

Master Plan



Sul Ross State University MASTER PLAN

January 2011

DRAFT



Sul Ross State University
Campus Master Plan

January 2011



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Main Campus - Sul Ross State University



Turner Range Animal Science Complex

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Executive Summary

In 2010, Sul Ross State University (SRSU) hired the Freese and Nichols team to prepare a master plan to guide campus development over the next decade. The master plan provides a vision for the main campus physical environment to promote and support the academic values and goals of the University, while addressing enrollment and future improvements.

SRSU is unique in that it does not face major issues that have plagued many colleges and universities across the country - insufficient parking and deficit space. Over the next several years, these issues will not be a concern; however, when enrollment reaches its target goal, new facilities and parking should be constructed in order to prevent those problems from occurring.

SRSU is the economic engine for Alpine and surrounding counties; therefore the master plan recommends various improvements that help to better connect the University to the local community and region. The Museum of the Big Bend, the University library, observatory, campus swimming pool, performing arts and athletic venues are existing components of SRSU that draw and weave the community and University together. The recommended jogging trail, landscape gardens, new athletic complex and intramural fields will help to continue this connection.

This master plan is an instrument for future decision making. The recommendations do not establish an exact implementation schedule, but establish a benchmark to meet changing conditions and available resources. The master plan provides the framework to meet the changing needs of SRSU and will only be effective if it stays in tune with the goals of SRSU today and into the future.



Introduction

Sul Ross State University (SRSU) is a comprehensive, public university in Alpine, Texas offering certificate programs and associate, bachelors and masters degrees. The main campus is situated in the unique environment of the Big Bend region and is the primary higher education institution serving a 19-county area in far West Texas. Sul Ross State University Rio Grande College, under common leadership with Sul Ross State University, operates on three campuses located, with branch campuses in Uvalde, Del Rio and Eagle Pass. SRSU is one of eight institutions under the Texas State University System. In 2010, Freese and Nichols, Inc. (FNI) was retained to conduct a master plan of its Alpine campus. The master plan addresses projected student enrollment, classroom utilization, facility needs, utility upgrades, sustainability principles, landscape standards and student environment needs including gathering spaces, parking, circulation and recreation areas. Unlike many universities, SRSU is fortunate to have adequate space and parking to serve the existing enrollment. Because of its unique location and climate, SRSU has enormous potential to create outdoor learning environments and capture students through special programs unique to this region.

Purpose

The purpose of this master plan is to guide the physical evolution of SRSU's main campus in Alpine and nearby facilities at Turner Range Animal Science Center and Jackson Field. The master plan provides a documentation of issues related to space and environment and recommends improvements over the next 10 years. It is intended to provide a framework for University leadership to make informed decisions and build on the foundation already established by SRSU as an outstanding higher education institution in the Trans-Pecos region. This plan is a working document designed to provide a baseline for current and future improvements to the built environment and is intended to provide SRSU assistance in prioritizing capital projects over the next decade.



INTRODUCTION

Background

SRSU was created by the 35th Legislature in 1917 to serve as a state normal college to train teachers. The school, Sul Ross State Normal College, was named after Lawrence Sullivan Ross, Governor of Texas from 1887 to 1891 and President of Texas A&M College from 1891 to 1898. Construction began in 1919 and on June 14, 1920, under the presidency of Thomas J. Fletcher, operations began in the present Dolph Briscoe Jr. Administration Building. The first enrollment included 77 students in the summer of 1920, who studied education and liberal arts subjects.

In 1923, the state Legislature changed the name to Sul Ross State Teachers College, and advanced courses leading to baccalaureate degrees were added. The first baccalaureate degree was awarded in the summer of 1925. In 1930, graduate level course work began, and the first master's degrees were presented in 1933. The school experienced continued growth in enrollment and construction until World War II, when portions of the campus housed a U.S. Navy pilot training program and a Women's Army Corps Training School.

Enrollment grew to more than 1,000 students in 1960 and to over 2,000 in 1970. Academic programs continued to expand and added new fine arts, physical education, science and range animal buildings and a new library were constructed between 1952 and 1974. In 1969, the Legislature again changed the name of the school to Sul Ross State University (SRSU) to reflect its status as a comprehensive state university.

SRSU has become the cultural and educational hub for the remote Big Bend region. The school has enriched the area through scientific research in biology, geology and range animal science with emphasis on Chihuahuan Desert studies. Through the Uni-

versity's Center for Big Bend Study, research and educational activities are conducted in historic, cultural and economic development for the Trans-Pecos region and adjacent areas in Mexico and New Mexico. The University is also a member of the American Southwest Conference and competes in NCAA Division III sports. Today, the governing body of the University is the Board of Regents of the Texas State University System. Fall 2010 enrollment was 2,093 students.

Programs of Study

Agricultural and Natural Resource Sciences

- Agricultural Business
- Animal Science
- Natural Resource Management

Arts and Sciences

- Academic Center for Excellence
- Behavioral and Social Sciences
- Biology
- Computer Sciences and Math
- Earth and Physical Sciences
- Fine Arts and Communication
- Languages and Literature

Professional Studies

- Business Administration
- Criminal Justice
- Education
- Industrial Technology
- Law Enforcement Academy
- Physical Education
- Vocational Nursing



Fast Facts

<i>Created, 35th Legislature</i>	<i>1917</i>
<i>First Administration Building</i>	<i>1920</i>
<i>Undergraduate Programs</i>	<i>36</i>
<i>Graduate Programs</i>	<i>23</i>

Context Map



SRSU's Alpine campus properties comprise 648.32 total acres. The largest contiguous lands of University-owned property are located along the eastern portions of Alpine, Texas at the intersection of U.S. Highway 90 and State Highway 223. The central campus is located in this area and contains approximately 95 acres of developed areas, consisting of the majority of University administrative, academic and student housing buildings. On the far eastern portions of the main central campus area and south of U.S. Highway 90, is the Turner Range Animal Science Complex. This 63.24 acre facility consists of lands committed to agricultural and natural resource sciences.

Jackson Field, located two blocks south of the main campus area along State Highway 118, is situated on 26.18 acres of University-owned land and contains practice fields, a track and the University's football stadium.

SRSU also operates two areas north of the main campus along State Highway 223. The first area is the 34.52 acres Kokernot Lodge, a recreational center and amphitheater operated by the University. Second is Kokernot Field and parking lot, located west of the Kokernot Lodge. This facility is leased from Alpine Independent School District.

Fast Facts

University Property (Alpine Campus)	Acres
<i>Central Campus</i>	95.00
<i>Old Duplex Housing</i>	10.34
<i>Jackson/Intramural Fields</i>	26.18
<i>Range Animal Science</i> <i>(ranch, vineyard, pastures)</i>	480.26
<i>Kokernot Lodge</i>	34.52
<i>Centennial School</i>	1.65
<i>Early Childcare Development</i>	0.37
Total Land Area	648.32
Total Building Area	1,128,418 SF

Map of Existing Conditions



Map of Existing Facilities



2010 Facilities Legend

- | | | |
|--|--|--|
| 1. President's Home | 13. Mountainside Hall | 26. Jackson Field Food North |
| 2. Wildenthal Memorial Library | 14. Industrial Technology Building/
Art Annex | 27. Jackson Field Food South |
| 3. University Center | 15. Physical Plant | 28. South Grandstands |
| 4. Briscoe Administration Building | 16. Central Heating and Cooling Plant | 29. Jackson Field |
| 5. Morelock Academic Building
(Marshall Auditorium) | 17. Lobo Village Housing Complex | 30. North Grandstands |
| 6. Academic Computer Resource Center | 18. Residential Living Office | 31. Field House (Visitors) |
| 7. Lawrence Hall | 19. Swimming Pool | 32. West P.E. and Intramural Field/Track |
| 8. Museum of the Big Bend | 20. Graves-Pierce Hall | 33. Physical Education Storage |
| 9. Francois Fine Arts Building
(Studio Theatre) | 21. Graves-Pierce Complex | 34. Softball Field |
| 10. Warnock Science Building | 22. Pete P. Gallego Center | 35. East P.E. and Intramural Field |
| 11. Ferguson Hall | 23. Cottages | |
| 12. Fletcher Hall | 24. Tennis Courts | |
| | 25. Ticket Booth | |



Main Campus - East Aerial View



Main Campus - South Aerial View



Jackson Field - North Aerial View



Softball Field - South Aerial View

Map of Existing Facilities



Kokernot Field - East Aerial View



Kokernot Lodge Outdoor Theatre and Drama Workshop

2010 Facilities Legend

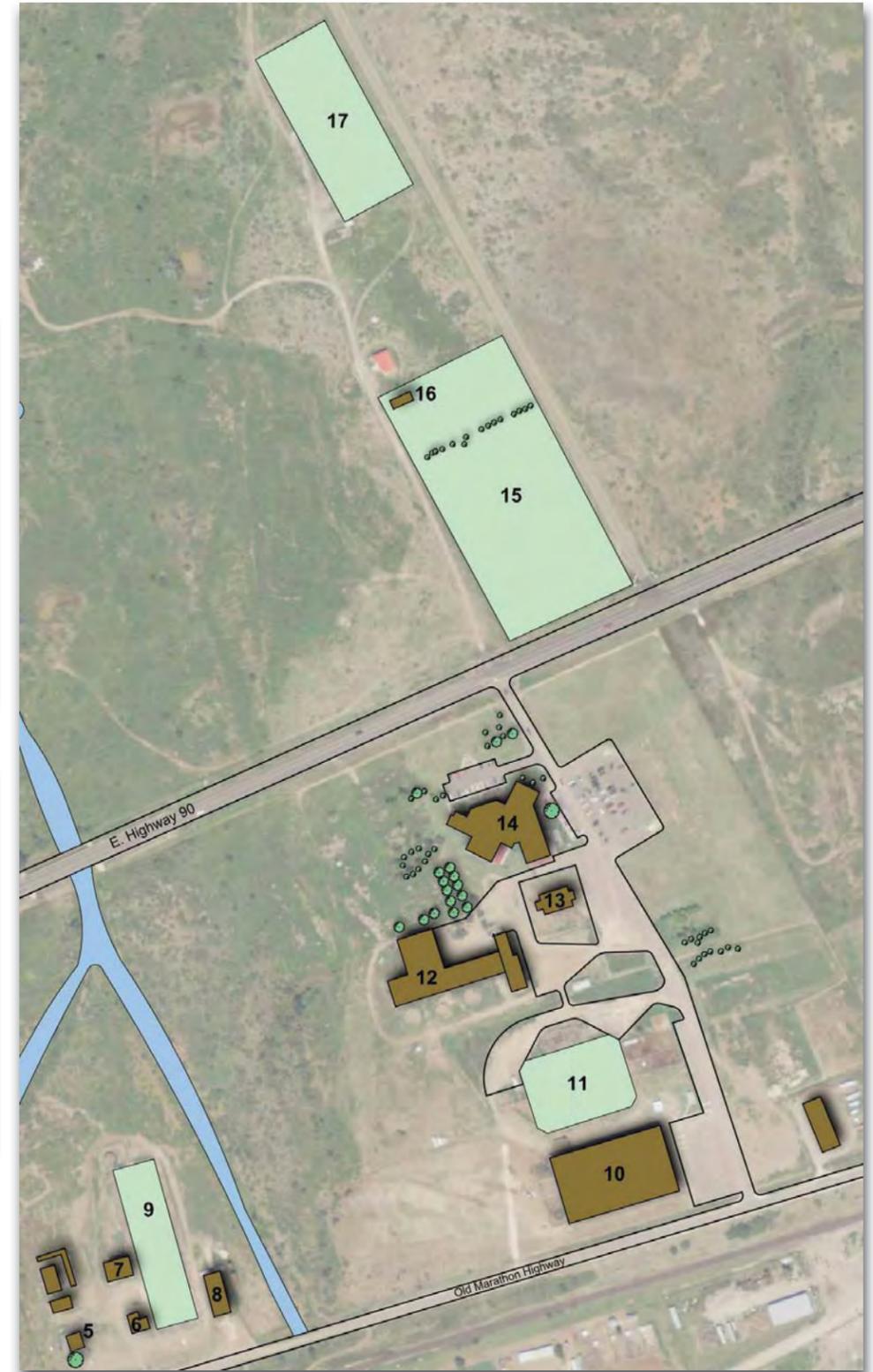
- | | |
|------------------------------|---------------------------------|
| 1. Kokernot Field | 10. Equine Science Center |
| 2. Kokernot Lodge Building | 11. Rodeo Arena |
| 3. Drama Workshop | 12. Horse Science Facility |
| 4. Outdoor Theatre | 13. Animal Husbandry Barn |
| 5. Ranch Foreman's Residence | 14. Range Animal Science Center |
| 6. Embryo Transfer Lab | 15. Experimental Vineyard |
| 7. Feed Barn | 16. Biology Greenhouse |
| 8. Hay Barn | 17. University Storage |
| 9. Feed Lot | |



Turner Range Animal Science Center - Southwest Aerial View



Turner Range Animal Science Center - North Aerial View



Enrollment

A comprehensive study was performed to evaluate how well the current campus and physical facilities contribute to the goals of the master plan and to provide recommendations for improvements to help achieve those goals. The following is a summary of the key components of this study:

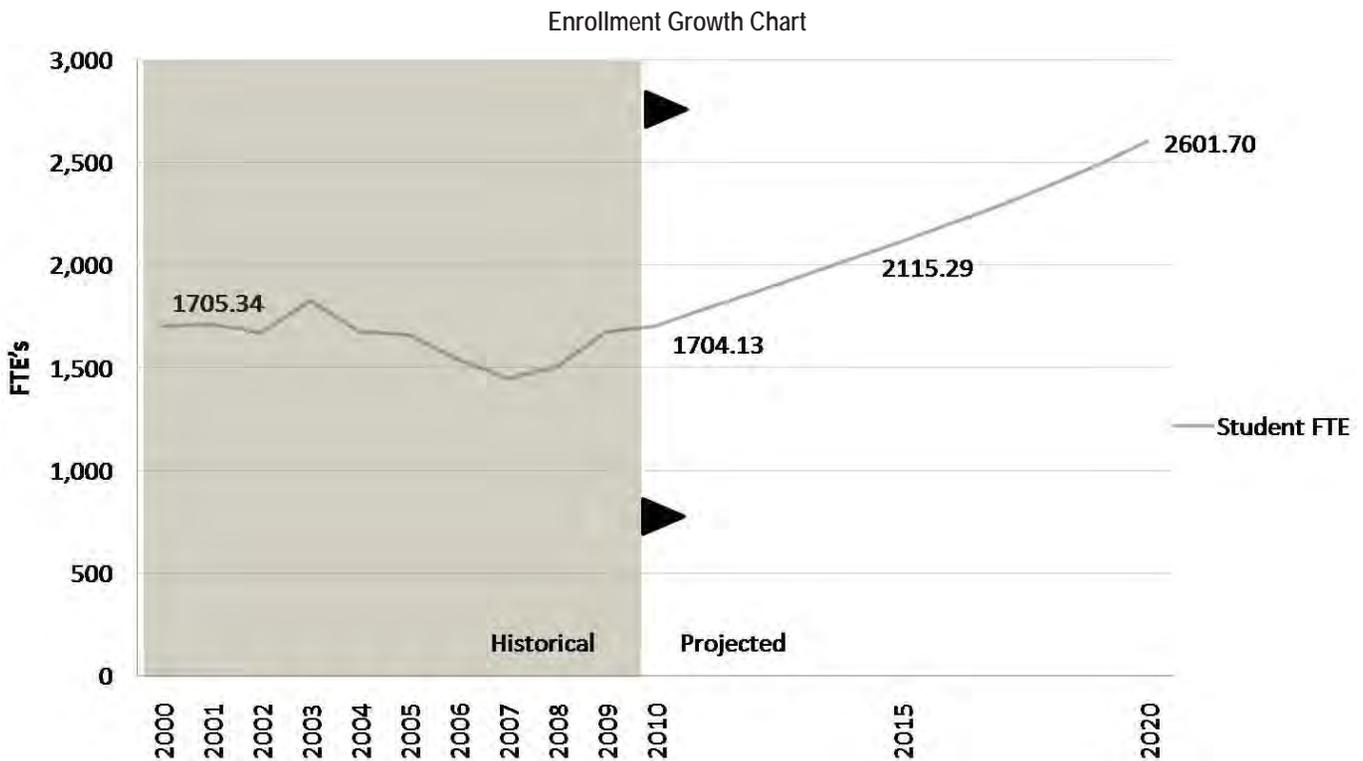
- Validating Enrollment Projections
- Space Utilization Analysis
- Data Gathering Interviews
- Identifying Academic Growth Areas
- Determining Space Needs
- Developing Space Projections
- Analyzing Functional Efficiencies Among Departments
- Walk-Through Inspection of Existing Teaching Spaces
- Developing Building Block Recommendations for the Future

One of the four primary master plan initiatives is to increase campus enrollment. As such, enrollment projections were provided by SRSU. A space utilization study was performed to analyze how efficiently teaching spaces were being used. Interviews were conducted in the early phase of the process to identify academic growth areas, determine space needs and develop space

projections. The consultant team completed interviews with the president and the master plan committee, as well as deans, administration and students to facilitate a highly collaborative master plan approach. Functional efficiencies of each department were then analyzed, and “building blocks” were ultimately developed to outline the road map to a successful master plan.

Enrollment Growth Goal

The University’s goal is to increase enrollment by 100 students per year from the current enrollment of 2,093 students to reach a mid-range target of 2,500 students by 2015 and a long-range target of 3,000 students by 2020. This target was defined by SRSU as one of the primary master plan goals. Historical enrollment data was provided by SRSU’s Office of Institutional Research. Growth is integral to the success of SRSU, and it is imperative that campus facilities accommodate that growth. Enrollment projections will assume growth at the rate of 100 students per year (headcount), and this growth scenario will be used for all space needs analysis. Headcounts are converted to Full Time Equivalents (FTEs) and are used for all projections and analysis.



Process

The planning process consisted of five interrelated phases of work that began in September 2010. These phases were: Mobilization, Data Gathering, Analysis, Review and Recommendations.

Master Plan Process		
Key Tasks	<p>Mobilization</p> <ul style="list-style-type: none"> Steering committee established Scope defined 	Meetings/Reviews
	<ul style="list-style-type: none"> “Kick-off”/Steering Committee meeting Presentation of project scope Outline of key meetings Selected departmental interviews 	September 7-10, 2010
	<p>Data Gathering</p> <ul style="list-style-type: none"> Campus site visit Space needs assessment Enrollment projections Building assessments and walk-throughs Campus issues/needs 	
	<ul style="list-style-type: none"> Facilities meeting Department heads, key faculty meetings Breakfast group Faculty and staff meeting Student meeting City and County Officials meeting Data Gathering Presentation 	October 13, 2010
	<p>Analysis</p> <ul style="list-style-type: none"> Campus analysis maps Concept plans developed Concept plan alternatives Enrollment and space need verification 	
	<ul style="list-style-type: none"> Analysis Presentation to review planning concepts, enrollment and space needs 	November 4, 2010
	<p>Review</p> <ul style="list-style-type: none"> Concept plans verified Cost estimates 	
	<ul style="list-style-type: none"> Review Presentation to finalize planning concepts Cost estimating review 	December 1, 2010
	<p>Recommendations</p> <ul style="list-style-type: none"> Preparation of master plan document 	
	<ul style="list-style-type: none"> Texas State University System (TSUS) meeting to review draft recommendations and cost estimates Final Presentation Board of Regents Master Plan Presentation 	Jan./Feb. 2011

Mobilization

During the Mobilization Phase, the Campus Master Plan Committee was established to review and approve the ongoing progress of the master plan.

A kick-off meeting was held at the start of the project to discuss plan content, project schedule and deliverables.

Data Gathering

During the Data Gathering Phase, the planning team collected and compiled data to provide the background information necessary to adequately assess the campus. Site data, facility assessments, previous enrollment trends, photographs and previous reports were collected. The team also conducted campus facility walk-throughs and numerous interviews during this phase.

Interview Sessions

Interviews were held with the Campus Master Plan Committee, Facilities Planning and Physical Plant personnel, President's Breakfast Group, department heads, faculty, staff, students, and city and county officials. The sessions were typically one hour long, and focused on understanding the perspective of the group concerning existing campus conditions. The interview sessions also concentrated on receiving feedback on future needs and visions for the University. Approximately 15 interview sessions took place over several days in September 2010.

Utilization Interviews

Facility Programming and Consulting (FPC), a sub-consultant of Freese and Nichols, conducted several interviews with deans, department heads and key faculty members from the various schools within the University.

FPC held approximately seven interviews to collect vital information and statistics that were used to determine current and future enrollment and utilization of space for the University.

Questionnaires

An online questionnaire was used to gather detailed comments about campus facilities and environment, parking and signage, and campus circulation from faculty, staff and students. A total of 142 questionnaires were completed with specific comments regarding the master plan.



Master Plan "Kick-off" meeting



A data gathering meeting with the campus facility staff was conducted



Interviews with students



Faculty and staff input meetings



Facility walk-throughs and assessments

Analysis

During the Analysis Phase, the planning team examined the campus to better understand existing conditions, opportunities and constraints of the campus environment. Analysis maps were created to visualize existing conditions and provide guidance for recommendations. The planning team also developed conceptual plans for the campus and presented them to the Campus Master Plan Committee. J. Robert Anderson Landscape Architects prepared large-scale sketches and renderings.

Review

During this phase, concept plans were revised and used to develop the remaining master plan recommendations.

A cost estimating meeting was conducted between Freese and Nichols and Beck Technology to discuss various items associated with future facilities and landscape recommendations. The goal of this meeting was to help the estimating team project the estimated costs of improvements by providing detailed information.

Recommendations

During the Recommendations Phase, the planning team presented the final master plan. Cost estimations and phasing strategies, along with necessary graphics and narratives were included to give clarity of purpose and to assist the University in generating support for the plan. The final master plan document was prepared and printed for distribution.

Summary of Issues

The planning team identified campus issues through interview sessions, questionnaires, site analysis and general campus observations. While many positive items were noted, the following comments highlight some improvements to be considered:

Campus Environment

- Limited gathering spaces to attract students to outdoor areas. Internal gathering spaces are lacking in some facilities
- Limited outdoor activities to take advantage of natural environment
- Lobo Village courtyards lack development for more efficient student use
- Lack of sufficient lighting in some areas of campus
- There is very little connection between the town and gown
- No designated pedestrian pathways to Jackson Field
- Lack of outdoor learning environments

Campus Facilities

- The University Center's dining area isn't configured for optimal use
- Turner RAS needs additional labs
- Lack of recreational fields for intramural programs
- Related departmental offices and classrooms could be arranged in order to function effectively
- Consistent technology is not integrated throughout campus classrooms
- Fletcher Hall is in need of renovation
- High demand for student housing in Alpine
- Need for larger testing rooms
- Campus police need interview and switchboard rooms
- Lack of emergency system on campus facilities and call boxes
- Student organizations have no formal meeting areas
- Classroom furniture and fixtures need upgrading
- Lack of studio space for those respective classes
- Swimming pool is outdated and inadequate in length
- Lack of multi-purpose classrooms
- Rodeo arena restrooms and concessions need improvement

Parking and Signage

- Lack of parking at Turner RAS
- Entry signage and directional signage at buildings need improvement
- Parking lots and internal campus streets are not named
- Lack of campus wayfinding
- Need for designated parking for motorcycles and scooters.
- Lack of bike racks available

Campus Circulation

- Pedestrian/vehicular conflicts occur while crossing from Lobo Village to academic core
- No direct connection between Lobo Village and academic core
- Pedestrian walkways are narrow and underserved in some areas
- Turner RAS is disconnected from main campus causing issues for the pedestrian needing to move between the two
- Intersection near physical plant, Lobo Village 2, and Big Bend Museum could be improved for better circulation



There is a need for outdoor gathering spaces



Some locations on campus are in need of bike racks

Analysis Overview

Upon completion of the Data Gathering phase, the information collected was analyzed to determine major goals and objectives. The following section includes the goals and objectives set forth for SRSU and the analysis of campus plans.



ANALYSIS

Utilization

A space utilization analysis was performed by overlaying the current facility inventory with the fall 2010 class schedule to determine how efficiently classrooms and laboratories were being utilized. The class schedule and facility inventory were provided by SRSU. The University has the unusual challenge of having a surplus of teaching and office space, contributing to low utilization. The following chart shows how many hours per week each classroom is used.

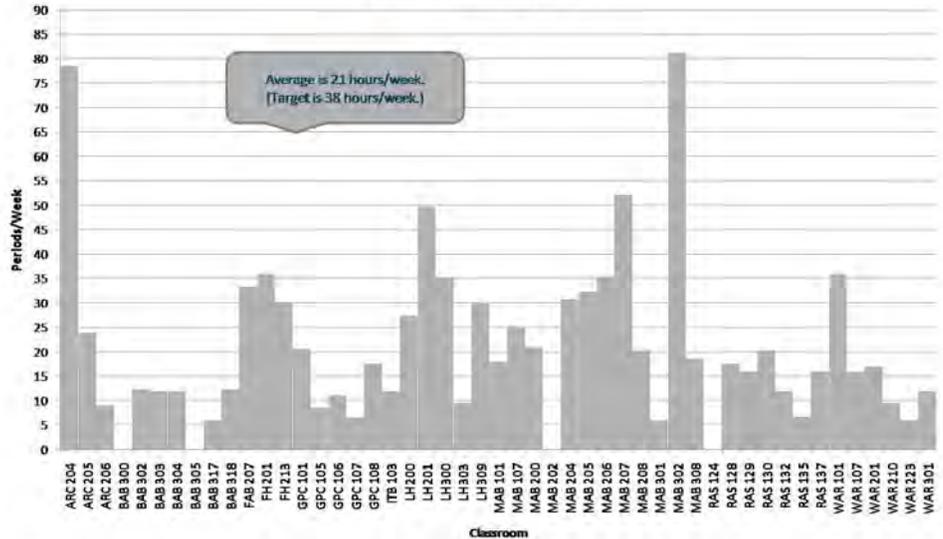
The Texas Higher Education Coordinating Board (THECB) has established a benchmark target of 38 hours per week for classroom utilization. SRSU currently has an average utilization of 21 hours per week.

The THECB benchmark target for laboratory utilization is 25 hours per week. SRSU currently has an average laboratory utilization of 12.4 hours per week.

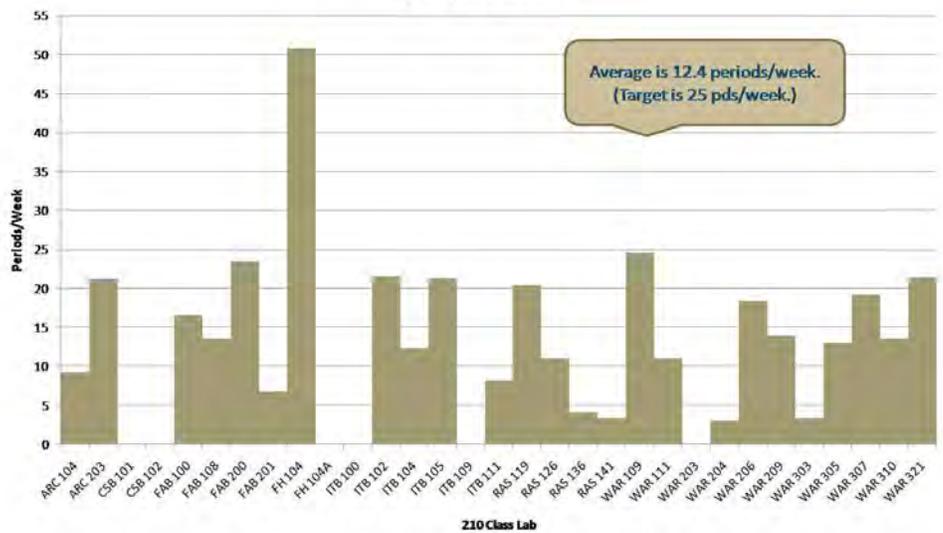
There was a consistent request from the staff that were interviewed to have more flexible classrooms, which generally requires movable, reconfigurable tables and chairs, as opposed to tablet arms. It also means full audio/visual capability. The ideal classroom station count should be 25 square-feet-per-station for tables and chairs. The majority of the classrooms are not meeting this target. The surplus of classroom space is an opportunity to decompress the station count and convert tablet arm classrooms to tables and chairs, which would help provide the desired flexibility.

In summary, classroom and laboratory space utilization is low. However, the surplus of space will allow SRSU to grow smartly and strategically into the available space. The surplus of space will also accommodate future growth for several years without undertaking substantial capital investment.

Classroom Utilization (Fall 2010)



Lab Utilization



Classroom Demand Analysis

When planning for the future, current needs must be evaluated and the total number of classrooms and their given capacities must be determined through a demand analysis. Below is a profile of current class section sizing patterns which outlines the classroom sizes necessary to support the current class schedule requirements. By determining the required number of rooms based on room capacities, this analysis determines classroom demand and reveals space surpluses and/or deficiencies.

SECTION SIZE	TOTAL SECTIONS	TOTAL REQUIRED ROOM PERIODS	MAXIMUM ROOM CAPACITY	TOTAL REQUIRED ROOMS	NO. OF AVAILABLE ROOMS	BALANCE
001 - 013	132	543	20	15	9	(6)
014 - 027	114	368	40	10	26	16
028 - 040	42	126	55	4	6	2
041 - 053	20	57	70	2	0	(2)
054 - 068	3	9	90	1	6	5
069 - 088	1	3	110	1	2	1
089 - 131	0	0	150	0	0	0
132 - 174	0	0	200	0	0	0
175 - 196	0	0	225	0	0	0
TOTALS	312	1,106		33.0	49.0	16.0

NOTES:

SECTION SIZE = range for number of students enrolled in a scheduled class section

TOTAL SECTIONS = total number of scheduled class sections in a particular size range

TOTAL REQUIRED ROOM PERIODS = total number of room periods scheduled for a particular size range (1 credit = 1 room period)

ROOM CAPACITY = fixed field, maximum room capacity...calculated based on **SECTION SIZE** and planned occupancy %

TOTAL REQUIRED ROOMS = **TOTAL ROOM PERIODS / CLASSROOM USE STANDARD**

NO. OF AVAILABLE ROOMS = number of rooms available for scheduled class sections in a particular size range

BALANCE = **NO. OF AVAILABLE ROOMS - TOTAL REQUIRED ROOMS**

The table identifies the need for additional 20-person and 70-person classrooms. It identifies a surplus of several other sized rooms, with an overall surplus of 16 classrooms on campus. Some of the surplus 40-person classrooms could be re-purposed or simply used as-is to accommodate the deficit of 20-person classrooms. With five surplus 90-person classrooms the same approach could be taken to accommodate the deficit of 70-person classrooms. This reallocation would provide a temporary solution while still maintaining a surplus of classrooms to allow for growth.

Space Projections

To estimate future space needs for SRSU, the THECB Five-Factor Model was used. The five factors considered are teaching, office, research, library and support space. The model applies to Education and General (E&G) space and does not include non-E&G space (housing, dining, student affairs, recreation, athletics, etc.). The projections are an estimate in square feet of space that will be needed to facilitate future growth. The model uses benchmark assignable square feet (ASF) amounts for each factor and multiplies it by the projected enrollment to arrive at the projected space requirements. For the purposes of this study, enrollments have been projected to 2020 for future space needs, and headcounts have been converted to FTEs.

The table below shows projections by the actual five-factor room types and how they compare with existing space.

By THECB 5 Factor Room Type (ASF) On Campus Students Only	Existing	THECB		
		2010	2015	2020
Teaching	126,307	90,758	111,090	131,899
Research	2,192	10,752	13,650	16,200
Office	72,996	36,479	44,933	53,613
Support	8,716	12,419	15,271	18,154
Library	36,740	34,199	41,232	45,914
Sul Ross State University Total	246,951	184,606	226,176	265,781

The model validates that there is a current surplus of teaching space, as well as office and library space. From an overall perspective, SRSU will not require additional teaching space until approximately 2018.



Typical classroom - Turner RAS Complex

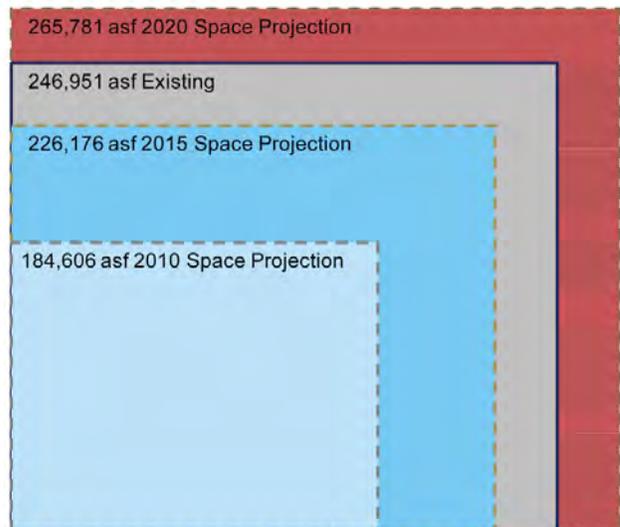
Research space shows a current deficit; however, SRSU does not perform as much research as desired and has made increasing research a primary goal of the master plan. Therefore, accommodating this space requirement is not recommended until SRSU reaches the research goal, and at that point repurposing of existing surplus space should be considered.

There further appears to be adequate office space to accommodate projected growth beyond the 2020 planning horizon. Support space (IT, storage, etc.) are currently behind the curve. This likely indicates that the University is making good use of their support space. This is supported by the fact that many of the groups interviewed expressed a need for storage space. This is another area that could be addressed by repurposing existing surplus space.

If the model is taken literally, it shows a space deficit for the library beginning in approximately 2012. However, there is a trend within libraries towards interactive learning that utilizes gathering spaces along with digital based media and resources. This should be taken into consideration and temper library space projections.

The overall square footage projection for the library appears to be adequate until approximately 2018.

THECB Model Projected vs. Existing Space



The table below outlines space requirements from a department -by-department perspective. The notable observation here is that the School of Arts and Sciences has a current and projected surplus of space, while the School of Professional Studies and the School of Agriculture and Natural Resource Studies show a current deficit.

THECB Calculations by College (ASF)	Existing*	2010	THECB 2015	2020
School of Arts and Sciences	76,066	54,254	58,099	64,149
School of Professional Studies	45,234	63,938	86,068	107,315
School of Agriculture and Natural Resources Studies	9,784	32,215	40,777	48,403
Classrooms (General Use)	42,258			
Other University Space	36,869			
Library	36,740			
Sul Ross State University Total	246,951			

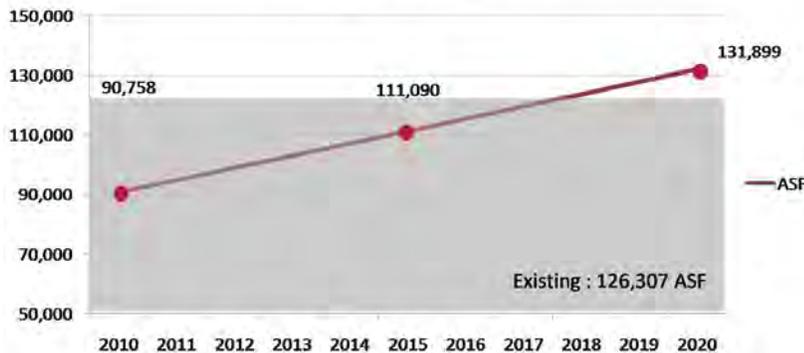
*General use classrooms are shared among all departments and are factored in before determining actual space needs.

Further investigation shows that the School of Arts and Sciences utilizes 55 percent of the faculty and 60 percent of the teaching space while capturing only 32 percent of the enrollment. Arts and Sciences have space intensive instructional needs, but only slightly and not to this degree of imbalance. Considering this and the overall surplus of teaching space, there is a definite need to balance the space discrepancy between schools.

Resource Utilization by College	2010		
	% Enrollment	% Faculty	% Space
School of Arts and Sciences	32%	55%	60%
School of Professional Studies	45%	35%	35%
School of Agriculture and Natural Resources Studies	15%	10%	5%

The following graph summarizes the overall teaching space projection. The model does not show any incremental space requirements until approximately 2018. These requirements are addressed in the "Building Blocks" section of the master plan.

Teaching ASF Projection



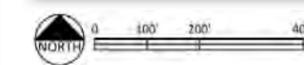
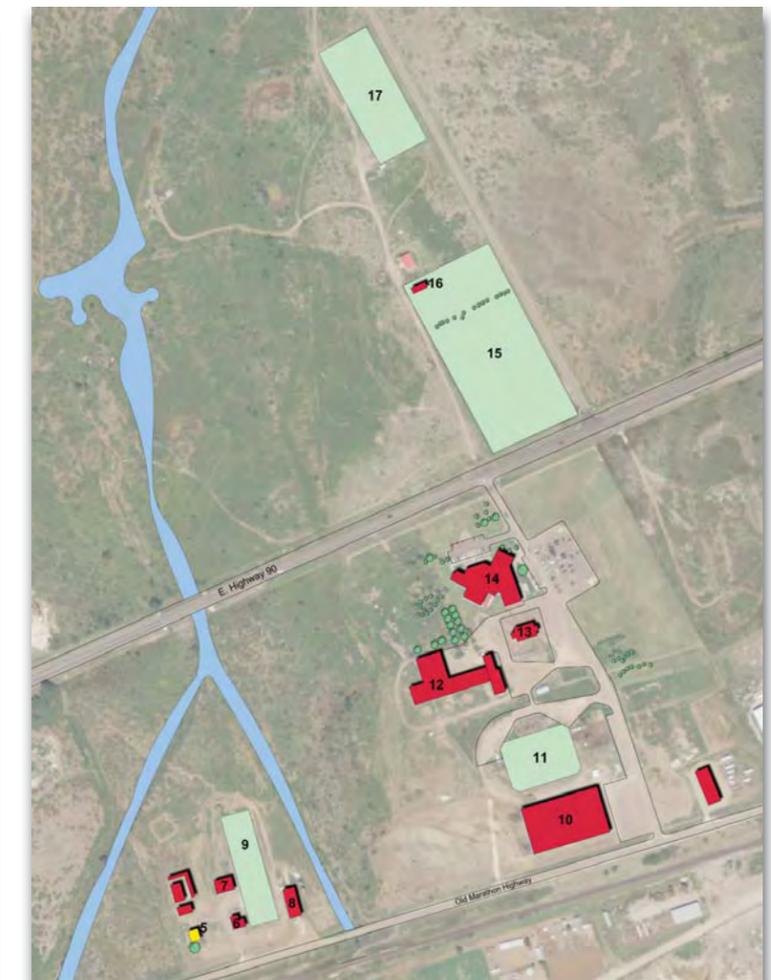
Functionality

Buildings with similar functions (i.e. academic and student services, housing, etc.) are grouped so that facilities with similar functions are generally located within close proximity to each other. Below are a few observations made by the planning team:

- Physical separation between academic core and student housing
- No direct connection between main campus and Jackson Field
- All building functions are served well by parking areas
- Building functions grouped well with the exception of Mountainside, Industrial Technology and Ceramics buildings

2010 Facilities Legend

- | | |
|--|--|
| 1. President's Home | 24. Tennis Courts |
| 2. Wildenthal Memorial Library | 25. Ticket Booth |
| 3. University Center | 26. Jackson Field Food North |
| 4. Briscoe Administration Building | 27. Jackson Field Food South |
| 5. Morelock Academic Building
(Marshall Auditorium) | 28. South Grandstands |
| 6. Academic Computer Resource Center | 29. Jackson Field |
| 7. Lawrence Hall | 30. North Grandstands |
| 8. Museum of the Big Bend | 31. Field House (Visitors) |
| 9. Francois Fine Arts Building
(Studio Theatre) | 32. West P.E. and Intramural Field/Track |
| 10. Warnock Science Building | 33. Physical Education Storage |
| 11. Ferguson Hall | 34. Softball Field |
| 12. Fletcher Hall | 35. East P.E. and Intramural Field |
| 13. Mountainside Hall | |
| 14. Industrial Technology Building/
Art Annex | 5. Ranch Foreman's Residence |
| 15. Physical Plant | 6. Embryo Transfer Lab |
| 16. Central Heating and Cooling Plant | 7. Feed Barn |
| 17. Lobo Village Housing Complex | 8. Hay Barn |
| 18. Residential Living Office | 9. Feed Lot |
| 19. Swimming Pool | 10. Equine Science Center |
| 20. Graves-Pierce Hall | 11. Rodeo Arena |
| 21. Graves-Pierce Complex | 12. Horse Science Facility |
| 22. Pete P. Gallego Center | 13. Animal Husbandry Barn |
| 23. Cottages | 14. Range Animal Science Center |
| | 15. Experimental Vineyard |
| | 16. Biology Greenhouse |
| | 17. University Storage |



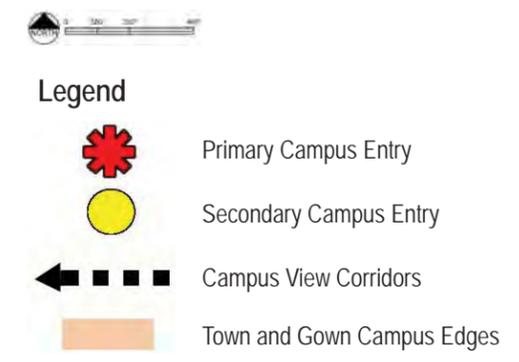
Legend

- Academic and Student Services
- Housing
- Recreation and Athletics
- Service and Maintenance
- City Property

Entries, Edges and View Corridors

Observations:

- Opportunity to better connect campus to town
- Campus entry signage could be modified
- Enhancement to primary campus entry



New Dormitory Location Analysis

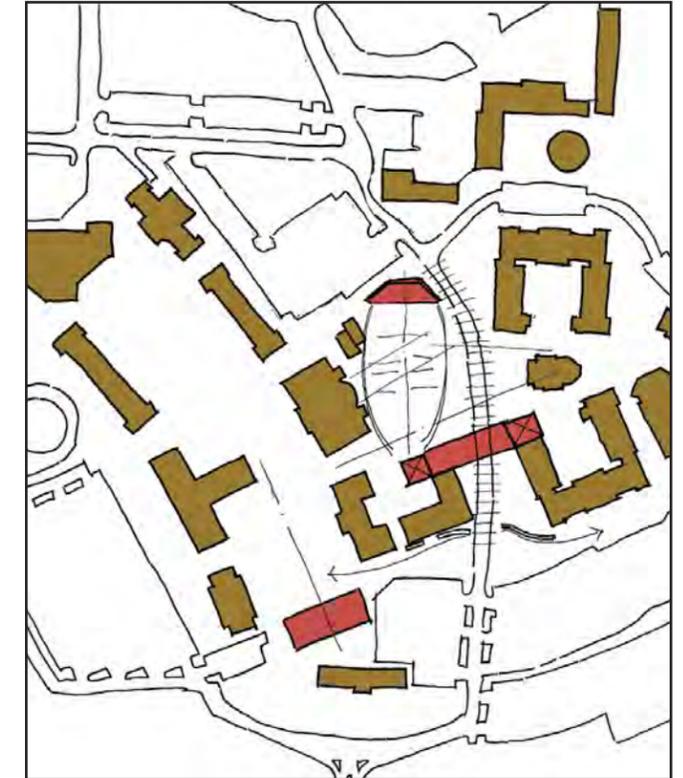
Two of the most critical needs of the campus master plan were to locate a site for additional student housing and improve the pedestrian connection between the Lobo Village (primary area for student housing) and University Center (located in the main campus quad). Currently, the pedestrian pathway between these two critical buildings passes through a parking lot, creating an unsafe environment for students and drivers. During the Analysis Phase, several locations and concepts were explored. The following images represent the alternatives the planning team worked through. The preferred alternative is shown in the Recommendations section of the Master Plan.



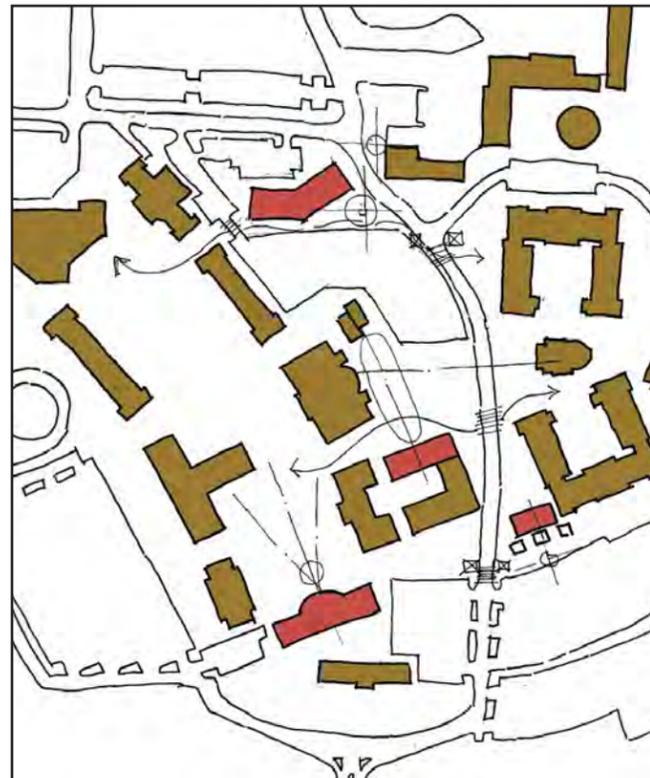
Demo and replace Fletcher Hall, New building to flank pedestrian space



Relocate loop road to the east, 3 buildings stair-stepped up hillside



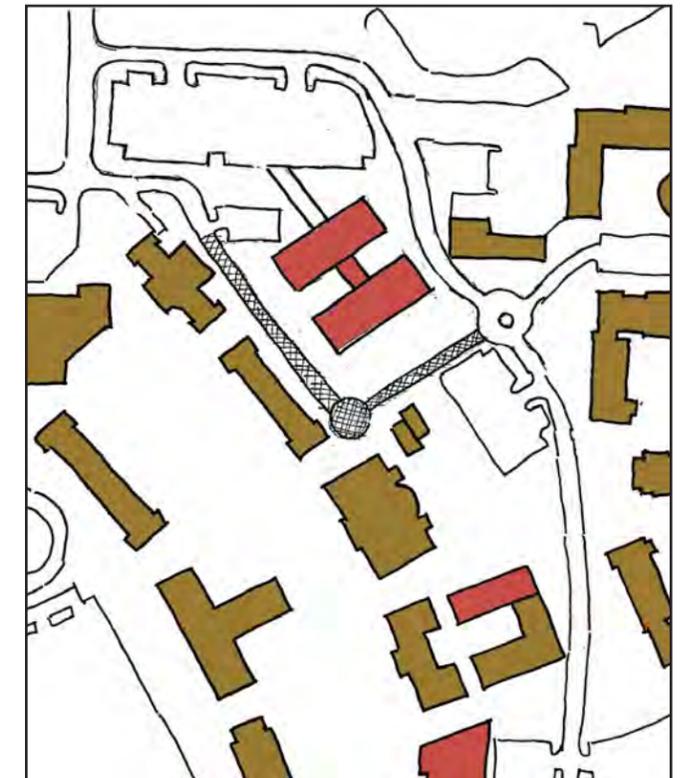
Bridge Fletcher Hall expansion over loop road



Addition to Fletcher Hall, new dorm to frame walkway, interior parking to remain



Relocate loop road to north, amphitheater



Relocate loop road to north, bookend buildings with limited plaza

Landscape and Maintenance

As with many college campuses, maintenance resources are stretched thin at SRSU. Much of the maintenance crew's time is spent mowing and caring for the huge acreage of turf grass that extends around and through the campus. The existing turf grass lawn requires relatively large amounts of water, which is a scarce resource in Alpine.

- Majority of campus is turf grass, including large, underutilized frontage.
- The frontage requires an inordinate amount of maintenance time and resources considering infrequency of use and low impact on the campus environment
- The greatest maintenance resources are expended in the highest visibility area, the main academic quadrangle
- Low maintenance/underwatered turf around Mountainside has little aesthetic or functional value
- Low maintenance native planting makes up a very small portion of the current campus landscape
- Specialty maintenance areas are appropriately maintained by the horticulture department, but some additional maintenance resources are needed in these areas to maintain them as high-impact garden spaces

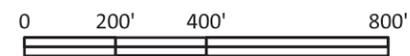


Legend

- Specialty Maintenance - special gardens maintained by the horticulture department
- High Maintenance - Manicured turf and planting in high visibility, high maintenance zones, high water use
- Moderate Maintenance - Turf and planting requiring moderately high maintenance and water
- Low Maintenance - Low water use native planting requiring minimal maintenance or minimally maintained turf
- Native Vegetation - Existing or restored natural vegetation requiring little or no maintenance.
- Existing Tree



SCALE: 1" = 400'



Open Space Quality

The highest quality open spaces are located in the oldest and shadiest parts of the campus, primarily in the North Quadrangle. This space has the primary elements of a quality open space: it is well defined by visually unified buildings, has a central focal point, adequate shade and protection for human comfort and frequent pedestrian traffic. The primarily lacking element through the higher quality campus open space is inviting areas or stopping points for seating, resting, gathering, etc. Other open space observations include:

- Open space becomes less as one travels away from the North Quadrangle
- The South Quadrangle lacks mature shade trees and architectural structure. Only one of the four buildings surrounding the South Quadrangle actually presents its front door to the green space
- The residential areas are in need of open space, primarily due to lack of mature trees, general lack of healthy vegetation, poor soil, steep slopes and circuitous ramp systems, lack of architectural structure (except in Lobo courtyards), and a complete lack of pedestrian-scale gathering spaces
- The tree-lined driveways that exist in a few places on campus are a positive landscape element that should be extended through the campus



Legend

- Highest Quality Open Space - Shady, well-defined pedestrian friendly, seating opportunities, etc.
- Moderate Quality Open Space - Sparsely shaded, moderately well-defined, lacks amenities
- Lowest Quality Open Space - High sun exposure, no clear definition, lacks amenities and pedestrian features
- Buffer Zone - Underutilized vegetative buffer, little activity or use
- Tree-lined Entry Drives
- Steep sloping area
- Campus edge-defining wall
- Signature Garden or Fountain

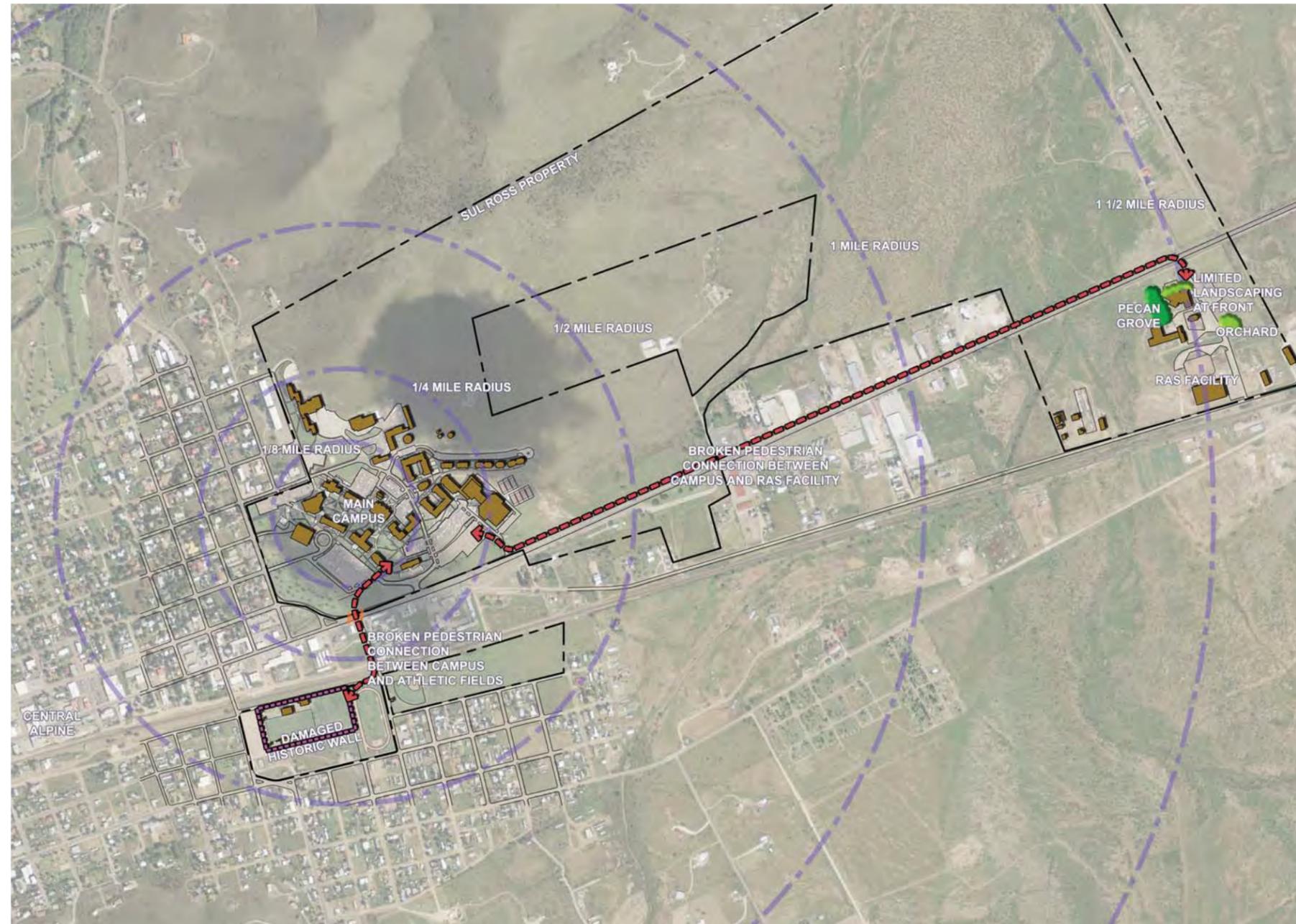


SCALE: 1" = 400'

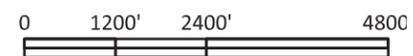


Walking Distances

The main campus is small in size with very manageable walking distances. Even from the most distant parking lot, the campus is walkable and pleasant. The only challenge is the remoteness of athletic fields and range animal science facilities that are 1/2 mile and 1 1/2 miles from the center of campus respectively with no clear pedestrian path between them. Sidewalks and clearly defined crosswalks can help, but encouraging pedestrian traffic across Highway 90 will always present some challenges.



SCALE: 1" = 2400'



Key Opportunities

The following key opportunities for landscape improvements were identified during the analysis phase:

- Build new pedestrian links between the academic core and Lobo Village
- Provide vehicular calming along loop road to improve pedestrian connection between Lobo Village and academic core
- Widen the primary pedestrian path that runs through the academic core from the University Center to Lawrence Hall
- Provide general landscape and open space improvements in the lower quality campus core spaces including the South Quadrangle and new connections between Lobo Village and the academic core
- Provide nodes at key locations along pathways with seating and accent paving
- Create a loop jogging path around the campus perimeter for student recreation, to increase utilization of frontage, and to provide an additional opportunity for local residents to use the campus
- Reduce maintenance and watering levels throughout the frontage and other lower-use areas on campus
- Build new softball/baseball and football stadiums on main campus to provide a safer connection. (The planning team explored the option of constructing a pedestrian bridge across Highway 90, but TxDOT will not allow this construction.)



Legend

- Open Spaces to Be Improved
- Key Pedestrian Nodes to Be Created / Improved
- Key Pedestrian Paths to Be Improved
- Vehicular Traffic to Be Calmed / Reduced
- Potential Jogging Path
- Landscape Areas Targeted for Reduced Maintenance and Water Use / Conversion to More Native Plants



SCALE: 1" = 400'



Sustainability

Today, and into the foreseeable future, our global society has identified and embraced the importance of “sustainability principles” for all our actions and decisions. Institutions of higher education play an important role not only in developing the principles, but also in serving as leaders of sustainability. A college or university is truly a small city with all of the opportunities and challenges to impact how the community lives, learns and plays.

Planners have embraced the “greening of campus” and have emerged as champions of campus sustainability as a key element of long-range master planning. The master planning process is an appropriate format to analyze and recommend campus sustainability. Various organizations have become leaders in these areas and offer support to institutions of higher learning. Two such organizations are the US Green Building Council, which developed the LEED green building rating system; and the American College & University President’s Climate Commitment. These nonprofit organizations provide various levels of resources, tools and educational materials to assist institutions with their sustainability mission.

According to the US Green Building Council, buildings in the United States currently account for:

- 72% of electricity consumption
- 38% of all carbon emissions
- 40% of raw materials use
- 30% of waste output
- 14% of potable water consumption

It is clear that opportunities exist in a wide range of areas to reduce consumption, thus saving dollars and environmental resources. These five areas serve as a starting point of awareness and analysis of how institutions such as SRSU are positioned for the future.

Current Conditions

SRSU is similar to most institutions of higher learning that have a long history and tenure of service in their location. The facilities, grounds and infrastructure span many years with many constructed well before energy saving, material technology, and sustainability practices were in place.

Sustainable initiatives adopted by local and national universities include, but are not limited to, solar PV arrays for electric generation, domestic solar water heaters, wind turbines for electric generation, rainwater and condensate water harvesting, graywater utilization, water efficient domestic plumbing fixture, Variable hydronic pumping and Variable air distribution for HVAC systems, etc.

Many campuses today are developing specific campus sustainability and environmental policies. At this time, the campus has the opportunity to establish these important mission, vision, and policy initiatives. Since these do not currently exist, future master plans should carefully analyze the institution’s stated initiatives against their actual progress.

Currently, SRSU is working with a consulting firm on identifying campus energy saving opportunities. It is clear that the institution has made investments in specific areas of lighting upgrades, window tinting and other project-specific areas over the years. Because of the age of many of the facilities and infrastructure, few opportunities are present to incorporate recent sustainability practices. None of the current facilities have been rated under the LEED system; however, several sustainability-related projects have been implemented such as a hot-water solar system at the swimming pool resulting in significant natural gas savings. SRSU has made their interest and commitment to becoming a sustainable campus over time clear. As with most commitments, the institution will be challenged with finding the financial resources required to make the upgrades in order to reap the gains down the road. This requires a careful balance between the initial first cost investment against the long-term benefit and terms of payback. No one solution or sustainability option fits everyone, so all strategies should receive further detailed analysis and final recommendations.

The campus has actively engaged in discussions with various vendors related to potential energy saving programs. The addition of solar panels to generate on-site electrical power has been discussed with potential vendors along with potential equipment upgrades. The opportunities for related grants and credits associated with energy-saving programs are in high demand and are currently a critical factor when determining the financial commitment and energy savings.

SRSU is located in a geographical location that facilitates many of the green strategies currently being utilized. Alpine’s location is ideal for both solar and wind harvesting; the use of solar panels and small-scale wind turbines is encouraged. Further, the region’s native landscape should be incorporated into the campus’s more traditional landscape elements especially in large, open turf areas where the use of native low-water materials are ideal. Ambient thermal and humidity conditions are favorable for utilizing free cooling and various other sustainable energy-saving HVAC strategies. The master plan will address existing conditions and future opportunities in the Landscape Master Plan.

College Sustainability Report Card

As more colleges and universities are developing sustainability policies and action plans, there is a growing need to provide tangible benchmark results. One recognized resource that institutions are turning to benchmark their sustainability progress, is the "College Sustainability Report Card" by the Sustainability Endowments Institute (SEI). The report card is the only comparative evaluation of campus and endowment sustainability activities at colleges and universities in the United States. The following information highlights the specifics of the program and the indicators that are measured. This detailed analysis is highly recommended as a key first step in determining where the institution currently is with their campus sustainability (see Appendix for more information on the College Sustainability Report Card).

Currently, SRSU is at the decision point of establishing their long range sustainability goal. Today most institutions have accepted the opportunities to become community leaders in the "greening of their campuses." Fortunately there are many resources, consultants, and organizations that are available to assist the institution in developing their sustainability plan.

Over the years SRSU has attempted to incorporate energy saving approaches and the available opportunities to be good stewards of natural resources. Many of the institution's current practices were "green" before the term was identified as being sustainable. Because of the diverse advancements in sustainability materials and technologies, it is important that the institution not only maintain, but increase their focus and commitments in these areas. SRSU has a wide range of sustainable opportunities ahead of them that will be important in their long range success.



Ground-mounted solar panels



Roof top solar panels can provide sufficient energy to operate facilities

Utilities

Mechanical System Descriptions

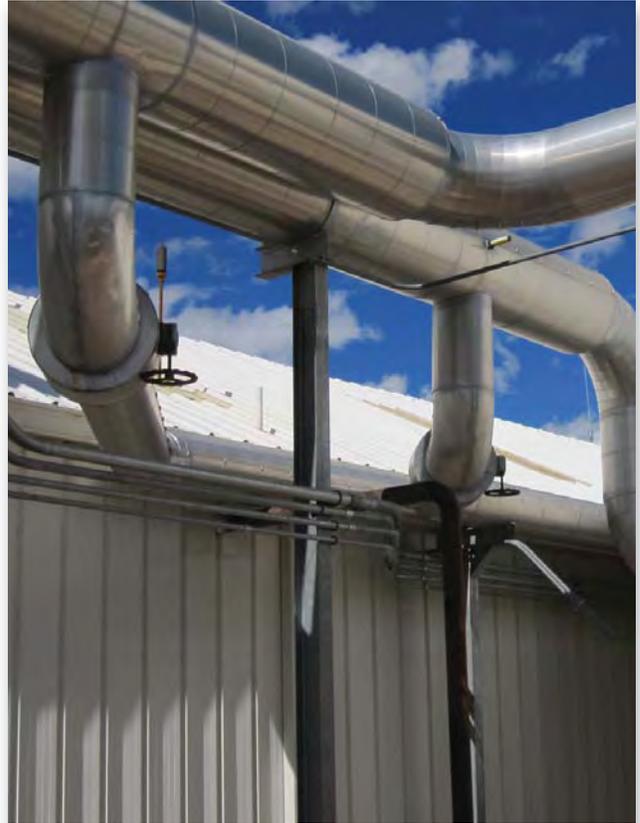
The buildings on the SRSU campus are served by the following HVAC cooling and heating sources:

- HVAC Cooling
 - Served from the central plant chilled water loop
 - Served from local air cooled chillers
 - Served from local direct expansion (DX) systems
 - Combination of the above
- Heating
 - Served from central plant steam system with local steam-to-heating water conversion
 - Served from local electric heating coils

This discussion will detail the various systems listed above and how they impact the present and future growth of SRSU campus.

Central Plant

The SRSU main campus central plant is located next to the physical plant and serves 12 academic buildings totaling 613,897 square feet. The central plant contains water-cooled chillers that produce chilled water for comfort cooling and boilers that produce steam for comfort heating. These hydronic heating and cooling sources distribute chilled water and steam through underground piping which forms a campus thermal utility loop. From this campus thermal utility loop, supply and return building run-outs for each system are extended and connected to the building air handling systems and to building steam, and heating water conversion systems.



Hydronic Piping - Central Plant



Central Plant



SRSU Main Campus Chilled Water and Steam Plan

Chilled Water System

There are three 600-ton York centrifugal water-cooled chillers in the existing central plant, each with its own constant volume chilled water pump. These chillers and their dedicated pumps are enabled on a lead-lag sequence based on campus cooling load and pump water to the underground thermal utility loop. Condenser water serving the chilled water system is produced by three mechanical draft crossflow cooling towers that are located behind the central plant. The cooling towers are provided with four constant speed condenser water pumps to circulate condenser water through the chillers. Most of the central chilled water plant was renovated in 2000.

Operation of the cooling towers, chillers and associated hydronic pumps are sequenced by pneumatic controls which are linked to SRSU's central Energy Management System (EMS). Existing pneumatic controls were found to be in poor condition and need to be replaced for proper system control.



Main Campus Central Chilled Water Plant

Steam Plant

The steam plant consists of two Cleaver Brooks natural gas fired boilers. These boilers (one rated at 350 hp and other rated at 600 hp) operate at 60 psi to generate medium pressure steam, which is then distributed through the underground heating loop to 11 buildings on campus. Campus buildings connected to the underground steam distribution loop use local steam-to-heating water conversion to provide heating water for building air handling units. The steam plant and associated steam distribution system are very old (some of the system dating back to 1940s) and have numerous deficiencies. The campus master plan for year 2000 indicated an annual monetary loss of approximately \$115,000 related to various deficiencies in the steam generation system. Replacement of this steam system with a viable alternative is of great importance to SRSU and should be considered a high priority while planning future improvements and renovations.



Main Campus Central Steam Plant

Local Chillers

The Museum of the Big Bend and Turner Range Animal Center are the two buildings that have local dedicated chillers for indoor cooling needs. Both of these chillers are air cooled and provide chilled water for building air handling units. The air cooled chiller serving the Museum of the Big Bend is connected to the chilled water loop and serves as a back-up to central plant chillers. The local chiller for the Museum of the Big Bend was out of service at the time of this report. The air cooled chiller serving Turner Range Animal Science Center is used as the primary source of cooling and was found to be good working condition.

Hydronic Air Handling Systems

Campus buildings served by the underground thermal utility loop are provided with hydronic air handling systems to maintain indoor comfort. The following hydronic air handling systems were found on campus:

- Constant volume chilled water air handling units
- Variable volume chilled water air handling units with terminal boxes
- Constant volume multi-zone dual deck air handling units
- Fan coil units with chilled water and hot water coils

Several of the systems are well past their useful life, are unreliable in operation and require considerable maintenance.

Local Direct Expansion (DX) Systems

Eight buildings on the SRSU main campus and a major portion of the Turner Range Animal Center are served by DX systems for indoor cooling. The following types of DX systems were found on campus:

- Residential Split DX systems
- Commercial Split DX systems
- Commercial Evaporative Coolers

Most of these systems were found to be in good condition. However, facilities staff reported several maintenance issues for split DX systems installed at Lobo residential village.

Local Electric Heating

Eight buildings on the SRSU main campus and a major portion of the Turner Range Animal Center use electric heating to maintain indoor comfort. These electric heating strips are used in conjunction with residential split DX systems. Most of these systems were found in good condition.

Campus Infrastructure Project

SRSU submitted an application to the State Energy Conservation Office in 2010 requesting American Recovery and Reinvestment Act of 2009 funding for various infrastructure upgrades, energy efficient technology and alternative energy source projects. This project will help the University in significantly reducing energy consumption and carbon footprint. SRSU intends to employ a highly qualified Energy Service Company to carry out the following infrastructure upgrades as part of a performance contract:

- **Central Plant Boiler Replacement and Distribution** - Replace vintage steam boilers with energy-efficient, safe and reliable hot water boilers. This will result in reduced water treatment costs, reduced fresh water make-up and as much as 30 percent reduction in Natural Gas costs (currently at one of the highest gas prices in the state (\$16-\$19 MCF).
- **Variable Frequency Drive** - Allow motors to be run at optimal speeds to match load demands.
- **EMS Expansion** - Expand the existing EMS to control electrical and mechanical components at the highest efficiency possible to substantially reduce energy costs.
- **High Efficiency Lighting Upgrades** - Lighting retrofits, T12 fluorescents to T8 significant savings up to 30 percent in campus lighting costs. Install lighting controls (motion sensors EMS scheduling).

- **Building HVAC Systems** - Approximately 50 percent of the existing air handling systems are very old, inefficient and unreliable, and require expensive maintenance and operational costs. Replacing these old systems will reduce campus energy and maintenance costs.
- **Alternative Energy Sources** - Solar arrays and wind turbines to make use of University's geographical positioning in the heart of favorable solar and wind resources.
- Deployment of renewable energy technology.
 - Solar PV
 - Solar hot water
- Central plant free cooling via plate and frame heat exchanger.

Mechanical System Analysis

Chilled Water System Load Analysis

Existing and proposed chilled water loads were identified and tabulated.

- **Existing:** Several buildings on the SRSU main campus are connected to the central chilled water plant through the underground thermal utility loop. The chilled water plant is currently oversized for the connected cooling load; one chiller typically handles the connected cooling load for 99 percent of the time. Buildings currently connected to the chilled water loop are:
 - Wildenthal Memorial Library
 - Morgan University Center
 - Briscoe Administration Building
 - Morelock Academic Building
 - Academic Computer Resource Center
 - Lawrence Hall
 - Museum of the Big Bend
 - Francois Fine Arts Building
 - Warnock Science Building
 - Graves-Pierce Complex
 - Pete P. Gallego Center
- **Proposed:** Those buildings not currently connected to the loop, but scheduled to be connected in the near future as part of this master plan, will have a projected total tonnage of approximately 400 tons. The existing central plant has enough capacity to handle this anticipated increase in campus cooling load. Buildings proposed for future chilled water connection are:
 - Fletcher Hall
 - Future Fletcher Hall Addition
 - Future Residence Hall
 - Future Academic Building
 - Future Sports Complex

Steam and Hot Water Load Analysis

Existing steam and proposed hot water loads were identified and tabulated.

- **Existing:** Several buildings on campus are currently connected to the steam loop for indoor heating needs. Though the existing steam system has the capacity to satisfy this heating load, the steam system is very inefficient and requires a lot of maintenance. Buildings currently connected to the steam loop are:
 - Wildenthal Memorial Library
 - Morgan University Center
 - Briscoe Administration Building
 - Morelock Academic Building
 - Academic Computer Resource Center
 - Lawrence Hall
 - Museum of the Big Bend
 - Francois Fine Arts Building
 - Warnock Science Building
 - Graves-Pierce Complex
 - Pete P. Gallego Center
- **Proposed:** This master plan proposes a de-centralized heating boiler system for SRSU, which will indicate demolishing the existing steam boilers, abandoning existing underground steam/condensate loop and installing new high-efficiency boilers at each building. Hydronic piping tie-ins to the steam loop shall be disconnected, and building air handling systems shall be connected to new local high efficiency heating water boiler systems. Buildings proposed for decentralized boiler systems are:
 - Wildenthal Memorial Library
 - Morgan University Center
 - Briscoe Administration Building
 - Morelock Academic Building
 - Academic Computer Resource Center
 - Lawrence Hall
 - Museum of the Big Bend
 - Francois Fine Arts Building
 - Warnock Science Building
 - Graves-Pierce Complex
 - Pete P. Gallego Center
 - Fletcher Hall
 - Future Fletcher Hall Addition
 - Future Residence Hall
 - Future Academic Building
 - Future Visitors Center
 - Future Sports Complex
 - Future Turner Range Animal Center Addition

Building Air Handling Systems

Existing and proposed building HVAC loads were identified and tabulated.

- **Existing:** The campus planning team evaluated the existing building air handling systems for their condition and ability to meet current loads. The following issues were noted:
 - Majority of hydronic air handling systems on campus are constant-volume, dual-deck multi-zone units, several of which are provided with terminal boxes for air mixing. Dual-deck, multi-zone units are not energy efficient, since they try to maintain both hot deck and cold deck temperatures simultaneously. Dual-deck, multi-zone units are also not the best alternative for temperature control or maintaining comfort in occupant space.
 - Majority of air handling units on campus are constant volume and do not employ variable frequency drives (VFD) to save energy during non-peak hours.
 - Few air handling units on campus are variable volume, but the VFDs on these units were found to be non-operational and in need of repair.
 - Most air handling systems on campus appeared to be out of balance, which is likely contributing to the high campus energy consumption.
 - The HVAC system serving Warnock Science Building is undersized and needs additional cooling capacity. The air handling units serving Warnock Science Building currently operate 24/7 to meet the cooling load.
 - The Industrial Technology Building appeared to have comfort issues and could use additional cooling capacity.
- **Proposed:** New air handling units shall be added to the new buildings that are proposed under this master plan and to existing buildings that currently lack or have reduced HVAC capacity. These new air handling units shall be either stand-alone or connected to the central thermal utility loop. Buildings with new air handling units are listed below:
 - Warnock Science Building: New VAV air handling unit connected to the central thermal utility loop.
 - Industrial Technology Building: New VAV air handling unit connected to the central thermal utility loop.
 - Fletcher Hall: New unit ventilators connected to central thermal utility loop.
 - Future Fletcher Hall Addition: New unit ventilators connected to central thermal utility loop.
 - Future Residence Hall: New VAV air handling units or unit ventilators connected to central thermal utility loop.
 - Future Academic Building: New VAV air handling units connected to central thermal utility loop.

- Future Visitors Center: New Packaged or split DX air handling units.
- Future Sports Complex: New VAV air handling units connected to central thermal utility loop.
- Future Turner Range Animal Center Addition: New Packaged or split DX air handling units.

Campus Energy Management System

The existing EMS is a mix of direct digital controls and pneumatic controls. Newer buildings have modern direct digital controls systems, while older ones are still operating on pneumatic controls. All of the control system types are linked to a Human Machine Interface (HMI) that is located in the physical plant office. The HMI for SRSU is Continuum Cyber Station, which is a propriety software platform from Schneider Electric (previously TAC). Facilities staff currently uses this HMI to alter operating schedules, temperature setpoints and other minor functions. Since SRSU does not employ anyone who is familiar with EMS programming or troubleshooting of complicated issues, servicing of EMS system is contracted to Ener-Tel Services Inc., which is located in San Angelo, Texas.

Testing of the existing EMS was not conducted as part of this master plan. However, some of the issues noted during a cursory review of the system are listed below:

- Hydronic valves not modulating to meet cooling or heating setpoints
- Outside air dampers closed during occupancy cutting ventilation to space
- Hot water valves open during cooling mode
- HVAC dampers and valves with incorrect settings and balancing
- Communication failure with devices in field
- Unverified control sequences for HVAC systems



Main Campus Cooling Tower Pneumatic Controls

Electrical System Descriptions

Main Campus Electric Transmission System

SRSU campus electric utility is provided by American Electric Power (AEP) formerly known as West Texas Utilities Company. The electric utility enters the main campus from 12.47kV overhead electrical lines located at the alleyway west of campus between East Lockhart Ave and East Avenue B as two underground feeder loops. See main campus electrical site plan below.



SRSU Main Campus Electrical Site Plan

The northern feeder supplies the following buildings:

- University Center
- Museum of the Big Bend
- Francois Fine Arts Building
- Mountain View dormitory
- Industrial Technology Building and Art Annex
- Physical Plant
- Graves-Pierce Complex
- Tennis Courts
- Pete P. Gallego Center

The southern feeder supplies the following buildings:

- The President's Residence
- Wildenthal Memorial Library
- Briscoe Administration Building
- Morelock Academic Building
- Academic Computing Resource Center
- Lawrence Hall
- Ferguson Hall

- The Cottages
- Fletcher Hall
- Lobo Village 1
- Lobo Village 2
- Lobo Villages 3-4
- Lobo Villages 5
- Lobo Village 6-7

AEP owns and maintains the feeders and transformers on campus. SRSU is metered and takes ownership at the secondary side of each transformer. Until 2007, the University was billed from a single meter at the edge of campus property, while ARP owned and maintained on-campus equipment. Legal changes during 2006 and 2007 due to electric utility deregulation in the state of Texas no longer allowed AEP to own or service equipment on the load side of a customer's meter. Therefore, in order for AEP to continue to provide maintenance for the campus electrical system, utility meters were placed on the secondary side of each campus transformer. This resulted in approximately 30 metering points, nearly one-per-building.

Since the campus distribution system is owned and maintained by AEP, any system upgrades due to new construction or aging equipment are the responsibility of AEP. AEP may require that SRSU share costs associated with any required upgrades, but design and construction are AEP's responsibility. Multiple metering points also means multiple bills, customer fees and payments, as well as limited control over the system.

Condition of AEP Distribution System on Campus

AEP was prompted for input about the condition of the main campus distribution system equipment. The vast majority of the equipment is in good condition and does not require attention beyond normal maintenance by AEP. Equipment assessment information provided by AEP for the main campus distribution system is given in Table 1. AEP does believe the transformer at Lawrence Hall needs oil maintenance.

Table 1 - Equipment Conditional Assessment

No.	Building Served	Meter Number	Transformer Size (KVA)	Transformer Number	Condition
1.	Presidents Home	428884692	50	116228	Good
2.	Wildenthal Library	428556759	500	8230	Good
3.	Bnscoe	428556762	500	84229	Good
4.	Morelock	428556760	500	84228	Good
5.	Computer Resource Center	428556756	150	84240	Good
6.	Lawrence Hall	428556726	225	98545	Minor oil issue
7.	Ferguson Hall	428556723	150	392520	Good
8.	Cabins	428884697	50	14108339	Good
9.	Fletcher Hall	428556761	225	84225	Good
10.	Warnock Science	428556758	500	11080768	Good
11.	Lobo Village 1	428471661	300	14102595	Good
12.	Lobo Village 2	428556735	500	2110018	Good
13.	Lobo Villages 3 & 4	428453768	300	2155341	Good
14.	Lobo Villages 5	428556736	300	11088691	Good
15.	Lobo Village 6 & 7	428556738	300	14102597	Good
16.	Pierce Complex	428556724	300	12001942	Good
17.	Tennis Courts	428884700	50	14102605	Good
18.	Gallego Center	428556725	1000	12001941	Good
19.	University Center	428574572	500	12000632	Good
20.	McCoy Building	428556737	500	14108378	Good
21.	Francois Fine Arts Building	428574546	500	84227	Good
22.	Mountain View Hall	428556757	500	84317	Good
23.	Industrial Technology Building	428574547	-	-	In need of replacement in near future
24.	Art Annex	428574549	50	5153008	Good
25.	Central plant	428556747	500	12002753	Good
26.	Central plant	428556749	225	84316	Good
27.	Central plant	428556748	750	84314	Good
28.	Central plant	428556750	750	515309	Good
29.	Physical Plant	428353379	150	14112950	Good
30.	Physical Plant	428556755	-	724201	Good

Source: American Electric Power

SRSU Distribution Equipment Assessment

Electrical safety is a concern for several buildings that have switchgear manufactured by Federal Pacific Electric (FPE). The FPE gear is 30 to 35 years old and approaching expected end of life. In addition to general age, parts for maintenance and repairs for FPE equipment have not been readily available since FPE liquidated in the late 1980s. The following buildings have switchgear manufactured by FPE:

- Briscoe Administration Building
- Francois Fine Arts Building
- Fletcher Hall
- Morelock Academic Building
- Physical Plant

The Graves-Pierce Complex also has switchgear equipment that was retained in a recent renovation, but is nearing its expected end of life. All of the electrical equipment in the buildings noted above should be evaluated for life safety and operational issues, and all such issues should be appropriately addressed, with life safety concerns receiving the highest priority.

There are two buildings on campus with observed lightning protection with the possibility of one or two other buildings with protection. According to a study by the environmental measurement company Vaisala, funded by the National Oceanic and Atmospheric Administration (NOAA), the Alpine, Texas region receives three-to-five lightning strikes per-square-kilometer annually.

Remote Campuses in Alpine

The electric utility incoming service at remote campuses in Alpine is metered separately at each location from AEP distribution lines. Distribution from AEP-owned public distribution lines is as direct as possible to metering locations.

Historical SRSU Electric Demand

Electric utility bills dated from August 2006 to June 2010 were provided by SRSU for analysis. Bills dated from August 2006 to April 2007 contained data from the single electric meter on the main campus and multiple auxiliary meter locations off of the main campus (Turner Range Animal Science Complex, The Centennial School Building, the athletics facilities, etc). From October 2007 to June 2010, SRSU was billed at each individual building on the main campus in addition to the auxiliary campus sites. The transition on the main campus from a single metering point to multiple metering points occurred during the time from May 2007 to September 2007, resulting in inconsistent metering records. See Figure 1 for plotted electric demand and Figure 2 for electric demand plotted with relative cost per kilowatt-hour (kwh).

From the fall of 2006 to the summer of 2010 the three month average electrical demand of all metering locations (main campus and remote sites) has decreased by 16 percent. The price-per-kilowatt-hour paid by SRSU adjusted to include taxes and fees has remained relatively constant at \$0.095/kwh since changes due to deregulation ended in September of 2007. Prior to the deregulation changes, the rate adjusted for fees and taxes was an average of \$0.076/kwh. The minimum demand of approximately 900,000kwh occurred in May of 2010 and the maximum demand of approximately 1,250,000kwh occurred in February of 2007.

Penalty fees are not currently being applied to the University's electric bills for low power factor. The most recent Rates and Tariffs document published by AEP Texas North Company that took effect September 1, 2010 includes the ability for AEP to increase the customer's delivery rate for power factors less than 95 percent. Power Factor Correction Capacitors may be required at certain SRSU facilities to avoid the additional power factor penalties.

Figure 1 - Historic Electric Utility Demand

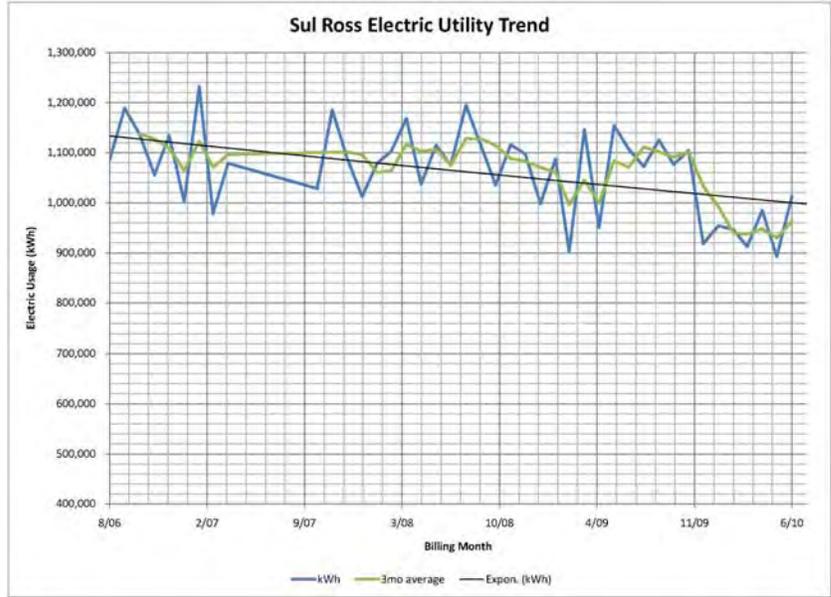
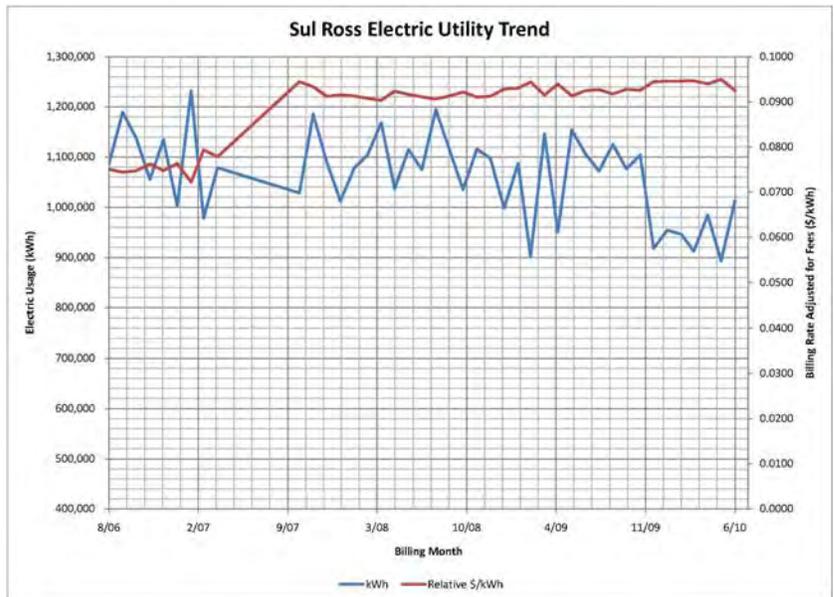
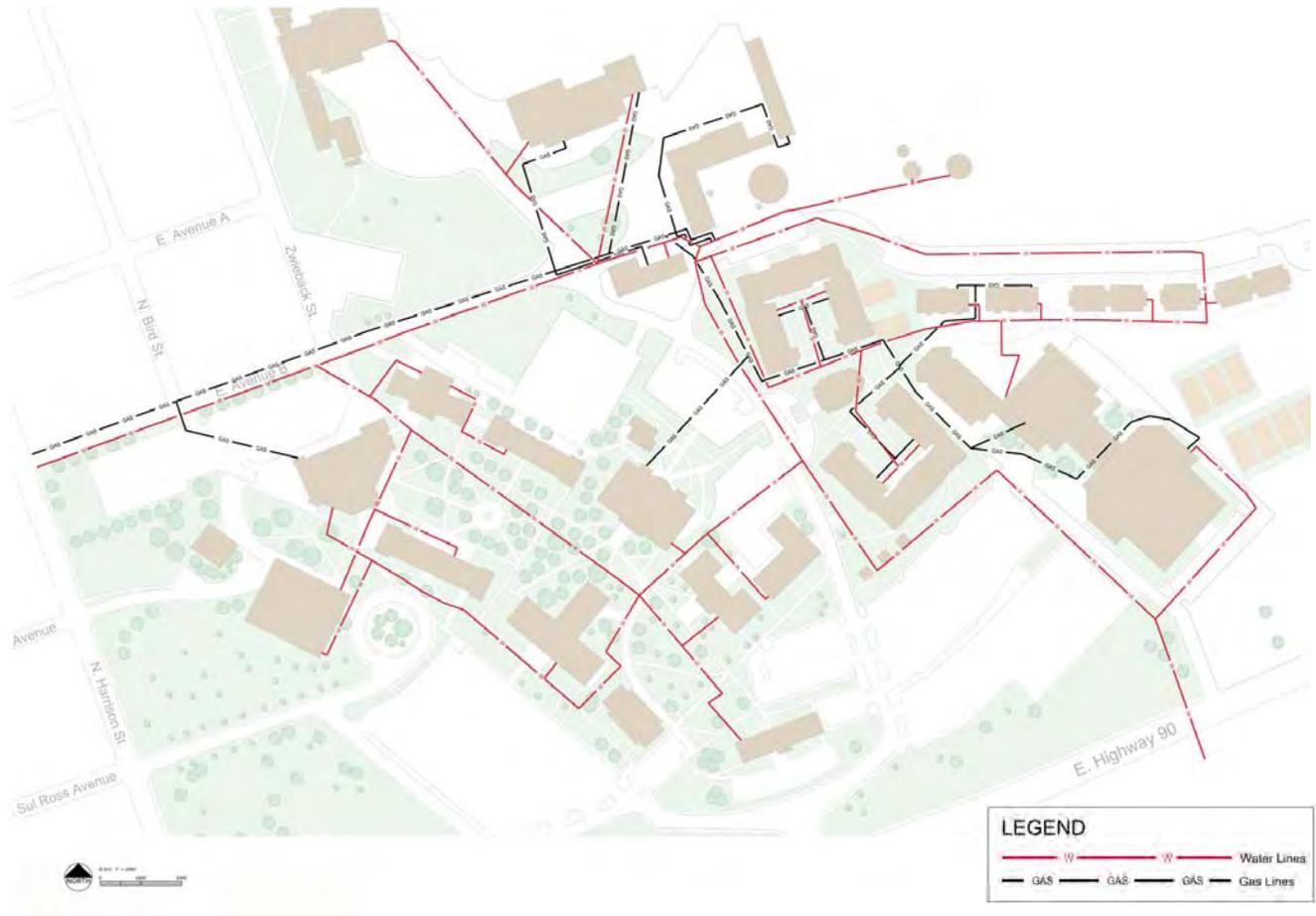


Figure 2 - Electric Demand and Relative Cost per kilowatt-hour



Water, Sewer and Gas Systems

The master plan team analyzed the domestic water distribution system, sanitary sewer distribution system and natural gas distribution system at SRSU's main campus and at Turner Range Animal Center.



SRSU Main Campus Water and Gas Plan



SRSU Main Campus Sanitary Sewer Plan

Water and Sewer

The City of Alpine provides potable water and manages sanitary sewer for SRSU. Potable water for the main campus is stored in above ground storage tanks and then distributed to various campus buildings. Storage tanks have a current total capacity of 600,000 gallons, which satisfies existing campus needs and is sufficient for the foreseeable future. The water pressure for most buildings on campus is around 32-34 psi, which is lower than desired. Dormitories are provided with booster pumps to resolve the water pressure issue.

Turner Range Animal Science Center has its own dedicated water supply and meter from the City of Alpine. No capacity or water pressure issues were noted for Turner Range Animal Center.

Plumbing systems on the SRSU main campus and at Turner Range Animal Center are managed and maintained by SRSU. No major issues were noted.

Gas

Natural gas is used on campus for indoor comfort heating and for domestic water heating. Indoor comfort heating is achieved with

gas-fired steam boilers located in the central plant and steam-to-heating water conversion units at each building. Domestic water heaters are provided locally at each campus building.

Southwest Texas Municipal Gas Corporation owns and operates the natural gas system serving SRSU. The SRSU main campus gas meter is located on East Avenue B and provides medium pressure gas to the central plant to serve gas-fired steam boilers and to the other buildings on campus having gas-fired equipment. Gas requirements to buildings other than central plant are minimal. Other buildings currently receiving gas service include Physical Plant, Industrial Technology Building, Science Building, Graves Pierce Complex and Pete P. Gallego Center. In addition to main campus gas connection, dedicated gas lines and meters are provided for University Center and Turner Range Animal Center.

Though the existing gas service on campus seems adequate for any foreseeable gas loads, the distribution system will need to be altered to accommodate the proposed decentralized boiler system.

Fletcher Hall Assessment

At SRSU's request, a physical condition assessment and recommendation for expansion of the Fletcher Hall dormitory was performed by FNI. The condition assessment performed was only visual in scope. No material sampling or testing related to asbestos, lead or other hazardous materials was performed.

General Building Description and Observations

Fletcher Hall was built in the early 1960s and appears to have been well maintained throughout its nearly 50-year life. The two-story building is "L" shaped in plan, approximately 27,200 square feet and located on a sloping site. The exterior of the building is red brick with white, painted, divided light windows in a traditional architectural style complimenting the rest of the campus buildings.

The 1/2 story is the lowest floor where one wing of the "L" is exposed on three sides with the other wing of the building foot print unexcavated crawlspace cut into the hillside. This lowest floor faces south and is the main entry to the building and contains a lobby/TV area, laundry, and other supporting functions. The upper two floors contain the dorm suites organized on either side of a corridor running the length of the building wings. The dorm suites are composed of two two-bed rooms sharing a bathroom with sink, toilet, and shower. There are 27 dorm bedrooms on the second floor and 28 on the third floor, providing housing for 110 students. The resident assistant's apartment is located on the ground floor adjacent to the main lobby.

Vertical circulation is accomplished with three stairways, one at each end of the wings and one at the intersection of the wings. The treads and risers appear to comply with current building codes, but the handrails and guardrails do not comply with building codes or disabled access guidelines. Because of the sloping site, the building can be entered at the second floor and this appears to be used by the students as the primary entry. This entry also has two exterior ramps, that do not appear to be in compliance with Texas Accessibility Standards for disabled ac-



Fletcher Hall - Sul Ross State University

cess in terms of the slope of the surface and intermediate landings, but has handrails and guard rails. The lack of an elevator to allow disabled access to the other floors within the building will need to be addressed as part of any significant renovations or expansions to the building. It appears that the common area at the intersection of the two wings provides an opportunity for installing an elevator shaft. One wall of the shaft would need to act as a load-bearing wall. The biggest unknown is the difficulty of avoiding foundation elements with the elevator pit.

Interior finishes are for the most part painted concrete masonry unit block walls and terrazzo floors throughout all rooms and corridors. No visible cracks were observed in the walls and only a few minor cracks in the terrazzo were appar-



This ramp has no intermediate landing

ent. The public spaces have suspended acoustic ceilings, and the dorm room ceilings are textured-and-painted concrete. Although most of the dorm rooms were not accessible during our review due to the high occupancy of the building, in rooms that we could access, it appeared that the built in desks and cabinetry were well worn and nearing the end of their expected life. Similarly, the plumbing fixtures are outdated due to their water inefficiency and should be replaced.

Given the building age and use, it is in reasonably good condition. However, the exterior walls are un-insulated, load-bearing CMU block with a brick veneer and original single-pane windows. This condition makes for a very energy inefficient building envelope and periods of uncomfortable living during the winter and summer months. An expansion joint through the building separates the two wings. Significant gaps in the expansion joint cover were observed on the exterior wall and at the roof parapets. It is recommended that this cover be replaced to prevent water intrusion into the building. The roof of the building is in fair-to-poor condition and of unknown age. There is evidence of ponding away from the roof drains. Through wall overflow scuppers are provided but appear to be much higher above the roof drains than recommended. The perimeter roof membrane terminates under the parapet brick ledge in a manner not acceptable by today's standards.



Gaps in expansion joint covers

Structural Observations

The building structure is reinforced concrete and CMU block. The first elevated floor is a concrete, one-way slab supported by beams spanning below load bearing walls above. The beams are supported by rectangular reinforced concrete columns. The second elevated floor is a one-way concrete slab supported by



load-bearing walls typically located between dorm rooms. The roof deck is some type of roofing panel supported by light-gage metal. The roof is supported by load-bearing walls between dorm rooms. As stated previously, no signs of structural distress to the reinforced concrete or CMU walls were observed. The structure appeared to be in good structural condition. Record documents of the building construction are not available but according to Jim Clouse, the soils are not active and other similar buildings on campus utilize shallow spread footing foundations, and it is reasonable to assume this building would be the same.

Mechanical, Plumbing and Electrical Observations

Space heating for Fletcher Hall is provided by two pipe-wall mounted radiant heaters. However, the building is, for the most part, not air conditioned. Window unit evaporative coolers (one per floor) have been recently installed at the ends of the corridors to increase air circulation in corridors, but ventilation in the dorm rooms and common areas is poor. Of the exhaust fans on bathrooms and common areas observed, several did not appear functional.

Adding air conditioning as part of a renovation of the building is possible but the space above the existing suspended ceilings is minimal for routing ductwork and hydronic piping. There is a 4-inch chilled water stub-up located near the building that can be used for a future chilled water connection and there is space available to house future HVAC systems.

The electrical distribution switchgear was manufactured by FPE and is nearing expected end of life. Original manufacturer parts for maintenance and repairs are no longer available for FPE equipment. General purpose extension cords have been utilized as permanent conductors for the evaporative coolers in the corridor windows.

As noted previously the plumbing fixtures appear to be original and should be replaced with low-flow, water conserving fixtures. Shower tubs are showing wear through to the base metal and custodial mop sinks are worn and should be replaced. The condition of piping within the walls of the building could not be observed but are understood to be serviceable.

The building is equipped with a fire alarm system with smoke and heat detectors but does not have a fire sprinkler system. Upgrading the fire alarm and adding fire protection should be part of any significant renovation of the building.

Considerations and Options for Expansion

SRSU has seen an increased demand for student housing exceeding current capacity. Therefore, as part of this assessment of Fletcher Hall, FNI was asked to provide our opinion on the possibility of expanding, replacing or repurposing the building. The following is a summary of the options considered and the conclusions reached.

Replace Fletcher Hall on Existing Site (Not Recommended)

Replacing the building with new student housing on the same site is a possibility, but also the most expensive and time consuming. This option would require demolition of Fletcher Hall and building a new facility large enough to replace the existing 110 beds plus adding an additional 80 to 100 beds to meet current demand. The median price of new dormitory buildings considered to be a modern equivalent to Fletcher Hall is currently around \$45,000 per bed; a new 200-bed dormitory can be expected to cost around \$9 million. Demolition and construction time would typically run about 18 months, but could be shortened if a fast track method of design and construction is possible. Another factor to consider in the cost of replacing Fletcher Hall on the same site is the expense of placing 110 students in hotels during construction.

Add a Fourth Floor to Fletcher Hall (Not Economically Feasible)

Expanding the facility by adding another floor was considered, but this building is not a good candidate for vertical expansion. As mentioned previously, record drawings are not available but given the roof structure observed, it is not likely that the original design allowed for future vertical expansion. It's anticipated that the floor beams, columns and foundations are probably not adequate for an additional floor. The roof framing is not suitable for use as a floor and would require complete removal and replacement.

Repurpose Fletcher Hall and Building New Housing (Not Recommended)

Another option considered was building new student housing elsewhere on campus and renovating Fletcher Hall to serve a purpose other than housing. This has the advantage of not displacing the Fletcher Hall occupants while the facility is built as well as allowing much greater flexibility in the housing design. However, if Fletcher Hall were to be adapted for other uses, the new student housing facility would have to be large enough to replace the lost beds at Fletcher Hall plus meet the forecasted demand. Additionally, the main difficulty in repurposing the use of the structure is the structure itself. Since the walls between dorm rooms are load bearing elements, they have to remain in place. Relocating the load bearing walls or widening the corridor is not practical. The dorm rooms are too large for typical office space and too small for classroom purposes.

Renovate Fletcher Hall and Add a New Wing (Recommended)

It is the opinion of FNI that the most viable option for improving and adding student housing is a major renovation to Fletcher Hall plus adding a new wing of housing to the facility for several reasons:

1. Renovation and reuse of existing buildings is usually the most economically and environmentally sustainable design solution.
2. The structure, walls, and floors appear to be sound and can be expected to last for many more years.
3. The size and configuration of the dorm rooms (two-bed rooms sharing a bathroom) are still comparable with other student housing projects being built today.
4. Its proximity to the campus thermal loop and existing connection point should allow for upgrading the heating, cooling and ventilation.
5. Adding an elevator in the existing structure would be expensive but appears reasonable, and other upgrades for meeting today's ADA accessibility requirements for housing are straightforward and achievable.
6. Although little can be done to improve the thermal properties of the exterior walls, replacing the existing windows with insulated glass windows and frames would greatly improve the comfort of level in the dorm rooms.

This solution would best be carried out in two phases to maximize the number of beds available at Fletcher Hall during the process. The first phase should involve the design and construction of the new wing. Several configurations are possible, but it appears that adding a new two-story wing at the north end of the building as shown in the attached concept plans has several advantages, including keeping the existing Hall functional during construction.



Typical room - Fletcher Hall

Additionally, this wing would help define outdoor student gathering spaces as conceived by the master plan recommendations (see new addition floor plans on page 47).

As our concept plan shows, it is recommended that the sloping site allows the new wing to connect to the second and third floors of Fletcher Hall at the north end of the building where the sloping site will allow an entry to the new wing on the north side. This approach will change the “L” shaped plan to a “U” shape, allowing all of the existing dorm rooms to remain and creates an interior courtyard space for the residence. Additionally, a new building entry could be provided in the new wing. As conceived, the new wing would add a total of 70 new beds at an approximate cost of \$2.4 million. Some work within the existing building would have to take place in support of the new wing, primarily to support the heating, cooling, plumbing, and electrical infrastructure. That work can be summarized as follows:

- Provide new 3-inch chilled water main line from existing 4-inch underground chilled water loop near south end of the building
- Provide new high-efficiency boiler and pumping system in basement mechanical room
- Route new heating water piping to new addition and run it above the existing corridor ceiling to serve the new wing; however, there is very little room above the ceiling and it may need to be lowered
- Upsize existing natural gas piping to building to accommodate new boiler system
- Upsize existing domestic water and sanitary sewer piping serving Fletcher Hall to accommodate new addition
- Provide new domestic water heater for the addition
- Coordinate the new electrical demand with AEP; AEP may be required to upgrade utility owned electric delivery equipment
- Replace existing FPE switchgear with new switchgear

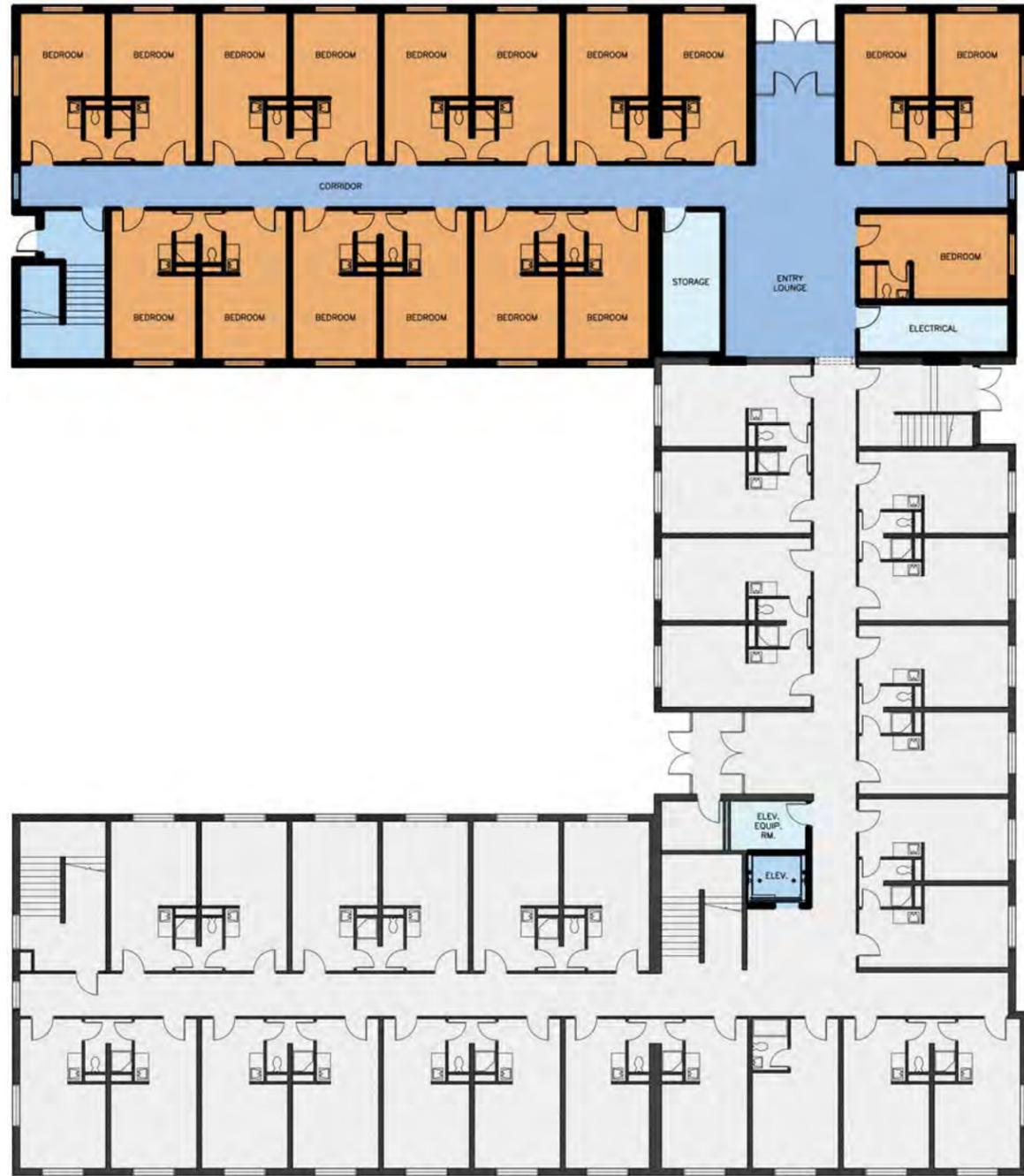
Phase 2 would be the renovation and modernization of the existing building upon completion and occupancy of the new wing. Major aspects of the renovation would consist of:

- Replacement of the existing roof with an insulated, reflective roof system
- Replacement of all exterior doors and windows with insulated systems
- Replacement of the exterior building expansion joint cover
- Installation of a passenger elevator in a location that can serve all three floors
- Bring all ramp and stair handrails and guardrails into compliance with current codes
- Replacement of all dorm room cabinetry and millwork
- Remove and replace the wall-mounted radiant heaters and associate piping with new floor-mounted hydronic unit ventilators with outside air louvers for ventilation

- Replace all exhaust fans in bathrooms and common areas
- Upgrade laundry room equipment and exhaust fans
- Connect new 4-inch chilled water piping to existing 4-inch underground chilled water loop; route new chilled water piping above ceiling to serve new unit ventilators
- Provide new heating water piping from phase I boiler system and route it above ceiling to serve new unit ventilators
- Upgrade existing plumbing fixtures to low flow types

In today's construction market, the estimated cost to renovate the 27,200 square foot building would be roughly \$130 per-square-foot, or about \$3.53 million. Together, with the cost of the proposed addition, total construction cost would be approximately \$7.9 million. In conclusion, the serviceability of Fletcher Hall plus the available area on its north side for a new 70-bed wing makes renovating and adding to the building the most economically viable option for meeting the current and short-term forecasted demand for student housing.

Proposed Fletcher Hall Addition



First Floor - 7,021 GSF
34 new beds



Second Floor - 7,098 GSF
36 new beds

Total Proposed Addition - 14,119 GSF (70 new beds)

- Legend**
- New Bedrooms
 - Circulation
 - Vertical Circulation
 - Support Spaces

Recommendations Overview

The following section describes the recommendations of the master plan. This section begins with functional and utilization improvements. These recommendations focus on interior renovations and department consolidations that help better utilize existing teaching spaces across schools.

The master plan concept maps present the overall visual and physical improvements for SRSU recommended over the next decade. These concepts display recommendations for the main campus and Turner RAS Center.

A project identifier map outlines various physical improvements by location. This is followed by detailed project descriptions to explain the size, phases, and/or landscape recommendations by logical capital project size. Toward the end of this section, general sustainability and utility recommendations are outlined. Additional miscellaneous recommendations are also listed here.

While these projects are not listed in any particular order, a phasing plan and cost estimates can be referenced at the close of this section to help prioritize projects as funding becomes available.



RECOMMENDATIONS

Functional and Utilization Improvements

The comprehensive analysis performed in Section 2 was key to developing the following functional and utilization improvements. The bullet points of these improvements are listed below:

Reconfigure Library

- Expand Archives into Adjacent Area
- Create 24-Hour Study Area
- Incorporate Coffee/Cyber Cafe
- Incorporate Flexible Work Tables
- Incorporate Flexible/Movable Book Shelves
- Model shows future space need, however, trends suggest existing space may be adequate

Morelock

- Move Arts & Sciences to Warnock
 - To Accommodate Nursing Growth
 - To Accommodate Criminal Justice Growth
 - To Accommodate Education Growth
- Renovate Marshall Auditorium

Lawrence Hall

- Move Professional Studies to Morelock
 - To Consolidate Professional Studies
 - To Reclaim Psych Lab
 - To Provide Office Space for Lab Faculty
 - To Allow for Arts & Sciences Growth
- Divide LH 200 into Two Rooms
 - To Relieve Pressure from LH 201
- Utilize LH 300 and LH 309
 - To Relieve Pressure from ARC 204 and MAB 302

Francois Fine Arts Building

- Improve Utilization
 - Better Utilize FAB 108
 - Better Utilize FAB 201
 - To Accommodate Studio Needs
- Re-Purpose T/A Offices and Storage
 - For Private Instrument Lessons
- Upgrade Finishes
- Incorporate Sound Insulation

Warnock Science Building

- Improve Utilization
 - Better Utilize WAR 203
- Renovate Planetarium
 - For Dual Purpose or Classroom

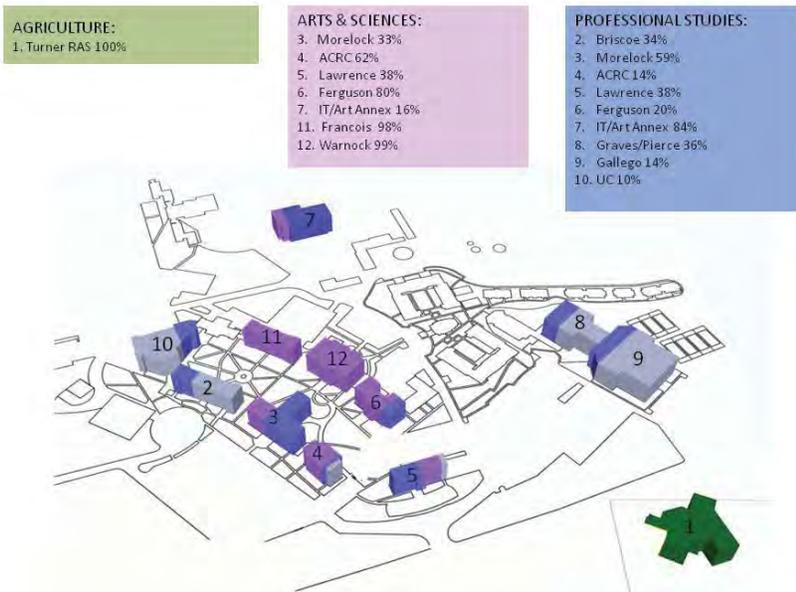
Ferguson Hall

- Improve Utilization
- Reconfigure/Expand Counseling & Accessibility Services
 - Create Group Counseling Room
 - Create Counselor Office
 - Separate Waiting Area

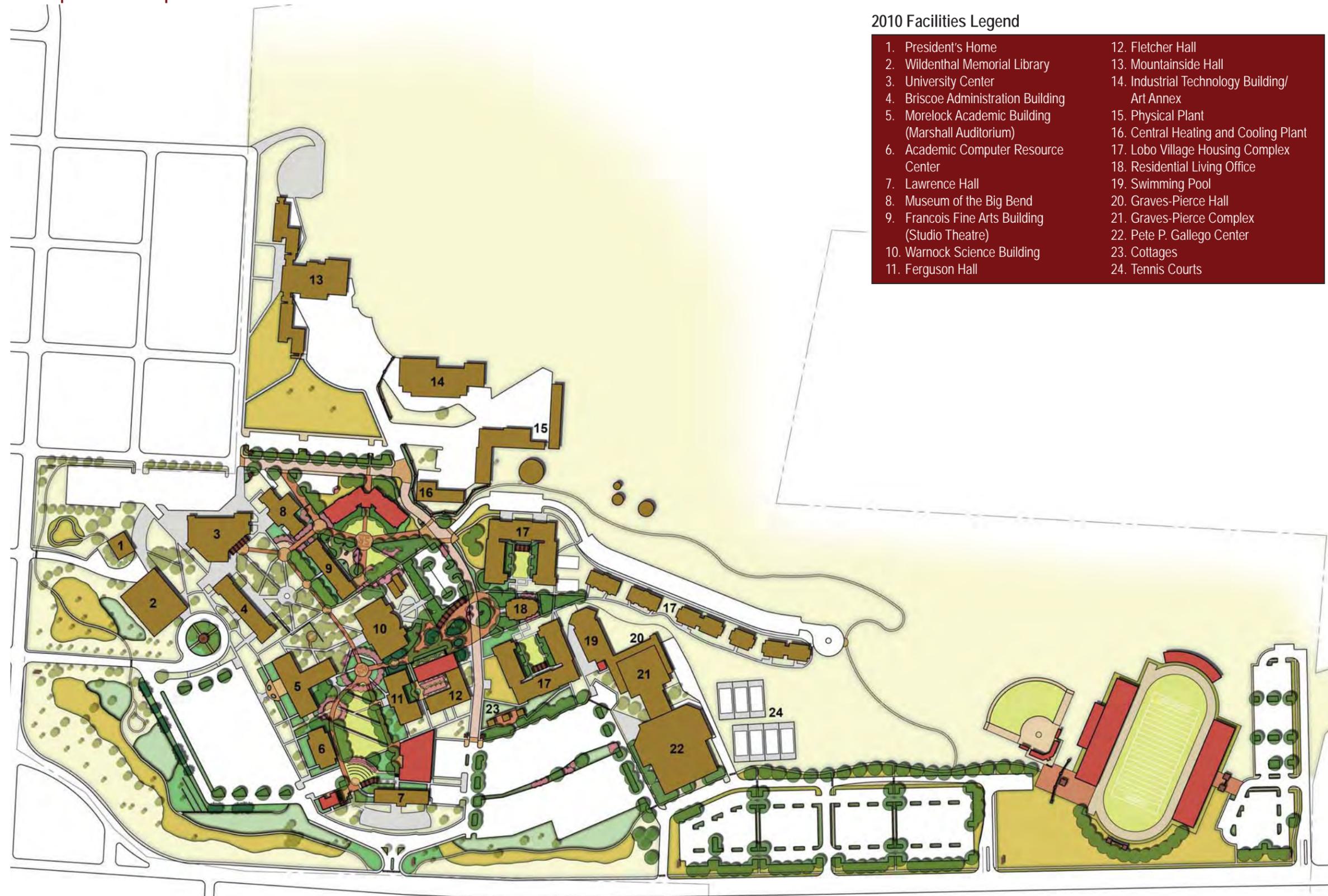
Build New Observatory

- New Space in Location with Appropriate Lighting Attributes

The following diagram is a snapshot of proposed functional and utilization improvements.

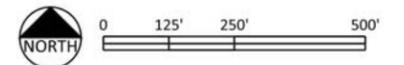


Concept Plan - Campus Master Plan



2010 Facilities Legend

- | | |
|--|--|
| 1. President's Home | 12. Fletcher Hall |
| 2. Wildenthal Memorial Library | 13. Mountainside Hall |
| 3. University Center | 14. Industrial Technology Building/
Art Annex |
| 4. Briscoe Administration Building | 15. Physical Plant |
| 5. Morelock Academic Building
(Marshall Auditorium) | 16. Central Heating and Cooling Plant |
| 6. Academic Computer Resource
Center | 17. Lobo Village Housing Complex |
| 7. Lawrence Hall | 18. Residential Living Office |
| 8. Museum of the Big Bend | 19. Swimming Pool |
| 9. Francois Fine Arts Building
(Studio Theatre) | 20. Graves-Pierce Hall |
| 10. Warnock Science Building | 21. Graves-Pierce Complex |
| 11. Ferguson Hall | 22. Pete P. Gallego Center |
| | 23. Cottages |
| | 24. Tennis Courts |



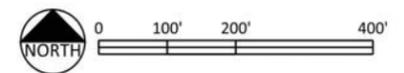
Concept Plan - Main Campus/Jackson Field



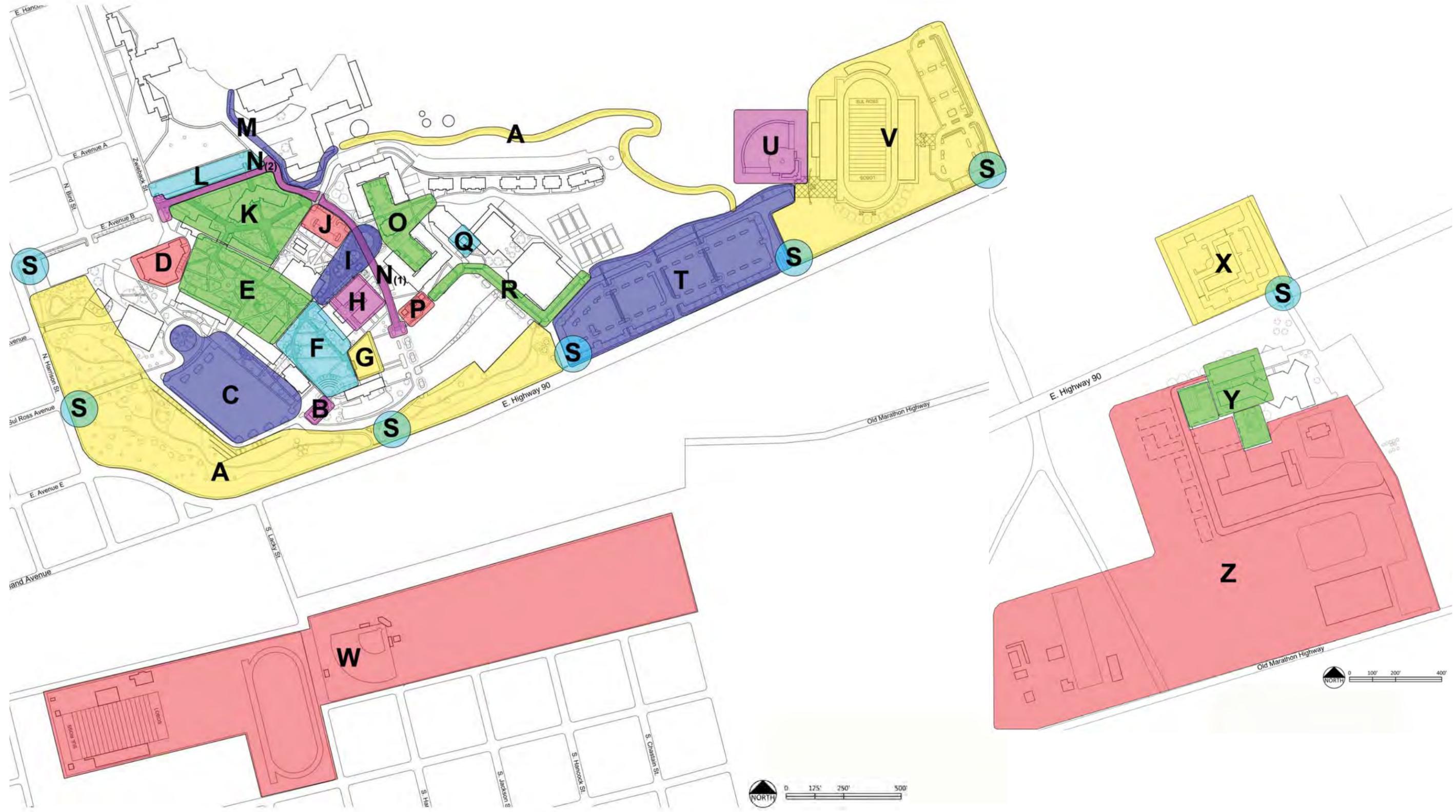


2010 Facilities Legend

- 1. Ranch Foreman's Residence
- 2. Embryo Transfer Lab
- 3. Feed Barn
- 4. Hay Barn
- 5. Feed Lot
- 6. Equine Science Center
- 7. Rodeo Arena
- 8. Horse Science Facility
- 9. Animal Husbandry Barn
- 10. Range Animal Science Center
- 11. Experimental Vineyard
- 12. Biology Greenhouse



Project Identifier Map



Project Descriptions

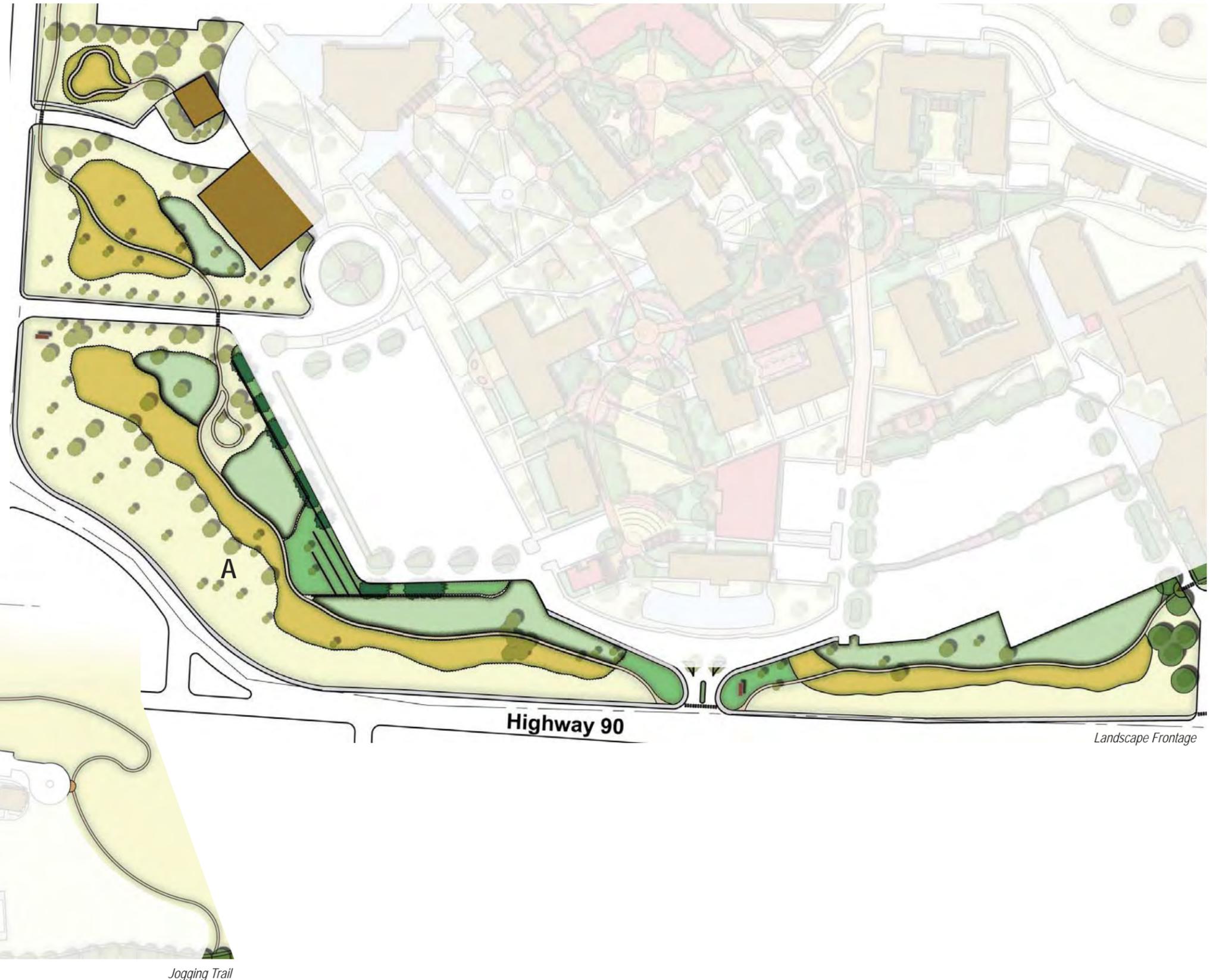
The master plan recognizes that the phasing of development is critical to the immediate and long-term success of SRSU. The timeframe of each project is difficult to determine and is subject to change since the implementation of individual projects is influenced by a number of factors such as funding, competing priorities and other unforeseen issues. Public/private partnerships may be available for projects H, K, U and V.

The recommended projects are flexible and can be developed in earlier or later phases if University priorities change. The following master plan projects are not listed in any particular order. Refer to page 81 for suggested phasing plan.

Project A - Landscape Frontage and Jogging Trail

The landscape frontage presents an opportunity to dramatically reduce the use of water and maintenance resources while also improving the physical connection between the campus and surrounding landscape. This project will modify the perimeter campus lawn, removing approximately half of the irrigated Bermuda grass and replacing it with native grassland and desert shrubs. The Bermuda grass is preserved primarily along the perimeter of the campus to maintain a manicured edge. Where water flows most heavily off the parking lot, stone terraces should be constructed to slow and disperse storm water as it exits the site. The steer sculpture currently located in the frontage should be moved to the RAS facility and may be replaced with a Lobo sculpture.

This project also includes a campus perimeter exercise trail that would pass through the frontage, allowing students, as well as local residents, to exercise while interacting with and experiencing the new landscape zones. The trail should be extended around the entire campus perimeter, sharing space with multi-use sidewalks where there is not sufficient space for a dedicated exercise trail. Trail markings including mileage markers and directional markers should be provided for simple navigation.



Project A (cont.) - Landscape Frontage Visualization



Landscape Frontage - before



Landscape Frontage - after

Project B - New University Visitor Center

Project B proposes a new University Visitor Center to provide campus visitors and prospective students with an easy-to-find gathering place for campus tours, University information and a variety of helpful resources when arriving on campus. The visitor center is approximately 2,000 GSF to include a general information area, staff offices and conference room. This facility is depicted to be located southwest of Lawrence Hall near the campus' main entrance. This location allows it to be seen as visitors enter the campus off E. Highway 90, as well as the west entrance on E. Sul Ross Avenue.



New University Visitor Center

Project C - Southwest Campus Landscape Improvements

The Southwest façade of the campus is the most visible and iconic view of SRSU. Landscape islands are proposed at either end of the large and heavily used parking lot on this side of the campus to soften the parking field. New plantings in front of the Morelock and ACRC buildings should improve the image of this edge of campus. A small plaza is proposed in front of Morelock as a gathering space before and after events in the Marshall Auditorium. The median in the middle of the roundabout in front of the Briscoe Building should be planted as a landscape garden with a sculptural element in the middle.



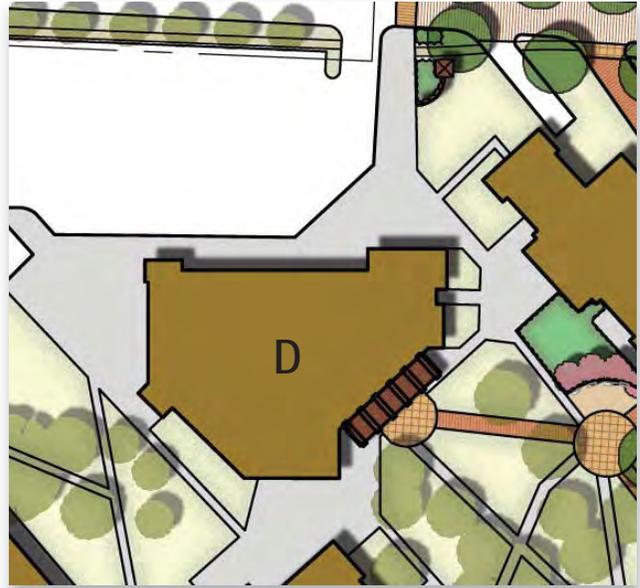
Southwest Campus Landscape Improvements

Project D - Interior Renovation of University Center

Project D proposes a renovation of the interior of the University Center, particularly the first floor dining area to include student gathering spaces in a comfortable environment. Currently, the building is in good condition and has tremendous opportunity to be the centralized interior gathering spot for students. The upstairs meeting spaces are well designed and highly utilized. However, the downstairs cafeteria is sterile and does not promote socializing other than during the hours for food service. The current layout does not allow access to seating without a meal plan. Minimal tables outside of the secure area provide limited social activity areas. A warmer, more inviting area of casual seating next to the coffee shop area should be considered. This could be accomplished by moving the cashier closer to the serving area. A flexible floor plan concept such as those used for hotel ballrooms may need to be adopted for the reconfiguration of different uses on the first floor. A flexible floor plan could provide student entertainment space while providing dining at other times.

Additionally, an extension of the dining area to outdoor tables toward the student quad should be incorporated with Project E. Shade structures in front of the building in the existing open plaza would allow additional functional gathering/ study areas. The only true area for student play in the University Center is the game room. This room is highly utilized and should be expanded and well connected to the student lounge areas.

The Student Career Services and Testing area (suite 211) is also undersized. With an interior renovation, this area should be expanded to include interview rooms, tutoring center, private areas for health screening and coordinator office. An open PC bank (areas for computer access) along the wall of the University Center is recommended. As student enrollment increases, functions of the University Center will likely need to increase another 15,000 GSF. This expansion could be an addition to the current facility or some satellite services within other buildings.



Interior Renovation of University Center



Existing Game Room - University Center

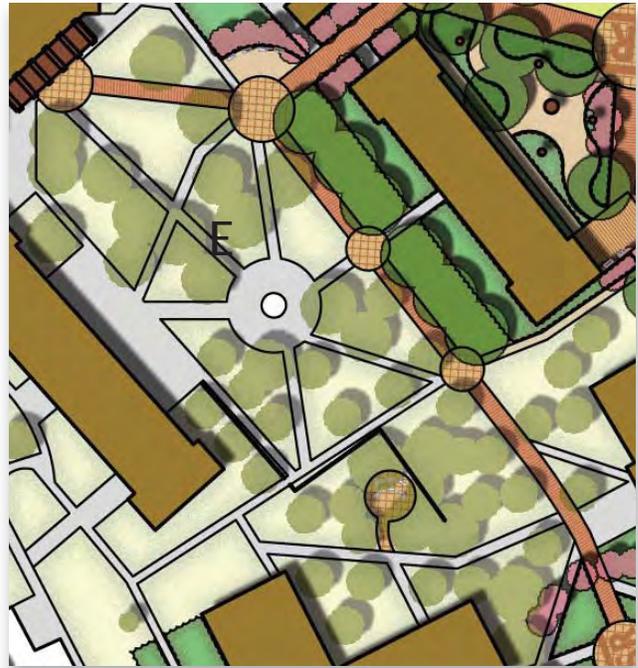
Project E - North Quadrangle Improvements

The North Quadrangle is one of the higher quality existing outdoor spaces on campus. While much of the structure of the quadrangle will remain intact, including the central fountain and tree canopy, wider walks, nodes at walkway intersections and improved quality surfacing should help raise the level of this outdoor space. The primary north-south walkway should be widened to 10 feet (refer to Landscape Standards in Appendix). This walkway will serve as the primary north-south artery for the campus. Major intersections will be marked by seating nodes, which allow casual sitting, study and conversation. These spaces will be embellished with enhanced paving and plantings that support the circle concept, and may include local boulders or stonework. New tree plantings along the northeast side of the walkway should help to formalize the pathway.



Example of Concrete Paver Walkway with Node at Intersection

New plantings in front of the Francois Fine Arts Building will replace deteriorated old plantings and turf. A new native garden is included in front of the Museum of the Big Bend. Heavy pruning of existing trees and selective removal is recommended to facilitate the further establishment of turf grass in the Quadrangle.



North Quadrangle - Main Campus



Example of Concrete Paver Walkway with Node at Building Entrance

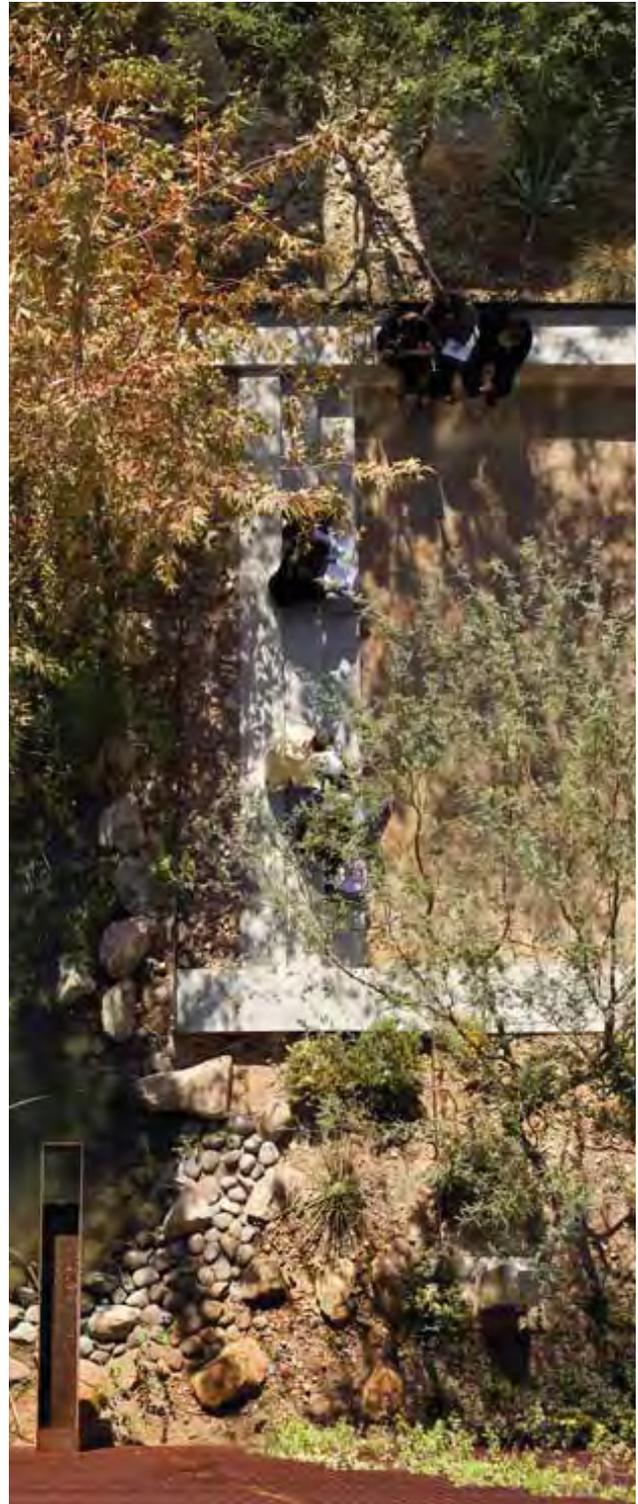
A new outdoor classroom is proposed at the south corner of the quadrangle behind the Morelock Building. This classroom will be tucked out of the way below an existing retaining wall and well shaded by existing trees for comfort during the summer. The outdoor classroom should consist of a small paved area with benches or seatwalls oriented around a single speaker and should have a capacity of approximately 30. Plantings around the classroom and additional educational features such as a geology wall are encouraged.



Outdoor classroom rustic example



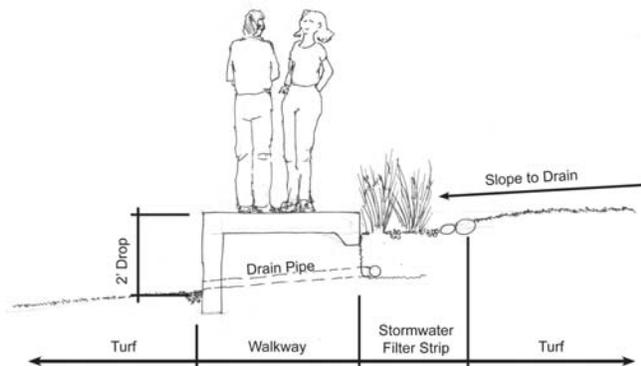
Geology Wall example



Outdoor classroom formal example (looking down)

Project F - South Quadrangle

The renewed South Quadrangle is conceived as a multi-purpose open space with a traditional perimeter of academic buildings. Surrounded by Lawrence, ACRC, Morelock, Warnock Science, Ferguson, and the proposed new academic classroom building, the South Quadrangle should become coequal with the North Quadrangle in open space quality, landscape treatment, pedestrian use and connection to the balance of campus. It can also serve the dual role as storm water filter and rainwater detention area. The slope of the quadrangle is from northeast to southwest, and the new landscape plan calls for terraces with diagonal paths crossing the slope at perpendicular angles. Each cross walkway should have a filtration bed of fibrous native grasses parallel to it on the uphill side. These grass plantings should detain storm water and act as pollution prevention devices.



Section of Diagonal Storm Water Terraces

The space should also have a widened main walkway on the eastern edge that extends to the North Quadrangle and continues the primary north-south walkway. Shade trees are shown to flank the South Quadrangle in a traditional campus design and the open space in the central part of the quad consists of lawn or native plantings depending on future water conservation goals.

At the northeast corner of the quad, a major intersection of the South Promenade and the main walkway occurs. This node should be an important landscape space, which serves as a seating space as well as symbolic outdoor meeting room. Landscape plantings emphasize the circular form. This node could serve as an excellent site for a major sculptural piece.

Access from the parking lot south of ACRC to the loading dock of Morelock should be preserved. This dual-purpose walkway and driveway serves as a fire lane and service drive to inner campus buildings and Morelock's Marshall Theatre.

At the southwest corner of the quadrangle, a large outdoor classroom/amphitheater is depicted at the same elevation as the new Visitor Center west of Lawrence Hall, with successive layers terracing up to the quadrangle elevation. This space can serve as



South Quadrangle - Main Campus



Amphitheater/outdoor classroom

a sunny alternative to the shady outdoor classroom located in the North Quadrangle as well as a performance space and an orientation point for prospective students and their families to start campus visits. This space can accommodate at least 100 people and should be designed such that overflow crowds for a performance could extend onto the Quadrangle and still have visibility to the stage.

Project G - New Academic Building

SRSU currently has sufficient academic space to accommodate its faculty, staff and students. However, by the targeted 2018 enrollment projections, it is anticipated that the University will need an additional 20,000 ASF/ 30,770 GSF of academic space. The master plan depicts a new two-story academic building totaling 30,000 square feet (approximately 15,000 square foot footprint). This building should include classrooms and labs in a north-south orientation between Lawrence Hall and Ferguson Hall. This site rounds out the academic core and helps define the south quadrangle. It should be site planned to be well connected to the student walkways shown in Project F.



New Academic Building at 30,770 GSF

Project H - Fletcher Hall Addition and Renovation

Fletcher Hall, currently located northeast of Ferguson Hall and southeast of Warnock Science Building, is one of the oldest student housing facilities on campus. Through a separate facility assessment, the planning team determined that the most viable option is to renovate the existing facility and construct a new wing to Fletcher Hall to be completed in two phases (see page 47).

Phase 1 would include the construction of a new 14,119 GSF, 70-bed wing to the existing Fletcher Hall. This addition would mirror the first and second floors of the existing facility. The new façade of the addition will face the proposed South Promenade, and become integrated into the pedestrian way and open space that will be used to better connect Lobo Village to the academic core.

Phase 2 of this project will be to renovate the existing portion of Fletcher Hall to match upgraded improvements completed in Phase 1 including modern amenities and utility upgrades. (See Fletcher Hall facility assessment on pages 43-47 for a more detailed description of renovations.)



Fletcher Hall Addition and Renovation



Rear Entrance - Fletcher Hall

Project I - South Promenade

The South Promenade will connect the Lobo Village and proposed addition to Fletcher Hall with the main campus via an integral pedestrian way/open space element. The present walkway is poorly located and causes the majority of students to walk across the parking lot that currently isolates Lobo Village from the academic core. Fletcher Hall will architecturally front on the promenade and will include a small space garden court adjacent to the Promenade. A small cafe or outdoor window service concession could allow snacks, beverage and limited food service.

Proposed paving will be a combination of colored concrete pavers and/or colored concrete. A curved arbor along the north edge of the promenade will provide casual seating opportunities and screen the parking lot on the north. New plantings of shade trees, particularly of the conifer woodland biome, should provide places for shady seating. Seatwalls serving as raised planters mix with the Promenade paving. A large, circular form at the east end of the Promenade will interface with the Lobo complex, with new lobo sculptures or other artistic features flanking the roadway in the middle of the circle. New campus light fixtures will allow appropriate security lighting between the two major zones of campus.

The grade change between the two campus zones will be accomplished via a continuous, 5 percent max slope, avoiding the need



South Promenade

for major steps and ramps. The existing educational gardens at the Warnock Science building will be incorporated into the Promenade. At the campus end of the Promenade, the walkway intersects with the newly widened main quadrangle walkway, creating a circular outdoor space/seating area. Existing trees should be preserved and utilities such as the electric transformer located north of Fletcher Hall will need to be relocated or adjusted to accommodate the new improvements.



Visualization of Proposed South Promenade

Project J - Parking Lot Reconfiguration

The existing parking lot between the North and South Promenades will be reconfigured to have a single point of entry near the middle of the lot and to allow a small addition of landscape space on the South Promenade side. The single entry point should reduce pedestrian/vehicular conflicts at the crossing for the North Promenade. The parking lot reconfiguration will also add four spaces, bringing this lot's total to 56 spaces.

Project K - New Student Dormitory and North Promenade

A new 30,000 GSF two-story student housing facility is recommended to be located just east of the Big Bend Museum. This residence hall, as currently proposed, will accommodate 104 beds, with an option to become a three-story building if needed to accommodate unexpected enrollment growth beyond target goal. This area also includes a 25-space parking lot just west of the new student housing. Exterior finishes should be similar or match the existing Lobo Village residences. The design recommends a student lounge area in the center of the building with access from both the north and south. North access should be well connected and identifiable from Avenue B and the proposed parking lot in Project L. The southern access of the dorm should open to a plaza (North Promenade) as depicted on the master plan.

In the new landscape space framed by the student housing, the North Promenade should serve as the primary pedestrian connection between Lobo Village and the University Center. The North Promenade allows students a safer, more clearly defined path from the dorm complex to the University Center. Beginning at the Lobo Village side of the campus inner drive, an improved pedestrian crosswalk with traffic calming should provide safer passage to the North Promenade. The new pavement will be designed as a major 24-foot-wide pedestrian walkway. The path extends across the former parking lot and is flanked by lawn on the dorm sides and landscape plantings and desert gardens on the south or academic sides, and lined by a formal row of trees. An emblem "SR" will be the centerpiece of the walkway axis in the center of the promenade. Bisecting the Promenade is a secondary walkway that passes through the student housing to allow direct access to the new parking north of the loop road. The Promenade will also allow restricted vehicular access to the back of the Francois Fine Arts Buildings for stage set delivery and drop-off for the mobility impaired to the Studio Theater. It is envisioned that this vehicular route will be designed with colored concrete and decorative pavers to allow access but be closed off with bollards outside of event activity.



Parking Lot Reconfiguration



Pedestrian/Vehicular Promenade

Behind the Francois Fine Arts Building, a small new plaza is depicted to provide a gathering space before and after performances in the theatre, as well as vehicular drop-off. A small Fine Arts Garden can provide siting for sculptural pieces, as well as a comfortable space for music students to practice outdoors.



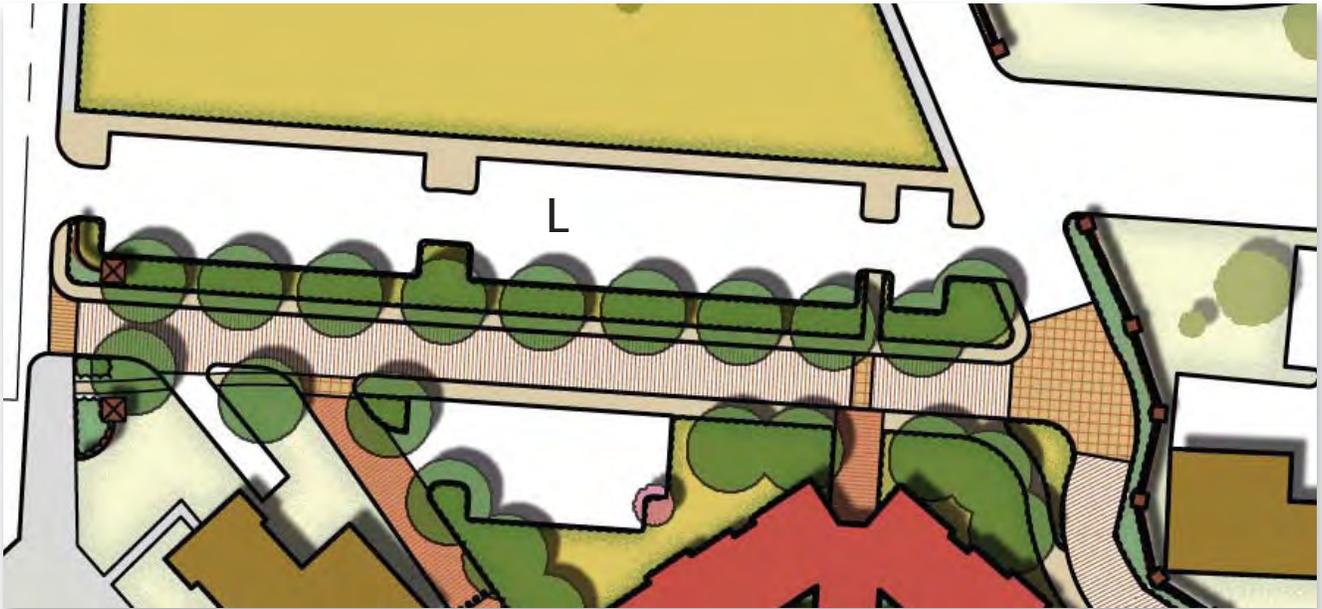
New Student Dormitory and North Promenade



Visualization of Proposed North Promenade

Project L - New Parking

Project L is an expansion of a parking lot to replace the parking displaced in Project K of the new dormitory. This parking will accommodate residents of the new dorm, as well as provide overflow parking for the Big Bend Museum. This parking area provides approximately 86 spaces, as shown. This lot could increase in number of spaces if designed in a stair-stepped manner up the hill. There are significant grade differences in the northeast corner of the parking lot so exact location of the parking entrance will be determined at the detailed site plan level when topography maps are available. This lot should be well screened and landscaped along Avenue B. Clearly delineated crosswalks should be required.



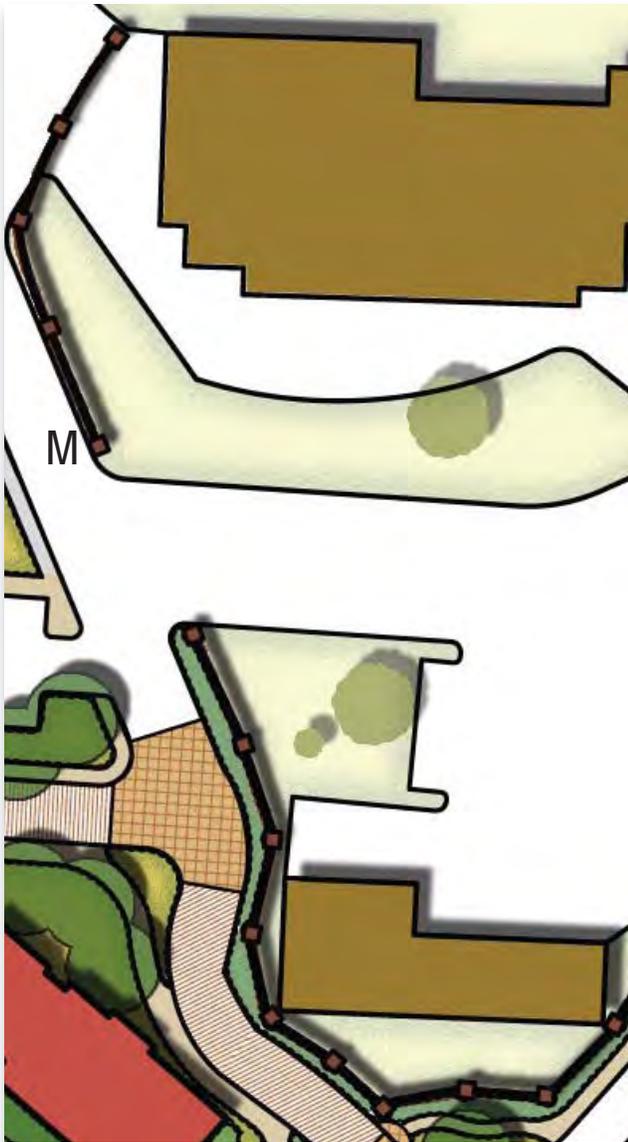
New parking



New campus gateway looking east on East Avenue B

Project M - Screen Wall/Landscape along Physical Plant

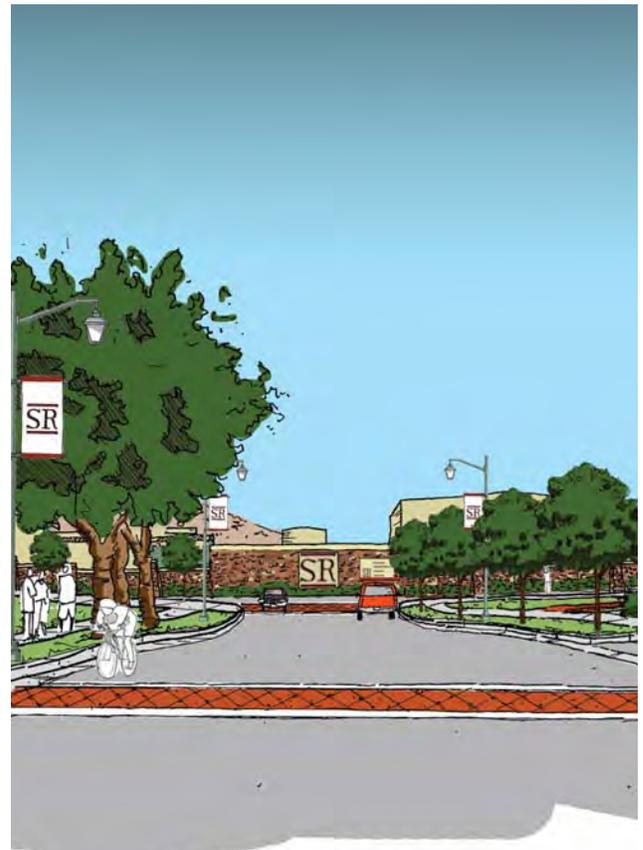
A new masonry wall and/or landscape treatment is recommended along the front of the Physical Plant to screen views from the main campus. This wall should be extended across the existing access point nearest the loop road. The wall should be constructed of rock or brick to match the campus architecture. The wall on axis with Avenue B provides a great opportunity to include the SRSU logo and directional signage to serve as a visual terminus for that roadway. Additionally, the masonry screen wall could be intermittent with dense landscape screening or incorporate a building mural relating to the campus to serve both a functional, yet aesthetic purpose. In the future, it is recommended the Physical Plant buildings be painted a tan color to blend more with the natural landscape rather than a stark white color.



Screen Wall/Landscape along Physical Plant



View of Physical Plant



Proposed view of Physical Plant



Project N - Loop Road Modifications

The campus loop road provides important access to most campus facilities including residence halls, the academic core and the physical plant. As such, it carries a significant daily traffic load and can present frequent pedestrian/vehicular conflicts during the day. The master plan provides for calming this drive through several means: 1) Creating portals or gateways at two ends of the inner section of the drive – these portals will signal arrival in the heart of the campus and serve to alert visitors, delivery vehicles, and all traffic to be aware of campus pedestrians. 2) Changing the pavement surface – the plan recommends changing the asphalt paved surface to concrete pavers or some type of concrete overlay, which can be ribbed or roughened to create a sound. This audible driving surface should help to slow traffic. 3) Signage – the plan recommends adding appropriate signage, which can be designed to slow vehicles and alert drivers to the slower speeds required. 4) Articulated crosswalks – at specific locations shown on the plan, crosswalks will be relocated to connect with sidewalks and promenades. The crosswalks should be signaled by a paving change contrasting with the roadway color/surface. The new roadway should also be tree-lined, where possible.

The loop road modifications are recommended for completion in two phases. The first phase begins the modifications just south of Fletcher Hall extending to the intersection just south of the Physical Plant. Phase 2 will continue from the Physical Plant to the intersection of East Avenue B and Zwieback Street. Phase 2 is recommended after Project K is completed.

The new roadway surfacing/traffic calming devices should slow traffic and discourage casual inner campus car use, while still allowing access for emergency vehicles, drop-offs and maintenance purposes.

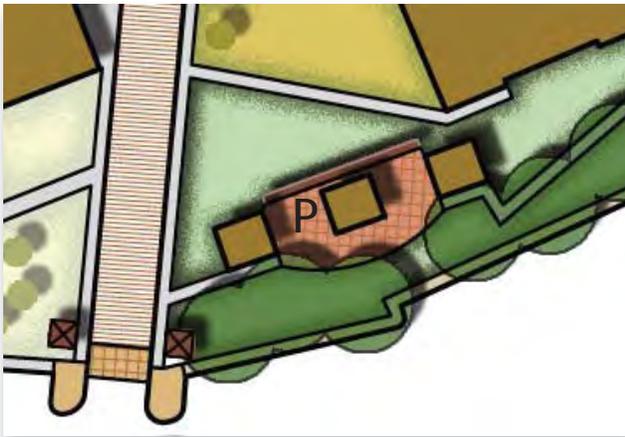
Loop Road Modifications

Project O - Lobo Village Landscape Improvements

Underplanting, poor soil preparation and lack of outdoor amenities have limited the Lobo Village landscape to be a pass-through space that has never achieved its potential to be a back yard for campus residents. The courtyards in the middle of Lobo 1 and 2 present the greatest opportunity to create quality outdoor spaces in this portion of the campus. These courtyards are convenient, enclosed and appropriately scaled, but lack amenities and seating areas to draw students. Each courtyard should be enhanced with new native plantings between the existing sidewalk and the building with small seating areas tucked in. Shade trees along both sides of the courtyard will provide shade and form a symbolic roof. Most importantly, a large shade structure can provide a central gathering space with picnic tables and barbeque pits. In addition, shade trees and additional plantings should be added to the beds around the Residential Living Office.

Project P - Cottage Plaza

The University Cottages once served as housing units for students living on campus. They are seen as historical monuments, which is the reason these cottages should stand out to visitors and campus users. The cottage plaza will incorporate a history wall directly behind the cottages and tie all three cottages together through a unique paving pattern. The limitation of space on this site prevents significant changes, but as alumni membership increases, the University may consider an appropriate location for an alumni center.



Cottage Plaza



Lobo Village Landscape Improvements



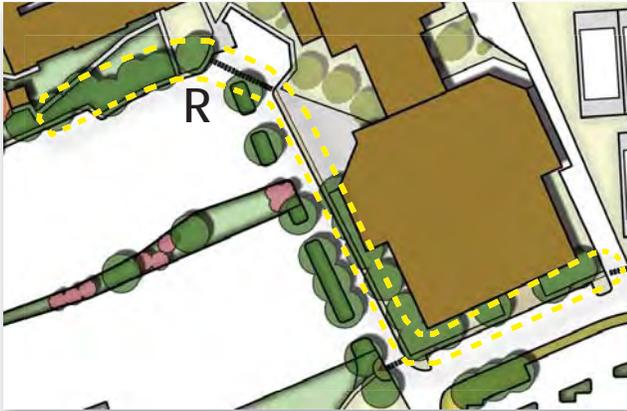
Existing Cottages - Main Campus

Project Q - New Swimming Pool Entry

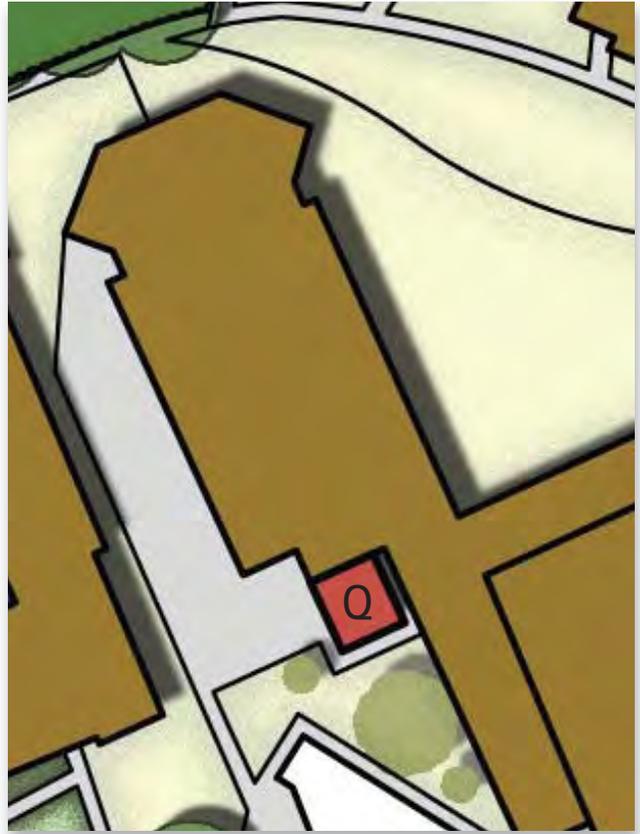
The existing swimming pool connected to the Graves-Pierce Complex can only be entered from the north end. This is not only an inconvenience, but it may prevent some from using the facility because it is hidden from public view. A proposed entry on the south end of the swimming pool will provide easy access to this amenity and safety by allowing this entrance to be in full public view.

Project R - Pedestrian Link to Athletic Complex

To better connect the core campus to the athletic complex, the primary sidewalk should be widened to eight feet and planted with shade trees along the length. Crosswalks should be added at all vehicular crossings. This pathway should further connect Projects T, U and V upon their completion.



Pedestrian Linkage



New Swimming Pool Entry



Inaccessible Swimming Pool Entrance

Project S - New and Modified Entry Signage

Signage is very critical to the identity of a university and helps to navigate visitors and campus users to the correct locations. It is recommended that SRSU modify its existing signage for better identity and wayfinding. Project S consists of entry signage enhancements at multiple locations including the four existing entries and three new entries (shown in Projects T, V and X). Entry enhancements are recommended at the entrance in front of Lawrence Hall off Highway 90 to distinguish it as the "Main Entrance." Additional monument signage, landscaping and a short median are recommended. Furthermore, the statue of the steer should be relocated to the Turner RAS Center and replaced with the school's mascot, the Lobo.

Enhancements to the existing signs include marking each entrance with a name, rather than a number. While the number is functional, it appears sterile and utilitarian. Simple modifications can help set the various campus entries apart while also creating a hierarchy for the types of users most likely to use the entrance.



Existing Entry Signage



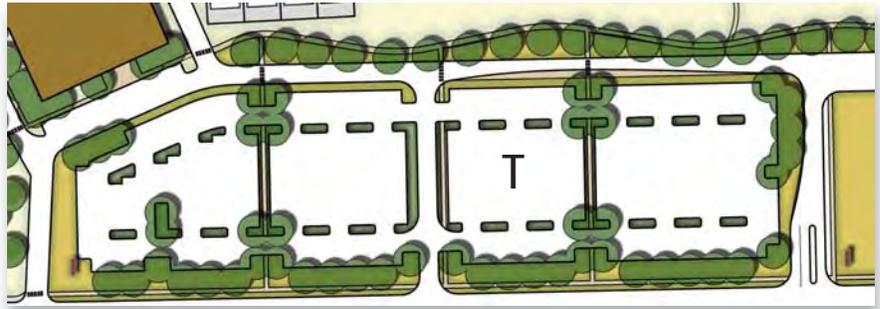
Statue to Be Relocated



Proposed Signage Concept

Project T - New Parking Lots

This project will have two phases at the end of completion. These parking areas will not only serve the new baseball/softball and football stadiums, they will also help to relieve some of the campus parking that will be lost in Projects H, I and K. Phase 1 consists of the western half of the parking area at the time parking is displaced by the new dormitory or Fletcher Hall expansion projects. Phase 1 will add 223 spaces on campus. Phase 2, the eastern half of the parking area, will add 300 spaces and is recommended to be constructed during the construction of the football stadium (Project U).

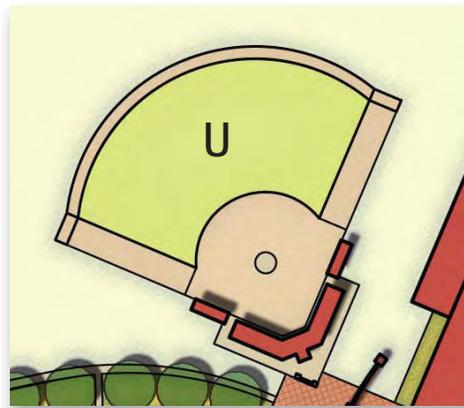


New Parking Lots

Pedestrian sidewalks to the north of these parking lots should help to link the new athletic facilities. The new parking lots will be planted with frequent shade trees and native plantings in the islands. A buffer of native grasses will separate the parking lots from the highway.

Project U - New Baseball/Softball Complex

The lack of a physical and pedestrian connection to the existing softball and baseball fields has created the opportunity for a proposed new baseball/softball complex on the main campus east of the Pete P. Gallego Center. This 500-seat complex will face the mountains giving fans a spectacular view.

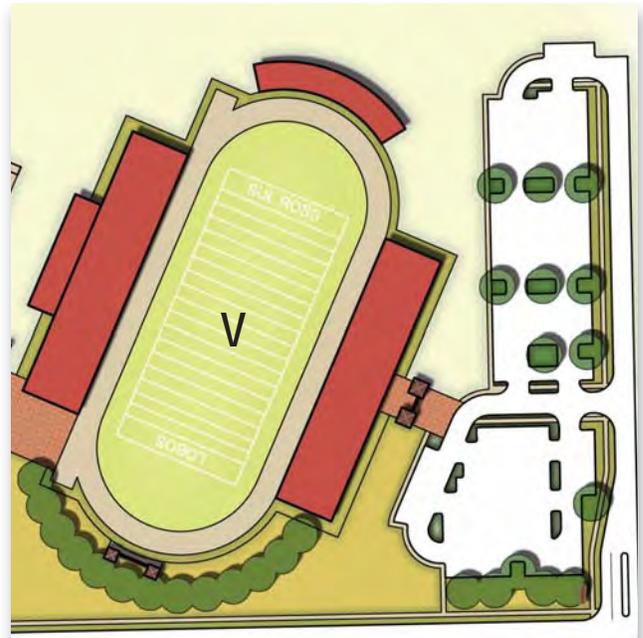


New Baseball/Softball Complex

Project V - New Football Stadium

The existing football stadium faces a couple of issues, including physical and pedestrian connections to the main campus, as well as east-west orientation causing sunlight glare issues during games. The new football stadium will have a 6,500-seat capacity. Topography changes cause the north end zone seating to be constructed partly into the grade change that makes for a great architectural feature. Concessions, home and visitor locker rooms are proposed to be housed in this facility. If needed during the time of construction, this site allows for a 243-space parking lot just east of the stadium providing a new entry drive.

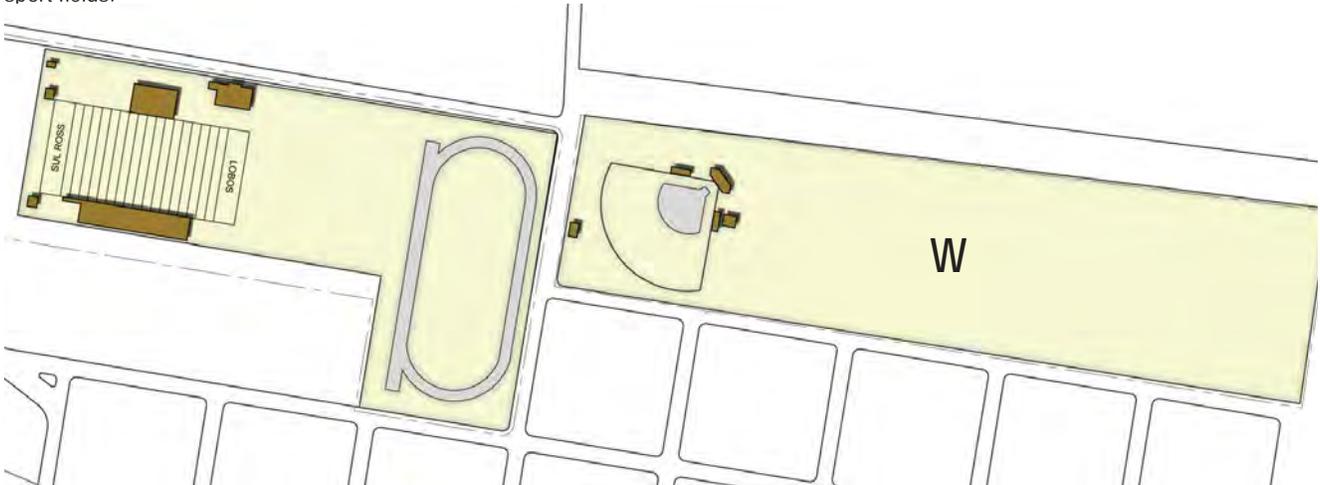
Major plazas on either side of the new stadium serve as gathering spaces before and after games. They should be constructed of concrete pavers with vertical and/or horizontal elements that emphasize school spirit and history. Shade trees should be provided in and around the plazas.



New Football Stadium

Project W - University Intramural Facilities

When the new athletic complex is complete on the main campus, SRSU could then modify the existing Jackson Field and softball field for intramural sports. This would be a minimal effort since these facilities currently exist. The open campus property to the east of the softball field could be developed for soccer and other sport fields.

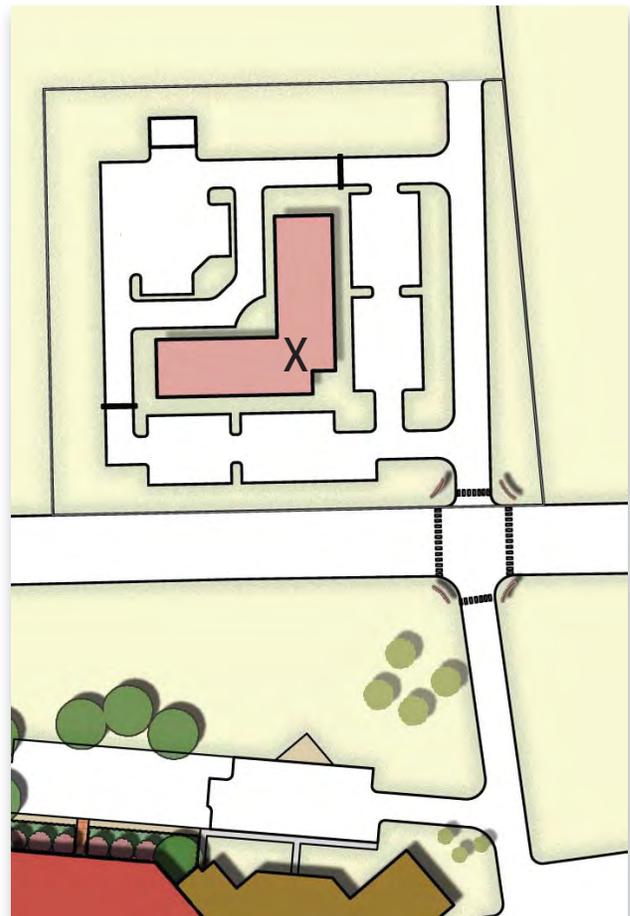


University Intramural Facilities

Project X - Borderlands Research Institute

The Borderlands Research Institute (BRI) will be located on the property of SRSU just north of the Turner RAS Center. This will be one of the first facilities visitors may interact with in Alpine and before arriving to the main campus. This 25,000 GSF facility should house offices, research space and visitor areas.

The landscape for the BRI will include a large outdoor veranda for gathering and social events. The remainder of the landscape should be focused on education and conservation. All plant materials should be native and organized by biome or region, with educational nature trails extending through the site. As the "Gateway to the Trans Pecos," this facility should serve as a primer for visitors on what to expect from and how to enjoy the region's distinct and beautiful landscape.



Borderlands Research Institute

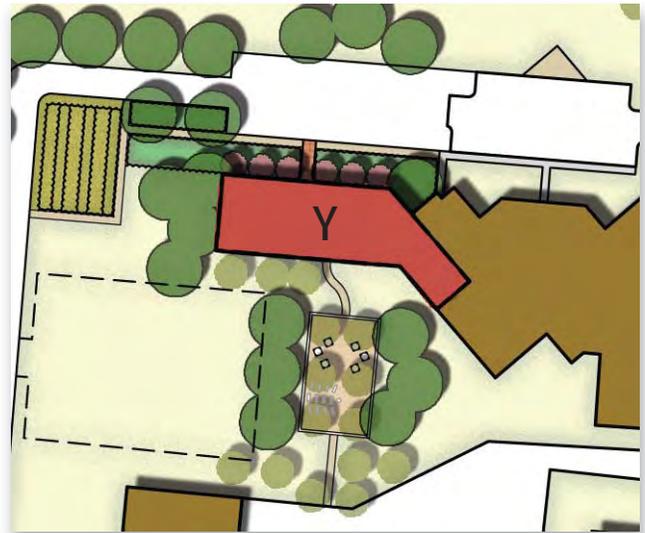
Project Y - Turner RAS Facility Expansion

The Turner RAS facility will need to expand by approximately 2015 to accommodate program growth. This 14,000 GSF expansion will need to accommodate dry and prep labs, as well as sample storage.

A large gravel area nestled into the existing pecan grove is proposed behind the new expansion. Here, an outdoor classroom will provide a classroom space for the outdoor-focused Range and Animal Science programs and a grouping of small picnic tables should provide a more informal gathering and lunch space for RAS students and faculty. A new range grass garden should facilitate grass identification courses. All other new landscaping should be wildscaping, with a great diversity of native plant materials and a focus on those plants that should draw birds, insects and other wildlife to the site.

Project Z - Turner RAS Center Improvements

Range Animal Science is a popular program at SRSU, and the Turner RAS Center has plenty of space available for growth. If needed, there are areas for future building sites to be located west of existing facilities. A future loop road could be constructed that would be to connect newer facilities at that time. Future parking areas could also be accommodated. There are some areas in the project area that may need to be paved for special events. Overall, the Turner RAS Center has potential and space available when needed.



Turner RAS Facility Expansion



Turner RAS Center

Recommendations - Sustainability

SRSU is at an opportune time in its history to undertake the process of developing a sustainability path for the future. As the institution has committed to the development of a ten-year campus master plan, now is an appropriate time to continue the deep thinking and goal setting process that has begun. Sustainability and the “greening” of our choices have become a part of our daily lives and are generally accepted as our permanent new way of thinking.

SRSU is committed to implementing its Master Plan with sustainability as a high priority, recognizing that the stewardship of scarce natural resources and reductions in operating costs that result from the incorporation of sustainable design and construction practices are important goals. The discussion that follows describes some ways in which SRSU may choose to incorporate sustainability principles in the planning, construction and operation of its facilities during the next decade.

Process

Today there are many examples and processes available that illustrate how other institutions of higher education have gone about developing a sustainability path. While no two institutions are identical, there are various elements that are common in most plans.

An important first step for University leadership is to clearly establish the importance and commitment of campus sustainability. The current SRSU leadership has expressed their desire to be a leader in this area not only for the institution, but also for the community and region.

The following recommendations should be considered in order to formalize this commitment and establish a clear process and commitment for the future:

- Create a University “Sustainability Office” and director - most major institutions eventually mature this position to a stand-alone department, but initially could become part of another current position
- Create a Sustainability Committee made up of University students, faculty and staff - this committee will champion, and develop the goals/ plans developed thru the sustainability office
- Develop a University-wide sustainability Vision, Mission, and Environmental Policy

- Develop a Sustainability Master Plan - a good plan creates a framework for the University to take actions to achieve the vision and goals of campus sustainability. This plan should establish specific measurable goals and matrix. Many institutions will focus on fewer broad-range goals, while others will develop a dozen, area-specific initiatives that become the core components of the Sustainability Master Plan. A few of the areas that SRSU may consider for its plan include:
 - Energy efficiency
 - Alternative energy practices
 - Management of greenhouse gas emissions
 - Sustainable land use
 - Water resources
 - Waste management
 - Purchase of sustainable services and goods
 - Sustainable food and dining practices
 - Green building practices

The final plan should be widely published and used as a part of the key decision-making process the University follows. The master plan should be updated on a regular basis.

- Prepare and publish a sustainability report to document the results and progress being made on the Sustainability Master Plan - this report should be published on a regular predetermined basis.
- Consider organizing a student-run sustainability service project
- Support sustainability based education and research across the University



Solar panels (like these pictured above) are helping some universities become sustainable

Capital Planning

Today's challenge in sustainability planning are funding resources that are required in order to implement campus sustainability objectives. A well-developed sustainability master plan will provide the institution with a road map of green options, goals, task and actions. Many sustainability actions will fall within normal maintenance and operations that are typically ongoing. Others may be undertaken as a part of other capital projects such as system upgrades, renovations and new construction projects. The sustainability master plan, together with the overall campus master plan, will allow the institution to prioritize its "green" projects based on capital spending budgets and cost/benefit analysis.

There are various ongoing funding assistance programs available that SRSU should become aware of when planning for sustainable-driven projects. These programs are always changing and vary at the local, state and national levels. Typically, the institutions sustainability office or director would be responsible for keeping updated on such opportunities. Below are a few of the many programs that SRSU might consider on future projects:

Local Utility Based Funding:

- American Electric Power's (AEP) SMART SourceSM Solar PV Program: The SMART SourceSM Program offers financial incentives for the installation of eligible distributed solar energy generating equipment on the premises of customers served by AEP. This program is provided by the utilities as part of their commitment to reduce energy consumption, energy demand and carbon emission. Maximum financial incentive reserved per commercial customer in the year 2010 was \$180,000. Though exact date for 2011 application has not been disclosed by AEP at the time of this report, SRSU should expect this date to be in the beginning of the year 2011. More information can be found at <http://www.txreincen-tives.com/apv/>.
- AEP's Commercial Standard Offer Program: AEP's Commercial Standard Offer Program pays incentives to service providers who install energy efficiency measures in non-residential facilities that are located within AEP's Texas service territories. These facilities must have a maximum demand of 100 kW and must receive their electricity from AEP. Incentives are paid for energy and demand savings and the installed measures must have the potential to reduce peak summer demand by at least 10 kW, except projects that are self sponsored, for which there are no minimum kW. Maximum incentive reserved per commercial customer in the year 2010 was \$26,250. More information can be found at <http://www.aepefficiency.com/cisop/intro/index.htm>.

State Energy Conservation Office (SECO) Grants and Loans:

- LoanSTAR Program: LoanSTAR (Saving Taxes And Resources) program provides finances energy-related cost-reduction retrofits for state, public school district, public college or public university and public hospital facilities. Low interest rate loans are provided to assist those institutions in financing their energy-related cost-reduction efforts. The program revolving loan mechanism allows applicants to repay loans through the stream of energy cost savings realized from the projects. LoanSTAR program recently took applications for loan assistance to fund building energy efficiency and retrofit activities. Maximum award per applicant is \$5,000,000. SRSU has applied for this loan to fund their Campus Infrastructure Project. More information can be found at <http://www.seco.cpa.state.tx.us/lr>.
- Renewable Energy Technology Grants (State Energy Program 2.1): Under the State Energy Program (SEP), the Comptroller of Public Accounts (Comptroller) SECO will provide grant funding to eligible public entities for qualified energy technologies. These grants are competitive and maximum grant awarded per applicant in the year 2010 was \$250,000. More information can be found at <http://www.seco.cpa.state.tx.us/funding/renewable.php>.

U.S. Department of Agriculture (USDA) Rural Development

- Rural Energy for America Program Guaranteed Loan Program (REAP LOAN): The REAP Guaranteed Loan Program encourages the commercial financing of renewable energy (bioenergy, geothermal, hydrogen, solar, wind and hydro power) and energy efficiency projects. Under the program, project developers will work with local lenders, who in turn can apply to USDA Rural Development for a loan guarantee up to 85 percent of the loan amount. More information can be found at <http://www.rurdev.usda.gov/rbs/bussp/9006loan.htm>.

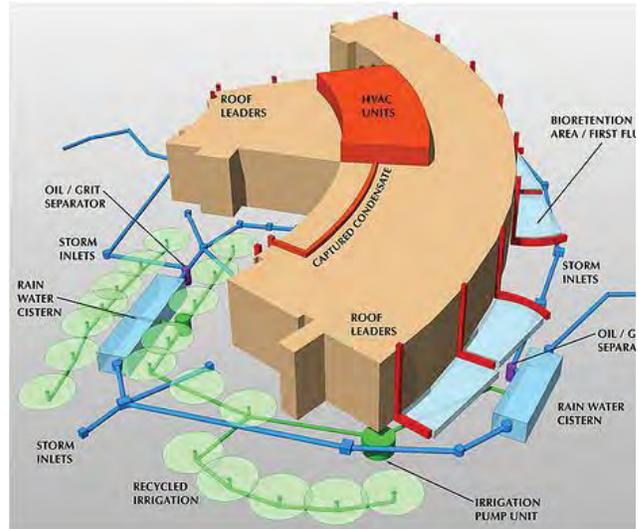


Sustainable Future

As SRSU looks for ways to advance its current sustainability goals and practices, there are many fine examples of how various institutions are meeting the challenge. The final plan and recommendations must consider unique factors such as, the context of its location, institution size and age, teaching/research focus, and public/private relationships. The October-December 2010 issue of (Planning for Higher Education) offers additional suggestions worth considering:

- Seek support from the University president and top administrators on campus
- Involve students, faculty, staff, and alumni who have a personal commitment and can offer technical expertise to support the goals
- Establish a well defined sustainability planning process to set goals and monitor progress
- Find a balance between a plan developed by students, faculty and staff versus a consultant only driven plan
- Look for strategic partnerships with local, regional, and state partnerships to leverage the institutions options and resources

With the same level of energy, commitment and focus that SRSU has engaged in the long-range master plan, we recommend that the institution undertake the steps necessary to develop firm campus sustainability goals and plans as outlined above.



Sustainable facilities



Sustainable equipment



Sustainable parking areas can serve dual purposes

Recommendations - Utilities

In the Recommendations phase of this Campus Master Plan, a number of projects have been identified where mechanical systems and controls will be added and/or modified to meet the current and future demands of the University. These projects and their impacts on the campus utilities are listed below:

Campus Infrastructure Upgrades

Based on acceptance of recently submitted application for ARRA funding by SECO, SRSU should employ a highly qualified ESCO to carry out the following campus wide infrastructure upgrades under a performance contract:

Boiler De-Centralization

The boiler de-centralization project can end SRSU's reliance on steam for indoor comfort heating and should improve campus energy efficiency by installation of new localized high-efficiency heating water boiler systems. This project will include:

- Demolition of existing gas-fired steam boilers in the central plant
- Demolition of existing steam-to-heating water conversion systems at each campus building
- Abandonment of existing underground steam and condensate-return utility loop and demolition of piping tie-ins to campus buildings
- Installation of new high-efficiency heating water boilers and pumping systems at each building
- Modification of existing heating water piping to connect to new high-efficiency heating water boiler systems
- Modification of existing natural gas piping to serve new high-efficiency heating water boiler systems

Central Plant Renovation

The central plant renovation project should reduce overall energy consumption of the plant and increase system reliability. This project will include:

- Demolition of existing constant-flow primary chilled water pumps and condenser water pumps
- Demolition of existing pneumatic controls
- Modification of existing central plant piping to incorporate plate and frame heat exchanger which will provide free cooling during mild temperature days of the year
- Installation of new high-efficiency chilled water and condenser water pumps with variable frequency drives
- Installation of variable-frequency drives for existing cooling tower fans
- Modification of existing direct digital control system to include central plant and new HVAC equipment

Building HVAC System Renovation and EMS Expansion

This project will replace aging HVAC systems and associated pneumatic controls in several buildings on campus with new energy-efficient HVAC systems and direct digital controls. This project should reduce energy consumption and cut operation/maintenance costs for SRSU. The building HVAC system renovation and EMS expansion project will include:

- Demolition of aging constant volume air handling systems
- Demolition of existing pneumatic controls
- Installation of new variable air volume air handling systems that can provide better occupant comfort and reduce energy use
- Installation of new air handling unit to increase Warnock Science building's cooling capacity
- Installation of DDC system for new HVAC equipment and connection to existing energy management system
- Hire experienced staff to manage and trouble shoot energy management system

Electrical Recommendations

A priority for electrical maintenance should be to replace the electrical switchgear manufactured by FPE. It is also recommended that the electrical equipment at the Graves-Pierce Complex be replaced with new equipment to increase reliability and safety and to decrease maintenance costs. Coordination should also take place with AEP to repair the aging pole mounted transformer at the Industrial Technology Building and to repair the transformer at Lawrence Hall.

Surge Protection Devices (SPD) should be installed at each service entrance location for the protection of electrical equipment. An SPD protects equipment from electric utility quality issues such as voltage or current surges and is independent from lightning protection systems.

High-Efficiency Lighting Upgrades

High-efficiency lighting upgrades shall provide significant saving up to 30 percent in campus lighting costs. New, high-efficiency lamps have different light distribution characteristics and may require detailed design analysis to provide the most efficient energy use. Advanced control systems such as occupancy sensors, universal time clock systems, and daylight harvesting offer additional saving in addition to fixture lamp upgrades. Advanced lighting control systems also require detailed design considerations and proper commissioning to realize efficient system designs while avoiding nuisance switching. This project should be accomplished by carrying out the following:

- Campus-wide lighting retrofits to upgrade T12 fluorescent lighting fixtures to T8 fixtures
- Installation of lighting controls such as occupancy sensors and time schedule controllers
- Connection to existing energy management system

Alternative Energy Resources

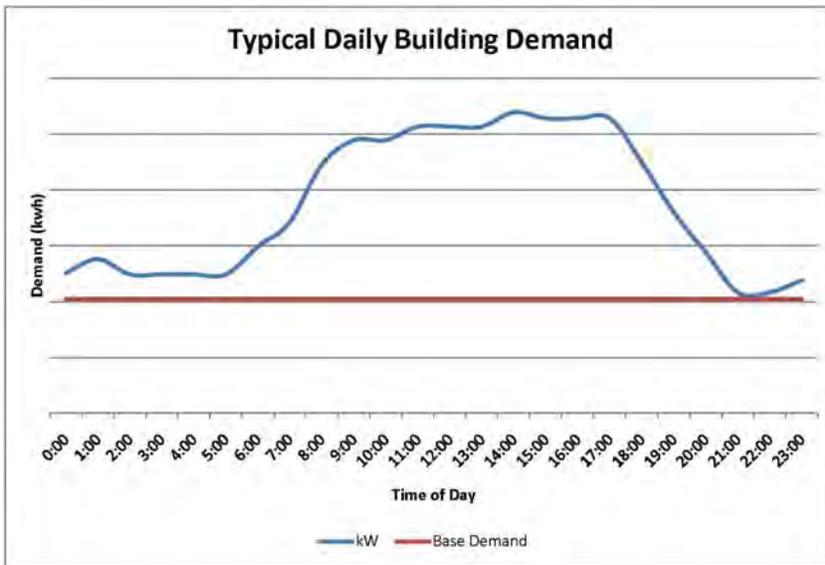
This project will reduce SRSU's reliance on traditional energy sources and increase sustainable awareness on and off campus. Some of the elements included in the alternative energy resources project may include, but are not limited to:

- Solar PV arrays for electricity generation
- Solar domestic water heaters
- Small wind turbines

Because the electric utilities at SRSU are metered in multiple locations, the most cost-effective way for SRSU to utilize alternative energy resources is to install a distributed system of smaller sources instead of a single, large system. Renewable electric generators should be distributed among the separate metering locations and should be sized such that the maximum generating capacity of the equipment matches the base demand of the load being served. This arrangement provides the largest possible return. The "base demand" is the minimum demand of a building and usually occurs outside of normal operating hours. An illustration of base demand is given in below.

SRSU is currently in the process of installing photovoltaic panels on the President's Residence as an initial step towards energy conservation. The process should continue, as funding allows, by installing renewable energy systems at buildings with the largest base demands. The following ten buildings have the largest base demands:

- Wildenthal Memorial Library
- Graves-Pierce Complex
- Briscoe Administration Building
- Lobo Village 2
- Warnock Science Building
- Lobo Village 1
- Range Animal Science Center
- Pete Gallego Center
- Morelock Academic Building
- Academic Computer Resource Center



Sizing generating equipment for the base demand avoids the event where electricity generated is greater than what is being used by the load. Excess generation must be burned off in the form of the following:

- Resistor banks
- Sold back to the Retail Electric Provide (REP) in the form of reverse metering
- Stored in battery banks to be used when required

When available, reverse metering offers the largest return. However, the rate paid by the REP is often the wholesale price of electricity and not the retail price. More savings are available when the excess generation can be applied to other loads being charged the retail price.

Fletcher Hall Renovation and Addition

Fletcher Hall renovation and addition project will be carried in two phases to minimize disruption of current student activity at Fletcher Hall. The first phase will consist of a 14,000-square-foot new building addition to house 70 beds, and the second phase shall consist of adding HVAC system and controls to existing 27,562-square-foot Fletcher Hall building. Projected HVAC loads should be approximately 92 tons for existing Fletcher Hall building and approximately 50 tons for new Fletcher Hall addition. Utilities modification in each phase is listed below:

Phase 1:

- Provide new floor-mounted hydronic unit ventilators for bedroom units and common areas; provide unit ventilators with outside air louvers for ventilation
- Provide new exhaust fans for restrooms and other common areas
- Provide new 3-inch chilled water main line from existing 4-inch underground chilled water loop near south end of building; run branch chilled water lines above ceiling to serve new unit ventilators
- Provide new high-efficiency boiler and pumping system in basement mechanical room
- Route new heating water piping to new addition and run it above ceiling to serve new unit ventilators
- Upsize existing natural gas piping to building to accommodate new boiler system
- Provide new low-flow plumbing fixtures in restrooms and common areas
- Upsize existing domestic water and sanitary sewer piping serving Fletcher Hall to accommodate new addition
- Provide new domestic water heater for addition
- Coordinate the new electrical demand with AEP; AEP may be required to upgrade utility owned electric delivery equipment
- Replace existing FPE switchgear with new switchgear

Phase 2:

- Demolish existing wall-mounted radiant heaters and associated piping
- Demolish existing exhaust fans in restrooms and common areas
- Provide new floor-mounted hydronic unit ventilators in same location as existing radiant heaters; provide unit ventilators with outside air louvers for ventilation
- Provide new exhaust fans in same location as existing ones.
- Provide new exhaust fans for laundry room
- Connect new 4-inch chilled water piping to existing 4-inch underground chilled water loop; stub-up for connection is located on the south side of the building; route new chilled water piping above ceiling to serve new unit ventilators
- Provide new heating water piping from phase I boiler system and route it above ceiling to serve new unit ventilators
- Upgrade existing plumbing fixtures to low-flow types

Future Student Dormitory

The proposed 30,000-square-foot residence hall will be located between the Museum of the Big Bend and central plant and will house 104 beds. This new residence hall will have a projected HVAC load of approximately 100 tons. Utility portion of this project includes the following:

- Provide a new 4-inch chilled water piping for building and connect it to existing 8-inch underground chilled water loop from the central plant
- Provide new Variable Air Volume hydronic air handling units or hydronic unit ventilators
- Provide new high-efficiency boiler and pumping system to provide heating water for building air handling units
- Provide low-flow plumbing fixtures and high-efficiency domestic water boiler system
- Provide a new gas connection for building from existing main gas line on East Avenue B
- Provide new domestic water piping to building from existing main water line running parallel to East Avenue B
- Extend existing sanitary sewer line currently serving the Museum of the Big Bend to serve new residence hall
- Coordinate new electrical load with AEP for a new electric metering point or to provide additional capacity at an existing metering point

New Academic Building

The proposed 30,700-square-foot Academic building will be located between the Lawrence Hall and Ferguson Hall. This new academic building will have a projected HVAC load of approximately 100 tons. Utility portion of this project is listed below:

- Provide a new 4-inch chilled water piping for building and connect it to existing 4-inch underground chilled water loop
- Provide new Variable Air Volume hydronic air handling systems designed to provide occupant comfort and reduce energy consumption
- Provide new high-efficiency boiler and pumping system to provide heating water for building air handling units
- Provide low-flow plumbing fixtures and high-efficiency domestic water boiler system
- Provide a new gas connection for building from existing gas line serving Fletcher Hall
- Provide new domestic water piping to building from existing main water line currently serving Lawrence Hall
- Provide new sanitary sewer line to building from existing sanitary sewer line running parallel to Lawrence Hall
- Coordinate new electrical load with AEP for a new electric metering point or to provide additional capacity at an existing metering point

New University Visitor Center

The proposed 2,000-square-foot Visitor Center will be located west of Lawrence Hall and will have a projected HVAC load of approximately 7-10 tons. Utility portion of this project is listed below:

- Provide new packaged DX or split DX air handling systems with electric or gas heat to cool and heat the new Visitor Center
- Provide low-flow plumbing fixtures and high-efficiency domestic water boiler system; instantaneous electric water heaters can be considered as a viable alternative to domestic water boiler system
- Provide a new gas connection for building from existing gas line serving Fletcher Hall
- Provide new domestic water piping to building from existing main water line currently serving Lawrence Hall
- Provide new sanitary sewer line to building from existing sanitary sewer line running parallel to Lawrence Hall
- Coordinate new electrical load with AEP for a new electric metering point or to provide additional capacity at an existing metering point

New Athletic Complex

The proposed Athletic Complex will be located east of Pete P. Gallego Center and will have a projected HVAC load of 50 tons (assuming 10,000-square-foot of air conditioned space). Utility portion of this project is listed below:

- Extend new 3-inch chilled water piping from the existing 8-inch underground chilled loop currently serving Pete P. Gallego Center
- Provide new Variable Air Volume hydronic air handling systems designed to provide occupant comfort and reduce energy consumption
- Provide new high-efficiency boiler and pumping system to provide heating water for building air handling units.
- Provide low-flow plumbing fixtures and high-efficiency domestic water boiler system
- Extend new gas connection for building from existing gas line currently serving Pete P. Gallego Center
- Extend new domestic water piping to building from existing main water line currently serving Pete P. Gallego Center
- Provide new sanitary sewer line to building from existing sanitary sewer line currently serving Pete P. Gallego Center
- Coordinate new electrical load with AEP for a new electric metering point

Turner Range Animal Science Facility Expansion

The proposed 14,000-square-foot addition will be constructed on the west side of existing Turner Range Animal Center building. This new addition will have a projected HVAC load of approximately 50 tons. Utility portion of this project is listed below:

- Provide new packaged DX or split DX air handling systems with electric or gas heat to cool and heat the new building addition
- Provide low-flow plumbing fixtures and high-efficiency domestic water boiler system
- Upsize existing gas connection to accommodate gas requirement of new HVAC equipment
- Upsize existing domestic water and sanitary sewer piping to serve new plumbing fixtures
- Coordinate new electrical load with AEP for a new electric metering point or to provide additional capacity at an existing metering point

Additional Recommendations

In addition to the individual projects listed on the Project Identifier Map and within the Utility and Sustainability section, the following items are recommended:

- Emergency call boxes for safety
- Better lighting along certain areas of pedestrian pathways
- Emergency back-up system
- Student organization space
- Furniture upgrades to auditorium-type desks rather than small, tablet-style desks
- Additional multi-purpose classrooms
- Bike racks and motorcycle/scooter parking
- Building signage and directional signage facing parking lots in addition to existing internal quad signage
- Parking lot numbering or lettering
- WiFi and technology

PHASING PLAN				
DESCRIPTION OF PROJECT	CORRESPONDING LETTER (if applicable)	PRIORITY OF IMPLEMENTATION		
		SHORT	MID	LONG
Fletcher Hall Addition and Renovation	H			
Loop Road Modifications - Phase 1	N1			
South Promenade	P			
Visitor Center	B			
Landscape Frontage and Jogging Trail	A			
Interior Renovation of University Center	D			
Southwest Campus Landscape Improvements	C			
South Quadrangle	F			
Turner RAS Facility Expansion	Y			
Borderlands Research Institute	X			
New and Modified Entry Signage	S			
New Swimming Pool Entry	Q			
Pedestrian Link to Athletic Complex	R			
Screen Wall/ Landscape along Physical Plant	M			
North Quadrangle Improvements	E			
New Parking	L			
Parking Lot Reconfiguration	J			
New Dormitory and North Promenade	K			
Loop Road Modifications - Phase 2	N2			
New Academic Building	G			
Lobo Village Landscape Improvements	O			
Cottage Plaza	P			
New Parking Lots	T			
New Baseball/ Softball Complex	U			
New Football Stadium	V			
University Intramural Facilities	W			
Turner RAS Center Improvements	Z			

Cost Estimates

Project A: Landscape Frontage & Jogging Trail					
Site Development	1	LS	\$	1,013,710.69	\$ 1,013,710.69
Building Construction					\$ -
Subtotal					\$ 1,013,710.69
		General Contractor Markups		18%	\$ 182,467.92
		Design Fees		10%	\$ 101,371.07
		Escalation		6.5%	\$ 65,891.19
		Project A: TOTAL			\$ 1,363,440.87

Project B: University Visitor's Center					
Site Development	1	LS	\$	97,861.00	\$97,861
Building Construction	2200	SF	\$	217.61	\$478,742
Subtotal					\$ 576,603.00
		General Contractor Markups		18%	\$ 103,788.54
		Design Fees		10%	\$ 57,660.30
		Escalation		6.5%	\$ 37,479.20
		Project B: TOTAL			\$ 775,531.04

Project C: Southwest Campus Landscape Improvements					
Site Development	1	LS	\$	159,310.60	\$159,311
Building Construction					\$ -
Subtotal					\$ 159,310.60
		General Contractor Markups		18%	\$ 28,675.91
		Design Fees		10%	\$ 15,931.06
		Escalation		21%	\$ 33,455.23
		Project C: TOTAL			\$ 237,372.79

Project D: Interior Renovation of University Center					
Site Development					
Building Construction	23157	SF	\$	25.50	\$590,477
Subtotal					\$ 590,477.48
		General Contractor Markups		18%	\$ 106,285.95
		Design Fees		10%	\$ 59,047.75
		Escalation		21%	\$ 124,000.27
		Project D: TOTAL			\$ 879,811.44

Project E: North Quadrangle Improvements					
Site Development	1	LS	\$	283,457.25	\$283,457
Building Construction					\$ -
Subtotal					\$ 283,457.25
				General Contractor Markups 18%	\$ 51,022.31
				Design Fees 10%	\$ 28,345.73
				Escalation 39%	\$ 110,548.33
Project E: TOTAL					\$ 473,373.61

Project F: South Quadrangle					
Site Development	1	LS	\$	510,901.40	\$510,901
Building Construction					\$ -
Subtotal					\$ 510,901.40
				General Contractor Markups 18%	\$ 91,962.25
				Design Fees 10%	\$ 51,090.14
				Escalation 21%	\$ 107,289.29
Project F: TOTAL					\$ 761,243.09

Project G: New Academic Building					
Site Development					\$ -
Building Construction	29673	SF	\$	144.02	\$4,273,505
Subtotal					\$ 4,273,505.46
				General Contractor Markups 18%	\$ 769,230.98
				Design Fees 10%	\$ 427,350.55
				Escalation 39%	\$ 1,666,667.13
Project G: TOTAL					\$ 7,136,754.12

Project H: Fletcher Hall Addition and Renovation					
Renovation	27200	SF	\$	130.00	\$3,536,000
New Construction	13864	SF	\$	173.47	\$2,404,988
Subtotal					\$ 5,940,988.08
				General Contractor Markups 18%	\$ 1,069,377.85
				Design Fees 10%	\$ 594,098.81
				Escalation 6.5%	\$ 386,164.23
Project H: TOTAL					\$ 7,990,628.97

Project I: South Promenade						
Site Development	1	LS	\$	800,796.55		\$800,797
Building Construction	200	SF	\$	100.00		\$20,000
Subtotal						\$ 820,796.55
		General Contractor Markups		18%	\$	147,743.38
		Design Fees		10%	\$	82,079.66
		Escalation		6.5%	\$	53,351.78
Project I: TOTAL						\$ 1,103,971.36

Project J: Parking Lot Reconfiguration						
Site Development	1	LS	\$	40,677.15		\$40,677
Building Construction						-
Subtotal						\$ 40,677.15
		General Contractor Markups		18%	\$	7,321.89
		Design Fees		10%	\$	4,067.72
		Escalation		39%	\$	15,864.09
Project J: TOTAL						\$ 67,930.84

Project K: North Promenade and New Student Housing						
Site Development	1	LS	\$	652,436.15		\$652,436
Building Construction	32690	SF	\$	159.86		\$5,225,823
Subtotal						\$ 5,878,259.55
		General Contractor Markups		18%	\$	1,058,086.72
		Design Fees		10%	\$	587,825.96
		Escalation		39%	\$	2,292,521.22
Project K: TOTAL						\$ 9,816,693.45

Project L: New Parking						
Site Development	1	LS	\$	188,639.36		\$188,639
Building Construction						-
Subtotal						\$ 188,639.36
		General Contractor Markups		18%	\$	33,955.08
		Design Fees		10%	\$	18,863.94
		Escalation		39%	\$	73,569.35
Project L: TOTAL						\$ 315,027.73

Project M: Physical Plant Screen					
Site Development	1	LS	\$	523,776.00	\$523,776
Building Construction					\$ -
Subtotal					\$ 523,776.00
		General Contractor Markups		18%	\$ 94,279.68
		Design Fees		10%	\$ 52,377.60
		Escalation		21%	\$ 109,992.96
		Project M: TOTAL			\$ 780,426.24

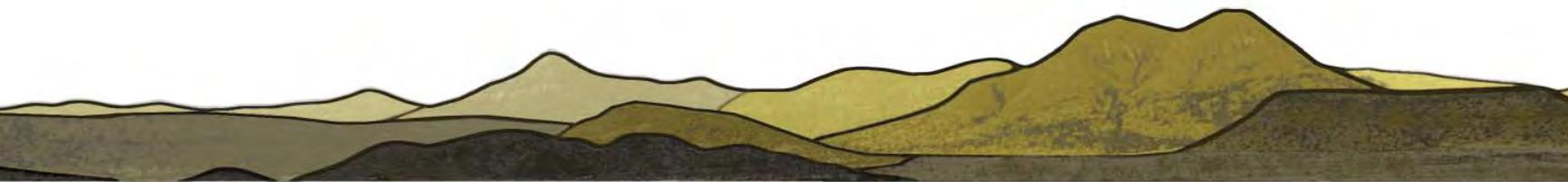
Project N1: Loop Road Modifications (Phase I)					
Site Development	1	LS	\$	377,864.50	\$377,865
Building Construction					\$ -
Subtotal					\$ 377,864.50
		General Contractor Markups		18%	\$ 68,015.61
		Design Fees		10%	\$ 37,786.45
		Escalation		6.5%	\$ 24,561.19
		Project N1: TOTAL			\$ 508,227.75

Project N2: Loop Road Modifications (Phase II)					
Site Development	1	LS	\$	377,864.50	\$377,865
Building Construction					\$ -
Subtotal					\$ 377,864.50
		General Contractor Markups		18%	\$ 68,015.61
		Design Fees		10%	\$ 37,786.45
		Escalation		21%	\$ 79,351.55
		Project N2: TOTAL			\$ 563,018.11

Project O: Lobo Village Landscape Improvements					
Site Development	1	LS	\$	19,500.00	\$19,500
Building Construction	1	LS	\$	146,475.00	\$146,475
Subtotal					\$ 165,975.00
		General Contractor Markups		18%	\$ 29,875.50
		Design Fees		10%	\$ 16,597.50
		Escalation		39%	\$ 64,730.25
		Project O: TOTAL			\$ 277,178.25

Project P: Cottage Plaza					
Site Development	1	LS	\$	57,240.00	\$57,240
Building Construction					\$ -
Subtotal					\$ 57,240.00
		General Contractor Markups		18%	\$ 10,303.20
		Design Fees		10%	\$ 5,724.00
		Escalation		39%	\$ 22,323.60
		Project P: TOTAL			\$ 95,590.80
Project Q: New Swimming Pool Entry					
Site Development	1	LS	\$	20,000.00	\$20,000
Building Construction					\$ -
Subtotal					\$ 20,000.00
		General Contractor Markups		18%	\$ 3,600.00
		Design Fees		10%	\$ 2,000.00
		Escalation		21%	\$ 4,200.00
		Project Q: TOTAL			\$ 29,800.00
Project R: Pedestrian Link to Athletic Complex					
Site Development	1	LS	\$	34,392.80	\$34,393
Building Construction					\$ -
Subtotal					\$ 34,392.80
		General Contractor Markups		18%	\$ 6,190.70
		Design Fees		10%	\$ 3,439.28
		Escalation		21%	\$ 7,222.49
		Project R: TOTAL			\$ 51,245.27
Project S: New and Modified Entry Signage					
Site Development	1	LS	\$	210,000.00	\$210,000
Building Construction					\$ -
Subtotal					\$ 210,000.00
		General Contractor Markups		18%	\$ 37,800.00
		Design Fees		10%	\$ 21,000.00
		Escalation		21%	\$ 44,100.00
		Project S: TOTAL			\$ 312,900.00

Project T: New Parking Lots					
Site Development	1	LS	\$	1,620,847.50	\$1,620,848
Building Construction					\$ -
Subtotal					\$ 1,620,847.50
		General Contractor Markups		18%	\$ 291,752.55
		Design Fees		10%	\$ 162,084.75
		Escalation		39%	\$ 632,130.53
Project T: TOTAL					\$ 2,706,815.33
Project U: New Baseball/Softball Complex					
Site Development					\$ -
Building Construction	1	LS	\$	900,000.00	\$900,000
Subtotal					\$ 900,000.00
		General Contractor Markups		18%	\$ 162,000.00
		Design Fees		10%	\$ 90,000.00
		Escalation		39%	\$ 351,000.00
Project U: TOTAL					\$ 1,503,000.00
Project V: New Football Stadium					
Site Development	1	LS	\$	919,177.48	\$919,177
Building Construction	1	LS	\$	10,400,000.00	\$10,400,000
Subtotal					\$ 11,319,177.48
		General Contractor Markups		18%	\$ 2,037,451.95
		Design Fees		10%	\$ 1,131,917.75
		Escalation		39%	\$ 4,414,479.22
Project V: TOTAL					\$ 18,903,026.39
Project Y: Turner RAS Facility Expansion					
Site Development	1	LS	\$	58,500.28	\$58,500
Building Construction	14000	SF	\$	175.00	\$2,450,000
Subtotal					\$ 2,508,500.28
		General Contractor Markups		18%	\$ 451,530.05
		Design Fees		10%	\$ 250,850.03
		Escalation		21%	\$ 526,785.06
Project Y: TOTAL					\$ 3,737,665.41
				PROJECT TOTAL:	\$ 60,390,672.85



APPENDIX

Landscape Standards

Landscape standards for the campus are necessary to promote a more cohesive sense of place and community identity at SRSU. Demonstrating the harmonious interplay of buildings, grounds, layout and security is a goal that all campuses should strive to achieve – the appropriate selection of landscape standards can aid in this. The unique geographic setting of the University in the Chihuahuan Desert, surrounded by beautiful mountains is both inspiring and captivating. The red brick buildings of Sul Ross stand out and create unity that clearly evokes a campus style and architectural appearance, but the grounds fall short of reflecting the same unity. Standards for campus furniture, landscape planting, walkways and lighting all can complement both the architecture and region. The variety of walls, paving and planting need to be pulled into a cohesive framework that will unify the campus, present a more finely tuned appearance to prospective students, and instill a sense of pride in all who live, work or learn at SRSU. Landscape standards will be implemented over time by being incorporated into major projects and by being replaced in minor projects.

Lighting

Lighting at SRSU provides both safety and aesthetic quality to the campus walkways and roadways. The proposed pedestrian fixtures are inspired by the clean lines of the American southwest. The black metal fixture is powder coated and will provide an architectural element during the daytime and lighting for students and staff at night. The proposed pedestrian fixture is the 12-foot height Se'lux Saturn 2, which provides 100 percent cutoff to prevent unwanted light spillage off campus or into night sky. The vehicular/parking lot fixtures will match the shoebox-style fixtures currently found on campus.



Standard Vehicular Light Fixture: Match Existing Shoebox



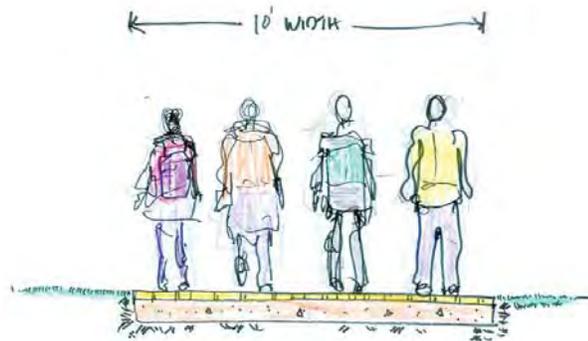
Examples of the Harmony Created by Landscape Standards



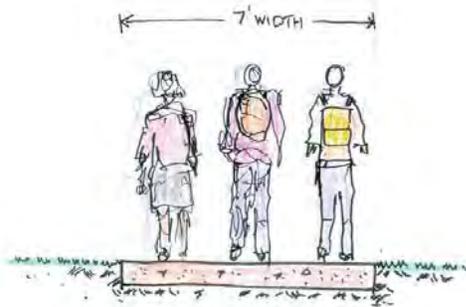
Standard Pedestrian Light Fixture: Se'lux Saturn 2 Cutoff, Metal Halide Lamp, Black Finish, Full Cutoff Optics, Round Straight Aluminum Pole, 12-foot height

Pedestrian Paving

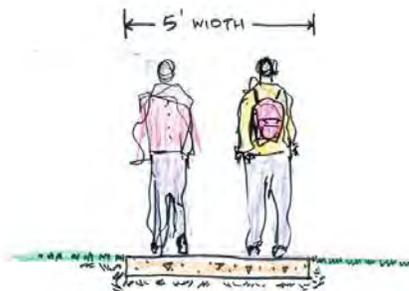
Decorative concrete pavers will serve as the standard pavement for all major walkways. The widths proposed are 10 feet wide for major connecting walks, seven-feet wide for collector walks, and five feet wide for replacement walks and for all minor walkways. The proposed concrete paver walks will be designed to fit the various widths of walkways, which will be renovated or replaced over time. Minor walkways (five feet wide only) may be paved with standard grey concrete rather than concrete pavers at the discretion of campus staff. Plazas, nodes and promenades will be surfaced with concrete pavers, colored concrete, or specialty flagstone paving on concrete base or a combination to provide textural interest at key intersections.



Minimum Size for Primary North-South Walkway, North and South Promenade, and other future major walkways



Collector Walks



Minimum size for all new minor walkways; existing three- and four-foot wide walkways should be replaced



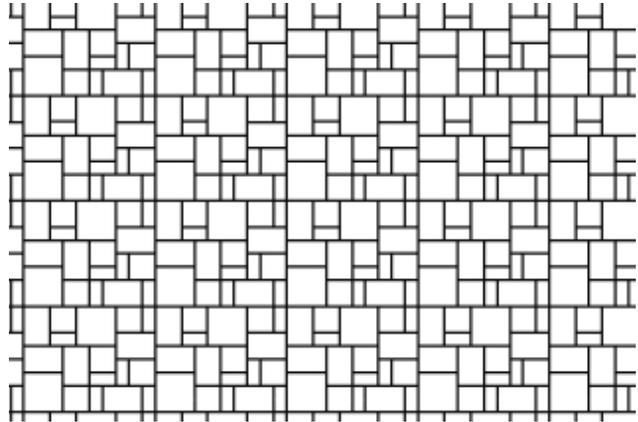
Austin Stone Blend



Buff



Light Brown



Random Mosaic Pattern

Standard concrete pavers: City Stone II, sized 6x3, 6x6 and 6x9, color shall be 40% Austin Stone Blend, 40% Buff, and 20% Light Brown. Pattern to be Random Mosaic.

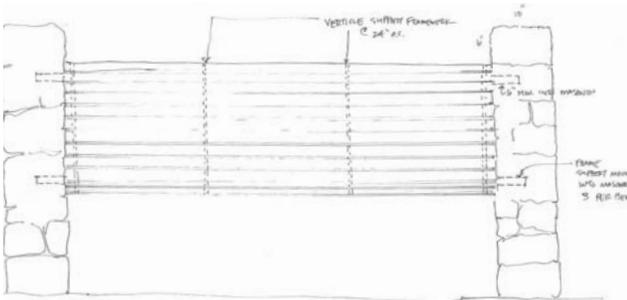
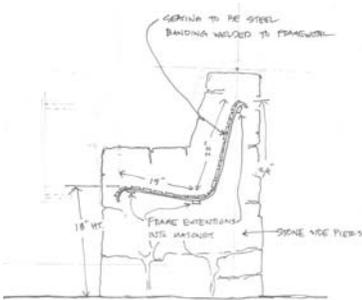


Standard colored concrete: 3000 psi min. concrete paving with medium broom finish, Scofield Color "Autumn Beige" integral additive.

Site Furnishings

The campus environment can be unified with benches, chairs and tables, trash receptacles and bike racks chosen for durability and weather resistance. The current variety of site furnishings is somewhat disjointed and often of a lower durability level not adequate for a campus environment. A systematic replacement of furnishings should be implemented with the new standards. As new buildings or new outdoor improvement projects are built, new site furnishings can be included.

In addition to the more common standard furnishings shown to the right, at select locations around campus a custom bench may be installed to provide a more substantial landscape element, celebrate a particular spot or view, or provide a donor recognition opportunity. The custom bench design is shown below:



Custom bench: Franklin Mountain Stone arms with Dumor Bench 141 without side panels



Standard bench: Dumor Bench 141, 6-foot length, black finish



Standard picnic table: Dumor Table 101, black finish



Standard movable table and chairs: Dumor Table & Chairs 126, black finish



Standard waste receptacle: Dumor 310-32 w/ hinged side door, black finish



Standard bike rack: American Bicycle Security Company "Campus" Innovative Bike Rack, black finish

Walls

The majority of walls on campus are constructed from Franklin Mountain Stone in a range of red-brown hues and are reasonably unified in appearance. The rustic stone and pattern of these walls offsets nicely from the formal red brick of the buildings and helps to anchor the campus to the landscape. However, as there are some significant variations between these walls, this standardization seeks to set the desired appearance for all future walls (replacement of existing walls is not required).

All future walls on campus shall be composed of stone in sizes and patterns similar to the stone walls in the Warnock Science Garden. Walls shall have tight-fitting, raked mortar joints. All walls in pedestrian areas shall receive a cast stone cap. Site walls away from pedestrian areas may be finished without a cast stone cap.

Gravel Mulch

Many planting beds on campus are mulched with a locally available red aggregate. Many of these beds are maintenance challenges, as rocks are kicked or thrown and tumble down slopes and onto sidewalks over time. Additionally, many of these beds do not have sufficient plant material to present a landscaped appearance. The following standards shall govern the future application of gravel mulch in all landscape beds:

- All gravel mulch shall have a maximum aggregate size of 3/4 inch
- Decomposed granite gravel shall be used in beds where it is likely that pedestrians will cut across. Decomposed granite shall not be used on slopes that exceed 5 percent.
- Gravel mulch shall not be used on slopes that exceed 4:1; these areas shall be fully planted to prevent erosion and reduce ongoing maintenance
- All beds that receive gravel mulch shall be planted such that plant material will cover a minimum of 50 percent of the bed area within five years
- Use of large boulders is encouraged

Parking Lot Landscaping

Parking lots on campus are large, uninterrupted fields of asphalt with few if any landscape islands or trees. All new or renovated parking lots shall meet the following parking lot landscaping requirements:

- 120 square feet of landscape island and at least one shade tree for every 30 parking spaces
- Buffer parking lots that are visible from the campus edge with a solid screen of native landscaping that will reach a mature height of four feet, minimum



The stone wall at the Warnock Science Garden will serve as the standard for future campus walls.



Existing gravel mulch areas are under-planted. Mulch gets kicked away where students cut corners and rolls down slopes onto the sidewalk.



The planting beds at the Briscoe Building represent an appropriate use of gravel mulch with sufficient plant density.

Planting

The master plan proposes a major departure from the current campus grounds plan. The campus is well cared for and consists of attractive trees and selected desert plant specimens in a predominant Bermuda grass lawn. The irrigation required to support this landscape provides supplemental water to the 15 inch average annually rainfall. This commitment to supplemental watering of a high consumption landscape has evolved over the years without professional guidance, and planning. Large areas of irrigated lawn grass should be modified into zones of native grasses and desert shrubs, as well as developing a biome approach to future landscape planting. This approach achieves several operational and educational goals including:

- *Conserving Water:* Changing the large expanses of lawn in the campus to a landscape that better represents the northern Chihuahuan desert will create a landscape that needs less water and is more tolerant of severe drought. This can reduce water consumption on campus annually.
- *Creating a Living Laboratory:* The campus becomes a microcosm of the diverse biologic region that surrounds it and provides educational opportunities for multiple academic departments.
- *Building More Sustainably:* The approach in changing the landscape is a paradigm shift that teaches students lessons in living with more ecological pursuits and goals.
- *Changing the Impression of the Campus to Future and Prospective Students:* By creating a more diverse, garden-based campus that celebrates outdoor spaces and the mild climate of the region, more opportunities for student interaction can occur, more outdoor teaching can happen, and more lively, activity-oriented programs can attract new students.

The various subregions reflect the diversity of the Trans-Pecos. The Sand Hills area consists of shin oak and mesquite on wind-blown dunes. Flat-topped mesas and plateaus are intersected by steep-walled canyons and dry washes that comprise the Stockton Plateau. Soils with high salt content and gypsum dunes are typical of the Salt Basin area. The Desert Scrub subregion is an area of low rainfall and rapid drainage. Creosote bush flats with yucca, lechuguilla, and various small-leafed plants are common. Finally, the Mountain Ranges have higher rainfall and woody vegetation such as junipers, oaks, pinon pine, ponderosa pine and Douglas fir. The five biomes of the Trans Pecos are:

1) *Grassland:* The grasslands of the Trans-Pecos are one of the most dominant, yet under appreciated, components of the biomes. Grassland area occurs in the central part of the region and is characterized by deeper soils with high clay content. There are approximately 268 species of native grass west of the Pecos River, many of which have great potential for restoration and use in landscape planning, particularly when compared to traditional highly irrigated lawn grass. Grassland planting for the campus can be designed in small clumps or beds or included in large mass planting that evoke the sweeping grandeur and colors of Texas

grassland. Other plants that should be included in the grassland biome include Texas Mountain Laurel, Nolina, Penstemons, Mexican Plum and Mexican Buckeye.

2) *Desert Shrub:* The Chihuahuan desert shrub biome (also called desert scrub) occurs in lower elevations up to approximately 4,500 feet, (Alpine is at elevation 4,514). Desert Shrub biome plants have become more prominent as ranching and grazing has continued since settlement in the 1800s. The beautiful shrubs of the desert, when used as cultivated landscape plants, will provide many varied colors and textures.

3) *Conifer Woodlands:* High elevations of the Davis Mountains and Chisos Mountains include the unique conifer biome plants - pines, junipers, aspen and Douglas fir, and the many shrubs and grasses of these remote canyons. This limited habitat can be included in the campus biomes to represent the plants found in deep canyons, with shallow soil pockets, rocky terrain and high moisture (average 20 inches/ per year.) The beauty of the pines currently on campus testifies to the character and resilience of these trees in managed settings. On the SRSU campus, zones where this biome can be displayed include spaces between existing buildings mimicking the tight canyons of the upper mountains.



Grassland Biome



Chihuahuan Desert Shrub Biome

4) *Oak-Juniper-Pinyon Woodlands*: The occurrence of Oak Juniper Pinyon Woodlands is widespread in the Trans Pecos region. Much of elevated hills and mountains above 4000 feet altitude (approximately 30 percent of the region) is in this habitat. Over 1,000 species of trees, shrubs, grasses, perennials and succulents inhabit this biome. They also include unique plants such as Texas Madrone, Emory Oak, many Salvias (Sage), Columbine, Mountain Laurel and Agarita. Many plants of this biome have become cultivated and are in wide use throughout much of Texas' landscape industry. This biome can be represented in raised planters, large planting zones surrounding buildings and in sloping spaces at the perimeter of campus.

5) *Riparian*: The river edges and drainages along the Pecos and Rio Grande Rivers and along Limpia Creek and Kokernot Creek. Many plants that prefer the higher water table of rivers and creeks include cottonwoods, walnut, willow, sumac, muhly grasses, oaks and ash. These plants could be used to demonstrate the filtering and storm water treatment capacity of dense fibrous root systems and high transpiration they are known for. This biome would have limited extent within the overall campus landscape, but could have great educational value and provide dense shade in key outdoor spaces.

These five biomes are represented throughout Trans Pecos, Texas, and can be abstracted in small representational landscape and gardens over the next 10 year master plan period in both small and large grounds' renovation projects. The map below shows the proposed distribution of the biomes on campus.



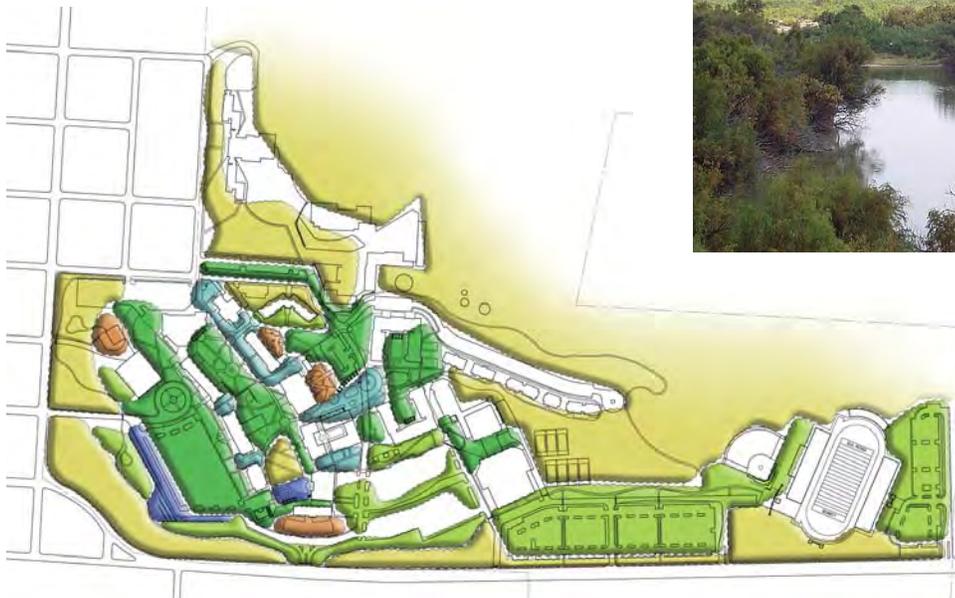
Conifer Woodland Biome



Oak Juniper Pinyon Woodland Biome



Riparian Biome



Proposed Biome distribution on campus

- Oak Juniper Pinyon Woodland*
- Conifer Woodland*
- Grassland*
- Chihuahuan Desert Shrub*
- Riparian*
- Specialty Garden*

Plant List

The following plants should be used for all future landscape projects on campus. Substitutions must be approved by campus staff. The column on the right shows what biome or biomes each plant is most appropriate to. While plant choices for any particular project need not be exclusively plants from a single biome, the majority of and dominant plants in any landscape scheme should represent the biome in which that project is located.

Common Name	Scientific Name	Biome
Shade Trees		
Alligator Juniper*	<i>Juniperus deppeana</i>	Conifer Woodland
Anacacho Orchid Tree	<i>Bauhinia lunarioides</i>	Oak Juniper Pinyon Woodland
Arizona Cypress*	<i>Cupressus arizonica</i>	Conifer Woodland
Aspen	<i>Populus deltoides</i>	Conifer Woodland
Bigtooth Maple	<i>Acer grandidentatum</i>	Conifer Woodland
Black Cherry, Southwestern Chokecherry	<i>Prunus serotina</i>	Conifer Woodland
Catclaw Acacia	<i>Acacia greggii</i>	Oak Juniper Pinyon Woodland
Chinquapin Oak	<i>Quercus muehlenbergii</i>	Oak Juniper Pinyon Woodland
Chisos Rosewood	<i>Vauquelinia corymbosa</i> ssp. <i>augustifolia</i>	Oak Juniper Pinyon Woodland
Cottonwood	<i>Populus deltoides</i>	Riparian
Desert Willow	<i>Chilopsis linearis</i>	Riparian/Desert Shrub
Fragrant Ash	<i>Fraxinus cuspidata</i>	Oak Juniper Pinyon Woodland
Emory Oak	<i>Quercus emoryii</i>	Oak Juniper Pinyon Woodland
Gambel Oak	<i>Quercus gambelii</i>	Oak Juniper Pinyon Woodland
Goldenball leadtree	<i>Leucaena retusa</i>	Oak Juniper Pinyon Woodland
Live Oak	<i>Quercus fusciformis</i>	Oak Juniper Pinyon Woodland
Mexican Buckeye	<i>Ungnadia speciosa</i>	Riparian
Mexican Redbud	<i>Cercis Canadensis</i> v. <i>mexicana</i>	Oak Juniper Pinyon Woodland
Mexican Pinyon	<i>Pinus cembroides</i>	Conifer Woodland
Ponderosa Pine	<i>Pinus ponderosa</i>	Conifer Woodland
Retama	<i>Parkinsonia aculeata</i>	Riparian
Texas Madrone*	<i>Arbutus xalapensis</i>	Conifer Woodland
Texas Persimmon	<i>Diospyros texana</i>	Oak Juniper Pinyon Woodland/Grassland
Texas Red Oak	<i>Quercus buckleyi</i>	Oak Juniper Pinyon Woodland
Weeping Juniper*	<i>Juniperus flaccida</i>	Conifer Woodland
Western Soapberry	<i>Sapindus drummondii</i>	Grassland
Wright's Acacia	<i>Acacia wrightii</i>	Oak Juniper Pinyon Woodland
*Denotes plant species proposed for limited use in campus landscaping; to be included in educational displays or scientific collections only.		

Common Name	Scientific Name	Biome
Shrubs		
Agarita	Berberis haematocarpa & B. trifoliolata	Desert shrub/Oak Juniper Pinyon Woodland
Apache Plume	Fallugia paradoxa	Desert shrub
Autumn Sage	Salvia greggii (all colors)	Oak Juniper Pinyon Woodland/Riparian/Grassland
Beargrass	Nolina erumpens	Oak Juniper Pinyon Woodland
Black Dalea	Dalea frutescens	Desert shrub
Big Bend Silverleaf	Leucophyllum minus	Desert shrub
Convent & Green Cloud Sage	Leucophyllum frutescens 'Convent'	Desert shrub
Creosote Bush*	Larrea tridentata	Desert shrub
Desert Rosemary Mint	Poliominta incana	Desert shrub
Esperanza	Tecoma stans	Oak Juniper Pinyon Woodland
Evergreen Sumac	Rhus virens	Oak Juniper Pinyon Woodland
Feather Dalea	Dalea formosa	Oak Juniper Pinyon Woodland
Flame Leaf Sumac	Rhus lanceolata	Oak Juniper Pinyon Woodland
Fragrant Mimosa	Mimosa boreales	Oak Juniper Pinyon Woodland
Fragrant Mistflower	Eupatorium havanense	Oak Juniper Pinyon Woodland
Fragrant Sumac	Rhus aromatica	Oak Juniper Pinyon Woodland
Guajillo	Acacia berlandieri	Desert shrub
Roemer's Acacia	Acacia romeriana	Desert shrub
Sacahuista	Nolina texana	Grassland/Riparian
Silver Dalea	Dalea bicolor var. Argyraea	Desert shrub
Texas Kidneywood	Eysenhardia texana	Oak Juniper Pinyon Woodland
Texas Lantana	Lantana horrida	Oak Juniper Pinyon Woodland
Texas Mountain Laurel	Sophora secundiflora	Oak Juniper Pinyon Woodland/Grassland
Texas Sage, Cenizo	Leucophyllum frutescens	Desert shrub/Grassland
Thompson Yucca	Yucca thompsoniana	Desert shrub/Grassland
Torrey yucca	Yucca torreyi	Desert shrub/Grassland
Turpentine Bush var. 'Desert Mountain'	Ericameria laricifolia	Desert shrub
Wheeler Sotol	Dasyliirion wheeleri	Desert shrub/Grassland
Winterfat	Ceratoides lanata	Desert shrub
Wooly Butterflybush	Buddleja marrubiifolia	Oak Juniper Pinyon Woodland

Common Name	Scientific Name	Biome
Perennials and Ground Covers		
Big Bend Penstemon	Penstemon havardii	Oak Juniper Pinyon Woodland
Big Red Sage	Salvia penstemonoides	Oak Juniper Pinyon Woodland
Blackfoot Daisy	Melampodium leucanthum	Oak Juniper Pinyon Woodland
Cardinal Penstemon	Penstemon cardinalis	Oak Juniper Pinyon Woodland
Columbine	Aquilegia spp.	Riparian/Oak Juniper Pinyon Woodland
Damianita	Chrysactinia mexicana	Oak Juniper Pinyon Woodland
Four Nerve Daisy		Grassland
Gregg Dalea	Dalea greggii	Desert Shrub
Havard Penstemon	Penstemon havardii	Grassland
Mealy Blue Sage	Salvia farinacea	Grassland
Mexican Oregano	Poliomintha incana	Desert Shrub
Mountain Sage	Salvia regla	Conifer Woodland/Oak Juniper Pinyon Woodland
Pink Skullcap	Scutellaria suffretescens	Desert Shrub
Pink Verbena	Verbena pumila	Grassland
Red Mexican Hat	Ratibida columnifera	Grassland
Scarlet Bouvardia	Bouvardia ternifolia	Oak Juniper Pinyon Woodland
Skeletonleaf Goldeneye		Desert Shrub
Sundrops	Calylophus hartwegii	Oak Juniper Pinyon Woodland/Grassland
Texas Betony	Stachys coccinea	Oak Juniper Pinyon Woodland
Drummond Sundrops	Calylophus drummondii	Grassland
Winecup	Callirhoe involucrata	Oak Juniper Pinyon Woodland/Grassland
Wright Penstemon	Penstemon wrightii	Oak Juniper Pinyon Woodland
Succulents		
Candelilla	Euphorbia antisiphilitica	Riparian
Chisos Agave	Agave havardiana	Desert Shrub
Greenflowered Cactus	Echinocereus viridiflorus	Desert Shrub
Lechuguilla	Agave lechuguilla	Desert Shrub
Nipple Cactus	Mammillaria meiacantha	Desert Shrub
Ocotillo	Fouquieria splendens	Desert Shrub
Red yucca	Hesperaloe parviflora	Desert Shrub/Riparian
Spineless Prickly Pear	Opuntia ellisiana	Desert Shrub
Weber Agave	Agave weberi	Desert Shrub

Common Name	Scientific Name	Biome
Grasses		
Big Alkalai Sacaton	<i>Sporobolus airoides</i> var. <i>wrightii</i>	Desert Shrub/Grassland/Riparian
Black Grama	<i>Bouteloua eriopoda</i>	Grassland
Blue Grama	<i>Bouteloua gracilis</i>	Grassland
Bull Muhly	<i>Muhlenbergia emersleyi</i>	Grassland/Conifer Woodland/Oak Juniper Pinyon Woodland
Buffalo Grass	<i>Buchloe dactyloides</i>	Grassland
Deer Muhly	<i>Muhlenbergia rigens</i>	Grassland/Riparian
Indian Grass	<i>Sorghastrum nutans</i>	Grassland
Little Bluestem	<i>Andropogon scoparius</i>	Grassland
Mexican Feather Grass	<i>Nassella tenuissima</i>	Grassland/Oak Juniper Pinyon Woodland/Conifer Woodland
Pine Muhly	<i>Muhlenbergia dubia</i>	Oak Juniper Pinyon Woodland/Conifer Woodland
Sideoats Grama	<i>Bouteloua curtipendula</i>	Grassland
Texas Grama	<i>Bouteloua texana</i>	Grassland

College Sustainability Report Card

The College Sustainability Report Card is the only independent evaluation of campus and endowment sustainability activities at colleges and universities in the United States and Canada. In contrast to the academic focus on sustainability in research and teaching, the Report Card examines colleges and universities, as institutions, through the lens of sustainability.

Sustainability signifies meeting the needs of the present without compromising the ability of future generations to meet their own needs. Are these considerations guiding how resources are managed in campus operations and endowment practices? The Report Card is designed to identify colleges and universities that are leading by example on sustainability. The aim is to provide accessible information for schools to learn from each other's experiences and establish more effective sustainability policies.

Just as the grading system serves as an incentive in the classroom, the Report Card's grading system seeks to encourage sustainability as a priority in college operations and endowment investment practices by offering independent yearly assessments of progress. The focus is on policies and practices in nine main categories:

- Administration
- Climate Change & Energy
- Food & Recycling
- Green Building
- Student Involvement
- Transportation
- Endowment Transparency
- Investment Priorities
- Shareholder Engagement

Indicators

The College Sustainability Report Card grades are determined through the following process:

The survey was divided into nine categories, with numerous sub-category indicators, all of which are listed below. Schools were awarded points based on their levels of activity within each indicator. The number of points assigned to each indicator varied, but the breakdown is shown below. Additionally, for some indicators, extra credit points were awarded to recognize highly innovative efforts. When appropriate, school size and geographic setting were taken into account.



Solar parking



Solar farm



Wind as an alternative energy has been tested at several universities

Administration

Sustainability Policies

Demonstrating a commitment to campus sustainability by the president and senior administrators through a formal sustainability policy or action plan. Adopting sustainability-related mission statements, strategic plans, master plans, and/or endorsements of local, national, or international agreements (e.g., American College and University Presidents' Climate Commitment, Talloires Declaration).

Regular Credit

25%

Extra Credit

5%

Administrative Committee

Integrating multiple stakeholders into an active committee that guides the administration on issues of campus sustainability. Facilitating student participation in institutional decision making on sustainability-related issues. Achieving significant results in efforts to advance sustainability on campus.

25%

Sustainability Staff

Designating staff members to help develop, facilitate and oversee sustainability programs and policies. Supporting the sustainability staff, as indicated by level of funding and authority of lead sustainability official.

25%

Office or Department

Maintaining an office or department focused on achieving campus sustainability goals.

5%

Website

Offering a school website to facilitate involvement in campus sustainability initiatives and to educate the community.

10%

Administration (cont.)	Regular Credit	Extra Credit
<p>Green Purchasing Mandating through a formal policy, or informally prioritizing, the purchase of reusable or green-certified materials, including, but not limited to, Energy Star products, EPEAT-certified electronics, and environmentally preferable paper products.</p>	10%	
<p>Employee Outreach Opportunities Organizing programs to encourage sustainable behavior among faculty and staff.</p>	5%	2.5%
Climate Change and Energy		
<p>Greenhouse Gas Emissions Inventory Initiating, completing, and updating campus greenhouse gas (GHG) emissions inventories.</p>	10%	5%
<p>Commitment to Greenhouse Gas Emissions Reduction Making a formal commitment to reducing GHG emissions by a specific amount.</p>	15%	5%
<p>Realized Greenhouse Gas Emissions Reduction Achieving a reduction in GHG emissions, both on a per-square-foot basis and on a per-student basis.</p>	20%	10%
<p>Energy Efficiency and Conservation Achieving a reduction in building energy consumption. Retrocommissioning HVAC systems and/or installing energy-efficient technologies, such as cogeneration plants and energy-efficient lighting. Facilitating programs that provide incentives for members of the campus community to reduce energy use.</p>	25%	10%
<p>Renewable Energy Generation Installing solar, wind, geothermal or other alternative sources of power on or off campus. Operating solar hot water systems.</p>	15%	10%
<p>Renewable Energy Purchase Purchasing electric power from renewable sources or purchasing renewable energy credits. Purchasing nonelectric energy from renewable sources.</p>	10%	7.5%
<p>On-site Combustion Generating energy for heating and/or cooling from renewable sources.</p>	5%	10%
Food and Recycling		
<p>Locally Grown and Produced Food <i>Geographic location and seasonal availability are taken into consideration. "Local" is defined as within 150 miles of campus.</i> Prioritizing the purchase of food from local farmers and producers. Sourcing food from on-campus farms and gardens.</p>	20%	10%

	Regular Credit	Extra Credit
Food and Recycling (cont.)		
Organic and Sustainably Produced Food Incorporating organic, cage-free, hormone-free, and other sustainably produced foods in the menu. Frequently offering specifically labeled vegan meals.	20%	10%
Fair Trade Products Purchasing fair trade-certified coffee and/or other food products.	5%	2.5%
Dishware and Eco-Friendly Incentives Providing incentives for the use of reusable dishware or for bringing a bag. Offering takeout containers made from recycled, biodegradable, or eco-friendly materials.	10%	
Food Composting and Waste Diversion Operating a composting program for pre- and postconsumer food waste. Reducing dining hall waste by donating excess food, implementing trayless dining, recycling used cooking oil for biodiesel, or removing bottled water, among other initiatives.	15%	
Waste Reduction Reducing the campus's waste generated per weighted campus user.	5%	
Recycling of Traditional Materials Administering a recycling program for all campus and dining hall traditional recyclables, such as bottles, cans, and cardboard.	10%	5%
Recycling of Electronic Waste Providing recycling for items like batteries, cell phones, computers, and printer cartridges, for waste generated by students and by the school.	5%	2.5%
Composting (Aside from Dining Facilities) Composting landscaping waste or recycling landscaping waste into mulch for use on campus. Providing composting receptacles around campus in locations other than dining halls.	5%	2.5%
Source Reduction Operating programs that facilitate the continued use of items in good condition (instead of disposal), such as end-of-semester furniture or clothing swaps and collections.	5%	2.5%
Green Building		
Design and Construction Committing, through a formal policy, to use green building criteria in all construction and renovations. Constructing buildings that are certified by, or meet the standards of, green building rating systems, including the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) rating. Diverting nonhazardous construction and demolition waste from landfills.	35%	5%

	Regular Credit	Extra Credit
Green Building (cont.)		
Adaptive Reuse Initiating adaptive reuse construction projects to repurpose unused buildings.	15%	
Operations and Maintenance Committing, through a formal policy, to maximize operational efficiency in buildings, including using green cleaning products and performing systems upgrades. Renovating existing buildings in accordance with LEED-EB standards.	20%	
Water Management Achieving a reduction in water-use-per-weighted-campus-user. Installing various energy efficiency and water conservation retrofits, such as lighting motion sensors or low-flow plumbing equipment. Using numerous strategies to manage storm water.	20%	10%
Energy Management Retrocommissioning HVAC systems and/or installing energy-efficient technologies, such as cogeneration plants and energy-efficient lighting.	10%	5%
Student Involvement		
Residential Communities Offering sustainability-themed residential housing options.	10%	5%
New Student Orientation Integrating sustainability into new student orientation.	10%	5%
Internships/Outreach Opportunities Offering sustainability internship opportunities for students on campus. Providing student positions through supported eco-rep programs or similar initiatives.	30%	20%
Student Organizations Having active student organizations that prioritize campus sustainability efforts and that achieve significant results in their efforts to advance sustainability on campus.	35%	7.5%
Sustainability Challenges and Competitions Overseeing sustainability challenges or competitions on campus or with other colleges at least once a year.	15%	7.5%
Transportation		
Campus Motor Fleet Maintaining motor fleet vehicles that run on clean-burning fuels or electricity.	12.5%	12.5%
Commute Modal Split Achieving a high percentage of employee and student commuters who travel via means other than single-occupancy vehicles.	10%	2.5%

Transportation (cont.)	Regular Credit	Extra Credit
<p>Local Transportation Alternatives Offering incentives to campus community members for carpooling or using public transportation. Providing free transportation around campus and/or to local destinations, or offering subsidies to public transportation systems.</p>	37.5%	5%
<p>Bicycle Program Encouraging bike use by providing bicycle rental or sharing programs and offering repair services.</p>	15%	5%
<p>Car-Sharing Program Partnering with a car-sharing program in order to reduce the need for car ownership.</p>	15%	10%
<p>Planning Planning and implementing policies to promote a pedestrian- and bike-friendly campus. Offering employees the option to telecommute or work a condensed week.</p>	10%	2.5%
 Endowment Transparency		
<p>Investment Holdings Making lists of investment holdings available to the school community or to a wider audience.</p>	40%	
<p>Proxy Voting Record Making proxy voting records available to the school community or to a wider audience.</p>	30%	
<p>Accessibility Making investment holdings and proxy voting records available, with points awarded on a scale based on how widely available they are. Priorities are as follows:</p> <ul style="list-style-type: none"> • Providing information via a publicly-accessible website. • Providing information via a password-protected website. • Sending information, upon request, via email or post. 	30%	
 Investment Priorities		
<p>Renewable Energy and Sustainable Investment Using environmental sustainability criteria in selecting all or part of endowment investments. Having investment policy provisions or using investment managers that consider sustainability factors. Investing in renewable energy funds or actively investigating the option.</p>	30%	
<p>Community Investment Making investments in community development loan funds or other community development financial institutions or actively investigating the option.</p>	30%	

Investment Priorities (cont.)

On-Campus Sustainability Projects

Investing in on-campus energy/water efficiency projects through the endowment (as an investment, not as a payout).

Regular Credit

30%

Extra Credit

Donor Fund Option

Offering donors the opportunity to direct their gift to an investment fund that considers environmental sustainability factors.

20%

Optimizing Investment Return

Investing to optimize long-term profit—a vital aspect of maintaining endowment sustainability.

40%

Shareholder Engagement

Proxy Vote Decisions

Providing ways for the school to exercise its shareholder rights. Advising trustees on proxy voting by a proxy voting advisory committee or similar committee structure.

40%

Stakeholder Involvement

Incorporating multiple stakeholders into the investment advisory process. Including faculty, student, and alumni representation on an advisory committee to the trustees.

30%

School Community Input

Encouraging members of the school community to provide input via open forums or a website.

10%

Sustainability Voting Record

Voting in favor of sustainability-related shareholder proposals (when school proxy voting records are available for review).

20%



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