RIVERSIDE CAMPUS PLAN
TEXAS A&M UNIVERSITY

December, 2012

Riverside Campus Plan Steering Committee

Center for Heritage Conservation
Office of Facilities Coordination
Division of Administration
# University Context

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* FIGURE 1*

*The chapel on August 22, 1955, now used as an assembly hall.*
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Letters from various administration begin here
I. INTRODUCTION

Campus planning and strategic planning express the aspirations of the University in concrete terms. This campus plan is founded on the mission statement, the established strategic planning process, and the aspirations embodied in the VISION 2020 and ACTION 2015 studies.

TEXAS A&M UNIVERSITY MISSION STATEMENT

Texas A&M University is dedicated to the discovery, development, communication, and application of knowledge in a wide range of academic and professional fields. Its mission of providing the highest quality undergraduate and graduate programs is inseparable from its mission of developing new understandings through research and creativity. It prepares students to assume roles in leadership, responsibility, and service to society. Texas A&M assumes as its historic trust the maintenance of freedom of inquiry and an intellectual environment nurturing the human mind and spirit. It welcomes and seeks to serve persons of all racial, ethnic, and geographic groups, women and men alike, as it addresses the needs of an increasingly diverse population and a global economy. In the twenty-first century, Texas A&M University seeks to assume a place of preeminence among public universities while respecting its history and traditions.

CAMPUS PLANNING AT TEXAS A&M UNIVERSITY

As the 2004 Campus Master Plan states, “campus planning and strategic planning express the aspirations of the University in concrete terms. They provide a vision for the institution, although one relates specifically to the quality of the built environment, and the other relates to the quality of the institution as a whole, both seek to establish goals for the University and to enhance the institution’s stature.”

In his introduction to the plan, then-University President Robert M. Gates noted, “A university’s excellence is and always will be measured by the quality of its programs, students and faculty. Its built environment – from buildings and other structures to the space that surrounds them - must be their equal. The quality of Texas A&M University’s facilities must reflect the quality of the people and programs they house.”

To advise the University President on proposed changes to the campus, the Council on the Built Environment was established to oversee the wise development and use of facilities under the guardianship of the University. The 2004 Campus Master Plan, that covers the Main Campus in College Station, sets forth guidelines for future development that will ensure the campus will remain a center of learning for generations to come.

FIGURE 1
Facing page: Cantonment Area of Bryan Air Army Base, ca. 1942.

FIGURE 2
Construction on water lines at the base, ca. 1951.
The primary purpose of the land and facilities located at the Texas A&M University’s Riverside Campus is to support the mission of Texas A&M University and The Texas A&M University System components headquarted on the College Station campus. The campus is defined as all Texas A&M University and Texas A&M University System facilities and land administered by Texas A&M University located in Brazos and Burleson Counties. (UNIVERSITY RULE 41.05.02.M1)

Texas A&M University is fortunate to have an extensive main campus that has evolved culturally and physically since it opened its doors as a Land Grant College in 1876. As a tier-one research institution with over 50,000 students there is a rich mix of academic and social activity in a diverse campus environment.

**The Main Campus** has a clear organizational plan dating back to the early 20th century, a well-identified historic core, residential accommodation for the much respected Corps of Cadets and other students, and iconic structures from a variety of periods. The university’s administrative offices are on the main campus, as are clusters of building associated with several colleges: Architecture, Education and Human Resources, Engineering, Geosciences, Liberal Arts and Humanities, and Science. The Rudder Complex includes three auditoria and a variety of meeting spaces. The 1955 Memorial Student Center re-opened in April 2012 after a major rehabilitation and expansion. Kyle Field and associated athletic facilities are also on the southwest quadrant of the Main Campus.

**The West Campus** developed to the west of the Wellborn Road since the 1960s, houses world-
class recreational areas and structures, facilities for teaching and research, and the college homes for Agriculture and Life Sciences, the Mays College of Business, the Bush School for Public Service, and Veterinary Medicine and Biological Sciences.

The Research Park, contiguous with the West Campus, provides facilities for interdisciplinary research set in a gentle landscaped area providing reflective quiet in close proximity to academic and research buildings. The George H. W. Bush Presidential Library and its associated teaching, research and conference facilities are in the southwest edge of the West Campus, creating an important location marker on Highway 2818.

The Riverside Campus is located some ten miles northwest of the contiguous campuses, at the junction of Highways 47 and 21. Highway 21 leads to Austin and San Antonio to the west, and to Interstate Highway 45 that links Houston and Dallas to the west, and also connects to the Houston Area Research Center at the Woodlands. College Station is some 90 minutes north of Houston via Highway 6 and Highway 290. The road from the main university facilities to the Riverside Campus passes the west campus and the facilities of Veterinary Medicine and Biological Sciences, and the Health Science Center (linked by a developing Bio-Medical Corridor supported by Brazos County, Bryan and College Station). The dual-carriage-way road also connects to Easterwood Field, the university-operated College Station airport (CLL) that is served by regular commuter flights to the Dallas/Fort Worth Airport (DFW) and the Bush Intercontinental Airport Houston (IAH.)

The 2,000 acres at the former United States Army Air Force Base comprise three 5,000-foot and two 7,000-foot runways, nearly 900 acres of pasture, and over 718,000 gross square feet of building space. These facilities offer opportunities for research, education and training activities that cannot be located at any other Texas A&M location, and represent a unique asset perhaps not matched at any other tier-one research institution.

The Riverside Campus is a unique resource, with a distinguished history of service to the nation in war and peace. The Riverside Campus Plan provides a framework for decision-making that continues and enhances these well-established and proud traditions, suggests a vision for the future that encourages and facilitates growth and innovation, and meets the needs, expectations and aspirations of users and visitors.
THE GOALS OF THE RIVERSIDE CAMPUS PLAN

**Identity**

- Establish a campus identity that represents the ‘brand’ of Texas A&M University
- Reflect the quality of Texas A&M University as a tier-one research institution

**Physical Quality**

- Create and maintain a physical infrastructure that supports current and emerging activities and encourages future innovation
- Propose Design Guidelines that encourage the wise re-use of existing built heritage and support innovative but compatible solutions to new facility needs
- Identify a civic structure and community appearance that grows from the historic and cultural heritage of the campus

**Sustainability**

- Reflect the University’s dedication to sustainable practices that nurture the environment, the economy, and social needs
Policy and Management

- Confirm an effective and transparent decision-making process for policies that recognize the responsibilities of Texas A&M University as a whole, while supporting future initiatives that grow from the unique nature of the campus

- Confirm and maintain an effective, efficient and equitable operational structure with visible physical presence, that encourages external engagement while maintaining appropriate internal security and safety.

FIGURE 4
Aerial photo of Riverside campus today.

FIGURE 5
Building 7090 in 1951

FIGURE 6
Researcher at Riverside campus working in the Nautical Archaeology Lab (7063).

FIGURE 7
Firing range for TEEX police training program on Riverside Campus.
II. HISTORY

THE BRYAN ARMY AIR BASE 1942-1946

With the obvious threat of a second European war in the late 1930s, military planners recognized the need to prepare for the potential involvement of the United States in the conflict, in which air power would be a key military component. During the early 1940s, the Gulf Coast Training Center was searching for possible sites for an air field. When Dr. T. O. Walton, president of the Agricultural and Mechanical College of Texas, learned that Brazos County was one of the prospective sites, he and a Chamber of Commerce Citizens Committee chaired by W.C. Mitchell reviewed possible sites near Bryan, Texas. The threat of war became a reality after the 1941 attack on Pearl Harbor. On May 6, 1942, the Chamber of Commerce Citizens Committee completed a report suggesting a site from 2500 to 4500 acres situated approximately six miles southwest of Bryan as the most promising location. Following an inspection by the Site Board of Officers the federal government purchased a tract of approximately 1,875 acres to be used as a station. The estimated cost of this land was $122,900.00 and it was owned by forty-six individuals.

The Site Board selection was based on four important factors: (1) climatic conditions, (2) communication and transportation facilities, (3) water and power supply, (4) the existence of various post facilities.

The site had climatic advantages. An analysis of climate over a ten-year period demonstrated that average mean summer temperature was 84 degrees, with a winter average of 51 degrees. Ten-year rain precipitation data showed an average of 38.6 inches. The prevailing winds are from the south and southeast. The heaviest fogs were in October and November, five to six days respectively. No tornadoes were recorded in the immediate area and there was only one hail storm in the last five years.

The existing transportation facilities in the vicinity of Bryan, Texas supported the viability of the site. The Missouri Pacific (International & Great Northern) main line from Houston to Fort Worth was less than a mile north of the area. The Southern Pacific main line from Houston to Dallas was operating through Bryan. State Highway 21 served the area, running through Bryan to Austin and the south and to East Texas to the north. Bryan was also served by United States Highway 190 and State Highway 6, linking it to Houston and the Gulf Coast in the south and to Dallas in the north.

Water supply for the City of Bryan originated from deep wells located four miles northwest of the city. Furthermore, the City of Bryan owned and operated its own power plant and was linked to the rural electrification system.
On 5 August 1942 official establishment of the Army Air Force Advanced Flying School, Bryan, Texas, was authorized by command of Major General Harmon. The construction of the air field started on 7 August 1942. On 21 January 1943 the 41st Base Headquarters and Air Base Squadron, activated at Foster Field as an administrative squadron arrived at Bryan, Texas. By this time all the barracks were completed and the men started to live on the post.

Commanding Officer Colonel James B. Duckworth’s 1944 history of the base notes that it was the only example among its peers with a focus on training both pilots and instructors. The school taught hundreds of WWII pilots how to fly modern aircraft, and the instructor’s training facility was also assigned to the task of developing standardized flying instruments and instrument-only flight training. Women Air Force Service Pilots (WASP) trained in Sweetwater, Texas and later stationed at Bryan, Texas and flew AT-6 and BT-13’s as engineering test pilots.

As of June 2011 the remaining structures from the 1942-1943 building campaign are the Aquaculture Lab (6242), Water Supply Building (6452), Office Building (7003), Chapel & Assembly Hall (7006), Aerospace Hangar (7046), TEES Records Archive (7057), TTI Research (7061), Conservation Projects (7064), Transformer Warehouse (7065), Flight Lab Storage (7078), Turbo Lab Storage (7079), Biology Storage (7080), TTI Safety Division Hangar (7090), Mechanical Tech Lab (7092), TTI Machining Facility (7093), Publications PRO. Center (7176), Nautical Archeology Storage (7177), Nautical Archaeology (8488), Archaeological Projects Building (8483), TTI Pavements Research Facility (8510), and various Warehouses (7098, 8175, 8508, 8511, 8512, 8513, 8516, 8517, 8518, 8519, 8521, 8529, 8530). (The numbering system is the one currently in use in 2011).

At the conclusion of WWII in 1946 the base was deactivated and assigned to the Agricultural and Mechanical College of Texas. The military facilities were converted into dormitory and classroom spaces to house returning servicemen seeking college education under the G. I. Bill. In the first year, seven hundred students occupied the facili-
ty. By 1947, all entering freshmen were automatically assigned to the “Annex,” as the base became known, and it ultimately housed some 1,500 students. The Annex was used as the freshmen division of the college until June 1950, when declining enrollments and a robust building program provided space to accommodate the entire student body on the main campus.

In 1943 the base had twelve barrack buildings assigned to African American enlisted men. Their officers slept in the same quarters or lived off base. By the Korean War there was provision for African American officers, but many preferred to live in Bryan.

**REACTIVATION AND EXPANSION FOR THE KOREAN CONFLICT 1952-1958**

At the onset of the Korean War (1950-1953), the Air Force, that had become a separate branch of the U.S. armed services in 1947, reactivated the facility and built two 7,000’ runways, two three-story brick barrack buildings and other structures. The Bryan Air Force Base housed the 3530th Pilot Training Wing, a flight training school crucial to the continuous supply of pilots for the ongoing air raids being conducted in Korea.

The Korean Conflict resulted in defense spending quadrupling in 1950, providing funds to rehabilitate older buildings and bring the Bryan Air Force Base up to date by adding new installations. In 1951 the U.S. Army Corp of Engineers hired several different firms to facilitate these rehabilitation and addition projects. The rehabilitation project included restoring the majority of the existing buildings, additions to several existing buildings; and the construction of four new warehouses, and adding a wing to the headquarters and a communication building.

During the Korean War, Bryan Air Force Base housed the 3530th Pilot Training Wing which flew T-28 Trojan propeller-powered trainers and the 3531st Pilot Training Wing which flew the newer T-33 Shooting Star jet-propelled fighter aircraft. Training continued at the base until 1958 when the base was placed on inactive status.
The U. S. Air Force deactivated the base in 1958, and the property was declared surplus and turned over to the Federal General Services Administration (GSA). In 1962 the GSA leased the site with all the facilities in-situ to the A&M College of Texas to support activities for education and research. The lease provided for the reclamation of the site by the federal government in the event of national emergency for the period from 1962 to 1982. In 1963 the College was renamed Texas A&M University, and in 1982 the university assumed clear title to the entire land and buildings of the former base.

At the end of the decade, the runways were designated a “dispersal airfield” where Strategic Air Command bombers could land should their home airbases be destroyed in a war with the Soviet Union.

In 1960 this role ended when the facility was transferred to the Air Material Command.

The current Riverside campus contains the following buildings constructed from the Korean War through 1962: Ag Comm Print Ctr & Storage Bld (4430), Extension Center Office Building (4431), Animal Shelter (5499), TEEX Hangar/Classrooms (6030), Chemical Supplies Storage (6047), Energy Systems Lab (6502), SAE Bldg. (6775), Conservation Research Lab (7063), TTI PENDULUM Test Facility (7500), AM VI Office And Shops (7535), TEES Smoke Detector Research (7800), TEEX - PS&S PROP HOUSE #1, #2 (7801-7802), and a series of large warehouses (8522, 8523, 8524).
THE RIVERSIDE CAMPUS UNDER TEXAS A&M UNIVERSITY 1982-2012

A Change of Name

As well as the post-WW II identification as “The Annex”, the former Bryan Air Base had been known as the Texas A & M University Research and Extension Center at Bryan, the Bryan Research and Extension Center (BREC), and the Texas A&M University Research Annex. In 1988, to reinforce the connection with the main campus, the Texas A&M University System Board of Regents chose the name Texas A&M University Riverside Campus for the site, and commissioned Bovay Engineers, Inc., Smith Locke Askura, Inc., and The Hardin Group, with Roscoe Jones as a consultant to prepare a plan for its future development.

The 1988 Campus Master Plan

The plan recognized the value of empty space and older buildings for research and storage, but noted that the facility had a poor image, a seemingly remote location, and an “unattractive appearance.” The improved connection to the main campus was addressed by a proposed University Parkway (now implemented as Highway 47). The stated goal of the study was to develop a Master Plan and Implementation Plan that will serve as a guide to the transformation of the Research and Extension Center at Bryan from an ‘ugly duckling’ to an aesthetically pleasing, efficient and cost-effective campus extension of the Texas A&M University.”

Existing users were surveyed and interviewed as to future space needs, but little useful data was developed as users were unclear as to actual increases in activity, or the nature of future research. Nevertheless, the planning team projected that the Riverside Campus would need buildings with a total of 1,500,000 SF, and would house 1,500 employees and 500 students by 2010.

One user with clear plans was the United States Department of Agriculture (USDA) who indicated the need for a Beef Cattle Center and a Swine Center. The other user with recognized need for research space and runway use was the Texas Transportation Institute (TTI).

Questionnaires sent to administrators and users at the 1988 facility revealed many shortcomings, including the need for bus service, food service, mail service, jogging trails, bicycle paths, lodging, and a “super computer.” Specific complaints included: poor access, inadequate funding, inad-
The future uses proposed in the report included a conference center, with recreational areas for faculty, students and conference attendees. The College of Environmental Design (now Architecture) and TTI proposed to develop a roadside vegetation laboratory, and a Historic Resource Center to train designers and crafts people in full scale preservation technology. It was suggested that the Texas Accelerator Center might move from the Houston Area Research Center (HARC) in The Woodlands. The Texas Agricultural Experiment Station (TAEX) and the College of Agriculture proposed a Beef Cattle Center. The Texas Engineering Extension Service (TEEX) saw an expansion of its training programs, specifically a pistol range for Law Enforcement, Military Science, and Physical Education students. Physical Education classes suggested facilities for skeet shooting, water skiing, and sailing. Military Science requested space for leadership training, field training, and a Cavalry Center. The university libraries requested a 10,000 SF Library Storage Facility. The Ocean Drilling Program requested storage space in Building 8081 (a 1953 Hangar).

Given the population growth and diversified activities anticipated by the 1988 Plan, the authors identified the following needs:

- Develop the Riverside Campus as an integral part of Texas A&M University
- Reduce travel time from main campus via a new University Parkway with a new entry to the campus, and frequent shuttle bus service
- Develop Riverside to same level of amenities and appearance as Main Campus, with high quality landscaping and signage, and provide design control for all new structures
- Group, zone or classify uses based on the need to be at Riverside and provide them an appropriate location. The groups were identified as Open Land Uses: pasture for Veterinary Medicine and...
Agriculture; Runway and Apron Uses: TTI and others; Light Industrial Type Uses: warehouses and metal buildings; Technology Uses: research and administrative offices, laboratories, conference rooms typical of the academic core of the campus; Recreational Uses: sports fields, golf course, swimming pool, picnic areas, conference center with lodging and associated food services; and Housing Uses: future extension service schools with residential capacity on site.

- Provide utility infrastructure to meet all research needs including shuttle bus, food, mail, and recreation facilities, a Commons Building with computing center, library, and meeting rooms, add a Conference Center, provide lockers, showers and meeting rooms for ‘light industrial’ users, and ensure security and fire protection services on a 24/7 basis.

- Establish a functional street system, with ample convenient parking, and adequate provision for pedestrians and bicycles, buildings with off-street loading docks. Streets in low-density areas would continue to have open ditch drainage, but major circulation ways should have curbs and gutters with storm sewer provision.

- Create, authorize and fund an organizational structure to manage and operate the Riverside Campus following the adoption of the Campus Master Plan.

Post-1988 Facility Developments in Response to University Growth

While the 1988 report suggested that some university components would wish to relocate to the former military base subject to improved access and better appearance, immediate proximity to the Main Campus proved to be an over-riding priority. The colleges of Business and Agriculture and Life Sciences, have made significant expansion on the West Campus in recent years, as have recreational facilities of all kinds, including the state-of-the-art Recreation Center. The Beef Cattle Center and a Swine Center located on farmland acquired closer to the Brazos River, and a major golf facility has been established in Bryan at the Traditions development.

Further, the 2004 Campus Master Plan encouraged an increased density through infilling on the Main Campus, based on positive attitudes toward the character of the Historic Core of the campus. Much significant construction for academic and research buildings has been completed following that plan. In addition to aesthetic considerations, the concern for truly sustainable development has encouraged increased density.
The 2004 plan also proposed the need for better physical connections between the Main and West campuses. A wide pedestrian path from Kyle Field going under the Wellborn Road and the railroad tracks to the Recreation Center has been completed and has proved successful. An even more ambitious grade separation accommodating bus, car, cycle and pedestrian traffic linking the main campus with the west campus is due for completion in 2013, and is already generating proposals for new academic and sports facilities on the West Campus, and consideration of a West Campus Residence Life development. Also, the College of Veterinary Medicine and Biological Sciences has a new District Plan with significant new headquarter buildings for teaching, research and administration, and an extensive Equine Initiative that will combine teaching and recreational uses and facilities for the Parsons Mounted Cavalry unit.

The Texas A&M Health Science Center (TAM-HSC) has developed a separate identity on Highway 47, further supported by the OneHealth Plus Biocorridor proposed by the cities of Bryan and College Station and Brazos County (2011), linked to the Veterinary School and extending to the TAM-HSC, a significant tract that backs onto the Traditions Golf Course and rapidly-expanding residential development.

**Growth on Riverside Campus since 1980**

In spite of the developments on Main and West Campuses and the initiation of the new Health Science Center campus, Texas A&M University and various Texas A&M University System agencies have built new research and education facilities at the Riverside Campus since 1980. These include a Processing Laboratory (7180), Solvent Extraction Building (7181), Extraction Building (7182), Refinery (7183), Fats & Oils Processing Building (7184), TEEX - PS&S Office Building
The University of Texas System and The Texas A&M University System are constructing a Joint Library Facility. The first phase of this warehouse-like structure is now funded and construction began across from Warehouse 8524 in 2012. The Texas Engineering Extension Service (TEEX) is constructing a gymnasium facility adjacent to its major office building (7751). TEEX also has approval for a significant expansion of its Firing Range from Building 8681 to the southern boundary of the campus.

Other facilities under consideration include a second Environmental Testing Facility for the Texas Transportation Institute, and a new 2500-foot x 100-foot concrete ‘ridge-rut facility’ for the same agency.

**Building on the Past for the Benefit of the Future**

Given the powerful incentives to retain traditional academic and student life on the main campus, the development of the Riverside Campus will be shaped by its unique opportunities to provide space for teaching, research, service and training activities that cannot be accommodated on the other College Station campuses of Texas A&M University, either for the sheer volume and type of space required, the need for significant ground areas for training and experimental projects that are inherently dangerous, or the necessity for activities or test facilities that are not aesthetically compatible with a traditional campus setting.

Nevertheless, the 2012 Riverside Campus Plan concurs with the basic needs identified in the 1988 Campus Plan, especially as they relate to a high-quality physical environment that fulfills the expectations of a 21st century teaching, research and service institution, and embodies qualities that will enhance the opportunities for innovation and inter-disciplinary collaboration.

Most especially, the historical analysis supports the view that the Riverside Campus has a unique character, and the plan therefore recommends that the remaining physical evidence of planning and construction from 1943 through 1962 should be considered for long-term conservation and re-use to celebrate this rich and honorable history, and the memory of the brave men and women who served there during its time as an active military base.
III. CURRENT CONDITIONS

LAND AND FACILITIES USES

The Riverside Campus comprises some 2,000 acres of land, of which 869 acres are used for pasture or open fields, and 207 acres are concrete runways, taxiways and aprons.

There are over one hundred buildings, ranging in age from 68 years to two currently under construction. There are approximately 750,000 gross square feet of buildings, with 66% of that being assignable, though in a wide range of physical condition.

Forty-five Texas A&M University departments utilize space at Riverside, as do five Texas A&M University System units and one Federal agency.

CIVIC FABRIC EVALUATION

The overall layout at the Riverside Campus was established by the Army Air Force in 1942. The access to the base at that time was from Highway 21, and entered on a north-south road identified as Bryan Road. The grid road system paralleled Bryan Road with Avenues A, B, C, and D, with the last road established along the apron and known as Flight Line Road.

The first streets at the north of the base were oriented northeast-southwest to follow a rail spur that served a series of storage buildings along Warehouse Road and maintenance facilities along 2nd Street. The other cross streets are spaced unevenly in an east-west configuration, and identified as 3rd through 8th Streets.

The 1942 base had three 300 feet x 5,000 feet runways in the classic delta layout. Two north-south runways intersecting the delta, each 150 feet x 7,000 feet, were added during the Korean conflict.

The construction of Highway 47 cut the access from Bryan Road to Highway 21, and a new entrance road was created to link Highway 47 to 5th Street.

The road system is in very poor condition, with only minimum maintenance having been undertaken over the years. 5th Street has been resurfaced from New Entrance Road to Flight Line Road, but road widths remain at 20 feet. The drainage uses the bar ditch method, and while the bar ditches have been maintained, the majority of the culverts are at least partially obstructed.

As new facilities have been added by state agencies some paved parking has been introduced,
however most other users rely on parking on the edge of the grass bar ditches, or along the edge of Flight Line Road. Paved areas alongside hangar and maintenance structures also provide informal off-street parking.

Recent grass-fires in the area have drawn attention to the fact that the sole access to Riverside Campus is from Highway 47, and as this is flanked by pasture land on the north, and a scrub area identified by the Corps of Engineers as a ‘safe’ land fill, the issue of safe egress in the case of fire is one of concern.

**FACILITY EVALUATION**

A recent Facility Evaluation Assessment undertaken by Texas A&M University in 2009 expressly excluded consideration of the Riverside Campus. Evaluations were undertaken by the military authorities in 1957 and a great many buildings were identified as poor quality with a limited useful life at that time.

An architectural windshield survey was conducted in July 2011 by the RCP team to establish the architectural qualities and the current physical conditions of the buildings.

The majority of the 1943 historic buildings have already gone. The remaining structures blend with the later structures at Riverside. The utilitarian nature of the historic structures allows them to be used for a variety of contemporary purposes. For example, the Nautical Archaeology department uses the 1952 fire station (7063) as a Conservation Research Laboratory. The spatial qualities of the structure allow the researchers to conduct conservation and research of parts of salvaged vessels and use the adjacent land for storage and desalination of waterlogged items. The department has also built contemporary structures around the Fire Station building for further research and storage. The historic buildings that are not occupied are rapidly deteriorating. One of the remaining 1943 hangars (7072) was demolished in July 2011 due to the dilapidated condition of the building. There are several contemporary architectural examples such as the 2006 ‘Architectural Ranch’ (7007), a facility for full-scale construction and digital fabrication, which shows how a new structure can embrace the cultural heritage values of the Riverside campus while meeting contemporary research needs. The design of the building reflects the sensibilities of the industrial architecture of WWII, mimicking the earlier wooden structures by its metal frame and exterior siding. In addition, the building maintains a similar mass and height to earlier buildings.
CURRENT CONDITIONS

The buildings on the Riverside Campus exhibit a directness, simplicity and functional pragmatism by virtue of being constructed during the period the campus was a military base. There are three major architectural types; barracks and offices, wide span hangars, and large warehouse structures.

The first building type constitutes the barrack/office buildings that date back to 1943. These buildings were built with a wood frame on a concrete slab. The exterior material is pressed wood-fiber panels. They have shallow pitch roofs. The buildings are approximately 17 feet tall to the ridge line. Most of the buildings have simple rectangular plans, though others have ‘L’ or ‘U’ plan forms. At the peak of the military presence there were over 120 barrack buildings, not counting the hospital barrack units. The few remaining are in very poor condition, even those being used for storage (7176, 7177, 7178, etc.). However, the Turbo Lab Storage and Biology Storage (7078, 7079) barracks have been upgraded and are serviceable for this purpose. The headquarters building (8007) was constructed in 1952 as the main administration office of the military base. It is a ‘U’ shaped building with a minimal slope to the roof. The building is partially occupied as offices, but utilizes inefficient window units for cooling, and has significant maintenance issues.

The second building type is the wide span hangars. One of the remaining hangars from the 1943 military base is Hangar 46 also known as T46 (7046). It was built as a Flight Mechanics Hangar for various airplanes. Hangar 46 is wood framed with wooden trusses. It is a timber frame structure with six wooden roof trusses, with an original clear span of 125 feet. The 1955 evaluation indicated significant deflection in the roof and six 12” diameter wooden columns were added at approximately one-third span. The floor and the adjacent apron that reaches to Flight Line Road are concrete. There are no interior finishes. A mezzanine storage area over offices stretches along the north wall. The structure originally had large metal sliding doors with wood panels and a

CHARACTER EVALUATION

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![Image](https://via.placeholder.com/150)

**FIGURE 3**

Present interior of 1943 Hangar 7046 showing timber construction, October 2011.
The sliding doors were replaced with small steel overhead coil doors as the entrance for small aircraft and a regular door to the side. The main hangar area is rectangular in shape, 125’ long by 80’ wide with a lean-to extension on the east of it, which is 105’ by 20’. The exterior of the building is covered with beige-painted 24” by 12” fiber-cement shingles which were installed after 1956. Currently hangar 46 is used by Aerospace Engineering Department. Besides some floor and foundation cracks, tile replacement and windows maintenance issues, the structure is in good condition to be continued to be used for flight mechanics studies.

The water tower provides water for Riverside Campus.

The third building type is the warehouse structures. One example is the 8522-8524 warehouse row, which was built during the Korean War in 1952. The warehouses are wood framed buildings set on a concrete foundation. Overall they are an interconnected one story rectangular 60’ by 706’ building in the north-south, east-west directions respectively. They have pressed wood exterior sliding. The site of the warehouses is flat overall with a marked grade change at the north to accommodate the railroad spur. The entrances along the north have been refilled; therefore all access to the building occurs along the south elevation. However, in the north elevation the loading docks that accepted the rail deliveries are still present.

In the south elevation, most of the sliding doors were replaced, and some of the windows were infilled. The north and south elevations are divided by exterior exposed firewalls that are painted concrete block and clay brick with a clay tile coping cap. These divisions of this one building result in the separate warehouses. The structure has a concrete floor. The roof is supported by elaborate trusses that are built-up timber construction consisting of two 2” by 12” bottom cords, two 2” by 14” top cards, and two 2” by 10” vertical braces at 6 feet on center. Also comprising these trusses are two 2” by 8” braces or possibly two 2” by 10” braces at diagonals. These built-up trusses are typical of construction throughout the Bryan Air Force Base. These trusses are typically spaced at 17 feet on center with vertical bracing at 12 feet on center. Each truss spans the 60 foot width of the warehouses and is approximately 9’ 6” in depth. These elaborate trusses allow for the large spans in the warehouse that create the open space needed for this type of building. Despite some concrete cracking, and minor maintenance issues, the structure of the warehouse is in a satisfactory state. The exterior siding was repaired and repainted in 2010.
The basic utility infrastructure on Riverside Campus dates back to the military installations from the 1940s and the 1950s, when they were designed to accommodate a significant population, though without the energy loads demanded by air conditioning.

The water system is supplied by a water well, tower storage and transmission supply from underground wells located to the north of the campus. There is an 8” loop for primary distribution through aging cast iron piping that is due for replacement.

The campus has a significant natural gas (NG) distribution system that was completely replaced in 2004. The NG supply is provided by ATMOS Energy and distributed through the university-owned system.

The sanitary sewage system is permitted for 100,000 gallons a day, with current peak demand at less than 50% of capacity. Most of the sanitary sewer lines are clay tile dating from the 1940s and will require replacement within the next ten (10) years, or before any significant development.

Surface water drainage consists of bar ditches along the road system. While most of the ditches and culverts have been maintained in reasonable condition, some of the culverts at intersections are in need of replacement.

The electrical system from Bryan Texas Utilities (BTU) is capable of providing 7.5 MW of power, with peak use in August 2011 being 1.8 MW. Electrical supply is provided by BTU with the distribution system owned and operated by Texas A&M University. The entire distribution system is aging overhead lines with wooden poles and any significant development on the campus will require a major electrical system upgrade. Underground distribution will be more expensive to install, but will greatly improve both reliability of service and visual appearance.

The current electrical supply from BTU lacks redundancy and the campus experiences brief power outages several times a year. This poses a problem for reliability and power quality.

It is recommended that the entire utility infrastructure be examined with a goal of renewing systems and services to accommodate future growth. The gradual removal of inefficient buildings and the use of more sustainable construction methods for new buildings mean that energy consumption demand will likely grow at a slower rate than the square footage added for new space, except for unique research demands that may have higher intensity requirements.

**COMMUNICATIONS**

The university replaced all communication distribution with fiber optic lines in the late 1980s and early 1990s. The communication hub is located at the junction of Avenue B and 2nd Street, adjacent to the water tower. Up until January 2012 Riverside had 45MB/sec data processing. The connectivity of Riverside Campus has undergone a major upgrade in January 2012 with the completion of a new dedicated fiber optic connection to the Main Campus. This runs along Highway 47, and terminates at the current communication hub at Avenue B and 2nd Street. To serve future needs and growth a secondary communications hub will be located at Avenue C and 7th Street in early 2012. The capacity to the campus now is 1GB/sec and is planned to grow to 10 GB/sec.

These new speeds are accessible to most of the central part of the campus, but each individual building still may be at 100MB/sec.

In order to accommodate remote areas of the
campus the university is adding a Wi-Max system (wireless transmission) that will enhance internet capability over the entire campus, utilizing antenna near the water tower, and allowing communication capacity over the entire campus.

SITE SECURITY

Entry to the campus is down a two-lane road that connects to Highway 47. The road passes through a perimeter fence that extends round the entire 2,000 acre campus. However, the fence is not patrolled and even though sections are electrified, access to the campus is not effectively controlled.

The gate from Highway 47 is open from 7:00 am until 6:00 pm on weekdays. Access at other times is by swipe card. The entrance is monitored by a video camera, however, the video quality is poor and license plates are not readable. The video output shows that incidents of ‘tailgating,’ that is, allowing a second vehicle access to the campus without proper security clearance, is common.

There is no designated secondary egress from the campus, though back roads to Goodson Bend Road on the south and Pitts Road on the west could be accessed using four-wheel drive vehicles. Some consideration has been given to access to research pastures on the north of the campus by the creation of a new gate off Highway 21, although this would further decrease the current security condition.

Wayfinding at Riverside Campus is non-existent, leaving visitors to rely on directions provided to them by their hosts. Individual buildings, particularly those occupied by System agencies, are well marked on the structures themselves, but the range of activities (including industry-sensitive testing, crash-testing on the runways, unexploded ordnance training, live-fire practice, armed intervention and access training, police and emergency driving training, and the use of industrial chemicals) creates a potentially hazardous situation at many points on the campus. The Office of Facilities Coordination maintains an individual at Riverside charged to schedule hazardous activities (like crash-testing) but some of the actual sites for such activities do not have
discrete fencing or monitoring, and patrols are generally informal.

Access to the runways, taxi-ways, and research pastures is effectively un-controlled outside weekday business hours.

There is no University Police Department (UPD) presence on the Riverside Campus, although random patrols are carried out from time to time. Fire protection is provided by the City of Bryan as the first-responder. Emergency health issues require notification to UPD or the Bryan Fire Department.

SECURITY LIGHTING

Street lighting is inconsistent at best, and since the campus closes between 6:00 pm and 7:00 am the current assumption is that none is required.

BUILDING SECURITY

Access to most buildings on campus is by standard key locks. The Architecture’s Digital Fabrication Building (7007) has swipe card access to facilitate access by faculty and students involved with research or class projects that utilize computer controlled fabrication equipment. Some agency buildings have internal security cameras and alarm systems, but the absence of a physical presence after hours renders many of these capable of deterring access rather than providing positive security.

In 2011 the university commissioned the Kroll Security Group (KSG) to undertake a university-wide analysis of security. KSG noted the need for an emergency entrance/exit, and suggested that the paved road behind the warehouses on the northern part of the campus could be extended to Highway 21.

KSG also called for significantly improved security cameras at the existing entrance, a common card-reader access to all buildings, special security within buildings with hazardous conditions or weapons storage, and control of primary access points to the runways.

They also recommended that the campus receive a dedicated UPD facility, with 24/7 support.

SUMMARY

As with the utility infrastructure, the current condition operates with a low level of activity, with a small number of personnel (faculty, staff or students) being based at the Riverside Campus as their main workplace, and with visitors being limited to individuals whose purpose is understood in advance and who will be escorted to the campus, or provided detailed instructions in advance of their visit.
Proposed Building Locations

1942-1957
1958-2012
Parking
Pasture
IV. EXPERIENCES AT THE RIVERSIDE CAMPUS 2020 AND BEYOND

Communicating a vision for the future marks the critical step between data gathering about the past and present condition and recommendations on procedures that might assist in the implementation of a future state. Where the subject is a campus with multiple users, and open-ended opportunities for growth in programs and activities, the ‘vision’ must excite the reader with words that imagine a future state.

This section of the Riverside Campus Plan describes three ‘stories’ of life at Riverside in 2020, based on existing and rapidly-developing situations that will require significant investment at Riverside if it is to achieve its potential to serve the multiple missions of the university and the system of which it is a part. The following section, V. Components of the Campus Plan, suggests specific approaches to physical change in support of the transformation of the Riverside Campus. Section VI. Policy, Operations and Design Control, proposes management and operational policies, and design guidelines for existing and new buildings and the landscape at Riverside Campus that will ensure that the physical nature of the campus reflects the quality of the people and programs that are housed there.

So, follow possible headlines from the future, and ‘imagine’ the new Riverside Campus.

NATIONAL DELEGATION VISITS JOINT RESEARCH TEAM

The morning of 20 April 2020 dawned clear and bright. The Dean and several of her faculty and research staff check last-minute communications and head to the Riverside Campus. It is ten miles down the road from the historic campus of the A&M College of Texas that opened in 1876, but light years away from the institution that existed then. Texas A&M University now has over 50,000 students from diverse and international backgrounds, there are ten colleges doing fundamental and applied research that attracts worldwide attention, and changes the lives of people of Texas, the nation and around the globe.

The journey from the center of the historic campus passes leading research and teaching facilities that stretch along University Drive, goes under the Wellborn Road and the railroad tracks to a wide thoroughfare with the West Campus on the south, passing the extensive research and teaching campus of the College of Veterinary Medicine and Biological Sciences to the north, skirts past the research and biological manufacturing complex of the regional Bio-Corridor, and heads north-west on Highway 47, past the Texas A&M Health Science Center complex.

The Riverside Campus has been a critical part of the teaching, research and service mission for over fifty years, but its physical resurgence since the adoption of a Campus Plan in 2012 has resulted in a new sense of community and increased the range and quantity of cross-disciplinary research.

Turning off Highway 47 at the well-marked entry road to Riverside the first stop is the Entrance Gate where a wave of a security pass allows authorized members of the university to pass under the long canopy with the “Texas A&M University Riverside Campus” signage standing proudly as the 1943 “Bryan Air Base” sign did so long ago. The entry road sweeps past cattle grazing on the Vet School’s pasture and ends at the junction of 5th Street and Bryan Road, where the Riverside Center, now five years old, is the hub of activity on campus.

The Center is at the east end of the Military Heritage District and occupies the site of the Headquarters Wing Offices constructed in 1952. The Center houses the administrative offices that coordinate activities, the University Police Department office, a cafeteria, and meeting rooms supported by a business center and IT facilities capable of teleconferencing around the globe. The parking to the west serves the Center and the 1943
Chapel, a well-established meeting and training space at Riverside, recently expanded to provide new restroom facilities.

The group park cars and enter the Center, to receive a greeting from the receptionist. The graduate research assistants traveled to Riverside by the regular shuttle bus service, and are already in the lobby area, taking another look at the panels and photographs that tell the history of the WWII campus.

The team from the Riverside Energy Efficiency Laboratory (REEL) took the electrically-powered campus shuttle from the former 1950s aircraft engine shop that now serves as a center for advanced research on alternative energy systems, and join the others in one of the well-equipped conference rooms to await the delegation flying into Easterwood Airport, just minutes away from Riverside. The government officials and congressional staff members are met at the airport and ferried to the Riverside Campus, pausing at the security entrance to collect visitor passes and campus information.

By 11:00 am the group has exchanged greetings, enjoyed coffee and snacks delivered from the Center’s cafeteria, had a welcome from the Campus Administrator whose offices are in the Center, and gets to work. The IT linkage allows the meeting to be shared with researchers off campus, and the Business Center facilitates transfer of documents and images as needed.

After a working lunch a chartered campus shuttle takes the group to the Digital Fabrication Facility built by the College of Architecture in 2006, now expanded to allow for routine use by undergraduate and graduate classes while meeting the exacting needs for fabricating components for emerging energy systems being developed by REEL. The shuttle heads down 5th Street to Avenue A, now the emergency exit road off campus that links to Highway 21, and stops at the steel and glass research center transformed from the 1950s workshop. Riverside provides unique opportunities to create at full scale, and the visitors examine the prototypes with interest. The IT team that has traveled with the delegation provides video support so that off-campus participants can engage in an interactive discussion.

The groups part at the Riverside Center at the end of a productive day; one that promises to lead to additional research funding and new international recognition.
**FIGURE 4**
Conceptual future Riverside Campus showing existing Chapel (7006) with addition, right, and new Riverside Center, left.

**FIGURE 5**
Example of cafe for the Riverside Center, seen here at Tokyo’s Shibuya.

**FIGURE 6**
Example of modern corridor for the Riverside Campus, seen here at GSA Headquarters Building in Washington, D.C.
UNLIKELY NEIGHBORS AT RIVERSIDE

The university’s investment in the Riverside Campus following the 2012 Campus Plan, built on the IT infrastructure improvement completed that year. A series of grants and donations created a 21st century utility system that incorporated advanced Utilities and Energy Management technology. The circulation loop uses road material research from the Texas Transportation Institute (TTI) that attracted world-wide attention, and took advantage of other research projects to maximize physical improvements to the campus, notably the electrically-powered shuttle bus.

From the first view of the security entrance, the overall appearance of the Riverside Campus remains utilitarian and practical. Yet the pride and dedication that was inherent in its history as a WWII training base is reflected in the crisp organization of the buildings, their use of simple yet elegant materials, and the quality of the working spaces for researchers and staff. Some of the areas adjacent to office functions are softened by simple landscaping, using few trees and with a heavy reliance on regional plant materials. The road system is designed to support internal traffic as well as visitors, all of whom recognize the effectiveness and sustainability of the natural drainage systems and the lighting and security system that separates the main built area of the campus from the wide swaths of concrete runways from 1942 and the 1950s. The research and training carried out west of Flight Line Road ranges from the drama of crash-testing vehicles by TTI to the rigorous driving training that is one of multiple training programs of the Texas Engineering Extension Service (TEEX). TEEX adds to the drama too, with live ammunition training and a remote practice area for learning how to deal with the demolition of unexploded ordnance!

The Riverside Center has provided an invaluable opportunity for college faculty and system employees to enjoy informal interaction. Coffee and lunch in the cafeteria, and the availability of state-of-the-art meeting rooms increase the chance of shared expertise and understanding.

In January 2018 researchers from the Institute for Nautical Archaeology and the Conservation Research Laboratory enjoy a lunch overlooking the pastures to the north of the Riverside Center and converse about the new discoveries in material conservation that had resulted from the addition of a new 2,000 SF facility across from the restored WWII Fire Station that remains the headquarters for conserving ship artifacts that had been the staple of their work for many years. The new wide-span building might not be as dramatic as the wood-trussed hangars from WWII, but it is
now the temporary home for an aircraft recovered from the South American jungle that is offering new challenges to the team.

At a near-by table, faculty from Aerospace Engineering are discussing recent research on unmanned aircraft, and the excitement of a potential new 3,000 SF building adjacent to the magnificent T-46 hangar built on Flight Line Road to service the aircraft used for training in WWI and during the Korean War. T-46, or 7046 as it is now known, is a central feature of the Military Heritage District. Aerospace had agreed to split the building to accommodate a WWII museum, and a small Visitor Center had been added on the Control Tower side of the building with donated alumni funds. The Control Tower, stripped of its housing many years ago, stands conserved by corrosion-resistant paint developed for off-shore oil platforms, as a silent reminder of the brave airmen, and women of the WASPs, who flew from the Bryan Air Base.

The Aerospace group mulled over experiments with unmanned craft, and their research with the United States Department of Agriculture staff based further south on Flight Line Road, but the wisps of conversation about the plane recovered from the jungle intrigued them, and soon they are deep in discussion about ways to re-construct the historic craft.

Proximity and serendipity combine to create new alliances.
LIFE AT THE ENTRANCE GATE

The new entrance gate and 24/7 security at the Riverside Campus was the first major physical improvement at the campus since the Korean War. As with any research and teaching facility there was a need to develop greater awareness of the role of the Riverside Campus in the Texas A&M University mission, with the parallel need to ensure the safety and security of the increased numbers of users and visitors.

There are two security staff on duty at all times, and they have direct contact with the UPD on Main Campus, video monitoring of the entry, and of the emergency exit from an extended Avenue A to Highway 21. The Campus Administrator’s team is housed at the Riverside Center and serves as backup during business hours. Security can be routine, but it is always varied.

The April 2020 delegation that gathered to review joint research between Architecture and Engineering was typical of many such teams that visit the campus every month. Regulars drive through using passes on their windshields. The Campus Shuttle drives through and parks at the Riverside Center, where passengers headed for academic or agency facilities wait for the electric shuttle that loops round the campus, itself a research vehicle jointly developed by TTI and the Energy Research Laboratory. There is talk of it being turned into an unmanned vehicle following a buried guide along the roads, and capable of being ‘called’ using personal communication devices. Several cities have indicated a willingness to support this research.

The final phase of the Joint Library Storage Facility on Warehouse Road is finally under construction. The JLSF already houses two-million volumes and has a staff of five, and the concrete trucks lumbering by on a regular schedule over the next three weeks will bring materials for the tilt-up wall system. It is interesting to compare that warehouse with those from the 1940s and 1950s that still serve other storage needs.

A large panel truck containing a crated European passenger car is checked through with a security tag and instructions to get to the TTI Environmental and Emissions Buildings. The completed facility in the 1990s was one of only three in the world ca-
pable of cooling an eighteen-wheeler tractor and trailer to 40 below freezing or heating it to 140 degrees above. The facility was in such demand for research and testing that a second facility has now been added with even more sophisticated instrumentation.

A TEEX bus with a new class of Police Cadets slows at the check point and is waved on to head for the Bryan Road and the TEEX Headquarters, with the gymnasium added in 2012, to begin intensive training that includes time at the Firing Ranges, and experience in the live-fire facility.

Over 2,000 such trainees attend each year, from municipal and federal programs. TEEX training at Riverside also includes First Responders, some of whom work with the elite Task Force One group that has had its own HQ at Riverside for the last five years. It also includes Electric Power Utility trainees who learn their skills on land once occupied by WWII barrack buildings.

There are the usual crop of students who missed the University Shuttle and had classes in Architecture, Engineering, Biology (bee research continues to thrive), and staff who choose to drive to Riverside who form a steady stream of arrivals to be checked and passes and maps provided to visitors.

And there are always a few who drive confidently under the Texas A&M University sign, imagining they are on the Main Campus. They are given a friendly wave and instructed to loop around the security booth and continue down Highway 47!

Really, there is never a dull moment at the Riverside Campus.
FIGURE 1
Point Roberts in Washington, example of security check point design for Riverside Campus, designed by Miller Hull

FIGURE 2
Cafe study at Delaware Art Museum, designed by Ann Beha Architects

FIGURE 3
Point Roberts in Washington, example of interior for Riverside Center, designed by Miller Hull
The university’s mission statement concludes, “In the twenty-first century, Texas A&M University seeks to assume a place of preeminence among public universities while respecting its history and traditions.” The ‘vision’ described in the previous section suggests a future for the Riverside Campus that is technologically advanced, environmentally sustainable, and creates a physical facility that is recognizably part of Texas A&M University, supports existing research and service activities, encourages and attracts new and expanded programs, and provides an environment that will inspire users to fulfill their highest aspirations, in part by recalling and conserving selected elements of its heritage.

The Campus Plan reinforces the layout established by the 1942 plan for the Bryan Army Air Base. The conceptual elements can be defined in geographic and qualitative terms but, as with the plans developed for the Main and West Texas A&M University campus locations, the framework is intended to be prescriptive as far as the Civic Structure and Identity, Development Zones, and Regulating Plan are concerned. The Circulation Plan also follows the original layout of the Bryan Army Air Base, but acknowledges the changes created by Highway 47 and the new entrance road that connects Highway 47 with 5th Street. The proposed conceptual circulation system establishes two improved paved loops that provide access to the major use areas on the campus. The actual implementation will depend on the location of increased activity and the associated demands for an improved, and perhaps selectively widened, road system and paved parking.

The land area west of Flight Line Road consists of the three 300-foot wide runways built in 1942, the two 7,000-foot x 150-foot runways added in the 1950s and open land between and around them. While runway 17R/35L remains active, most of the land area is no longer cleared of naturally occurring tree growth. The area contains a small number of structures that support research activity. The multiple users are described in the Current Condition section of the plan. Development in this area will be subject to the same oversight as the rest of the campus. Many activities essential to the research and service programs at Riverside also require special attention to issues of safety and security.
Main transportation Circulation

Warehouse Zone: Long- and short-term storage and maintenance

Active Work Zone: Light industrial-type activities and associated office support space

Office, Education, Assembly Zone with associated technical support activities
CIVIC STRUCTURE AND IDENTITY

The base as completed in 1943 and augmented some ten years later had a straightforward grid-ded street pattern, densely filled with three major building types: barracks and offices, wide span hangars, and large warehouse structures. The classic grid had a series of lettered ‘avenues’ parallel to the north-south Flight Line Road (created along the eastern edge of a 500-foot wide aircraft parking apron). The east-west direction had numbered ‘streets.’ The blocks formed by the road system have equal spacing east-west and vary in dimension on the north-south direction. The warehouses were aligned to a railroad spur that entered the base from the northeast, resulting in triangular and trapezoidal lots at the intersections with the main grid. The aerial photograph on page 6 shows the civic structure in 1951.

For obvious reasons buildings were kept to the east of Flight Line Road. Major administrative functions were aligned between 5th and 6th Streets. New buildings for community use, gathering spaces, or administration should be considered for this section of the campus, which is of major heritage significance. As new facilities are constructed, this pattern should be reinforced.

The identity of the campus derives from the grid-ded layout and the scale and massing of the buildings. However, there is an almost total lack of ‘sense of place’ or celebration of the identity of the campus. Attention must be paid to noting the existence of the campus at the junction of Highway 47 with New Entrance Road (which might benefit by being re-named) and creating a sense of arrival at the entrance gate, perhaps in conjunction with an increased sense of security.

Major intersections in the street grid should be marked with simple but distinctive markers. Future development of campus lighting and signage should draw on the Campus Site Furnishing and Hardscape Standards in use on the Main Campus and West Campus.

DEVELOPMENT ZONES

Like all campuses, building uses are generally grouped according to functional adjacencies, with specific building uses mixed in each group. That is, laboratory/workshop space is supported by office and storage, and occasionally by ancillary shelter structures. Over time specific departments and agencies have developed easily identified locations, and new structures and facilities have been constructed as their functions expanded. The intention of the plan is to encourage and facilitate development that will positively support the aspirations and activities at the Riverside Campus, and ensure operational safety and convenience, while recognizing that changing circumstances may suggest alternative locations for some existing uses.

Development Zones reinforce the predominant uses in four broad categories:

• Active Work Zone Light industrial-type activities and associated office support space
• Warehouse Zone Long- and short-term storage and maintenance facilities
• Office, Education, Assembly Zone with associated technical support activities
• Open Land, Hazardous Activities, and Testing Zone with associated structures in direct support of these activities.

The Development Zones are overlaid in part by a Military Heritage District designed to protect the essential character of the 1942 Army Air Base and specific structures remaining from the period when the Riverside Campus was an active military facility. Development proposals within the heritage district must be designed to respect and preserve the integrity of its history.
REGULATING PLAN

The original overlapping grid plan provides a clearly defined layout for the campus, with a regular 400 foot block dimension on centerline for the north-south avenues. Block lengths vary between 1,000 feet and 500 feet on centerline of the east-west streets. A 300 foot wide apron, later widened to 500 feet, with Flight Line Road, designated as the first 20 feet of the apron, is the western limit to the base buildings. Warehouse Road is aligned with the original railroad spur, shown as 58 degrees 30 minutes from the north-south axis on the General Layout plan dated July 1942. A second street (1st on the 1942 plan, but called 2nd Street on all subsequent plans) is 350 feet from Warehouse Road and parallel to it.

Streets are generally 20 feet in width, flanked by bar ditches.

Setbacks were uniformly 40 feet from the back of the streets, except for warehouse and hangar structures where different functional requirements dictated the setback.

The two three-story brick barracks constructed in 1958 interrupt the flow of Avenue D. Future development should follow the regulating lines estab-

FIGURE 1
Road section of Avenue C showing building set back and bar ditch and road dimensions.

FIGURE 2
Road section of Warehouse Road.

FIGURE 3
Aerial photo of campus showing angle of Warehouse Road and 2nd Street, ca. 2007.
lished in 1942, with setbacks of 40 feet from the original street edge. All existing view and access corridors down the streets and avenues should be preserved.

The main administrative and recreational buildings, the Post Exchange, and Chapel were all designated on a 450 foot wide block between 5th and 6th Streets. Future development of buildings serving the Riverside Campus community should be constructed along this east-west spine. Potentially these include an administrative and security office building on the site of the Headquarters Wing Building (8007), general classrooms, and an amenity/assembly building with food service to augment the assembly facilities in the Chapel (7006).

**CIRCULATION**

The major traffic routes have remained remarkably consistent since the base was first laid out. The 1942 General Layout indicates ‘Heavy Traffic Streets’ on Avenues A and C and Bryan Road (the entrance road until construction of Highway 47) and Warehouse Road and Streets 1, 5 and 6. Flight Line Road (part of the apron) also carried significant traffic.

The current circulation is very light traffic, with only 5th Street paved to any significant quality, a result of it becoming the connection to New Entrance Road from Highway 47.

In order to establish an effective circulation pattern, priority should be given to re-paving 7th Street and Warehouse Road, and Avenue A and Bryan Road, creating a loop within the campus. 6th Street will remain the main axis of the campus. Access to Flight Line Road will continue to be from 5th Street and an improved 7th Street. The loop system will facilitate a future bus service. As activity increases at the Riverside Campus, consideration should be given to improving 6th Street and providing for 5th and 6th Streets to be one-way traffic. This will provide for an increased traffic load without requiring the widening of either street, though the quality of all streets in the campus should be upgraded. The original site drainage using bar ditches and storm drains is acceptable and curbs and gutters should not be required provided regular maintenance is provided.

**PARKING AND ACCESS**

Provision for parking was included in the 1942 layout, although not generally hard paved. Parking has been provided in association with construction since 1958, but the low population has established a tradition of parking on the grass at the side of the roads adjacent to activity zones. As changes take place through new buildings or change to existing structures, defined and paved off-street parking should be a requirement of approval, as should proper provision for delivery, removal of trash and emergency access. The parking surface and site drainage should be consistent with an increased formality of the image of the campus. Safety lighting should be considered and designed to meet university standards.

Within the areas of new development, all appropriate codes and standards should be met including those related to accessibility.
WAYFINDING

The issue of identity and wayfinding at the Riverside Campus will be dictated by activity levels and the provision of security on a 24/7 basis, but the ‘branding’ of the campus as a Texas A&M University facility demands some immediate investment in creating a sense of arrival, a visitor facility that will include administrative and community space, and the design of identification markers for streets and facilities. The provision of lighting for major streets and selective illumination of facilities should be considered as part of the branding process.

UTILITIES AND ENERGY MANAGEMENT

It is recommended that the entire utility infrastructure be examined with a goal of renewing systems and services to accommodate future growth. The objective should be to showcase the Riverside Campus as a model of sustainable and environmentally-friendly design for its facilities and infrastructure.

While Silver LEED is the current university standard, the ASHRAE 90.1 2010 should be considered as a target for minimum energy efficiency
standard. A comprehensive study undertaken by the engineering firm of Burns and McDonnell for UEM recommends that Texas A&M University aim for an energy efficiency standard 20% better than the 2010 ASHRAE. Such a target would require higher first cost expenditures, but in most cases a lower life cycle cost is achieved, together with significant environmental benefits through reduced energy consumption. Application of energy standards should relate to use and cost effectiveness.

The original campuses in College Station have achieved very significant savings with the installation of a Combined Heat and Power (CHP) system with centrally distributed heating and cooling. With the opportunity to see the Riverside Campus as a ‘new’ installation a CHP system should be considered. In addition some or all of the following design and technology alternatives would offer further efficiencies, though as with any project design a balance must be drawn between first and life-cycle costs.

• Building envelopes must have high insulation values
• Natural light and building orientation must be used effectively
• Geothermal systems should be explored for supplemental cooling and heating
• High efficiency HVAC and lighting design with intelligent building automation for optimized control of both HVAC and lighting
• Heat/cooling recovery systems should be incorporated when extensive outside air is required
• Solar energy technology should be considered for hot water and supplemental electrical supply
• Low water use plumbing fixtures and the use of gray water and water recovery from roofs and HVAC cooling coils

The integration of current Utilities and Energy Management (UEM) experience with the on-going research at the Riverside Campus Energy Efficiency Laboratory (REEL) offers a unique opportunity for innovation and the use of grant funding to develop on-campus, full-scale demonstration projects.
To the greatest extent possible, buildings in the Military Heritage District area constructed between 1942 and 1957 shall be protected and rehabilitated to serve existing and future uses, while retaining their original character.

The Military Heritage District overlays the Development Zones and extends from 200 feet east of Bryan Road; 300 feet north of 5th Street to 100 feet west of the apron at Flight Line Road; 300 feet south of 6th Street, down to Avenue A, and then contains half the block between 6th and 7th Streets. Existing buildings within this area should be considered for preservation and re-use, specifically the Chapel (7006), the Control Tower structure (7077) and Hangar T-46 (7046). Any new construction in this area should respect the scale, massing and material selection that reflects the historic nature of the base.

SECURITY AND VISIBILITY

The issue of ‘branding’ and identification of the Riverside Campus as an integral part of Texas A&M University will attract a greater number of visitors, and a balance will need to be found between greater accessibility and the provision of needed security and safety. The plan suggests the construction of an administrative infrastructure that will issue visitor passes, provide police and fire protection on a 24-hour basis, and introduce discrete areas of security and access based on the activities in each area. Boundaries will reflect life safety issues and the control of access to areas with operational security requirements. Entities with greater security needs should anticipate increased costs associated with a greater level of protection.

MILITARY HERITAGE DISTRICT

To the greatest extent possible, buildings in the Military Heritage District area constructed between 1942 and 1957 shall be protected and rehabilitated to serve existing and future uses, while retaining their original character.

The Military Heritage District overlays the Development Zones and extends from 200 feet east of Bryan Road; 300 feet north of 5th Street to 100 feet west of the apron at Flight Line Road; 300 feet south of 6th Street, down to Avenue A, and then contains half the block between 6th and 7th Streets. Existing buildings within this area should be considered for preservation and re-use, specifically the Chapel (7006), the Control Tower structure (7077) and Hangar T-46 (7046). Any new construction in this area should respect the scale, massing and material selection that reflects the historic nature of the base.

Every effort should be made to find a use for Hangar T-46 that supports the restoration approach used for Hangar 7090 (TTI), celebrates the military history of the campus, and incorporates the structure of the Control Tower as part of the interpretation.

The need for new structures in this area, or the decision to replace an existing structure, shall be predicated on preserving the visual integrity of the ‘base’ context. As such, the location of new buildings will follow locations of buildings that previously existed, and the scale and general appearance of the new structures will be compatible with, but not copies of, the original buildings.

The design review process will pay special attention to the overall and immediate context of each building historically and functionally, including, but not limited to, paving, entry and exit, and landscape treatments as they have developed over time.
As noted in the Significance section of this plan, some of the remaining physical evidence from 1943 through 1962 should be considered for long-term conservation to celebrate the rich and honorable history of the base, and the memory of the brave men and women who served there.

While all structures within the Military Heritage District will be reviewed on a case by case basis, the following structures are designated as of special importance to the character of the Riverside Campus:

The Administration Building (8007), Chapel (7006), Office Building (7003), TEEX Copy Center (7240), Control Tower (7077) and Flight Mechanics Hanger (7046), Warehouses (8510, 8511, 8512, 8513, 851617, 8518, 8519, 8521, 8522, 8523, 8524), Hangars (7090, 8030, 8031), and Hangar/Workshop (6502).

There are two hangars remaining from 1943. One (7090) has been successfully rehabilitated by the Texas Transportation Institute and forms the center of its extensive series of workshops and offices, and is adjacent to runways 17L/35R and 17L/35c that provide test platforms for research.
One 1943 hangar (7072) was demolished in June 2011. One other (7046) remains just south of 6th Street, adjacent to the steel framework of the 1950s Control Tower (7077.)

Two hangars (6030 and 8031) from 1954 remain at the south end of Flight Line Road, and provide storage facilities for the Ocean Drilling program.

The buildings along the original administrative and operational spine are generally of poor quality, though one group at Flight Line Road (7063, 7064, 6069) is occupied by the Institute for Nautical Archeology and provides acceptable work space for the conservation of recovered ship parts. The Chapel (7006) has lost the traditional spire shown in early photographs, but has been well maintained and is heavily used as an assembly and classroom facility. The early plans show a series of curved driveways on the Chapel block.

Specific structures noted in this section, whether inside the Military Heritage District or not, should be treated as significant to the heritage of the base, and preserved to the greatest extent possible. Where re-use or repair is proposed every effort should be made to respect the original design and retain original fabric. Replacement should respect scale and massing.
FIGURE 1
Conceptual future Riverside Campus showing existing Hangar 7046 and Control Tower with additional Hangar and parking.
VI. POLICY, OPERATION, AND DESIGN CONTROLS

FACILITY USE AND DEVELOPMENT POLICY

Consistent with the designation of the Riverside Campus as a part of Texas A&M University, the policies controlling the use of facilities (defined as buildings, structures and land) shall be the same as for other parts of the university.

Requests for new uses, changes of use, and development shall be submitted to the Council on the Built Environment (CBE) with a full description of the proposal, rationale for the need, and source of funding. Requests may be made by Vice Presidents and Deans (including those responsible for state agencies). The CBE refers the proposal to the appropriate sub-councils (Design Review, Facility Utilization, Maintenance, Technical) for review and preparation of recommendations to CBE. CBE recommendations are then presented to the president of the university for action.

OPERATION OF THE RIVERSIDE CAMPUS

The Office of Facilities Coordination will oversee the operation of the Riverside Campus based on policies established by the CBE and approved by the president of the university.

This shall include the equitable use of facilities, management of the infrastructure, ensuring a safe and secure environment, and the provision of such community services as may be authorized for the benefit of the Riverside Campus community and its guests.

It is recommended that the Office of Facilities Coordination convene and meet regularly with a Users Council to ensure effective communications and operations on this unique campus.

DESIGN CONTROL

Strong design control is required to achieve a high-quality campus environment and implement the intent of the Campus Plan. A balance must be reached between the four institutional entities involved in most projects: the Users, facilities services or Facilities Planning and Construction, the Design Review entity, and the Design Team (which may involve a Construction Manager). The Design Review entity has a unique ‘public’ agenda, and is the guardian of the Campus Plan. Design review is the responsibility of the University Architect and the informed membership of the Design Review sub-council of the Council on the Built Environment.
BUILDING DESIGN PRINCIPLES

The design of buildings on the Riverside Campus should, both in form, design of elevations, and material selection, be guided by a similar directness, simplicity and functional pragmatism exhibited by the buildings constructed during the period the campus was a military base.

Terms used to describe the vision for buildings on the campus include, ‘light industrial,’ ‘high-tech,’ and adhere to the principle that ‘form follows function.’ The Texas A&M University ‘brand’ will have a very different architectural vocabulary from that used on any other campus, except perhaps the agricultural complex on Highway 21 as it crosses the Brazos River. Nevertheless, it will represent the honesty and integrity long associated with the university and its missions.

The military buildings were intended for a limited life-span, and while the university will make every effort to rehabilitate and re-purpose buildings, the decision to demolish a building that has reached the end of its useful life must be an option. In rehabilitation and in the construction of new buildings the university is committed to the principles of sustainable design and Life Cycle Cost Analysis.

The basic philosophy is that new buildings and changes to existing buildings shall respect and enhance the character of the Riverside Campus, while reflecting the aspirations and missions of a 21st century tier one research university.

LANDSCAPE DESIGN PRINCIPLES

The basic principles are to achieve low maintenance overall, and to limit materials to a palette of native plants that have adapted to the climate and do not require regular irrigation. Where irrigation is required it should be supplied by harvested rainwater to the greatest degree possible. Plant materials, where they are proposed, should be adjacent to building entrances, and be associated with active personnel areas.

The maintenance of pasture and agricultural research areas will be determined by use.

The runway areas represent some of the most active research areas on the campus and while natural plant growth has been allowed in some areas, every effort should be made to manage these areas to maximize usability and improve safety and security.

Within the designated Military Heritage Overlay Area planting associated with HQ and other selected buildings should be maintained to reflect its historic appearance.
Standards for signage on, or associated with, buildings and activity areas must reinforce the Texas A&M University ‘brand’ and reflect both the traditions of, and vision for, the campus.

RIVERSIDE CAMPUS DESIGN CHECK-LIST FOR NEW BUILDINGS, REHABILITATION OF EXISTING BUILDINGS, LANDSCAPE AND SIGNAGE

The Council on the Built Environment (CBE) recommends approval to the president of the university all physical changes to campuses controlled by Texas A&M University. Once the president approves a change the CBE charges the Design Review subcouncil of the CBE with ensuring that the changes meet the standards established for the campus. The process requires design review at Concept, Schematic Design and Design Development stages, and a review of a full-size mock up panel to check material selection and construction details before final material purchase. The Design Review checklist for Riverside Campus will cover the elements listed, and each item will be evaluated as Aligned, Not Aligned, To Be Determined, or Not Applicable.

PLANNING AND LANDSCAPING REQUIREMENTS

A Siting
A1 The location is appropriate to the intended function and connected activities
A2 Any building maintains the established setbacks from streets
A3 The site is congruent with the Riverside Campus character
A4 Proposed work within the Military Heritage District maintains the district character

B Accessibility
B1 Vehicular access meets user needs and campus capacity
B2 Ensures proper access for emergency and service vehicles
B3 Traffic flow is consistent with existing patterns
B4 Plans for improvements are included in the project budget

C Parking
C1 Off-street parking is provided for proposed occupants and visitors
C2 Parking is related to user and visitor needs and is accessible to the building
C3 Funds for improvements are included in the project budget

D Landscaping
D1 The design and plant selections have low maintenance needs
D2 The design is consistent with the Riverside Campus character

E Landscape Furnishings and Signage
E1 The selection of furnishings are in compliance with university and system standards
E2 The signage is approved as to content
E3 The signage is consistent with standards for Riverside Campus

F Lighting
F1 The lighting provides for a safe environment for users and visitors
F2 The selection is consistent with university and system standards
**BUILDING DESIGN GUIDELINES**

**G  Massing and Height**
G1  Appropriate to function and consistent with context

**H  Consistent Typology**
H1  Relates to recognized building type: Warehouse; Office/Support Building; Hangar/Workshop
H2  Consistent with industrial or light industrial context
H3  Direct and pragmatic design informed by materials and construction process

**I  Form**
I1  Consistent with typology and function
I2  Roofs pitched or with slopes to drain

**J  Design Basics**
J1  Recognizable entrances linked to outdoor landscape and access
J2  Simple fenestration patterns consistent with campus character
J3  Large glass areas limited to entrances and unique functions
J4  Integrated and well-scaled signage
J5  Satisfies all life safety and building codes
J6  High-quality work environments
J7  Generous Net-to-Gross ratios in office-like spaces

**K  Materials**
K1  Brick, pre-cast stone, concrete block, tilt-up concrete, cement-based siding
K2  Metal panels either as infill or skin
K3  Glass consistent with university standards
K4  Standing seam metal, composition shingle, or membrane roofing

**L  Sustainability** (LEED Silver standard as design standard)
L1  Reuse of existing building(s)
L2  Low energy usage
L3  Low maintenance
L4  Effective use of daylighting for activity areas
L5  Water harvesting for landscape irrigation
Proposed Joint Library Facility designed by Harrison Kornberg Architects, the first on Riverside Campus to be designed with these guidelines.

**FIGURE 3**
Proposed Joint Library Facility site plan, with future additions outlined (Harrison Kornberg Architects).
Example of good design for Riverside Campus, the Will Rogers Airport Snow Barn in Oklahoma City, Oklahoma, designed by Elliot + Associates Architects.

FIGURE 1
In the twenty-first century, Texas A&M University seeks to assume a place of preeminence among the public universities while respecting its history and traditions.

-Excerpt from TAMU Mission Statement

To meet this mission the physical facility at Riverside Campus must be recognizably part of Texas A&M University, support existing research, teaching and service activities, and encourage and attract new and expanded programs.

The Riverside Campus must:

- Be safe and secure, with a high quality infrastructure of utilities, community services, communications, roads, and buildings
- Be technologically advanced, environmentally sustainable and efficient
- Have a built and natural environment that inspires users to fulfill their highest aspirations, encourage a sense of community, and represent the standards and values of the university and system to visitors
- Recall and conserve selected elements of its proud heritage of military service and sacrifice

Achieving the goals identified in this plan will require commitments by both the institution and the users of the Riverside Campus.

The university has established clear procedures for policy-making and oversight and effective operational procedures that together can ensure a cooperative and synergistic development of the diverse activities on the Riverside Campus. The Council on the Built Environment and its subcouncils will work with users on programming and assignment. The User Group Committee will ensure a shared commitment to the goals of the university and the Riverside Campus.

Institutional commitments will include:

- Security and Safety
- Communications
- Utility Infrastructure
- Roads and Parking
- Community Support (particularly the construction of a central office, meeting and service facility)

Programmatic improvements and changes proposed by users will lead to:

- Support for the institutional improvements noted above
- Sensitive reuse of existing facilities in compliance with the Design Controls
- Development of high quality research and work spaces
- Addition of new buildings that reflect the design heritage of the campus
Historical research on the Riverside Campus led to the discovery of General Orders Number 12 issued on 30 June 1954 by the Commander. The document redesignates the names of all streets on the base to honor military leadership in the air force during and after World War II, and individuals who lost their lives in WWII or in training at the Bryan Air Base.

There is no indication that these name changes were ever implemented. For the purposes of wayfinding on the Riverside Campus it is recommended that the original numbered streets and lettered avenues be retained as the primary name, but consideration should be given to indicating a secondary name. The contents of General Orders Number 12 are shown below, and should be given a prominent place in any display of the history of the campus.

HEADQUARTERS 3530th PILOT TRAINING WING
(BSC SE) (ATRC)
Bryan Air Force Base, Bryan, Texas
GENERAL ORDERS NUMBER 12
REDESIGNATION OF STREETS
30 June 1954

1. The street known as Avenue A, Bryan Air Force Base, Bryan, Texas is redesignated Yount Avenue in memory of Lieutenant General Barton K. Yount, effective 15 July 54 in recognition of his outstanding achievement as Commanding General of the Army Air Forces Training Command during World War II.

2. The street known as Avenue B, Bryan Air Force Base, Bryan, Texas is redesignated Vandenberg in memory of General Hoyt S. Vandenberg effective 15 July 54 in recognition of his outstanding leadership as Chief of Staff, USAF, from April 1948 to June 1953.

3. The street known as Avenue C, Bryan Air Force Base, Bryan, Texas is redesignated Mitchell Avenue in memory of Brigadier General William (Billy) Mitchell effective 15 July 54 in recognition of his valiant crusading fight for peace through air power.

4. The street known as Avenue D, Bryan Air Force Base, Bryan, Texas is redesignated Arnold Avenue in memory of General Henry H. Arnold, effective 15 July 54 in recognition of his outstanding leadership of the U.S. Army Air Forces during World War II.

5. The street known as First Street, Bryan Air Force Base, Bryan, Texas is redesignated Stach Street in memory of Major Paul J. Stach effective 15 July 54 in recognition of his heroic combat service during World War II in the course of which he made the supreme sacrifice during the D-Day Invasion of Normandy, France.

6. The street known as Third Street, Bryan Air Force Base, Bryan, Texas is redesignated Hughes Street in memory of Lieutenant Lloyd H. Hughes effective 15 July 54 in recognition of his valor in the performance of hazardous duty in aerial warfare over Ploesti, Roumania in which he gave up his life for the success of the mission.

7. The street known as Fourth Street, Bryan Air Force Base, Bryan, Texas is redesignated Willis Street in memory of Captain James G. Willis, Jr., effective 15 July 54 in recognition of his meritorious service in which he made the supreme sacrifice in aerial combat during the Korean conflict.

8. The street known as Fifth Street, Bryan Air Force Base, Bryan, Texas is redesignated Luke Street, effective 15 July 54, in memory of Lieutenant Roland E. Luke, who gave up his life in the course of duty while on a student training mission near Milano, Texas.

9. The street known as Sixth Street, Bryan Air Force Base, Bryan, Texas is redesignated Mills Street, effective 15 July 54, in memory of Captain Thomas H. Mills who gave up his life during the course of duty while on a student training mission near College Station, Texas.

10. The street known as Seventh Street, Bryan Air Force Base, Bryan, Texas is redesignated Harte Street, effective 15 July 54, in memory of Captain David A. Harte who during the course of duty gave up his life while on a student training mission over Navasota, Texas.

BY ORDER OF THE COMMANDER:

OFFICIAL:

(signature)

Wm. GREENWOOD
Major, USAF
Adjutant