~5	312,500	

25,000 Enrollment - Space Need

At 25,000 enrollment, A&M-San Antonio will require a second dedicated fine arts building and two additional academic buildings, one of which is focused on laboratory facilities. A special use building that includes athletics, dedicated administration building, and a dining/general use building will also be required.

BUILDING BLOCKS FOR MASTER PLAN

CEFPI Based Building Blocks				Housing and Parking			
Building	Space Use	Size (ASF)	Size (GSF)		#	SF	Acres
25,000 Enrollment							
Fine Arts Building	100s, 200s, 300s, 500s, 600s	60,000	92,308				
Academic Building #8 (w/ Lab Facilities)	200s, 300s, 400s, 500s	60,000	92,308				
Academic Building #9	100s, 300s, 400s	60,000	92,308				
Special Use Building With Athletics	300s, 500s	40,000	61,538				
Administration Building - Student Services and Operations	300s, 700s	33,000	50,769				
Dining Hall and General Use Building	600s	30,000	46,154				
				Parking (SF)	2,285	742,625	17
				Housing (GSF)	~5	312,500	

Residence Hall Calculations

The university will determine the extent of student housing they would like to achieve on campus. Residence hall possible space needs were discussed in the Space Requests and Projections portion of this text. The amount of residence hall square feet required is dependant upon what percentage of student enrollment they would like to accommodate on campus, as well as, the available funding to build residence halls. On average, A&M-San Antonio will require the following gross square feet per enrollment threshold:

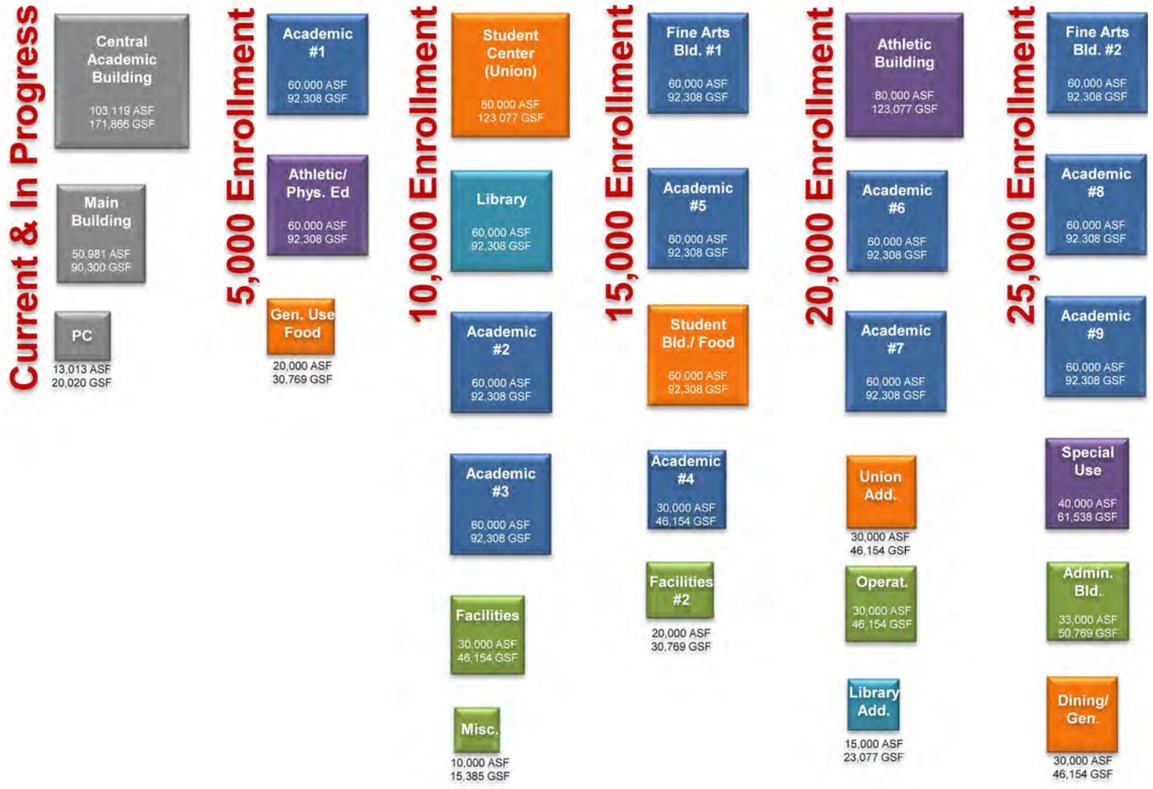
- 10,000 Enrollment
  - 625,000 GSF
- 15,000 Enrollment
  - 937,500 GSF
- 20,000 Enrollment
  - 1,250,000 GSF
- 25,000 Enrollment
  - 1,562,500 GSF

Building Block Summary

The table below summarizes the building blocks at each enrollment threshold. Also summarized are parking and residence hall needs.

CEFPI Based Building Blocks				Housing and Parking			
Building	Space Use	Size (ASF)	Size (GSF)		#	SF	Acres
Current (Existing & Planned - Main Campus)							
	Total	154,100	262,166	Parking (SF)	792		
				Housing (GSF)	-		
5,000 Enrollment							
	Total	140,000	215,385	Parking (SF)	736	239,200	5
				Housing (GSF)	-		
10,000 Enrollment							
	Total	300,000	461,538	Parking (SF)	3,043	988,975	23
				Housing (GSF)	~10	625,000	
15,000 Enrollment							
	Total	230,000	353,846	Parking (SF)	2,285	742,625	17
				Housing (GSF)	~5	312,500	
20,000 Enrollment							
	Total	275,000	423,077	Parking (SF)	2,286	742,950	17
				Housing (GSF)	~5	312,500	
25,000 Enrollment							
	Total	283,000	435,385	Parking (SF)	2,285	742,625	17
				Housing (GSF)	~5	312,500	
Total CEFPI Based		1,382,100	2,151,397	Total	11,427	3,456,375	79

The building blocks below are drawn to scale in comparison with each other.



Possible Construction Dates

Based on the low enrollment projections, possible dates at which enrollment thresholds may kick in are:

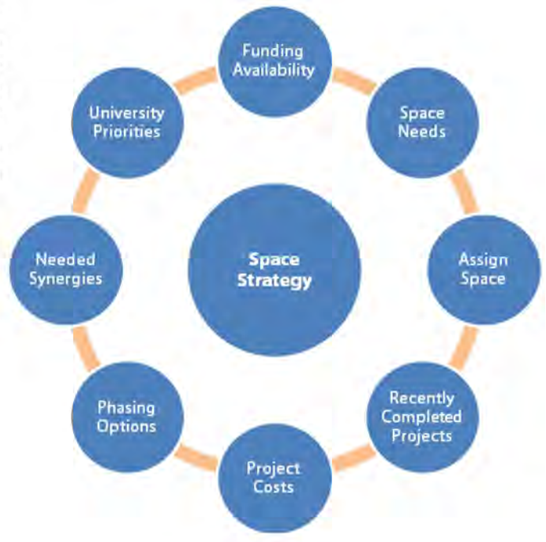
BUILDING BLOCKS - APPROXIMATE YEAR SF NEEDED

	Approximate Year Needed	Size (ASF)	Size (GSF)		#	SF	Acres
5,000 Enrollment							
	2014	140,000	215,385	Parking (SF)	736	239,200	5
				Housing (GSF)	-		
10,000 Enrollment							
	2019	300,000	461,538	Parking (SF)	3,043	988,975	23
				Housing (GSF)	~10	625,000	
15,000 Enrollment							
	2024	230,000	353,846	Parking (SF)	2,285	742,625	17
				Housing (GSF)	~5	312,500	
20,000 Enrollment							
	2028	275,000	423,077	Parking (SF)	2,286	742,950	17
				Housing (GSF)	~5	312,500	
25,000 Enrollment							
	2032	283,000	435,385	Parking (SF)	2,285	742,625	17
				Housing (GSF)	~5	312,500	

Next Steps

Since its inception as a Texas A&M University System Center with 126 students in 2000, the university has grown significantly to become today's A&M-San Antonio campus, with an enrollment of 3,554 students in the Fall of 2012.

A&M-San Antonio continues to grow at a remarkable pace, adding new facilities and new programs, with grand plans for the direction of the institution. As the university broadens their enrollment catchment area and becomes a more established presence in San Antonio, demands on resources will continue to grow making a development plan essential.



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TEXAS HISTORICAL COMMISSION

March 16, 2012

Mr. Brad Jones
Texas Historical Commission
1511 Colorado
Austin, Texas 78701

RE: DRAFT REPORT FOR THE TAMU 43-ACRE DEVELOPMENT TRACT PROJECT, BEXAR COUNTY, TEXAS

Mr. Jones:

Enclosed please find a draft copy for you review of the archaeological survey of the proposed 43-acre development tract on behalf of Texas A&M University-San Antonio located in southern Bexar County. Fieldwork was conducted under Texas Antiquities Permit Number 6163. No cultural resources were documented during the survey efforts, and no further work is recommended for the project area.

Please feel free to contact me by telephone or through email at apeyton@swca.com.

Sincerely,

Abby Peyton, MA, RPA
SWCA Principal Investigator
512-476-0891

ANTIQUITIES CODE OF TEXAS REVIEW
NO SIGNIFICANT SITES
PROJECT MAY PROCEED
by
for Mark Wolfe
Executive Director, THC
Date 4/10/12
Track#

DRAFT REPORT
ACCEPTABLE
by
for Mark Wolfe
Executive Director, THC
Date 4/10/12
Track#

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08 June 2012

Michael Lanford
Alamo Architects
1512 South Flores St.
San Antonio, Texas 78204

RE: Environmental Constraints Update for the 581-Acre TAMU-San Antonio Development Tract, Bexar County, Texas, SWCA Project No. 22649-402

Dear Mr. Lanford,

SWCA Environmental Consultants (SWCA) was contracted by Alamo Architects to provide an update of the environmental constraints on the 581-acre development tract that was previously reviewed in the 2008 development plan for the Texas A&M University (TAMU) -San Antonio Campus. The 581-acre tract comprises the proposed main campus area, and is located south of Loop 410 to the east of South Zarzamora Road and west of Pleasanton Road in the City of San Antonio, Bexar County, Texas (project area). The location of the project area is identified in Appendix A, Figure 1. The following review provides an update to the ecosystem assessment and cultural resources assessment of the environmental constraints identified in the 2008 TAMU-San Antonio Campus development plan.

ECOSYSTEM ASSESSMENT

Methodology

SWCA conducted a desktop review to update the ecosystem assessment originally provided in the 2008 development plan for the TAMU-San Antonio Campus. SWCA reviewed current and past aerial photography, National Wetland Inventory mapping, the National Hydrography Dataset (NHD), and both the U.S. Fish and Wildlife Service (USFWS) and Texas Parks and Wildlife Department (TPWD) files on threatened and endangered species that occur in Bexar County, Texas. SWCA also received the results of the TPWD Natural Diversity Database (NDD) search on February 6, 2012.

Threatened and Endangered Species Review

SWCA
ENVIRONMENTAL CONSULTANTS

Mr. Lanford
February 23, 2012

The USFWS currently identifies 20 federally listed threatened or endangered species as having the potential to occur in Bexar County, Texas. This is an increase from the 14 species identified in the 2008 TAMU-San Antonio Campus development plan. The current species include two amphibians, San Marcos salamander (*Eurycea nana*) and Texas blind salamander (*Typhlomolge rathbuni*); two aquatic insects, Comal Springs dryopid beetle (*Stygoparnus comalensis*) and Comal Springs riffle beetle (*Heterelmis comalensis*); four birds, black-capped vireo (*Vireo atricapilla*), golden-cheeked warbler (*Dendroica chrysoparia*), mountain plover (*Charadrius montarus*), and whooping crane (*Grus americana*); one flowering plant, Texas wild rice (*Zizania texana*); one fish, fountain darter (*Etheostoma fonticola*); and, ten cave-dwelling (karst) invertebrates, [unnamed] ground beetle (*Rhadine infernalis*), [unnamed] ground beetle (*Rhadine exilis*), Braken Bat Cave meshweaver (*Cicurina venii*), Cokendolpher Cave harvestman (*Texella cokendolpheri*), Government Canyon Bat Cave meshweaver (*Cicurina vespera*), Government Canyon Bat Cave spider (*Neoleptoneta microps*), Helotes mold beetle (*Batrisodes venyivi*), Madla's Cave meshweaver (*Cicurina madla*), Peck's Cave amphipod (*Stygobromus [=Stygonectes] pecki*).

The previously identified piping plover (*Charadrius melodus*), interior least tern (*Sternula antillarum athalassos*), and Robber Baron Cave meshweaver (*Cicurina baroni*) were removed from the 2012 USFWS list for Bexar County, and the above-listed mountain plover, aquatic insects, amphibians, fish, and flowering plants were added. In addition to these federally listed species, 21 species are listed as threatened or endangered by TPWD. Table 1 provides the current USFWS and TPWD listing status for all listed species having the potential to occur in Bexar County, Texas as well as a brief summary of the potential for each species to occur in the 581-acre project area.

Table 1. Federally and State- Listed Species in Bexar County, Texas

Common Name	Scientific Name	USFWS Status[1]	TPWD Status[2]	Habitat Characteristics/ Potential to Occur in Project Area
Amphibians				
Cascade Caverns salamander	*Eurycea latitans complex*		T	Species requires springs or water-filled caves that are absent from the project area; not expected to occur.
Comal blind salamander	*Eurycea tridentifera*		T	Species requires springs or water-filled caves that are absent from the project area; not expected to occur.
San Marcos salamander	*Eurycea nana*	E		Species requires springs or water-filled caves that are absent from the project area; not expected to occur.
Texas blind salamander	*Typhlomolge rathbuni*	E		Species requires springs or water-filled caves that are absent from the project

SWCA ENVIRONMENTAL CONSULTANTS

Mr. Lanford
February 23, 2012

Table 1. Federally and State- Listed Species in Bexar County, Texas

Common Name	Scientific Name	USFWS Status[1]	TPWD Status[2]	Habitat Characteristics/ Potential to Occur in Project Area
				area; not expected to occur.
Arachnids				
Braken Bat Cave meshweaver	*Cicurina venii*	E		Species requires karst features that are absent from the project area; not expected to occur.
Cokendolpher Cave harvestman	*Texella cokendolpheri*	E		Species requires karst features that are absent from the project area; not expected to occur.
Government Canyon Bat Cave meshweaver	*Cicurina vespera*	E		Species requires karst features that are absent from the project area; not expected to occur.
Government Canyon Bat Cave spider	*Neoleptoneta microps*	E		Species requires karst features that are absent from the project area; not expected to occur.
Madla's Cave meshweaver	*Cicurina madla*	E		Species requires karst features that are absent from the project area; not expected to occur.
Birds				
American peregrine falcon	*Falco peregrinus anatum*		T	Species is not expected to occur because preferred habitat of cliffs, bluffs, or suitable vegetation is absent from project area; however, species may fly over project area during migration.
Black-capped vireo	*Vireo atricapilla*	E	E	Species is not expected to occur in the project area because wooded areas do not contain species typically associated with preferred habitat such as shin oak (*Quercus sinuata* var. *breviloba*) or evergreen sumac (*Rhus virens*).
Golden-cheeked warbler	*Dendroica chrysoparia*	E	E	Species is not expected to occur in the project area because wooded areas do not contain species typically associated with preferred habitat such as live oak (*Quercus fusiformis*) or Ashe juniper (*Juniperus ashei*).
Interior least tern	*Sterna antillarum athalassos*		E	Species requires sandbars, salt flats, and bare beaches associated with braided streams, rivers, and reservoirs, which are absent from the project area; not expected to occur.
Mountain plover	*Charadrius montarus*	PT		Species requires native herbaceous grasslands and plowed fields, which are largely absent from the project area.

SWCA ENVIRONMENTAL CONSULTANTS

Mr. Lanford
February 23, 2012

Table 1. Federally and State- Listed Species in Bexar County, Texas

Common Name	Scientific Name	USFWS Status[1]	TPWD Status[2]	Habitat Characteristics/ Potential to Occur in Project Area
				There are few areas of native grasslands that would be preferred habitat; not expected to occur.
Peregrine falcon	*Falco peregrinus*		T	Species is not expected to occur because preferred habitat of cliffs, bluffs, or suitable vegetation is absent from project area; however, species may fly over project area during migration.
White-faced ibis	*Piegadis chihi*		T	Species prefers freshwater wetlands and ponds and is known to occur seasonally at Mitchell Lake, less than 1 mile from project area. Species has the potential to occur in project area at the three on-site ponds; however, this potential is low because more preferable habitat located 0.7-miles away.
Whooping crane	*Grus americana*	E, EXPN	T	Species requires extensive wetland or aquatic habitat, which is absent from the project area; not expected to occur.
Wood stork	*Mycteria americana*		T	Species prefers freshwater wetlands and ponds and is known to occur on a rare basis at Mitchell Lake, less than 1 mile from project area. Species has the potential to occur in project area at the three on-site ponds; however, this potential is low because more preferable habitat located 0.7-miles away.
Zone-tailed hawk	*Buteo albonotatus*		T	Species prefers rough, deep, rocky canyons and stream sides in semi-arid mesa, hill, and mountain terrain, which are absent from the project area; not expected to occur.
Crustaceans				
Peck's Cave amphipod	*Stygobromus [=Stygonectes] pecki*	E		Species requires karst features that are absent from the project area; not expected to occur.
Fishes				
Fountain darter	*Etheostoma fonticola*	E		Species requires perennial, deep-flowing waters that are absent from the project area; not expected to occur.
Toothless blindcat	*Trogloglanis pattersoni*		T	Species requires perennial, deep-flowing waters that are absent from the project area; not expected to occur.

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Table 1. Federally and State- Listed Species in Bexar County, Texas

Common Name	Scientific Name	USFWS Status[1]	TPWD Status[2]	Habitat Characteristics/ Potential to Occur in Project Area
Widemouth blindcat	*Stan eurystomus*		T	Species requires perennial, deep-flowing waters that are absent from the project area; not expected to occur.
Flowering Plants				
Texas wild rice	*Zizania texana*	E		Species requires clear flowing spring-fed waters, which are absent from the project area; not expected to occur.
Insects				
Comal Springs dryopid beetle	*Stygoparnus comalensis*	E		Species requires karst features that are absent from the project area; not expected to occur.
Comal Springs riffle beetle	*Heterelmis comalensis*	E		Species requires karst features that are absent from the project area; not expected to occur.
Helotes mold beetle	*Batrisodes venyivi*	E		Species requires karst features that are absent from the project area; not expected to occur.
[Unnamed] ground beetle	*Rhadine infernalis*	E		Species requires karst features that are absent from the project area; not expected to occur.
[Unnamed] ground beetle	*Rhadine exilis*	E		Species requires karst features that are absent from the project area; not expected to occur.
Mammals				
Black bear	*Ursus americanas*		T	Species requires bottomland hardwoods or large tracts of undeveloped forested area that are absent from the project area; not expected to occur.
Gray wolf	*Canis lupus*		E	Species is extirpated from Texas and would not occur in project area.
Red wolf	*Canis rufus*		E	Species is extinct in Texas and would not occur in project area.
Mollusks				
False spike mussel	*Quadrula mitchelli*		T	Species requires perennial, deep-flowing waters that are absent from the project area; not expected to occur.
Golden orb	*Quadrula aurea*		T	Species requires perennial, deep-flowing waters that are absent from the project area; not expected to occur.
Texas fatmucket	*Lampsilis bracteata*		T	Species requires perennial, deep-flowing waters that are absent from the project area; not expected to occur.
Texas pimpleback	*Quadrula petrina*		T	Species requires perennial, deep-flowing waters that are absent from the project area; not expected to occur.
Reptiles				
Texas horned lizard	*Phrynosoma cornutum*		T	Species requires scattered native bunchgrasses, cactus or shrubby trees with exposed soils, which are largely absent from the project area. Although known to occur in the general area, the species has a low potential for occurrence in the project area.
Texas indigo snake	*Drymarchon melanurus erebennus*		T	Species requires thornbush-chaparral woodlands of south Texas, especially dense riparian corridors, suburban areas and irrigated croplands, which are absent from the project area; not expected to occur.
Texas tortoise	*Gopherus berlandieri*		T	Species requires open brush with native grass understory, which is largely absent from the project area. Although known to occur in the general area, the species has a low potential for occurrence in the project area.
Timber/Canebrake rattlesnake	*Crotalus horridus*		T	Species requires perennial, deep-flowing waters that are absent from the project area; not expected to occur.

[1] **USFWS Listing Status:** E-endangered; PT-Proposed Threatened; EXPN- Experimental Population, Non-Essential
[2] TPWD Listing Status: E-Endangered; T-Threatened

In summary, the federally listed amphibians, aquatic insects, flowering plant, and fish all require specific water features that are absent from the project area and therefore, are not expected to occur on the property. The ten federally listed karst invertebrates require habitat that is identified well north of the project area and the project area is outside those delineated by the USFWS as having potential to contain endangered karst invertebrate habitat. The federally endangered black-capped vireo and golden-cheeked warbler are not expected to occur in the project area because the property does not contain habitat with specific species composition and density requirements typically preferred by both species. In addition, the proposed threatened mountain plover and the endangered whooping crane both require respective native grassland and wetland habitats that are absent from the project area.

Of the state listed species identified in Table 1, four birds and two reptiles have a potential to occur near the project area, although this potential is low. The white-faced ibis and wood stork

have been observed at Mitchell Lake, which is 0.7-mile from the project area. These birds may fly over the project area during migration or potentially stop at ponds in or near the property. The peregrine falcon and American peregrine falcon may also fly over the project area during migration, but are not expected to use habitat in or near the project area. While suitable habitat for the Texas horned lizard and Texas tortoise was not observed on the property, these species are known to occur in the general area. The results of the TPWD NDD review on February 6, 2012 revealed no federally or state listed species occurrences within or adjacent to the project area.

Wetlands and Jurisdictional Waters

The 2008 TAMU-San Antonio Campus development plan identified one on-channel pond and three isolated stock ponds within the 581-acre property. A review of the NHD data revealed that no changes to the previously identified waterbodies have occurred since the site development plan was developed in 2008 (Appendix A, Figure 2).

Vegetation, Soils, Geology, Topography, and Surface Drainage

No changes have occurred to vegetation characteristics, soils, geology, topography, or surface drainage on the 581-acre TAMU-San Antonio Campus since the site development plan was developed in 2008 (Appendix A, Figure 2).

CULTURAL RESOURCES ASSESSMENT

Methodology

SWCA conducted a thorough background cultural resources and environmental literature search of the project area. An SWCA archaeologist reviewed the Terrell Wells USGS 7.5-minute topographic quadrangle maps at the Texas Archeological Research Laboratory (TARL) and searched the Texas Historical Commission's (THC) Texas Archeological Sites Atlas (Atlas) online database for any previously recorded surveys and historic or prehistoric archaeological sites located in or near the project area. In addition to identifying recorded archaeological sites, the review included information on the following types of cultural resources: National Register of Historic Places (NRHP) properties, SALs, Official Texas Historical Markers (OTHM), Registered Texas Historic Landmarks (RTHLs), cemeteries, and local neighborhood surveys. The archaeologist also examined the Natural Resources Conservation Service's (NRCS) Web Soil Survey database for Bexar County (NRCS 2012) and the *Geologic Atlas of Texas, San Antonio Sheet* (Barnes 1992). As a part of the review, a SWCA archeologist reviewed the Texas Department of Transportation (TxDOT) Historic Overlay Maps, a mapping/GIS system with

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Antonio Sheet (Barnes 1992). As a part of the review, a SWCA archeologist reviewed the Texas Department of Transportation (TxDOT) Historic Overlay Maps, a mapping/GIS system with historic maps and resource information covering most portions of the state (Foster et al. 2006). Aerial photographs were also reviewed to assist in identifying any disturbances.

Results

The background review revealed that there are no previously recorded archaeological sites documented within or directly adjacent to the project area. Since the 2008 site development plan was created, two additional cultural resources surveys have taken place within the project area as a result of various phases of development for the TAMU-San Antonio Campus development plan. These surveys were conducted by SWCA in 2009 and again in 2012 for 10-acre and 43-acre development tracts located in the central portion of the project area. In addition to these, a survey for the proposed east-west Verano Roadway conducted on behalf of the City of San Antonio runs along the northern border of the project area. This survey was conducted by SWCA in 2009 and resulted in negative findings (Galindo 2010). Additionally, the Lona China cemetery is located approximately 0.6 miles northwest of the project area. No other documented cultural resources are located within a one-mile radius of the project area.

The background review data differs somewhat from what was provided in the 2008 site development plan. The current review shows that three previously recorded archaeological sites and six cultural resources surveys are located within a one-mile search radius of the main campus project area. These sites consist of the Mitchell Mauermann Cemetery (41BX1669) located approximately half a mile south of the project area, a historic farmstead known as the Fernando Rodriguez homestead (41BX1747) located 0.67 miles southwest of the main campus project area, and a prehistoric lithic scatter (41BX1877) located 0.95 miles south of the main campus project area (Atlas 2012).

The previously conducted cultural resources surveys consist of four surveys conducted on behalf of various federal or state entities such as the Environmental Protection Agency (EPA) and Federal Highway Administration (FHWA) in 1977, 1978, 1984 and 1986. These surveys primarily followed existing roadways and little other data was available on the Atlas database. A large area survey was conducted in 2004 on behalf of the City of San Antonio. This survey is located approximately 0.9 miles south of the main campus project area and resulted in the documentation of numerous archaeological sites, however none are located within the one-mile search radius. The final survey was conducted by SWCA for the Leon Creek Interceptor project in 2010. This project documented the previously mentioned site 41BX1877.

A review of the TxDOT Historic Overlay maps dating to 1903, 1918, 1919, 1927, and 1953 determined that no historic-age structures are located within the main campus project area.

These maps also provided information regarding long-term land use of the property, which aided in gauging the intensity of agriculture-related disturbances over the past century (Foster et al. 2006). The 1919 Bexar County Oil Fields map depicts the project area as within "Mission Irrigated Farms". This indicates that the land has continually been used for agricultural purposes for nearly a century, and has likely sustained subsurface disturbance for at least as long. The 1940 series of Stoner Maps and accompanying aerials for San Antonio show that large portions of the project area have functioned as cleared agricultural fields or pasture.

The review of the previous work in the area, including SWCA's most recent 2012 intensive archaeological survey within the main campus project area, as well as aerial photographs indicate that there is generally a moderate to low potential for significant cultural resources within the remainder of the project area. This is based on the primarily upland setting of the project area, which has been disturbed to some degree by agricultural activity, as well as clearing and cattle grazing. It should be noted that the previously mentioned Mauerrmann Cemetery (41BX1669) is located within the southern development parcel that borders Comanche Creek. Additionally, a number of previously recorded sites are located along the Leon Creek drainage that flows west to east at the southern end of this parcel. Because of the proximity of the confluence of these two waterways, the probability for undocumented cultural resources within this southern parcel is considerably higher.

It is SWCA's professional opinion that this ecosystem and cultural resources assessment is complete and updated to reflect current data. If you have any questions or comments on this revised assessment, please do not hesitate to contact me at (512) 476-0891 or via email at apeyton@swca.com.

Sincerely,

Abby Peyton, MA, RPA
SWCA Project Manager / Archaeologist
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REFERENCES

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Galindo, Mary Jo
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APPENDIX A

FIGURES

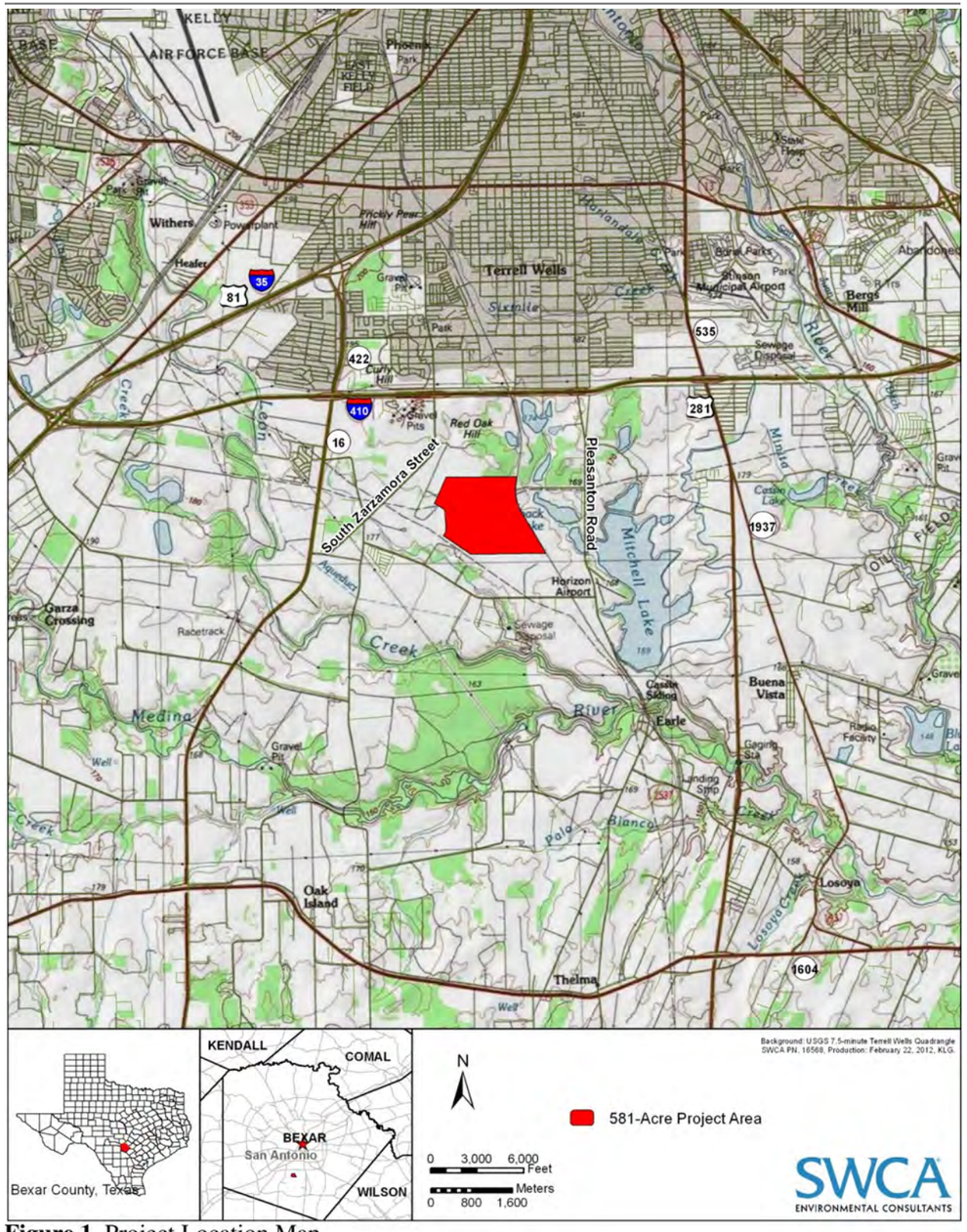

Figure 1. Project Location Map.

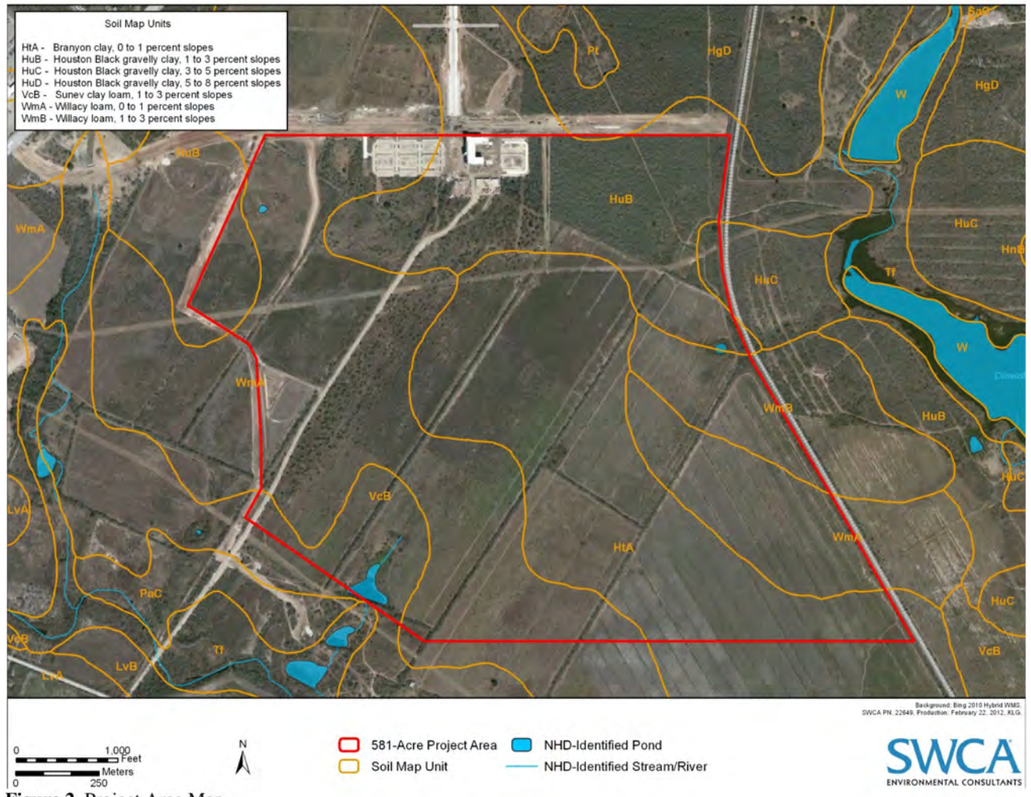

Figure 2. Project Area Map.

CULTURAL RESOURCES SURVEY OF THE
TEXAS A&M UNIVERSITY-SAN ANTONIO
43-ACRE DEVELOPMENT TRACT,
BEXAR COUNTY, TX

Prepared for

TEXAS A&M UNIVERSITY SYSTEM
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Prepared by

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Texas Antiquities Permit 6163

SWCA Project Number 22649-402-AUS
SWCA Cultural Resources Report No. 12-75

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The USFWS currently identifies 20 federally listed threatened or endangered species as having the potential to occur in Bexar County, Texas. This is an increase from the 14 species identified in the 2008 TAMU-San Antonio Campus development plan. The current species include two amphibians, San Marcos salamander (*Eurycea nana*) and Texas blind salamander (*Typhlomolge rathbuni*); two aquatic insects, Comal Springs dryopid beetle (*Stygoparnus comalensis*) and Comal Springs riffle beetle (*Heterelmis comalensis*); four birds, black-capped vireo (*Vireo atricapilla*), golden-cheeked warbler (*Dendroica chrysoparia*), mountain plover (*Charadrius montarus*), and whooping crane (*Grus americana*); one flowering plant, Texas wild rice (*Zizania texana*); one fish, fountain darter (*Etheostoma fonticola*); and, ten cave-dwelling (karst) invertebrates, [unnamed] ground beetle (*Rhadine infernalis*), [unnamed] ground beetle (*Rhadine exilis*), Braken Bat Cave meshweaver (*Cicurina venii*), Cokendolpher Cave harvestman (*Texella cokendolpheri*), Government Canyon Bat Cave meshweaver (*Cicurina vespera*), Government Canyon Bat Cave spider (*Neoleptoneta microps*), Helotes mold beetle (*Batrisodes venyivi*), Madla's Cave meshweaver (*Cicurina madla*), Peck's Cave amphipod (*Stygobromus [=Stygonectes] pecki*).

The previously identified piping plover (*Charadrius melodus*), interior least tern (*Sternula antillarum athalassos*), and Robber Baron Cave meshweaver (*Cicurina baroni*) were removed from the 2012 USFWS list for Bexar County, and the above-listed mountain plover, aquatic insects, amphibians, fish, and flowering plants were added. In addition to these federally listed species, 21 species are listed as threatened or endangered by TPWD. Table 1 provides the current USFWS and TPWD listing status for all listed species having the potential to occur in Bexar County, Texas as well as a brief summary of the potential for each species to occur in the 581-acre project area.

Table 1. Federally and State- Listed Species in Bexar County, Texas

Common Name	Scientific Name	USFWS Status[1]	TPWD Status[2]	Habitat Characteristics/ Potential to Occur in Project Area
Amphibians				
Cascade Caverns salamander	*Eurycea latitans complex*		T	Species requires springs or water-filled caves that are absent from the project area; not expected to occur.
Comal blind salamander	*Eurycea tridentifera*		T	Species requires springs or water-filled caves that are absent from the project area; not expected to occur.
San Marcos salamander	*Eurycea nana*	E		Species requires springs or water-filled caves that are absent from the project area; not expected to occur.
Texas blind salamander	*Typhlomolge rathbuni*	E		Species requires springs or water-filled caves that are absent from the project

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Table 1. Federally and State- Listed Species in Bexar County, Texas

Common Name	Scientific Name	USFWS Status[1]	TPWD Status[2]	Habitat Characteristics/ Potential to Occur in Project Area
				area; not expected to occur.
Arachnids				
Braken Bat Cave meshweaver	*Cicurina venii*	E		Species requires karst features that are absent from the project area; not expected to occur.
Cokendolpher Cave harvestman	*Texella cokendolpheri*	E		Species requires karst features that are absent from the project area; not expected to occur.
Government Canyon Bat Cave meshweaver	*Cicurina vespera*	E		Species requires karst features that are absent from the project area; not expected to occur.
Government Canyon Bat Cave spider	*Neoleptoneta microps*	E		Species requires karst features that are absent from the project area; not expected to occur.
Madla's Cave meshweaver	*Cicurina madla*	E		Species requires karst features that are absent from the project area; not expected to occur.
Birds				
American peregrine falcon	*Falco peregrinus anatum*		T	Species is not expected to occur because preferred habitat of cliffs, bluffs, or suitable vegetation is absent from project area; however, species may fly over project area during migration.
Black-capped vireo	*Vireo atricapilla*	E	E	Species is not expected to occur in the project area because wooded areas do not contain species typically associated with preferred habitat such as shin oak (*Quercus sinuata* var. *breviloba*) or evergreen sumac (*Rhus virens*).
Golden-cheeked warbler	*Dendroica chrysoparia*	E	E	Species is not expected to occur in the project area because wooded areas do not contain species typically associated with preferred habitat such as live oak (*Quercus fusiformis*) or Ashe juniper (*Juniperus ashei*).
Interior least tern	*Sterna antillarum athalassos*		E	Species requires sandbars, salt flats, and bare beaches associated with braided streams, rivers, and reservoirs, which are absent from the project area; not expected to occur.
Mountain plover	*Charadrius montarus*	PT		Species requires native herbaceous grasslands and plowed fields, which are largely absent from the project area.

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Table 1. Federally and State- Listed Species in Bexar County, Texas

Common Name	Scientific Name	USFWS Status[1]	TPWD Status[2]	Habitat Characteristics/ Potential to Occur in Project Area
				waters that are absent from the project area; not expected to occur.
Reptiles				
Texas horned lizard	*Phrynosoma cornutum*		T	Species requires scattered native bunchgrasses, cactus or shrubby trees with exposed soils, which are largely absent from the project area. Although known to occur in the general area, the species has a low potential for occurrence in the project area.
Texas indigo snake	*Drymarchon melanurus erebennus*		T	Species requires thornbush-chaparral woodlands of south Texas, especially dense riparian corridors, suburban areas and irrigated croplands, which are absent from the project area; not expected to occur.
Texas tortoise	*Gopherus berlandieri*		T	Species requires open brush with native grass understory, which is largely absent from the project area. Although known to occur in the general area, the species has a low potential for occurrence in the project area.
Timber/Canebrake rattlesnake	*Crotalus horridus*		T	Species requires perennial, deep-flowing waters that are absent from the project area; not expected to occur.

[1] **USFWS Listing Status:** E-endangered; PT-Proposed Threatened; EXPN- Experimental Population, Non-Essential
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In summary, the federally listed amphibians, aquatic insects, flowering plant, and fish all require specific water features that are absent from the project area and therefore, are not expected to occur on the property. The ten federally listed karst invertebrates require habitat that is identified well north of the project area and the project area is outside those delineated by the USFWS as having potential to contain endangered karst invertebrate habitat. The federally endangered black-capped vireo and golden-cheeked warbler are not expected to occur in the project area because the property does not contain habitat with specific species composition and density requirements typically preferred by both species. In addition, the proposed threatened mountain plover and the endangered whooping crane both require respective native grassland and wetland habitats that are absent from the project area.

Of the state listed species identified in Table 1, four birds and two reptiles have a potential to occur near the project area, although this potential is low. The white-faced ibis and wood stork

have been observed at Mitchell Lake, which is 0.7-mile from the project area. These birds may fly over the project area during migration or potentially stop at ponds in or near the property. The peregrine falcon and American peregrine falcon may also fly over the project area during migration, but are not expected to use habitat in or near the project area. While suitable habitat for the Texas horned lizard and Texas tortoise was not observed on the property, these species are known to occur in the general area. The results of the TPWD NDD review on February 6, 2012 revealed no federally or state listed species occurrences within or adjacent to the project area.

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It is SWCA's professional opinion that this ecosystem and cultural resources assessment is complete and updated to reflect current data. If you have any questions or comments on this revised assessment, please do not hesitate to contact me at (512) 476-0891 or via email at apeyton@swca.com.

Sincerely,

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Galindo, Mary Jo
2010 *Intensive Cultural Resources Survey of the Proposed Verano East-West Roadway Project in Bexar County, Texas.* SWCA Cultural Resources Report No. 09-316. Austin, Texas.

area that has experienced long-term agricultural activity. Such activities have continually impacted the surface and subsurface deposits across the 43-acre development tract.

The THC/CTA survey standards for this project necessitated the excavation of 22 shovel tests within the 43-acre project area. SWCA excavated a total of 22 shovel tests, thereby meeting the survey standards for projects of this size. No artifacts were recovered from any of the 22 shovel tests. Based on the result of the current survey effort, no archaeological resources will be affected by any construction activities within the project area. SWCA recommends no further archaeological investigations within the project area.

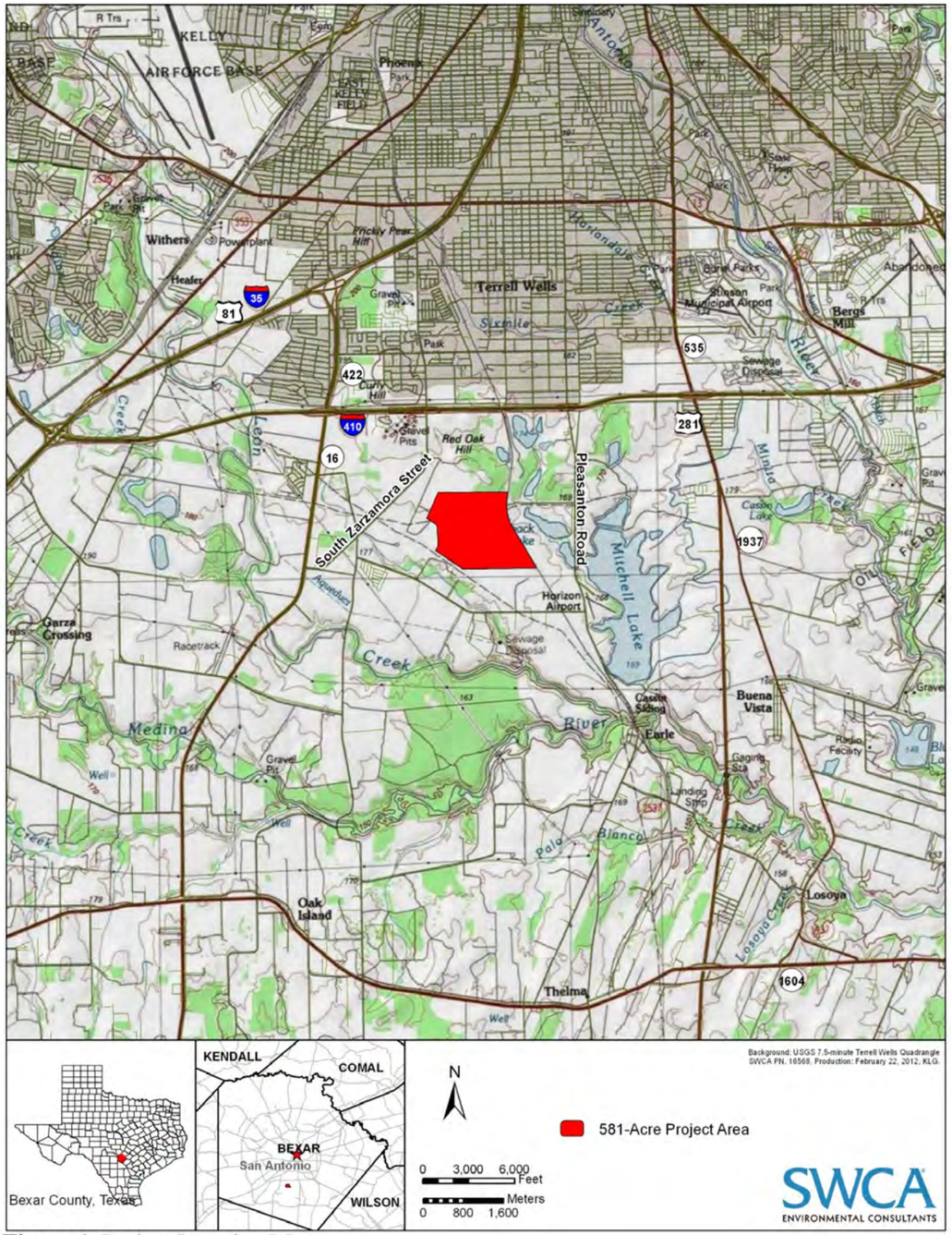
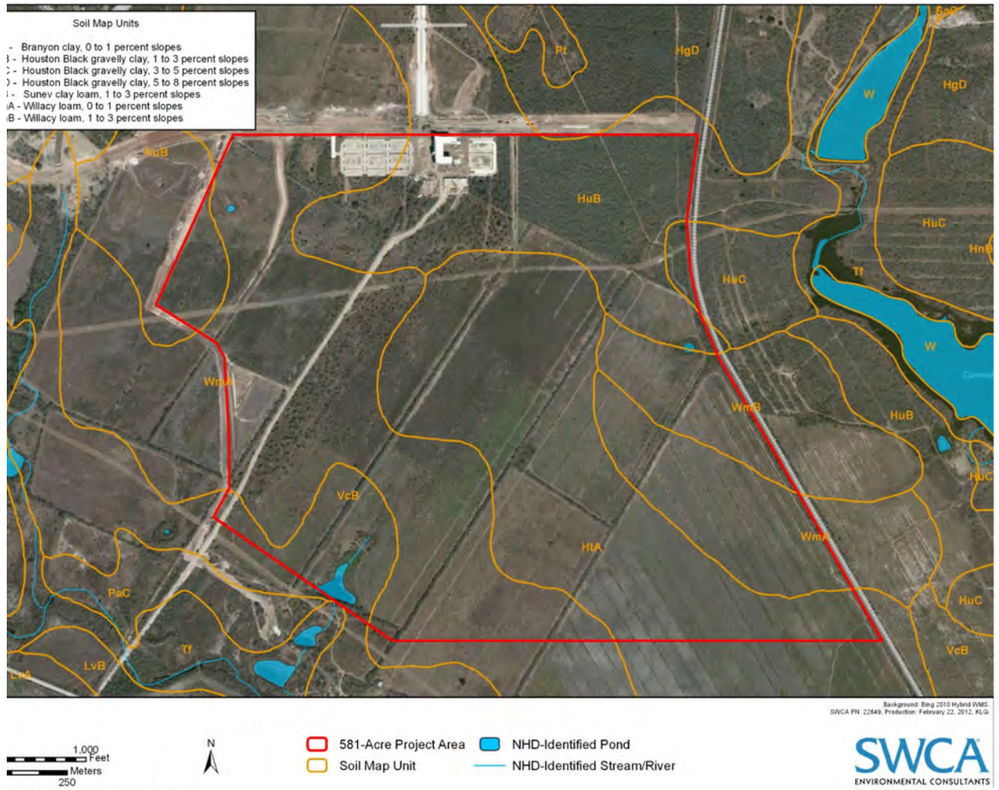


Figure 1. Project Location Map.



ıre 2. Project Area Map.

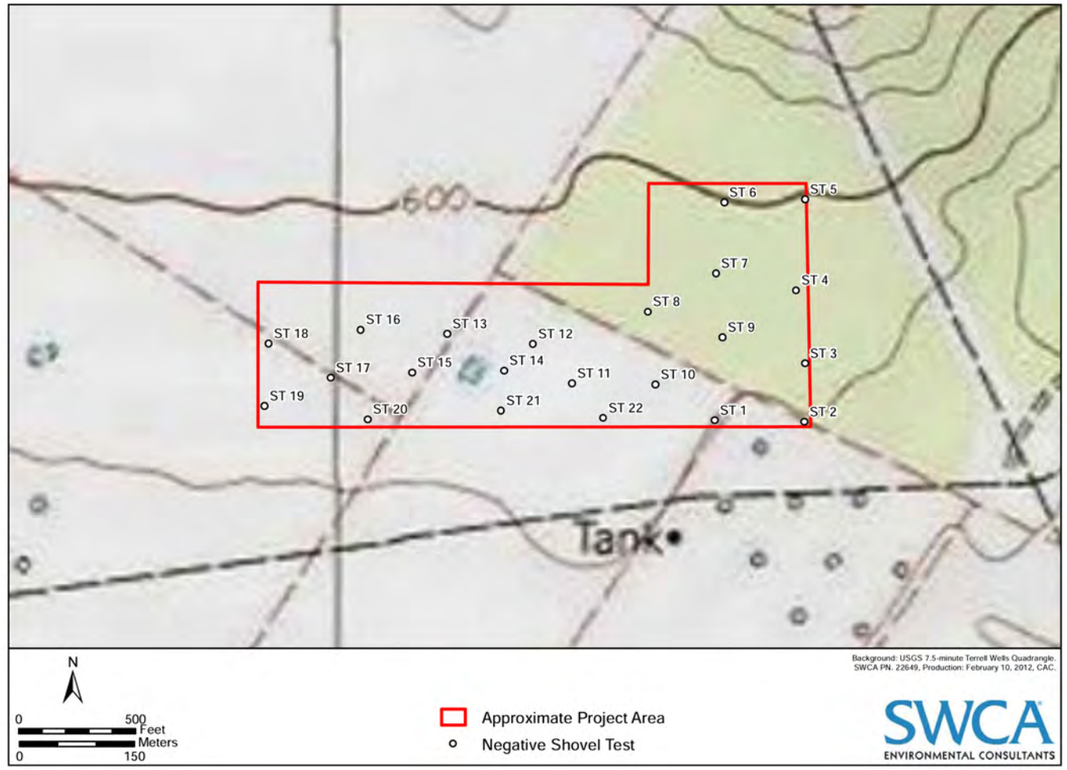


Figure 7. Survey results map.

Table 1. Shovel Test Data

Shovel Test #	Depth (cmbs)	Munsell	Soil Color	Soil Texture Description	Inclusions	Comments
1	0–30	10YR4/3	brown	silty loam	30-40% gravels	No cultural materials.
	30+	10YR4/3	brown	clay loam	5YR 5/6 mottles	Termination due to basal clay.
2	0–40	10YR3/2	very dark grayish brown	silty clay loam	1–3% chert cobbles	No cultural materials.
	40–50	10YR2/2	very dark brown	clay loam	10–20% gravels, 10% calcium carbonates	Termination due to dense gravel lense.
3	0–25	10YR3/2	very dark grayish brown	silty clay loam	<20% gravels	No cultural materials.
	25–30	10YR4/2	dark grayish brown	clay loam	>30% gravels	Termination due to compact soil with dense gravels.
4	0–45	10YR2/2	dark brown	silty clay loam	1–3% chert cobbles	No cultural materials.
	45–50	7.5YR5/6	strong brown	clay loam	3% chert cobbles, 5–10 cm diameter	Termination due to basal clay.
5	0–10	10YR3/2	very dark grayish brown	silty clay loam	30% gravels	No cultural materials.
	10–20	10YR3/2	very dark grayish brown	silty clay loam	70% gravels	Termination due to compact soil with dense gravels.
6	0–30	10YR3/2	very dark grayish brown	silty clay loam	2% gravels	No cultural materials.
	30–50	7.5YR5/6	strong brown	clay loam	3% gravels	Termination due to basal clay.
7	0–30	10YR4/6	dark yellowish brown	silty loam	20-50% gravels	No cultural materials.
	35–40	5YR5/6	yellowish red	silty clay	50-70% gravels	Termination due to basal clay.
8	0–30	10YR2/2	very dark brown	silty clay loam	1% gravels	No cultural materials.
	30–45	10YR5/6	yellowish brown	clay loam	1% gravels	Termination due to basal clay.
9	0–25	10YR4/1	dark gray	silty clay loam	10% gravels	No cultural materials.
	25–30	10YR3/1	very dark gray	clay	None	Termination due to compact soil.
10	0–5	10YR4/6	dark yellowish brown	silty loam	80% gravels	No cultural materials. Terminated at dense gravel lense.
11	0–30	10YR4/1	dark gray	clay loam	>30% gravels	Termination due to compact soil with dense gravels.
12	0–25	10YR4/1	dark gray	silty clay loam	50% gravels	No cultural materials. Termination due to compact soil with dense gravels.
13	0–25	10YR4/1	dark gray	silty clay loam	50% gravels	No cultural materials. Termination due to compact soil with dense gravels.
14	0–30	10YR4/1	dark gray	clay loam	50% gravels	No cultural materials.
	30+	10YR4/1	dark gray	clay	50% gravels	Termination due to compact soil with gravels.
15	0–30	10YR4/1	dark gray	silty clay loam	50% gravels	No cultural materials. Termination due to compact soil with gravels.
16	0–30	10YR3/2	dark brown	silty clay loam	2% gravels	No cultural materials.
	30–40	10YR5/4	yellowish brown	clay loam	5% gravels	Termination due to basal clay.
17	0–25	10YR4/6	dark yellowish brown	silty loam	60% gravels	No cultural materials.
	25–30	10YR4/6	dark yellowish brown	clay loam	70% gravels, 7.5YR5/6 mottles	Termination due to basal clay.
18	0–15	10YR4/2	dark grayish brown	silty clay loam	80% gravels	No cultural materials. Termination due to dense gravels.
19	0–5	10YR4/6	dark yellowish brown	silty loam	80% gravels	No cultural materials.
	5–10	10YR4/6	dark yellowish brown	clay loam	80% gravels, 7.5YR5/6 mottles	Termination due to basal clay.
20	0–30	10YR4/2	dark grayish brown	silty clay loam	50% gravels	No cultural materials.
	30–35	10YR4/6	dark yellowish brown	clay loam	50% gravels	Termination due to basal clay.
21	0–5	10YR3/2	very dark grayish brown	silty clay loam	80% gravels	No cultural materials. Termination due to dense gravels.
22	0–30	10YR4/2	dark grayish brown	silty clay loam	50% gravels	No cultural materials.
	30–35	10YR4/6	dark yellowish brown	clay loam	50% gravels	Termination due to basal clay.

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Texas A&M University-San Antonio / Alamo Architects / Development Plan Estimate / June 4, 2012

SUMMARY

CURRENT - EXISTING & PLANNED	SF	PER SF	ESTIMATE
Central Academic Building	171,866	$ 268.54	$ 46,152,327
Patriots' Casa	20,020	$ 440.70	$ 8,822,786
Outdoor Basketball Courts (2)			$ 157,312
Sand Volleyball Court (1)			$ 28,160
Parking / Roads / Hardscape / Softscape / Irrigation / Infrastructure / Plazas / Site Lighting			$ 5,036,956
SUBTOTAL			$ 60,197,540
Escalation to 2014 - 3%			$ 1,805,926
SUBTOTAL			$ 62,003,466
Soft Costs - 20% of TPC			$ 15,500,867
TOTAL			**$ 77,504,333**

5,000 ENROLLMENT	SF	PER SF	ESTIMATE
Academic Building #1	92,308	$ 264.62	$ 24,426,810
Athletic, Physical Education Building	92,308	$ 262.94	$ 24,271,117
General Use Building with Food Service	30,769	$ 344.87	$ 10,611,203
Tennis Court (1)			$ 179,200
Parking / Roads / Hardscape / Softscape / Irrigation / Infrastructure / Plazas / Site Lighting			$ 3,956,076
SUBTOTAL			$ 63,444,406
Escalation to 2016 - 6%			$ 3,806,664
SUBTOTAL			$ 67,251,070
Soft Costs - 23% of TPC			$ 20,087,982
TOTAL			**$ 87,339,052**

10,000 ENROLLMENT	SF	PER SF	ESTIMATE
Facilities Building #1	46,154	$ 266.53	$ 12,301,321
Central Plant #1	10,000	$ 1,265.87	$ 12,658,706
Student Center	123,077	$ 278.09	$ 34,226,506
Library Building	92,308	$ 278.15	$ 25,675,033
Greenhouse / Animal Quarters / Field Building	15,385	$ 325.83	$ 5,012,939
Academic Building #2	92,308	$ 264.62	$ 24,426,810
Academic Building #3	92,308	$ 264.62	$ 24,426,810
Housing R1, R2, R3, R5, R6, R11 *(NOTE 1)*	625,000	$ 218.95	$ 136,844,460
Outdoor Basketball Courts (2)			$ 157,312
Sand Volleyball Court (1)			$ 28,160
Multipurpose Soccer / Intramural Field (1)			$ 640,000
Parking / Roads / Hardscape / Softscape / Irrigation / Infrastructure / Plazas / Site Lighting			$ 32,928,213
SUBTOTAL			$ 309,326,268
Escalation to 2018 - 9%			$ 27,839,364
SUBTOTAL			$ 337,165,632
Soft Costs - 23% of TPC			$ 100,711,812
TOTAL			**$ 437,877,445**

15,000 ENROLLMENT	SF	PER SF	ESTIMATE
Fine Arts Building - Theater	92,308	$ 477.13	$ 44,043,271
Academic Building #4	92,308	$ 264.62	$ 24,426,810
Academic Building #5	92,308	$ 264.62	$ 24,426,810
Facilities Building #2	30,769	$ 273.01	$ 8,400,384
Central Plant #2	15,000	$ 1,265.87	$ 18,988,058
Student Building with Food Service	92,308	$ 305.26	$ 28,178,025
Housing R10, R12 *(NOTE 1)*	312,500	$ 209.13	$ 65,352,337
Tennis Courts (2)			$ 358,400
Parking / Roads / Hardscape / Softscape / Irrigation / Infrastructure / Plazas / Site Lighting			$ 36,501,317
SUBTOTAL			$ 250,675,412
Escalation to 2021 - 13.5%			$ 33,841,181
SUBTOTAL			$ 284,516,592
Soft Costs - 23% of TPC			$ 84,985,476
TOTAL			**$ 369,502,068**

20,000 ENROLLMENT	SF	PER SF	ESTIMATE
Academic Building #6	92,308	$ 264.62	$ 24,426,810
Academic Building #7	92,308	$ 264.62	$ 24,426,810
Library Addition	23,077	$ 281.35	$ 6,492,647
Athletic Building	123,077	$ 240.89	$ 29,647,429
Student Center Addition	46,154	$ 231.62	$ 10,690,031
Campus Operations Center	46,154	$ 218.04	$ 10,063,215
Housing R7, R8, R13 *(NOTE 1)*	312,500	$ 219.68	$ 68,650,768
Track with Football / Soccer Field (1)			$ 4,352,000
Baseball Field (1)			$ 960,000
Softball Field (1)			$ 896,000
Multipurpose Soccer / Intramural Field (1)			$ 640,000
Parking / Roads / Hardscape / Softscape / Irrigation / Infrastructure / Plazas / Site Lighting			$ 21,597,716
SUBTOTAL			$ 202,843,426
Escalation to 2024 - 18%			$ 36,511,817
SUBTOTAL			$ 239,355,243
Soft Costs - 23% of TPC			$ 71,495,722
TOTAL			**$ 310,850,965**

25,000 ENROLLMENT	SF	PER SF	ESTIMATE
Dining Hall and General Use Building	46,154	$ 319.57	$ 14,749,516
Fine Arts Building - Academic	92,308	$ 255.79	$ 23,611,405
Academic Building #8	92,308	$ 293.74	$ 27,114,714
Academic Building #9	92,308	$ 264.62	$ 24,426,810
Special Use Building with Athletics	61,538	$ 245.53	$ 15,109,467
Administration Building - Student Services & C	50,769	$ 248.15	$ 12,598,544
Housing R4, R9 *(NOTE 1)*	312,500	$ 209.13	$ 65,352,337
Parking / Roads / Hardscape / Softscape / Irrigation / Infrastructure / Plazas / Site Lighting			$ 22,277,381
SUBTOTAL			$ 205,240,173
Escalation to 2026 - 21%			$ 43,100,436
SUBTOTAL			$ 248,340,609
Soft Costs - 23% of TPC			$ 74,179,662
TOTAL			**$ 322,520,271**

NOTE 1: All student housing has been budgeted as "institutional construction" - heavy concrete frames / durable exterior materials

GRAND TOTAL FOR ENROLLMENT OF 25,000	**$ 1,605,594,133**

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TEXAS A&M UNIVERSITY

SAN ANTONIO

2017 MASTER PLAN

Published: 1 April, 2017

VisSpiro STRATEGIES


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