1 VISION

Texas A&M University College Station Campus

Purpose and Mission of the University

The A&M University System is one of the largest systems of higher education in the nation. Through a statewide network of eleven universities, seven state agencies and a comprehensive health science center, the A&M System educates nearly 115,000 students and reaches another 22 million people through service each year. The A&M System is the state's land-grant system. A land-grant college or university is an institution that has been designated by its state legislature or Congress to receive the benefits of the Morrill Acts of 1862 and 1890. The original mission of these institutions, as set forth in the first Morrill Act, was to teach agriculture, military tactics and the mechanic arts as well as classical studies so that members of the working classes could obtain a practical education. The A&M System strives for the highest quality undergraduate, graduate and professional educational programs, outreach and community enhancement services that meet the needs of individuals and organizations, and research and knowledge generation that meets our creative needs and provides the foundation for economic development in Texas.

Texas A&M University-Central Texas is located in Killeen, and is one of the newest universities in the Texas A&M University System, achieving independent status in May 2009. It opened in September of 1999 as Tarleton State University-Central Texas, a public upper-level institution offering bachelor's and master's programs at several sites, including area community colleges, high schools and Fort Hood, the nation's largest active-duty military installation. The Killeen-Temple-Fort Hood Metropolitan Statistical Area now has a population of more than 350,000. Enrollment at A&M-Central Texas continues to grow, totalling 2,500 in January of 2010. Many students attend part time because they are serving in the military or have family and career commitments. A&M-Central Texas offers undergraduate degrees in 38 areas and graduate degrees in 26 areas. To encourage a seamless transfer from community colleges to upper-level work at A&M-Central Texas, the university has developed agreements with Central Texas community colleges that enable smooth transfers without a loss of credits for students who begin their community college studies with A&M-Central Texas in mind.

The University has formalized its Mission Statement as follows:

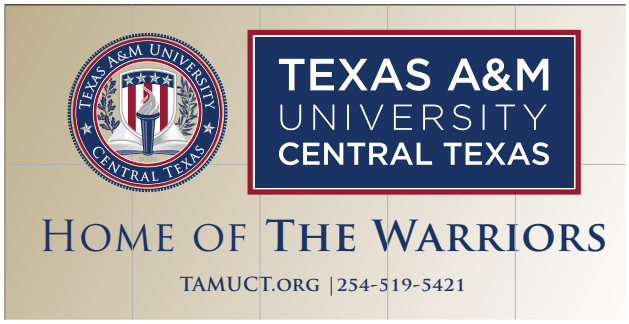
Texas A&M University-Central Texas prepares graduates to lead personally and professional fulfilling lives by providing high quality, rigorous and innovative education through excellence in teaching, service and scholarship. Academic programs and services empower our students to know no boundaries by inspiring intellectual curiosity and lifelong learning, embracing scholarship and research, developing leadership and personal responsibility, and promoting diversity and respect for all individuals.

Core Values:

- Excellence and Achievement- We strive to continuously improve, innovate and exceed expectations.
- Compassion- We care about the feelings of others. When others are suffering, we empathize and offer help.
- Integrity- We conduct ourselves in an ethical and respectful manner.
- Knowledge- We provide educational experiences to encourage lifelong yearning and intellectual curiosity.
- Diversity- We respect and value differences; as well as, similarities in all of our students, co-workers and other stakeholders.
- Initiative- We encourge the involvement and the contribution of each employee. We create a workplace where every employee can share a sense of ownership.
- Collaboration- We develop and maintain partnerships to serve the needs of our students, faculty, staff and external stakeholders.

Themes:

- Excellence
- Service
- Compassion



History of Site Acquisition

Killeen-Fort Hood area community leaders worked for more than a decade with the Texas A&M System to win approval and funding for a freestanding public university campus in the Killeen metropolitan area. the vision of the community for significant economic development and access for Fort Hood soldiers and their families to a first class, affordable university education was complimentary to A&M's goal that the campus would "open a new path to make Central Texas a vital center for education, research and economic development."

The Division of the Army agreed to transfer 672 acres of land which constituted a portion of Fort Hood which was somewhat isolated from the main body of the post and, because of nearby encroaching development, was no longer practical for military training and maneuvers. In lieu of a cash payment for the property, the Army agreed to accept an exchange of in-kind considerations for the land. A&M would give the Army use of available classroom space and provide educational services in areas of nursing, computer networking, mental health education and business administration.

The transfer occurred on April 30, 2009 in a ceremony at the U.S. Capitol. The transfer papers were signed by U.S. Representative Chet Edwards (D-Waco), U.S. Representative John Carter (R-Round Rock), Army Secretary Pete Geren and Texas A&M System Chancellor Michael McKinney. Edwards served as Chairman of the Military Construction and Veteran Affairs Appropriations Committee. Chancellor McKinney characterized the importance of the acquisition of the campus land as follows:

"This land ensures that Texas A&M University-Central Texas commands a strategic position for upcoming advances in research and commercialization in collaboration with the A&M System, Fort Hood and our many partners."

Description of the Site

The site for the Texas A&M University-Central Texas campus is 672 acres of undeveloped land located at the southwest corner of State Highway 201 (Clear Creek Parkway) and State Highway 195 (Phantom Warriors Highway) in Killeen. Because Fort Hood's training activities on the property in recent years had been limited, the character of the property has returned to a state which is reminiscent of classic rolling Central Texas ranch land. Mature live oak trees, exposed limestone outcrops and meandering tributary creeks create an overall scenic aspect. Although the vigorous growth of the City of Killeen has brought development of residential subdivisions to the virtual doorstep of the campus, this has not impacted the

quality of the dramatic vistas from topographic high points. And the expansion of the Killeen-Fort Hood Regional Airport two miles west of the campus has created a rationale for improvements to the roadway network adjacent to the property, from which the University will benefit.

Guiding Principles for Campus Development

The planning and development of a new university campus on property of this ample size and distinctive physical character is a rare opportunity indeed. In contrast to an urban campus environment, often characterized by limited land area and constraining context, and resulting in a rigorous formal pattern of building quadrangles, the leadership of TAMU-Central Texas envisions a campus designed to function in harmony with the natural environment. This overarching vision leads in turn to several guiding principles which should inform decision making about campus development for years to come.

- Create a unique sense of place for TAMU-CT by designing in response to the nature of a rugged and picturesque site.
- Preserve the riparian zones of North Reese Creek as well as habitat and steep slope areas as permanent open space.
- Create a compact, easily walkable academic core and housing precinct.
- Utilize flatter, less vegetated areas of the property for recreational fields, athletic facilities and parking.
- Develop a pattern language for campus form to include roadways which curve and flow with the topography and buildings set in angular, picturesque relationships.
- Establish design guidelines which combine elements of regional architectural history with an expression of contemporary technology.

The Development Plan which follows in intended to provide the University with a clear roadmap for incremental development of the campus over the next twenty to thirty years, accommodating a target enrollment of 15,000 students. The plan addresses appropriate responses to the regional Killeen-Fort Hood context, the natural systems of the landscape and the programmatic requirements of future academic, residential, extra-curricular and support facilities. The plan also contains detailed architectural and landscape design principles and guidelines which can provide guidance with regard to massing, scale, form, materials and details for campus architecture. A framework for the development of the campus utility infrastructure is included in Chapter 7.

We are confident that the realization of the Campus Development Plan at full buildout will provide a healthy and beautiful learning environment in full support of the mission and core values of Texas A&M University-Central Texas.


STATE HIGHWAY 201
STATE HIGHWAY 195
0
400
800
1600 Feet
ILLUSTRATIVE CAMPUS MASTER PLAN
FULL BUILD OUT

2 PLANNING PROCESS

This Campus Development Plan is the result of a rigorous planning process spanning four distinctive phases of activity and five months duration, beginning in mid-November of 2009 and complete in mid-April 2010. The Texas A&M University System, Office of Facility Planning and Construction served as the administrators, managing and guiding the conduct of the process for the benefit of their clients, the Texas A&M University-Central Texas local leadership. Audrey Rohloff-Ecklund served as the Project Manager on behalf of Texas A&M University System. Teresa L. Teaff, PhD (Interim Provost and VP for Academic and Student Affairs) and Gaylena Nunn (Interim VP for Finance and Administration) represented the Central Texas campus. The consulting team was led by Good Fulton & Farrell of Dallas. The following consultants and disciplines completed the planning team:

- Ira Fink and Associates (academic planners)
- Jacobs (environmental, traffic, landscape, power and energy, and stakeholder liaison)
- Pacheco-Koch (civil engineering)
- focusEGD (signage and wayfinding systems)

The planning process benefitted from frequent work sessions and review meetings with the client team as well as with local stakeholders in the Killeen-Fort Hood community. The support and counsel of local leaders such as General Pete Taylor (ret.) and Col. Bill Parry (ret.) with the Heart of Texas Defense Alliance, John Crutchfield, President and CEO of the Greater Killeen Chamber of Commerce and members of the City of Killeen City Council and technical staff were valuable in helping the consulting team in our understanding of regional context, priorities and potential beneficial partnerships with Texas A&M. The phases of work and tasks accomplished flowed as follows:

Phase I Data Collection

1. Obtain and review existing plans, surveys, reports and memoranda
2. Conduct physical site analysis
3. Determine area planning influences such as population growth, income, housing, transportation, employment and land use

Phase II Programming, Mapping and Analysis

2.1 Create campus-wide Building Program
- Create enrollment projections
- Predict student enrollment by academic program
- Create faculty and staff population projections
- Predict facility needs using the THECB Space Projection Model
- Project building scale and footprint size to predict the number of academic buildings required
- Project recreation and athletics needs
- Project housing beds/buildings required
- Predict parking space needs

2.2 Convert site analysis data into a series of useful maps to guide planning
- Area-wide Thoroughfare Plan
- Area-wide Land Use Plan
- Campus core zone
- No build zones/environmental preserves
- View corridors
- Utility and circulation corridors

Phase III Alternative Plans

3.1 Preparation of alternative recommendations for locations of initial phase building and sitework

3.2 Development of overall campus framework plans for Land Use, Vehicular Circulation and Parking, Open Space and Pedestrian Circulation, Utility Infrastructure and Urban Design Principles

3.3 Preparation of traffic study to confirm roadway network capacities and viability of ingress/egress on TxDOT roadways

3.4 Presentation of initial concepts and findings to TAMU-CT faculty and staff and local stakeholders

Phase IV Campus Development Plan

4.1 Coalesced the results of the alternative plans into a final campus master plan

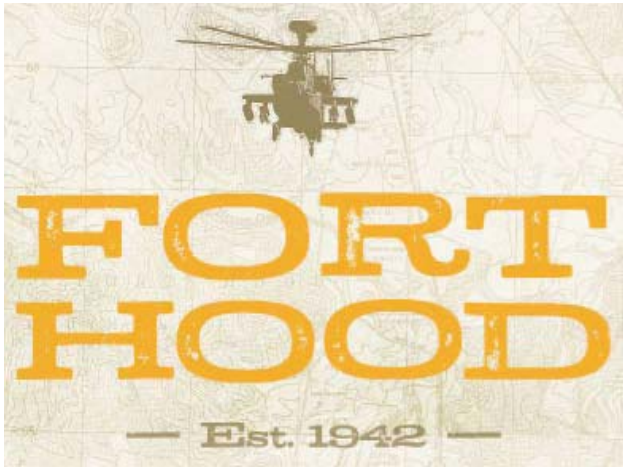
4.2 Prepared supporting maps, charts and drawings to illustrate components

4.3 Prepared the text for the final report

4.4 Conducted final review presentations with the client team in preparation for submittal to the Board of Regents

4.5 Presentation and approval by the Board of Regents on May 27, 2010

3 REGIONAL CONTEXT



The purpose of this chapter of the Campus Development Plan is to examine and report upon the regional context within which the new Texas A&M University-Central Texas will reside, and to describe the major forces which are likely to bring growth to the metropolitan area and influence the institutional character of the university.

The Killeen-Temple-Fort Hood Metropolitan Statistical Area is one of the most dynamic MSA's in terms of population growth not only in Texas, but also in the entire U.S. 2010 MSA population estimates of almost 400,000 represent a 21% increase from the 2000 census. Killeen was recognized by the US Census Bureau as the ninth fastest growing large city in the nation between 2007 and 2008, and now sports a population of approximately 120,000. Killeen's position as the host city for Fort Hood looms large as the single greatest driver of the city's growth and economic vitality. As a result of the build up following September 11, 2001, the post has become the largest military installation in the United States. Families of Fort Hood soldiers have followed them to the region, encouraged by the vigorous regional economy and the low cost of housing. This segment of the population, seeking to complete a college degree or pursue additional academic credentials, will likely look to Texas A&M-Central Texas as an attractive, affordable option.

The site for the future campus of Texas A&M University-Central Texas is located at the southern extreme of the City of Killeen, Texas corporate limits. The city limit line is located several hundred feet south of the north property line and several hundred feet west of the east property line. The bulk of the campus land lies outside the city limits within Killeen's extra-territorial jurisdiction (ETJ). The City staff has suggested that A&M make a request for voluntary annexation of the campus into the City of Killeen proper at some point in the near future, to bring clarity to matters of police and fire protections services on campus.

The campus property lies within Killeen's prime southern growth area, which can be defined as located roughly between Stagecoach Road on the north, Stillhouse Hollow Road on the east, FM 2484 on the south and Fort Hood on the West. The City of Killeen has been investing in the basic infrastructure and road improvements in preparation for the community's next several decades of growth.

Areas in the path of Killeen's southward growth are currently rural in character, and (similar to the TAMU campus) feature stands of mature trees, meandering riparian corridors, and topographic "knobs" which serve as prominent landmarks on the horizon. Typically, land of this character inspires carefully planned, higher quality development. From conversations with City leadership (staff and elected) and from review of recent land use plans, it is evident that this is the collective vision.

The SH 195/SH 201 corridor adjacent to the TAMU-CT campus property has been identified in Killeen's Comprehensive Plan as the most-likely high-growth quadrant within the City of Killeen. A number of land use influences are seen as contributors to a growth pattern which favors this southerly direction: the Fort-Hood Military Reservation boundary constrains growth to the north, west and southwest, forming edges which push development to the south and east; the Killeen Fort Hood Regional Airport represents a large investment by the community, and tends to promote nearby commercial and industrial uses which attract major employers to the corridor; and the future SH 195/SH 201 grade-separated interchange has the potential to function as a major gateway to the City on SH 195 and will tend to draw and capture destination-oriented retail establishments.

Fort Hood Military Reservation

The Fort Hood Military Reservation encompasses approximately 340 square miles of land area extending from the northern edge of Killeen 25 miles into the Central Texas countryside, and wrapping around the west and southwest edges of the city to form the western boundary of the TAMU-CT campus. Fort Hood is the largest single point employer in the state of Texas, and has a government payroll in excess of $1 billion annually. Yearly contract purchasing exceeds $400,000. There are currently no permanent structures on the portion of the post which lies adjacent to the campus property. Informal conversations with representatives of The Heart of Texas Defense Alliance (an organization with the function of liaison between the Army and local civilian economic interests) suggested a vision for a technology research park initiative as a future Army-Texas A&M partnership on the neighboring Fort Hood parcel. The emerging disciplines of defense technology and bio-technology are seen as prime fields for synergistic efforts by the two institutions.

New Regional Medical Center

Nearly $1 billion in federal stimulus funds have been committed for the two-stage construction of a new Fort Hood hospital. When completed, the new Regional Medical Center will be approximately 585,000 SF and will support 140,000 enrolled beneficiaries including 50,000 active duty soldiers. Work on the first phase of the hospital is scheduled to be completed by 2013 at a cost of $621 million. This phase includes a clinic building and an ancillary building that will house radiology, labs and other departments. The second phase, which includes a five-story tower, is scheduled to begin in 2016 and will cost $350 million. Providing housing and services to the families and personnel working at and utilizing the significant new facility will be an important community objective for Killeen in upcoming years.

Killeen/Fort Hood Regional Airport

This joint Airport completed in 2004 provides a civilian terminal on the east side for private sector operations and a military complex on the western portion for US Army operations. It is a major investment in the future development of the City as well as a necessity for troops reporting to the post. It will be a major destination for traffic in the local area, and may serve as a catalyst to industrial development. The net industrial expansion within a 30 mile radius of the facility is expected to generate more than $2.8 billion in added yearly gross product by the time that the Airport is in full operation in 2014. The Airport is located at the southwest corner of the "pocket" formed by the Fort Hood Military Reservation; therefore, any development associated with or stimulated by the Airport will have to be located east or northeast of the Airport.

The Airport runways and aprons are oriented southeast and northwest, so that approaches and takeoffs occur over Fort Hood lands. As such, the noise impact levels of commercial traffic will have limited impact upon the campus. Commercial air traffic, measured in enplanements, is projected to increase to 240,620 by 2016. As of the date of

this Campus Plan, the need and feasibility of a second runway is being studied. The proposed location for the second runway is parallel to the existing runway and roughly 5000 feet to the south. This position would not appear to cause takeoff or landing operations to occur directly over TAMU-CT campus land.

As the military mission of Fort Hood expands, the potential for military air traffic increases. The military operations at the Airport are projected to be 24,059 in 2006 and will increase to 29,328 by 2016. This military air traffic can take the form of airplanes and helicopters, and the flight circulation patterns may extend over the campus property. Such helicopter overflights are seen as common in Killeen, and are not perceived to have a large impact on the quality of life. However, the noise impacts from the increased military air traffic would have the same effects on nearby properties as the increased commercial traffic.

Noise is generally defined as "unwanted sound," and is the matter for subjective judgment of what is "noisy" and what is not. An extended technical discussion of noise specific to the Killeen Airport can be found in Planning Program for Killeen Joint Use Airport at Robert Gray AAF, February 2004, page F.2. In short, the property most likely to be adversely affected by excessive noise (technically defined as greater than 65 db(A) lays entirely within the Fort Hood Military Reservation. This impact is projected to not significantly increase through 2021.

SH 195/SH 201 Interchange

This interchange has the potential to be a major gateway to the City on SH 195. Already a major artery that connects Killeen to IH-35, SH 195 carries a significant amount of traffic to and from the City and Fort Hood. SH 201 connects SH 195 to the Airport and to US Highway 190. On the City's Major Thoroughfare Plan, SH 201 is planned to extend eastward to FM 3418. At some point in the future, SH 201 may be extended southeastwardly, crossing the upstream end of Stillhouse Hollow Lake and connecting to I-35 in the vicinity of Salado.

As a land use influence, the interchange will tend to draw compatible destination commercial uses such as retail establishments, offices or a hotel. Medium density residential uses and mixed use developments (which might choose to locate across from the campus SH 201 or SH 195), would also be considered as compatible uses with TAMU-CT.

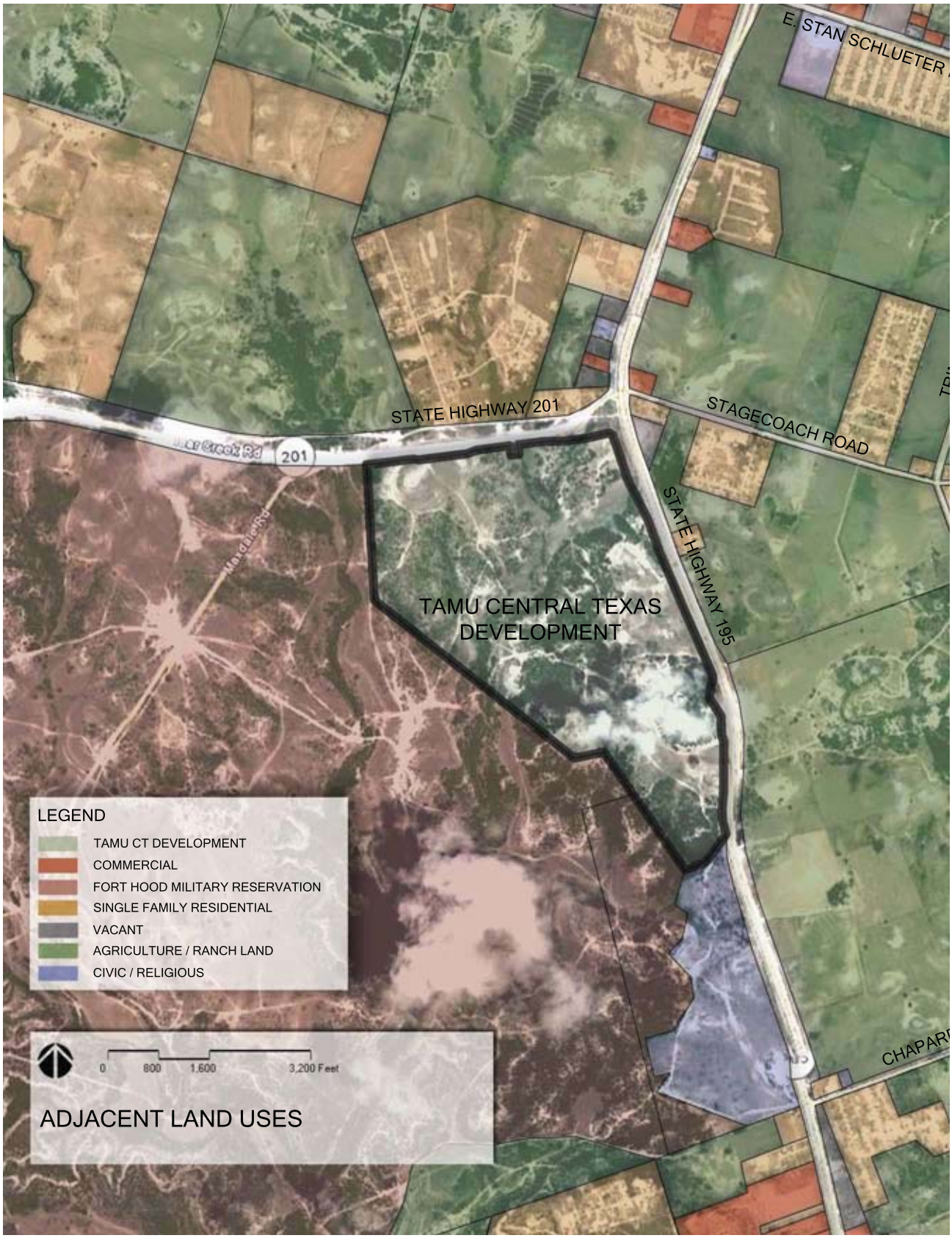
In order to control land uses along the highway corridors adjacent to the TAMU-CT campus property, the City of Killeen enacted a "University Overlay" zoning district ("UOD") for a depth of 1500 feet from the highway right of way lines opposite the campus. The regulations contained in this new ordinance prohibit incompatible uses such as auto dealerships and industrial uses, as well as residential uses which are not a part of a mixed use development. In addition, a height limit of 35 feet maximum was established, and landscaped buffer yard setbacks were created to promote a greener edge to the roadways. The City has expressed a desire to further regulate business signage and create architectural design standards in the University Overlay District to reduce the clutter that has occurred on Killeen's other major highways. These initiatives will have a beneficial influence on the visual character of the campus context.

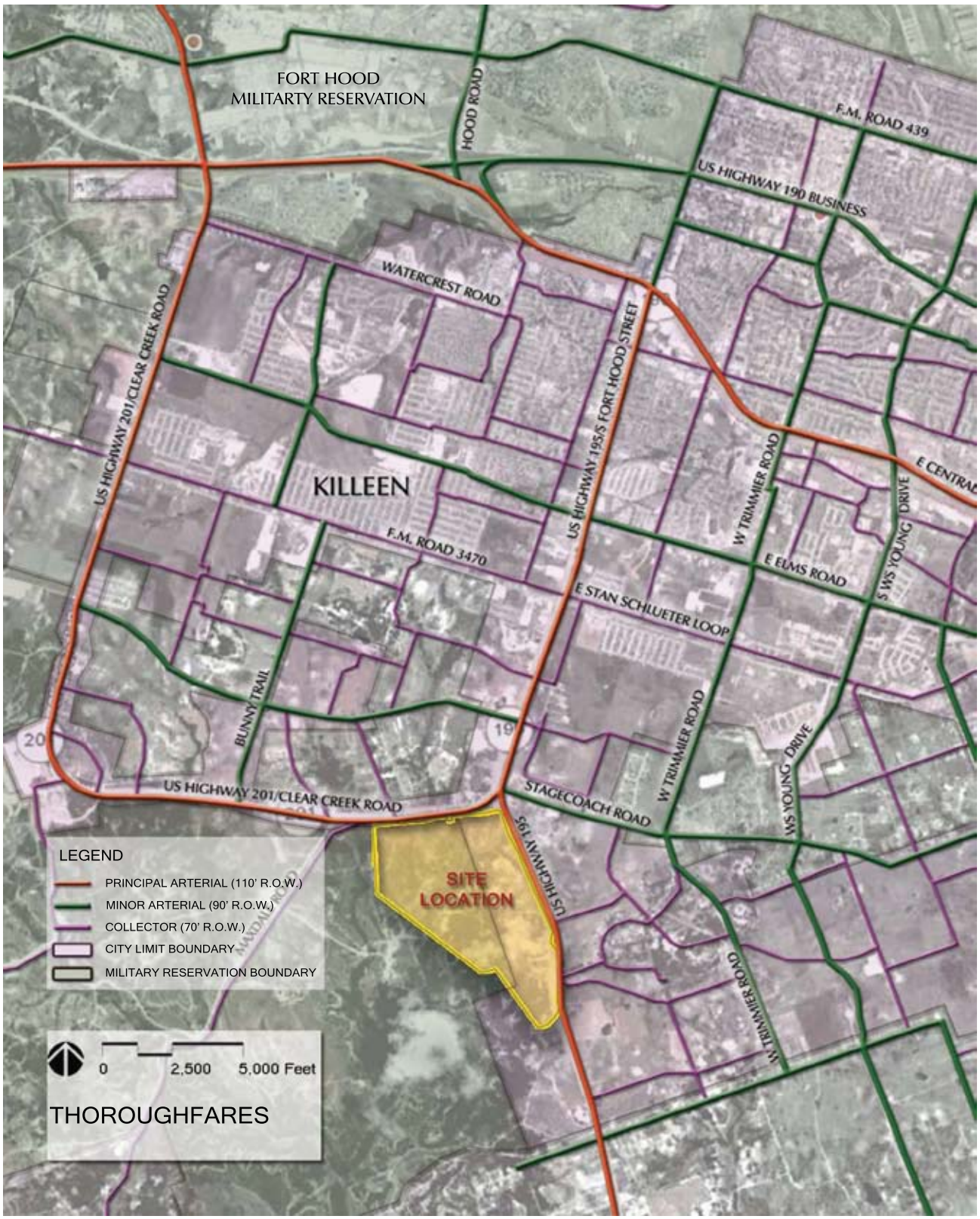
Texas Veterans Cemetery

The Texas Veterans Cemetery is located immediately south of the campus property on the west side of SH 195. The Cemetery occupies the frontage of SH 195 southward to the City Limits at Chaparral Road.

The Cemetery is owned and operated by the Texas Veterans Land Board (TVLB). The TVLB would prefer that the areas around the Cemetery adhere to the "Dark Skies Initiative" guidelines. (www.darksky.org) This initiative endeavors to limit light pollution that is caused by unshielded site lighting. This light pollution can be caused by streetlights and parking lot lights that direct light into the sky as well as to the ground. The "Dark Skies Initiative" seeks to limit light pollution through the use of reflectors and shields that direct illumination to the ground. The adoption of the guidelines promoted by the Initiative are voluntary only, unless a local government seeks to employ them through policy.

The limestone walls and metal roofs of the small-scaled structures on the Cemetery grounds are seen as compatible with the vision for the architectural character of the TAMU-CT campus buildings. The well maintained lawns and preserved tree groupings make the Cemetery a quiet, graceful neighbor.


E. STAN SCHLUETER
STATE HIGHWAY 201
STAGECOACH ROAD
201
STATE HIGHWAY 195
TAMU CENTRAL TEXAS
DEVELOPMENT
LEGEND
TAMU CT DEVELOPMENT
COMMERCIAL
FORT HOOD MILITARY RESERVATION
SINGLE FAMILY RESIDENTIAL
VACANT
AGRICULTURE / RANCH LAND
CIVIC / RELIGIOUS
0
800
1,600
3,200 Feet
ADJACENT LAND USES


FORT HOOD
MILITARTY RESERVATION
HOOD ROAD
F.M. ROAD 439
US HIGHWAY 190 BUSINESS
WATERCREST ROAD
US HIGHWAY 201/CLEAR CREEK ROAD
US HIGHWAY 195/S FORT HOOD STREET
KILLEEN
W TRIMMIER ROAD
E CENTRAL
S WS YOUNG DRIVE
F.M. ROAD 3470
E ELMS ROAD
E STAN SCHLUETER LOOP
BUNNY TRAIL
US HIGHWAY 201/CLEAR CREEK ROAD
STAGECOACH ROAD
W TRIMMIER ROAD
WS YOUNG DRIVE
US HIGHWAY 195
SITE LOCATION
W TRIMMIER ROAD
LEGEND
PRINCIPAL ARTERIAL (110' R.O.W.)
MINOR ARTERIAL (90' R.O.W.)
COLLECTOR (70' R.O.W.)
CITY LIMIT BOUNDARY
MILITARY RESERVATION BOUNDARY
0
2,500
5,000 Feet
THOROUGHFARES

4 SITE ANALYSIS

View looking east on SH 201

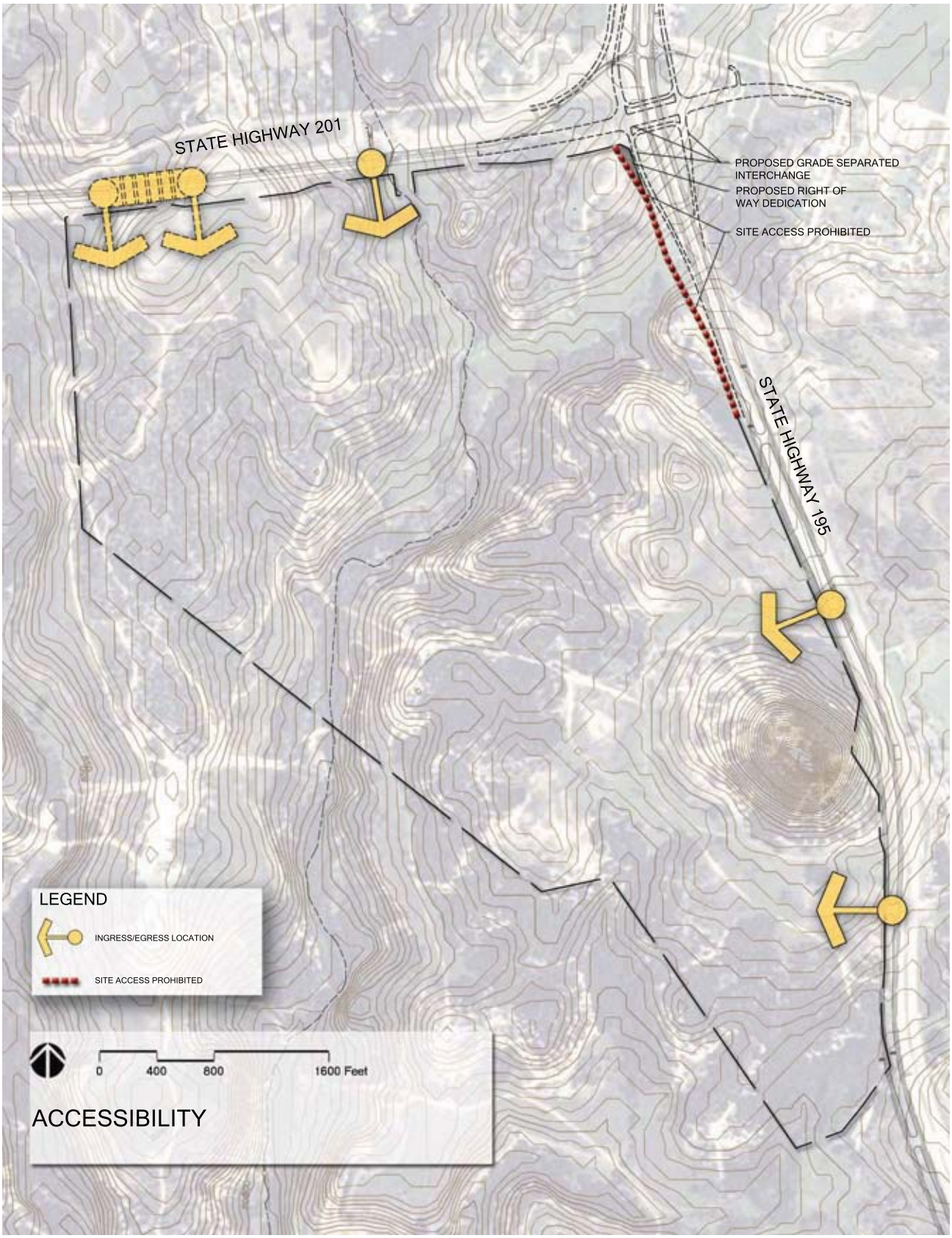
View looking south onto the site from SH 201

View looking south on SH 195

Access

The current State Highway 201 is a two-lane road that connects the Regional Airport to SH 195 and Stagecoach Road as it travels east towards south central Killeen. The Texas Department of Transportation is currently constructing signals at this intersection to control traffic movements in all four directions. These signals are intended as a temporary measure to improve safety until funding becomes available for the planned grade separated interchange. Due to future traffic projections for this portion of Killeen, TXDOT plans call for the future widening of SH 201 by adding two lanes to the south of the current two lanes, forming a divided four lane highway. This widening may occur within the next 2 years depending on state funding. Likewise, TXDOT has plans for a future grade separated interchange of SH 201 over SH 195. This important project, which may be combined with the SH 201 widening project, will move the current intersection about 800 feet to the south, and remove an existing bend in the movement from SH 201 to Stagecoach Road. Right-of-way and access control has already been purchased for the SH 201/SH 195 grade separated interchange. Vehicular access into the campus from SH 201 is proposed at two locations: for Phase 1 of the master development plan the first entry drive will lie immediately west of North Reese Creek and align with the existing Reese Creek Road Connector, which is roughly 2,000 linear feet west of the SH 201/SH 195 interchange. The Phase 2 access drive will lie west of the Phase 1 drive and approximately 500 feet east of the site's west boundary. Both of these entry points will require deceleration and acceleration lanes, and signalized intersections will be highly desirable for safety. There is another access drive along SH 201 that currently serves as vehicular access to the lift station located roughly one half mile south of the highway. This access drive will remain in use until alternate means of access is provided in future phases of the campus development plan.

State Highway 195 is a four lane median-divided roadway in good repair. Vehicular access to the site will be limited to align with two existing median openings along the site's east boundary with the highway. From north to south these access points lie roughly 4,100 feet and 6,600 feet from the future grade separated interchange. This more southerly point of access has been suggested as a future grade-separated crossing at the time that SH 195 becomes a fully limited-access freeway. These access points are expected to be utilized post Phase 2 construction. Acceleration and deceleration lanes will be required to


STATE HIGHWAY 201
PROPOSED GRADE SEPARATED INTERCHANGE
PROPOSED RIGHT OF WAY DEDICATION
SITE ACCESS PROHIBITED
STATE HIGHWAY 195
LEGEND
INGRESS/EGRESS LOCATION
SITE ACCESS PROHIBITED
0
400
800
1600 Feet
ACCESSIBILITY

accommodate traffic speeds on SH 195. There is an existing median break that lies roughly 2,600 feet south of the future interchange, which is scheduled to be removed in order to better facilitate traffic flow upon the completion of the interchange project.

Topography

The site's topography is emblematic of much of the terrain in Central Texas—mostly rolling hills, with occasional steep sloping areas. These slopes tend to expose the underlying sedimentary bedrock, which is composed of limestone and dolomite that were deposited in shallow, warm water seas throughout what is now Texas. Fossils from the Cretaceous period consist of animal and plant remains that are abundant in the area, and in most of the exposed rocky locations on the site. Specifically, ancient oysters dating to 100 million years ago named *Exogyra ponderosa* are especially numerous in several exposed areas throughout the site.

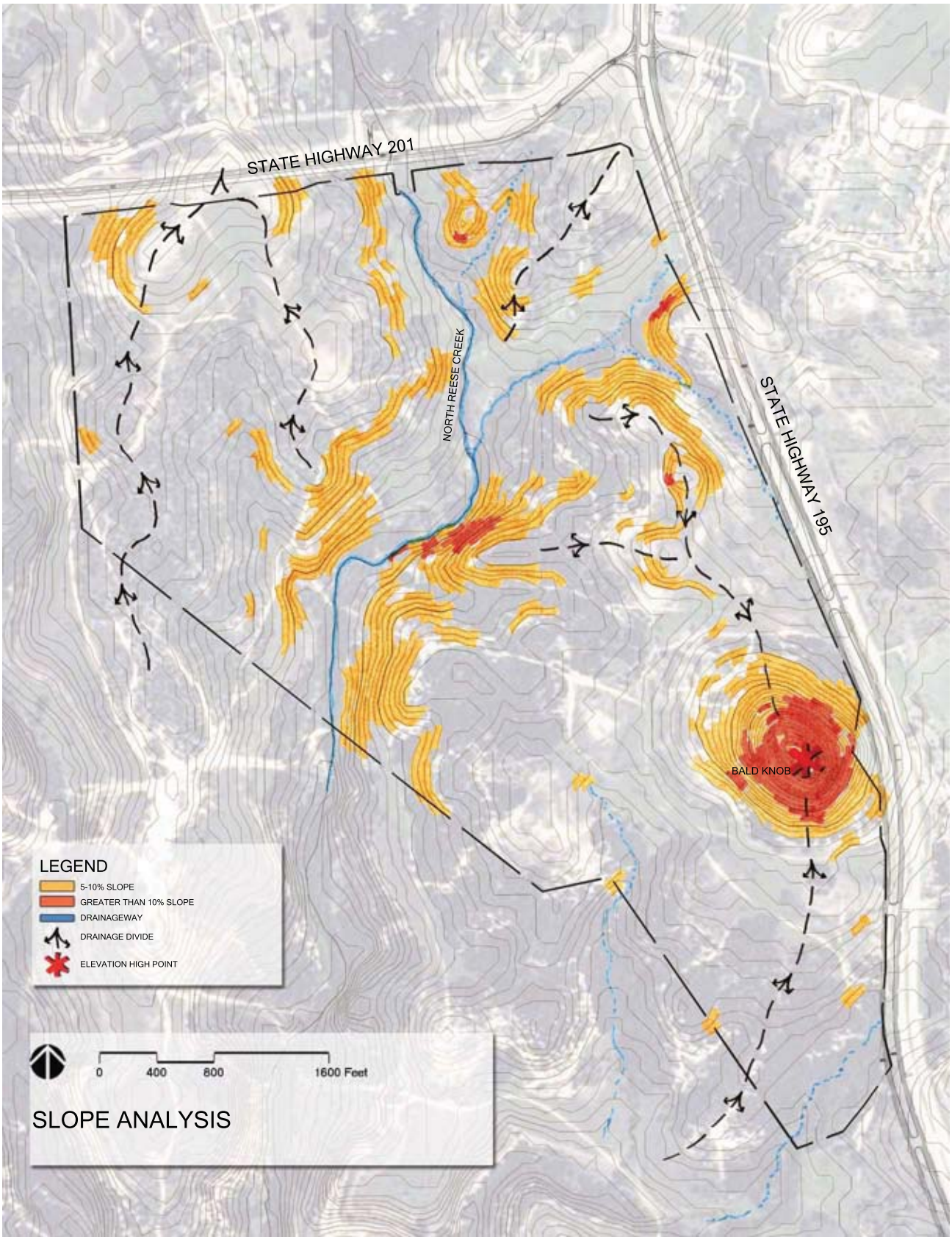
View looking south toward Bald Knob

The most prominent location on the site is Bald Knob, which is the highest point on the site and one of the highest in the area at 1,080 feet+/- above sea level in the site's southeast corner. It has a large, steeply sloped area on its north face with exposed limestone and countless fossil remains. Another area on the site with this exposed rock condition is the site's second highest point near its northwest corner at 945 feet+/-, which has a large exposed limestone escarpment along its north and west face. Other locations include escarpments along portions of North Reese Creek and high points that are relatively flat both west and east of the creek. With the exception of the two high points on the site, most of the steep sloped areas reside along the creek beds, which occasionally exceed 10% grade.

Aside from these steeply sloped areas, most of the site is gently sloped and easily walkable. Of these areas, the flattest portion is roughly the location of the Development Plan's future pedestrian quadrangle south of the Phase 1 building, which also has exposed limestone with limited topsoil. This location has prominent views of much of the site and surrounding areas.

Limestone outcrops near North Reese Creek

Though most of the site is gently sloped, the site in its totality is fairly extreme in its overall maximum relief. As mentioned above the highest point is Bald Knob at 1,080 feet+/-. The low point is 830 feet+/- and resides along North Reese Creek at its most southerly point on the site before it passes onto Fort Hood property, giving the entire site a maximum relief of 250 feet+/-.


STATE HIGHWAY 201
NORTH REESE CREEK
STATE HIGHWAY 195
BALD KNOB
LEGEND
5-10% SLOPE
GREATER THAN 10% SLOPE
DRAINAGEWAY
DRAINAGE DIVIDE
ELEVATION HIGH POINT
0
400
800
1600 Feet
SLOPE ANALYSIS

North Reese Creek

Drainage Characteristics

The only named creek on the site is North Reese Creek, which flows southwesterly through the middle portion of the site, and has a watershed comprised of roughly 500 of the site's 670 acres. This Waterway of the U.S. includes a FEMA delineated 100-year flood plain that averages 200 feet in width. The creek has two arms that extend to the northeast, which also include a 100-year flood plain. While these arms are mostly dry, North Reese Creek remains wet all year; in fact, it was observed that after a typical rain event during the fall of 2009 that this creek is quite active, averaging ten to twelve feet in width and one to two feet in depth. A small portion of North Reese Creek has an exposed limestone base.

Two additional unnamed creeks seasonally run from the far south end of the site towards the southwest and include about 135 acres of the site's total watershed. Another off-site creek west of the site on Fort Hood property includes roughly 35 acres of watershed from the west edge of the site.

An area on the site that shows a strong sense of topographic containment, yet is not depicted with a creek bed is Area 1A as shown on the exhibit. This area has no evident rock exposure and is boggy in nature. It may eventually be delineated as part of the Waterways of the U.S. Another area that is somewhat boggy is the Area 1C near SH 195.

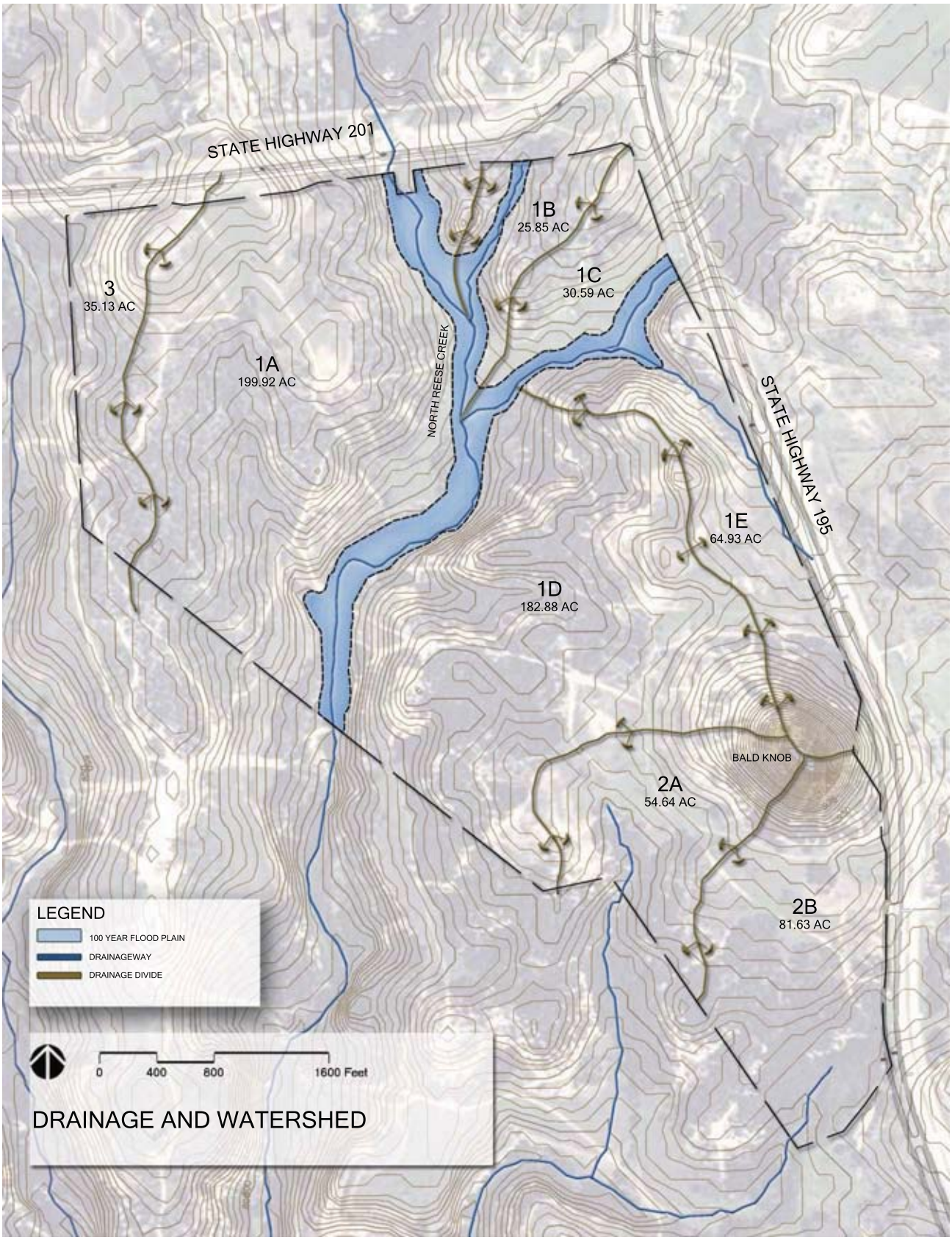
North Reese Creek

Vegetation

One of the many unique attributes of Central Texas is its vegetation, which is characterized by frequently low lying, somewhat scrubby trees and shrubs, complemented by field grasses. This vicinity is part of the Cross Timbers ecoregion, a transitional area between the prairies of the American West and the forested low lying hills of Texas. Specifically, the site lies within Ecoregion 29e called the Limestone Cut Plain, which is underlain by Cretaceous limestone and dolomitic clay. This ground underlayment combined with limited topsoil depth is not conducive to the cultivation of many crops, being better suited to rangeland or pastureland. A somewhat limited native tree habitat is present on the site, which is comprised of shade tree varieties like the deciduous Post Oak, White Shin Oak, Cedar Elm, Texas Ash, Plateau Live Oak, Hackberry and Bur Oak, along with evergreens like Eastern Redcedar and Ashe Juniper—most of which appear somewhat stunted on the site.

Existing Oak trees and grasses

Although the grasslands of the Limestone Cut Plain are a mix of tall, mid, and short grasses, some consider it a westernmost extension of the tallgrass prairie, which distinguishes this ecoregion from the Edwards Plateau Woodland. Grasses on the site include big bluestem, little bluestem, yellow Indiangrass, silver bluestem, Texas wintergrass, tall dropseed, sideoats grama, and common curlymesquite. Yuccas and cacti predominate as well. Low impact cattle grazing is evident throughout on the site.


STATE HIGHWAY 201
1B
25.85 AC
1C
30.59 AC
3
35.13 AC
1A
199.92 AC
NORTH REESE CREEK
STATE HIGHWAY 195
1E
64.93 AC
1D
182.88 AC
BALD KNOB
2A
54.64 AC
2B
81.63 AC
LEGEND
100 YEAR FLOOD PLAIN
DRAINAGEWAY
DRAINAGE DIVIDE
0
400
800
1600 Feet
DRAINAGE AND WATERSHED


STATE HIGHWAY 201
STATE HIGHWAY 195
LEGEND
PREDOMINANTLY DECIDUOUS OAKS
PREDOMINANTLY EVERGREEN JUNIPERS
0
400
800
1600 Feet
EXISTING VEGETATION

Portions of the site with a shallow topsoil depth rarely allow trees to attain a height taller than 30 feet, with evergreens typically growing no higher than 20 feet. Tall deciduous specimens on the site tend to follow the flood plain of North Reese Creek and its arms, which can grow to 50 feet in height. The areas on the site with the highest concentration of taller specimen trees are the far northeast corner of the site near the SH 201/SH 195 interchange and the boggy area along the western boundary northeast of North Reese Creek. In both areas mature Post Oaks and Cedar Elms predominate.

At least two riparian habitats are found on the site. Of the three types of plant communities that can characterize the riparian zones of the limestone-dominated Central Texas region, the Hackberry and Elm community predominates here. Species such as white-tailed deer, opossum, raccoon, Eastern cottontail, swamp rabbits, armadillo, Carolina wrens, painted buntings, summer tanagers, yellow-throated and white-eyed vireos, prothonotary and yellow-throated warblers are regularly found along the rivers and creeks of this region.

Protected Species and Their Habitat

Significant portions of the campus are comprised of habitat for the federally endangered Golden-cheeked Warbler (Dendroica chrysoparia). A portion of this habitat has been set aside as Golden-cheeked Warbler (GCWA) Habitat Management Areas pursuant to consultation with the U.S. Fish and Wildlife Service, which issued an amended Biological Opinion for the property on May 6, 2009. Within the GCWA Habitat Management Areas, located along the southwest boundary of the campus site, no disturbance can occur. Other specific constraints are associated with these Habitat Management Areas include:

- The Habitat Management Areas must be clearly marked in the field prior to vegetation removal to prevent habitat clearing beyond allowable limits (i.e., orange construction barrier).
- The Habitat Management Areas will be managed as GCWA habitat in perpetuity and scientific research/ educational uses are encouraged.
- Any trails located within the Habitat Management Areas will be pervious low impact, nature trails with no hard surfaces, minimal vegetation removal, and in low density (i.e., a sparse network of trails).

Black Capped Vireo

The GCWA Habitat Management Areas also have 100-meter Buffer Zones surrounding them. The Buffer Zones have some unique requirements of their own:

- Buffer Zones must be maintained as natural transition areas and planted with native vegetation.
- No vertical structures are allowed in the Buffer Zones. Construction in these areas is limited to roads or paths.

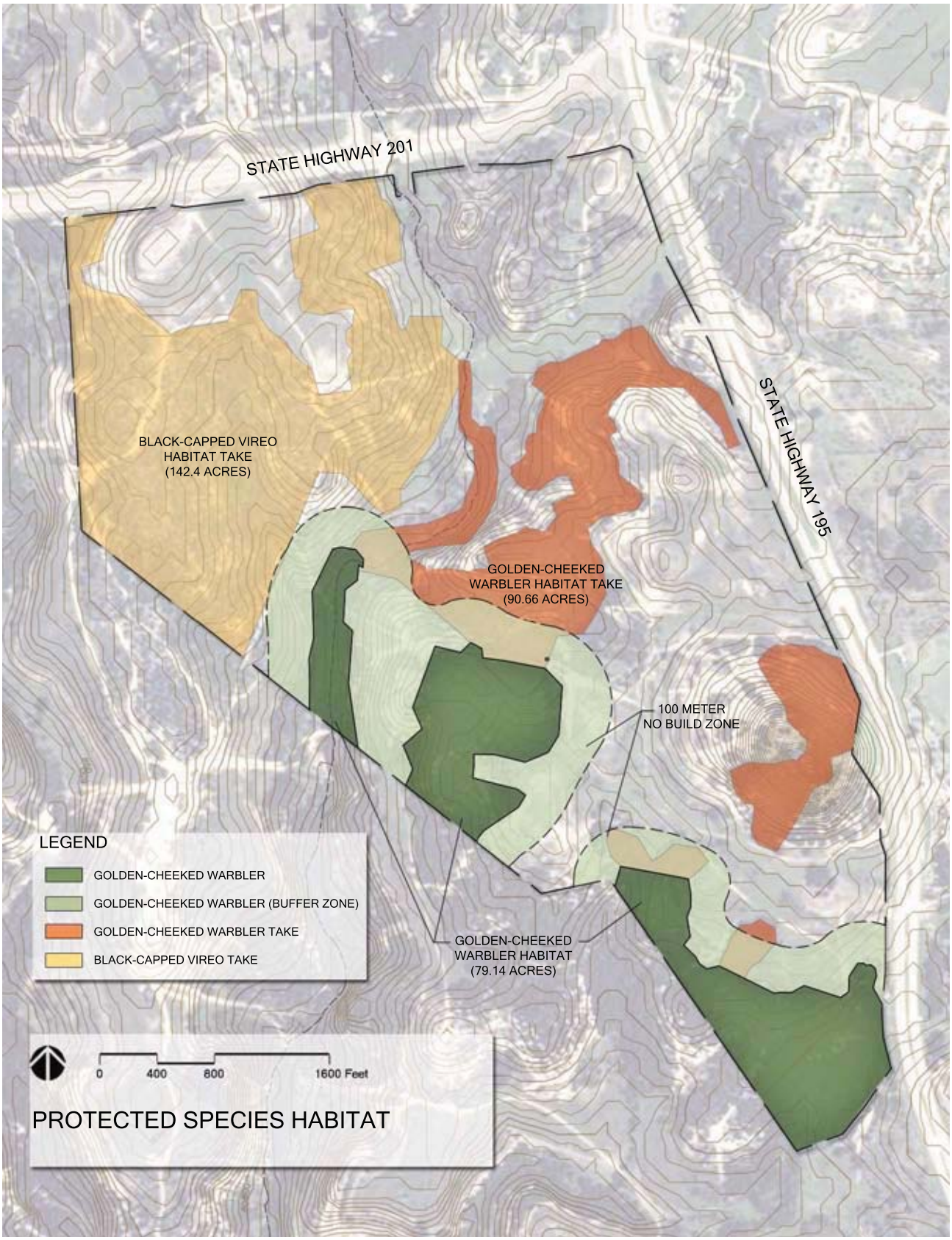
Portions of GCWA habitat outside of the GCWA Habitat Management Areas and Buffer Zones can be used for development, provided the following conditions are adhered to:

- Development of the site will follow a phased approach from the north to the south, utilizing the areas along State Highway 201 first.
- Habitat removal is limited to a period from September 1 through February 28.
- Habitat disturbance/removal can only be performed immediately prior to scheduled construction.

Other requirements pertaining to protection of GCWA habitat include the following:

- Lighting impacts must be minimized via directional lighting.
- Vegetation removal must be done in accordance with Texas Forest Service guidelines related to the prevention of oak wilt.
- Right-of-way (clearing) for the perimeter fence bordering Fort Hood will have a maximum width of 21 feet where it crosses GCWA habitat.

Golden Cheeked Warbler


STATE HIGHWAY 201
STATE HIGHWAY 195
BLACK-CAPPED VIREO
HABITAT TAKE
(142.4 ACRES)
GOLDEN-CHEEKED
WARBLER HABITAT TAKE
(90.66 ACRES)
100 METER
NO BUILD ZONE
GOLDEN-CHEEKED
WARBLER HABITAT
(79.14 ACRES)
LEGEND
GOLDEN-CHEEKED WARBLER
GOLDEN-CHEEKED WARBLER (BUFFER ZONE)
GOLDEN-CHEEKED WARBLER TAKE
BLACK-CAPPED VIREO TAKE
0
400
800
1600 Feet
PROTECTED SPECIES HABITAT

Streams

Streams play a crucial role in the ecology of an area. They convey runoff, provide a source of water to terrestrial wildlife, are the medium in which aquatic organisms dwell, and serve as natural corridors for the movement of wildlife. In many developed areas, streams are the only feature connecting otherwise isolated habitats, providing mobility for animals that in turn allows genetic exchange and the maintenance of genetic diversity within species.

Given that these streams are an essential part of the character of the site, the campus plan protects their integrity by maintaining buffers along the streams where practicable and crossing them in limited locations where necessary to maintain connectivity with the remainder of the site.

The major water feature on the campus is North Reese Creek, which flows north to south across the subject property entering the campus property under State Highway 201. This stream has the rocky, limestone substrate and relatively clear water typical of central Texas streams. Several smaller intermittent and ephemeral streams flow into North Reese Creek within the campus property. Each of these streams would be considered a water of the U.S. by the U.S. Army Corps of Engineers and as such, would be regulated if proposed modifications to them were proposed. Modifications to these streams could include road or path crossings via bridges or culverts, on-channel impoundments, and stream realignment. These types of modifications would require coordination with the Corps of Engineers to ensure compliance with Section 404 of the Clean Water Act.

North Reese Creek

Floodplain

Floodplains are an important part of the physical landscape, allowing major precipitation events to runoff in a safe manner and infiltrate the soils. Development in floodplains is regulated at the local level through local floodplain administrators. In general, structures intended for habitation are not allowed in floodplains.

North Reese Creek and two of its tributaries have mapped floodplain associated with them. These floodplains are, for the most part mapped as Zone A, which means that no detailed study has been performed to determine base flood elevations. Where the floodplains cross State Highway 201 and State Highway 195 in the extreme north and northeast portions of the site, detailed studies were performed and base flood elevations were determined.

Existing two-track roads on site

Campus Plan Response to Environmental Constraints

The campus plan preserves large portions of the property, particularly along the southwestern boundary, allowing wildlife habitats in this area to continue to function with full connectivity to similar habitats on the adjoining Fort Hood property. The plan is laid out in a manner affording students and faculty with two key ways to interact with nature. First, large portions of the landscape will be visible from built portions of the campus giving students and faculty a perspective of their place in the surrounding country. Second, trails, walking paths, and roads are laid out in such a manner as to access each of the habitat types on the property.

The protective restrictions related to Golden-cheeked Warbler habitat will serve to protect the habitat for this federally-listed species in perpetuity. Furthermore, the campus will benefit from preserving an area to function as a living laboratory in which to study this, and other, sensitive species.

Likewise, the campus plan honors the importance of floodplains by avoiding them with the limited exception of road and trail crossings.

Visual Characteristics

The expansiveness of the site from afar is first apparent on approach to it from several of the commanding views from State Highway 195. Specific view corridors into the site from the highway get framed from three vantage points—one from the current intersection with SH 201 affording a preeminent view towards the southwest and two views looking westerly towards the middle heart of the site from a stretch of road due north of Bald Knob. Beyond these views the site is fairly internalized, requiring interior vantage points from key locations.

A thorough reconnaissance of the site from the ground provides a more nuanced understanding of the site's many diverse features and attributes, starting with the view corridors and vantage points. When on the site at essentially any location, Bald Knob serves as a constant reference point and signature landmark; hence, from this point--especially from the north face looking north—gives as commanding a view as most any site could have in the immediate area, clearly observing the City of Killeen to the north. Similarly, the second highest point at the site's northwest corner offers prominent views across the south and east towards Bald Knob. Aside from these two vantage points, another commanding view is had roughly 1,500 feet due northwest of Bald Knob from a prominently situated knoll with views in all directions.

Bald Knob

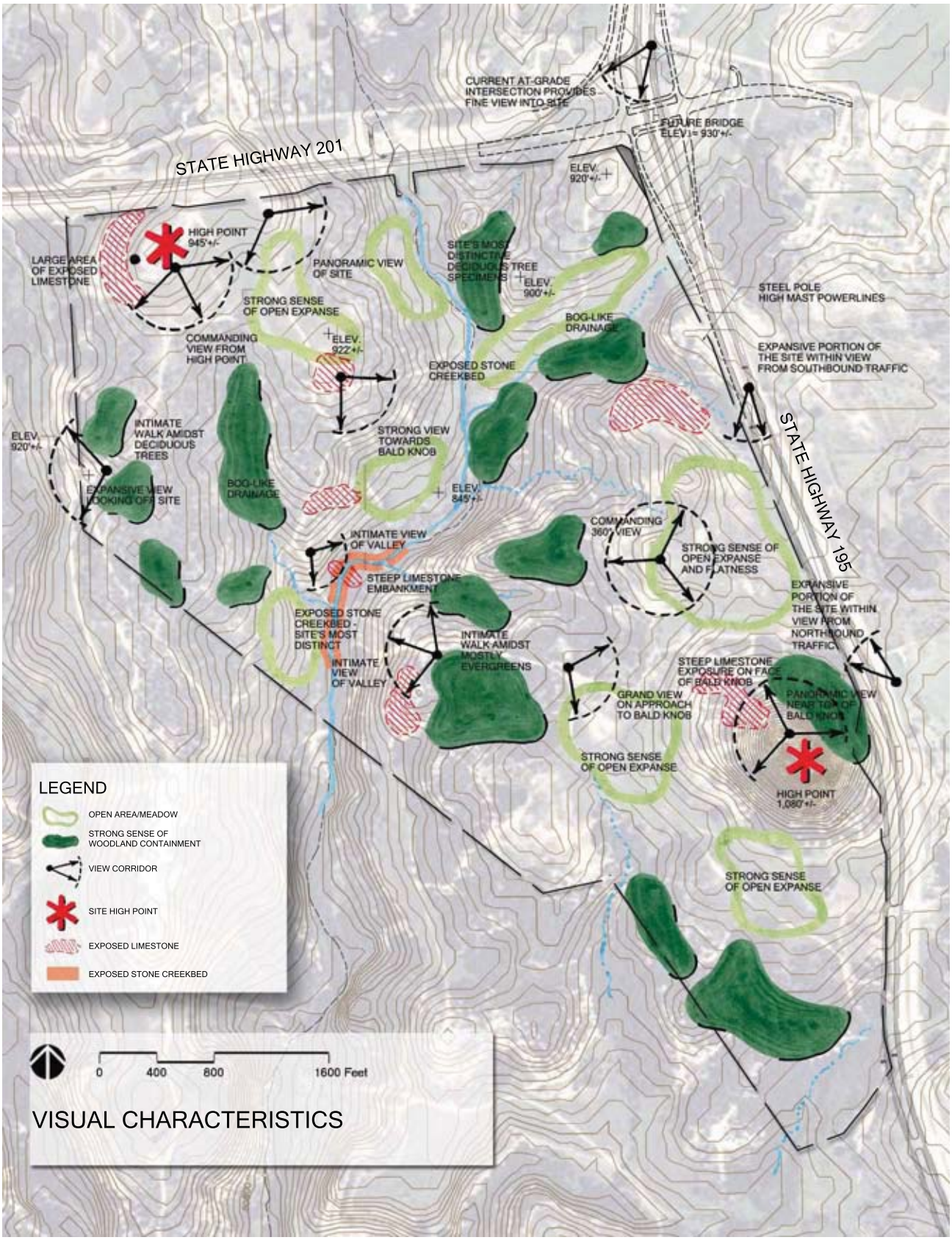
Several minor vantage points occur throughout the site, with specific points along North Reese Creek that afford more intimate views looking across the site's largest and deepest drainage way. From the creek itself, after walking directly up the grade out of the drainage way near its most southerly point on the site, a short walk to the east provides a grand view of Bald Knob only a quarter mile away. Finally, one of the most compelling views comes from the site's westerly edge looking west off-site towards the Fort Hood property, which overlooks a valley with rolling hills several miles beyond.

View from high point along SH 201

Many of these vantage points correlate to what's directly beneath our feet. The two prominent high points and several minor viewpoints on the site are associated with extensive locations with exposed rock. Immense quantities of fossilized marine life found on the ground at these locations only magnify the geological value of the site at-large. Two of the best locations to view these fossils are the northwest face of Bald Knob and the west face of the second highest point in the site's northwest corner. Another spot is a more subtle location that overlooks North Reese Creek from the northwest on flat terrain. Below this point to the south along the creek is a natural stone crossing with a steep grade that cuts a fairly intense gash in the stone, providing a section cut consisting of millions of years of marine activity.

Because North Reese Creek serves as a lifeline for many of the taller trees and shade loving vegetation on the site, it is clear by looking at the exhibit that most of the forest-like conditions occur along this vital drainage way. Away from the main channel of the creek we find two riparian zones that support many varieties of flora as well as some of the larger tree specimens. These zones would also be ideal for supporting fauna as well, but no such activity was viewed during the on-site reconnaissance. Other areas away from the North Reese Creek watershed include an extensive collection Eastern Redcedar growth along Bald Knob's east face as well as the far south corner of the site.

A contrast to the forested areas along the creeks is the extensive rangeland found on the site. Covered with field grasses and wildflowers, these meadows allow for unencumbered views throughout the site and provide for a strong, open sense of expanse. These meadows are best seen on the site's south section, with the largest one being adjacent to SH 195 on one of largest flat spots in the area, and two others at the foot of the west and south face of Bald Knob.


STATE HIGHWAY 201
CURRENT AT-GRADE INTERSECTION PROVIDES FINE VIEW INTO SITE
FUTURE BRIDGE ELEV.= 930'+/-
ELEV. 920'+/-
HIGH POINT 845'+/-
LARGE AREA OF EXPOSED LIMESTONE
PANORAMIC VIEW OF SITE
SITE'S MOST DISTINCTIVE DECIDUOUS TREE SPECIMENS
ELEV. 900'+/-
STEEL POLE HIGH MAST POWERLINES
STRONG SENSE OF OPEN EXPANSE
COMMANDING VIEW FROM HIGH POINT
ELEV. 922'+/-
BOG-LIKE DRAINAGE
EXPANSIVE PORTION OF THE SITE WITHIN VIEW FROM SOUTHBOUND TRAFFIC
EXPOSED STONE CREEKBED
ELEV. 920'+/-
INTIMATE WALK AMIDST DECIDUOUS TREES
STRONG VIEW TOWARDS BALD KNOB
EXPANSIVE VIEW LOOKING OFF SITE
BOG-LIKE DRAINAGE
ELEV. 845'+/-
STATE HIGHWAY 195
COMMANDING 360° VIEW
INTIMATE VIEW OF VALLEY
STRONG SENSE OF OPEN EXPANSE AND FLATNESS
STEEP LIMESTONE EMBANKMENT
EXPANSIVE PORTION OF THE SITE WITHIN VIEW FROM NORTHBOUND TRAFFIC
EXPOSED STONE CREEKBED - SITE'S MOST DISTINCT
INTIMATE WALK AMIDST MOSTLY EVERGREENS
INTIMATE VIEW OF VALLEY
STEEP LIMESTONE EXPOSURE ON FACE OF BALD KNOB
GRAND VIEW ON APPROACH TO BALD KNOB
PANORAMIC VIEW NEAR TOP OF BALD KNOB
STRONG SENSE OF OPEN EXPANSE
HIGH POINT 1,080'+/-
STRONG SENSE OF OPEN EXPANSE
LEGEND
OPEN AREA/MEADOW
STRONG SENSE OF WOODLAND CONTAINMENT
VIEW CORRIDOR
SITE HIGH POINT
EXPOSED LIMESTONE
EXPOSED STONE CREEKBED
0
400
800
1600 Feet
VISUAL CHARACTERISTICS

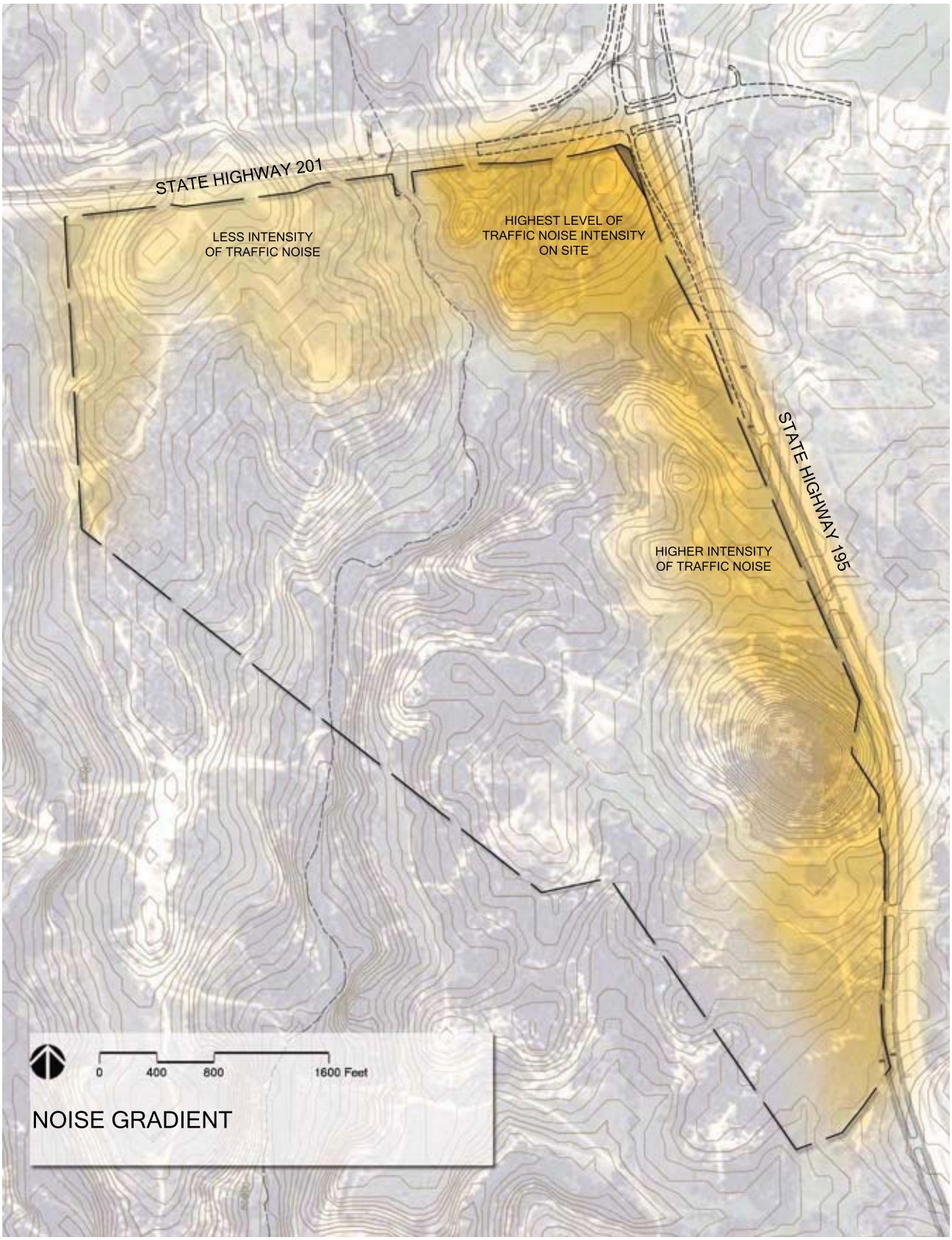
Panoramic view of campus property from Bald Knob

Noise Gradient

The intensity of noise pollution from vehicles along highly traveled roadways is an important attribute that should be documented. Though the site is graced with an attractive natural setting of rolling hills and occasional heavy vegetation, its proximity to both State Highway 201 and State Highway 195 lessens its overall pastoral quality in many key areas. Variable intensities of noise from vehicles along these highways are evident along their entire perimeter of the site. An exception to this rule occurs when the property's perimeter is higher in elevation than the roadway itself, allowing for the topography to serve as a noise buffer.

The northwestern two-thirds of the site along SH 201 is somewhat sheltered from road noise due to it being slightly higher than the highway's grade elevation along its western perimeter. Past North Reese Creek to the east, however, SH 201 runs more at-grade with the elevation of the site; hence, the noise level increases. The furthest extent into the site that noise is evident along its SH 201 perimeter is along the site's low point along North Reese Creek.

Along SH 195 highway noise is generally more noticeable and consistent along the site's entire eastern perimeter. The one exception is where the highway skirts along Bald Knob near the site's southern corner. Bald Knob also prevents noise from extending deeper into the site than elsewhere along SH 195. Not surprising, the location on the site with the most evident traffic noise intensity is at the intersection of the two highways, extending almost half a mile southwesterly into the site.


STATE HIGHWAY 201
LESS INTENSITY
OF TRAFFIC NOISE
HIGHEST LEVEL OF
TRAFFIC NOISE INTENSITY
ON SITE
STATE HIGHWAY 195
HIGHER INTENSITY
OF TRAFFIC NOISE
0
400
800
1600 Feet
NOISE GRADIENT

5 CAMPUS PROGRAM

Introduction

Planning university facilities in the year 2010 to meet the needs of the 21st century Texas A&M University, Central Texas (TAMU-CT) campus is a very important activity. The buildings, land, and landscape of the campus will collectively do more than serve their designated functions. They will establish patterns of movement and social encounter among the members of the academic community. They will create opportunities for exchange that have educational and collegial consequences, and their locations, configurations and spaces will help create appropriate settings for these interactions. These activities will be as important to the TAMU-CT campus as will the change being brought about by advances in information and communication technology.

Understanding

To meet the needs of a new campus, the TAMU-CT program space planning is based upon achieving campus goals and objectives. Through an assessment of the existing campus facilities, and with a series of space programming analyses, the future space needs of the campus were developed. This included peer benchmarking among other Texas campuses, identification of planning assumptions for TAMU-CT, and conceptualization of short/long term strategic space needs.

The primary goals of the campus facilities program are to:

- Identify facility initiatives that will advance the University
- Size the facilities needs
- Establish priorities and time lines associated with the development plan

The completed campus program is a scaling (sizing) activity in that it provides a space needs estimate for facilities that will meet TAMU-CT's mission, core values, and future vision. This scaling activity, which takes place at a broad programmatic level, allows multiple opportunities to develop buildings to meet campus needs. This methodology is summarized in this section and spelled out in detail in Appendix A.

Space Planning Approach

The general approach to the TAMU-CT program plan was based on five major activities:

- Systematic: The space needs analysis, master planning, capital outlay, and facility programming were undertaken as a systematic process of collecting and analyzing data.
- Written Record: These activities provided TAMU-CT with a written record of decisions, agreements and consensus.
- Objective: The work was objective, and determined the functional needs of TAMU-CT and translated them into planning and space requirements.
- Balanced: The recommendations were centered on balancing facility master planning concerns of project scope (size) and available building sites and configuration.
- Relevant: The analysis also identified issues that could affect future capital outlay programs, scope, and project budgets.

The intent of the Space Program Plan is to develop an understanding of the facility needs of TAMU-CT and to develop a solid foundation of knowledge upon which alternative approaches to meeting these facility needs can be based.

PLANNING ASSUMPTIONS

TAMU-CT Enrollment

Currently, TAMU-CT has the following academic units: Division of Arts and Sciences, Division of Business Administration, Division of Education, and Social Work Program. In fall 2009, campus enrollment was 1,532 undergraduates and 656 graduates. Spring 2010 enrollment was 1,792 undergraduates and 802 graduates.

Overall, there are currently approximately five part-time students for every one full-time student. For purposes of this space plan program, the enrollment target was set at 4 part-time students for every one full-time, resulting in a 0.60 full-time student equivalent to headcount ratio.

Population Planning Assumptions

To develop the Program Plan, a series of planning assumptions were developed.

Overall TAMU-CT enrollment at build-out: A total of 15,000 headcount students, or 9,000 full-time student equivalents (FTSE), is the ultimate enrollment target at full campus build-out. At 15,000 headcount enrollment, the campus would have 3,000 full-time and 12,000 part-time students.

Upper Division Campus

Initially, TAMU-CT will continue in its current configuration as an upper division (junior-senior) and Master's level campus only. The expectation is to add lower division students (freshmen and sophomores) to the campus in 8 to 10 years. For purposes of this space projection, the campus is considered to have both lower division and upper division students at full build-out, which could take 25 years.

Undergraduate: Based on headcount, current fall 2009 and spring 2010 TAMU-CT enrollment is 70 percent undergraduate students. The ultimate goal is to have an enrollment that is 80 to 85 percent undergraduate.

Graduate: Current fall 2009 TAMU-CT enrollment is 30 percent graduate students. The ultimate goal is to have 15 to 20 percent of overall enrollment be graduate students. Although there may eventually be doctoral degree programs, none are anticipated in the near or medium-term. For space planning assumptions, slightly less than 20 percent graduate student enrollment is used at campus build-out.

Projected Enrollment Distribution

The starting point for estimating space requirements for TAMU-CT is based upon the distribution of enrollment by program area. While currently TAMU-CT is an upper division and graduate institution, for space planning purposes, the campus is considered also to have lower division students. It is expected that lower division students will become part of the campus enrollment within 10 years.

Based on enrollment distribution in Texas higher education, the distribution would result in a TAMU-CT enrollment of approximately 7,480 undergraduate students, 1,072 master's degree students, 306 doctoral degree students, and 142 students in professional certificate programs. At this

distribution, approximately 85 percent of the projected TAMU-CT enrolled students would be undergraduates and 15 percent would be graduates. This is at the lower end of the campus expectations in that their desire would be that the campus approach 15 to 20 percent graduate student enrollment.

Student to Faculty Ratio
To estimate the number of FTE faculty and staff, the number of FTE faculty, as of fall 2008, across all public higher education institutions in Texas was used. Based on the THECB fall 2008 academic space projections model, and excluding Texas state technical colleges and Lamar University colleges, the student to faculty ratio in fall 2008 across all institutions was approximately 15.21. At this ratio, the total number of faculty at build-out for TAMU-CT would be 592 faculty.

Staff to Faculty Ratio
Currently, the THECB space projections model uses an estimate of 1.8 FTE staff employees for every 1.0 FTE faculty. Based on this ratio, the number of staff is estimated to total 1,066. Altogether, there would be a combined total of 1,658 FTE TAMU-CT faculty and staff at build-out. (Assuming the bulk of this employment would be full-time, and based on an assumption that there would be 1.25 headcount for every FTE, the TAMU-CT campus at build-out could generate approximately 2,073 headcount faculty and staff employees.)

Space Needs Projections

The Texas Higher Education Coordinating Board five-factor academic space projections model was used to predict the educational and general (E&G) space required for Texas A&M University, Central Texas Campus to fulfill its missions of teaching, research, and public service. Auxiliary space, such as residence halls, student union, recreation and intercollegiate athletics, or other auxiliary enterprises, are not included in the THECB model and were separately projected. To do this, a space projection simulation model to address current and future needs projections of space was developed.

The space utilization process began with work sessions where members of the TAMU-CT Master Plan Steering Committee along with other designated University staff met with the consultant team to discuss the following types of issues:

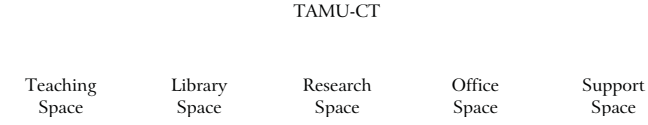
- Short- and long-range academic goals and objectives, including future visions for the TAMU-CT campus.
- Specific issues, needs, and priorities regarded by the committee and the University executive staff as space utilization imperatives.

Space needs projections for each of five space factors is calculated separately based on THECB data developed from institutionally provided information. As a new institution, historical data does not yet exist for TAMU-CT on which to base space needs projections. As a result, various surrogate data source measures have been used.

The five factors, and how the specific data sources are used for prediction in the THECB model, are shown below.

Factors	**Drivers/Predictors**
Teaching space	Level and program areas of TAMU-CT's expected funded semester credit hours
Library space	Number of faculty, students, approved academic programs, and library holdings
Research space	Projected research expenditures based on students' reported semester credit hours
Office space	Number of faculty, staff, and current fund E&G expenditures
Support space	A percentage of the total prediction for the preceding four factors

THECB Academic Five-Factor Space Projections Model



ESTIMATING SPACE BASED ON THE THECB FIVE-FACTOR MODEL

Factor 1: Teaching Space
Teaching spaces are those spaces used primarily for instruction. Estimating the amount of teaching space is based upon assigning net assignable square footage to FTSE based upon enrollment by program area by academic level. This resulted in a space need of 460,422 net assignable square feet (NASF).

Factor 2: Library Space
Estimating library spaces follow the THECB space projections model format. While projections were available on the student enrollment and thus, in turn, faculty and staff employment, there were no similar data available on the projected number of undergraduate degree programs or graduate master's degree programs as required in the library space projections model. To provide a means to estimate these numbers, the degree programs at other Texas A&M University campuses were reviewed.

Since the library projection is for build-out, the estimate for Texas A&M University, Central Texas Campus was based on space at five current A&M institutions. The result is that for projection purposes, it is estimated that TAMU-CT would have 65 bachelor's degree programs and 40 master's or graduate degree programs.

Based on the THECB Model, the library collection requirements would require approximately 48,000 square feet, the user requirements would require 58,000 square feet, and the staff requirements 13,000 square feet, for a total of 119,000 NASF. The THECB space model allows an additional 17 percent for spaces yet to be determined, which adds another 20,000 NASF, and then adjusts this total by a factor of 95 percent. The result is that the library projected space needs would total approximately 132,399 NASF.

Factor 3: Research Space
For purposes of space projections, the research space is based upon student full-time equivalent. In the THECB academic space projections model, research space is calculated at 3 ASF for every FTE student. With an estimated 9,000 FTE and at 3 ASF per FTE, the total is 27,000 assignable square feet for research purposes.

Factor 4: Office Space
Office space needs under the THECB model are projected per FTE faculty and per FTE staff. As noted earlier, at campus build-out there would be an estimated 592 FTE faculty and 1,066 FTE staff. Using the THECB projections of 190 NASF office space allowance per FTE faculty and 170 NASF per FTE staff, the total amount of office space, as shown in table 15, would be 293,700 ASF.

Factor 5: Support Space
Support space is calculated in the THECB space projections model at 9 percent of the total assignable square feet calculated for teaching, library, research, and office. As shown in Table 1, these four factors total 913,521 square feet. The support space factor at 9 percent would add another 82,217 ASF.

Table 1
Estimated Education and General (E&G) Space Needs

Estimated Space	**Total NASF**
Teaching	460,422
Library	132,399
Research	27,000
Office	293,700
Total	**913,521**
Total Support Space	**82,217**
Total E&G Space	**995,738 NASF**

OTHER SPACE FACTORS

There are other areas that are not included in the THECB space projections model for estimating space needs. These include athletics and recreation, dining and food services, student unions and student centers, conference and meeting rooms, and residential areas.

Athletics and Recreation

Athletics generally refers to intercollegiate athletics spaces. These indoor spaces for practice and competition, as well as spectators, include courts for basketball, volleyball, and indoor swimming, as well as wrestling, and include courts and activity areas, as well as the support areas. At TAMU-CT, the Council of Educational Facility Planners International (CEFPI) guidelines were used. These result in athletics space of 85,000 ASF (or approximately 121,000 gross square feet).

In addition, campuses today have recreation buildings, including recreation space for activities such as bowling alleys, game and arcade rooms, exercise and fitness areas, and passive areas for recreation. This is in addition to recreation dedicated areas for basketball and volleyball.

The CEFPI guidelines provide 13,500 ASF. Based on the guidelines, there would not be enough space generated to have a standalone recreation building. The minimum indoor recreation area for a standalone, non-athletics facility would be 60,000 ASF or more. This is equal to 86,000 GSF or more, which would provide enough space for a separate recreation building.

Residential

TAMU-CT has indicated that, at the time the campus admits lower division students, the campus wants to have a residential component. For planning purposes, the campus has identified housing 20 percent of the FTE student population.

At a build-out of 15,000 students, or 9,000 FTE, this would mean the campus would house 1,800 students, including 1,440 undergraduate and 360 graduate students. At an average space per residential student of 350 square feet, this would result in 630,000 assignable square feet of on-campus residential facilities.

Space Summary

Overall, and as shown in Table 2, the THECB five factors result in a campus space need of 995,738 assignable square feet and 1,642,589 gross square feet. The other factors not included in the THECB five factors result in a total area of 254,500 assignable square feet and 389,176 gross square feet. The residential or housing component, for student housing only, totals 630,000 assignable square feet and 900,000 gross square feet. This is shown in Table 2.

Overall, square footage requirements at TAMU-CT build-out total 1.9 million ASF, or 2.9 million GSF.

Table 2
Estimated TAMU-CT Total Space Needs

Space Type	ASF	Building Efficiency Ratio	GSF
THECB Five Factors			
Teaching	460,422	0.60	767,370
Library	132,399	0.65	203,691
Research	27,000	0.60	45,000
Office	293,700	0.60	489,500
Support	82,217	0.60	137,028
Sub-Total, THECB Five Factors	995,738		1,642,589
Other Factors			
Athletics	85,000	0.70	121,429
Recreation	13,500	0.70	19,286
Dining/Food Services	90,000	0.65	138,461
Student Unions/Student Centers	40,500	0.60	67,500
Conference/Meeting Rooms	25,500	0.60	42,500
Sub-Total, Other Factors	254,500		389,176
Residential			
Housing	630,000	0.70	900,000
Total	**1,880,238**		**2,931,765**

LAND AREA REQUIREMENTS

Campus Area in Acres

To estimate the acreage requirements of the land using activities of the TAMU-CT campus, a number of metrics are involved. These include the gross square footage of proposed buildings; the estimated height of these buildings; the footprint of these buildings, that is the land area taken by the first floor on the ground; the ground area coverage (GAC), which is a measurement of land use intensity; and floor area ratio (FAR), which is a measure of the gross square footage of a building in comparison to the property on which it sits.

For the THECB five-factor space, the average number of stories or floors in the campus building is estimated to be between three and four floors, depending on the space type, and the ground area coverage (GAC) is estimated to be 0.25. As shown in Table 3, the net result is that the primary academic facilities on the campus would require a total of 43.1 acres.

Table 3
THECB Five-Factor Space Needs, Estimated Acreage (Build-Out)

Space Type	Building GSF	Average No. of Floors	Building Footprint (SF)	Building Footprint (Acres)	Ground Area Coverage (GAC) Land Use Efficiency	Land Area (Acres)
Teaching	767,370	3.5	219,249	5.0	0.25	20.1
Library	203,691	3.5	58,197	1.3	0.25	5.3
Research	45,000	3.5	12,857	0.3	0.25	1.2
Office	489,500	3.5	139,857	3.2	0.25	12.8
Support	137,028	3.5	39,151	0.9	0.25	3.6
Total	**1,642,589**		**469,311**	**10.8**		**43.1**

Other Space Needs

Other major buildings on the campus would include those used for indoor athletics and recreation, dining and food services, student union and student center type activities, and meeting rooms associated with these activities. Because athletics, recreation, and dining facilities all tend to be large volume spaces with a need for considerable floor to ceiling height, they are shown in this acreage estimate as single-story buildings. The student center and student union are shown as an average of three stories. The conference and meeting rooms, which are most likely included or added to the THECB space, would be three or more stories.

In addition, the other space needs generally are shown at a ground area coverage, or land use efficiency, of 0.30. Taken together these other space needs would require a land area of 24.4 acres. This is shown in Table 4.

Table 4
Other Space Needs, Estimated Acreage (Build-Out)

Space Type	Building GSF	Average No. of Floors	Building Footprint (SF)	Building Footprint (Acres)	Ground Area Coverage (GAC) Land Use Efficiency	Land Area (Acres)
Athletics	121,429	1.0	121,429	2.8	0.30	9.3
Recreation	19,286	1.0	19,286	0.4	0.30	1.5
Dining/Food Services	138,461	1.0	138,461	3.2	0.30	10.6
Student Union/ Center	67,500	3.0	22,500	0.5	0.30	1.7
Conf/Meeting Rooms	42,500	3.0	14,167	0.3	0.25	1.3
Total	**389,176**		**327,093**	**7.3**		**24.4**

Residential

Providing student housing includes the residential accommodation space itself, as well as recreational spaces and spaces for parking. Table 5 estimates the square footage needed for just the actual housing portion of the residential parts of the campus. The basic planning assumptions underlying this estimate are that undergraduate students would live at an average of two students per bedroom. Thus, an estimated 1,440 undergraduate student housing beds would create 720 bedroom units of undergraduate housing.

The graduate housing, which is likely to be apartments, could be occupied by a graduate student and their family, by a graduate student in studio housing, or even by graduate students sharing housing. The least dense of these would mean that every graduate student would have their own housing unit. This would result in 360 units of graduate housing.

For acreage estimating purposes, the undergraduate housing is calculated at a land use density of 100 beds per acre, resulting in 14.4 acres of undergraduate student housing. The graduate housing is calculated at a density of 20 units per acre, thus requiring 18.0 acres for graduate student housing.

Table 5
Residential Space Needs, Estimated Acreage (Build-Out)

Space Type	Beds	Units	GSF	Beds per Acre	Units per Acre	Total Acres
Housing (Undergraduate)	1,440	720	720,000	100	--	14.4
Housing (Graduate)	360	360	180,000	--	20	18.0
Total	**1,800**	**1,080**	**900,000**			**32.4**

Parking

To estimate the parking requirements of the campus, both at opening and at build-out, a parking model was developed. The parking model separately calculates parking requirements for faculty, staff, visitors, and vendors, for commuter students, and for resident students, and provides the capacity to add parking for other populations on the campus.

Parking Requirement

While parking space is quite often projected at 350 square feet per vehicle, this is a measure that works best when the parking is in an urban area with little landscape buffer and where the parking is tightly packed and contiguous. Since this is likely not to be the case at TAMU-CT, a different metric for estimating parking requirements is used to determine the acreage of the campus devoted to parking. In this instance, a simple metric of providing 100 cars per acre for surface parking will allow the trees to be saved, the contours to be observed, and adequate road surfaces provided adjacent to the parking areas themselves.

The campus has asked that parking at build-out be based on the criteria that two-thirds of the parking spaces are in surface parking and one-third in parking structures. For purposes of the acreage analysis, surface parking is computed at 100 parking spaces per acre and structure parking at 300 spaces per acre. The total parking requirements are calculated based on this distribution of surface and structure parking.

The parking requirements of the campus then translate into approximately 61.3 acres for non-residential student, faculty, staff, and visitor parking and 14.8 acres for parking in the residential areas, or a total of 76.1 acres of parking.

Outdoor Circulation and Buffer Space

Moreover, since there needs to be an additional land or setback buffer around the parking area, as well as a roadway system,

this land use is assumed to require the same amount of land as parking, or an additional 76.1 acres.

Outdoor Athletics and Recreation

Table 6 illustrates the acreage requirements for outdoor athletics and recreation. The campus has indicated that they expect to compete at the intercollegiate athletic level. They propose a football stadium that, over time, might have a seating capacity of up to 15,000 persons. This would be at full build-out and would be constructed in increments appropriate to demand.

Table 6
Outdoor Athletics and Recreation Space Needs, Estimated Acreage (Build-Out)

Space Type	No. of Fields (Courts)	Acres per Field	Land Area (Acres)	GAC	Total Acres
Football Stadium (15,000 seats)	1	5.0	5.0	0.75	6.7
Football Practice Fields	2	1.5	3.0	0.75	4.0
Track (400-Meter)	1	6.0	6.0	0.75	8.0
Soccer	2	2.5	5.0	0.75	6.7
Baseball	1	6.0	6.0	0.75	8.0
Softball	1	2.0	2.0	0.75	2.7
Tennis	6	0.25	28.5	0.75	2.0
Total	**14**		**28.5**		**38.0**

Intramural Courts and Fields

In addition to the outdoor athletics and recreation, campuses provide recreation spaces for students living in on-campus housing, as well as for others who wish to participate in intramural activities. These are shown in Table 7. Including space for basketball, volleyball, and multipurpose fields, these outdoor recreation areas could create a demand for 12.0 acres of land.

Table 7
Intramural Courts and Fields Space Needs, Estimated Acreage (Build-Out)

Space Type	No. of Fields (Courts)	Acres per Field	Land Area (Acres)	GAC	Total Acres
Basketball	6	0.3	1.8	0.75	2.4
Volleyball	4	0.3	1.2	0.75	1.6
Multipurpose Fields	6	1.0	6.0	0.75	8.0
Total	**16**		**9.0**		**12.0**

Summary Land Area

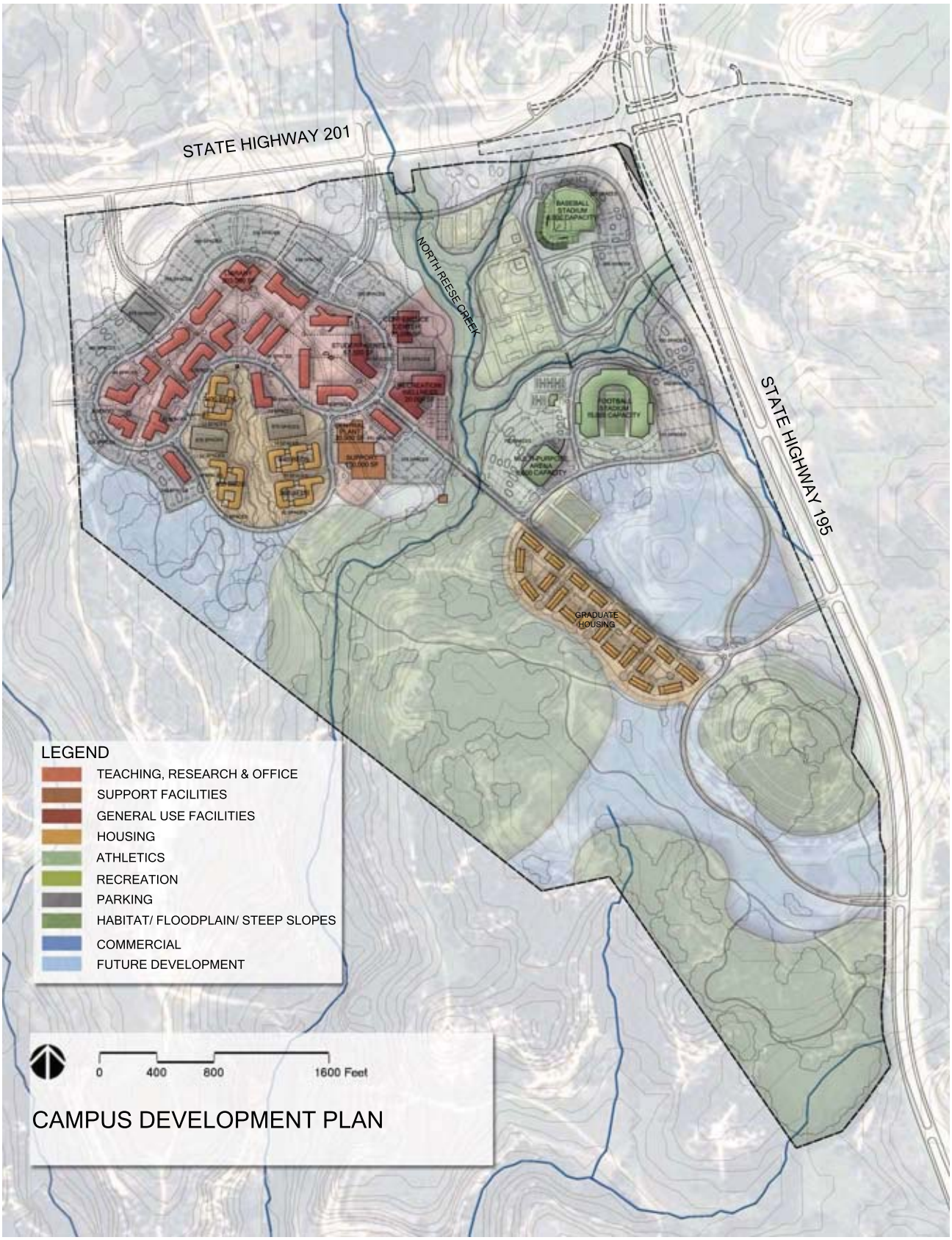
Table 8 shows the aggregate of all of the land using activities on campus. This excludes the land held in natural reserves or too steep to build on; it also does not include a factor for a campus roadway system.

As shown in Table 8, the aggregate of the land using activities described in this section would create a total land use and buffer area of 302 acres for the campus at build-out.

Table 8
Summary Land Area, Estimated Acreage (Build-Out)

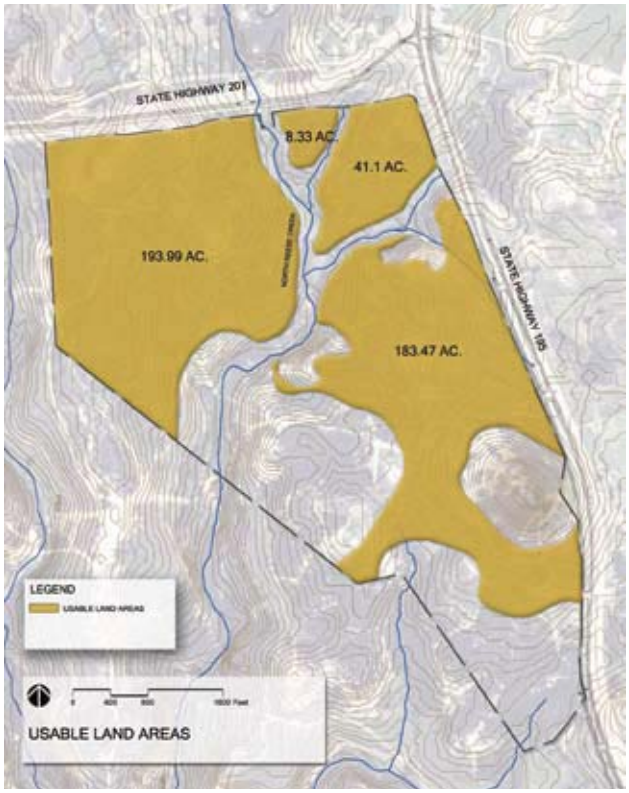
Space or Activity Type	Land Area (Acres)
THECB Five-Factor Space	43.1
Other Space	24.4
Residential	32.4
Parking	76.1
Outdoor Circulation and Buffer Space	76.1
Outdoor Athletics and Recreation	38.0
Intramural Courts and Fields	12.0
Total	**302.1**

Calculations by Good Fulton & Farrell suggest that approximately 247 acres of the campus are in habitat areas or are considered too steep to build on. Taken together, the 302 calculated land using areas and the 247 unusable areas show the campus requiring 549 acres of land. With a total land allocation of 663 acres, the campus can meet its build-out requirements and also provide a substantial 114 acre land buffer and reserve area for future generations.


STATE HIGHWAY 201
NORTH REESE CREEK
STATE HIGHWAY 195
BASEBALL STADIUM
FOOTBALL STADIUM
GRADUATE HOUSING
LEGEND
TEACHING, RESEARCH & OFFICE
SUPPORT FACILITIES
GENERAL USE FACILITIES
HOUSING
ATHLETICS
RECREATION
PARKING
HABITAT/ FLOODPLAIN/ STEEP SLOPES
COMMERCIAL
FUTURE DEVELOPMENT
0
400
800
1600 Feet
CAMPUS DEVELOPMENT PLAN

6 DEVELOPMENT PLAN

Central Texas architectural heritage



GUIDING PRINCIPLES

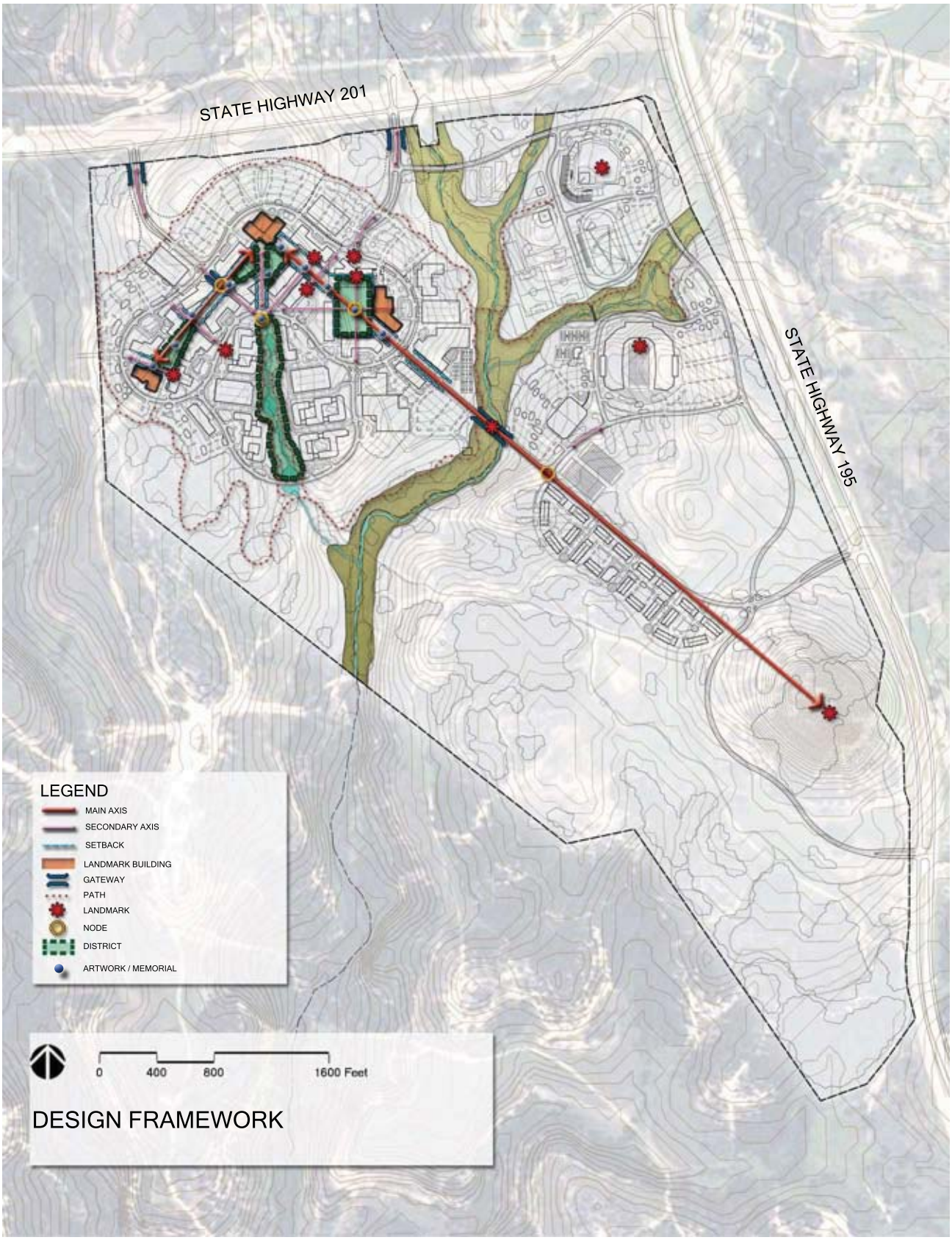
The proposed Campus Development Plan for Texas A&M University-Central Texas has been inspired by a series of guiding principles formulated by the planning team and endorsed by our client group.

- Create a unique sense of place for TAMU-CT by designing in response to the nature of a rugged and picturesque site.
- Preserve the riparian zones of North Reese Creek as well as habitat and steep slope areas as permanent open space.
- Create a compact, easily walkable academic core and housing precinct.
- Utilize flatter, less vegetated areas of the property for recreational fields, athletic facilities and parking.
- Develop a pattern language for campus form to include roadways which curve and flow with the topography and buildings set in angular, picturesque relationships.
- Establish design guidelines which combine elements of regional architectural history with an expression of contemporary technology.

DESIGN FRAMEWORK SUMMARY

Mapping accomplished during the site analysis phase reveals the characteristics of access and topography which begin to structure the campus plan. The largest contiguous developable land mass consists of approximately 194 acres of property west of North Reese Creek and with 2000 linear feet of frontage on SH 201. This precinct allows qualities of visibility and accessibility for the initial building increment as well as the ability to expand long term into a sizeable academic core.

State Highway 201 serves as the primary campus gateway. Because the Killeen/Temple/Fort Hood metropolitan area has no public transit system, and because Central Texas will remain an automobile-oriented culture for the foreseeable future, large parking areas are required. These are distributed on the outside of a ring road which circumnavigates the academic core, thereby collecting cars on the campus perimeter and reserving the core primarily for pedestrians.


STATE HIGHWAY 201
STATE HIGHWAY 195
LEGEND
MAIN AXIS
SECONDARY AXIS
SETBACK
LANDMARK BUILDING
GATEWAY
PATH
LANDMARK
NODE
DISTRICT
ARTWORK / MEMORIAL
0
400
800
1600 Feet
DESIGN FRAMEWORK

The organizing device for the academic core is an "L"-shaped pedestrian spine, linking topographic high points on the campus and creating a view corridor which engages the landmark "Bald Knob" on the southeastern edge of the property. At the intersection of the two legs of the pedestrian spine is proposed the location for the symbolic "Main Building" (perhaps the future library). This key site should be reserved for a special work of architecture, with the size and height to terminate two axes and command the heart of the academic core.

The on-campus student housing district is located "down the hill" from the core, and is positioned to flank both sides of a North Reese Creek drainage tributary. This wooded environment is within easy walking distance of the academic core and recreational amenities, and can enjoy the amenities of adjacent greenbelt trails.

LAND USE PLAN

One of the most important duties of the Campus Development Plan is to accurately portray the distribution of buildings, student housing, recreation areas, athletic facilities and parking across the campus property in response to the programmed needs. In the case of Texas A&M University-Central Texas, the planning horizon for this study was established as a 15,000 student enrollment.

Table 30 (Page 14) of Appendix A, Campus Program Technical Memorandum, is a summary of the land areas estimated to accommodate the program, and suggests that the property acreage should be more than adequate in size for the envisioned enrollment. The Campus Land Use Map (on page 42) illustrates the allocation of land areas into districts and zones generally consistent with the programmed amounts, while also reserving environmentally sensitive zones as permanent open space and leaving more than 100 acres available for future development.

Academic Core

The TAMU-CT Academic Core consists of sites for 19 buildings on approximately 50 acres which would meet the program for Teaching, Office, Library and Research space per the THECB Model. These 19 buildings are presumed to have typical footprints of 20,000 to 25,000 SF in area and average 3.5 stories in height. An exception to this is the library building, which has been shown as a much larger footprint, and would perhaps rise to 5 or 6 stories in height. It is shown in the most prominent site at the intersection of the two pedestrian spines. Total gross building area in the core is in the range of 1.5 million square feet. Each of the building sites is organized to give buildings addressable locations along the campus ring road as well as frontage and access from the pedestrian spines. This will facilitate easy wayfinding for visitors and emergency vehicles as well as a pleasant pedestrian experience for students, faculty and staff.

General Use Facilities

The quality of life on campus will be greatly strengthened by successful implementation of general use facilities such as the Student Center, Dining Facilities, a Conference Center and a Recreation/Wellness Center. These buildings are not only spirited gathering places for students, faculty and staff, but they also serve as venues that bring together "town and gown." The location of these facilities is proposed as a 15-acre district straddling the ring road near its intersection with the first entry road from State Highway 201. Ample parking both on surface and in one of the proposed garages is available near these high-population buildings. The proposed Student Center is sited on the larger campus green on the inside of the academic core. This places it within convenient walking distance from all classroom-office buildings via the main pedestrian spine. The Student Center is illustrated as a "Phase 2" development in the Phasing Plan and is located such that early infrastructure of roadways and utilities can serve it easily. The proposed Conference Center and Recreation/Wellness Center are illustrated flanking a parking garage and with adjacency to the North Reese Creek greenbelt. The siting creates a good relationship between indoor recreation facilities and outdoor recreation fields and courts shown across the creek.

Dining facilities, indicated in the Campus Program as approximately 138,000 GSF in size, would be distributed in several locations on campus, rather than in a single building. For the purposes of the Campus Development Plan, we have assumed that the undergraduate residence hall complex would include perhaps two dining halls. The Student Center would also include a food service component, as would the Conference Center. The footprint allocations for these developments have been planned accordingly.

Residential Facilities

The Texas A&M University System has expressed a desire to construct a phase of on campus student housing as early as possible in the evolution of TAMU-CT. The residential district for undergraduate student housing is illustrated on the Land Use Plan as a 15-acre precinct on wooded land flanking a North Reese Creek tributary drainage swale down the hill below the academic core. This is an attractive site for housing, within short walking distances to classes and recreation. We envision a trail system utilizing the creek greenbelts to connect this district to all campus destinations. The form of undergraduate housing is illustrated as four-story courtyard-style buildings with suites along double-loaded corridors and commons areas at the "knuckles" and on ground floor areas. These buildings are expected to be constructed in phases of 300 to 400 beds each. Therefore, 4 building complexes are shown to achieve the programmed 1440 beds. Each pair of buildings flanks a 4-level, above-grade parking garage which provides parking at a ratio of approximately one car per bed.

Graduate student housing, programmed to accommodate 360 students, is shown in an 18-acre district west of North Reese Creek in the southerly half of the campus property at the foot of Bald Knob. The form of graduate housing is illustrated as two-story garden apartment buildings arrayed around surface parking courts and achieving a density of approximately 20 units per acre. The proposed location is set apart from the campus core, giving graduate students a sense of greater independence and puts them in a transitional place between their collegiate experience and the workplace.

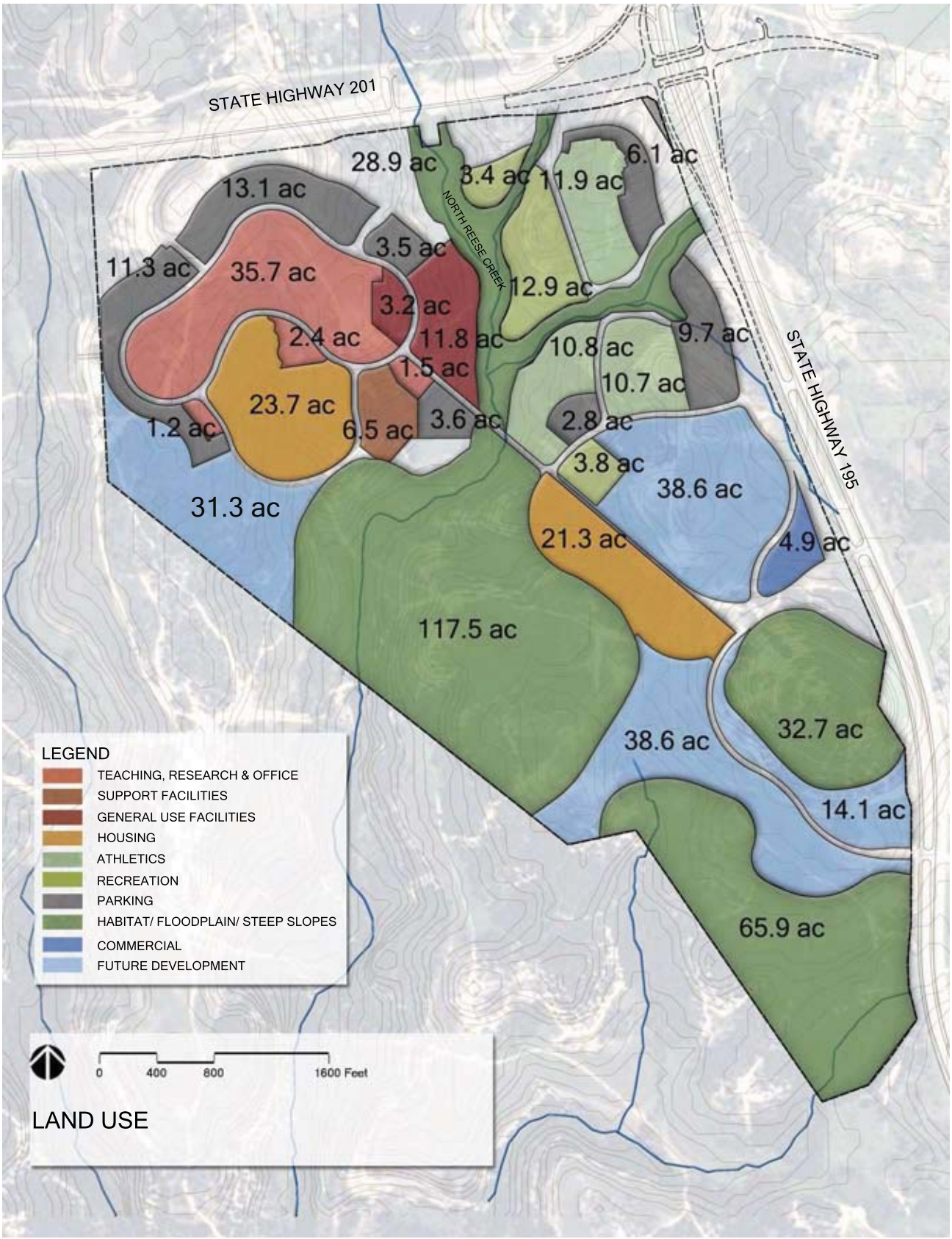
Recreational and Athletic Facilities

Texas A&M University-Central Texas desires to provide recreation space for students who will be living in on-campus housing as well as for others who wish to participate in intramural sports activities. These facilities are positioned adjacent to North Reese Creek in the northeastern quadrant of the campus. The plan illustrates two soccer fields, a baseball field and softball field, four multi-purpose play fields, six basketball courts, four sand volleyball courts and a tennis center with six courts. This precinct occupies approximately 20 acres. The TAMUS leadership has indicated that they expect the University to compete at the intercollegiate athletic level in the future. The Campus Development Plan illustrates a football stadium seating 15,000 integrated with the athletic department offices and locker room and training facilities which support a complete athletics program. Also shown are a multi-purpose/basketball arena seating 8,000, a baseball stadium for 8,000 and a track and field complex. Tennis, soccer, swimming and softball competition can be accommodated through dual utilization of recreation fields and facilities discussed in earlier paragraphs. The total land area devoted to recreation and athletics is approximately 60 acres. Together, these functions are proposed to occupy the flattest, least scenic portions of the campus property, nearest the highways and with good access and ample adjacent parking.

Support Facilities

The support facilities for the TAMU-CT campus were identified in the campus building program as 137,000 GSF of building area. This space would typically be located in two structures--- a building housing the Central Utilities Plant, and an adjacent office/warehouse style building for the facilities staff, campus security force, maintenance materials and equip ment, and other related warehouse needs. The zone for these buildings is illustrated in a position south of the academic core, which is relatively central to the campus, yet not in a highly visible location. This location will make distribution of thermal utilities to all campus structures reasonably efficient and cost effective.


Good Fulton & Farrell Architects


STATE HIGHWAY 201
NORTH REESE CREEK
STATE HIGHWAY 195
28.9 ac
3.4 ac
11.9 ac
6.1 ac
13.1 ac
3.5 ac
11.3 ac
35.7 ac
12.9 ac
3.2 ac
2.4 ac
11.8 ac
10.8 ac
9.7 ac
1.5 ac
10.7 ac
23.7 ac
1.2 ac
6.5 ac
3.6 ac
2.8 ac
3.8 ac
38.6 ac
31.3 ac
21.3 ac
4.9 ac
117.5 ac
38.6 ac
32.7 ac
14.1 ac
65.9 ac
LEGEND
TEACHING, RESEARCH & OFFICE
SUPPORT FACILITIES
GENERAL USE FACILITIES
HOUSING
ATHLETICS
RECREATION
PARKING
HABITAT/ FLOODPLAIN/ STEEP SLOPES
COMMERCIAL
FUTURE DEVELOPMENT
0
400
800
1600 Feet
LAND USE

Future Development Capacity

Approximately 100 acres of campus land remains unassigned in this Campus Development Plan simply because, at the 15,000 student enrollment horizon, there are not programmed functions to fill the available acreage. This excess capacity exists, in spite of setting aside 240 acres of land for environmental preserves. In the early stage of preparing this master plan, the consulting team worked briefly with a programmed horizon of 25,000 students, and successfully accommodated that larger headcount on the campus, while still adhering to the "guiding principles" stated at the beginning of the chapter. Therefore, we are comfortable in reporting that the future development capacity of the property could be used to accommodate unforeseen growth to 25,000 or could support "partnership" endeavors such as a Research Park, in which A&M and Fort Hood collaborate on research initiatives in defense technology or biotechnology. Such a corporate incubator might be developed in the southern portions of the campus off SH 195, in a zone where walking distances do not make core academic functions practical. Another good use for future development land is a commercial enterprise zone, in which A&M may ground lease land to a private developer to deliver desirable commercial services (retail stores, restaurants, a hotel, medical offices) at a campus gateway. approximately five acres is illustrated for this function at the more northerly point of ingress-egress on SH 195.

OPEN SPACE AND PEDESTRIAN CIRCULATION

Because the master plan for Texas A&M University-Central Texas has been structured as a response to the form and beauty of the property, the amount of open space and the diversity of the campus landscape will contribute strongly to the character of the place. Approximately half of the campus property is designated in the plan as open space. These areas serve a variety of purposes and take several forms.

Campus Edges

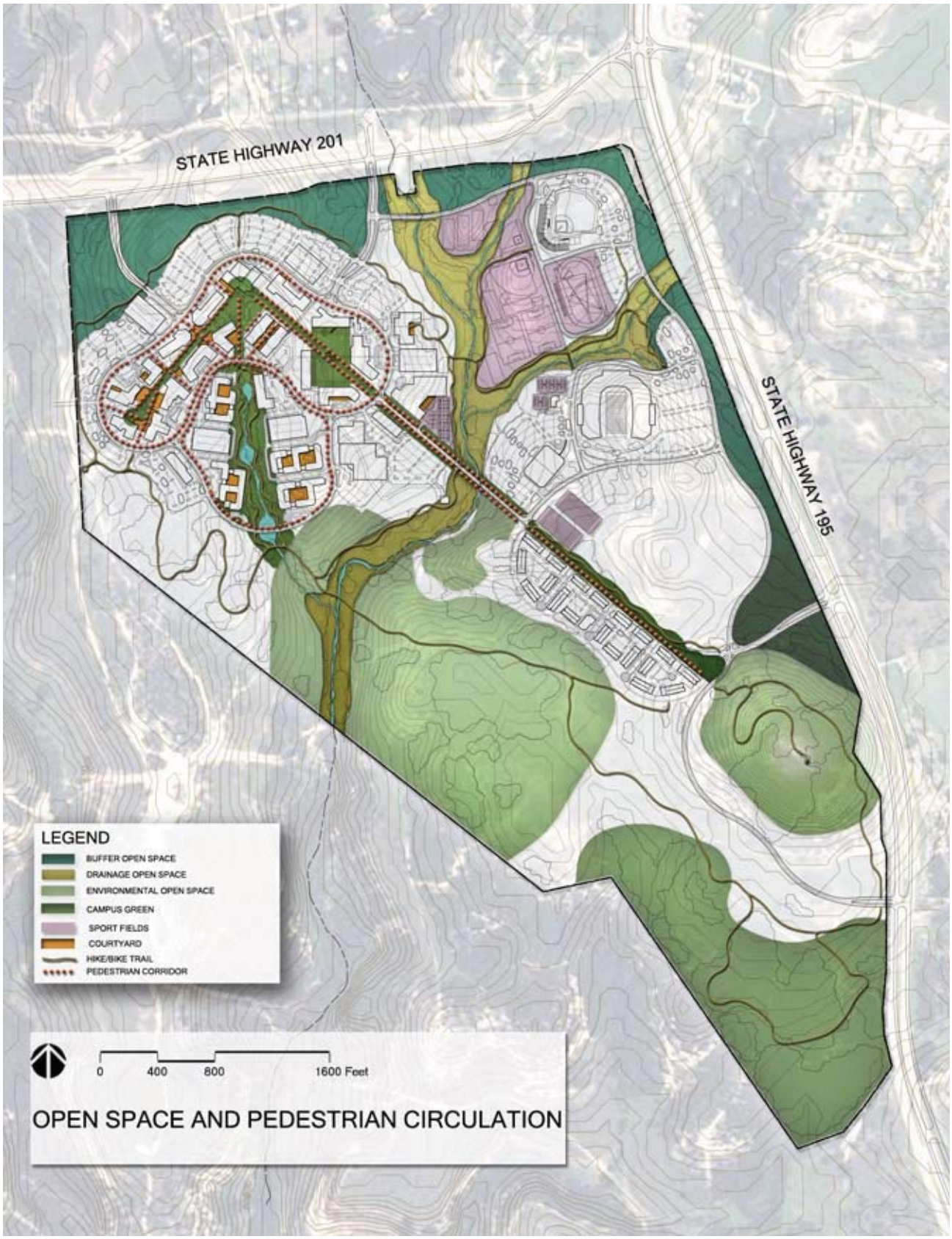
The campus boundaries against the two state highways are shown with generous landscaped buffers between the roadways at the perimeter of campus. This variable width buffer is proposed to be no less than 100 feet in width, and creates a sizeable green foreground to screen views of cars and filter highway noise. It forms a decompression zone which contributes to the definition of the campus as a special place. It is envisioned that the buffer landscape consists of drought-tolerant native grasses, overseeded with wildflowers and sprinkled with existing stands of trees. The edges of the property along the rights of way highway rights of way and the parking lots and internal should be marked with a boundary fence which is more expressive of ranch heritage than of security. This might be a pipe rail fence or pipe-and cable fence which transitions to stone monuments at the campus gateways, with identification signage. (See "Environmental Graphics/Wayfinding" in Chapter 8.)

Environmental Preserves

Approximately 80 acres of the TAMU-CT property are proposed to remain as wildlife habitat for the Golden-Cheeked Warbler. These wooded zones are located in the south-central and far southern portions of the campus. Construction in these areas is prohibited. However, soft-surfaced trails may be placed through the habitat zones and can offer significant opportunity both for recreation and for nature study in conjunction with science curriculum. The North Reese Creek riparion zones constitute waters of the United States and include flood plain areas in which construction and disturbance of the water convergence should not occur. These areas are also shown on the campus plan as permanent open space, enhanced by a parallel trail system. A third type of environmental preserve are the steep slope areas, with slopes greater than 10%. Bald Knob (32.7 Acres) and a beautiful area of natural rock outcrop just south of the proposed bridge over North Reese Creek (4.0 Acres) are illustrated as open space. These areas are subject to significant erosion if the natural vegetative cover is disturbed. Early in the development of the campus, a formal trail should be created leading to the summit of Bald Knob, to avoid the inevitable trampling that a college age population will inflict on this tempting destination.

Pedestriansways and Campus Greens

The most significant formal gesture structuring the campus plan is the "L"-shaped pedestrian spine connecting the buildings of the academic core and linking across North Reese Creek on axis with Bald Knob. This pedestrian way is imagined as a lively focus of campus life. Although the spine is drawn as an axial uninterrupted straight view corridor, it is proposed to have somewhat irregular shapes and edges that are responsive to the placement of buildings relative to the topography. The resulting spaces might alternate between larger campus greens at each end and in the middle, with narrower connecting pedestrianways between. This spatial "choreography" would be a distinctive characteristic of TAMU-CT. Buildings which create the edges of the pedestrianway should engage it with entries, porches or arcades, and terraces to ensure that the occupants will enliven these important common areas. The landscape character of the pedestrianways and greens should include a careful combination of undisturbed native vegetation and zones of man-made ordered landscape on those pads where building construction removed ground covers and altered the grades. The minimum width of the view corridor and pedestrian space between buildings should not be less than 100 feet.


STATE HIGHWAY 201
STATE HIGHWAY 195
LEGEND
BUFFER OPEN SPACE
DRAINAGE OPEN SPACE
ENVIRONMENTAL OPEN SPACE
CAMPUS GREEN
SPORT FIELDS
COURTYARD
HIKE/BIKE TRAIL
PEDESTRIAN CORRIDOR
0
400
800
1600 Feet
OPEN SPACE AND PEDESTRIAN CIRCULATION

The student housing precinct also uses an open space spine as an organizing device. This pedestrianway is wider than the one described above, because it follows a wooded drainage swale upon which buildings should not encroach. This spine leads directly up the hill to the campus green in front of the "Main Building" and the symbolic heart of campus. It is illustrated as a 200-foot wide greenbelt on average.

Sports Fields

The provision of multi-purpose intramural fields, as well as fields for soccer, softball, baseball and track will contribute strongly to the perception of Texas A&M University-Central Texas as an open green campus. These recreation areas constitute more than 50 acres of open space, located in the northeastern quadrant of the campus.

VEHICULAR CIRCULATION AND PARKING

The vehicular space circulation network for the Texas A&M University-Central Texas campus is designed to collect as many automobiles as practical into parking lots and garages near the perimeter of the campus and thereby create a more pedestrian oriented campus core. In spite of the large campus land mass, points of ingress and egress to the property are limited because the bounding roadways are TxDOT highways with rigorous restrictions on the spacing of intersections.

Two permanent access points are planned to the campus along SH 201. This access driveway serving the City of Killeen lift station is proposed to remain in place during the first several years of campus operation. The eastern most access driveway and this temporary lift station drive will be used to accommodate Phase I traffic. The temporary lift station is intended to serve only emergency and service vehicle traffic, while the primary access point which leads directly to the first building will serve student and faculty traffic. Traffic modeling will be completed to determine the intersection geometry requirements of both permanent gateways from SH 201, and a signal warrant study will be prepared. We recommend that TAMU vigorously pursue traffic signals at these intersections in the interest of safety.

CT master plan utilizes the two existing southern median openings on SH 195 as campus gateways by situating driveway access coincident to these openings. This access is not expected to be utilized until later phases of campus development. Acceleration and deceleration lanes will be required on SH 195 at these intersections to accommodate higher traffic speeds on this roadway.

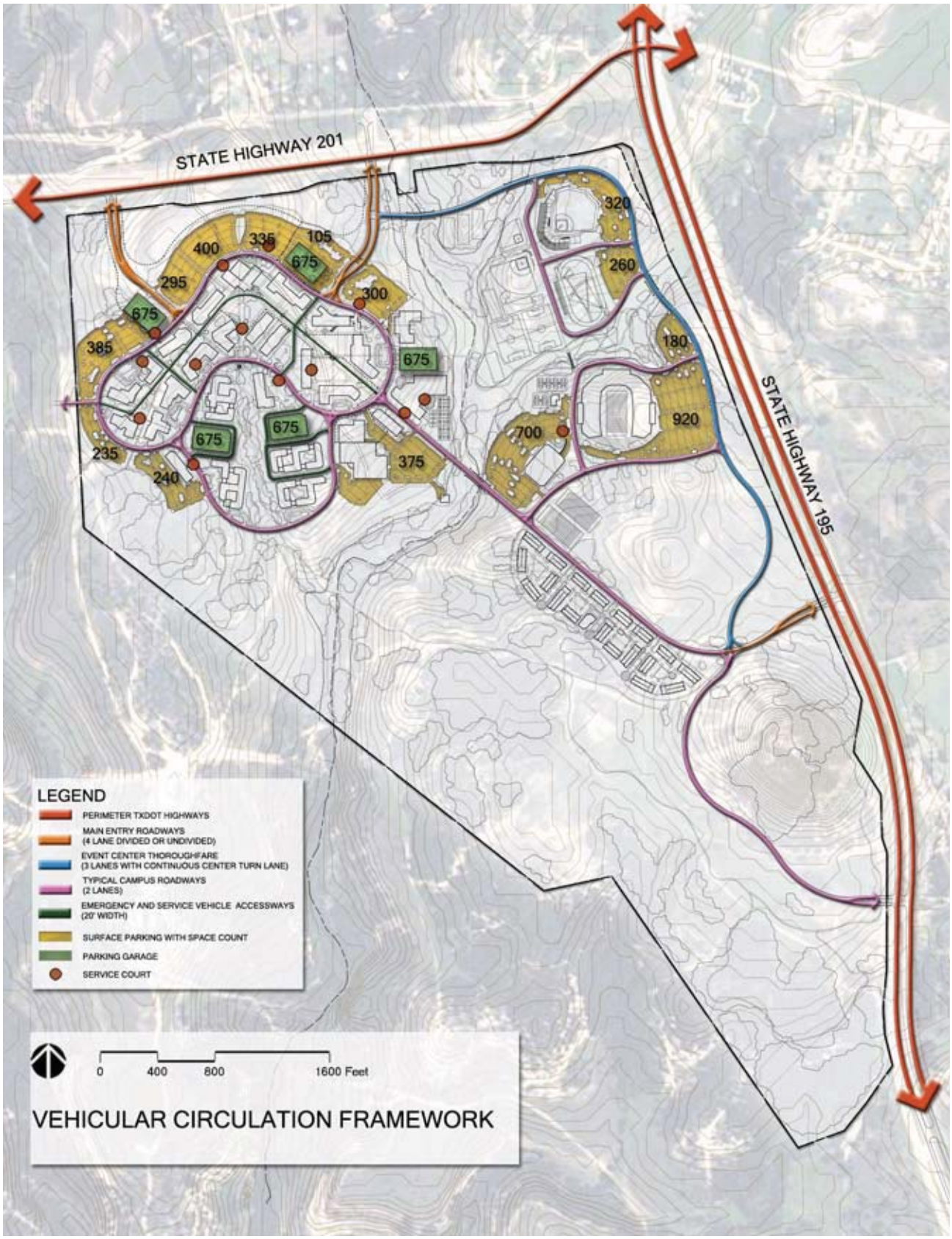
A traffic study was conducted to estimate the number of trips that will be generated by the proposed campus during the peak hours and the internal campus roadways are sized based on these trips. Traffic approaching and departing the site was estimated based on existing travel patterns and engineering judgement regarding future travel patterns. The trips were distributed across the internal street network using logical routes and assumptions and the internal roadways were sized using guidelines from the North Central Texas Council of Governments (NCTCOG). NCTCOG uses theoretical capacities (service volumes) for planning the number of lanes needed for various typed of roads. Based on these guidelines, the number of lanes required on the internal campus roads was determined.

The following are observations and recommendations of the traffic study:

1. The roadways connecting the campus to SH 201 are recommended to be 4-lane roadways. The entrance/exit from SH 195 roadway that primarily serves the athletic complex traffic is recommended to be a 4-lane section until the first access point to the baseball stadium/multi-purpose arena.
2. It is recommended that a 3-lane section with a continuous center turn lane be planned for the roadway and connection the SH 201 and SH 195 gateways serving the baseball stadium, football stadium and multi-purpose arena. Since most of the traffic using this roadway is headed towards parking lots, the center turn lane will provide relief to the through movement along this roadway.

The traffic volumes at the entrance/exit points along SH 201 and SH 195 were checked against the threshold for deceleration lanes using TxDOT's *Access Management Manual*. According to TxDOT's *Access Management Manual,* a deceleration lane on a 40 mph or greater roadway is required when the right-turn volume exceeds 50 vehicles per hour (vph). Based on the estimated traffic volumes at the ingress and egress points along SH 201 and SH 195, this criteria is met at all points. The complete traffic analysis for campus roadways is included as Appendix B.

The four-lane entry drives from SH 201 are shown as median-divided roadways which curve through the trees and up the hillside to intersect the two-lane campus ring road which circumnavigates the academic core. The ring road is proposed to be a 20 foot wide paving section to allow for two way traffic (one 11-foot lane in each direction) plus fur additional feet of lane width in each direction to accommodate bicycle traffic on the street. On the outside


STATE HIGHWAY 201
STATE HIGHWAY 195
320
260
180
920
700
105
335
400
295
675
300
675
385
675
675
675
235
240
375
LEGEND
PERIMETER TXDOT HIGHWAYS
MAIN ENTRY ROADWAYS
(4 LANE DIVIDED OR UNDIVIDED)
EVENT CENTER THOROUGHFARE
(3 LANES WITH CONTINUOUS CENTER TURN LANE)
TYPICAL CAMPUS ROADWAYS
(2 LANES)
EMERGENCY AND SERVICE VEHICLE ACCESSWAYS
(20' WIDTH)
SURFACE PARKING WITH SPACE COUNT
PARKING GARAGE
SERVICE COURT
0
400
800
1600 Feet
VEHICULAR CIRCULATION FRAMEWORK

of the ring road are a combination of surface parking lots and two above-grade parking structures which taken together, provide almost half of the campus requirement for 9788 spaces. The parking structures are placed in the most desirable locations adjacent to the entry drives for optimum traffic flow at peak periods, and nearest to the largest concentration of classroom buildings to facilitate shorter walking distances. Because of the expensive cost of these structures (four times the cost of surface parking) it is necessary to create an incentive for students and faculty to elect to pay an extra fee for a space in the garages an help defray the cost of the structure.

The internal roadway system is designed to provide suitable connectivity and linkage of the various campus functions, yet minimize the number of bridges crossing North Reese Creek.

In addition to the cost of these structures, the US Army Corps of Engineers requires a Section 404 permit to alter the grading and configuration of a conveyance of a Water of the United States. This is a lengthy and difficult process. One of the creek crossings is a roadway which links the campus academic core to the first SH 195 gateway, and serves to the graduate student housing and the athletic complex. This roadway "merges" with the pedestrian spine as it crosses the creek, and suggests that the design of this bridge (to carry significant vehicular bicycle and pedestrian traffic) should be a special design element for the campus. It is placed on axis from Bald Knob to the "signature building." The other creek crossings occur on a roadway which sweeps around the northeast perimeter of the campus, connecting the athletic complex and its parking to the points of access on SH 201 and SH 195. As stated earlier, this is proposed as a 3 lane roadway, which allows a "reversible" lane for event traffic management and accomodates turning movements. The construction of this road can probably be postponed until the campus athletic complex is fully developed.

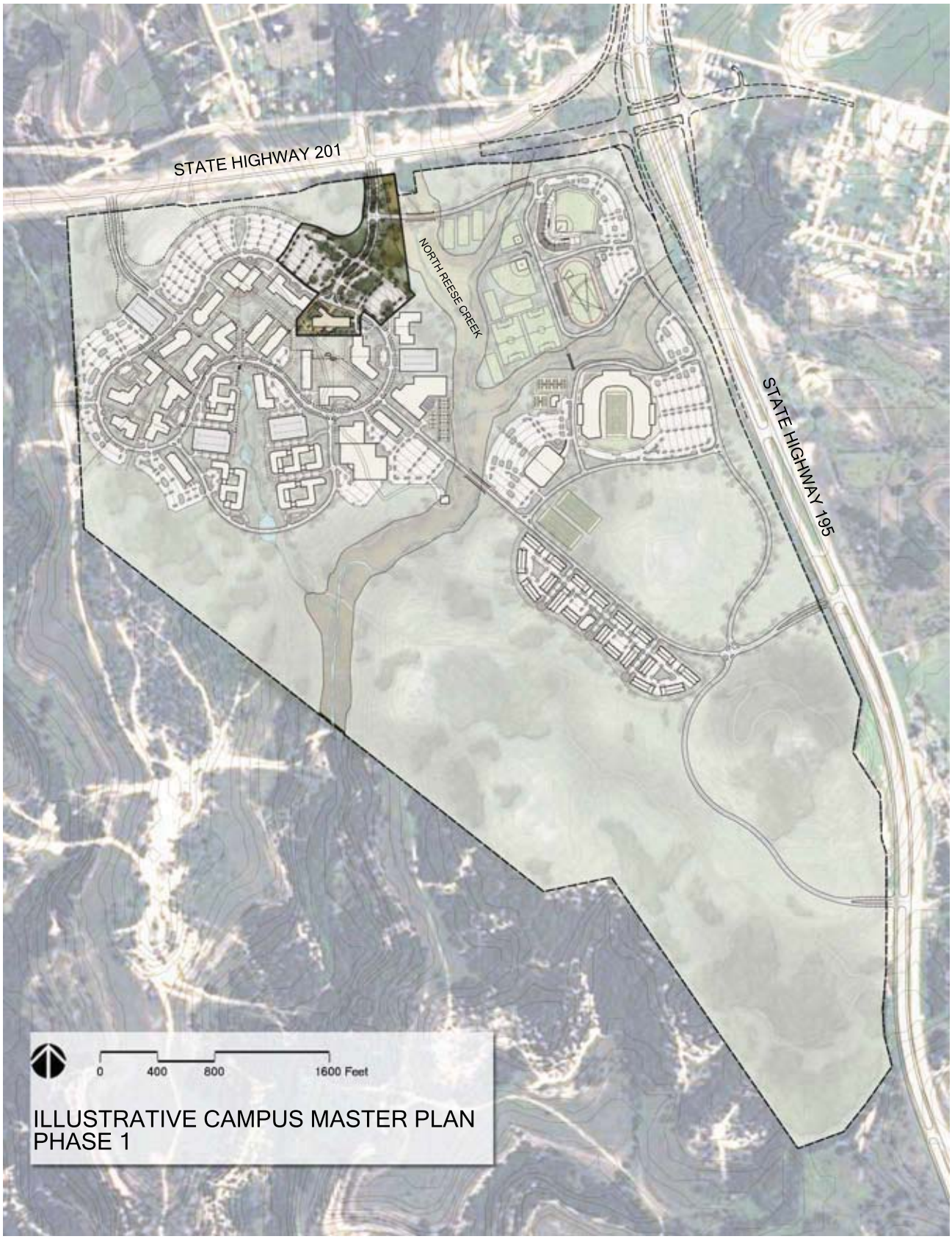
The character of these roadways is suggested to generally favor curving alignments over straight geometries; this both helps to "calm" traffic and to fit the topography and respond to existing tree locations. "Lay down" curb profiles are recommended to create a softer looking edge where the road meets the sidewalk or landscape.

Service and emergency vehicle accessways are proposed in several locations in the campus plan. These lanes are proposed to look and function as pedestrianways during daily campus operation, but be sized to accommodate the width turning ration and loading of fire trucks and service vehicles. This can be accomplished with a 20-foot wide paving that utilizes a flexible stone base and concrete unit pavers or a pervious "grass-crete" product. The plan also suggest where service nodes for deliveries might be consolidated between pairs of buildings. These nodes should be the location for loading docks, electrical transformers, trash and recycling containers, emergency generators and other similar service elements to avoid them being dispersed in an unsightly way on campus.

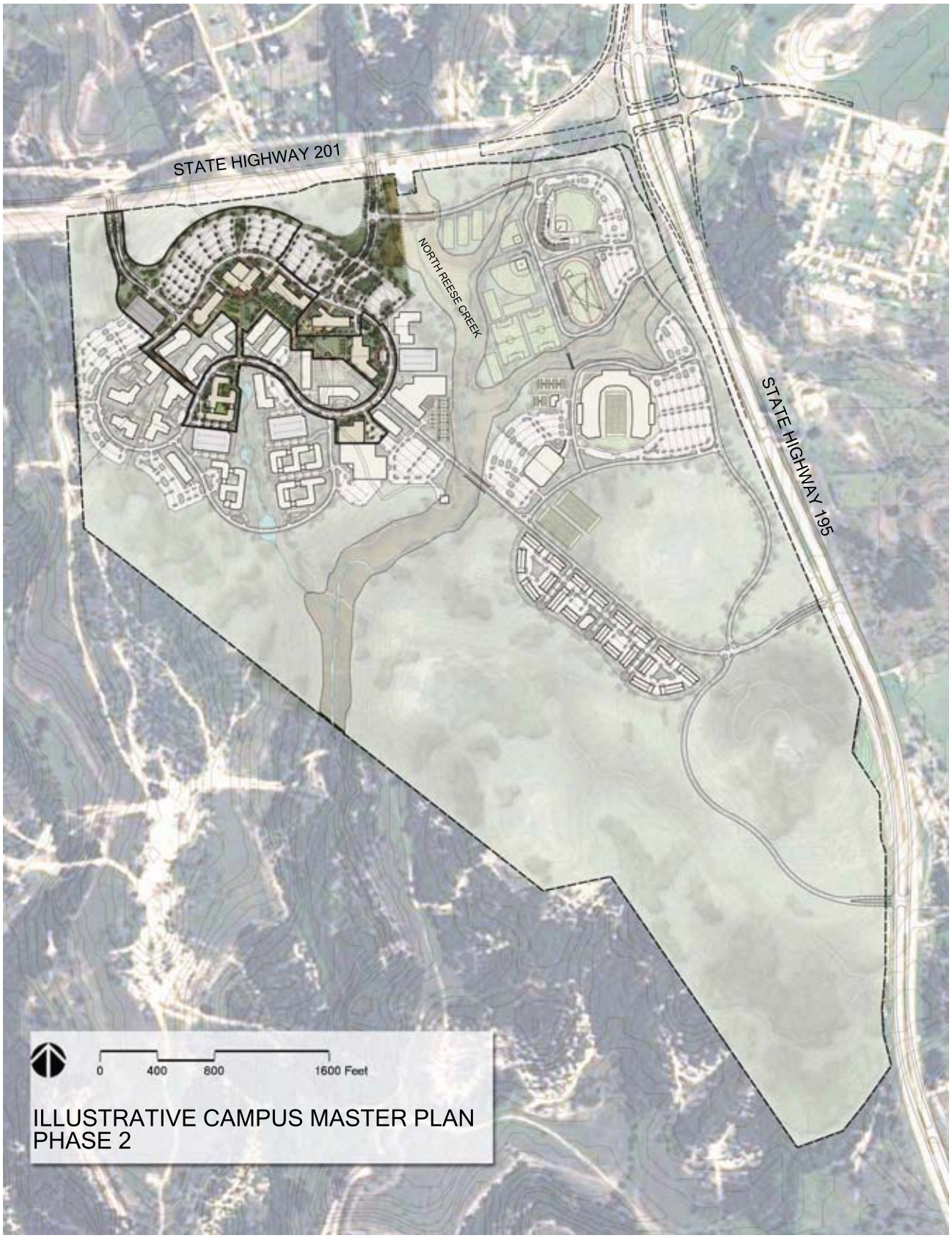
In addition to a heavy concentration of parking facilities on the north perimeter of the academic core, the plan places the largest surface parking lots in close proximity to the athletic complex. Approximately 2500 spaces are illustrated in this area. These lots are proposed to be linked to the heart of campus by a trail system along the creeks, but it is likely that an on-campus shuttle bus will be a necessary feature to make these lots an attractive alternative for students. For major events, the shuttle program would operate in reverse, bringing patrons to the stadium or arena from other campus parking lots.

PHASING RATIONALE

The Campus Development Plan must provide for the growth and evolution of the University in somewhat unpredictable increments over a period of 30 or more years. At each step of its growth, the campus must be functional and beautiful and no single expansion event should have to bear an unreasonable burden of infrastructure extension and cost. Toward that objective, the plan illustrates two "snapshots" of campus development. The first is a Phase One Development Plan, which presents the scope of site development proposed to accompany the initial 100,000 SF multi-purpose classroom and office building. This shows the first entrance roadway from SH 201 and two surface parking lots accommodating approximately 720 spaces. The second snapshot, which we label as "Phase Two Development Plan," presents the general status of campus development after eight to ten years of evolution. This plan illustrates a recommendation of the first six building sites to be developed and the necessary and logical infrastructure of roadways, parking and pedestrianways, and utilities to serve those buildings. The plan includes a first phase of student housing, the library, student center and central plant in addition to general classroom/office buildings. By this point in time, the campus will require a second point of ingress and egress, and this is shown intersecting SH 201.



ILLUSTRATIVE CAMPUS MASTER PLAN
PHASE 1



ILLUSTRATIVE CAMPUS MASTER PLAN
PHASE 2


STATE HIGHWAY 201
STATE HIGHWAY 195
0
400
800
1600 Feet
ILLUSTRATIVE CAMPUS MASTER PLAN
FULL BUILD OUT

7

CAMPUS INFRASTRUCTURE

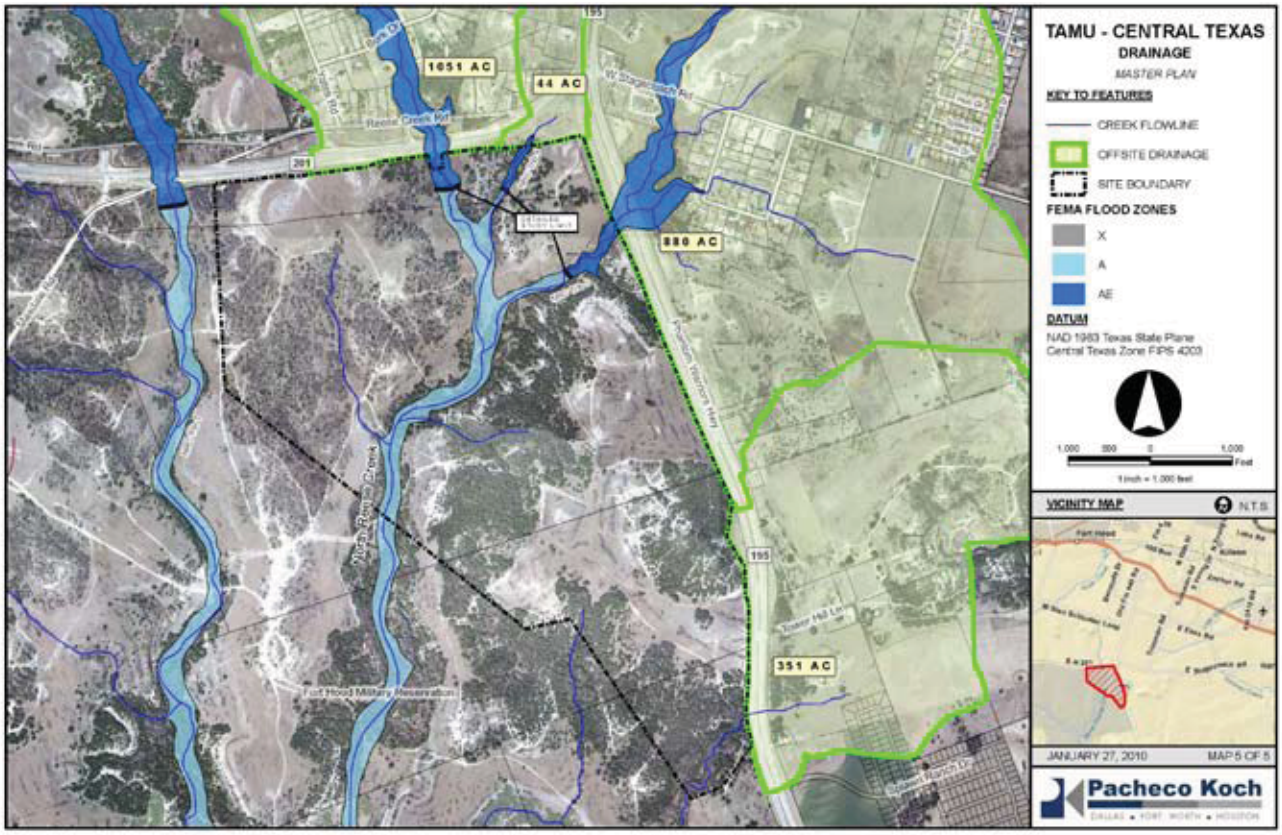
STORMWATER

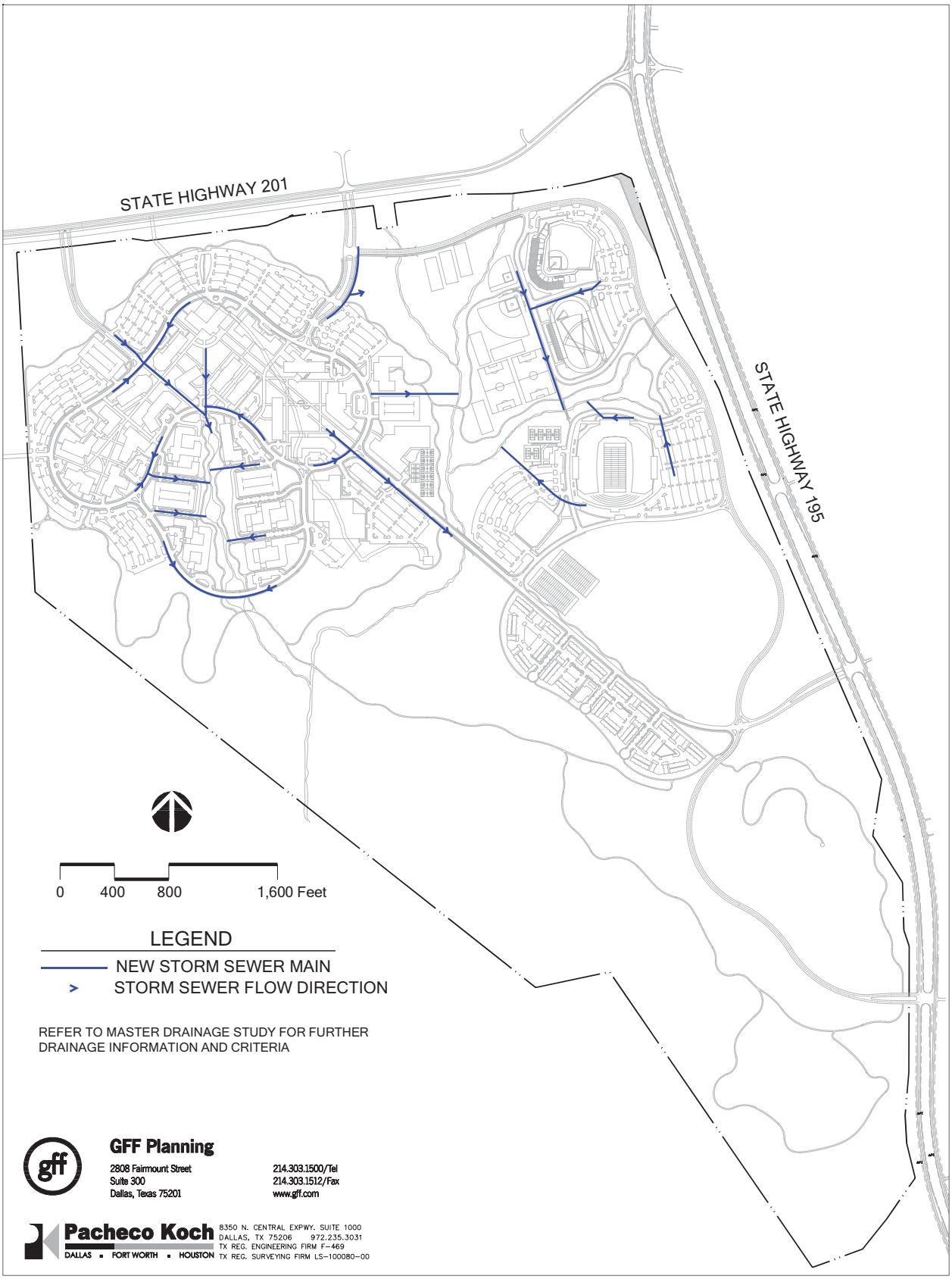
Site Conditions

The campus site drains into the North Reese Creek watershed. A portion of the campus drains to North Reese Creek Tributary 3, a portion to North Reese Creek Tributary 4, and the western portion of the campus drains offsite to North Reese Creek Tributary 1. The area contributing runoff to North Reese Creek Tributary 1 drains offsite across the Fort Hood Military Reservation. The confluence of North Reese Creek and North Reese Creek Tributary 1 occurs approximately 6,000 linear feet downstream of the campus property.

North Reese Creek drains into the Lampasas River. The Lampasas River is currently located on the Texas Water Quality Inventory 303(d) list for elevated bacteria levels. The Water Sciences Team from Texas AgriLife Research at Blackland Research and Extension Center along with collaborators from Texas A&M University's Spatial Sciences Lab and Texas AgriLife Extension Service are addressing the Lampasas River water quality issues through a coordinated effort to facilitate and encourage public education, awareness, and involvement of water quality issues and conduct a science-based analysis of the watershed. The City of Killeen has a vested interest in the preparation of the Lampasas River Watershed Protection Plan.

North Reese Creek receives drainage from approximately 2,300 acres located offsite and upstream of the campus development. A detailed drainage study has been performed for the Zone AE areas. This study was most likely completed as part of mapping efforts by the City of Killeen. A detailed study has not been performed on the Zone A areas, which encompasses a large portion of North Reese Creek through the campus development. The approximate flood plain mapping for the Zone A areas was most likely completed as part of an overall mapping effort by Bell County. The approximate study for the Zone A areas do not have established Base Flood Elevations. Base Flood Elevations establish the limits of flooding inundation and dictates flood insurance requirements. They are further required to establish finished floor elevations for any new buildings adjacent to regulatory floodplains.


TAMU - CENTRAL TEXAS
DRAINAGE
MASTER PLAN
KEY TO FEATURES
CREEK FLOWLINE
OFFSITE DRAINAGE
SITE BOUNDARY
FEMA FLOOD ZONES
X
A
AE
DATUM
NAD 1983 Texas State Plane
Central Texas Zone FIPS 4203
1,000 500 0 1,000 Feet
1 inch = 1,000 feet
VICINITY MAP
N.T.S.
JANUARY 27, 2010
MAP 5 OF 5
Pacheco Koch
1051 AC
44 AC
880 AC
351 AC
201
195
Reese Creek Rd
Fort Hood Military Reservation


STATE HIGHWAY 201
STATE HIGHWAY 195
0
400
800
1,600 Feet
LEGEND
NEW STORM SEWER MAIN
STORM SEWER FLOW DIRECTION
REFER TO MASTER DRAINAGE STUDY FOR FURTHER DRAINAGE INFORMATION AND CRITERIA
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214.303.1512/Fax
www.gff.com
Pacheco Koch
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TX REG. SURVEYING FIRM LS-100080-00

A master drainage study will be performed as part of the phase I development to include a hydrologic analysis of the campus based on existing and predicted future watershed conditions. This study will be used to determine peak discharges within the stream(s) and preliminary detention volume requirements, if any. A hydraulic model will also be developed to estimate Base Flood Elevations within the FEMA designated Zone A floodplains throughout the campus.

Jurisdictional waters of the United States should be identified if floodplain mitigation is required. Grading within natural streams is generally regulated through Section 404 of the Clean Water Act and governed by the US Army Corps of Engineers. Determination and delineation of US jurisdictional waters is generally needed to develop a floodplain reclamation plan that avoids jurisdictional features and unnecessary 404 permitting.

The State of Texas Water Code, Chapter 11.086 restricts a property from altering the drainage characteristics (flow and drainage manner) on a downstream property. The City of Killeen has detention requirements restricting the amount of storm water run-off to that of pre-developed conditions. It is anticipated that open space for detention areas will be deemed necessary for campus development and will be confirmed with the master drainage study.

Section 10 of House Bill No. 4 requires all state buildings with a roof area greater than 10,000 square feet institute rainwater harvesting, if practical. This bill was signed by the State Governor in June of 2007. Rainwater harvesting involves the capture of the storm water from the roof or other areas of the site. The collected water may be used to supplement landscape irrigation and for non-potable uses within the building.

Overall Stormwater Management/ Planning Approach

The development plan incorporates the following principles in the overall stormwater management:

1. Prioritize strategies which reduce runoff quantity including rainwater harvesting.
2. Provide natural areas for detention to reduce runoff to pre-developed conditions, if required.

It is anticipated a series of underground storm sewer pipes will collect and pipe runoff to several detention areas throughout the campus if detention is required. The ponds will slowly release the water at a rate equivalent to pre-developed conditions into North Reese Creek or one of its contributing tributaries.

WATER

Existing water service is provided by the City of Killeen. An existing 16” ductile iron distribution main is located along the south side of Reese Creek Road and will be used to serve the campus. There is an existing 12” distribution main along the east side of State Highway 195 (Phantom Warriors Highway). The building for Phase 1 will be individually metered; however the campus should consider master-metering at a time it becomes most economically feasible. A combination domestic and fire looped system with master meters should be used to serve the campus. Connections should be made to both the 16” and 12” distribution systems to create a looped system of redundancy.

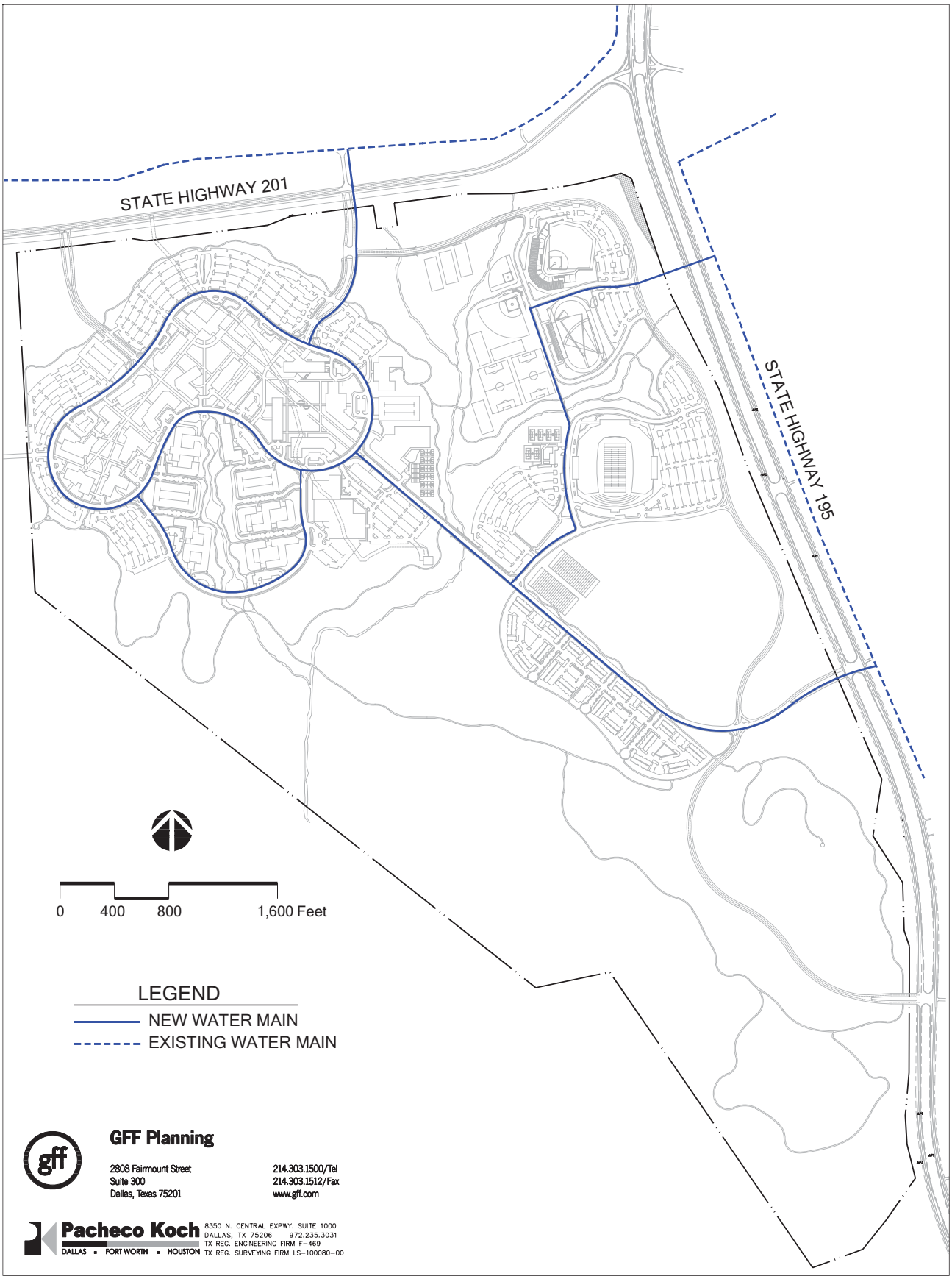
SANITARY SEWER

Two gravity mains are available to serve the site which drain into lift station #20, located in the middle northern half of the campus. This lift station is owned and operated by the City of Killeen. An existing 18” gravity main is available to serve the majority of the academic and resident corridors and provides service to offsite areas north of the campus. An existing 15” gravity main is available to serve the athletic complexes and provides service to offsite areas northeast of the campus. These mains drain into lift station #20.

Lift Station #22, located upstream of the campus development, drains into lift station #20 via the 18” gravity main. There is a 16” force main that conveys sewage from lift station #20 into a gravity system downstream which terminates at the City of Killeen’s waste water treatment facility.

Two options for Phase 1 service are available. An individual service line, sized for Phase 1, may be installed which connects to the 18” gravity main. As an alternative, a larger and longer system, sized for multiple phases, may be installed. Budget considerations for Phase 1 should be made to determine which option is more feasible.

Lift station #20 has a capacity of 5.8 MGD and has been sized to accommodate the ultimate campus development. The lift station was designed for two (2) additional phases beyond the current conditions with a maximum of four (4) pumps. The current configuration is that of two (2) pumps to maintain minimum velocities. Existing capacity is 1400 gpm. Improvements may be made to the existing impeller sizes and/or additional pumps may be added as warranted by increased demand. The University should budget for lift station improvements in subsequent phases.


STATE HIGHWAY 201
STATE HIGHWAY 195
0
400
800
1,600 Feet
LEGEND
NEW WATER MAIN
EXISTING WATER MAIN
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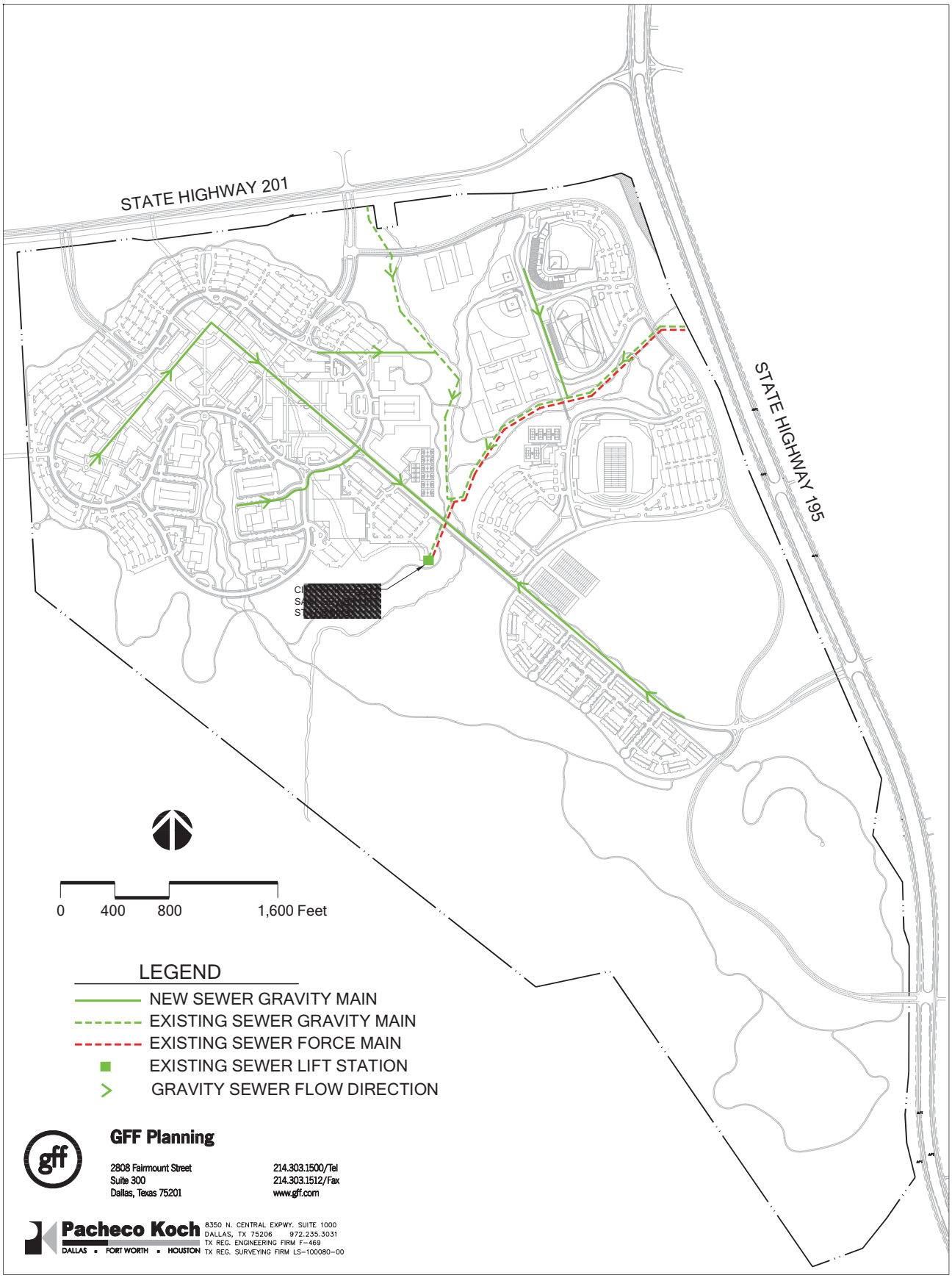

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GAS

Existing service is available from Atmos Energy. An existing 6" gas main is located in FM 3470 (Stan Schlueter Loop) at the intersection of SH 195. While no gas services are expected for Phase I, approximately 11,000 LF of 8" gas main may be extended to the site during future phases. Existing service is also available approximately 3 miles to the west at the Killeen-Fort Hood Regional Airport. Atmos Energy anticipates extending this main to the east when warranted by adjacent development. At that point, redundancy may be incorporated into the campus system. In the interim, vacant risers may be incorporated into the design to provide a means of redundancy. The University should determine if the campus will be master metered or individual building meters will be provided. Master metering the campus at ultimate build out should qualify the campus at a lower usage rate than providing individual meters for each building.

FIBER

Existing service is available from Century Link along SH 195 across the campus frontage and approximately 1,500 LF west of the site at the intersection of Maxdale Road and SH 201. Two services will be brought to the site creating a redundant system for the campus. The first service for Phase 1 will be extended from SH 195 and enter the campus from the eastern drive entrance off SH 201. A separate service, installed with a subsequent phase, will be extended to the east along SH 201 and enter the campus from the western drive entrance off SH 201.

While it is unclear at this time where facilities are located adjacent to the campus, Bellnet will also provide redundant service to the campus and enter the eastern drive entrance along SH 201 at the designated point of delivery.

These services will be brought to the main distribution frame (MDF) room in the library at the time the library is constructed. From the library, a distribution network will be provided to serve the campus. Phase 1 will be dual served from the Century Link and Bellnet services.

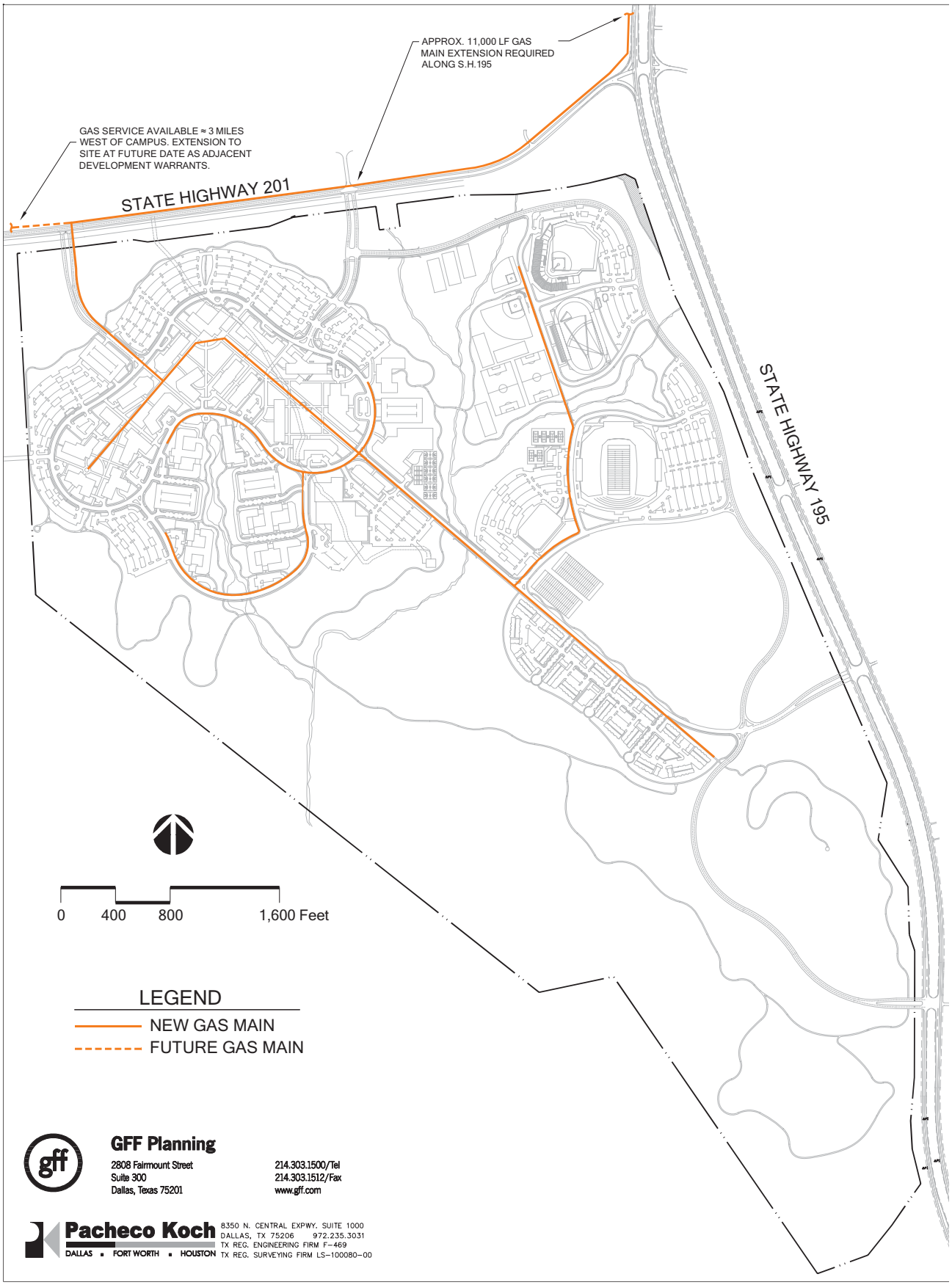
ELECTRIC

Existing service is available from Oncor Electric Delivery Company, LLC. Existing 3-phase overhead facilities are located along SH 195. Existing 3-phase overhead facilities are located along SH 201. A substation is located approximately one half-mile north of the campus along SH 195.

An existing 3-phase overhead service from SH 195 to the City of Killeen's lift station may be utilized to provide a looped system for the athletic complexes, graduate housing and the retail corridor.

The campus will take ownership of electric utilities starting with Phase I. Oncor will extend overhead facilities from the substation, set a pole with riser along the north side of SH 201 adjacent to the campus' east drive entry and bore under SH 201 to the point of delivery. Oncor will also provide an overhead electric service point-of-delivery along the west property line.

An underground looped switchgear feed will be routed through the campus connecting the two points of delivery, while an underground looped transformer feed will provide service to each building.



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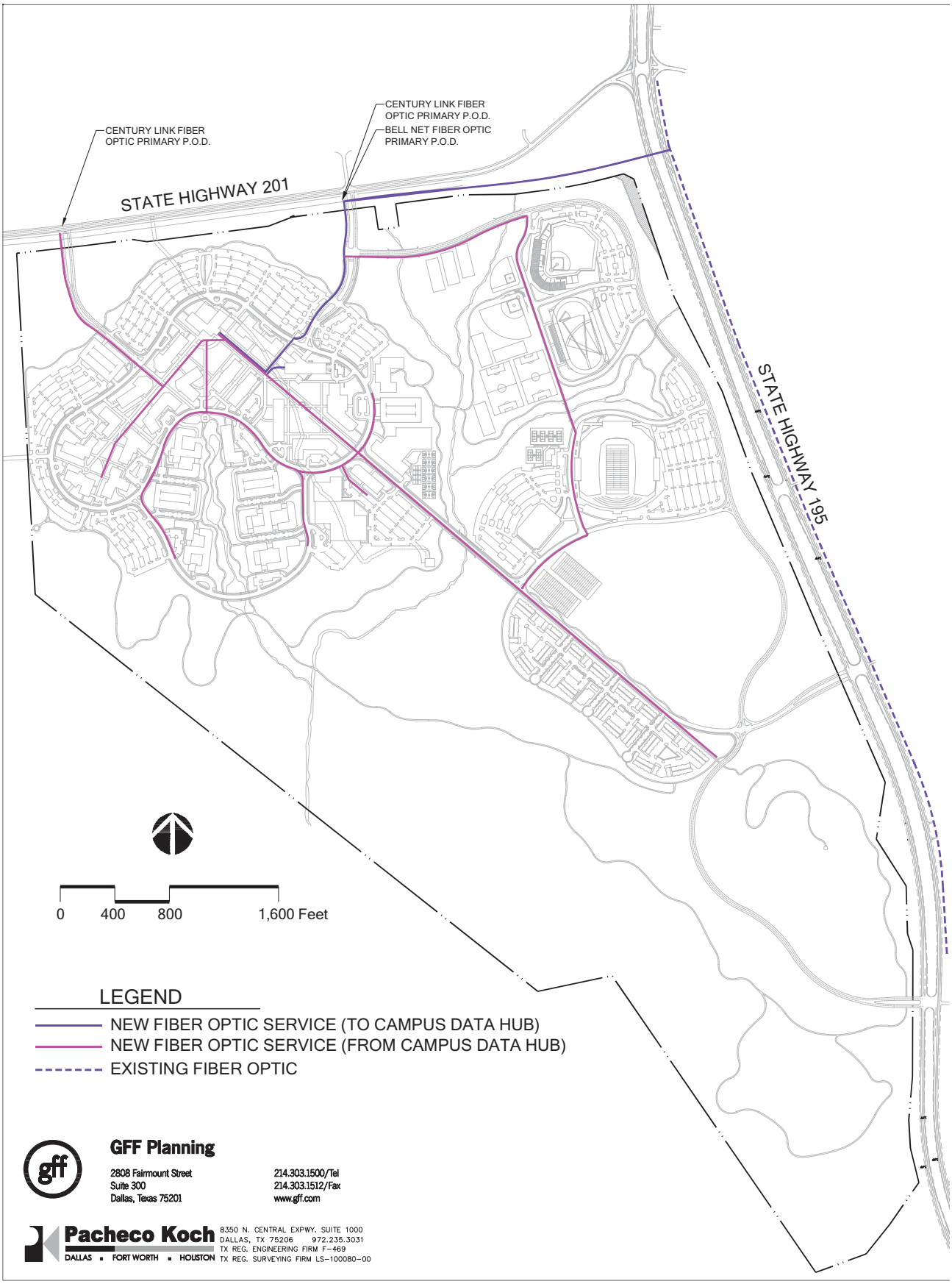
CENTURY LINK FIBER
OPTIC PRIMARY P.O.D.
CENTURY LINK FIBER
OPTIC PRIMARY P.O.D.
BELL NET FIBER OPTIC
PRIMARY P.O.D.
STATE HIGHWAY 201
STATE HIGHWAY 195
0
400
800
1,600 Feet
LEGEND
NEW FIBER OPTIC SERVICE (TO CAMPUS DATA HUB)
NEW FIBER OPTIC SERVICE (FROM CAMPUS DATA HUB)
EXISTING FIBER OPTIC
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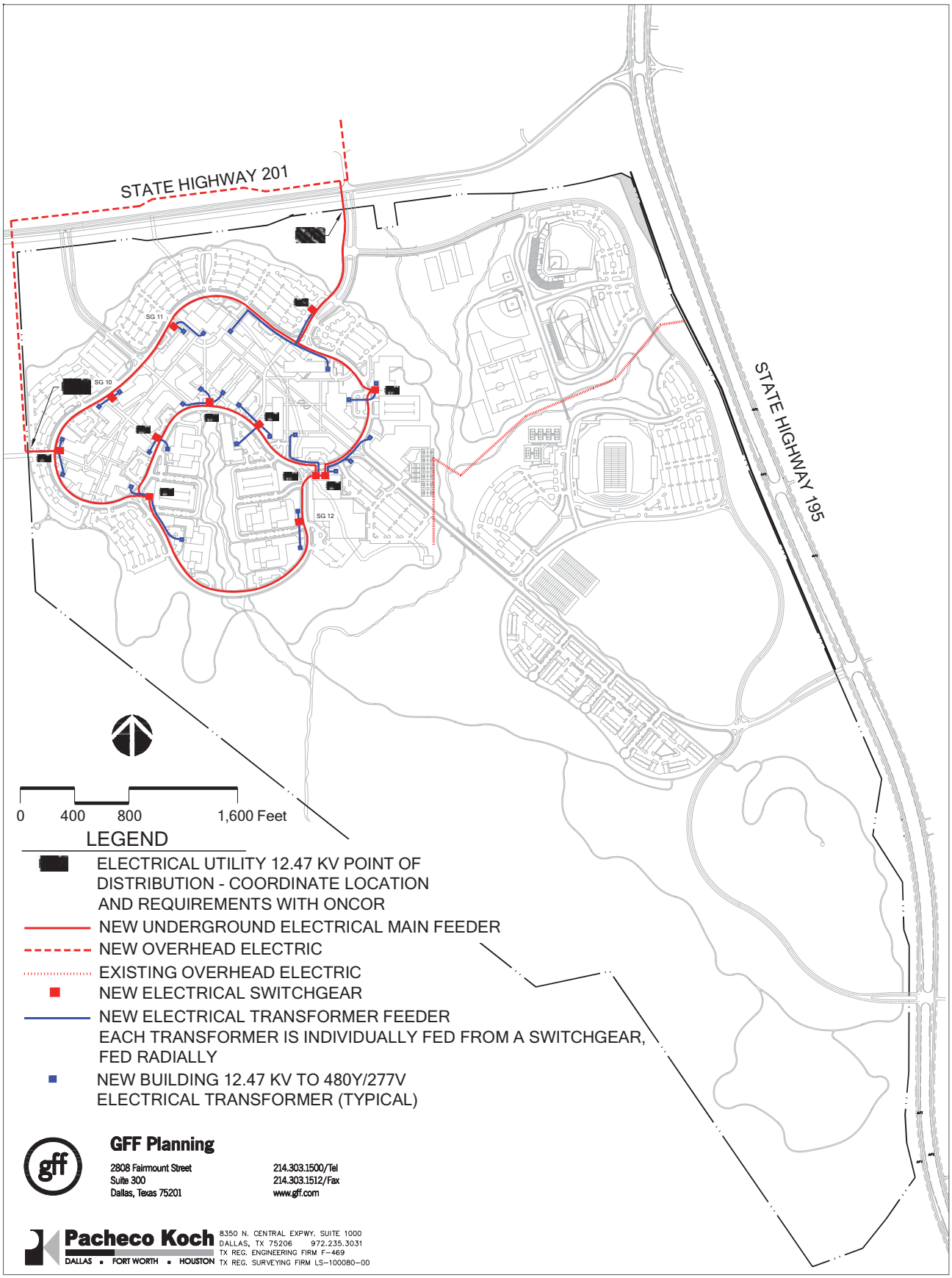

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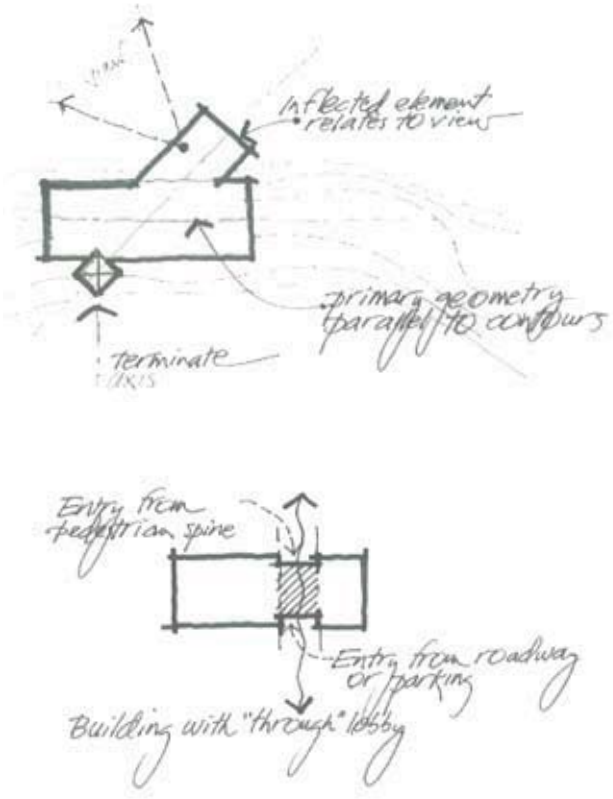
8 DESIGN STANDARDS



ARCHITECTURAL DESIGN STANDARDS

Building Orientation

One of the guiding principles for campus planning at Texas A&M University-Central Texas expresses a preference for informal relationship among buildings and between buildings and adjacent roadways and pedestrian ways as a response to the lay of the land. This suggests that campus buildings should be sited with a priority on orienting buildings with long elevations positioned parallel with contour lines and/or inflected to face primary views or to preserve important tree groupings. This approach to building orientation can yield interesting buildings which feature primary and secondary geometrics. For instance, specialized programmatic functions within a campus building might depart from the regular gird and be expressed by a unique formal element which responds to site features. The Campus Development Plan illustrates that virtually all buildings are site with frontage on both a vehicular roadway as well as the pedestrian open space spine. Buildings should therefore have entrances on both of those faces. A "through" lobby which connects these entrances is a desirable device which enhances circulation and wayfinding.

Porches, Arcades and Walkways

To respond to harsh, hot sunlight and protect from sudden downbursts of rain, covered walkways, arcades and porches are desirable features for the campus. These can function as protection at building entries as well as to provide linkage elements between buildings. These features are best located on the pedestrian spine side of the buildings and along southern and western building faces. Taking inspiration from indigenous Central Texas architecture, porches would feature sloped standing seam metal roofs, or may be covered by trellis-like shade structures to create dappled shadow patterns for terraces that invite students and faculty to pause and gather between classes.

Building Heights

To create a scale for the campus which is compatible with the regional context and natural environment of the site, a four-story height limit is suggested. An exception to this limit would be tower elements which are used to terminate

axes or mark a special location, or perhaps a single iconic building which may function as the "signature" building on campus. The Development Plan identifies these special locations on the "Urban Design Principles Map" in Chapter 6.

FACADE MATERIALS

Stone

The use of native Texas limestone as the primary facade material for campus buildings provides an important linkage to Central Texas architectural heritage. The weathered limestone strata on the campus, near and at the ground surface elevation, is tan to golden in color. Therefore, the selection of stone should favor that color range rather than white. Cordova Cream, Cordova Shell and Leuders are examples. These stones are quarried at sites less than 200 miles from the campus, therefore offering reduced transportation costs and qualifying as local materials for the purposes of the LEED rating system.

Limestone veneers should have a face dimension as large as practical, and with a horizontal dimension 1.5 to 2 times the vertical dimension. 12 inches by 24 inches is an example of a desirable size and proportion. The use of "roughback," cleft face, or exposed quarry face stone is preferred at the base of buildings, to express relationship of the building to the landscape and to the natural grade. Cut face (ashlar) dressed stone faces are desirable for use as veneers on upper floors, window and door surrounds and as accent courses. Fossized stones such as Cordova Shell should be used only in protected locations where the effects of rainfall and resulting discoloration and weathering are minimized.

Cement Plaster

Because there will be locations and applications on buildings where it is not practical to carry heavier stone veneers, Portland Cement Plaster (stucco) is recommended as a secondary facade material. Color selections should be limited to a creamy white to compliment the limestone. The finish should be light sand hand trowelled or machine applied with a fine orifice.

Architectural Metal Panels

An alternative secondary facade material is the use of sophisticated architectural metal panels. Metals should be clear anodized aluminum, galvanized steel, stainless steel, or zinc-colored steel. These should be composite panels such as "Aloco bond," should have a ribbed profile or be of a heavy enough gauge to resist oil-canning. Metal panels may be most effective when incorporated into a curtainwall system.

Glazing

One of the best methods for expressing the use of today's advanced technology in the campus buildings will be through the use of curtainwall glazing systems in areas where introducing a significant amount of natural light is desirable. Glazing materials should be insulated units with low e coatings to achieve the best solar performance yet with maximum transparency. The preferred color effect is clear to pale green, rather than grey, bronze or blue. Exposed mullions should be clear anodized aluminum.

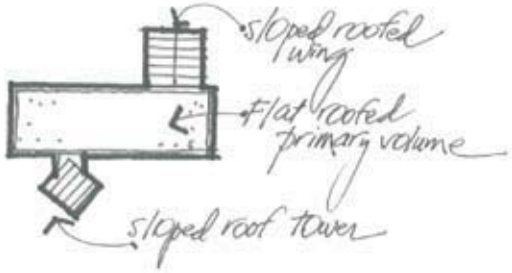
Shading Devices

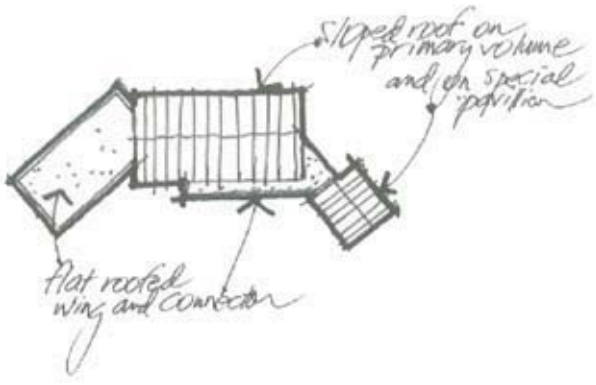
Areas of glazing should be shaded by shading devices appropriate to their orientation. Horizontally projecting louvers and fins on southern facades and vertical fins on east and west faces will provide the best performance. These shading devices should be constructed of clear anodized aluminum or galvanized steel. Consideration should be given to the use of a horizontal light shelf to shade the windows and provide ambient daylight deep into the interior of the building.

ROOF FORMS AND MATERIALS

As a means to reflect on the regional architectural heritage of indigenous agrarian buildings, every building on campus must have a sloped roofed element on at least some part of the building. For instance, if the primary mass of the building is a flat-roofed volume, then a special-function wing, tower element, entry porch or similar volume should contribute a gabled or shed roof form. Sloped roofs should have pitches no less than 4 in 12 and no greater than 8 in 12.

Sloped roofs should be double lock standing seam metal roofs with a natural galvanized finish. Panel widths should be approximately 16 inches wide, with seams approximately 1.5 inches high. Rooftop vent stacks and mechanical systems should be screened by the inherent form of the roof or by parapet wall extensions such that they are not visible from ground level from any public right of way.





LANDSCAPE STANDARDS

Landscape Design Intent

The following landscape standards are important to ensure quality, sustainable and compatible landscaping throughout the TAMU-Central Texas campus. The character and heritage of the site was carefully examined in order to emphasize the natural environment. The intent is that the landscaping should compliment the built environment by blending the natural surroundings with the planned design elements. The landscape design utilizes a variety of lansdcape materials indigenous to the Central Texas region.

Considering the aforementioned **Guiding Principles for Campus Development** for these design guidelines, the overarching theme presented is to respect existing topography and preserve as much existing vegetation, habitat and ground cover as possible. The landscape design aimed to do just that, by cultivating an understanding of the rich Central Texas heritage through use of local materials, elemental forms, and climate response. The natural systems of the site were preserved and celebrated. For example, habitat areas, slopes, riparian corridors, and the Bald Knob site, were all taken into consideration in the design process. Enhanced views and sight lines were considered carefully in the design process.

The plant materials and site furnishings list was specifically created for the TAMU Central campus. The plants selected are a combination of native and adaptive. Some non-natives are recommended for specific situations (shaded areas and poor drainage areas). The result is that the hard and soft landscape elements in the open space contribute towards a visually pleasing campus environment. The aim is to identify and reinforce a particular uniqueness for the TAMU-Central Texas campus. The following guidelines communicate the design intent and vision for the campus landscaping through a series of images and corresponding text.

There are several important key areas of the campus plan that are the most visible and require particular attention; for example, gateways, streets, pathways, pedestrian spaces, open quad areas, and parking. Landscaping should work to relieve the overall mass and scale of the structures, frame outdoor spaces, and create a sense of place. The landscape should stage the architecture to enhance and showcase it.

Landscape Zones

Natural

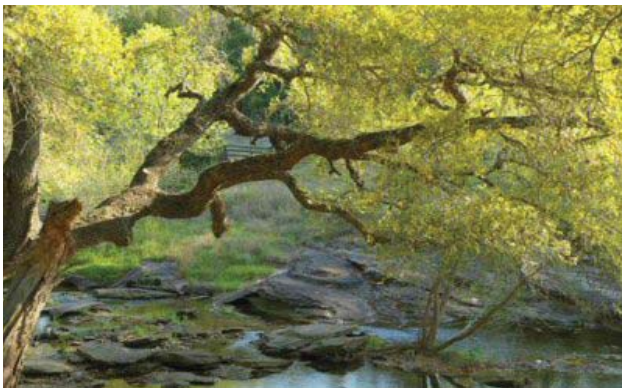
Natural landscape areas are comprised of grassland species and an abundance of existing flora which can minimize maintenance and irrigation costs. Core wooded areas are also found in the natural areas. The vistas are maintained and preserved in these locations. The natural area includes a protected wildlife habitat. These habitat areas contribute to water quality, biodiversity and ecological function. The North Reese Creek flows southwesterly throught the site. Portions of the stream corridor are located in the natural areas and are seen as a wonderful amenity that should be preserved. Invasive or non-native plants should be removed in this area. A focus in the natural area is for the landscape to be as protected and preserved as possible and sustainable. The TAMU-Central Texas site has multiple opportunities for natural landscape areas.

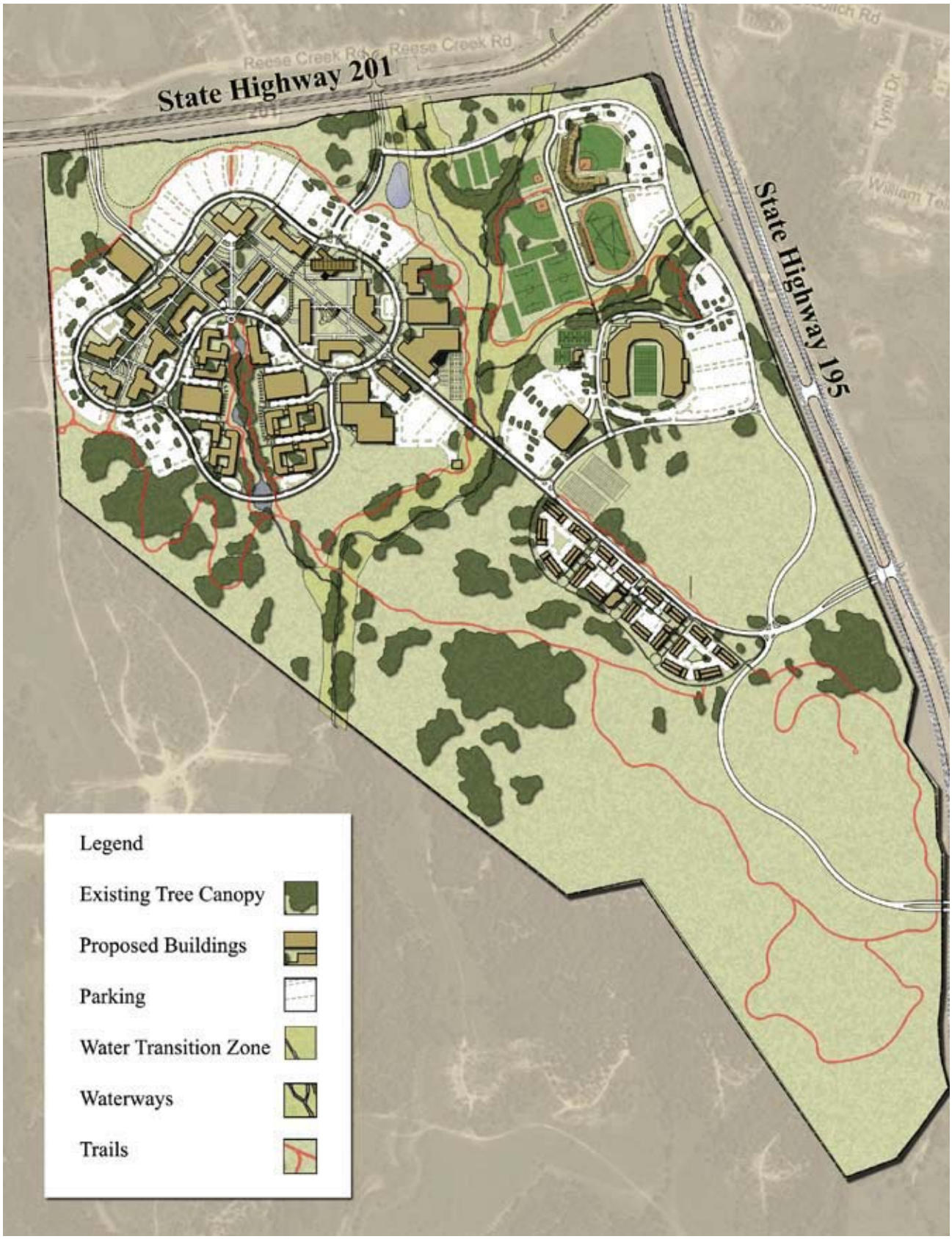
Transition

Transition landscapes at the campus provide an opportunity for the natural and programmed areas to blend seamlessly. Transition areas have a more detailed planting design than the natural areas. In these areas shrubs, trees, and perennials are planted to achieve year-round benefit. The edges in the transition area are soft with native plans that require some minimal maintenance and irrigation. This area includes the addition of delineated planting beds and tree massing within grasslands. The transition area signifies the beginning of informal spaces.

Programmed

This area of the campus landscape is more active and formal than the two areas described previously. Programmed areas include outdoor rooms for socializing and studying and landscaped spaces that contribute to the campus environment. They provide open lawns, plantings, seating walls, courtyards, and paving materials to frame the area. All of the site furnishings for the campus are found in this area. The programmed landscapes will require the most maintenance and irrigation.




State Highway 201
Reese Creek Rd
State Highway 195
Legend
Existing Tree Canopy
Proposed Buildings
Parking
Water Transition Zone
Waterways
Trails

Gateways

Gateways utilize architectural elements and landscape materials to orient and inform. For students, faculty and visitors, the gateways are the first impression of the TAMU-Central Texas campus. The landscaping at the gateways and along main entry roadways must set the tone and reflect the overall vision for the campus.

- Gateways should serve to delineate campus boundaries with unifying street trees.
- Gateways should incorporate landscaping at base and perimeters.
- Landscaping should include a mixture of adapted ornamental and native plant species as well as color beds.
- Landscaping at gateways should not be designed to obstruct lettering and readability.
- Large specimen trees at gateways are encouraged to give entry scale and welcome feel. Selection should be repeated at all similar gateways.
- Gateway element materials include; native Texas stonewalls, concrete unit pavers and reuse of on site boulders where applicable.

Streets

The streets of the TAMU-Central Texas campus should be seen as public spaces that provide a strong sense of place and contribute to the overall vision for the campus. The street network should be designed not only to move traffic, but also to extend and enrich the network of pedestrian and bicycle pathways. The streets within the campus should be pedestrian-friendly promoting day and evening activity in a safe and effective manner.

Landscaping along streets can be useful in stewarding different types of movement between the pedestrians, bicycles and vehicles. Street trees should be provided to enhance the pedestrian experience.

- Street edges should be defined by formal or informal groupings of trees.
- Street trees should be planted between the sidewalk and back of curb, known as the planting strip, and shall be appropriately spaced to allow for growth.
- The planting strip should be of sufficient width to prevent damage to the curb or sidewalk due to root spread.
- Streets with generous building setbacks should include canopy trees to reinforce the intended street width proportions.
- Trees should be required to have a root barrier installed if located within 3 feet of a wall, sidewalk, street, or utility easement adjacent to a street. The root barrier shall be placed against and run parallel to the above-mentioned for a minimum of 5 feet in length.

Perimeter

The landscape treatment that occurs at the edges of the highways adjacent to the campus perimeter is envisioned to reflect the native Texas landscape. These areas will require landscaping to provide a cohesive appearance. Wide open space buffers from the highways are encouraged with an open informal planting. The plantings here will consist of native and informal groupings and will transition from the edge of the highway to the campus entry points and gateways.

Parking

The design of parking facilities for the campus shall be accentuated with high-quality landscape treatments to allow for relief in the summer months and to be visually appealing.

Surface Lots

- Landscape buffers between parking lots and the street edge or perimeter should be 12 feet.
- Plant shade trees where possible in and around lots.
- Planting and maintenance of trees within parking lots should be done in ways which maintain clear lines of sight for safety.
- Planting should be used by arranging tree planting pockets at regular intervals to soften the appearance of parking areas.
- Low shrubs or mounding trees are suggested screening techniques.
- The use of semi-pervious parking surface alternatives is encouraged.
- Existing trees should be maintained wherever is reasonable, but islands should be large enough to encompass the drip line of the tree canopy.

Parking Garages

- Planting and vegetative screens will help alleviate and humanize first floors of parking garages.
- Large blank walls should be avoided and instead fenestration should be integrated with plant materials (climbing vines) to create green walls.
- The roofs of parking garages should be considered for rooftop gardens or other landscape amenity.

Pathways

Sidewalks and trails will make up the pathway system for the campus. They should traverse the entire campus in a cohesive and connected manner. They will provide linkages between exterior spaces and buildings. Integrated with the topography of the campus, this network of paths should result in flowing routes for pedestrians and bicyclists navigating the site. Surface texture should respond to the type of pedestrian movement. The following materials may be used for pathways: pavers, exposed aggregate, concrete, and decomposed granite.

Sidewalks

- Should be a minimum 6 feet along streets (widths will vary depending upon location and volume of pedestrian traffic.
    - 8 feet between campus building and housing
    - 10 feet between major central spaces
    - 10 feet walks are required for emergency vehicle access.
- Colored and textured concrete or unit pavers is encouraged in crosswalks.
- Interior pedestrian sidewalks should link with exterior routes to provide logical connections through buildings.

Trails

- Trails should be 10 feet wide and limited to pedestrians and cyclists.
- Trails should be concrete or decomposed granite.
- Along major streets within the campus there should be a 4 foot bike lane.
- Should be designed to ADA standards.

Bridges

Bridges represent an opportunity to combine the built environment into the landscape. Due to their unique character and setting, bridges are an opportunity to integrate with the internal circulation system. Vehicle and pedestrian bridges are located on the campus. These bridges should be carefully designed to accommodate vehicles, pedestrians and bicyclists.

- The pedestrian bridges should be clear span structures or built with smaller spans on multiple slender concrete or timber piers.
- The pedestrian bridges should be wide enough to accommodate two way pedestrian traffic and one way emergency and service vehicle access.
- The pedestrian bridges should have guardrails, handrails and lighting.
- Align bridges with logical pedestrian flow patterns.

- Bridges located in the “transition” and “programmed” areas are envisioned to be designed with metal materials.
- Bridges located in the natural landscape areas are envisioned to be designed with stone material.

Service and Emergency Access

Service areas are needed for loading docks and large building utilities as a functional requirement of building programs. They may also include trash containers, which should be screened to improve building appearance or consolidate service uses. Specific drives and parking spaces for service vehicles can reduce conflicts with pedestrians, bicyclists and other vehicles. Service areas are shown on the Vehicular Circulation Framework Plan.

- Integrate enclosures for service areas with adjacent buildings, and use finishes similar to the construction materials of the buildings.
- Accommodate large utilities or trash containers within the building. If not possible, cluster components and screen from entries and primary pedestrian paths.
- Integrate external enclosures into the surrounding environment with appropriate lighting, materials, and finishes. Conceal enclosures by using trees, shrubs, and vines.

Hardscape and Furnishings

A palette of landscape materials, lighting, and street furniture are presented below. A consistent palette forms a coherent whole and a sense of place for the TAMU Central campus. These elements, combined together, create active gathering spaces and reinforce the linkages and gateways within the campus and its edge. The following elements comprise the character and identity of the campus.

Paving

Paving is intended to emphasize areas of pedestrian circulation and accent architectural elements. The paving design shall contribute to providing a unified architectural vision throughout the campus and shall be of like material throughout. Paving also gives a sense of continuity between different areas, in particular, when a single material is used for edges and pathways. Paving elements include walks, paths, drives, plazas, steps and ramps.

- Main pedestrian pathways should be gray or subtle-colored concrete.
- Entry locations should be constructed of accent materials such as brick, stone, concrete pavers or colored or patterned concrete to signify arrival at a special place.
- Street crossing locations should also be constructed of

- a specific paving material to differentiate for vehicular traffic.
- Special paving materials include exposed aggregate concrete, scored concrete, unit pavers, or stone.

Lighting

Lighting shall be used as a tool to illuminate architecture and pedestrian spaces while enhancing their aesthetic qualities and to serve as repetitive elements that reinforce the architectural theme of the campus master plan. Lighting for the campus shall create a unique, safe, and exciting nighttime ambiance, while protecting the dark sky, and shall be designed with the following in mind.

- Illuminate roadways, pedestrian spaces, and architecture while enhancing their safety component as well as aesthetic qualities.
- Repetitive and consistent lighting fixtures shall be used throughout to enhance community character.
- Lighting elements shall blend attractively into the environment by day and perform effectively at night to promote a comfortable, visually continuous condition.
- Fixture design shall be compatible with the overall vision and shatterproof lamp coverings shall be used.
- Fixtures shall be placed to minimize glare and located as to not present hazards for pedestrian vehicles.
- Lighting shall be directed downward and controlled so not to disturb adjacent properties and to respect “dark sky” principles of lighting design.
- All light fixtures shall have metal halide light sources or LEED approved lighting.
- All lights shall be placed to avoid conflict with trees.
- The lighting style to be used throughout the TAMU-Central Texas campus is ____.

Planting Pots/Planters

Plant containers shall be used where trees and shrubs cannot be planted directly in the ground and in conjunction with seating and plaza areas. They help to articulate the edges and act as anchors for plaza areas. Buildings should incorporate planters to enliven entry and exit experience.

- Planters may contain grasses or flowers and should be replaced seasonally.
- The planter style to be used throughout the TAMU-Central Texas campus is Longshadow, Mill Valley Bowl 48”, Beige.

Seating and Benches

A consistent style of site furnishings is encouraged throughout the TAMU-Central Texas campus. Sustainability, durability and weathering were taken into account when choosing products. All outdoor seating areas should enhance congregation in addition to providing rest. All site furnishings should be standardized and come from the same manufacturer.

- The bench style to be used throughout the campus is ___

Waste and Recycling Receptacles

Waste and recycling containers are a necessity on campus. The intent is to limit the visual clutter of receptacles in view and to integrate the receptacles into the environment of gathering areas, pedestrian paths and building entrances without dominating the view.

- Receptacles should be located with careful attention to their servicing needs and aesthetic orientation.
- The waste receptacles to be used throughout the campus is from Landscapeforms, Plainwell, powdercoated or stainless steel and ipe.
- Receptacles should be located in close proximity to seating and benches.

Bicycle Racks

To encourage and facilitate biking as a means of transportation, bicycle racks shall be provided. Adequate and convenient racks located throughout the campus and adjacent to major activity centers and parking lots is encouraged.

- Bicycle parking will be located near campus buildings and facilities and in close proximity to the entrances.
- Bicycle racks should have a 3 foot minimum clearance between bicycles parked at racks and other site furniture.
- The racks should not obstruct the pedestrian right-of-way.
- Bike parking should be provided at a ratio of 5% per total peak user for each building. Therefore if one building on campus will have 1,000 peak users, 50 bike parking spaces should be provided.

- The bike rack style is from Landscapeforms, Ring, powdercoated steel or stainless steel.

Bollards

Bollards tend to be fixed objects used to delineate an area, prevent vehicles from entering an area, and often to provide additional pedestrian scale lighting. Use of bollards in a college campus environment is a useful way to buffer bicyclists and pedestrians from automobile traffic. Bollards help to makes the streets and pathways safer by designating pedestrian and bicycle-only areas. They form a useful barrier for vehicles but should be located to rather direct than obstruct.

- Desired style of the bollards for the TAMU Central campus is ___.
- Bollards may be combined with low level lighting.
- The service drives adjacent to the buildings should be controlled with operable barriers. The operable barriers may be barrier gates or operable bollard arrays. Operable bollard arrays are preferable in order to prevent unauthorized vehicles from accessing the service drives and driving underneath the buildings
- In addition to the bollards, additional barrier devices such as fixed devices should be required to provide a continuous barrier from structure to structure.
- Fixed bollards should be steel posts set in concrete and/or decorative planters of sufficient mass to repel a vehicle.

Plant List

Various types of plants articulate and define the landscapes of the TAMU-Central Texas campus. Primarily, specific plants are used to create compositions based on the plants form, height, texture, or color.

The following is a list of plant materials approved for installation. The abridged list indicates plant type and species, and is intended to be used as a guide to aid designers in selecting plant material suitable for the campus.

Canopy Trees

Arizona Cypress	Cupressus arizonica
Bald Cypress	Taxodium distichum
Bigtooth Maple	Acer grandidentatum
Bur Oak	Quercus macrocarpa
Cedar Elm	Ulmus crassifolia
Chinquapin Oak	Quercus muhlenbergii
Eastern Red Cedar	Juniperus virginiana
Escarpment Live Oak	Quercus fusiformis
Lacebark Elm	Ulmus parvifolia
Mesquite Honey	Prosopis glandulosa
Monterey Oak (Mexican White)	Quercus polymorpha
Montezuma Cypress	Taxodium mucronatum
Pecan	Carya illinoinensis
Shumard Oak	Quercus shumardii
Southern Live Oak	Quercus virginiana
Texas Ash	Fraxinus texensis
Texas Red Oak	Quercus texana

Small Trees and Large Shrubs

American Smoke Tree	Cotinus obovatus
Anacacho Orchid Tree	Bauhinia congesta
Chitalpa	Chitalpa tashkentensis
Crape Myrtle	Lagerstroemia x hybrida
Cherry Laurel	Prunus caroliniana
Desert Willow	Chilopsis linearis
Escarpment Black Cherry	Prunus serotina var eximia
Evergreen Sumac	Rhus virens
Eves Necklace	ophora affinis
Flameleaf Sumac	Rhus lanceolata
Gregg Dalea	Dalea greggii
Lacey Oak	
Kidneywood	Eysenhardtia texana
Lady Banksia Rose	Rosa banksiae
Mexican Buckeye	Ungnadia speciosa
Mexican Plum	Prunus mexicana
Mexican Redbud	Cercis canadensis var.
Pomegranate	Punica granatum
Possumhaw Holly	Ilex decidua
Quercus glaucoides	Quercus laceyi
Red Buckeye	Aesculus pavia
Roughleaf Dogwood	Cornus drummondii
Red Buckeye	Aesculus pavia
Retama Jerusalem Thorn	Parkinsonia aculeata
Rusty Blackhaw Viburnum	Viburnum rufidulum
Sandankwa Viburnum	iburnum suspensus
Soapberry	Sapindus drummondii
Texas Mountain Laurel	Sophora secundiflora
Texas Persimmon	Diospyros texana
Texas Pistachio	Pistacia texana
Texas Redbud	Cercis canadensis var.
Wax Myrtle	Myrica cerifera
Yaupon Holly	Ilex vomitoria

Shrubs

Abelia	Abelia grandiflora
Agave (Century Plant)	Agave sp.
American Beautyberry	allicarpa americana
Barbados Cherry	Malpighia glabra
Black Dalea	Dalea frutescens
Burford Holly	Ilex cornuta (Burfordii)
Bush Germander	Teucrium fruticans
Carolina Buckthorn	Rhamnus caroliniana
Coralberry	Symphoricarpos orbiculatus
Cotoneaster	Cotoneaster spp.
Dwarf Chinese Holly	Ilex cornuta (Rotunda)
Dwarf Yaupon Holly	Ilex vomituria (Nana)
Elaeagnus	Elaeagnus pungens
Flame Acanthus	Anisacanthus quadrifidus var.
Flowering Senna	Cassia corymbosa
Fragrant Sumac (Aromatic)	Rhus aromatica
Gulf Muhly	Muhlenbergia capillaris
Hill Country Penstemon	Penstemon triflorus
Japanese Barberry	Berberis thunbergii
Mock Orange	Philadelphus coronarius
Mountain Sage	Salvia regla
Penstemon	Penstemon tenuis Gulf Coast
Rose (Belindas Dream)	Rosa (Belindas Dream)
Rose (Cecile Brunner)	Rosa (Cecile Brunner)
Rose (Knock Out)	Rosa (Knock Out)
Rose (Living Easy)	Rosa (Living Easy)

Rose (Marie Daly)	Rosa (Marie Daly) (Marie Pavie)
Rose (Martha Gonzales)	Rosa (Martha Gonzales)
Rose (Mutabilis)	Rosa (Mutabilis)
Rose (Nearly Wild)	Rosa (Nearly Wild)
Rose (Old Blush)	Rosa (Old Blush)
Red Yucca	Hesperaloe parviflora
Rock Rose	Pavonia lasiopetala
Softleaf Yucca	Yucca recurvifolia
Texas Dwarf Palmetto	Sabal minor
Turks Cap	Malvaviscus arboreus
Twistleaf Yucca	Yucca rupicola
Upright Rosemary	Rosmarinus officinalis
Wooly Butterfly Bush	Buddleja marrubiifolia

Perennnials

Bearded Iris	Iris germanica
Bicolor Iris (African)	Dietes bicolor
Black-eyed Susan	Rudbeckia hirta
Blackfoot Daisy	Melampodium leucanthum
Bulbine	frutescens (B. caulescens)
Butterfly Bush	uddleja davidii
Calylophus (Primrose)	alylophus berlandieri
Cast Iron Plant	Aspidistra elatior
Cedar Sage	Salvia roemeriana
Cherry Sage (Autumn Sage)	Salvia greggii
Chile Pequin (Chile Petin)	Capsicum annuum
Copper Canyon Daisy	agetes lemmonii
Coreopsis	Coreopsis lanceolata
Cuphea (David Verity)	uphea x. (David Verity)
Damianita	Chrysactinia mexicana
Esperanza (Yellow Bells)	Tecoma stans
Fall Aster	Aster oblongifolius
Fall Obedient Plant	Physostegia virginiana
Firebush	Hamelia patens
Garden Phlox	Phlox paniculata
Gaura	Gaura lindheimeri
Gayfeather	Liatris mucronata
Greggs Mistflower	Eupatorium greggii
Hymenoxys	etraneuris scaposa
Jerusalem Sage	Phlomis fruticosa
Indigo Spires	Salvia (Indigo Spires)
Lambs Ear	Stachys byzantina
Lantana (hybrid)	Lanatana x. hybrida
Leadwort Plumbago	Ceratostigma plumbaginoides
Lindheimer Senna	Senna lindheimeriana
Majestic Sage	Salvia guaranitica
Mexican Bush Sage	Salvia leucantha
Mexican Honeysuckle	usticia spicigera
Mexican Mint Marigold	Tagetes lucida
Mexican Oregano	Poliomintha longiflora
Missouri Primrose	Oenothera missouriensis
Oleander	Nerium oleander
Paleleaf Yucca	Yucca pallida
Penstemon Sage	Salvia penstemonoides
Perrenial Hibiscus	Hibiscus moscheutos
Perrenial Winecup	Callirhoe involucrata
Pink Skullcap	Scutellaria suffrutescens
Plumbago	Plumbago auriculata
Prairie Verbena	erbena bipinnatifida
Pride of Barbados	Caesalpinia pulcherrima
Purple Coneflower	Echinacea purpurea
Red Columbine	quilegia canadensis
River Fern	Thelypteris kunthii
Rock Penstemon	Penstemon baccharifolius
Ruellia (dwarf)	uellia brittoniana
Russian Sage	Perovskia atriplicifolia
Shrimp Plant	Justicia brandegeana
Society Garlic	Tulbaghia violacea
Texas Sage	Leucophyllum frutescens
Texas Sedge	Carex texensis
Texas Sotol	Dasylirion texanum
Texas Lantana	Lantana horrida
Trailing Lantana	Lantana montevidensis
Tropical Sage	Salvia coccinea
Yarrow	Achillea sp.
Yellow Columbine	Aquilegia chrysantha
Zexmenia	Wedelia texana

Ornamental Grasses

Aztec Grass	Ophiopogon intermedius
Bamboo Muhly	Muhlenbergia dumosa
Basket Grass (Sacahuista)	Nolina texana
Big Muhly	Muhlenbergia lindheimeri
Deer Muhly	Muhlenbergia rigens
Dwarf Fountain Grass	Pennisetum alopecuroides
Inland Sea Oats	Chasmanthium latifolium
Mexican Feathergrass	Stipa tenuissima
Sideoats Grama	Bouteloua curtipendul

Vines

Bush Morning Glory	Ipomoea fistulosa
Carolina Jessamine	Gelsemium sempervirens
Coral Honeysuckle	Lonicera sempervirens
Coral Vine	Antigonon leptopus
Crossvine	Bignonia capreolata
Fig Vine	Ficus pumila
Passion Vine	Passiflora incarnata
Trumpet Vine	Campsis radicans
Virginia Creeper	Parthenocissus quinquefolia

Ground cover

Asian Jasmine	Trachelospermum asiaticum
Artemesia	Artemesia (Powis Castle)
Berkeley Sedge	Carex tumulicola
Creeping Germander	Teucrium cossonii
Frogfruit	Phyla incisa
Horseherb	Calyptocarpus vialis
Liriope	Liriope muscari
Meadow Sedge	Carex perdentata
Monkey Grass	Ophiopogon japonicus
Mountain Pea	Orbexilum sp. (nova)
Oregano	Origanum vulgare
Pigeonberry	Rivina humilis
Primrose Jasmine	Jasminum mesnyi
Purple Heart	Setcreasea pallida
Santolina (Lavender Cotton)	Santolina chamaecyparissus
Sedum (Stonecrop)	Sedum sp.
Silver Ponyfoot	Dichondra argentea
Trailing Rosemary	Rosmarinas officinalis var.
Wooly Stemodia	Stemodia lanata

Lawn

Bermuda	Bermuda Tif 419
Buffalo	Buffalo 609
St. Augustine	St. Augustine Common
Zoysia (Coarse Leaf)	Z. japonica El Toro
Zoysia (Narrow Leaf)	Z. matrella

Plant Species For Rain Gardens

Big bluestem	Andropogon gerardii
Bushy bluestem	Andropogon glomeratus
Soft rush	Juncus effusus
Gulf coast muhly	Muhlenbergia capillaris
Big muhly	Muhlenbergi lindheimeri
Deer muhly	Muhlenbergia rigens
Little bluestem	Schizachyrium scoparium
Hardstem bulrush	Schoenoplectus acutus
Indian grass	Sorghastrum nutans
Prairie cordgrass	Spartina pectinata
Longspike tridens	Tridens strictus

Irrigation

The irrigation guidelines are established for design and installation of cost effective, reliable irrigation systems for landscape areas on the TAMU Central campus.

- All planted bed areas shall have drip irrigation for water efficiency and minimal evaporation.
- Small turf areas of 25’ or less shall utilize pop up spray heads.
- Large turf areas 25’ or greater shall utilize rotary style heads.
- A rain/ freeze/ wind sensor should be installed with all irrigation controls.
- A centralized control system should be used on all large campus irrigation systems.
- Use hydro zoning when designing campus irrigation systems.

Sustainable Elements

Sustainable design principles are holistic in nature and are woven through the entire campus design and development. The goal of implementing sustainable design practices is to enhance the quality of experience for the student, faculty and visitor. Sustainable landscape design can be used to create healthy and ecologically appropriate spaces and provide pleasant outdoor environments. By making sustainability an integral part of the ongoing campus development, TAMU-Central Texas is setting a new standard for its campuses and buildings. Sustainability in general is a trend on all major universities and college campuses today.

Green Roofs

Green roofs provide a thin layer of living plants growing on top of a roof. This usually involves installation of a layer system of membranes, substrate and plants. Green roofs benefits include improved air quality, temperature regulation, and lessen heat island effect. They are a cost saving device due to a decreased need to build infrastructure for storm water retention, cooling and heating savings, and a reduction of drainage system costs.

There are three types of green roofs – Extensive (Ecoroofs), Semi-intensive, and Intensive:

1. Extensive - Typically 3-6 inches deep with a saturated weight of 15-30 lb/sq.ft. They are ideal for the growth of drought-tolerant plants, particular succulents like Sedum. They don't need irrigation and only little maintenance. Due to the low maintenance, they are the roof of choice for building owners looking to reduce costs and improve the environment.

2. Semi-intensive - Usually 6-12 inches deep with a saturated weight of 30-50 lb/sq.ft. Whether irrigation is necessary or not depends on the regional climate and on the kind of plants that are used. Shrubs, perennials, herbs and grasses can be used on semi-intensive roofs. Maintenance is still quite labor intensive because the design of most semi-intensive green roof is still garden-like.

3. Intensive - For intensive green roofs, the growing media is fairly deep – usually more than one 1 foot – and supports shrub and tree growth. A roof top garden or a patio is an example of an intensive roof. The saturated weight is 70 lb/sq.ft or more and irrigation is necessary in most cases. They also require a lot of maintenance, like any other well-kept garden does.

If green roofs are not intially affordable, then there should be design considerations made to retrofit the roof buildings in the future.

Rain Gardens

Rain gardens offer temporary storage of runoff water. They reduce a site's overall runoff, in order to maintain predevelopment peak discharge rate and timing. Rain gardens are typically applied to parking lots or landscaped areas with gentle slopes. If the rain gardens are designed properly, they have shown ability to remove significant amounts of dissolved heavy metals, phosphorous, and fine sediments. They also reduce storm water infrastructure costs.

- Not applicable on steep, unstable slopes or landslide areas (slopes greater than 20 percent).
- Not appropriate at locations where the water table is within 6 feet of the ground surface and where the surrounding soil stratum is unstable.
- Not appropriate where clay soil is present and when bedrock is close to the surface.

Permeable Pavements

Permeable pavement allows water to pass through pervious surfaces into a specially-designed subgrade gravel bed or other porous medium. They can replace conventional asphalt or concrete parking lots, driveways and walkways. The main benefit is a substantial reduction in runoff rate and volume from the area of pervious pavement as well as adjacent impervious areas. In properly designed systems, all of the runoff may be detained and released at a rate adequate to prevent increased flood flows, and to recharge the local aquifer as a natural system would.

- Pervious Concrete Pavement can pass 3 to 5 gallons of water per minute per square foot, similar to natural ground cover.
- Pervious Concrete Pavement is ADA friendly.
- Pervious Concrete Pavement requires fewer joints than conventional concrete pavement.
- Pervious asphalt is that the same mixing and application equipment is used as for impervious asphalt.
- Permeable paving is not ideal for high traffic/high speed areas because it has lower load-bearing capacity than conventional pavement.
- It should not be used on storm water "hotspots" with high pollutant loads because storm water cannot be pretreated prior to infiltration.

Tree Preservation

Large and significant trees contribute to the TAMU Central's special character and add interest to the campus. Such trees take thirty years or more to develop and cannot easily be replaced. Therefore, all significant trees, such as Oaks and Juniper, should be protected. Tree preservation must be programmed and planned from the beginning.

- Buildings shall be sited so as to preserve as many large trees as possible.
- Existing large trees shall be incorporated into the landscape design of the building where possible.
- Trees that must be removed should be replaced with a 4" minimum caliper.
- Sites shall be graded so as to preserve the root system of existing large trees within the drip line of the tree.
- No construction, grading, or strorage of material shall occur in the drip line of an large tree intended for preservation.
- Large trees intended for preservation shall be protected by a 4 feet tall construction fence and placed ouside of the drip line of the tree or group of trees to be preserved.
- The fencing should be of a highly visible material (orange vinyl), and shall have a tree protection sign affixed to the fence.
- All protective fencing shall be in place prior to commencement of any site work and remain in place until all exterior work has been completed.

ENVIRONMENTAL GRAPHICS AND WAYFINDING

As part of the overall master plan, design effort has been given to the environmental graphics appropriate for the new campus. The purpose of including such design and documentation is to provide for an ongoing consistency during the growing years of the Texas A&M University - Central Texas campus.

Consistency is the key to reaching the following goals:

- to support branding and respectfully display the University name and seal, now and in the future
- to establish a campus wide cohesive design that spans architectural styles from one decade to another, and one architect to another
- to establish standards for text, cap height, contrast and placement in order to ensure optimal legibility and comprehension of sign content
- to address functional needs of the wayfinding, code compliance and campus regulatory issues such as assigned parking lots and spaces for all visitors, staff and students
- to effectively describe the durable materials, efficient manufacturing methods, and installation procedures to inform any fabricator who may be hired to fabricate and install signage on the campus

Consistency aids in the positive and meaningful visitor and student experience. It supports the overall goal of academic excellence with an intentional attention to detail and useful elements to aid wayfinding and identification.

Wayfinding Strategy

The wayfinding strategy for TAMU-CT mirrors that of a typical university. Users are greeted at campus entry by a large identity monument. Then, as they proceed toward intersections, directional signage aids the decision making process by describing which buildings or features lie ahead. Freestanding monument signage, visible from the roadway, identifies campus buildings by name, school or function. Parking lots are given specific identities so that users can more easily recall where they have parked and additional signage regulates particular parking spaces for particular users.

As the campus develops so does the wayfinding system. Pedestrian oriented signage, such as freestanding kiosks, should be installed to better orient new students and visitors. All of the sign types described above are detailed within the pages that follow.

System Design

Like the architecture, the signage system was designed to evoke the heritage of the region as well as advancements in technology. Materials like clear anodized aluminum and stone are used in combination to complement the architecture. Colors have been chosen to reflect the TAMU-CT brand, respond to the surroundings, and provide optimal legibility and contrast for sign message content.

Typography

The typeface for all exterior wayfinding applications is Trajan Pro Bold (figure A). It was chosen for its legibility as well as for its prestigious and collegiate appearance. Trajan is complemented nicely by the Gotham family (Figure B), which has been selected by TAMU-CT as a corporate font. All TAMU-CT identity and brand elements that are featured on exterior signage, such as the school logo (figure C), should maintain the use of Gotham. Gotham will also be used for interior signage where ADA compliance is necessary.

TRAJAN PRO BOLD

ABCDEFGHIJKLMN
OPQRSTUVWXYZ
ABCDEFGHIJKLMN
OPQRSTUVWXYZ
0 1 2 3 4 5 6 7 8 9

Figure A

Gotham Book

ABCDEFGHIJKLMN
OPQRSTUVWXYZ
abcdefghijklmn
opqrstuvwxyz
0 1 2 3 4 5 6 7 8 9

Figure B

TEXAS A&M
UNIVERSITY
CENTRAL TEXAS

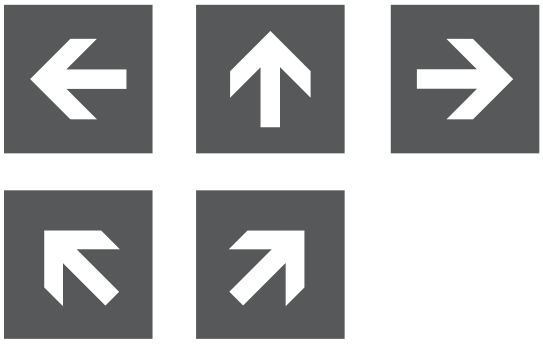
Figure C

Symbols

The university seal is used on most exterior sign types. In that application it will be rendered in a monochromatic fashion as shown. Directional arrows should be clean and legible as rendered below. Additional internationally recognized symbols, such as the handicap accessibility symbol will be used as well. A custom symbol has been created for use on signage associated with Fuel Efficient Vehicles, if applicable to a specific project.

University Seal

Arrows



Accessibility

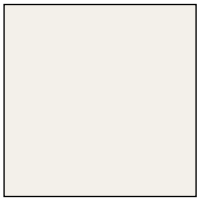
Fuel-Efficient Vehicle

Color

Color selections for signage systems must be made while considering contrast between foreground and background. Colors should also remain sensitive to the TAMU-CT brand, as well as to the surrounding environment. A light cream-colored background was chosen because whiter colors tend to reflect more light, be less imposing to a setting, and have a more sophisticated look. Navy text references the TAMU-CT brand. This basic color scheme should be applied to all exterior signage applications, unless noted otherwise.

Depending on the sign, graphic elements such as symbols, will use a grey, blue or green as specified below.

Cream
Benjamin Moore #2148-70
Mountain Peak White



Maroon
Pantone 202c

Navy
Pantone 655c

Grey
80% Black

Blue
Pantone 285C

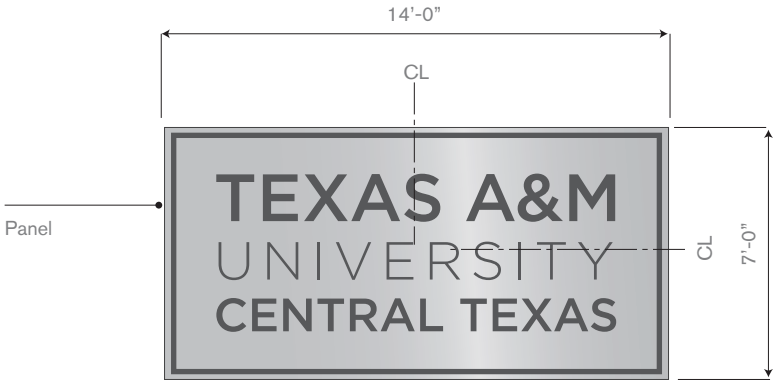
Green
Pantone 349C

EXTERIOR SIGN ELEMENTS

Campus Identity Signage (Sign Type E1)

Main entrance features are designed to act as a gateway to a new student's future. At the same time it is important that they identify the campus in a way that is legible from varying distances.

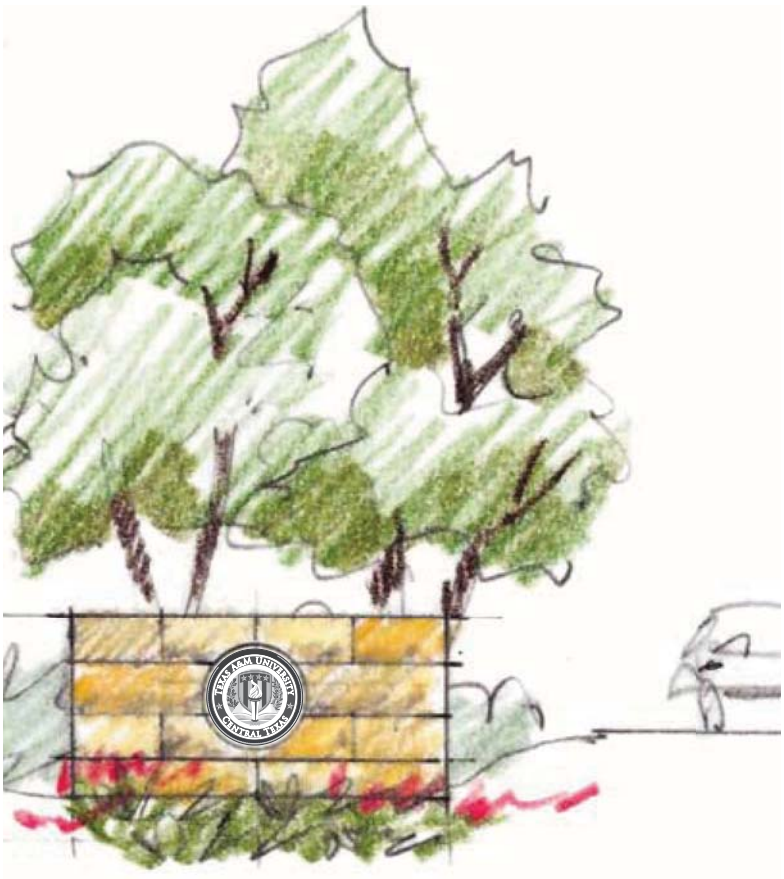
The monumental design of the assymetrical stone entry wall interacts with the rolling terrain to good effect and provides a nice canvas for identity elements as well. Fabricated aluminum panels with dark grey copy will be attached to the surface of the stone to create an appearance that is consistent with campus design standards.



1 **Panel Elevation :** 1/4" = 1'-0"

The seal will be rendered through
a photo-etching process on a 4’ diameter
clear anodized aluminum panel.
The panel will be mounted to the stone wall
in the median of the entry road.

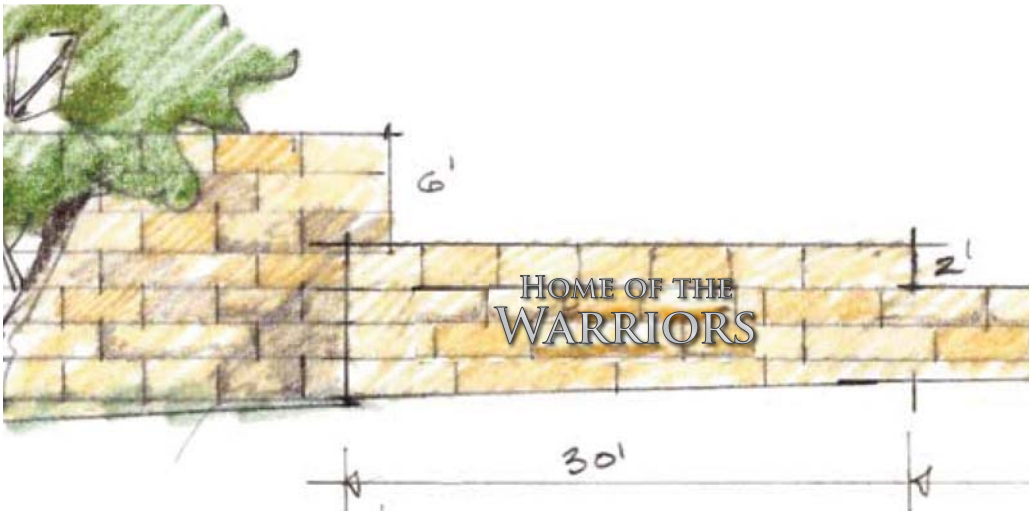
2 **Front Elevation :** 1/4” = 1’-0”



1 **Wall Elevation :** 1/8”=1’ 0”

Cut letters of 1/4” thick aluminum will be pin-mounted to the third portion of the entry wall as indicated.

2 **Front Elevation :** 1/2” = 1’-0”



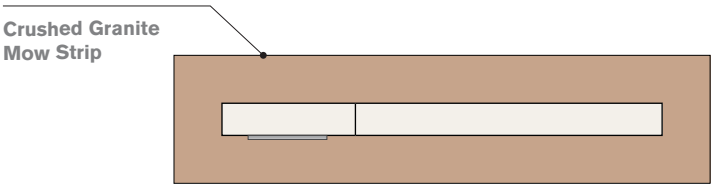
1 **Wall Elevation :** 1/8”=1’ 0”

Vehicular Directional Signage (Sign Type E2)

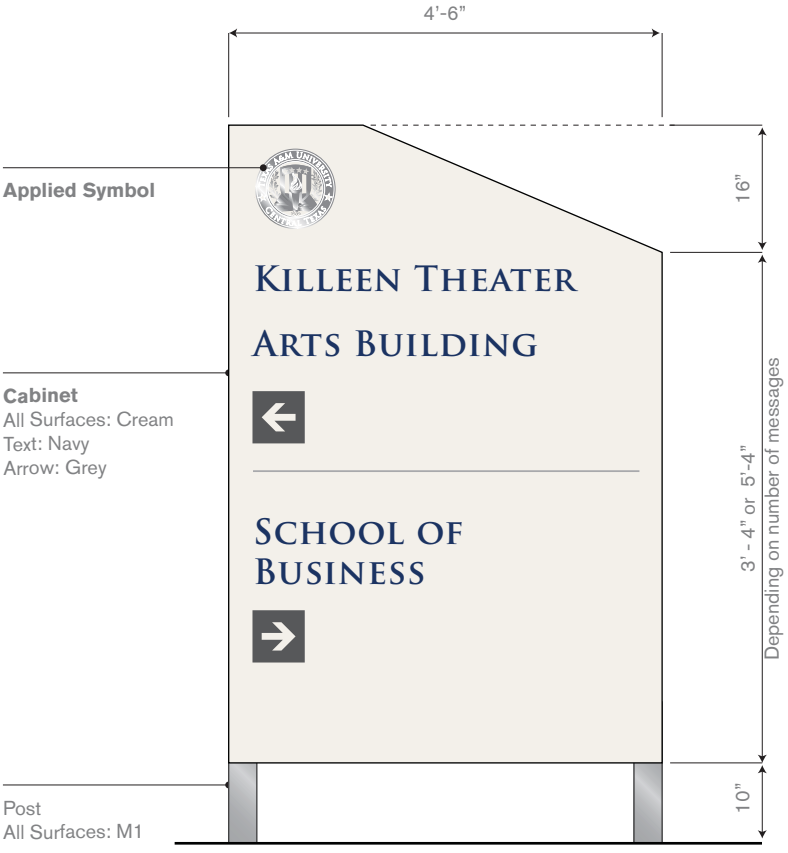
When it comes to directional signage, text height, clean typestyles and contrast are critical to driver readability and decision-making. Messages displayed on directional signage for the TAMU-CT campus will use a cap height no less than 3-1/4". Additionally, the boxed arrow symbol should measure 6" square.

Furthermore, it is important to consider the variety of messages that will need to be displayed. The sign type has been designed to expand in height to accommodate more destinations, as they are required to be displayed. All graphics are to be screen printed first surface to the fabricated aluminum cabinet. Messages of different direction should be separated with a 1/4" rule line. The university seal has a diameter of 10" and is to be photo-etched into 1/2" thick aluminum plate.

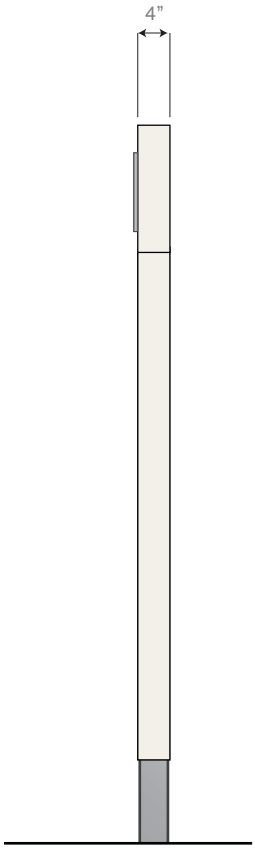
Because terrain varies, the design utilizes posts that may be cut to lengths appropriate for installation into below grade concrete. Posts will be 3-1/2" square aluminum tube frame of a clear anodized finish. Each sign should be set into a crushed granite mow strip, 6" wider than the sign on all sides.



Plan View: 3/4" = 1'-0"



Front Elevation : 3/4" = 1'-0"



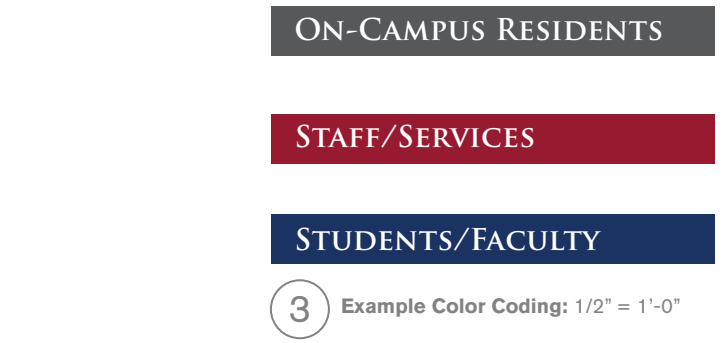
Side View: 3/4" = 1'-0"

Parking Lot Identity (Sign Type E3)

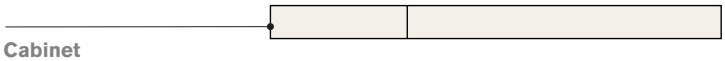
This sign type identifies parking lots but may also designate those who are allowed to use that particular lot or area of a lot. As the campus builds out, parking lot identity signs should be color-coded according to the assigned user group. In this way, these signs can support University personnel in the administration of parking assignment. A color coding system should be based on school colors or colors that are complimentary to school colors. An example of a color coding system is included in figure 3 to the left.

An alpha-identity system is the proposed solution for lot identification. This system creates an identity that is easy to recall and lends itself to a logical application sequence. Alphas should have a cap height of 12", while "Parking Lot" should be 3-1/4". Any labels or user group designations should sit within a 6" band and have a cap height of 2-3/4".

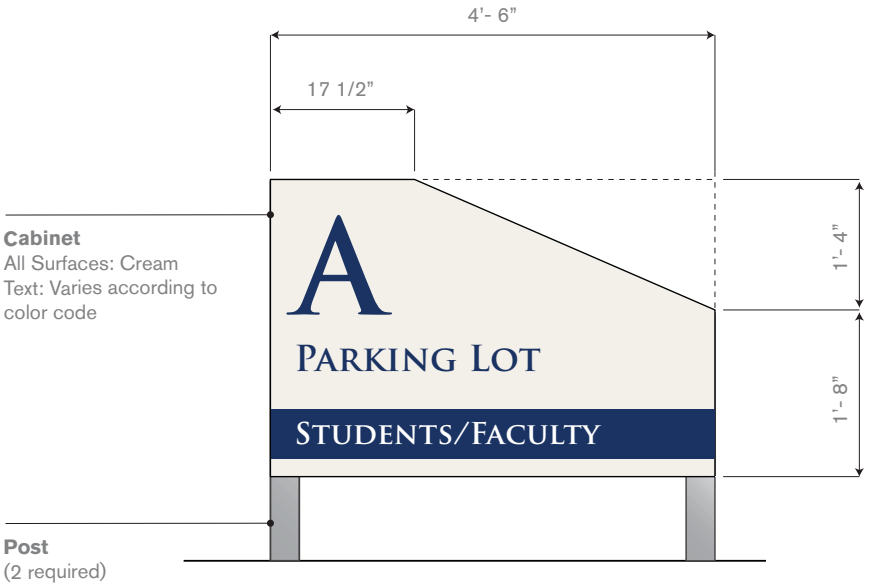
Materials and construction will be similar to Vehicular Directionals.



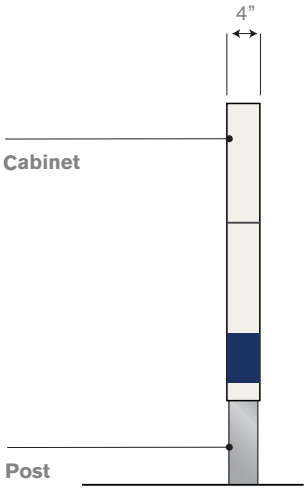
3 **Example Color Coding:** 1/2" = 1'-0"



2 **Plan View:** 1/2" = 1'-0"



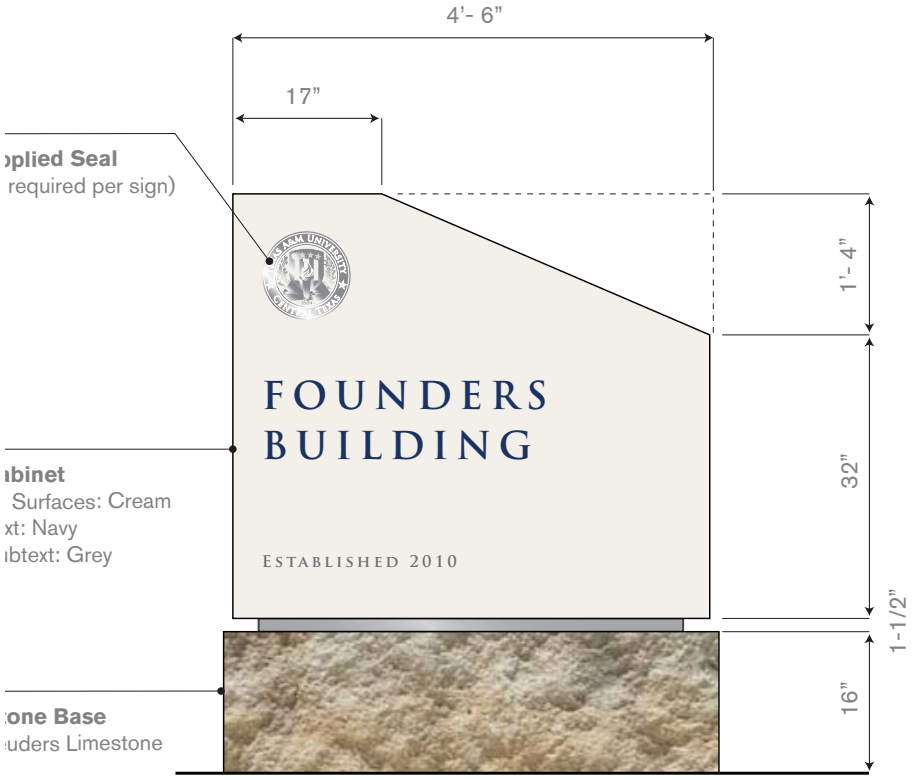
1 **Front Elevation:** 1/2" = 1'-0"



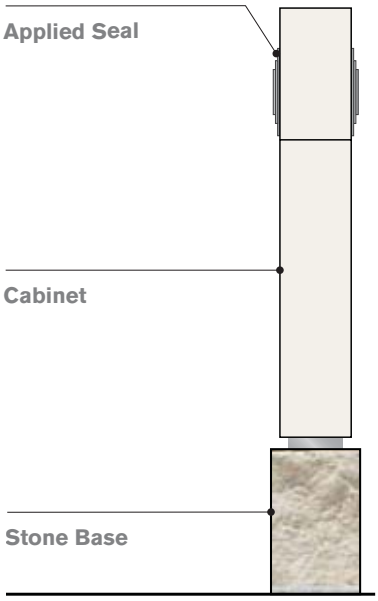
4 **Side View:** 1/2" = 1'-0"

3 **Alternate Layout:** 1/2" = 1'-0"

2 **Plan:** 1/2" = 1'-0"



1 **Front Elevation:** 1/2" = 1'-0"



4 **Side View:** 1/2" = 1'-0"

Building Identity Signs (Sign Type E4)

Building Identity Signs will be needed for all academic, administration, student housing and service buildings. At least one sign should be located in close proximity to each individual building and must be visible from the roadway. Depending on the design and location of the building, a second sign may be necessary at alternate entrances.

Building identity signs may display not only the building name, but also one or more types of schools or services housed there. Building names should have a cap height of 3-1/4" while Schools, Centers, services or any other subtext should be listed under the building name with a cap height of no less than 1-3/4". Figure 3 is included as an example.

The university seal has a diameter of 10" and is to be photo-etched into aluminum and applied to the sign cabinet. The sign cabinet is set onto a base of rough cleft limestone to match the architecture.

Traffic Regulatory (Sign Type E5)

Traffic regulatory signs are based on Texas Department of Transportation Manual of Uniform Traffic Control Devices (MUTCD), and are divided into two groups. Those signs located along major vehicular thoroughfares, such as the main campus boulevard from Route 201 to the point of entering the area of parking lots, will use a standard pole and sign panel installation as specified by the traffic engineer. Signs located in major parking lots, where drivers become pedestrians and view details more closely, will use finished poles and sign panels. In keeping with the campus standards, the poles will be square and have an clear anodized aluminum finish. Panels with screen-printed graphics will be mechanically attached to the pole.

A cap height of 1-3/8" is used for "Reserved Parking" or similar messages, while 1" text is to be used for the message underneath. Symbols should be no less than 4" square.

2 **Plan:** 3/4" = 1'-0"

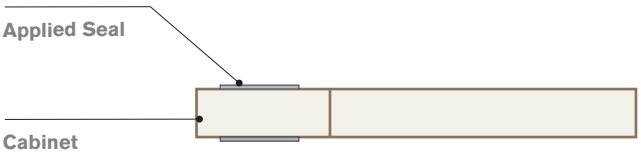
1 **Front Elevation:** 3/4" = 1'-0"

2 **Alternate Layouts:** 3/4" = 1'-0"

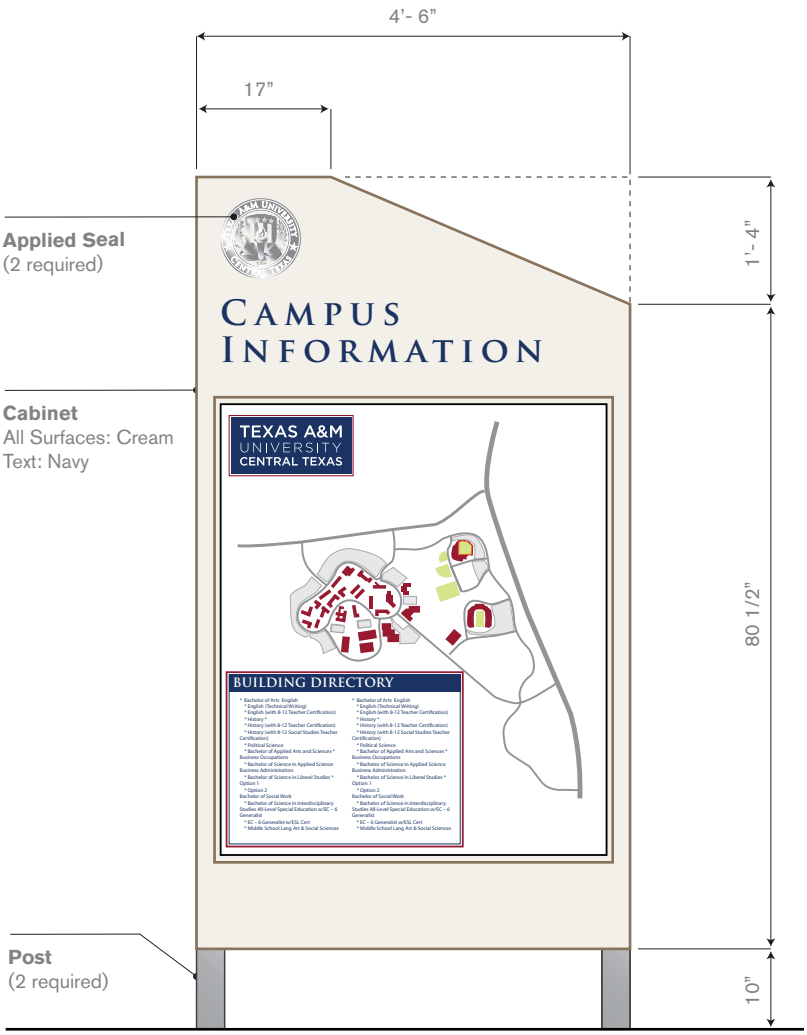
Pedestrian Kiosk (Sign Type E6)

Strategic locations along pedestrian paths are prime locations for these elements. Until the need for orientation maps develops, this sign type provides a frame in which to display general campus information, such as upcoming events or registration deadlines. Materials developed by the university marketing department can be printed to the appropriate size and inserted into the sign frame.

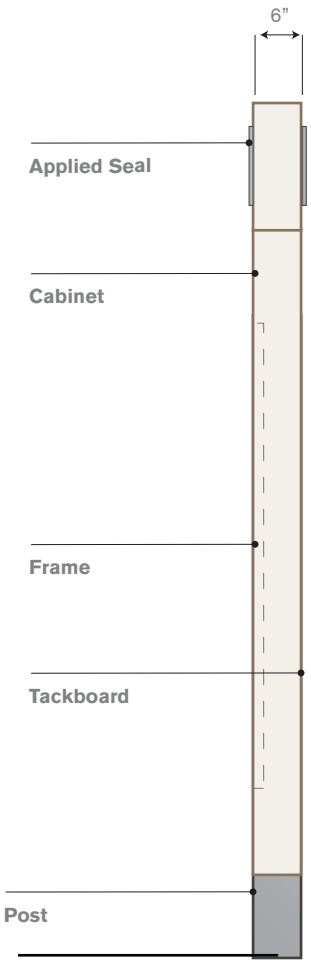
The sign has also been designed with the idea of student use as well. The reverse side of the kiosk has a tackboard on which students will be able to post fliers as is done on many college campuses. This sign type will help reduce visual clutter throughout the campus by containing messages of all types in one vessel.



2 **Plan:** 1/2" = 1'-0"



1 **Front Elevation:** 1/2" = 1'-0"



3 **Side View:** 1/2" = 1'-0"