Texas A&M International University

Master Plan 2004-2014

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Architects and Planners, Inc.

Produced in cooperation with The Texas A&M University System and
Texas A&M International University in Laredo, Texas.

This document shall not be used for regulatory approval,
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Acknowledgements

The participation of the following individuals and organizations in the preparation of the Master Plan for Texas A&M International University is gratefully acknowledged.

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November 18, 2004
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Letter from the University's President

In the last third of the 20th century, South Texans achieved unprecedented improvement for higher education in this region. Thirty-five years ago, Billy Cowart was sent from Kingsville up to Laredo to open an "outreach office" of Texas A&I University. That effort, housed in a carrel in the Yeary Library at Laredo Junior College, has become Texas A&M International University. Today all three institutions participating in that initiative-Texas A&I, Laredo Community College, Texas A&I at Laredo-have been made new, expanding far beyond even the sunniest predictions. Today, only nine years after moving into the first buildings on our new campus, we are about to complete the Lamar Bruni Vergara Science Center and the expanded kinesiology facilities are nearing the end of the design phase. Phase II of student housing, the Residential Learning Community which opened last month, will meet immediate demands for more and traditional on-campus housing for undergraduates.

The unusually high quality of construction and the carefully designed beauty of these buildings dazzle all visitors to Texas A&M International University. Plato may have gathered his academy on a porch, but beginning in the Middle Ages universities have shared ground with great cathedrals and houses of worship. The spirit can best be fed and the mind trained in amenable surroundings, buildings that support our efforts and stimulate our imaginations. University study in Laredo honors this tradition.

The Master Plan, here updated and looking into the next decade, reflects the best calculations and thinking of the architectural firm of Ford, Powell & Carson and of those who teach and study and work at the University. The vigorous growth we will experience demands an aggressive and unstinted commitment to building and to change. Our habit of erecting beautiful buildings will continue, the happy union of Laredo's strong legislative team in Austin and strong tradition of philanthropy in our city. These plans will guide our thinking and frame our dreams.

Our task at the University is to design and to build our lives. How blessed we are to carry out that mission in such a resplendent setting.

President Ray M. Keck, Ph. D.

Letter from the Vice President for Finance and Administration

Texas A&M International University was established in 1969 by the 61st Legislature, House Bill 607, as Texas A&I University at Laredo. It was co-located and leased space from Laredo Junior College (now Laredo Community College). Since then the University has changed its name to Laredo State University and then to Texas A&M International University in 1993 after having joined the Texas A&M University System in 1989. In 1991 the University received a $250,000 appropriation, under the leadership of Representative Henry Cuellar, for the development of a master plan for a new campus.

In 1992 the goals of the University were to:

- Prepare the approved physical site for construction of a technologically advanced university campus.
- Expand Laredo State University from an upper-level institution to a four-year university.
- Expand the University's academic program inventory to include a broader range of offerings at the Baccalaureate and Master levels and at least one program at the Ph. D. level.
- Increase quality and accessibility at all education levels, and improve minority student recruitment and retention.
- Improve the quality of education by providing faculty opportunities and resources to sharpen their mastery of disciplines and engage in research and publication.
- Commit the University to obtaining and incorporating the latest technologies to advance its institutional mission.
- Serve as a leading resource center for economic, social, and educational development issues in South Texas.
- Capitalize on the strategic location of the University, emerging as an institution with and international agenda able to address the developmental challenges of Mexico, Latin America, and the hemisphere.

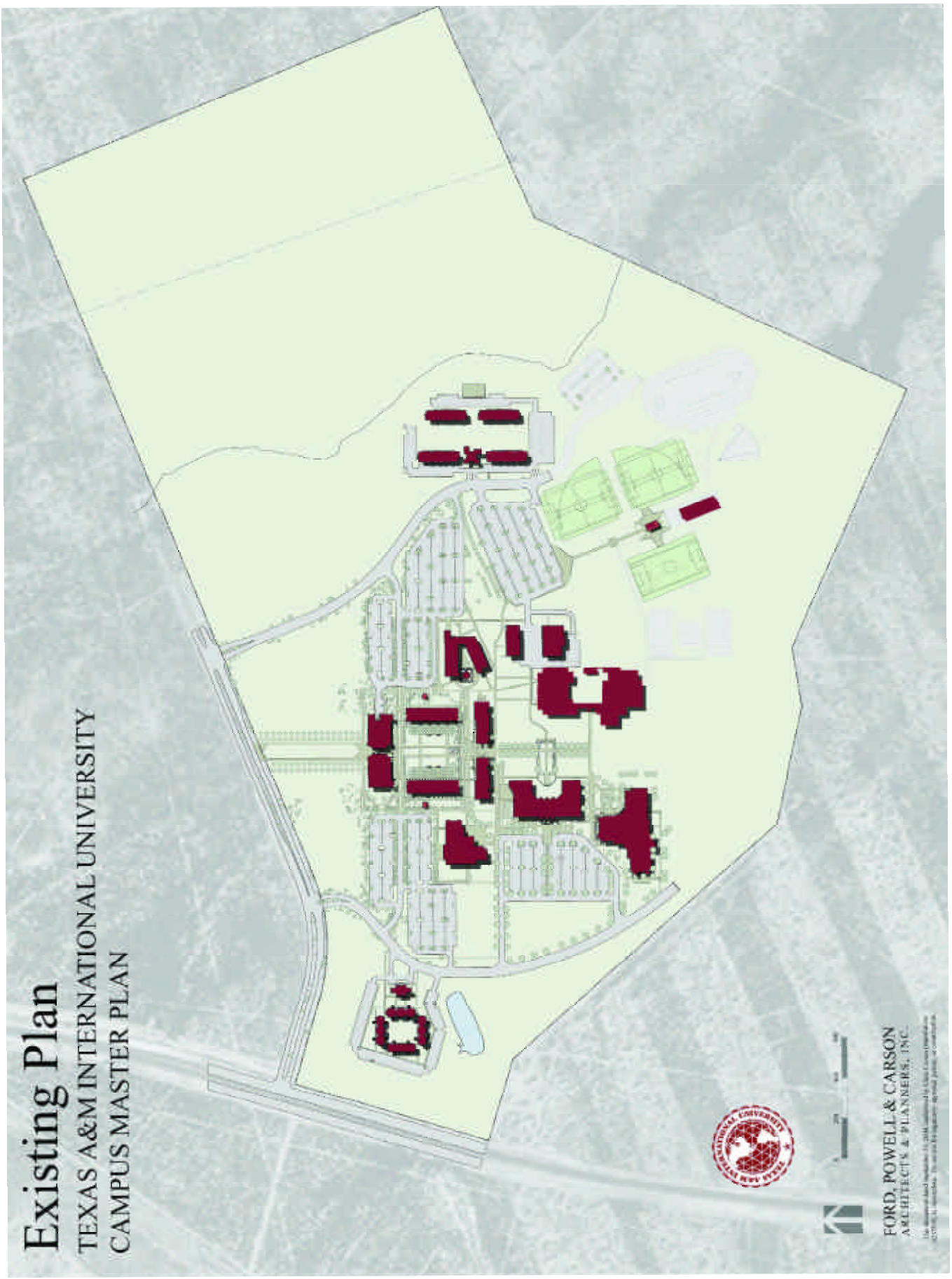
This led to the donation of 300 acres of land donated by Mr. Radcliffe Killam to construct the new campus. In the subsequent legislative session, Senate Bill 3 provided Tuition Revenue Bond Authority for $30,000,000 to begin construction of Phase I of the new campus. The funds were provided by Senate Bill 6, 73rd Legislature under the leadership of Senator Judith Zaffirini. House Bill 2058, 73rd Legislature, authorized and appropriated Tuition Revenue Bonds of $36,000,000.

Since then we have constructed several phases and are currently designing Phase V, an expansion of the Kinesiology Facility. As of 2003 we now have a beautiful campus with 12 buildings totalling 671,600 gross square feet, at a cost of approximately $158,820,562. This is in addition to the student housing. Tuition Revenue Bonds have provided approximately $140,677,500. The Master Plan, which was developed in 1992, has been completed and now we are working to update that plan. This updated plan will look 5 and 10 years into the future and identify new construction needed to keep up with the rapid growth.

This new campus has provided our students the best in facilities to pursue their educational dreams. Our intent has been to provide the best facilities so that the faculty and staff can provide the very best in educational programs and support services.

The updated plan documents the existing facilities and grounds, identifies facilities for the future, and projects future enrollment based on the academic programs offerings that are planned. Constructing a new campus has provided an opportunity to develop beautiful, very well landscaped, maintenance-friendly and technologically advanced facilities that will support the learning environment. The University is prepared and poised to continue to advance the goals outlined when we prepared the first master plan.

Jose Garcia
Vice-President for Finance and Administration


Existing Plan
TEXAS A&M INTERNATIONAL UNIVERSITY
CAMPUS MASTER PLAN
FORD, POWELL & CARSON
ARCHITECTS & PLANNERS, INC.

I. Mission of the University

Texas A&M International University System has a clear and comprehensive mission statement, approved by The Texas A&M University System Board of Regents and the Texas Higher Education Coordinating Board, periodically reviewed and communicated to its constituencies.

Texas A&M International University, a Member of The Texas A&M University System, is committed to the preparation of students for leadership roles in their chosen profession and in an increasingly complex, culturally diverse state, national, and global society. The University provides students with a learning environment anchored by the highest quality programs built on a solid academic foundation in the liberal arts and natural sciences. To fulfill its mission, the University offers baccalaureate and masters programs in the arts; humanities; business; education; physical, biological, and social sciences; and health professions, with authority for select doctoral programs. Programs focus on developing strong undergraduate and graduate offerings and a progressive agenda for global study and understanding across all disciplines.

II. General

The master plan update will document what has been constructed and will provide direction for the future growth of the University. This plan will support the strategic plan of the University which will enable it to continue to meet the needs of a rapidly growing regional student population. For example, the University was converted to a full four year university in the Fall of 1995 when the first phase of construction was completed. In the fall of 2003 the University had an enrollment of 4080 and expects to have some 4400 students by fall 2005. This master plan contemplates a University with an enrollment of 11,000 students in approximately 10 years.

This Master Plan Update will support The University in undergoing a reaffirmation accreditation visit by the Southern Association of College and Schools (SACS). The compliance criteria indicate that, "The institution must maintain a current written physical facilities master plan that provides for orderly development of the institution and relates it to other institutional planning efforts."

Historical Context

The university traces its origins back to 1970 when it was referred to as Texas A&I University at Laredo, a branch of Texas A&I University at Kingsville. In 1977, the name was changed to Laredo State University. The university became a member of the Texas A&M University System in 1989. In 1992 the first master plan for the university was prepared for its new quarters in north Laredo and the year following, the name of the institution was officially changed to Texas A&M International University. The University was authorized by the 74th Texas Legislature to become a four year degree-granting institution. From its inception, TAMIU shared its campus on the grounds of the old Ft. McIntosh with Laredo Junior College. In 1995, the University marked its 25th anniversary on the site of its new campus on property donated to the University System by the Killam family of Laredo. The original 200-acre campus was subsequently augmented by a further 100-acre grant by the same family.

Enrollment at the University has grown consistently. In the Fall of 1995, enrollment was 2,510 students. In the Fall of 2003, this figure had grown to 4,080. In the Fall of 2004, enrollment is projected to be on the order of 4,276 students.

Regional Context

The South Texas Region continues to grow at rate that outstrips growth in other Texas regions. The border region is the fastest growing part of Texas. Between 1995 and 2000, the Laredo/Webb County area experienced a growth rate of 44%, as compared to 28% statewide during the same period. Between the years 1990 - 1996, Laredo was the second fastest growing metropolitan area in the United States, and continues today to grow at a rapid and sustained rate. The population in Webb County/ Laredo is now at the 214,000 mark and growing at a substantial rate. This growth is both demographic and economic and will have profound implications for the state of Texas in the decades to come. The 200,000 population figure does not approximate the true population of the area which from an economic point of view must encompass "Los Dos Laredos" with a population that may be as high as 850,000 according to the University's Strategic Plan. The passage of the North American Free Trade Act (NAFTA) has been an economic engine for the region with the establishment of maquilladora plants on the Mexican side of the border and the concomitant growth in trans-border related activities such as distribution and storage centers on the American side of the border. Last year, there were more than 1.6 million loaded truck crossings at the border alone, and there are in excess of 800 cross-border or border-related businesses in the areas.

The border region was under-served by the state university systems-notably the University of Texas System and the Texas A&M University System. To a significant degree. this has changed. Currently there are a number of new campuses of these state university systems dotted along the southern border: the University of Texas at Brownsville, the University of Texas Pan American at Edinburgh, Texas A&M University in Corpus Christi, the venerable Texas A&M Kingsville campus, and Texas A&M International University in Laredo. The rapid growth of these universities in recent years serves to illustrate the long pent-up demand for higher education in the border region. By the year 2000, nearly 25% of all students eligible for college in Texas were Hispanic and this number is expected to continue to increase. The verifiable fact is that all of these institutions of higher learning are experiencing continuing growth rates. To gauge the potential demand for college-level institutions, the school age population under 18 years of age in Laredo alone comprises about 36% of the area population as compared to 28% statewide.

The need to locate first-rate institutions of higher learning in the border region is in part driven by the need to elevate the reduced economic circumstances of the area's population, and in part by cultural factors which sometimes inhibit college eligible students from living far from home. The median per capita income in Laredo is approximately $11,000 per year as a compared to nearly $19,000 statewide. Increased aspirations in the region, however, are fueling a rising demand for higher education that can only increase. Improving employment statistics for the area and rising average incomes compared to the previous twenty years are contributing factors. Economic factors also come into play and underscore the need for a local university that can accommodate large numbers of students who are obliged to work part-time to support themselves and their families. They are natural "customers" for higher education on a part time basis.

Texas A&M International University reaches across the Texas-Mexico border and draws students from northern Mexico as well. It sits at the heart of a roughly 15,000 square mile region where it is the only senior university, fulfilling a crucial need. In the Laredo area, Laredo Community College fills the critical 2-year college educational niche. The UT Health Sciences Center under the aegis of the UTHSC - San Antonio partially serves the medical educational sector.

III. Objective of the Master Plan Update

The purpose of this master plan study is to provide a multi-year master plan to address needs and existing development ideas for the entire 300-acre campus. This master plan must incorporate analysis of existing conditions, projected needs, current capabilities, educational goals, and anticipated funding levels.

Analysis of Existing Conditions

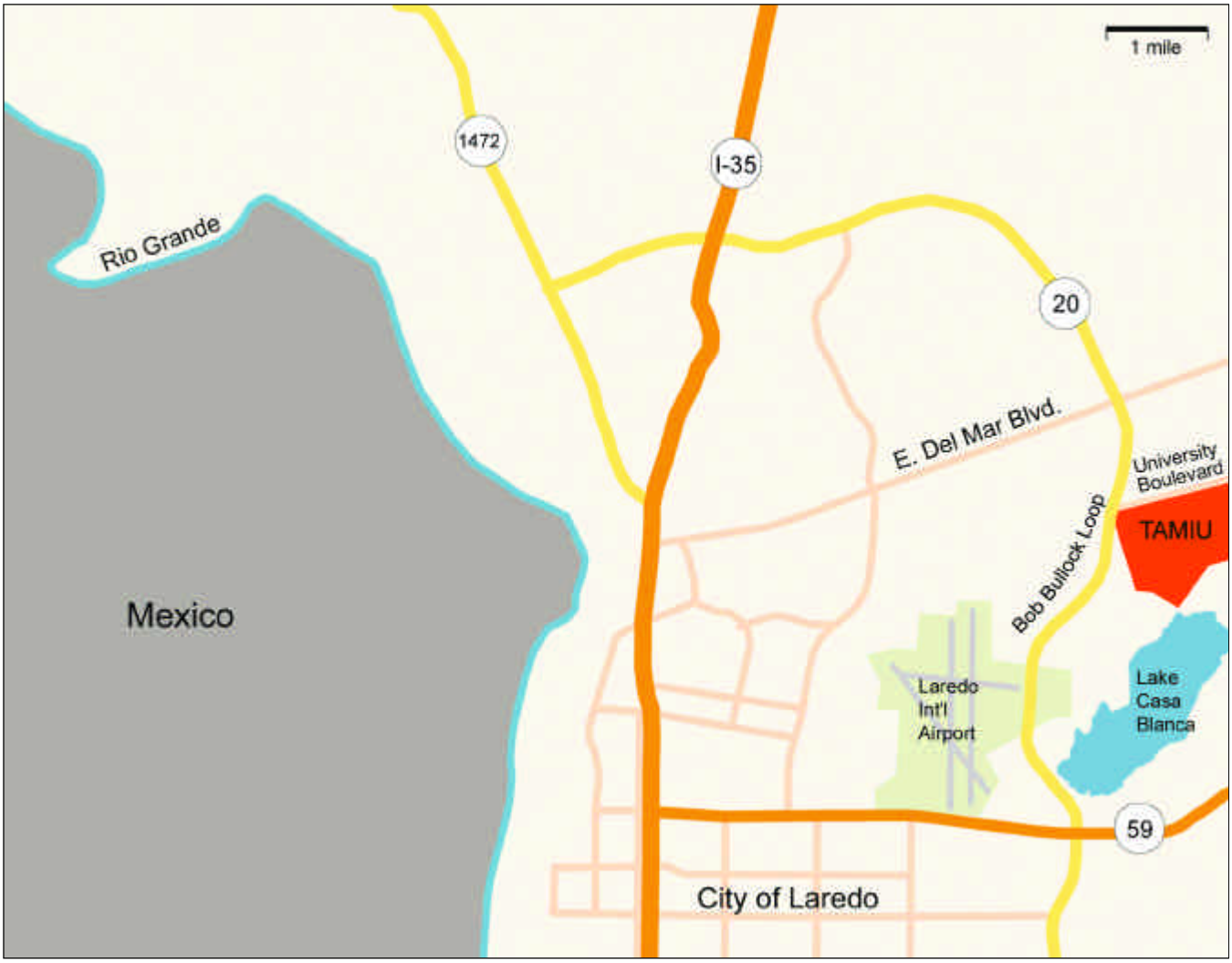
The University occupies an attractive 300-acre site on the northeast edge of Laredo. This site consists of a 200-acre initial land grant that was later supplemented by another, contiguous 100-acre parcel of land donated by the family that made the initial grant. Access to the University is via University Boulevard which connects to Bob Bullock Loop (Loop 20) at a signalized intersection.

At the time of this master plan update, the University has undergone four successive, major phases of construction and is embarking on a fifth phase, beginning with a doubling of its Kinesiology Building. This Master Plan Update assumes its construction.

The University has broadly developed in accordance with its original master plan. This master plan laid out a “core campus” of academic and support buildings surrounded by surface parking lots contained within a perimeter or Loop Road. Variances from the original master plan are minor; for example, the first increment of student housing was placed in the northwest corner of the site. Subsequent housing units have been built where originally intended. The Loop Road shown in the first master plan has not been completed. This Master Plan Update shows that it should be included in the first phase (5 years) of construction. It is essential for continued, efficient growth of the University. A south entry/exit will be essential to the University in order to prevent traffic bottlenecks that are already occurring to the north.

The University has grown at slower pace than initially predicted; however, there is ample evidence to suggest that growth is accelerating and can be sustained provided that proper funding levels are made available.

The current campus has tremendous curb appeal. It is among the most attractive building complexes in the Laredo area and a source of pride in the local community. This is attributable to a consistent use of materials and forms which is sufficiently strong to accommodate judicious variations and exceptions within a prevailing theme.



Access Issues

Texas A&M International University, as distinct from the time of 1992 master plan, is now at the heart of an area of explosive suburban growth. No longer is the campus miles away from concurrent development; it is in the middle of it. University administrators have expressed concerns especially regarding such issues as connecting to the local road network in order to efficiently load and unload the campus at peak times at the beginning and at the end of the campus day.

The primary feeder to the campus is the Bob Bullock Loop. This loop intersects University Boulevard, currently the only street providing access to the University. TxDOT has expressed an interest in constructing an overpass at this intersection in order to permit a rapid left-turn flow of traffic to the south, easing congestion somewhat at this intersection. The master planners are in favor of this development. No scheduled implementation or funding plan is known at this time.

Second Campus Exit

A second means to alleviating traffic pressures at this intersection will be an exit on the opposite, or south end of the campus. Such an entrance will permit traffic to travel down a 'collector street' in an adjacent residential neighborhood planned for the future. This entrance/exit to the campus is essential for its continued development. The adjacent landowners have been aware of a need for a second exit from the campus since the time of the first master plan. In recent discussions with the landowners, this need was again expressed and reinforced. While concurring in general, the adjacent property owner made no commitments.

This second exit/entrance to the campus will ultimately connect with Bob Bullock Loop south of the University well beyond the minimum distance TxDOT prescribes for separation between traffic signals. There is no timetable for when an entrance to the south will be constructed.

Extension of University Boulevard

A third option which seems certain eventually to be built, is the extension of University Boulevard to the east to connect with a new (and yet to be built) Outer Loop.

According to the City of Laredo's Thoroughfare Plan (as amended November 26, 2001), both Del Mar Boulevard to the north, and University Boulevard immediately abutting the site to the north, are designated as "major arterials" and are slated to be extended to the east to connect to the proposed Outer Loop. When such an extension actually takes place, access to, and exit from the University to the east will significantly improve exit from the University at peak times. However, there is no published schedule that the master planners are aware of at this time.

Of immediate concern to the campus' future plans through the next two growth phases is gaining access to the campus from the south. Constructing an overpass at the intersection of Bob Bullock and University will significantly improve the through-put of traffic making a left turn on Bob Bullock.

New South Entry/Exit

Similarly, an entrance/exit to the south through a collector street on the Killam-owned property - connecting with Bob Bullock further to the south - can have several beneficial effects that are beneficial to the University: 1) it will give the University a much-needed second entrance and exit, easing pressure on University; 2) the collector street will provide a buffer between the University and the Killam property to the south; 3) the collector street will provide an appropriate environment for the development of privately owned apartment-style housing on the outward side of the collector. Thus there would be a synergy between a southern entrance to the university, a collector street, and housing opportunities.

A new south entrance to the campus will span over a 100-year flood plain. A short span bridge of some type will be required. This bridge - centered on the new Administration Building - is an opportunity to make the entrance from the south more dramatic.

Plans for a projected Killam-developed housing and residential development to the south clearly indicate an entrance on the main axis of the campus. It appears to be inevitable that such a development will take place and that an entrance at the south end of the campus will be constructed; however, the Killam Companies did not share a projected timeline for this development with the master planning architects.

Projected Needs - Programming

Programming in the context of a master plan update involves looking at what is there, meeting with the University leadership collectively and individually to analyze growth trends, and to quantify what the results of that analysis look like when applied to a set time horizon. The time horizon for this study is a two-phase process extending from the present to a period 8-10 years out. Each phase is 4-5 years in duration.

The tables accompanying this section summarize the results of this study in relation to the current conditions at the University. For the sake of simplicity, the tables do not show the detailed numbers that make up the constituent parts of each of the University's main Colleges and Divisions.

The process involved the following tasks and determinations:

- Change or growth in the undergraduate FTE population
- Change or growth in Master Degree FTE population
- Change or growth in PhD FTE population
- Summarize resultant total FTE student population (Undergraduate/ Master/ PhD
- Change or growth in Faculty FTE, a function of student populations
- Change or growth in Staff FTE growth, also related to student population totals

The numbers of students, faculty and staff resulting from these projections are used as the basis for calculating the University's space needs. The methodology is contained in the Texas Higher Education Coordinating Board's Five Factor Model. The resultant calculations permit the Programmers to determine the following:

- Total Space Growth
- Teaching Space Needs
- Library Growth
- Research Space
- Office Space
- Support Space
- Non-E&G Space

Tables on the following pages illustrate the results of each projection. To summarize:

- Currently, the University occupies approximately 672,000 GSF of building space in 12 buildings, not including student housing.
- **Undergraduate FTE** will increase from 2,536 to 3,958 in five years, an increase of 56%. In ten years, the U/G FTE will be approximately 6,400, and increase of more than 150% over current numbers.
- The FTE number of **Master's Degree candidates** will increase in five years by approximately 64% to 559; in ten years this number is expected to increase to almost 840, or 146% over the current number of candidates.
- The **number of PhD candidate FTE** students during the same time period is expected to increase dramatically from 3 FTE today, to 34 in five years, and 71 in ten years.
- Thus the **total number of FTE Students** is expected to increase from 2,880 currently to 4,551 in five years and nearly 7,300 FTE students in 10 years.
- **Faculty (FTE)** numbers will increase from 223 to about 284 in five years, and to 456 in ten years.
- Non-faculty **Staff (FTE)** will increase from 405 to 513 in five years and to about 820 in ten years, more than double the current number.
- The THECB's Five Factor Model yields **Total Space Needs** in five years yields more than a 244,000 ASF (Assignable Square Feet) with projected new construction of approximately 91,000 ASF not including new Dining and Housing areas. This equates to approximately 375,000 GSF (Gross Square Feet) of new building area. In ten years more than 550,000 ASF of new building area is needed, (again excluding Housing and Dining) equating to approximately 850,000 GSF of building space.
- The balance of the Tables shows how the spaces in the preceding Table is sub-divided among Teaching, Office, Library, Research, Office Support, and non-E&G space.

Anticipated Funding Levels

The University has used a variety of funding sources to construct the campus to this point. The majority of the funding, $140,677,500, has been provided by the State of Texas through the sale of Tuition Revenue Bonds. The additional $18,143,062 has been funded with private gifts, student fees and funds from the Higher Education Assistance Fund (HEAF). The current practice for the State has been to authorize Tuition Revenue Bond Authority every other legislative session.

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CURRENT BUILDING AREAS* (Gross SF)	Area
Bldg Name	**(GSF)**
Bullock Hall	33,700
Canseco Nursing Arts Center	41,100
Central Plant	9,800
Classroom & Lab Bldg	33,700
Field House	1,400
Fine Arts	121,700
Killam Library	168,400
Kinesiology	49,000
Pellegrino Hall	41,300
Physical Plant	14,200
Student Development Center	99,200
W Hemispheric Center	58,000
Total	**671,600**
Housing	**Area**
University Village	89,200
Total Housing	**89200**
New Buildings Currently Under Planning or Construction	**Area**
Lamar Bruni - Vergara Science Center**	79,300
Residential Learning Center**	143,800
Kinesiology Expansion**	60900
Total Housing	**284000**
Grand Total	**1044800**
* As of Fall 2003	
** Actual size is subject to verification.	

Table 1.1: The “core campus” today occupies just under 800,000 gross square feet (GSF) of space

CURRENT BUILDING AREAS* (Assignable SF)	Area
Bldg Name	**(ASF)**
Bullock Hall	21,200
Canseco Nursing Arts Center	27,700
Central Plant	12,300
Classroom & Lab Bldg	21,600
Field House	400
Fine Arts	49,400
Killam Library	116,900
Kinesiology	31,700
Pellegrino Hall	27,100
Physical Plant	9,700
Student Development Center	53,800
W Hemispheric Center	28,800
Total	**400,600**
Housing	**Area**
University Village	58,000
Total Housing	**58,000**
New Buildings Currently Under Planning or Construction	**Area**
Lamar Bruni - Vergara Science Center**	51,500
Residential Learning Center**	93,500
Kinesiology Expansion**	39,600
Total Housing	**184,600**
Grand Total	**643,200**
* As of Fall 2003	
** Actual size is subject to verification.	

Table 1.2: TAMIU will more than *double* its existing building square footage during the next decade.

Occupying Department	Current Space (ASF)
College of Arts & Sciences	5,582
Social Sciences	8,484
Biology & Chemistry	15,431
Center for Earth & Environmental Studies	1,513
Athletics	17,197
Student Recreation	13,592
University Registrar	3,823
Enrollment Services	1,097
Admissions	1,380
Enrollment Mgmt & School Relations	2,002
Financial Aid	3,022
College of Education Departments and Centers**	20,132
Language & Literature	13,793
Psychology, Sociology, Social Work & Criminal Justice	8,747
Mathematical & Physical Sciences	9,163
Military Science	539
Campus Housing	58,000
Institutional Effectiveness	1,180
Provost's Office & Title V	3,304
VP for Finance & Administration	2,081
Comptroller/Business Services	2,789
Budget, Payroll, Grants & Contracts	1,067
Human Resources	2,123
VP for Student Affairs	424
President's Office	1,919
Institutional Planning & Development	1,833
Public Affairs & information Services	1,152
Special Programs	1,313
Unknown	2,829
Library	42,940
Computer & Telecomm Services	12,946
PASE	8,271
Student Life	524
Career Services	2,518
Student Activities	3,927
Student Center	3,739
Student Counseling Services	1,474
Student Health Services	1,516
Auxiliary Services	5,685
General Meeting Rooms	17,395
Food Services	9,958
College of Business Administration Departments & Centers	30,539
Educational Tech & Outreach	4,673
Fine & Performing Arts	23,586
Physical Plant	18,914
University Police	2,416
Purchasing & Support Services	7,005
Central Utility Plant	12,330
Nursing	10,789
Theatre	17,272
International Programs	3,168
Other	11,505
Total Assignable SF	**458,625**
Total Gross SF (approx.)	**705,577**

Table 1.3: Undergraduate FTE growth

UNDERGRADUATE FTE GROWTH	U/G FTE	
	Current	5 Year
College of Arts & Sciences	1,696	2,621
College of Business Administration	450	639
College of Education	299	450
School of Nursing	90	246
Other Spaces in Academic Affairs	0	0
Finance & Administration	0	0
Student Affairs	0	0
Other Spaces	0	0
Total	2,536	3,957

Table 1.4: Anticipated Master Degree FTE growth

MASTERS FTE GROWTH	Masters FTE	
	Current	5 Year
College of Arts & Sciences	75	141
College of Business Administration	139	191
College of Education	127	211
School of Nursing	0	13
Other Spaces in Academic Affairs	0	0
Finance & Administration	0	0
Student Affairs	0	0
Other Spaces	0	0
Total	341	558

Table 1.5: Projected Doctoral Degree FTE growth

DOCTORAL FTE GROWTH	Doctoral FTE	
	Current	5 Year
College of Arts & Sciences	0	3
College of Business Administration	2	10
College of Education	0	20
School of Nursing	0	0
Other Spaces in Academic Affairs	0	0
Finance & Administration	0	0
Student Affairs	0	0
Other Spaces	0	0
Total	2	34

Table 1.8: Staff FTE Growth

TOTAL STUDENT FTE GROWTH	Total Student FTE Growth			
	Current	5 Year	2010	10 Year
College of Arts & Sciences	1,771	2,766	3,099	4,429
College of Business Administration	591	841	918	1,227
College of Education	426	682	764	1,092
School of Nursing	90	259	317	549
Other Spaces in Academic Affairs	0	0	0	0
Finance & Administration	0	0	0	0
Student Affairs	0	0	0	0
Other Spaces	0	0	0	0
Total	**2,879**	**4,550**	**5,100**	**7,298**
FACULTY FTE GROWTH	**Faculty FTE Growth**			
	Current	5 Year	2,010	10 Year
College of Arts & Sciences	119	153	173	253
College of Business Administration	38	41	45	62
College of Education	37	46	52	74
School of Nursing	13	26	29	41
Other Spaces in Academic Affairs	13	14	15	21
Finance & Administration	0	0	0	0
Student Affairs	1	0	0	1
Other Spaces	1	0	0	1
Total	**223**	**284**	**318**	**456**
STAFF FTE GROWTH	**Staff FTE Growth**			
	Current	5 Year	2,010	10 Year
College of Arts & Sciences	24	41	48	74
College of Business Administration	18	22	25	35
College of Education	15	25	28	40
School of Nursing	4	4	5	10
Other Spaces in Academic Affairs	64	80	89	123
Finance & Administration	140	175	196	281
Student Affairs	105	128	144	208
Other Spaces	31	34	37	47
Total	**404**	**512**	**574**	**822**

Table 1.9: Research Grant Growth

RESEARCH GRANT GROWTH	Research Grant Growth			
	Current	5 Year	2,010	10 Year
College of Arts & Sciences	575	1,063	1,202	1,757
College of Business Administration	100	200	240	400
College of Education	986	1,151	1,100	894
School of Nursing	19	250	250	250
Other Spaces in Academic Affairs	0	0	0	0
Finance & Administration	0	0	0	0
Student Affairs	0	0	0	0
Other Spaces	0	0	0	0
Total	**1,680**	**2,664**	**2,792**	**3,301**

Table 2.1: Space Needs growth, Assignable Square Feet (ASF)

TOTAL SPACE NEEDS GROWTH (ASF &	Total Space Needs (ASF)			
	Current	5 Year	2,010	10 Year
College of Arts & Sciences	86,843	147,741	169,859	258,654
College of Business Administration	30,539	41,794	47,040	67,782
College of Education	20,132	47,189	52,410	73,330
School of Nursing	10,789	19,858	23,271	37,255
Other Spaces in Academic Affairs	82,048	135,554	144,586	180,436
Finance & Administration	67,360	98,757	104,337	134,862
Student Affairs	107,004	425,554	428,867	740,951
Other Spaces	53,909	75,133	56,714	99,455
Total	**458,625**	**991,580**	**1,027,083**	**1,592,724**
Housing ASF	58,000	334,094	334,194	609,150
Food Services & Dining ASF	9,958	23,125	23,191	41,462
Total Housing, Food Services & Dining	**67,958**	**357,219**	**357,385**	**650,613**
Total Less Housing, Food Services & Dining	**390,667**	**634,361**	**669,699**	**942,111**
Total Gross Area Less Housing Food Services & Dining (65%)	**601,026**	**975,939**	**1,030,305**	**1,449,402**

Table 2.2: Anticipated Growth in Teaching Space, Assignable Square Feet (ASF)

TEACHING SPACE GROWTH (ASF)	Teaching Space (ASF)			
	Current	5 Year	2,010	10 Year
College of Arts & Sciences	63,084	101,073	116,234	177,088
College of Business Administration	15,116	27,730	31,138	44,559
College of Education	12,865	24,632	28,283	42,925
School of Nursing	5,131	10,662	13,133	23,348
Other Spaces in Academic Affairs	22,255	43,552	44,589	48,522
Finance & Administration	4,981	6,246	6,789	8,831
Student Affairs	0	0	0	0
Other Spaces	800	659	678	726
Total	**124,230**	**214,554**	**240,843**	**345,999**

Table 2.3: Growth in Library space needs, Assignable Square Feet (ASF)

LIBRARY SPACE GROWTH (ASF)	Library Space (ASF)			
	Current	5 Year	2,010	10 Year
College of Arts & Sciences	0	0	0	0
College of Business Administration	0	0	0	0
College of Education	0	0	0	0
School of Nursing	0	0	0	0
Other Spaces in Academic Affairs	42,940	72,536	78,455	102,132
Finance & Administration	0	0	0	0
Student Affairs	0	0	0	0
Other Spaces	0	0	0	0
Total	**42,940**	**72,536**	**78,455**	**102,132**

Table 2.4: Growth in Research Space, Assignable Square Feet (ASF)

RESEARCH SPACE GROWTH (ASF)	Research Space (ASF)			
	Current	5 Year	2,010	10 Year
College of Arts & Sciences	1,567	7,818	8,839	12,922
College of Business Administration	0	1,470	1,765	2,941
College of Education	0	8,466	8,087	6,572
School of Nursing	0	1,838	1,838	1,838
Other Spaces in Academic Affairs	0	0	0	0
Finance & Administration	0	0	0	0
Student Affairs	0	0	0	0
Other Spaces	0	0	0	0
Total	**1,567**	**19,595**	**20,531**	**24,276**

Table 2.5: Growth in Office space needs, Assignable Square Feet (ASF)

OFFICE SPACE GROWTH (ASF)	Office Space (ASF)			
	Current	5 Year	2,010	10 Year
College of Arts & Sciences	21,795	36,215	41,146	60,870
College of Business Administration	18,254	11,738	12,988	17,984
College of Education	6,906	13,135	14,735	21,133
School of Nursing	4,372	5,857	6,599	9,567
Other Spaces in Academic Affairs	14,787	16,446	18,179	25,111
Finance & Administration	21,320	29,766	33,369	47,780
Student Affairs	15,848	22,011	24,737	35,257
Other Spaces	6,827	6,064	6,522	8,353
Total	**110,111**	**141,236**	**158,277**	**226,058**

Table 2.6: Growth in Support space needs, Assignable Square Feet (ASF)

SUPPORT SPACE GROWTH (ASF)	Support Space (ASF)			
	Current	5 Year	2,010	10 Year
College of Arts & Sciences	397	note	note	note
College of Business Administration	0	note	note	note
College of Education	360	note	note	note
School of Nursing	414	note	note	note
Other Spaces in Academic Affairs	1,100	note	note	note
Finance & Administration	23,045	note	note	note
Student Affairs	422	note	note	note
Other Spaces	1,567	note	note	note
Total	**27,306**	**40,312**	**44,829**	**62,861**
NOTE: Support space projections are not linear additions after the Current Year but, a percentage (9%) of added values				

Table 2.7: Non-E&G space growth, Assignable Square Feet (ASF)

NON-E&G SPACE GROWTH (ASF)	Non-E&G Space (ASF)			
	Current	5 Year	2,010	10 Year
College of Arts & Sciences	0	0	0	0
College of Business Administration	0	0	0	0
College of Education	0	0	0	0
School of Nursing	0	0	0	0
Other Spaces in Academic Affairs	0	0	0	0
Finance & Administration	18,015	34,830	34,830	43,130
Student Affairs	90,618	401,941	401,941	701,191
Other Spaces	45,074	66,574	66,574	87,074
Total	**153,707**	**503,345**	**503,345**	**831,395**

TAMIU - PROJECTED SPACE NEEDS Phase I and Phase II					
Bldg No.	**Possible New Building**	**Occupying Departments**	**New Building (ASF)**	**New Building (GSF)**	**New Building Not Includes Housing & Dining (GSF)**
Currently Under Planning or Construction					
1	Lamar Bruni-Vergara Science Center (currently under construction)	Arts & Sciences, Social Sciences, Biology & Chemistry, Cntr for Earth & Envl Studies	49,023	75,420	75,420
2	Kinesiology Expansion (currently under planning)	Student Recreation, Education	39,596	60,917	60,917
3	Residential Learning Center (currently under construction)	Campus Housing	93,500	143,846	0
Total (Currently Under Planning or Construction)			**182,119**	**280,183**	**136,337**
New Buildings					
1	Student Success Center	Student Services, Welcome Center	78,007	120,011	120,011
	Education	Education Departments and Centers			
2	Boarder Center for Homeland Security	Psychology, Sociology, Social Work & Criminal Justice, Language & Literature	100,160	154,092	154,092
3	Engineering, Math & Physical Science Bldg	Math & Physical Sci, New Engineering, Military Sci	48,425	74,500	74,500
4	Housing	New 525 Beds	91,700	141,077	0
5	Dining	Food Services (250 Seats)	10,158	15,627	0
6	Administration Bldg	University Administrative Offices	37,347	57,457	57,457
7	Library - Existing Killam	Library, Computer & Telecomm Services, PASE	0	0	0
8	Student Center Expansion	Student Services, Food Services (150 Seats)	53,990	83,061	83,061
9	Business Administration	Business Admin, Educational Tech & Outreach	57,108	87,858	87,858
	Education	Education			
10	Performing Arts Center Annex	Fine & Performing Arts	1,729	2,661	2,661
11	Physical Plant, Central Storage & Receiving	Physical Plant, University Police, Purchasing & Support	33,579	51,660	51,660
12	Central Utility Plant Expansion		16,000	24,615	24,615
13	Nursing	Nursing, Allied Health	6,282	9,665	9,665
14	Housing	New 1,500 Beds	364,800	561,231	0
15	Dining	New Dining Hall for On-Campus Housing (350 Seats)	14,027	21,580	0
16	Children's Museum		19,260	29,631	29,631
17	Theatre		10,406	16,009	16,009
Total (New Buildings)			**942,978**	**1,450,736**	**711,220**
Grand Total (Currently Under Planning or Construction and New Buildings)			**1,125,097**	**1,730,919**	**847,557**

Table 2.8: Projected Needs: At the end of ten years (Phase II), the University will need to have in place approximately 850,000 GSF of buildings, not including Housing and Dining facilities.

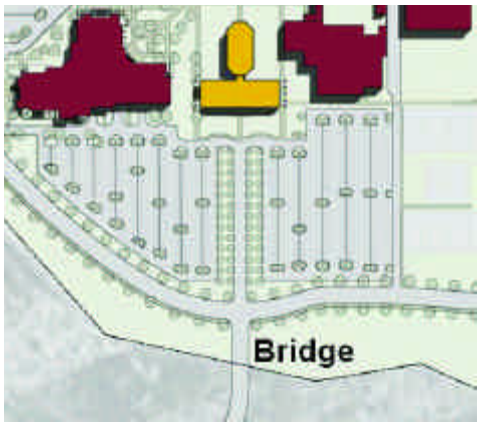
(continued from page 5)

The University is requesting Tuition Revenue Bond Authority to construct the following: a Student Success Building, additional campus Utility/infrastructure, a Border Center for Homeland Security Building and a Support Services Facility. The University will continue to seek and use private gifts, student fees and Higher Education Assistance Funds for the construction of the facilities necessary to conduct a high quality educational program.

IV. Organizing Principles of the Master Plan

In addition to identifying programmatic needs resulting from past and future growth trends of the campus, growth must be channeled in directions that enhance the physical plant of the University. A series of organizing principles were developed as part of this master planning effort:

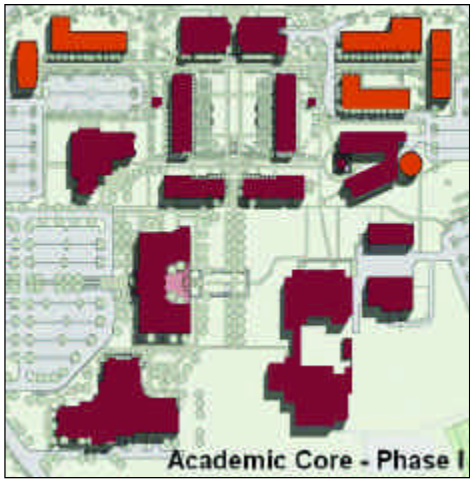
- **Improve Access to the University: Complete the Campus Loop Drive**

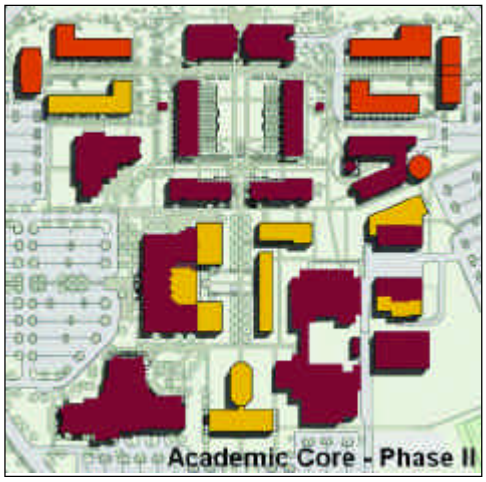


It is the recommendation of this Master Plan Update, that the campus vehicular loop be completed, if not in the first phase of construction, then at the beginning of the second phase of construction. By the time the second phase is begun completion of the Campus Loop will be critical to the continuing success of campus development. It is recognized that campus infrastructure projects are often difficult to fund and such funding frequently lags behind building development. Not completing the Loop Drive, will constrain development of the campus and impede the construction of, and access to, much-needed parking.

A corollary to this organizing principle is that completion of the Loop Drive makes it practical to also construct a second entrance/exit to the campus from the south. This entrance can connect to a collector street planned for the residential community to the south which will connect to Bob Bullock Loop to the southwest, as well as University to the northeast.

- **Continue Development of the Academic Core**





The Academic Core of the campus is centered on the original 200-acre parcel donated to the University. The first 5-year increment of growth, and the second 5-year increment of growth are intended to fill out, fill in, and extend the core of the campus in the 200-acre parcel. A corollary of this principle is that existing pedestrian axes will be reinforced and extended.

- **Maintain the Pedestrian Character of the Academic Core**

The heart of the TAMIU campus will be reserved for pedestrian, foot traffic. A corollary of this principle is to permit infrequent, or controlled access, by service and delivery vehicles, as well as golf carts and fire trucks, where necessity and fire codes mandate such access.

- **Preserve the Character of Open Spaces**

The 'front yard" of the campus is to the north of the Killam Library/ Administration Building and is intended to remain inviolate. The double rows of trees flanking the formal main entrance walk will remain unchanged, except for a proposed semi-circular or crescent-shaped drop off on axis with the entrance walk.

Two significant quadrangles or malls straddle the main north-south axis of the campus. The original quadrangle south of the Killam Library/Administration Building is a more formal space flanked on the east and west sides by attractive, shaded outdoor "living spaces" that are particularly well-suited to the local climate, and a fountain/water feature at its southern end.

The quadrangle on the other side of Pellegrino and Canseco Halls is flanked on the east and west by the Student Center and the Kinesiology Building which will shortly double in size. This quadrangle currently has a single outstanding physical feature, the Bruni-Vergara Memorial Garden which is centered on the Student Center's east entry court. Otherwise, this quadrangle is currently somewhat undefined and rather barren partly because the trees that have been planted in it have not yet grown up. The master planners propose to develop this quadrangle more extensively and to give it a greater youth-oriented student activity-focus.

The new Kinesiology Building addition - currently in design at the time of this writing-will significantly help to define the southeastern corner of the open space. The nature of the building uses-student recreation, competitive sports, an eventual swimming pool in the courtyard between the existing Kinesiology expansion will enliven this space. Located across the quadrangle from the Student Center where much of the student population will concentrate at certain times of the day, the area will take on a new and vibrant character.

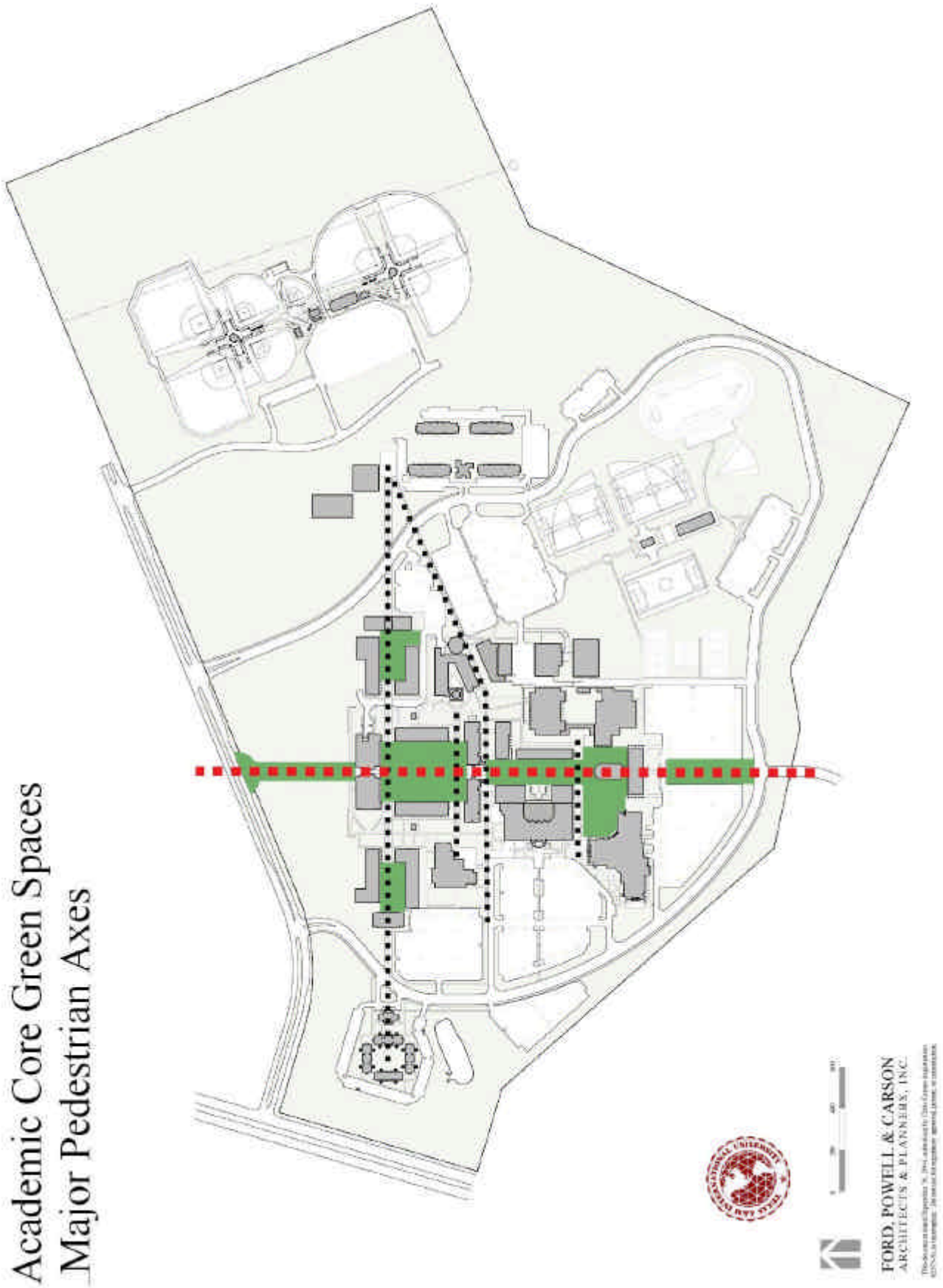
The master planners propose the construction of a north-south linear trellis flanking the existing Kinesiology Building with food service kiosks located underneath this trellis. The addition of a trellis will introduce an attractive and much needed shade-giving element into this quadrangle and provide yet another focus for student gathering here. The visual focus of the space will remain the Bruni-Vergara pergola located at one end of the Bruni-Vergara Memorial Garden. Eventually, during the second phase of construction, this quadrangle will be closed on the south by a new Administration Building which will be on axis with the Killam Library, and which will mark the southern end of the core campus. This building should have a significant presence and appearance because of its location and role as the south 'anchor' of the axis. Its form should be singular in appearance and can be a departure from the prevailing rectilinear building language used throughout most the campus.

- ## Preserve and Extend Pedestrian Axes (*Paseos*)

There are four primary east-west pedestrian *paseos* or axes in the academic core campus. Of these, the master plan proposes to extend two of them, while two are constrained.

First Pedestrian *Paseo* (1)

The first *Paseo*, or axis, passes south of the Killam Library/ Administration Building. This axis will be extended both east and west. On the east, it will be used to organize a courtyard flanked on the north and south sides by a building for the College of Education (first 5 year phase) and a new College of Business Administration Building respectively. On the west end of this axis, a new Welcome/ Student Success Center will straddle the axis and allow pedestrian traffic to pass through on the ground floor. This building will also house additional College of


Academic Core Green Spaces
Major Pedestrian Axes
FORD, POWELL & CARSON
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Education spaces. The prominent location of the Welcome Center/Student Success Center is entirely intentional. This will be the first building that first-time campus visitors will see.

The east extension of the first *Paseo* is a complex of three buildings making up the Science & Engineering Complex. Again, the end building on the east is intended to be a walk-thru or pass-thru building so that the axis can continue across the Loop Drive to the Student Housing complex.

(2) Second Pedestrian *Paseo* (constrained)

The second *Paseo* is at the south end of the academic quadrangle and connects the Western Hemispheric Trade Center on the western terminus and the Bruni-Vergara Science Center on the eastern terminus. This *Paseo* cannot continue further to the east, but it can pass through the lobby of the Western hemispheric Trade Center on the west where a future building site has been identified.

(3) Third Pedestrian *Paseo*

The pedestrian axis that passes to the south of Pellegrino and Canseco Halls should continue in both directions. The continuation of this axis to the east, turns in a northeasterly direction and intersects the continuation of the first Paseo at the refectory of the housing complex.

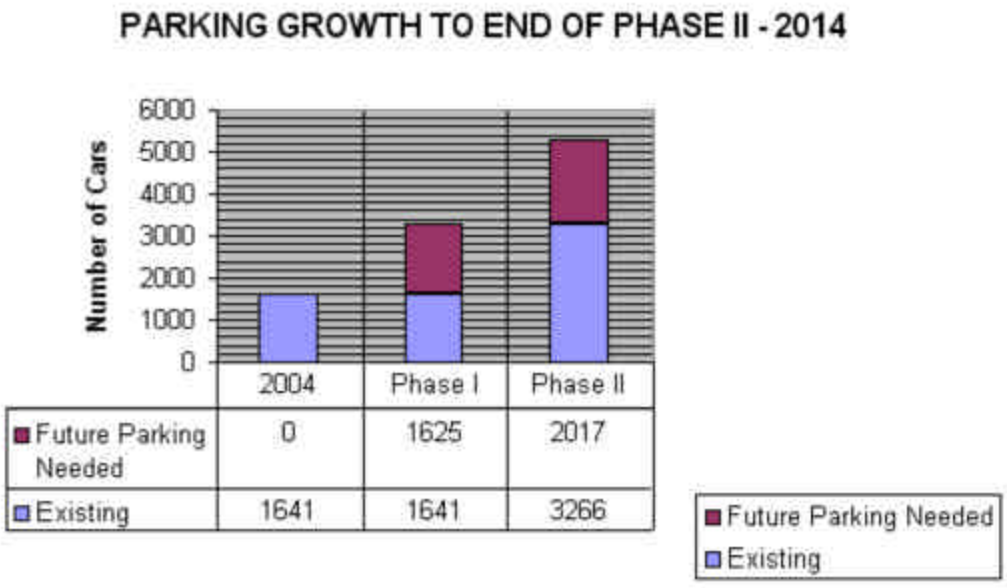
(4) Fourth Pedestrian *Paseo* (constrained)

A fourth *Paseo* passes to the south of the Student center in front of the Center for Fine and Performing Arts (CFPA) and terminates on the east at the courtyard between the existing Kinesiology Building and the new addition to this building. This master plan does not contemplate the extension of this axis to the west because of the need for surface parking serving the CFPA and Student Center; nor can this axis continue to the east where its extension is blocked by the Physical Plant and Central Plant.

- **Continue to Provide Surface Parking**

Surface parking will continue to be the preferred choice for parking on campus for the 10-year horizon of this master plan. It will not always be so. After that time period, the University will be faced with options that include making increased use of the 100-acre added parcel of land for additional parking, and/or the construction of parking

garages. Current thinking by the master planning team is that surface parking on the original 200-acre site will definitely be sufficient for the first 5-year increment of building. During the second phase of building, a proportion of the parking demand will be met by combining it with the construction of a baseball/softball complex on the 100-acre added parcel of land which will also be used by the University during the day.



Parking Garages (Future)

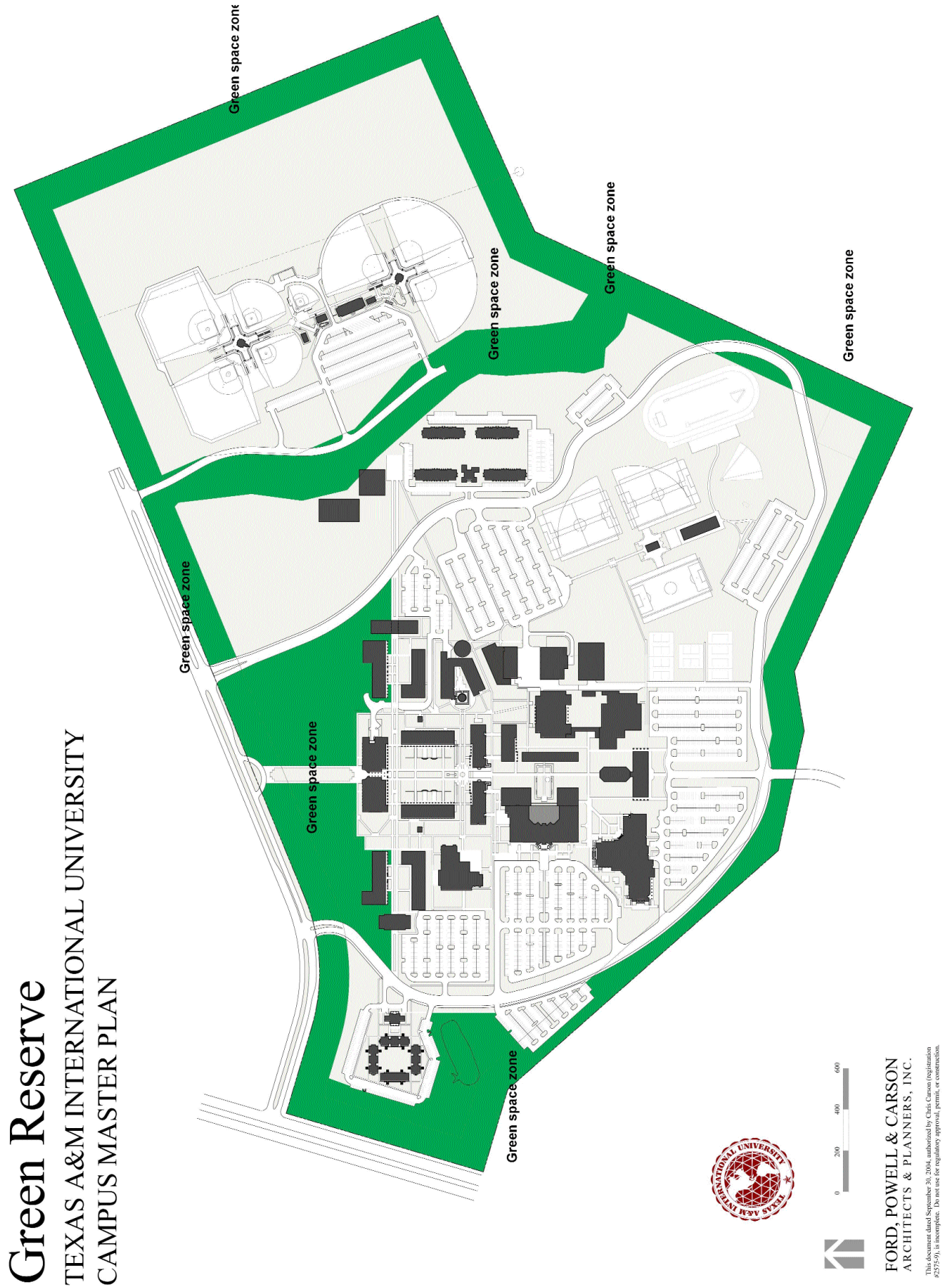
Beyond the 10-year planning horizon of this study, as the core campus expands and takes over surface parking lots on the original 200-acre site, additional surface lots will be needed. This parking will also have to be accommodated on the 100-acre additional parking. This process of 'capturing' building sites around an expanded core campus, will continue until a series of parking-garage sized surface lots remain within the Loop Drive. These lots should be held in reserve against the day when it becomes realistic for the University to charge student fees which will help to finance the construction of parking garages.

It is noted that parking and the 'right to park' are deeply rooted in local values. In a city such as Laredo which has little, if any, tradition of paying for parking anywhere, construction of parking structures should be deferred until conditions of overcrowding leave the university with no choice but to build them. At that point, it will be patently clear to all that structured parking is needed. We believe that this moment will arrive some 20 years in the future.

It will be important as a future planning tool, to always hold four or five sites more or less evenly spaced on the perimeter inside the Campus Loop in reserve (on surface lots) for construction of parking garages. These should be at least two double loaded bays wide (approximately 124') and about a minimum of 200' to 240' feet in length. This will allow the academic core to continue to expand on the original 200 acres before construction of academic buildings on the 100-acres becomes necessary.

- ## Maintain a Green Space Preserve

The University should maintain a Green Space Preserve all around the campus. This will act as a visual buffer against the future encroachment of neighboring development. This preserve should extend all around the perimeter of the campus and on both sides of the north-south arroyo. The preserve should be no more than approximately 150 feet deep and will be less in areas where the perimeter road is closer to the property line. For the duration of this master plan update, the preserve should be left in its natural, xeriscape state. In the future, when surrounding development encroaches, more manicured landscaping options should be considered.


Green Reserve
TEXAS A&M INTERNATIONAL UNIVERSITY
CAMPUS MASTER PLAN
Green space zone
Green space zone
Green space zone
Green space zone
Green space zone
Green space zone
Green space zone
FORD, POWELL & CARSON
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V. Academic Plan

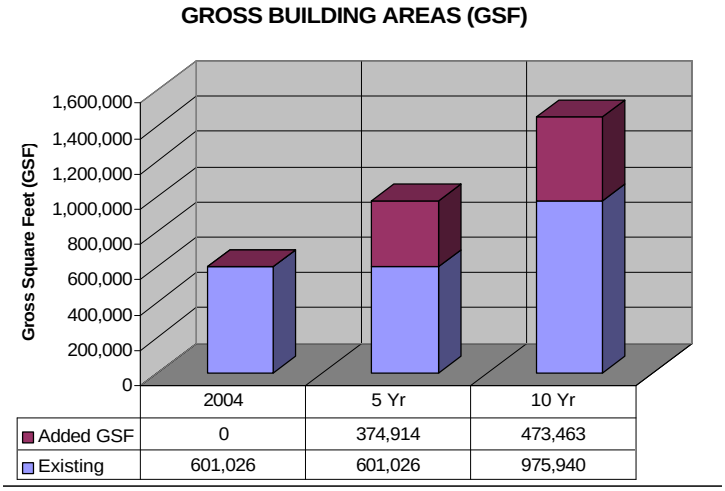
The Space Projection (Draft) is included in its entirety in the Appendix. It is based on interviews held among the Programmers and the Academic departments of the University, and indicates the growth that is anticipated in each department by FTE.

ENROLLMENT & FTSE GROWTH		**Five**	**Ten**
Undergraduate (UG) FTSE	**2003**	**Year**	**Year**
College of Arts & Sciences	1,771	2,767	4,429
College of Business Administration	592	842	1,228
College of Education	426	683	1,093
School of Nursing	90	260	549
	2,880	**4,551**	**7,299**
Approx UG Headcount (HC):	4,340	6,858	11,000 HC Enrollment
% change from 2003	0%	58%	153%

Increases in enrollment and full-time equivalent students as shown above are quite sizable, yet lower than predicted in the 1992 master plan. In light of accelerating growth, it is apparent to the University that these numbers are achievable. Provided sufficient funding is made available by the State, the master planners' view is that Laredo and the region it serves throughout Texas and Northern Mexico can support these numbers.

Increases in existing degree programs offered by the University will be augmented by new engineering programs that will be offered by the College of Arts and Sciences and a new Allied Health program in the School of Nursing. These are the trends. It is, however, difficult to predict what new programs will make themselves known as the university progresses through its second phase of development of this master plan update. Continuing Education figures are not shown.

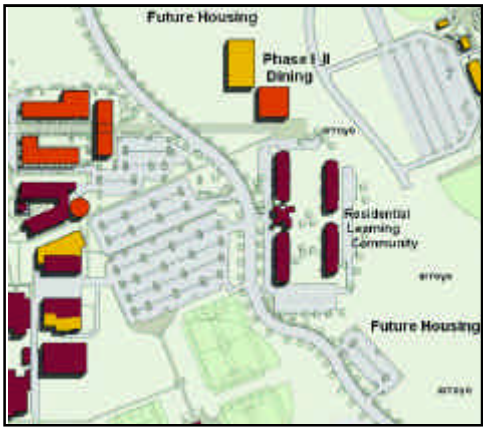
VI. Gross Building Areas Needed to Meet Growth Projections

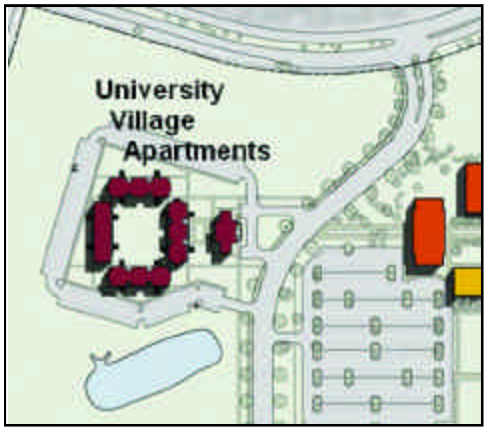


Currently, the University occupies about 601,000 GSF of space, not counting space used for apartments or residence halls. In order to accommodate growth in both enrollment and new programs, about 375,000 GSF of space will be added to the campus during the next five years. During the 5-year period after that, another 473,000 GSF of space will be added.

Thus the rate of growth of the campus averaged during Phase I is about 75,000 GSF per year. During Phase II, the pace quickens at a rate of about 95,000 GSF per year. At the end of the second phase, the campus will have more than doubled in size, not counting the additional area needed for on-campus housing units and any other amenities that may be added. Other than on-campus housing and a quantity of Phase 2 parking, the master planners project that additional campus area can be accommodated within the borders of the original 200-acre site. Even after completion of Phase II, there are a number of additional buildings sites remaining in the core campus.

VII. Student Housing





The TAMIU Administration has expressed a desire to increase the number of housing units on campus to serve a greater percentage of the student body. Currently there are two housing complexes on the campus. An apartment-style complex (256 beds) in the northwest corner of the site was the first to be constructed by a private developer on University property under a lease arrangement with TAMIU. This complex will shortly revert to the University. The second complex is on the east side of campus, the site originally contemplated by the University as the "Housing Zone" for the campus and contains about 420 beds not including faculty advisors.

The University has set a goal of housing roughly 25% of its enrollment. This goal will be conditioned by the actual market demand for housing. The approximately 424-bed new "Residential Learning Units" that has just been completed will be used as a test case.

HOUSING ON CAMPUS	**Headcount**	**Beds**	**% of Headcount**
Current Housing	4,340	676	15.5%
Phase I Housing additional beds	6,858	1,038	25% (cumul)
Phase II Housing additional beds	11,000	1,036	25% (cumul)
Total Housing (beds)		**2,750**	**25%**

It is noted that these numbers are substantially higher than the 750 units originally contemplated in the 1992 master plan. The master planners believe that in order to achieve the numbers shown above, several hurdles will have to be overcome, some tied to the area economy, some tied to the space available and density of development. The existing new units are more in keeping with the types of units that should be developed on campus, but density of development is quite low. If continued the University would rapidly run out of space. Greater density of development with more tightly-planned exterior common spaces are recommended. The Housing Zone is shown in the illustration.

VIII. Public Service Plan

As Texas A&M International University continues to grow and develop new programs at an astounding pace, the University is committed to maintaining and expanding its collaborative efforts with a number of entities at various levels. TAMIU is going into more neighborhoods, school rooms, business communities locally and in the surrounding area as well as in the Western Hemisphere. In return the community has responded to its fundraising efforts this year with over $4 million in gifts.

The Eduardo M. Hinojosa Reading Research Center assists 2nd to 5th grade students in the development and dissemination of effective teaching models to help children learn to read effectively. The Center utilizes unique instructional approaches for students facing literacy obstacles. Between 300-400 students are serviced each year.

The Center for Earth and Environmental Studies conducts outreach with Laredo Children's Museum and K1 - 12 local school districts and has established partnerships with the National Weather Service Regional Office in Corpus Christi, TX, and Lake Casa Blanca State Park. Rainfall observations from the TAMIU Meso-Scale Weather Network greatly benefits area ranchers and agricultural producers by freely providing precipitation data and analysis of rainfall frequency and intensity.

Numerous summer programs are offered for area children and teenagers which include pre-engineering programs, SAT and GRE preparation sessions, entrepreneurship camps, fine and performing arts classes and athletic camps. The campus is filled every summer with 400 to 600 students at different times during the day.

The Western Hemispheric Trade Center compiles databases that are comprised of trade and commerce information in regards to the North American Free Trade Association (NAFTA), the Free Trade Area of the Americas (FTAA), Central and South America. The Center also has an exchange program with Universities throughout the Hemisphere and integrates these to the various established exchange programs at TAMIU. An *International Trade Journal* is produced quarterly and devoted to both the theoretical and practical aspects of business and economic issues in the Western Hemisphere.

The University provides meeting rooms, special event services and support for community groups and civic organizations throughout the year. The Laredo Philharmonic Orchestra and the Laredo Children's Museum have joined resources with the University toward providing even higher quality concerts and children's programs.

As the University continues establishing relationships in the community, the University Service plan is enhanced. Partnerships and cooperative programs are created by both the faculty and staff on a continuous basis.

IX. Regional Analysis and Map

Local Ecosystem: The local ecosystem will be affected by the expansion of the campus. This will affect the remaining quantity of tree and shrub cover on the original 200-acres and especially on the 100-acres to the west. Native vegetation on the 100-acre parcel will be reduced significantly when the new Baseball/Softball Complex is constructed. This new construction will clear slightly more than 30 acres of land and add approximately 430 cars to the 100-acred site. Runoff due to increases in impervious cover will be increased in the 100-acre parcel but is not expected to change the 100-year flood plain profile.

There is a fair number of white-tailed deer that are known to forage on the TAMIU campus, limiting the selection of appropriate plant materials that can be planted on campus - see Appendix for appropriate plant materials. There are no witness reports, nor are the master planners aware of, any endangered species inhabiting the 300-acres. It is known that wild pigs and javelina - who live in mesquite habitats and forage on prickly pear - occasionally roam the campus. Nearly 150 species of birds are to be found in the Laredo area, some nesting in the nearby Lake Casa Blanca area. Various species of snake are in abundant quantities in the region.

As urban development continues throughout the area, habitat for wild species will increasingly be reduced. This is an inevitable consequence of growth and expansion. Where local habitats remain, small populations of wildlife will persist, but the future for these creatures in rapidly growing Metropolitan Laredo is limited.

• Environmental Assessment and Cultural Resources Study

The consultant's report is included in the Appendix.

• Utility Infrastructure Plans

Utility infrastructure plans for mechanical, electrical and plumbing utilities are in the Appendix, along with the consultant’s report.

Communications - Data/IT/Telecommunications - report and plan is in the Appendix of the Master Plan Update.

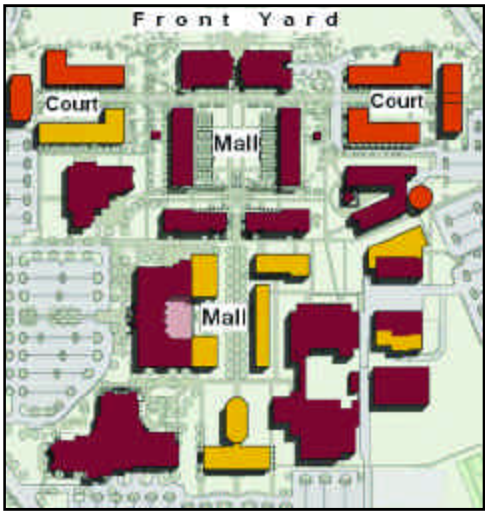
X. Proposed Land Use Plans

Land Use Plans at the end of Phase I and the end of Phase II are shown on the following two pages.

- **Unified campus lighting:** there are currently at least three different walkway styles of lighting used on campus. The University should adopt the use of a single fixture that has proven itself in terms of 1) aesthetic quality, 2) maintainability, and 3) affordability. Each project that is subsequently built on campus will use this fixture. The State of Texas has adopted exterior light pollution standards for use in its institutional buildings. (Need Gentry input here

- **Landscaping:** the open spaces contained within the core campus should continue to be planted and use low maintenance but manicured planting materials. Area outside of the core campus should, to the extend possible, be planted with very low-maintenance and xeriscaped plant materials in order to reduce water use to a minimum level and to reduce labor and maintenance costs. Areas outside of the original 200-acre campus during the first phase of the master plan, need no treatment other than the natural vegetation already there. Any plant materials that are considered to be delicacies for the local fauna, should be avoided. A plant list of appropriate materials furnished by the University is in the Appendix.

- **Pedestrian Malls:** the pedestrian malls are shown on the open space site plans. Malls are oriented in a north-south direction. There are two malls - the northern, formal Academic Mall which is complete; and the southern, Student Mall which will be complete at the end of Phase II.



This second mall is anchored by the Student Center (and its Phase II expansion) on the west; the expansion of the Kinesiology Building with its future courtyard pool on the east; the Bruni-Vergara Garden and Pavilion in the center; and a new amenity, a long, trellised shade structure with kiosks underneath flanking the existing Kinesiology Building. The south end of this Mall is terminated by the new Administration Building which is on axis with the primary north-south axis of the campus. Because of its proximity to activity centers that will be heavily used by students, this mall will be more festive and active in character, an ideal place for student organizations to hold outdoor events.

- ***Paseos*:** we will refer in this report to the east-west pedestrian "streets' crossing the Malls as *'paseos'*. Two of the *Paseos* are classified at 'through-paseos'. The first occurs just to the south of the Killam Library and the east and west ends of this *Paseo* pass through new academic courtyards to the east and west of the Library.

The second *Paseo* passes between the Western Hemispheric Trade Center (WHTC) on the west and the Lamar Bruni-Vergara Science Center on the east. The western end of this *Paseo* passes through the lobby of the WHTC and provides access to future building sites after Phase II is completed.

The third *Paseo* is an important 'through-*Paseo*' and passes just to the south of Pellegrino and Canseco halls and also affords access on the east and west. This *Paseo* will ultimately be an important connector as it continues on the east in a north easterly direction, connecting to and passing by the new Dining Hall(s) on its way


Five-Year Plan
TEXAS A&M INTERNATIONAL UNIVERSITY
CAMPUS MASTER PLAN
PHASE I LAND USE PLAN
Arroyo
HOUSING
Parking
PE / ATHLETICS
Permanent Open Space
ACADEMICS
STUDENT FOCUS
Parking
HOUSING
Existing buildings
Five-year plan
FORD, POWELL & CARSON
ARCHITECTS & PLANNERS, INC


Ten-Year Plan
TEXAS A&M INTERNATIONAL UNIVERSITY
CAMPUS MASTER PLAN
PHASE II LAND USE PLAN
BASEBALL/ SOFTBALL (Temporary)
Parking
Arroyo
Future Housing
Housing
Arroyo
Future Housing
Drill site
Permanent open space
ACADEMICS
STUDENT FOCUS
Support
Parking
PE / ATHLETICS
Parking
Parking
South Entry / Exit
Housing
Pond
Existing buildings
Five-year plan
Ten-year plan
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across the *arroyo* and future campus expansion into the 100-acre site.

The fourth *Paseo* is centered on the courtyard between the Kinesiology Building and its addition; it will be realized and completed when the addition is complete. Ready access from parking lots on the west end of the campus will direct foot traffic in this direction.

- **Streets & Parking:** see Vehicular Circulation Plan on the following page. Other than short service drives, there are no streets in the traditional sense on campus. Parking is not currently a problem on campus. Exiting the campus at certain peak times is. This is discussed elsewhere in the Master Plan Report. As buildings are added on the edges of the existing core campus, surface parking lots will be displaced and additional parking demand based on added programs, increased enrollment, staff and faculty will be needed. The Master Plan anticipates this need and seeks to maintain the balance between spaces needed and spaces provided at each stage of construction.

PARKING GROWTH	**Spaces**	**% over 2004**
Existing parking spaces	1641	
Additional Parking Phase I	1625	99%
Additional Parking Phase II	2017	222%
	5,283 spaces	

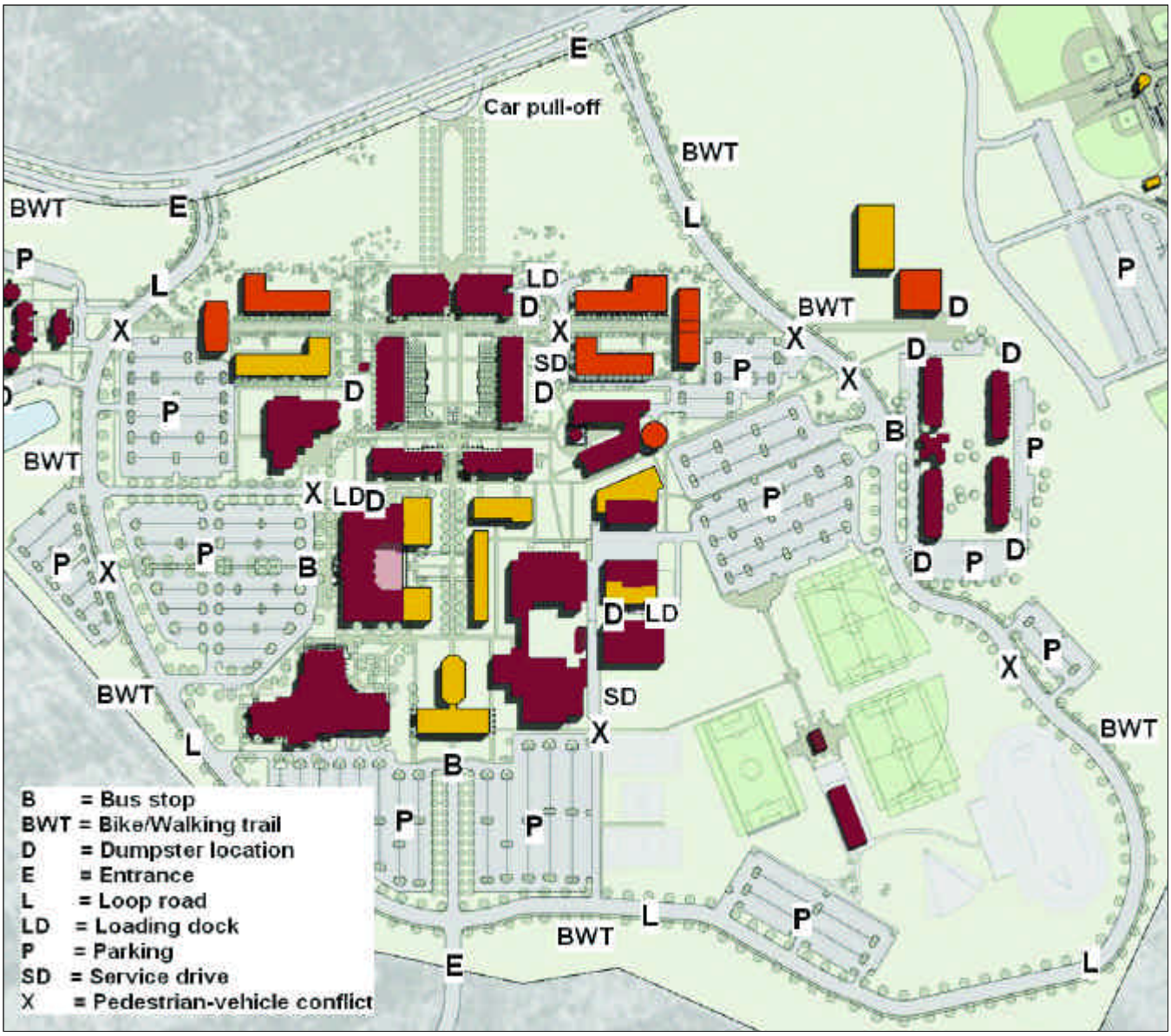
Instead of adding parking spaces in large quantities, it is more realistic from a funding point of view to "add as you go." Ideally, each added building component will also include an increment of parking. This approach is reflected in the Master Plan Update.

- **Playing Fields**

The Master Plan indicates how the Playing Fields will continue to develop during the next two phases. A significant development for the Master Plan, is an arrangement currently being negotiated with local interests outside of the University for a Softball/ Baseball Complex on the 100-acre added parcel to the east. This could occur in either Phase I or Phase II of the current master plan and is not entirely under the control of the University.

- **Baseball/Softball Complex**

This project, in addition to providing needed additional softball/baseball fields to the University and for public use, will also provide important initial infrastructure on the 100-acre site, such as water service, sewer service, electrical service, curb cuts. Parking for more than 430 spaces will also be shared with the University. An earlier identified need for a Special Events Center and its compliment of parking, to be constructed on the 100-acres of added land is mooted by this project. The Baseball/Softball Complex, if realized, will have a definite service life, after which control of the development reverts back to the University.



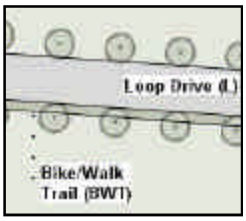
- **Vehicular Circulation Plan:** The single most important task to be fulfilled on campus is the completion of Loop Road. Essentially, the Loop Road requirements as set down in the 1992 master plan will be adhered to in principle and varied in detail. Once the Loop within the campus is completed, full two-way internal access to all, parts of the campus will be possible without having to leave the campus. Looking for parking spaces will be simpli fied when all parking is within reach from inside the campus.

  - **Motorcycle/Mo-Ped parking:** According to the Director of Physical Plant and the Police Department, it is rare that more than 20 motorcycles are on campus at any one time. This number can be expected to grow as enrollment grows, and may be encouraged to grow more if gasoline prices remain high. The Director of Police reports that the University has a couple of motorcycle parking areas that are used. Often, motorcyclist simply park in the middle of a regular car parking space. According to a published University of California study conducted at its Santa Cruz campus, the total number of motorcycles on campus numbered fewer than 2% of the total student population. At TAMIU, this percentage seems high based on experience. Assuming 1% utilization, this would yield a maximum of 110 motorcycle spaces at the end of Phase II with an enrollment of 11,000 students. According to the UCSC study motorcycles do not require any special proximity to buildings and should be located in general parking areas.

- **Bicycles:** the use of bicycles on campus can be expected to increase over time. According to the Chief of Police, there are bicycle racks dotted throughout the campus. Currently usage is low. Most students lock their bikes when using the racks. There have been some bicycle thefts on campus, mostly at the dormitories. The Director of Physical Plant sees more students using bicycles to travel between classes.

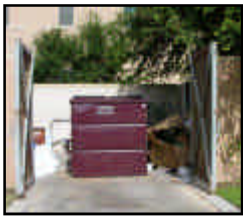
- **Bicycle racks** should be placed in close proximity to (next to and not in the pedestrian path) designated buildings on campus. There are a number of standards for the quantity of bicycle spaces required overall. One conservative standard places this amount at 6% of the total enrolled student body (City of Portland, OR). This percentage seems tailored to much larger campuses. Bicycle racks should allow a 2' x 6' space for each bicycle.

Bicycle Paths (BWT): The master planners recommend that the Campus Loop be finished out with a bicycle path that follows its circuit around the campus. This can be a tightly designed path or a more loose and meandering one. There should be other paths that connect with the Baseball/ Softball Complex as well and perhaps into the scrub brush area further to the west. Such a path would pass by the dormitory housing. The American Association of State Highway & Transportation Officials (1999) publishes guidelines for bicycle paths that double as walking paths. These paths can range from 8' to 12' wide.



Bus Service (B): The campus is served by two El Metro bus routes - 16 & 21. The bus currently stops in front of the Student Center which is appropriate. According to the Director of Physical Plant, the University will consider adding another bus stop at the new Dormitory Learning Units. Given the ultimate quantity of housing that the University is considering, there should be a bus stop at the new housing. In the future, once the Campus Loop is completed, the El Metro Bus may wish to circulate internally between the Student Center and the dormitories. A third stop can be considered in the future in front of the new Administration Building to be constructed as part of Phase II.

- **Designated Refuse (D):** refuse collection points are shown on the drawings. New locations for refuse collection will be placed in cooperation with the Physical Plant Department.



- **Service and Emergency Vehicle Access (Em):** service vehicle routes are shown on the Vehicular Circulation Plan above. Every second east-west *Paseo*, starting at the Killam Library, is “hardened” to take the weight of emergency vehicle traffic. Fire lanes and emergency vehicle access will be both maintained and extended so that all buildings constructed in Phase I and Phase II will be accessible to local fire-fighting companies. The nearest fire-fighting / EMS company is Fire Station #10 located at the corner of Bob Bullock and Casa Verde, only minutes from the site. Completion of the campus loop will ease fire and emergency vehicle access to all buildings.

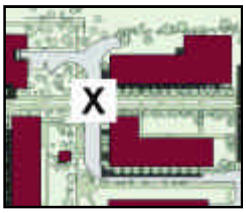
- **Pedestrian Circulation:** pedestrian circulation within the campus has been discussed in this Update in the context of Malls and *Paseos*. The principle contained in 1992 master plan for the campus of extending pedestrian Paseos into parking lots will, where possible, be maintained in the new master plan. This will reduce pedestrian-vehicular conflicts in parking areas.

Pedestrian-Vehicular Conflicts (X): The greatest likelihood of conflicts between vehicle and pedestrians occur where dormitory and apartment residents cross the campus loop road. At the apartments located in the northwest corner of the campus, the pavement surface is marked, striped and signed. Similar measures will need to be taken at the new Dormitory Learning units constructed on the west side of the campus. When the campus loop drive is completed, and additional housing units are constructed, it may become necessary to introduce stop signs, change paving textures at alert drivers before coming to a full stop. Speed bumps may also be employed to slow traffic in the housing zone crossing points. Housing zone crossing points must be consolidated to as few points as possible. This will concentrate the flow of traffic across the campus loop.

Use of perimeter roads and peripheral parking lots mitigate most, but not all, pedestrian/ vehicular conflicts. In the case of TAMIU, housing is located outboard of the perimeter road, and students must cross this road at designated crossing points. Traffic will need to stop at this point to allow students to pass safely. At this time, we are proposing the use of 'traffic humps' to slow traffic down before coming to a full stop. Traffic lights on campus are not necessary at this time.

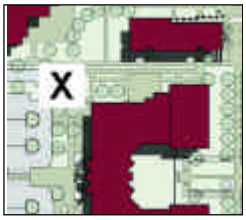
A number of service-vehicle/pedestrian conflicts that have been identified:

- **Killam Library Loading Dock**



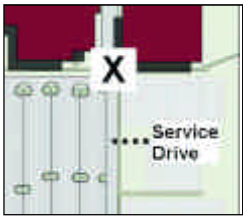
This existing loading dock and truck-turning apron is currently accessible from a parking lot in the northeast corner of the site. During Phase I, this *Paseo* will be extended to the east and three new buildings added - Liberal Arts, Homeland Security and Physical Sciences. The Killam Library loading dock will continue to function for the life of the campus. However, its purpose will be limited to fulfilling the Library's needs and will no longer serve Administration offices or other offices that will have moved out of the building. It is expected that TAMIU will then have greater control over scheduling activities.

- **Student Center Loading Dock, Refuse Pickup**



The Student Center will expand during Phase II. The Kitchen will expand as part of this growth. Service traffic to the motor/ service court will also increase somewhat. This is an existing well-established condition that campus users are well-aware of and no special measures other than appropriate signage warning pedestrians is needed.

- **Purchasing/ Central Plant:**



A new service drive extends northward from the completed campus loop on the south. The road crosses the primary pathway from the Kinesiology Building Addition to the playing fields. This will be a pathway that is used every day. The service drive is not a through-street and is used only periodically. Vehicles using it will never attain a high rate of speed. Proper signage and pavement markings will be sufficient to alert drivers and pedestrians alike.

XI The Master Plan

The Five-Year and Ten-Year Master Plans are shown on the following two pages. They represent the synthesis of programming information gathered from interviews and reviews with the department heads, deans and the Administration. These are detailed in the beginning portions of this Master Plan Update. The extension of programs and evolutionary growth of existing programs on campus was translated into projections of space in accordance with the Texas Higher Education Coordinating Board's Five Factor Model. Resulting Assignable Square Feet (ASF) were subsequently translated into Gross Square Feet (GSF) in order to arrive at projections of actual building sizes. The backup for these space projections includes projections of growth of student populations by degree, and consequent projections of faculty, staff and support personnel.

• Fundamental Organizing Premise

A fundamental organizing premise for planning the future campus during the next 10 years is that Texas A&M International University campus should expand its core campus facilities on the original 200 acres of land during at least the two phases shown in this Master Plan Update. This growth strategy will increase the density of buildings, students and programs in the core campus and make careful and parsimonious use of available building sites. By gathering the buildings within the confines of the original 200 acres, efficient use will be made of utility infrastructure. In the meantime, the 100-acre parcel on the east can be put to use as a Baseball/Softball Complex that can occupy the land temporarily, and which will cause certain utility infrastructure, dual-use ball fields and parking on that parcel.

• Organizing Principles

In this Master Plan Update, development of the campus is organized around a series of basic principles which have guided the master planners throughout the process.

• Additional Building Sites

A reasonable question arises as to when the construction of academic buildings on the 100-acre parcel on the east will occur. This question cannot be answered with precision in part because it is outside of the scope of this Master Plan Update, and in part because it hinges on the growth of programs, and the availability of funding. Certainly there is no lack of will, interest and enthusiasm on the part of the University to continue and increase its rate of growth.

Looking at the Ten-Year Plan, it appears that all developable land within the original 200-acres is "consumed" by buildings, green space, roads and parking at the end of Phase II. However, after 10 years, it may become financially feasible to consider the construction of multi-level parking garages. Although not a part of this Master Plan Update, the master planners have suggested that a series of building sites be held in reserve along the inside of the perimeter road. These sites should be large enough to each accommodate a parking garage with a footprint of around 124' x 240,' more or less. Construction of such garages will not only make more parking available to the University, but will also create a number of building sites around the original academic core.

• The Long View

Ten years in the development of an institution of higher learning is a short time period, which will pass quickly. Therefore it is incumbent on the stewards of the future of the University - Regents, Administrators and Master Planners alike - to proceed carefully and prudently and to the extent possible, to conserve its resources, including land, so that Texas A&M International University can grow gracefully in place serving its region and beyond, for many generations to come.

Submitted by -
Ford, Powell & Carson, Architects and Planners, Inc.
Facility Programming and Consulting, Inc.
Shah-Smith & Associates, Inc.
Datum Gojer Engineers, LLC
Drash Consulting Engineers
Datacom Design Group


Five-Year Plan
TEXAS A&M INTERNATIONAL UNIVERSITY
CAMPUS MASTER PLAN
Existing buildings
Five-year plan
FORD, POWELL & CARSON
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Ten-Year Plan
TEXAS A&M INTERNATIONAL UNIVERSITY
CAMPUS MASTER PLAN
Existing buildings
Five-year plan
Ten-year plan
FORD, POWELL & CARSON
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XII. APPENDICES

Reports

Architectural Guidelines
Dept. of Physical Plant - Landscape Guidelines
Current Facility Inventory
Shah-Smith & Associates, Inc. - MEP
Datum-Gojer, LLC - Flood Plain Analysis
Drash Consulting Engineers, Inc. - Archaeology
Datacom Design Group - Data/IT/Telecommunications
Dept. of Physical Plant - Energy Conservation Measures
Master Planning Team

Architectural Guidelines

Additional illustrations are located at the end of this Section

Architectural Style

Stylistically, the present campus draws on a rich vocabulary of contemporary shapes and forms. Generally, these forms are simple and straight forward. The buildings on the campus have a prevailing material theme that consists of brick walls with carefully modulated window openings. The harsh climate is accommodated in the architecture through the use of colonnades recessed into the ground floors of most of the buildings on campus and further supplemented through the judicious planting of shade-giving trees in certain public areas of the campus. Sloped roof forms utilizing flat terra cotta Spanish tiles provide a unifying effect throughout the campus while allowing for variation of detail among the various campus buildings. The predominance of masonry imparts a re-assuring look of solidity and permanence to the campus. The campus is contemporary in nature, yet not futuristic in execution.

The campus buildings have a serene and 'timeless quality' that makes the addition of new buildings using this vocabulary a fairly straightforward process and permits greater latitude in the judicious introduction of decorative elements in brickwork, cast stone, glazed brick and architectural craft items and accessories. The use of ornament within the discipline of simple envelopes, forms and recesses was encouraged from the outset and has been introduced in practice. This is a successful design strategy that should be continued.

Some buildings occupy a place of greater prominence within the University and receive special architectural treatment. For example, the Sue and Radcliffe Killam Library and Administration Building, because of its role in the University and its placement in the master plan, is the primary 'image building' on campus. The building straddles the main axis of the campus and is bisected by a tall opening that marks the ceremonial entry portal to the campus. This entrance is flanked by imposing black/green granite columns. The pavement in the portal area is stone.

Similarly, both the Center for Western Hemispheric Trade and the Student Center and Center for the Fine and Performing Arts Buildings occupy unique places in the public "outreach" of the University and have received special attention as a result. Both of these buildings are less inwardly focused to the campus because they receive visitors to the campus on a regular basis.

The Architectural Guidelines for this campus are sufficiently flexible to accommodate singular exceptions to the prevailing palette of materials. A good analogy for this would be many cities and towns around the world, such as Sienna in Italy, Aix-en-Provence and Chartres in France (pictures here) which employ a fairly limited palette of materials throughout the urban fabric but which are punctuated by very exceptional buildings and towers. In the case of Texas A&M International University, this rule would apply to the Sue and Radcliffe Killam Library, the new Bruni- Vergara Science Center and the small pergola in the Bruni-Vergara Memorial Garden. A proposed new Administration building at the southern terminus of the main north-south axis of the campus should be of a quality that equals that of the Killam Library.

Texas A&M International University in Laredo is one of the largest building complexes in the city, not including industrial warehouse parks. It makes a coherent and comprehensive architectural statement in the immediate project area and to the community at large. Its stylistic and visual integrity is immediately identifiable and sets a standard for architectural

quality that equals the University's academic position in the community.

Sun Control

Where building function permits, fixed glass openings in brick walls should be held to less than 50% of the area of the brick wall, except at building entrances. Direct solar heat load in Laredo is high and building air conditioning systems will otherwise be adversely affected. Buildings must in any event comply with the energy guidelines for the State of Texas. Tinted, insulated glass on exterior walls is indicated everywhere except on building walls under deeply recessed exterior columns, in which case the glass should be clear and not tinted. On glass entrance doors in walls that are not recessed, the glass in the doors proper should be clear.

At the ground level, buildings should continue to provide recessed loggias. Typically these are behind colonnades. This architectural device allows pedestrians to move about the campus in shade and protected against rain showers. Recessing the building exterior wall at this level also permits clear insulated glass to be used which is more inviting to the pedestrian.

Roofs

Low-sloped hipped roofs were proposed in the original master plan and have been incorporated into most subsequent buildings constructed on campus. The roofs use flat "Spanish" terra cotta roofing tiles that are attractive to the eye from both near and far. This is important because there are long views to the campus from the surrounding area
There is no conflict between the contemporary palette of materials and forms in use on the campus and the flat terra cotta tile roofs - they coordinate well together. The roofs overhang the top floors providing a line of shade at the top and giving a definite visual "end" to each building. The color and form of the roofs have a certain Mediterranean flavor to them that fits with the setting of the campus in Laredo. This master plan update confirms the appropriateness of this roofing type in all but the most exceptional cases.

It is the recommendation of this master plan update that recessed flat roofs surrounded by low slope tile roofs be avoided if possible. The University has not had a good experience with these roofs. Only under circumstances involving stringent "bathtub testing" per the Texas A&M System standards should such roofs be considered in the future and then only after thorough review of roof details by the System.

Walls

This master plan update confirms and extends the original recommendation to use a light-reflecting sand-faced buff-colored brick of "FBS" specification quality of domestic manufacture as the primary brick for use on the campus. The pleasing light-reflecting color and texture of the brick is energy-efficient It is durable and economical and requires little maintenance. For TAMIU, the selected campus brick is Acme Brick (Elgin Heritage Americana Blend 130,151300117, Custom Smooth and Custom Heavy Scratch)

Brick walls may be banded with cast stone of a compatible hue to articulate the exterior of the buildings, and may be used as simple terminations at column and wall bases, capitols and lintels. The use of florid or extreme ornamentation in these bands, capitols and bases is not recommended other than in very limited applications.

This master plan update confirms the suitability of introducing glazed brick and ceramic tile on vertical surfaces under porches and loggias, and may be extended into the interior for use in ground floor lobbies.

Use of any metal sunshading devices over windows will require design review by the University and the System. Since fixed glass openings should generally be periodic in nature and few, if any, continuous window bands are contemplated on this campus, horizontal metal shading devices are discouraged except in singular instances at special openings.

Exceptional buildings designated by the University and the System to receive special attention and treatment may make more liberal use - budget permitting - of stone on the exterior walls of the subject building. Texas granites compatible in color and texture of the campus may be employed, as may smooth-textured limestone materials and other native quarried stones such as red sandstone. Other natural stones will be reviewed on an individual basis. Large scale use of stone masonry materials quarried out of the state is discouraged. It is the recommendation of this master plan, that the field brick used everywhere else on the campus be employed as an accent material in such buildings in order to provide a visual "tie" to the remainder of the campus.

Building Heights

The Texas A&M International University campus at one level of perception is a 'horizontal' campus; that is, buildings are low-rise in height, usually limited to three or four stories tall. From a visual point of view, this works well with the rather flat landscape and straight horizon found in Laredo. There are other, practical reasons why university buildings are most often limited to these heights:

- The highest use spaces are limited to the first two floors for reason of exiting with lecture halls on the ground floor with smaller classrooms and less dense laboratory spaces above
- Large lecture halls may extend up from the first floor to the second floor providing greater opportunities for exiting
- Offices, the least dense occupancy found on a campus, should most often, except in the cases of administration buildings, be located on the top floor(s) of a building
- Low rise buildings do not require a high elevator investment
- Students most often walk during class changes and limited floors permit shorter class change times

Generally, this functional layering is followed on the Texas A&M International University's campus and it appears to have served the University well. There will always be exceptions to these rules, but there is every reason for the overall mass of buildings on campus to follow these layering principles.

The singular building that is the Sue and Radcliffe Killam Library dominates the site, as it should. The library is the figurative and symbolic 'heart' of the university. But there is no reason why a singular structure, such as a tower, cannot also be built on campus at some point in the future that provides a visual reference point and serves as another important symbol for the campus.

The campus is gently sloped to the south, and the eventual placement of a new Administration Building at the south end of the main axis will provide an opportunity for both a singular building that departs somewhat from the form and material rules that have governed the rest of the University, but may well represent an opportunity to introduce a vertical element into the plan, in addition a water feature discussed earlier. Both a tower and feature represent donation opportunities to the University. (Trinity Tower/ University of Dallas Tower)

This Master Plan Update does not envision the construction of mid-or high-rise buildings on this campus either now or in the fore-seeable future. Such buildings would not be in keeping with look of the campus.

Site Design Guidelines

The fundamental planning idea of the first master plan proposed a central, north-south axis that bisected the original 200-acre site. In the original master plan, East-West cross axes - here called paseos - traverse the campus and provide access to parking lots that flank the campus. As executed, one of the paseos is largely terminated at both ends, but movement along the sides of buildings allows access to parking. The idea as posited in the original master plan was to create a pedestrian "oasis" or courtyards and malls more or less symmetrically arranged about the main North-South axis. The spirit of this plan has been faithfully executed in practice and this Master Plan Update follows that direction.

Flanking the campus on the east and west sides with parking is the right idea and is continued in this Master Plan Update with additional parking to the south.. The east-west paseos should, to the extent possible, continue into the parking lots as paved and planted landscape strips. On the east side of the campus, space should be made available to continue the paseos across the Loop Road, through the Housing Area and into the 100-acre site. This paseo should be designed to be drivable by light campus-owned vehicles.

It is a fundamental organizing principle (see "IV. Organizing Principles of the Master Plan") of this master plan to continue development of the Academic Core of the campus on the original 200 acres before expanding into the additional 100-acre site to the east. As this Update shows, there is sufficient site area available to accomplish this without violating the either the spirit or intent of the original master plan to the planning horizon and beyond. Although the 200 acres is now 300 acres, this expansion was anticipated in the original plan. At the time of the preparation of this Master Plan Update, there is still considerable room for development within the original campus.

Paved Surfaces

Sidewalks and plazas are generally concrete on campus. The edges of the sidewalk sections are banded with smooth concrete while the interior surface is textured. In relatively narrow sidewalks this is acceptable, but in larger plazas - see photo at left - in front of the Center for Hemispheric Trade, to the west of the Student Center, and to the northwest of the Center for the Fine and Performing Arts the effect of large expanses of very light concrete in Laredo's sunlight is bleak, somewhat blinding and hot. For large expanses of pavement, alternate materials such as brick or interlocking concrete pavers in a darker shade and bordered with concrete bands, should be used.

This Master Plan Update recommends that if budgetary considerations require the construction of concrete plazas, that they be punctuated by shade-giving trees or shading structures. Otherwise, a paving material such as brick or dark grey-colored concrete pavers should be used.

Site furnishings

The outdoor seating areas that flank the main academic mall to the south of the Killam Library are very attractive, successful and well-used. These seating areas are on slightly raised platforms, paved with brick pavers that create "outdoor sitting rooms". They are separated along the length of both Cowart and Bullock Halls by planted groves of trees separating one "room" from the other. Wooden benches with backs provide welcoming and comfortable seating. The master planners recommend continuing to use these or similar benches in appropriate locations.

Water Features

In a generally dry environment, judicious use of water in public places can be a tremendous enhancement to the way a space is perceived and experienced. The original master plan spoke to this point. In execution thus far, a single water feature in the form of an acequia (irrigation canal) flanked by limestone walls was placed at the foot of the main academic mall. Although modest in scale, its psychological effect is out of proportion to its size. During the second phase of this master plan, a new Administration Building will be constructed at the south end of the principal axis. At that time a second fountain or water feature should be added to the campus.

Landscaping

The pedestrian spaces on campus in the Academic Core were to be manicured and landscaped and planted with a variety of landscape materials native to the region. The changes to the recommended plant list were developed by the Physical Plant Department at TAMIU and are based on many years of experience with planting in the South Texas region (see Appendix: Landscape Guidelines in the following section).

Site Lighting

Site lighting consists of the following:

- Parking lot lighting
- Pedestrian walkway lighting
- Athletic playing field lighting

The rules with respect to outdoor lighting on State-funded projects have changed. General outdoor lighting in state-funded projects is governed by the House of Representatives act entitled HB 916 "Regulation of Certain Outdoor Lighting". It became effective on September 1st, 1999. The purpose of the act is to reduce outdoor light pollution by diminishing the addition of scattered light to the atmosphere. The means for doing so are the use of fixtures that utilize "cut-off luminaries" if the rated output of the lighting fixture is greater than 1800 lumens.

The old-style "popsicle" outdoor pole-mounted light fixture (picture) does not meet the State's criteria and is to be discontinued. The University already uses an outdoor pole-mounted "lantern" fixture (picture) that meets the State's requirements and this fixture is recommended for continued use in all future work along pedestrian walkways (paseos) and in malls and plazas.

Parking lots on campus already use pole-mounted "curvilinear cutoff series" luminaries. These are poled mounted ((picture) luminaries in single, double, triple or quad arm-mounted configurations. These fixtures are recommended for continued use to illuminate parking lots. On future projects, designers may propose the use of light-mounted bollards in appropriate installations. These bollards must conform to the State's outdoor lighting standards.

Athletic Field Lighting is treated by state law as a special, exempt case that permits additional lighting. In these cases, steps will still need to be taken to shield outdoor light sources from direct view and to minimize upward lighting and light pollution. Athletic playing field lighting, including the proposed Baseball/Softball Complex will will be evaluated on a case-by-case basis. Lighting under ceilings in loggias inset into building facades are part of building lighting.-

Banded sidewalk

Stone pavers at fountain

Concrete and brick pavers

Concrete unit pavers

Concrete pavers & concrete

Stone pavers at Killam

Banded stone wall @ Killam

Polished granite column

Campus standard brick

Brick and stone wainscot

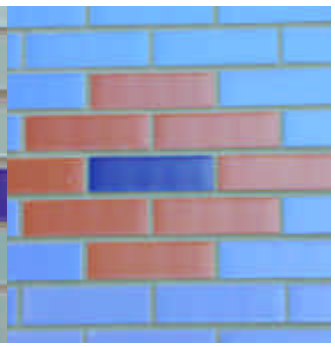
Two brick types at Kinesiology

Student Center brick

Glazed tile inset at Canseco

Canseco Hall glazed tile

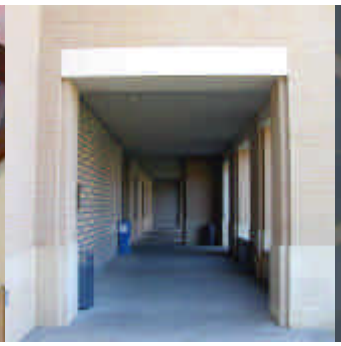
Glazed tile at Kinesiology



Glazed tile at Kinesiology

Sunshade north side of Science building

Sunshade at Student Center



Loggia

Loggia at Killam Library

Loggia at Cowart Hall

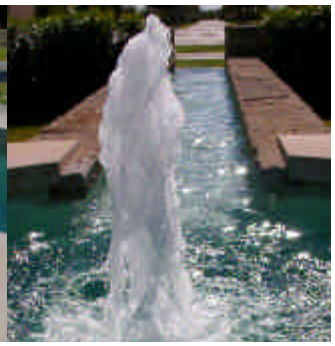
Roof at Kinesiology Building

Roof at Physical Plant

Roof at new housing complex

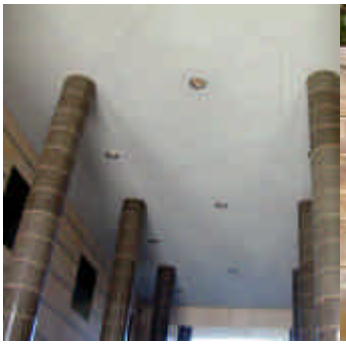
Red Roof at Killam building

Fountain



Fountain

Exceptional architecture: Radcliffe & Sue Killam Library



Colonnade at Killam Library

Fountain

Javelinas

Site edges to remain natural and undisturbed

Palm tree

Italian Cedar

Oak tree

Oleander bushes

Shaded outdoor seating

Wooden bench seating

Bicycle rack

Refuse container

Blue Boy Emergency Station

New campus lighting fixture

Parking lot fixture

Discontinued lighting fixture

LANDSCAPE GUIDELINES
Recommended Plant Material List

The plant list below was made available to the Master Planners by Richard Gentry, Director of Physical Plant at Texas A&M International University on 15 September, 2004.

Trees
Southern Live Oak
Monterrey Oak
Cedar Elm

Small Trees
Vitex
Crepe Myrtle (Hybrid Varieties)
Dessert Willow

Shrubs
Agarita (Berberis trifoliolata)
Boxleaf Euonymus (Euonymus japonica 'Microphylla')
Bush Germander (Teucrium fruiticans)
Ceniza/Texas Sage (Leucophyllum spp.)
Elaeagnus or Silverberry (Elaeagnus pungens)
Esperanza (Tecoma stans)
Evergreen sumac (Rhus virens)
Firebush (Hamelia patens)
Goldcup (Hypericum spp.)
Gray Cotoneaster (Cotoneaster glaucophylla)
Japanese Boxwood (Buxus microphylla japonica)
Japanese Yew (Podocarpus macrophyllus)
Nandina (Nandina domestica)
Oleander (Nerium oleander)
Pineapple Guava (Feijoa sellowiana)
Pomegranate (Punica granatum)
Primrose Jasmine (Jasminum mesnyi)
Reeve's Spirea (Spirea reevesiana)
Soft Leaf Yucca (Yucca recurvifolia)
Sotol (Dasylirion spp.)
Texas Mountain Laurel (Sophora secundiflora)
Upright Rosemary (Rosmarinus officinalis)
Yaupon Holly (regular and dwarf) (Ilex vomitoria)
Yucca (spp) All yucca with a sharp, stiff point

Ground Covers
Prostrate Rosemary (Rosmarinus officinalis Prostratus)
Germander (Teucrium chamaedrys)
Wedelia (Wedelia trilobata)

Perennials
Ageratum (Eupatorium coelestinum)
Amaryllis (Hippeastrum x Johnsonii)
Angel Trumpet (Datura spp)
Bouncing Bet / Soapwort (Saponaria officinalis)
Silver King Artemisia (Artemisia ludoviciana)
Autumn Sage (Salvia greggii)
Bearded Iris (Iris spp)
Blue Plumbago (Plumbago auriculata)
Candytuft (Iberis sempervirens)
Copper Canyon Daisy (Tagetes lemonii) Dusty Miller (Senecio cineraria)
Garlic Chives (Allium tuberosum)
Goldmoss Sedum (Sedum acre)
Gray Santolina or Lavender Cotton (Santolina hamaecy-parissus)
Green Santolina (Santolina virens)
Hummingbird Bush (Anisacanthus wrightii)
Indigo Spires Salvia (Salvia 'Indigo Spires')
Jerusalem Sage (Phlomis fruticosa)
Lantana (Lantana spp)
Mallow Hibiscus (Hibiscus moscheutos)
Marguerite (Chrysanthemum frutescens)
Mealy Cup Sage (Salvia farinacea)
Mexican Bush Sage (Salvia leucantha)
Mexican Hat (Ratibida columnaris)
Mexican Honeysuckle (Justicia spicigera)
Mexican Mint Marigold (Tagetes lucida)
Mexican Oregano (Poliomintha longifolia)
Oxeye Daisy (Chrysanthemum leucanthemum)
Rock Rose (Pavonia lasiopetala)
Rosemary (Rosmarinus officinalis)
Salvia (all varieties)
Spined Prickly Pear Cactus (Opuntia spp)
Split Leaf Philodendron (P. selloum)
Texas Betony (Stachys coccinea)
Wedelia (Wedelia trilobata)
Wormwood (Artemisia absinthum)
Yarrow (Achillea millefolium)

Ornamental grasses
Inland sea oats (Chasmanthium latifolium)
Maiden Grass (Miscanthus sinensis)
Gulf Muhley (Muhlenbergia capillaris)
Lindheimer's Muhley (Muhlenbergia lindheimeri)
Pampas Grass(Cortaderia selloana)
Purple Fountain Grass (Pennisetum setaceum)

Flowers
Indigo Spires (Salvia spp.)
Larkspurs (Delphinium consolida)
Marigolds (Tagetes spp)
Mealy Cup Sage (Salvia farinacea)
Periwinkles (Catharanthus roseus)
Zinnias (Zinnia spp)

Current Facility Inventory

The current facility inventory was catalogued and and quantified by the Programmers. Tables showing existing space usages in each of the existing campus buildings are shown in the Appendix of this report. THECB Guidelines were used throughout in order to determine the size of and quantity of new facilities needed in function of the anticipated student populations in each of the Colleges and Schools. The University currently occupies about 672,000 GSF of space - not including housing - in twelve buildings.

University Departments & Subdivisions Surveyed as part of the Master Planning process:

Dept No	Department
College of Arts & Sciences	
1	College of Arts & Sciences
2	Language & Literature
3	Psychology, Sociology, Social Work & Criminal Justice
4	Social Sciences
5	Fine & Performing Arts
6	Mathematical & Physical Sciences
7	Biology & Chemistry
8	Center for Earth & Environmental Studies
110	Military Science
9	New Engineering Program
College of Business Administration	
10	College of Business Administration
11	Accounting, Economics & Finance
12	MIS & Decision Science
13	Mgmt, Marketing & Int'l Business
17	Business Ph. D Program
14	Center for the Study of Western Hemispheric Trade
15	Western Hemispheric Trade Info Center
16	Texas Center for Border Economics & Enterprise Development
College of Education	
20	College of Education
21	Curriculum & Instruction
22	Professional Programs
23	Special Population
24	Regents' Initiative
25	Alternative Certification Program
26	Hinojosa Reading Research Center
27	Child Development Center
28	Project Rio
Dr. F.M. Canseco School of Nursing	
30	School of Nursing
31	New Allied Health Program
Other Spaces in Academic Affairs	
35	International Programs
42	Athletics
43	Educational Tech & Outreach
45	Library Services
46	PASE
47	PASE - Testing & Computer Services
48	PASE - Center for Advancement of Scholastic Achievement

49 PASE - Writing Center
50 PASE - Student Support Services
51 Special Programs (Academic Affairs)
56 Institutional Effectiveness
151 Provost's Office & Title V

Finance & Administration
60 VP for Finance & Administration
61 Comptroller/Business Services - Comptroller
62 Comptroller/Business Services - Account Payable
63 Comptroller/Business Services - Cashier
64 Computer & Telecomm Services
65 Physical Plant
66 University Police
68 Auxiliary Services
69 Budget, Payroll, Grants & Contracts
70 Human Resources
71 Purchasing & Support Services - Purchasing
72 Purchasing & Support Services - Secretarial Services
73 Purchasing & Support Services - Central Stores
74 Purchasing & Support Services - Print Shop
75 Purchasing & Support Services - Mail Room
76 Purchasing & Support Services - Copy Center
77 Purchasing & Support Services - Property Inventory Management & Receiving

Student Affairs
90 VP for Student Affairs
91 University Registrar
65 Physical Plant
66 University Police
68 Auxiliary Services
69 Budget, Payroll, Grants & Contracts
70 Human Resources
71 Purchasing & Support Services - Purchasing
72 Purchasing & Support Services - Secretarial Services
73 Purchasing & Support Services - Central Stores
74 Purchasing & Support Services - Print Shop
75 Purchasing & Support Services - Mail Room
76 Purchasing & Support Services - Copy Center
77 Purchasing & Support Services - Property Inventory Management & Receiving

Student Affairs
90 VP for Student Affairs
91 University Registrar
92 Student Life
93 Career Services
94 Student Activities
95 Student Center
96 Student Counseling Services
97 Student Health Services
98 Housing & Residence Life
99 Enrollment Services
100 Admissions
101 Enrollment Management & School Relations
102 Financial Aid
103 Food Services

Texas A&M International University

Master Plan Update

Final Draft

11/5/2004

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Introduction

As part of the team responsible for updating the Texas A&M International University Master Plan, Shah Smith & Associates has taken into account the campus generation and distribution capabilities for chilled water, heating hot water, domestic hot water, and electrical power. Projections made for these systems include considerations for the current ten year building plan

Central Plant

Chilled Water System

The central plant is located in the southeast part of the campus and currently has three (3) 1000 ton water cooled centrifugal chillers giving the plant a total firm capacity of 2000 tons to meet campus demands. Central plant supply and return temperature, as well as chilled water flow was provided to Shah Smith & Associates by TAMU's Energy Systems Laboratory (ESL). This data was used to calculate the chill water system demand from March 2003 to March 2004. Chilled water demand for TAMIU peaked at 1500 tons (Appendix A), which is well within the plant's current firm capacity. At present, the central plant is being expanded to add another 1000 ton chiller, which will increase the plant's firm capacity to 3000 tons. This was done to accommodate the New Science Building and Student Recreation Center.

The chilled water system is currently employed as a primary-secondary system, with the secondary pumps in idle. A major reason the chilled water system was designed to include secondary pumps was to allow for varying flow conditions. However, the use of two way control valves at the building AHU coils and the incorporation of VFD's have resulted in improved control for varying flow rates, rendering the secondary chilled water pumps unnecessary. For this reason, Shah Smith & Associates recommends removing the secondary chilled water pumps from the central plant, changing the system to a variable primary flow arrangement. The primary pumps are rated at 60 ft head for 2,000 gpm, and are able to provide enough head to overcome frictional losses throughout the distribution system. Removing the pumps will add space the central plant could use for installing a second heat pump (Attachment 1). It will also result in energy savings since the primary pumps do not have to move chilled water through free-wheeling secondary pumps.

The campus connected cooling load (the sum of all campus buildings' block cooling loads) is currently 3173 tons (Appendix C). It does not take into account the New Science Building or the Student Recreation Center which are currently in construction and design phases, respectively. Comparing the actual cooling load (1500 tons) for the central plant and the connected load (3173 tons) from the campus building plans results in a diversity factor of 47%. This diversity is used to determine the impact of the proposed building plan on the central plant chiller capacity.

Of the buildings planned for the campus, the residence halls and dining facilities along with the event center will not be served by thermal utility distribution systems. Taking this into account, the projected 5 year building plan will not require new chillers. However, one (1) 1000 ton chiller will be required before the projected ten year building plan is completed. Shah Smith & Associates recommends expanding the current central plant south to house this additional capacity.

Heating Hot Water

The heating hot water demand is met by two (2) 8400 MBH gas fired boilers for a system firm capacity of 8400 MBH. During off peak times, such as from spring to early fall, a 5400 MBH heat pump also located in the central plant carries the campus heat load. From ESL data recorded in 2003, the current demand peaks in the vicinity of 7530 MBH (Appendix B) and comparison of the 20,348 MBH maximum connected load (Appendix D) yields a 37% diversity factor. As with the chilled water system, the diversity is used to estimate future loads associated with the campus building program.

With the Science Building's completion, the central plant will no longer have firm capacity to meet campus heating demand. Another 8400 MBH gas fired boiler will need to be added to maintain firm capacity. If redundancy is not a criterion for boiler capacity, then the central plant currently has the capacity to meet campus demands for a few more years. The risk of not having firm capacity is that if both boilers are operating at a peak demand time and one of the two boilers needs repair or maintenance, then the campus heating requirements will not be met at peak load conditions. Regardless of redundancy, a new boiler will need to be installed before the Business building is completed according to the ten year building plan. These boilers will be housed in the proposed central plant expansion.

The heat pump is capable of handling the campus heating load for approximately seven months a year. As the campus expands, the operating window for the heat pump will be lowered. At the end of the five year growth plan the operating window is projected to be reduced to three months a year. The addition of another 5400 MBH heat pump will provide for the current operating window throughout the ten year master plan. Given current electrical and gas rates, this option is the most cost effective. Installation of the additional heat pump should be considered in the near future to provide redundancy to the heat pump system. The conversion of the chilled water distribution system to variable flow primary will allow the additional heat pump to be placed where the secondary pumps are currently located in the central plant.

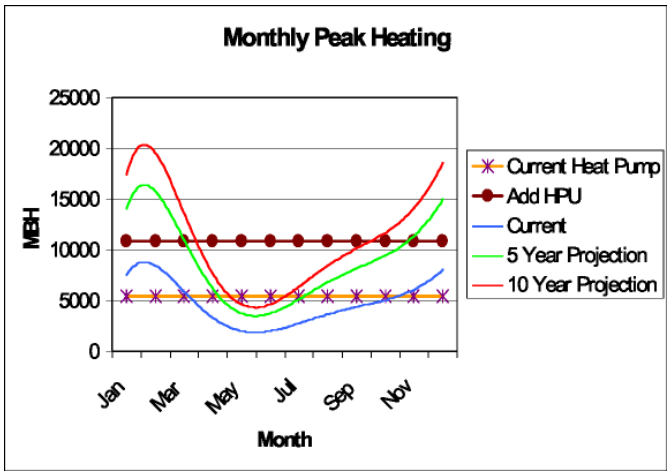


Chart 1: Projected Campus Heating Demand for TAMIU

There have been discussions between TAMU Corpus Christi and Texas A&M International University regarding an existing heat pump TAMU-CC does not use. TAMU-CC has offered their heat pump to Texas A&M International. However, the design capabilities of the Corpus Christi heat pump should be verified prior to removal and installation in Laredo, in order to ensure proper integration and operation in conjunction with the Laredo heat pump system.

Domestic Hot Water

The central plant currently houses two gas fired domestic water heaters feeding a distribution system throughout the campus. One water heater is sized at 1600 GPH recovery and 1275 gallons of storage. The other heater is rated for 1250 GPH recovery and 1000 gallons of storage for a total central plant capacity of 2850 GPH storage and 2275 gallons of storage. The buried hot water supply and return pipe holds approximately 2,000 gallons of storage for a total system storage capacity of 4,275 gallons.

Existing buildings consume 2,130 GPH recovery and 2130 gallons of storage (Appendix E) leaving 720GPH recovery and 2145 gallons of storage. Future buildings are projected to use 1,300 GPH recovery and 1300 gallons of storage. The recovery demand placed on the system by the ten year plan slightly exceeds the available recovery in the central plant, but the large storage volume in the ten year plan will be able to make up for the excess demand. Therefore, with the aid of system storage the hot water heaters in the central plant will be bale to keep up with peak demand. Taking this into account, the current gas fired heaters in the central plant have the capacity to meet recovery and storage demand for the campus throughout the ten year building plan. Current and projected domestic hot water distribution diagrams for the campus can be seen in Attachments 8 and 9 respectively.

Thermal Utility Distribution

For distribution of thermal utilities, chilled water and heating hot water lines are direct buried together in the same corridor across campus. Hydraulic analysis of the chilled water and heating hot water system was conducted using computer modeling software and showed sufficient differential pressures throughout the distribution systems. Table 1 indicates the model results of existing and projected campus buildings. Differential pressures of both chilled water and hot water are included.

	Existing			Projected	
Building	**CHW Differential Pressure (psi)**	**HW Differential Pressure (psi)**	**Building**	**CHW Differential Pressure (psi)**	**HW Differential Pressure (psi)**
Killam Library	20.5	8.5	Science Building	20.5	8.5
Bullock Hall	20.0	8	Kinesiology Expansion	21.5	9.5
Cowart Hall	20.5	8.5	Student Success Center	20.0	7.5
Central Plant	22.0	10	Education	20.0	8
Pelegrino Hall	20.0	8	Engineering	21.0	9
Canseco Hall	20.5	8.5	Administration	21.5	9.5
Kinesiology	20.5	9	Student Center Expansion	20.5	9
Physical Plant	-	9	Business	20.0	8
Western Hemisphere	20.5	8.5	Nursing	21.0	9
Student Center	20.0	9	Children's Museum	20.5	9
Fine Arts	20.5	7			

Table 1: Thermal utility results showing campus building differential pressures

Hydraulic modeling shows there are no immediate problems with the thermal utility distribution lines, but the southwest part of the campus is an area of concern because the lines are 8" and 4" for chilled water and hot water respectively. This may cause problems with thermal utility distribution to projected future buildings in that area of the campus depending on the order in which they are constructed. Installation of new utility lines south of the central plant (Attachment 1) would alleviate this problem. An 18" chilled water line and 12" hot water line will provide enough capacity to serve the Academic building, as well as increase the supply pressure to the Fine Arts building.

Electrical Systems

Existing Load Information

Per records obtained from TAMIU staff, the power company has reported the previous twelve (12) month peak demand load for the campus as approximately 2,950kW. TAMIU staff measured the power factor at 0.92 at the main meter for the campus. From these values, the campus kVA demand is calculated to be about 3,200kVA.

Adequacy of Existing Infrastructure

At present, the power demand over the next 10 years is expected to increase by approximately 15,300kVA. Adding this number to the existing campus load brings the total campus power demand in 10 years to 18,500kVA (Appendix F). This number includes power to feed new and existing campus buildings as well as additional capacity in the central plant. Although thermal utilities from the distribution system are not connected, it was assumed that the proposed Residence Halls and Dining Halls will be provided power via the service switchgear in the Central Plant.

The existing campus building feeder loop from the Central Plant is made up of three (3) #4/0AWG 15kV phase conductors and one (1) #2AWG 600V ground. These feeders have an ampacity of 240A at 12.47 kV. This ampacity results in a feeder power capacity of 5,200kVA. According to information obtained from TAMIU to date, the demand load for the existing campus feeders (Loop A and Loop B) is approximately 1,850kVA. With a 10% growth factor applied, an additional 3,300kVA can be placed on the current feeder.

According to AEP Texas Central's (AEP) engineering staff, the capacity of the existing utility circuit (LDC #10032789418359300) is approximately 10,000kVA.

Proposed New Infrastructure

To feed the new campus buildings, three new campus feeders from the service switchgear "SE" will need to be pulled in new and existing ductbanks (Attachment 7). Presently the campus is fed at 12.47kV in a loop arrangement. This model will be continued into the new campus feeders. The addition of these three new loops will require three new sections with six total vacuum breakers to be added to campus service switchgear "SE".

Based on the projected load growth, the campus power demand will exceed the capacity of the existing AEP utility feeder in approximately 5 years. At that point, a major upgrade to AEP's infrastructure will be required. A new utility circuit will need to be installed. With this new service in place, we recommend that the service switchgear in the Central Plant be re-configured into a Main-Tie-Main arrangement (Attachment 7). The new utility feeders from AEP will be designed such that either utility feeder can serve the total campus (i.e. 20,000kVA). This arrangement will provide redundancy for future campus development. Also, to increase the aesthetic appeal and reliability of power delivery, we recommend that the utility circuits be installed in underground ductbank from the existing AEP point-of-service to the service switchgear. Though ultimately up to AEP's engineering staff, each utility circuit could consist of four (4) 5" conduits, each with four (4) 500kcmil conductors. Providing for spare ducts in the ductbank, this would require a ductbank with three rows of four ducts for a total of twelve.

The additional campus feeder loops and switchgear re-configuration for the Main-Tie-Main arrangement will require six new 36-inch wide sections to be added to switchgear "SE". To make room for these additional sections, the existing switchgear room in the Central Plant will be expanded by approximately 30 feet to the south (Attachment 1).

Site Lighting

The proposed site lighting scheme will follow the present standard and fixture types throughout the campus. Site lighting will be powered by lighting contactors provided in buildings adjacent to the walkways served.

Utility Maps

A map of the existing and new power distribution infrastructure is attached to this report.

Appendix & Attachments

to the Shah-Smith & Associates Report

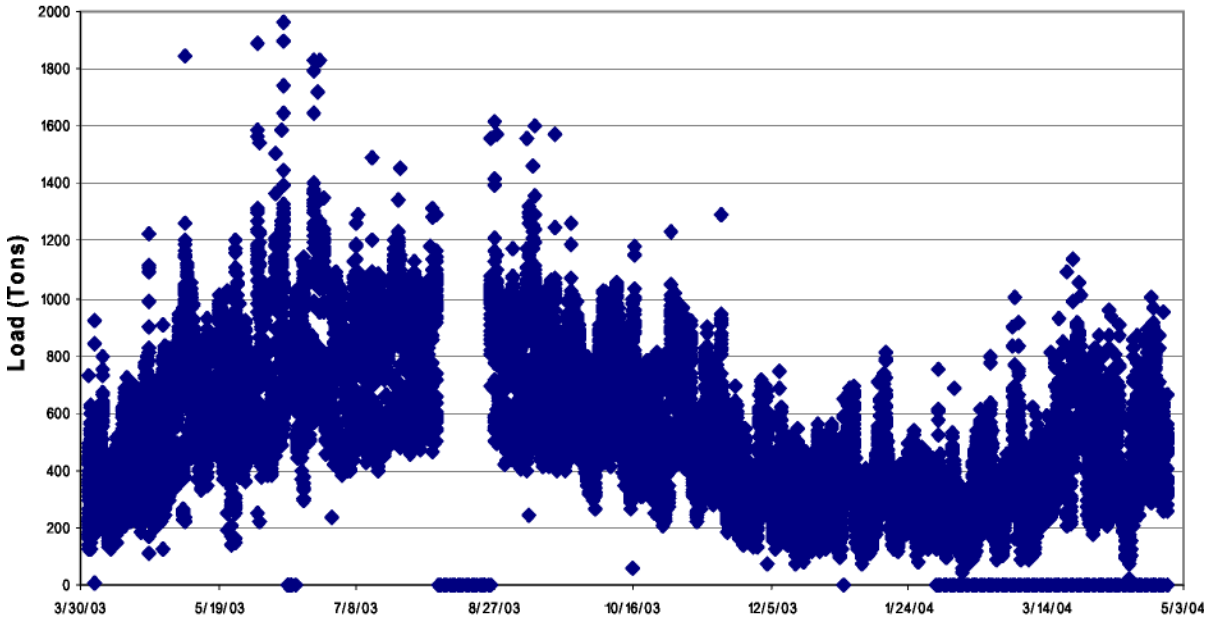


Figure 1: TAMIU Central Plant Chilled Water Load March 2003-2004

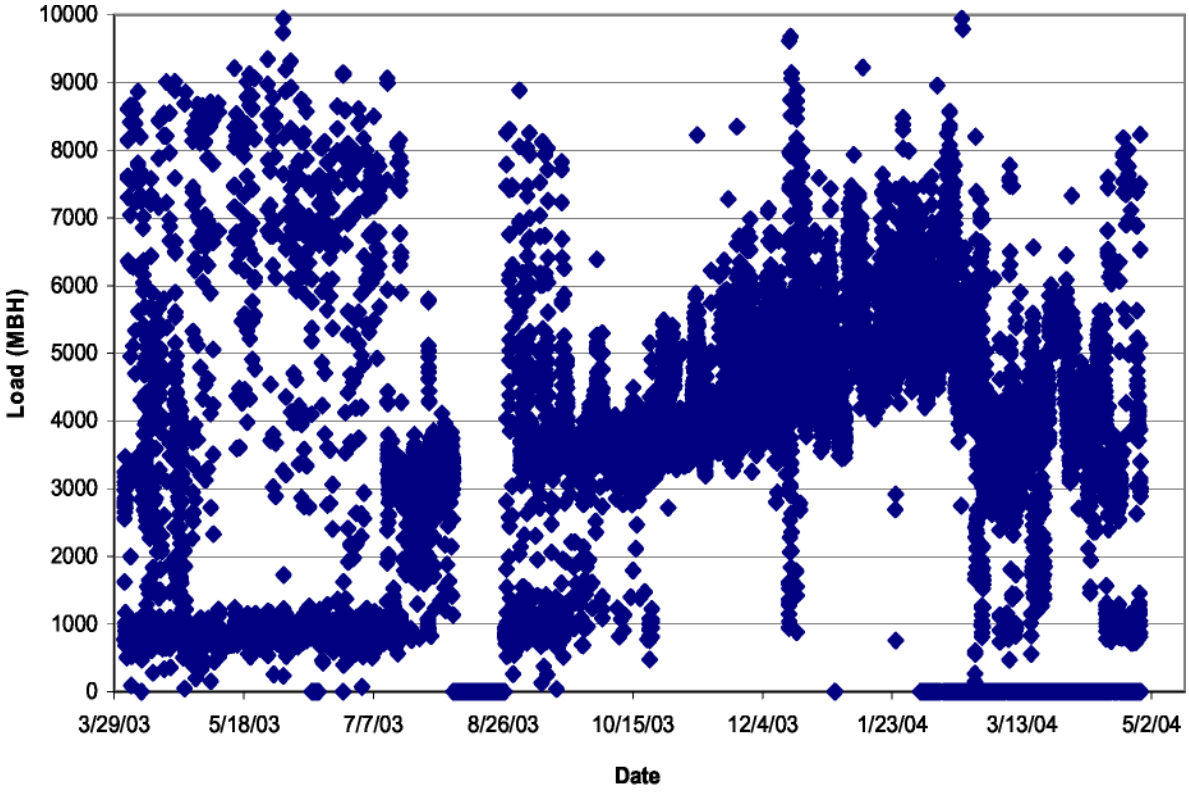


Figure 2: TAMIU Central Plant Heating Hot Water Load March 2003-2004

Buildings	Gross Square Ft.	Peak Load (Tons)	Diverse Load (Tons)	Peak Flow (gpm)	Diverse Flow (gpm)
Existing Buildings					
Bldg 'A' - Killam Library	187,000	713	335	1,426	670
Bldg 'B' - Bullock Hall	34,200	205	96	410	193
Bldg 'C'	34,600	223	105	446	210
Bldg 'D' - Central Plant	18,900	33	16	66	31
Bldg 'E' - Pellegrino Hall	44,800	218	102	436	205
Bldg 'F' - Canseco Hall	45,200	145	68	290	136
Bldg 'G' - Kinesiology	50,000	531	250	1,062	499
Bldg 'H' - Physical Plant	16,100	24	11	48	23
Bldg 'I' - Western Hemispheric	70,400	235	110	470	221
Bldg 'J' - Student Center	107,200	480	226	960	451
Bldg 'K' - Fine Arts	106,500	366	172	732	344
Subtotal	714,900	3,173	1,491	6,346	2,983
Cumulative Totals	714,900	3,173	1,491	6,346	2,983
Buildings in Design/Construction					
New Science	79,300	600	282	1,200	564
Student Rec Center	60,000	600	282	1,200	564
Subtotal	139,300	1,200	564	2,400	1,128
Cumulative Totals	854,200	4,373	2,055	8,746	4,111
5 Year Projected Buildings					
Education & Student Success	120,000	463	218	926	435
Liberal Arts Building	154,000	815	383	1,631	767
Engineering, Math, and Science	74,500	445	209	891	419
Subtotal	348,500	1,724	810	3,447	1,620
Cumulative Totals	1,202,700	6,097	2,865	12,193	5,731
10 Year Projected Buildings					
Administration Building	57,500	192	90	383	180
Student Center Expansion	83,100	369	174	739	347
Business Building	87,800	439	206	878	413
Performing Arts Center	2,700	9	4	18	8
Physical Plant	51,700	122	57	243	114
Central Plant	24,600	70	33	141	66
Nursing Building	9,700	49	23	97	46
Children's Museum	29,600	148	70	296	139
Theater	16,000	53	25	107	50
Subtotal	362,700	1,451	682	2,902	1,364
Cumulative Totals	1,565,400	7,547	3,547	15,095	7,095

Appendix C: TAMIU Projected Chilled Water Load Based on Current Building Plan

Building	Gross Square ft.	Max Load (MBH)	Diverse Load MBH	Peak Flow (gpm)	Diverse Flow (gpm)
Existing Buildings					
Bldg 'A' - Killam Library	187,000	4,780	1,769	478	177
Bldg 'B' - Bullock Hall	34,200	1,580	585	158	58
Bldg 'C'	34,600	1,730	640	173	64
Bldg 'D' - Central Plant	18,900	220	81	22	8
Bldg 'E' - Pelegrino Hall	44,800	933	345	93	35
Bldg 'F' - Canseco Hall	45,200	635	235	63	23
Bldg 'G' - Kinesiology	50,000	4,050	1,499	405	150
Bldg 'H' - Physical Plant	16,100	500	185	50	19
Bldg 'I' - Western Hemispheric	70,400	1,550	574	155	57
Bldg 'J' - Student Development Center	107,200	1,520	562	152	56
Bldg 'K' - Fine Arts	106,500	2,850	1,055	285	105
Subtotals	714,900	20,348	7,529	2,035	753
Cumulative Totals	714,900	20,348	7,529	2,035	753
Buildings in Design/Construction					
New Science	79,300	2,500	925	250	93
Student Rec Center	60,000	5,700	2,109	570	211
Subtotals	139,300	8,200	3,034	820	303
Cumulative Totals	854,200	28,548	10,563	2,855	1,056
5 Year Projected Buildings					
Education & Student Success	120,000	3,840	1,421	384	142
Liberal Arts Building	154,000	4,928	1,823	493	182
Engineering, Math, and Science	74,500	2,980	1,103	298	110
Subtotals	348,500	11,748	4,347	1,175	435
Cumulative Totals	1,202,700	40,296	14,910	4,030	1,491
10 Year Projected Buildings					
Administration Building	57,500	1,438	532	144	53
Student Center Expansion	83,100	2,078	769	208	77
Business Building	87,800	2,810	1,040	281	104
Performing Arts Center	2,700	86	32	9	3
Physical Plant	51,700	1,293	478	129	48
Central Plant	24,600	984	364	98	36
Nursing Building	9,700	388	144	39	14
Children's Museum	29,600	888	329	89	33
Theater	16,000	400	148	40	15
Subtotals	362,700	10,364	3,834	1,036	383
Cumulative Totals	1,565,400	50,660	18,744	5,066	1,874

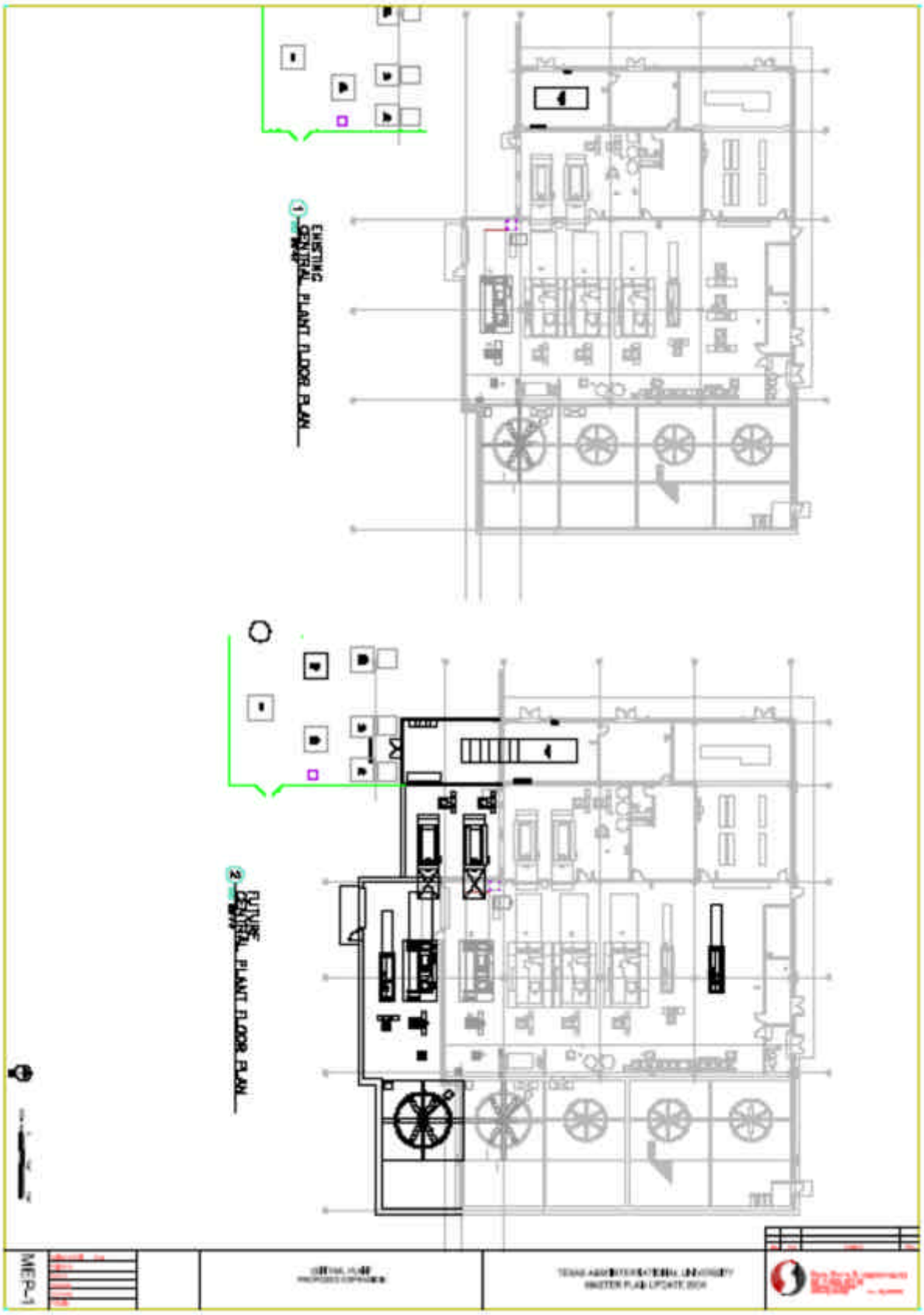
Appendix D: TAMIU Projected Heating Hot Water Maximum Load

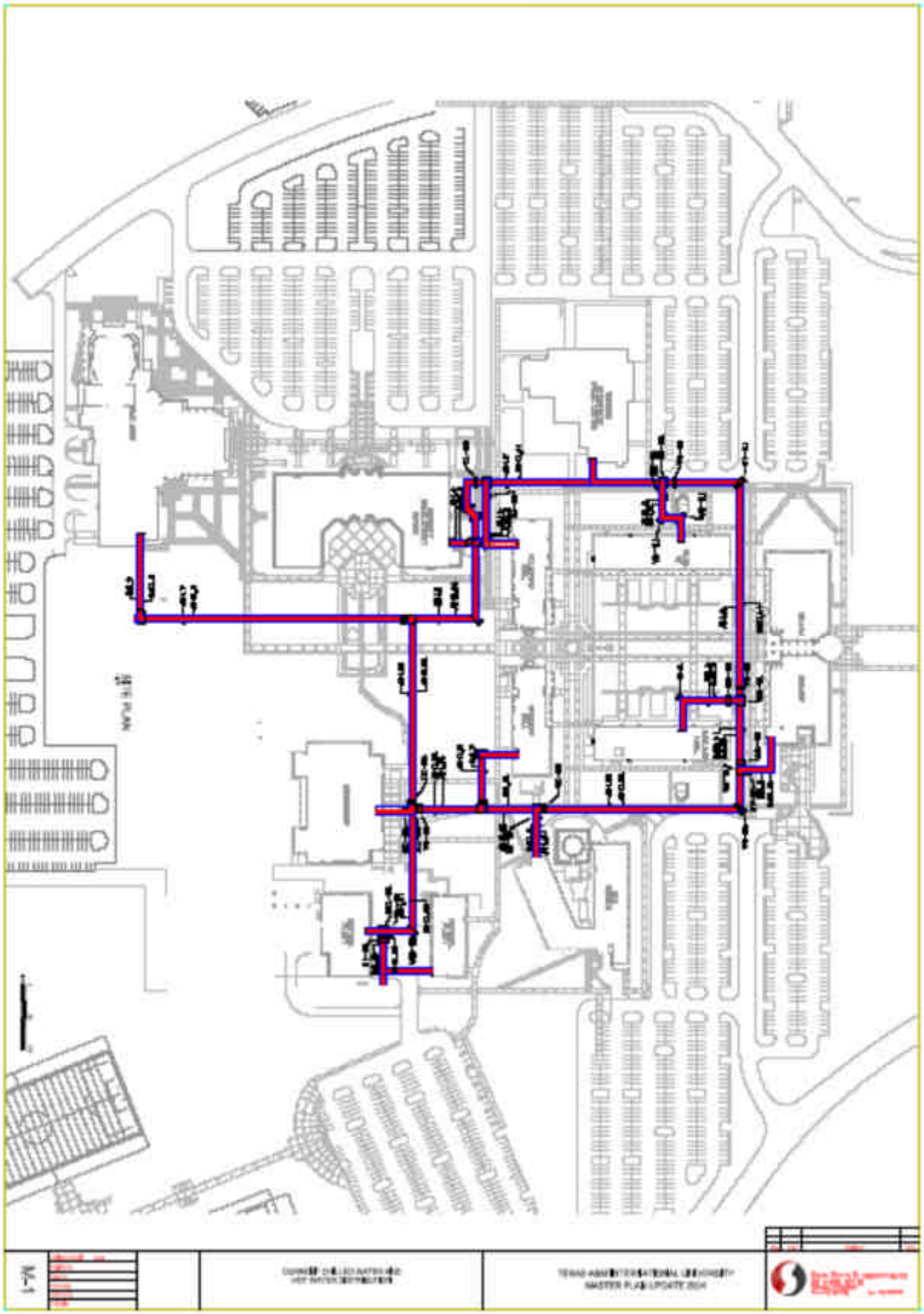
Buildings	Gross Square ft.	Recovery (GPH)	Storage (Gallons)
Existing Buildings			
Bldg 'A' - Killam Library	187,000	200	200
Bldg 'B' - Bullock Hall	34,200	175	175
Bldg 'C'	34,600	175	175
Bldg 'D' - Central Plant	18,900	-	-
Bldg 'E' - Pelegrino Hall	44,800	162	160
Bldg 'F' - Canseco Hall	45,200	162	160
Bldg 'G' - Kinesiology	50,000	330	330
Bldg 'H' - Physical Plant	16,100	160	160
Bldg 'I' - Western Hemispheric	70,400	175	175
Bldg 'J' - Student Center	107,200	250	250
Bldg 'K' - Fine Arts	106,500	175	175
Subtotals	714,900	1,964	1,960
Cumulative Totals	714,900	1,964	1,960
Buildings in Design/Construction			
New Science	79,300	170	170
Student Rec Center	60,000	175	175
Subtotals	139,300	345	345
Cumulative Totals	854,200	2,309	2,305
5 Year Projected Buildings			
Education & Student Success	120,000	250	250
Liberal Arts Building	154,000	300	300
Engineering, Math, and Science	74,500	170	170
Subtotals	348,500	720	720
Cumulative Totals	1,202,700	3,029	3,025
10 Year Projected Buildings			
Administration Building	57,500	150	150
Student Center Expansion	83,100	-	-
Business Building	87,800	170	170
Performing Arts Center	2,700	-	-
Physical Plant	51,700	-	-
Central Plant	24,600	-	-
Nursing Building	9,700	100	100
Children's Museum	29,600	-	-
Theater	16,000	-	-
Subtotals	362,700	420	420
Cumulative Totals	1,565,400	3,449	3,445

Appendix E: TAMIU Projected Domestic Hot Water Demand

Buildings	Gross Square ft.	Total kVA	VA/sq ft.
Existing Buildings			
Existing Campus Load	714,900	3,200	4.48
New Science Bldg	79,300	765	9.61
Student Recreation Center	60,000	429	7.16
Sub-Totals	854,200	4,391	5.14
Cumulative Totals	854,200	4,391	5.14
5 Year Projected Buildings			
Education & Student Center	120,000	778	6.48
Liberal Arts Building	154,000	1,065	6.92
Engineering, Math, & Science	74,500	680	9.12
Housing	285,000	2,195	7.70
Dining	15,600	203	13.00
Sub-Totals	649,100	4,920	7.58
Cumulative Total	1,503,300	9,311	6.19
10 Year Projected Buildings			
Administration Building	57,500	363	6.32
Student Center Expansion	83,100	554	6.66
Business & Education Building	87,800	599	6.83
Performing Arts Center	2,700	17	6.26
Physical Plant	51,700	310	6.00
Central Utility Plant Upgrades	24,600	2,519	
Nursing Building	9,700	66	6.84
Housing	561,200	4,321	7.70
Dining	21,600	281	13.00
Children's Museum	29,600	202	6.84
Theatre	16,000	85	5.32
Sub-Totals	945,500	9,318	9.85
Cumulative Total	2,448,800	18,629	7.61

Appendix F: TAMIU Projected Power Demand


EXISTING
GENERAL PLANT FLOOR PLAN
FUTURE
GENERAL PLANT FLOOR PLAN
MEP-1



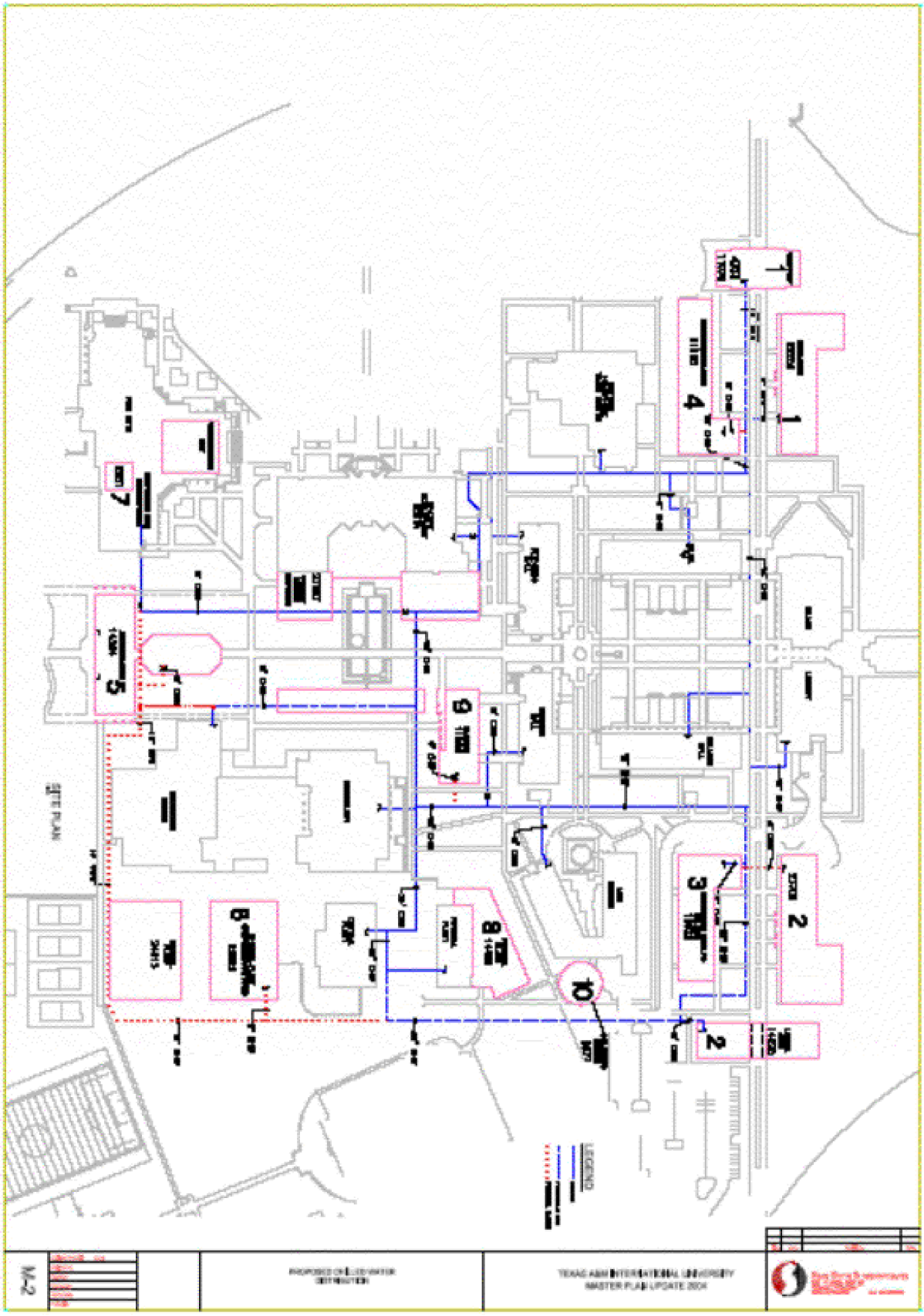


Figure XXX: Shah-Smith Site Plan showing -

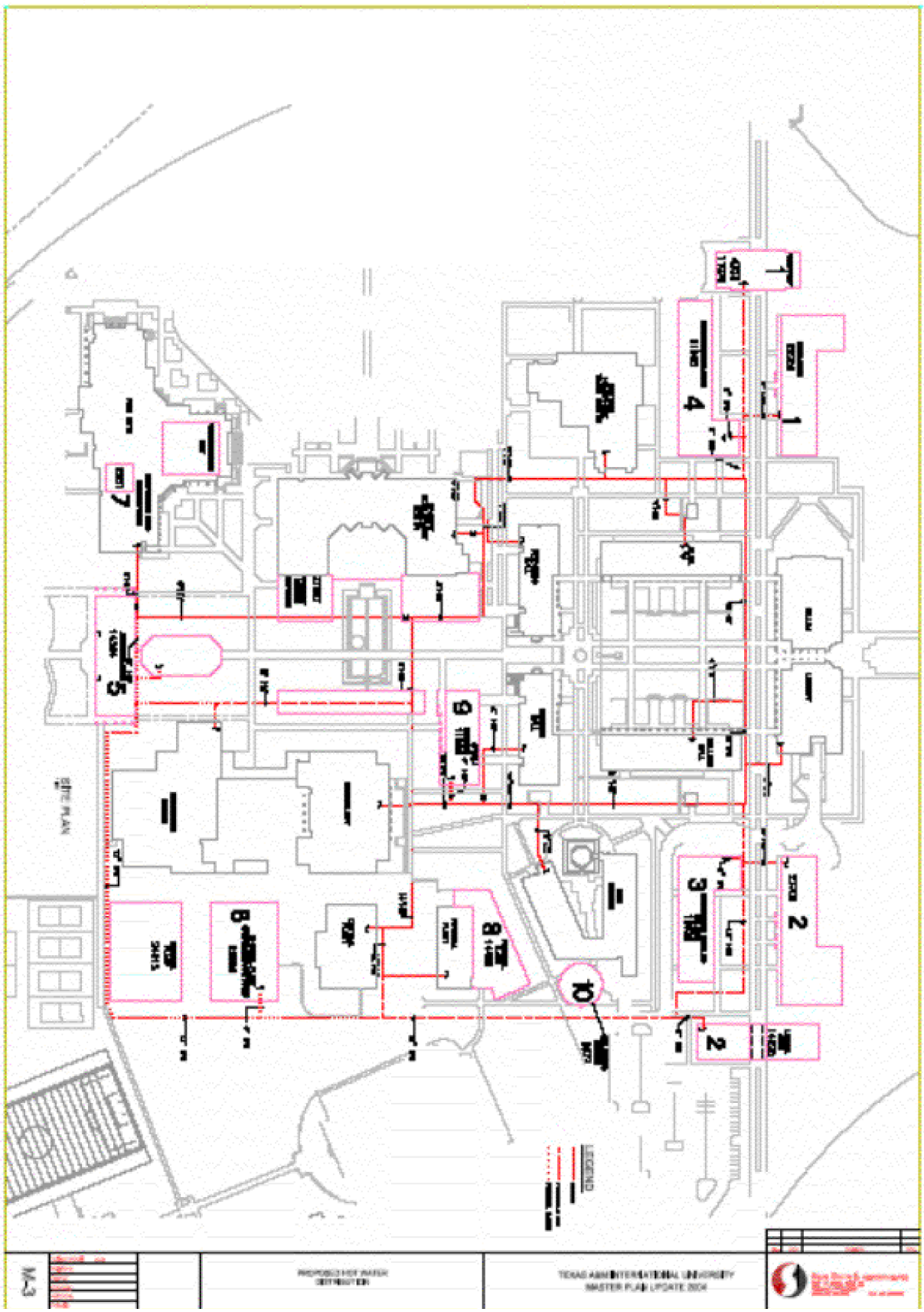
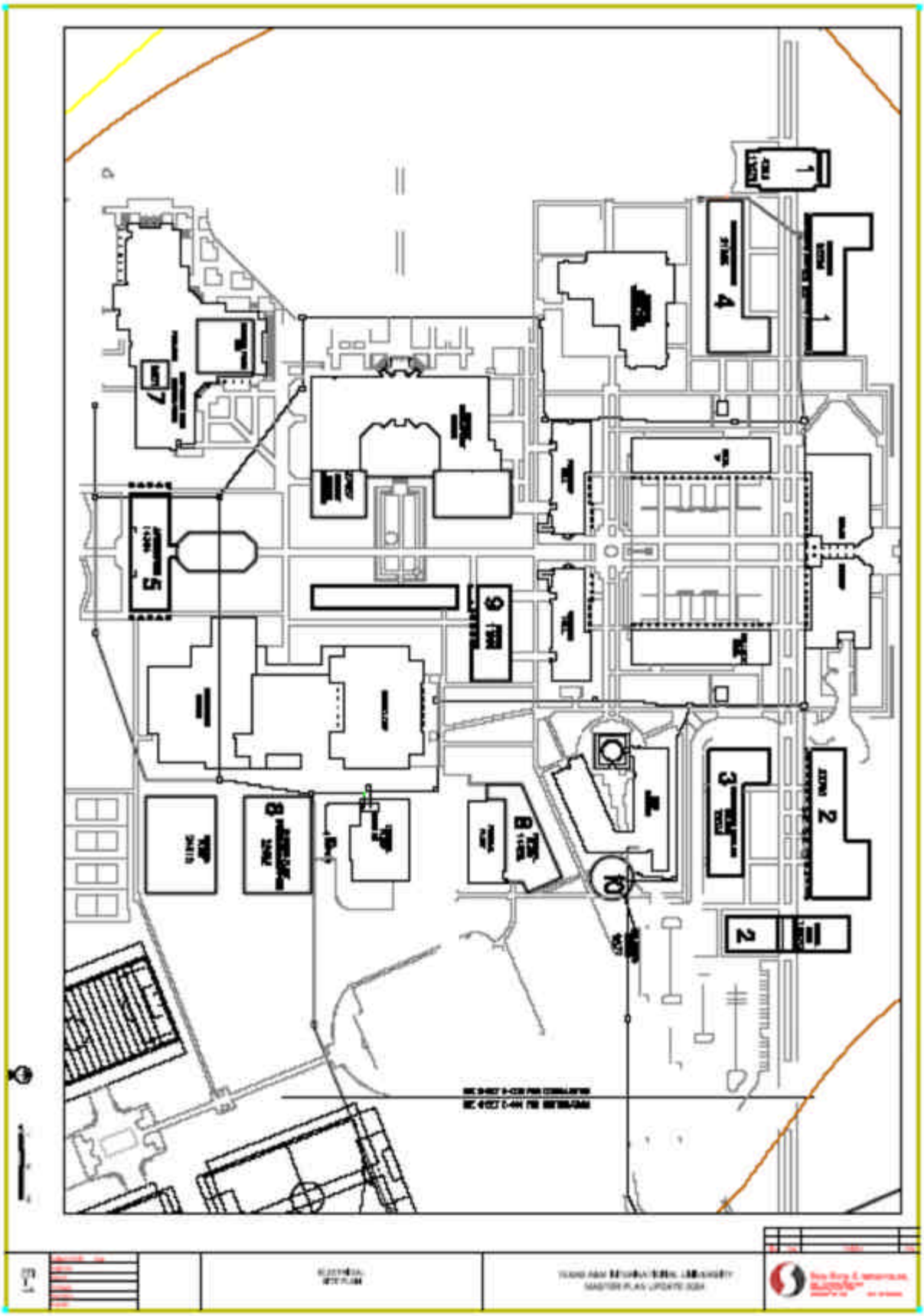
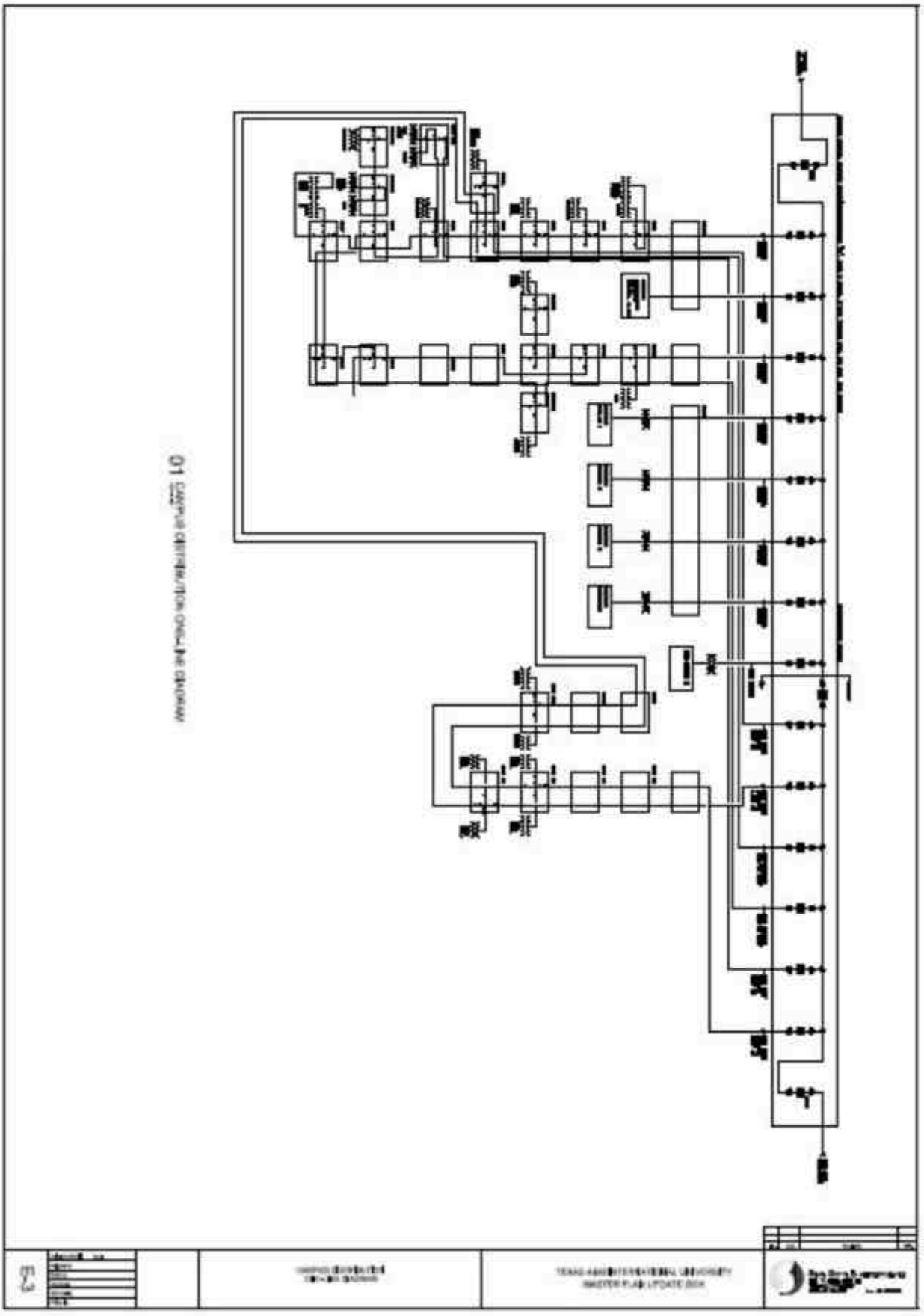
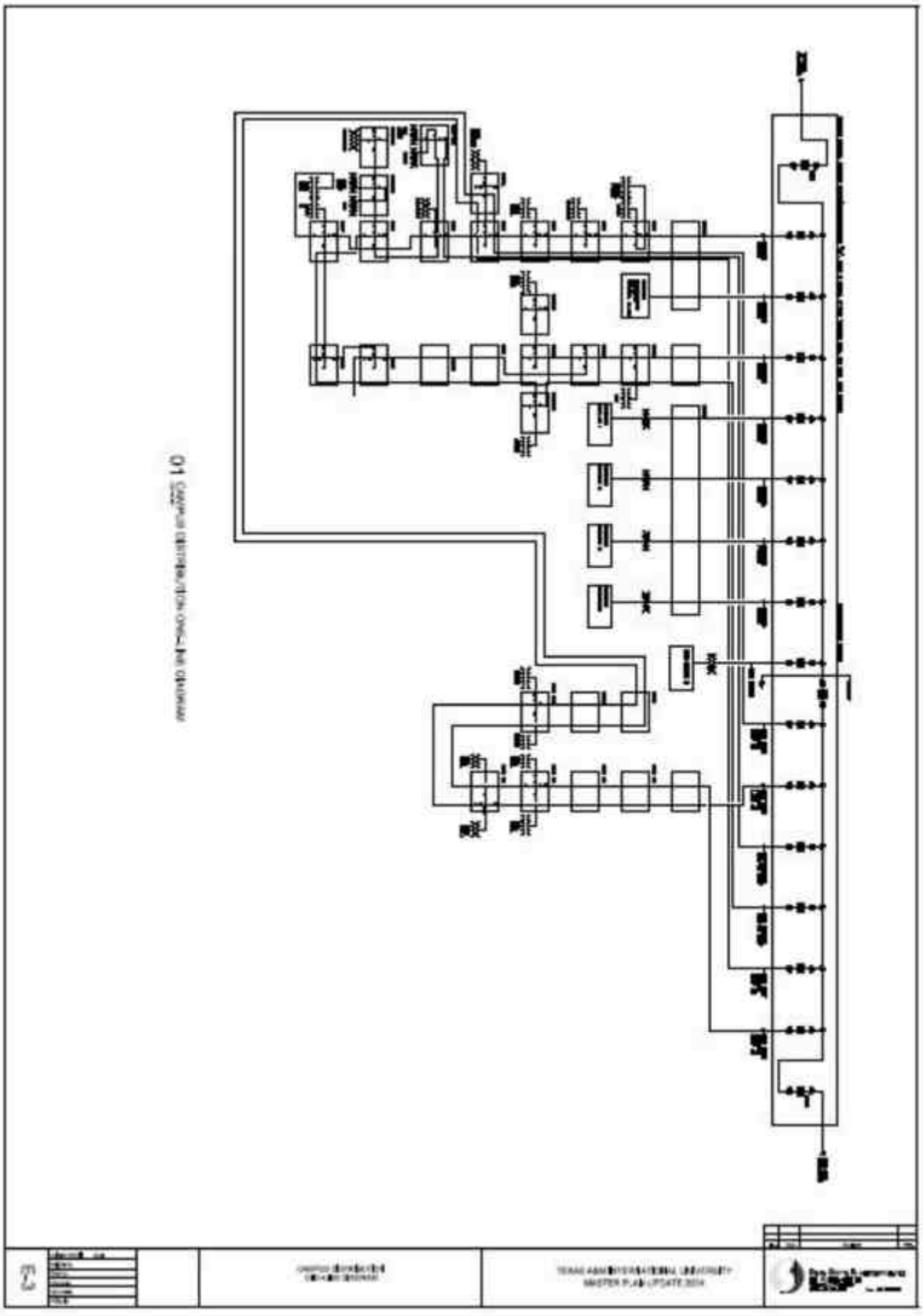
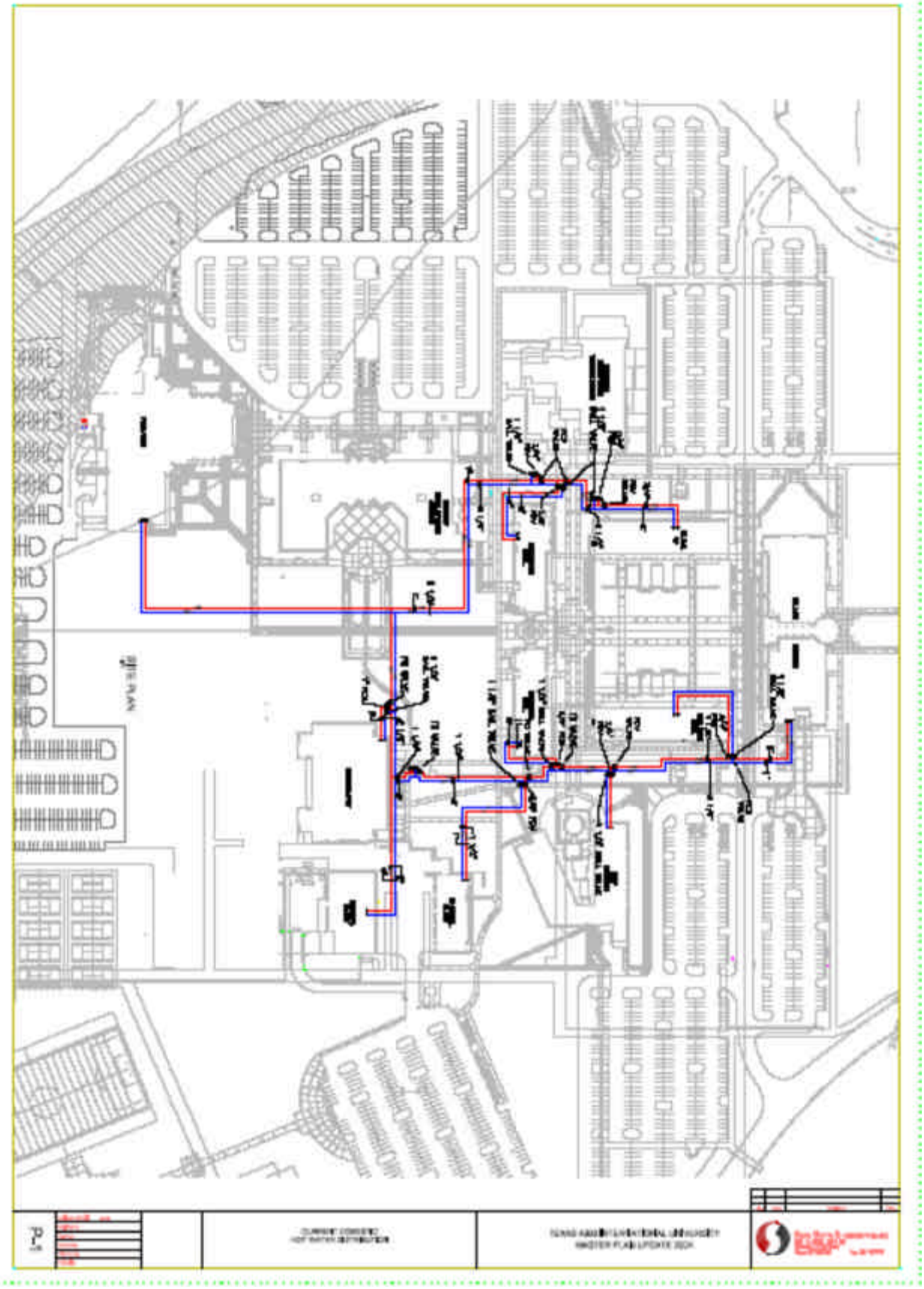


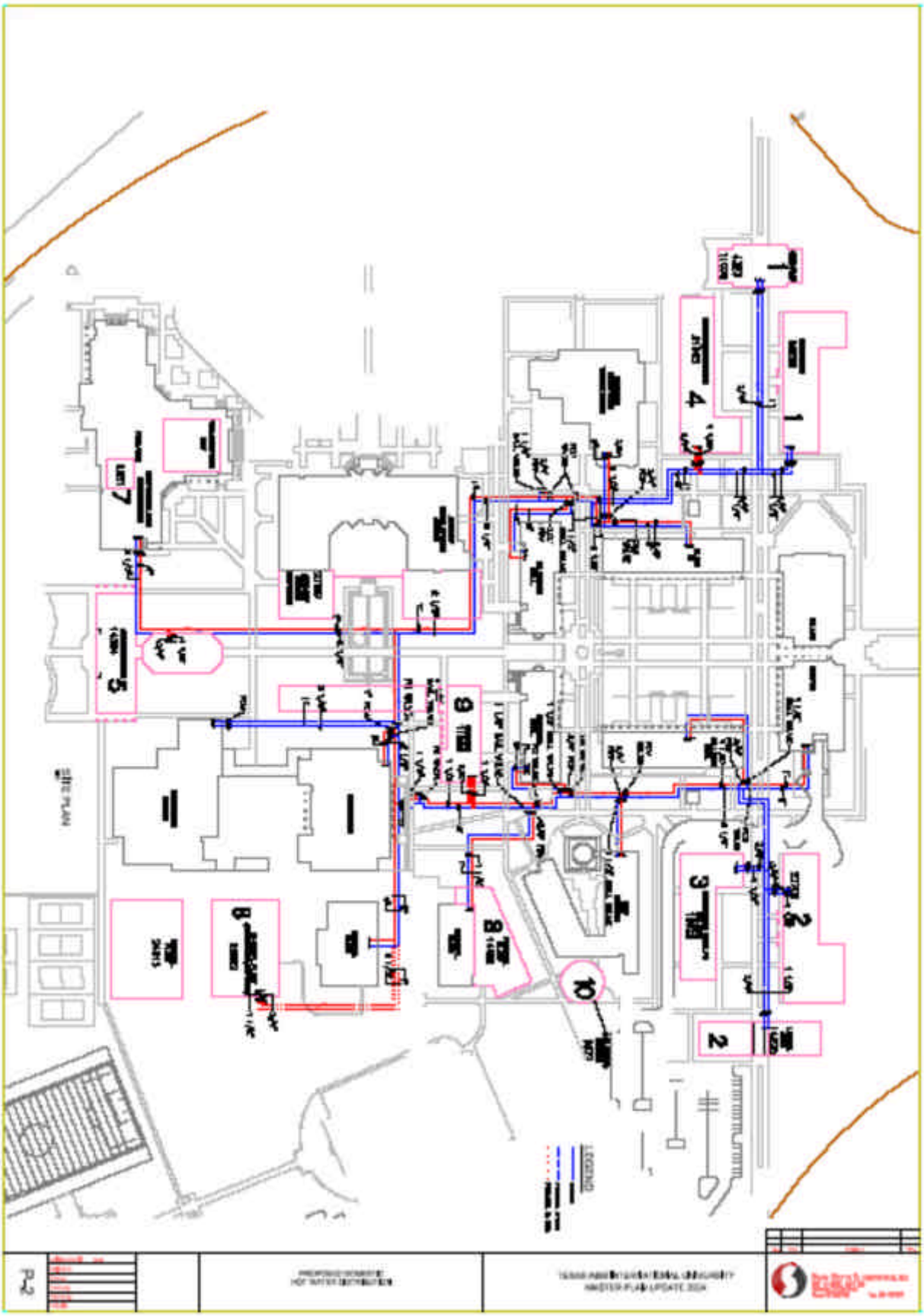
Figure XXX: Shah-Smith Site Plan showing -











DATA/IT/TELECOMMUNICATIONS

Master Plan Overview
Texas A&M Laredo International University

Master Plan Overview

Texas A&M International University (TAMIU) in Laredo has a strategic mission of providing undergraduate and graduate education, research, and service to society. The campus incorporates the latest technology to advance this institutional mission and serves as a leading technology resource to the south Texas area. Therefore a comprehensive master plan should include the communications infrastructure in its scope.

Bandwidth Requirements

The Internet has become an integral part of the educational experience and as such, the TAMIU campus IT infrastructure gives students access to the wealth of information available via the A&M systems network as well as the internet. As students and staff utilize the Internet more intensively, demand for access will grow. Individual password controlled e-mail accounts and the use of the accounts to communicate with faculty for the purpose of submitting course material will also place greater demands on connections to the data network and the Internet. Consideration is being given to creating enhanced graduate level courses and offering these courses across the internet. These factors should be taken into consideration when planning current and future technology infrastructure requirements.

The bandwidth requirements of users have been doubling every 3 to 4 years. This is due to the fact that users are, in general, sending larger files both internally and external to their systems. Changing traffic patterns are causing the primary destination for data traffic to move from inside the network to file servers, printers, mail servers, etc. to outside the network and across the internet. It is clear that the more traffic that is sent externally to the system, the greater the bandwidth capacity needs to be for the backbone cabling. The external traffic is typically emails with attachments as well as requests to access information from either the A&M systems intranet or the public internet. In past years a simple email text message was the predominant communication. Now, email text and one or more attachments (word, excel, graphic files) make up a larger percentage of the regular traffic. These attached files are growing larger and larger. The convergence of other systems such as security, building automation systems and A/V systems across the Ethernet network are also increasing bandwidth demands.

As the campus network is diverse, one recommendation is that continual monitoring of the different campus departments' inter and extra-campus connections be implemented so that the changes in demands for bandwidth in the backbone and ISP connectivity can be foreseen. This will allow for the sizing of connecting media, circuits and bandwidth can be allocated to the areas with the greatest demand. This monitoring would be done from a newly established manned network operations center. The network operation center would house the equipment and personnel to allocate idle bandwidth, resolve network bottle neck issues, reduce downtime and overall provide the enhanced network services a technology advanced campus will require.

Campus Technology Overview

Telecommunications infrastructure serves many uses today. In addition to the traditional use for voice and data communications, the technology infrastructure provides broadband video, security services, and wireless networking. The impact of the technology infrastructure is far reaching. Every single member of the faculty, staff and student body depend on these systems functioning reliably and correctly.

Network Topology - Data

The main Ethernet core distribution switches for data services are in the main communications room located in the Killiam Library building basement at the east end of the campus. These services are distributed via multi-fiber backbone cables. The network topology is a mixture of direct and distributed services.

Network Topology - Voice Telecommunications

An Avaya PBX serves the existing voice telecommunication needs. This PBX is deployed in a direct circuit copper feed from the main communications room in the Killiam Library Building, or in some instances using remote switch modules and fiber connectivity allowing the system to be distributed between buildings on campus.

To determine whether this system has the capacity to serve campus expansion, it will be necessary to obtain engineering information from existing voice system and then document the growth capabilities of the system, i.e., the number of additional phones, cards, modules, network nodes that can be added to the existing system to support the projected voice needs of the campus as it grows.

Today, the cost, complexity and age of these systems are forcing a re-evaluation of this technology. The rapid acceptance of voice over IP telephony (VoIP) is causing a migration away from the legacy switched-circuit technologies.

TAMIU does not consider it feasible or desirable to change out all voice telecommunications at this time. However, to conserve conduit duct bank space, it may be desirable to consider deploying VoIP in the near future. This would allow retention of the existing voice telecommunications equipment while focusing new telecommunication investment in the voice over IP area. At some later date, the existing facilities could be upgraded to Voice over IP.

Communications Infrastructure

The infrastructure to support the voice and data networks at the TAMIU consists of a variety of signal pathways including: Copper campus (inter building) backbone cable and singlemode/multimode fiber optic backbone cables that run throughout the campus in a system of underground distribution via a six four inch conduit bank and sub-surface vaults for use as pull points and changes in direction of the cable. This network originates in the main communications (MC) room in the basement of the Killam Library building where different media types provide the platforms to deliver the various campus wide services needed to serve administrative operations, building service, the faculties' needs, and the student population. Currently, the types of services include an Ethernet data network, TDM voice services, distance learning, broadband video, building maintenance systems and security networks. When extending this network into the areas on campus planned for expansion many factors need to be considered. Some of the issues that must be considered are, capacity for current and future operations, the routing of the systems along right of way, locations of the maintenance points, survivability, conduit identification, redundancy or route diversity, and as-built records.

Attempting to predict what types of media will be available years into the future is difficult. Because of this the best way to prepare for future requirements is to design a system of pathways that can be re-used many times over, and to establish a process for keeping record drawings up to date. The expense of setting up a system of pathways that can be evacuated and repopulated with the current technology will be easily recovered in future savings by not having to incur the expense of disrupting hardened surfaces and established landscaping to place new conduits. It is recommended that an operation's budget for updating the permanent records for existing conduit be added to the main campus budget as a requirement as well as the completed as-built drawings for all expansion areas.

Campus Backbone

The type of backbone media placed into the conduit network to provide the various types of information technology services will affect the number of conduits required. It is recommended that capacity be planned for Single Mode (SM) fiber, 62.5 um Multi-Mode (MM) fiber, 50 um Multi-Mode fiber, multi-pair copper and coaxial cables. To achieve this, without a major over-build of the campus wide conduit distribution consisting of six four-inch conduits, space would be allocated in the following manner: three of the four conduits would be filled with two 1 ½" and one 1" flexible inner-duct for fiber cabling. A flexible fabric inner duct may be substituted for the standard rigid inner duct in one of the three conduits. This product makes it possible to place 6 to 9 fabric inner ducts into one four inch conduit thereby maximizing the available area. The remaining three conduits would be allocated as follows: two conduits would be for copper based services such as analog fax and emergency voice lines, building maintenance and for the security department, with the remaining conduit kept as a spare. Recommendations include converging IT, Voice, A/V and eventually security and fire systems onto high capacity fiber based networks. This will reduce the requirements for large conduit duct bank infrastructure to support independent copper based systems having to be constructed. The campus IT department will need to make a commitment to expanding systems and services across fiber multiplexing platforms. The electronic provisioning nature of these new plat-

forms will require training and operational changes. To successfully implement and maintain reliable and consistent services across these electronic systems, up-grades to the HVAC, emergency power and fire suppression systems will have to be completed at the main campus distribution point in the basement of the Killaim library. In addition, it is recommended that a protocol/requirement be created for the population of the spare conduit: Once the spare conduit is full, the cabling in the conduit that the newly installed cables replace, be removed. In this way, there will always be a spare conduit in which to add services as required.

To accomplish the above mentioned goals, high strand count fiber cables should ring the campus. As new buildings are added, four conduits will be extended to the closest communications man hole where binder groups of 12 to 24 fiber strands will be broken out of the high count fiber cable and spliced to entrance cables routed into the building. Were this strategy implemented, one 144 strand SM all dielectric fiber campus backbone cable with an outside diameter of three quarters of an inch would support six buildings with 24 fibers or twelve new buildings with 12 fibers.
Multi-pair copper cables to support security, fire and emergency communications systems will still be required in the campus backbone system. Utilizing 24 AWG foam core PE-89 type multi-pair cables will reduce the outside diameter area by twenty-five percent. For example if the copper pair count requirements per building are set at 50 pair per building (less for smaller buildings) and 24 AWG PE-89 cable with an outside diameter of three quarters of an inch is used, a two four-inch conduit duct bank could support six new buildings. Another option for the copper cabling would be to also use high pair count copper back bone cables; for example place a 600 pair cable, and then splice in the maintenance hole the 50 pair cable intended for the new building. In deploying this method, one four-inch conduit could support 50 pair cables for 12 buildings. Because the four-inch conduit network has been designed as a ring and all of the copper services are located in one place, there are two pathways available to deploy these cables. This topology essentially doubles the four-inch conduit area for copper cabling extending into the network.

Additionally, the design of the conduit pathways for expansion would be affected using current best practices of not having more than 180° of bends between pulling points, and not having any outside runs longer than 400 feet without a pulling point. Careful planning and record keeping of how the conduit space is used will assure that the system of conduits may be re-used for future media types. Plugging any unused conduits and filling the voids in the other conduits using devices specifically designed for this purpose is an important maintenance practice. A system of labels based on ANSI/TIA/EIA 606-A identifying what each conduit is allocated for along with the "to" and "from" information is extremely beneficial for disaster recovery operation; and facilitates ongoing maintenance.

In conclusion, a commitment to the importance of correctly designing and maintaining a system of campus backbone pathways and communicating to decision makers how much this kind of technology infrastructure adds to the value of a viable infrastructure must be made.

Horizontal distribution

Horizontal distribution is the extension of the campus wide services to the individual work areas and maintenance points. This is accomplished from a location in the building established for such purposes. These locations may be referred to as an IT room, Telecommunications Room (TR), Building Distributor (BD), Main Communications Room (MC), as well as may others. The current TIA/EIA standards are moving towards the international designation of 'Building Distributor' or as it shall be referred to from here forward, a BD. This naming convention alludes to the fact that multiple services that require horizontal distribution may be able to be collocated within this one room. With this understanding, the BD should be sized accordingly. That is, enlarged to accommodate systems that would likely be placed in the room. Additionally the migration to fiber-based electronic systems requires that when designing these spaces special attention be given to environmental conditions such as ambient temperature humidity, and air quality. Electrical power availability, reliability and quality as well as grounding are also important factors that have to taken into consideration when designing these spaces. The TIA/EIA standards include guidelines for sizing these communications equipment rooms based on the number of square feet in the serving area and the work area density. These guidelines may be customized to fit the specific educational buildings needs. For example, a building with a high density of horizontal infrastructure will require a larger room than one with a low density infrastructure. Furthermore, technical limitations require that these rooms must be located on the floor plan such that no one cable run to any work area will exceed a cable distance of 270 feet.
Due to the extreme sensitivity of the newer high-speed copper UTP cables (Category 6) and the real life limitations of installing the cabling at a "safe" distance from power cabling and conduits, it is recommended that the total linear cable distance be kept to 270 feet rather than the TIA/EIA standard of 295 feet. This practice will help to mitigate signal coupling and third harmonic disturbances on cables. In a multi-story building it is recommended that there be a minimum of one

room per floor, and that the rooms from the other floors in the building be stacked one on top of the other with at least three of the stacked walls in vertical alignment.

Once the BD's are sized and located, a system of pathways leading from the BD to the individual work areas should be carefully designed. As with the campus backbone conduit network, a system of pathways should be designed that has been sized for future capacities, is accessible, and is resilient. If multiple services are to be distributed using a single pathway, it is recommended that a means of segregating the services be employed. Each pathway would be labeled with the name of the BD room of origin. To facilitate the re-use of the horizontal pathways one recommendation would be that when making changes, all unused cables be removed.

Security

During interviews conducted with TAMIU Administration and Staff, security was mentioned as an area that is receiving more attention. The ability to restrict building access, change levels of access for an area, and to monitor many areas has become a necessity. Potential and real loss of expensive equipment, especially notebook computers from unoccupied classrooms (computer labs) results in having to increase the number of areas that require controlled access. Increasing the number of secure locations suggest the deployment of a digital type system that utilizes either Biometrics or card-key access devices. These include: any area where cash is handled; areas where records are retained; computer labs, classrooms and storage rooms where valuable equipment is stored; main communication rooms and telecommunication rooms where networking equipment is installed, and server rooms where ITS servers are housed. Thumbprint readers (Biometrics Technology) are one example of the newer types of security systems on the market today. Access devices require that infrastructure (conduit and boxes) be added where these devices will be located. This should be included in building and campus planning to avoid having to add these devices after all other infrastructure cabling has been completed. The administering and issuing of the pass cards to the security systems should take place from one centralized location.

Surveillance with video cameras occurs in some locations on campus. Some of these cameras are connected to tape backups, while other locations are not recorded. Digital video recorders should be installed in all new construction, as well as possibly added to some existing buildings. As the new building infrastructure is designed, attention must be given to additional cabling needed to expand the coverage of the video security system within the building and connectivity to the central security monitoring station. It should be noted that analog video signals require large blocks of bandwidth. Only 8-10 channels per single mode fiber pair are available. If analog video is contemplated, the bandwidth intensive nature of this application will need to be considered and the number of SM fiber pairs increased proportionally. While the equipment is more expensive, digital video applications are much less bandwidth intensive and are capable of being used with advanced applications such as facial recognition programs and programs that can recognize unusual activity within a frame sequence.

Wireless LAN Infrastructure

Wireless LAN connectivity is a technology that continues to evolve. The demand for wireless connectivity will constantly increase as more faculty, staff, and students acquire notebook computers with the expectation and desire to have them function "anywhere-anytime". The implementation of a ubiquitous wireless LAN infrastructure possible based on the newly ratified 802.16 WIMAX standards will allow the students and faculty to work with greater flexibility and freedom. Currently, TAMIU has plans that call for the implementation of wireless connectivity in all future buildings. Wireless security is very important so as with the wired network it is recommended that several layers of authentication and verification be implemented to protect against unauthorized access to the campus network.

Audio Visual Systems:

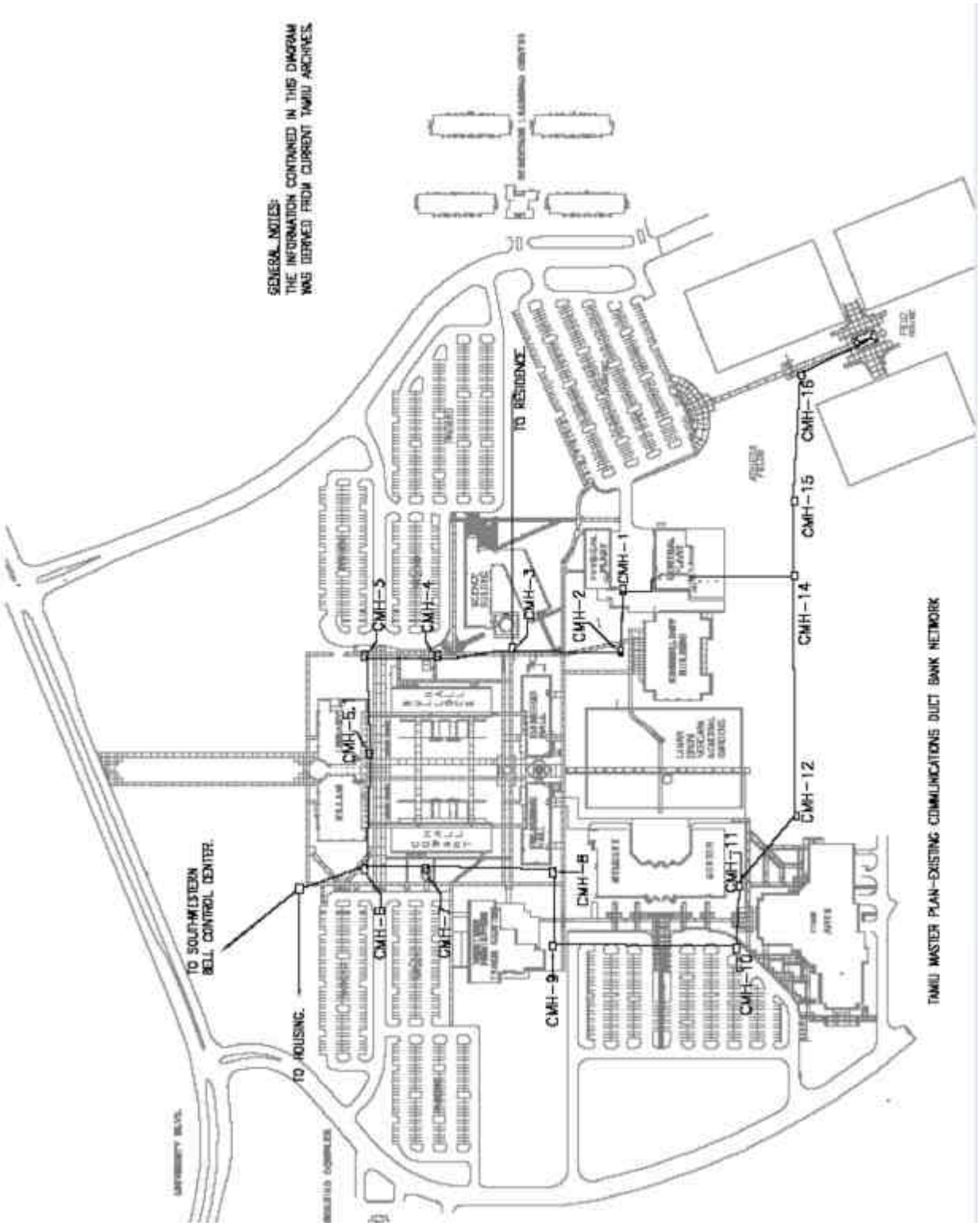
Many of the classrooms on campus have audiovisual presentation equipment. Currently the audio video presentation systems are stand-alone systems. As equipment is added and replaced the networking capabilities of the newer equipment should be utilized so that these systems can be monitored and configured from a centralized location. A system of networked audiovisual devices can also provide data for security and asset management systems.

Telecommunications Infrastructure Planning Goals:

- Provide a reliable, scalable, resilient, and flexible technology infrastructure.
- Be a next-generation solution and have the ability to be expandable and handle new types of services and features.
- Accommodate new users in an easy, affordable manner.
- Be a scalable and centrally distributed solution.
- Documentation should be maintained for day to day maintenance issues as well as the moves adds and changes required for the operations personnel, should be a priority.
- The technology will be problem free and transparent for the end users.
- Incorporate redundant routing, back-up systems and preventative methodologies in the design of the campus infrastructure.
- Minimize the effects of integration of the new facilities.
- Evaluate and understand the impact of the construction on existing facilities.

Creation of Technology Infrastructure Construction Guidelines and Standards:

It is recommended that TAMIU create a localized set of campus-wide design criteria for the Technology Infrastructure. These standards would be based on A&M Redbook, NEC, IEEE, ANSI and EIA/TIA standards and will provide for a consistent application of technology infrastructure as new buildings are designed. These standards should be comprehensive and should be regarded as a living documents that must be periodically reviewed and updated. This documents will be used as a blueprint and protocol for vendors, contractors, consultants, planners, etc. These documents would include all aspects of the TAMIU communications infrastructure (data, voice, video, broadband television, security and BMS). The document should be periodically submitted for review, approval and acceptance by the college administration. Following the document's acceptance, it should be included as part of the campus's general construction guidelines as a required part of any future construction project.


GENERAL NOTES:
THE INFORMATION CONTAINED IN THIS DIAGRAM WAS DERIVED FROM CURRENT TAMIU ARCHIVES.
TO RESIDENCE
TO SOUTHWESTERN BELL CONTROL CENTER.
TO HOUSING.
CMH-1
CMH-2
CMH-3
CMH-4
CMH-5
CMH-5.1
CMH-6
CMH-7
CMH-8
CMH-9
CMH-10
CMH-11
CMH-12
CMH-14
CMH-15
CMH-16
TAMIU MASTER PLAN-EXISTING COMMUNICATIONS DUCT BANK NETWORK

TEXAS A&M INTERNATIONAL UNIVERSITY
LAREDO, TEXAS

PRELIMINARY 100-YEAR FLOOD PLAIN ANALYSIS

Charles Gojer and Associates
September 15, 2004

Recently we revived the drainage study from TxDOT for the culvert located along Loop 20 that drains onto the TAMIU Campus. The study was by developed by Turner Collie and Braden Inc. and is dated 2000. The study provides important information that impacts the flood plain located on the TAMIU Campus. The most notable are the calculated tail water elevation for the 2-8'x4'x124' Multiple Box Culvert which is 511.39 feet and 100-year flow which is 431 cubic feet per second. The calculated tail water elevation tells us what elevation the water will rise to during a 10-year storm event. The culvert is designed to provide drainage relief to an 83 acre area located on the east side of Loop 20.

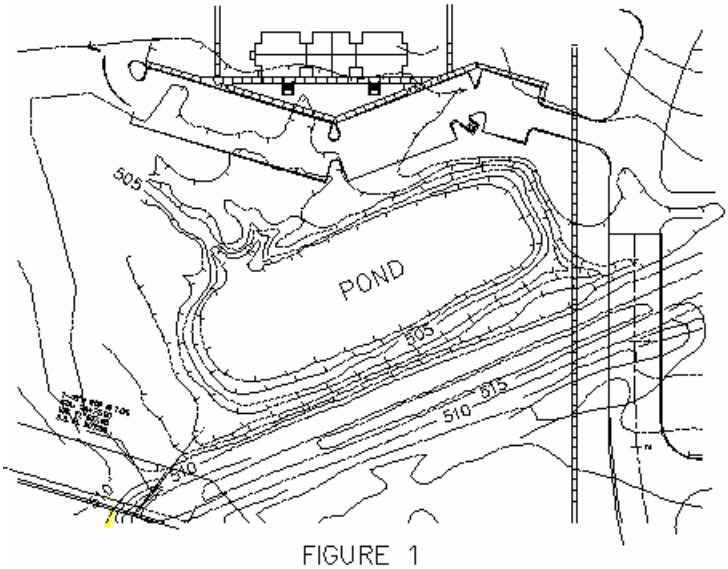


FIGURE 1

The water then drains from the culvert to a detention pond that appears to have been built years ago by constructing an earthen dam in the form of a berm (see Figure 1). No plans or studies were found for the pond. So the information obtained from TxDOT can not be related to the pond for the 100-year storm. Information that would be needed is the capacity of the pond, time of detention and outflow in volume over time. We do have some information for the pond. the bottom elevation is approximately 503.5, the top 509.0 and it covers about a 120 by 400-foot area. These elevations and dimensions were taken from the Site Plan (Alpha) AutoCAD file provided by TAMIU.

Although we couldn't find information to support it, we feel that the pond does overflow into the newly constructed channel located on the southeast side of the property. The channel was constructed with an upstream flow line of 502.67 and at a slope of one percent. The information was obtained from the construction documents for the channel. It is important to note that the Site Plan (Alpha), TxDOT plans, and the channel plans all appear to be on the same datum.

We are not sure what the water elevation at the overflow point for the pond is, but for argument's sake we are going to assume a water elevation of 505 feet where the channel begins. This number was based on the design height of the channel along with other finished grades shown on the construction plans for the channel. It ignores any hydraulic jump at this point. With this assumption we can determine the water elevation in the channel at the pinch point between the Fine Arts building and the channel when the pond overflows. The beginning of the channel is located about 1000 feet from the pinch point at a slope of one percent. Because the hydraulic grade line is the same as the slope of the channel for open channel flow, the water elevation should fall 10 feet from the beginning of the channel to the pinch point. The elevation of the water at the pinch point would then be 495 when the pond overflows. The finish floor of the Fine Arts building is approximately 504 taken off the channel construction plans.

From these our preliminary findings the Fine Arts building is not in danger of being flooded when the pond overflows, but the Loop Road at an elevation of approximately 494.5 would be under water. This doesn't take into account the culvert downstream located where the service road crosses the channel. A backwater curve would need to be developed for

the 100 year storm event. Water could back up at the culvert forcing the water to rise in the channel upstream. However to determine the actual water elevation for the for the 100-year storm for which the flood plain is determined a comprehensive study would need to be done taking all these drainage structures into account. This would give TAMIU a solid foundation to apply for a map revision with FEMA and comfort level for any new construction in the area where the already designated 100- year flood plain is located.

ARCHAEOLOGICAL SERVICES
100-ACRE TRACT
LAREDO, WEBB COUNTY, TEXAS

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September 15, 2004

Introduction

An archaeological constraints analysis was conducted on a 100-acre tract in Laredo, Webb County, Texas (Figure 1). The project area is scheduled for development by Texas A&M International University (TAMIU), but the location and nature of planned impacts were not fully known when this constraints analysis was conducted.

The purpose of the constraints analysis was to gather available information on previously recorded archaeological surveys and sites within the property and to assess the potential for the occurrence of significant cultural resources. The goal was to provide information for project planning and development, as well as estimates on possible future archaeological work required for regulatory compliance.

Definition of Study Area

The 100-acre project area is located northeast of Laredo, in Webb County, Texas. The western edge borders the existing TAMIU campus, and University Boulevard forms the northern boundary of the project area.

The surface geology throughout the project area is the Eocene Laredo Formation, composed of sandstone and clay (Barnes 1976). The soils in the project area include Maverick-Catarina complex, gently rolling; Moglia clay loam, 1 to 5 percent slopes; and Copita fine sandy loam, 0 to 3 percent slopes (Sanders and Gabriel 1985). The Maverick-Catarina complex soils are moderately deep to deep soils found on hills and in narrow valleys. The Maverick soils occur on summits and side slopes of hills. They are characterized by a grayish brown clay surface layer with a light olive brown saline clay subsoil. The Catarina soils are found in narrow valleys and on foot slopes of hills. They also have a grayish brown clay surface layer, with a light brownish gray saline subsoil. The Moglia clay loam is a deep, gently sloping soil found on convex plains and summits and side slopes of low hills. The Copita fine sandy loam is a moderately deep soil found on summits and side slopes of low hills as well as on broad, convex plains (Sanders and Gabriel 1985).

Methods

A background literature review and records search was performed by an archaeologist to determine the locations and content of any previous surveys and recorded sites in or near the proposed project area. These investigations included examining the Texas Historical Commission's (THC) Historic Sites Atlas (Atlas), site files at the Texas Archeological Research Laboratory (TARL), relevant maps, and National Register of Historic Places (NRHP) listings. Bureau of Economic Geology maps and Soil Conservation Service survey maps were also examined to explore previous disturbances and archaeological potential.

RESULTS

Previous Investigations

The background literature review revealed that a portion of the project area has been previously surveyed for archaeological resources, although this survey does not appear on the Atlas. In 1992, Mariah Associates, Inc. surveyed 200 acres for the proposed site of Laredo State University (Treece 1992), which is now TAMIU. That survey overlaps with the western margin of the 100-acre tract and recorded two sites on the campus, 41WB362 and 41WB363, both of which were recommended for testing. Subsequently, the THC designated the two sites State Archeological Landmarks (SALs), as reported in Warren (1994) and confirmed by the THC (Lillie Thompson, personal communication, August 25, 2004)1. Warren (1994) conducted significant testing at the two sites in 1993-1994. Both sites are discussed in more detail below.

No other sites are located within the 100-acre tract, although two large sites (41WB357 and 41WB358) are located less than one mile west and north of the project area, respectively. Both were recorded during a survey of Loop 20 by the Texas Department of Transportation. The sites are both large (several hundred meters long) prehistoric lithic scatters, but apparently contained little cultural material. Five test units were excavated at 41WB358, but only three artifacts were recovered from the excavations (TARL, 41WB357 and 41WB358 site forms).

Sites 41WB362 and 41WB363

The two sites apparently occupy opposite banks of a small drainage immediately east of the current campus, and probably should have been recorded as one archaeological site. Site 41WB362, which is on the eastern bank, is entirely located within the 100-acre tract. The site comprises a light scatter of chert flakes, burned rock, cores, and projectile points with a few areas of higher concentration. At least one burned rock feature was present when the site was recorded. The cultural material appeared to be eroding from a well-defined zone within otherwise sterile alluvium (TARL, 41WB362 site form).

Site 41WB363, which is on the opposite bank of the drainage, is partially within the 100-acre tract. The site was recorded as a linear scatter of material that included three burned rock hearths (eroding from ca. 20-30 cm below surface), debitage, a few cores, and projectile points (TARL, 41WB363 site form).

Jim Warren's (1994) testing excavations at the two sites focused on portions of the sites to be affected by dormitory construction and the construction of a bridge across the drainage. Only a small portion of 41 WB362 was tested (0.02 acres), in the area to be impacted by the bridge. The tested area was badly eroded and contained no intact features that were evident on the surface.

1 The sites, both known as the Laredo State University site, were designated as State Archeological Landmarks on December 17, 1993.

The subsurface tests revealed no artifacts. Warren (1994:36) recommended that the small portion of the site that he tested was not significant, but stated that his sample was of too small of an area to be applicable to the remainder of the site.

The investigations at 41WB363 sampled a larger area (3.0 acres) and documented several intact features 30 cm below surface (Warren 1994). Charcoal samples from features at the site returned radiocarbon dates spanning A.D. 390-760. Based on the testing, Warren (1994) recommended that 0.79 acres of the site contained significant deposits that should be avoided.

Summary and Recommendations

The background literature review determined that two archaeological sites are located within the proposed 100-acre project area. According to Warren (1994), both sites are listed as State Archeological Landmarks. This designation affords certain levels of protection to the two sites. In addition, Warren recommended that a portion of 41 WB363 was significant, meaning it should be avoided or investigated further. This portion appears to be within the 100-acre project area. Warren recommended that a small portion of 41WB362 was not significant but made no evaluation concerning the majority of the site. Therefore, Treece's (1992) earlier recommendation of potential significance still applies to most of the site.

There is a high probability that additional archaeological sites are located east of 41WB362, which apparently marks the limits of Treece's (1992) survey. Site 41WB362 could extend to the east, beyond its plotted limits.

Given the presence to two significant or potentially significant archaeological sites within the 100-acre project area, it is recommended that the additional archaeological investigations are likely to be required for the project area. The portion of the 100-acres east of 41WB362 should be surveyed for cultural resources, and a professional archaeologist should revisit both known sites to flag site boundaries and mark significant or potentially significant areas for avoidance. In the event that those areas cannot be avoided, the THC should be consulted on a plan of further testing (at 41WB362) or data recovery (at 41WB363). The State Archeological Landmark status of the two sites should also be confirmed with the THC.

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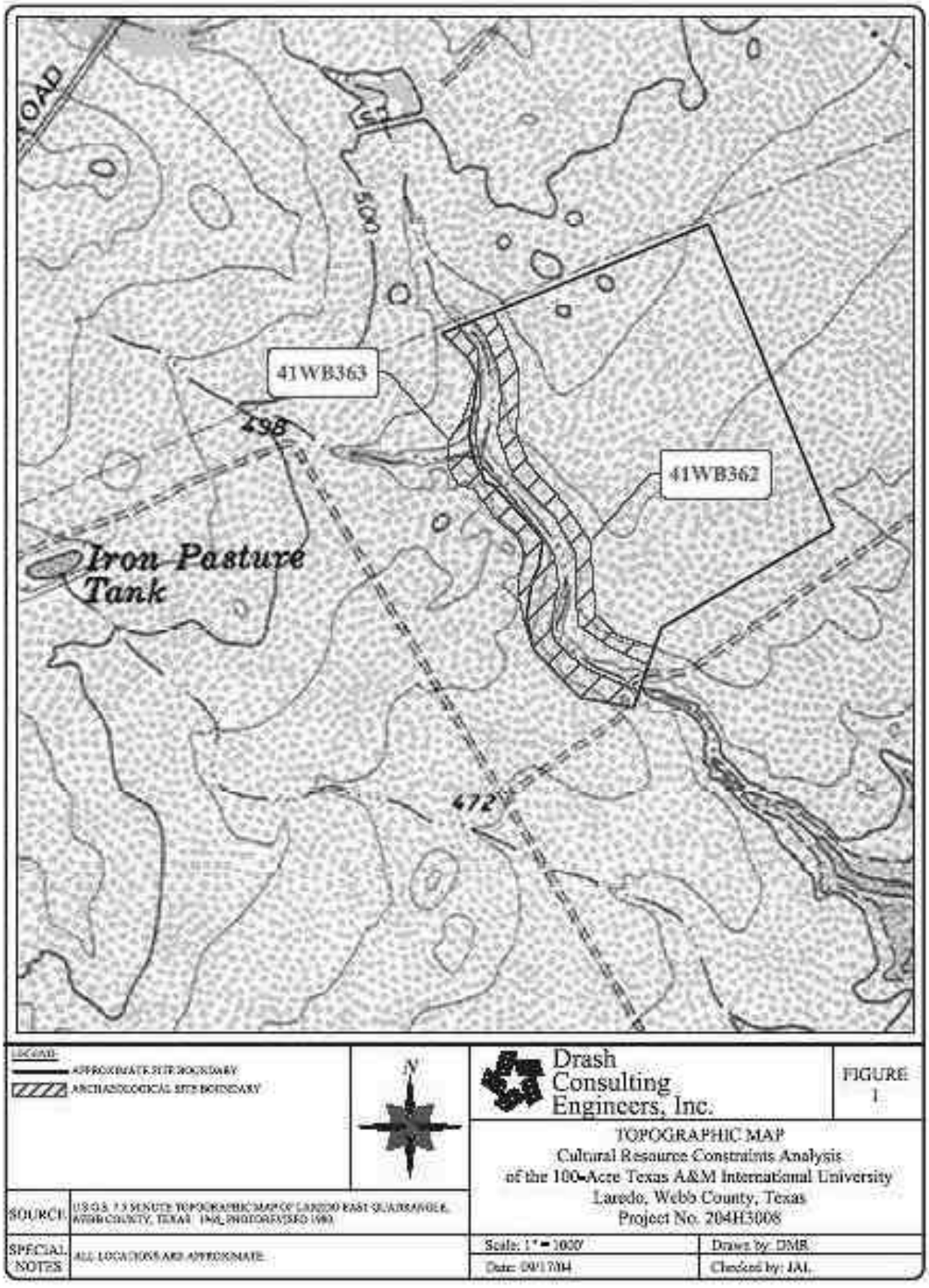
Texas A&M Laredo International University.


41WB363
41WB362
Iron Pasture Tank
500
198
472
LEGEND:
APPROXIMATE SITE BOUNDARY
ARCHAEOLOGICAL SITE BOUNDARY
N
SOURCE:
SPECIAL NOTES:
ALL LOCATIONS ARE APPROXIMATE.
Drash Consulting Engineers, Inc.
FIGURE 1
TOPOGRAPHIC MAP
Cultural Resource Constraints Analysis
of the 100-Acre Texas A&M International University
Laredo, Webb County, Texas
Project No. 204H3008
Scale: 1" = 1000'
Drawn by: DMR
Date: 04/17/04
Checked by: JAL

Energy Conservation Measures / Sustainability

The University has taken several measures to conserve energy. The University has in the past commissioned the Energy Systems Lab in College Station to analyze and implement energy saving measures on a building by building basis. The University's implementation of a McQuay heat pump enables the University to use heat generated cooling for heating water during the warmer months. This process enables the University to save money by utilizing cheaper electricity rather than more expensive natural gas.

The University is also investigating several green projects that would save money if implemented. The University's landscape philosophy is to incorporate native and xeriscape plant material throughout the grounds. By utilizing a xeriscape plan the University can minimize the amount of irrigation needed to keep the campus green. The University currently irrigates its grounds with regular domestic water. Recently the University contacted the City of Laredo to inquire about tapping a treated effluent line that runs parallel to Loop 20. This treated effluent is currently used to irrigate both the municipal golf course and the Laredo Country Club. The University believes this effluent could be used to irrigate the athletic fields and the outer grounds of the University. The cost of treated effluent is significantly less than domestic water.

Another project the University is considering is automating the irrigation controllers. The current controllers are controlled manually. This makes it difficult to turn the controllers on and off as required. By automating the controllers would have much more control of watering schedules therefore economizing water.