

State University System of Florida

FLORIDA INTERNATIONAL UNIVERSITY

University Park / North Miami Campus / Miami, Florida



MASTER PLAN UPDATE 1991-2006 PLANNING AND DESIGN REPORT / JULY 1991

The Architects Collaborative Inc. / SDM Consulting Engineers

A Joint Venture Miami, Florida

State University System of Florida

F L O R I D A I N T E R N A T I O N A L U N I V E R S I T Y

University Park / North Miami Campus / Miami, Florida

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The Architects Collaborative Inc. / SDM Consulting Engineers

A Joint Venture Miami, Florida

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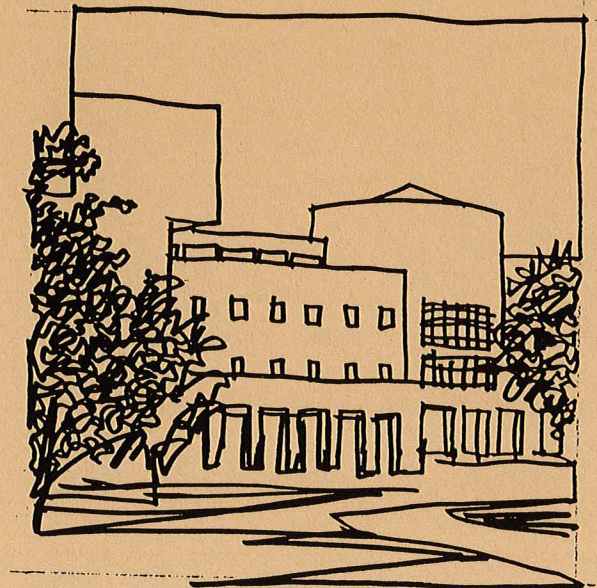
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EXECUTIVE SUMMARY



Executive Summary

The TAC/SDM joint venture was commissioned by Florida International University to update the Master Plan for University Park and the North Miami Campus. The work was divided into three tasks: Needs Assessment, Planning/Design and Master Plan documentation. The first task, documented in the Needs Assessment Report, identified University facility requirements to the year 2006 in three five-year planning periods: 1991-1996, 1996-2001, and 2001-2006. The Planning/Design task developed design alternatives for integrating proposed facilities. These alternatives, which were reviewed with representatives of the University's administration and revised to reflect their comments, were summarized in the Interim Planning and Design Report. In the third task, the Final Report for the Master Plan Update was prepared based on the recommended plans for each campus.

The overall goals of the planning and design effort were:

- o to reinforce the structure and character of University Park and the North Miami Campus, as expressed in the 1987 Master Plan Update, while accommodating the University's projected growth and facilities requirements.
- o to emphasize the conservation of land for future use;
- o to reinforce the pedestrian character of the inner campus; and
- o to provide for vehicular circulation and parking outside the campus core.

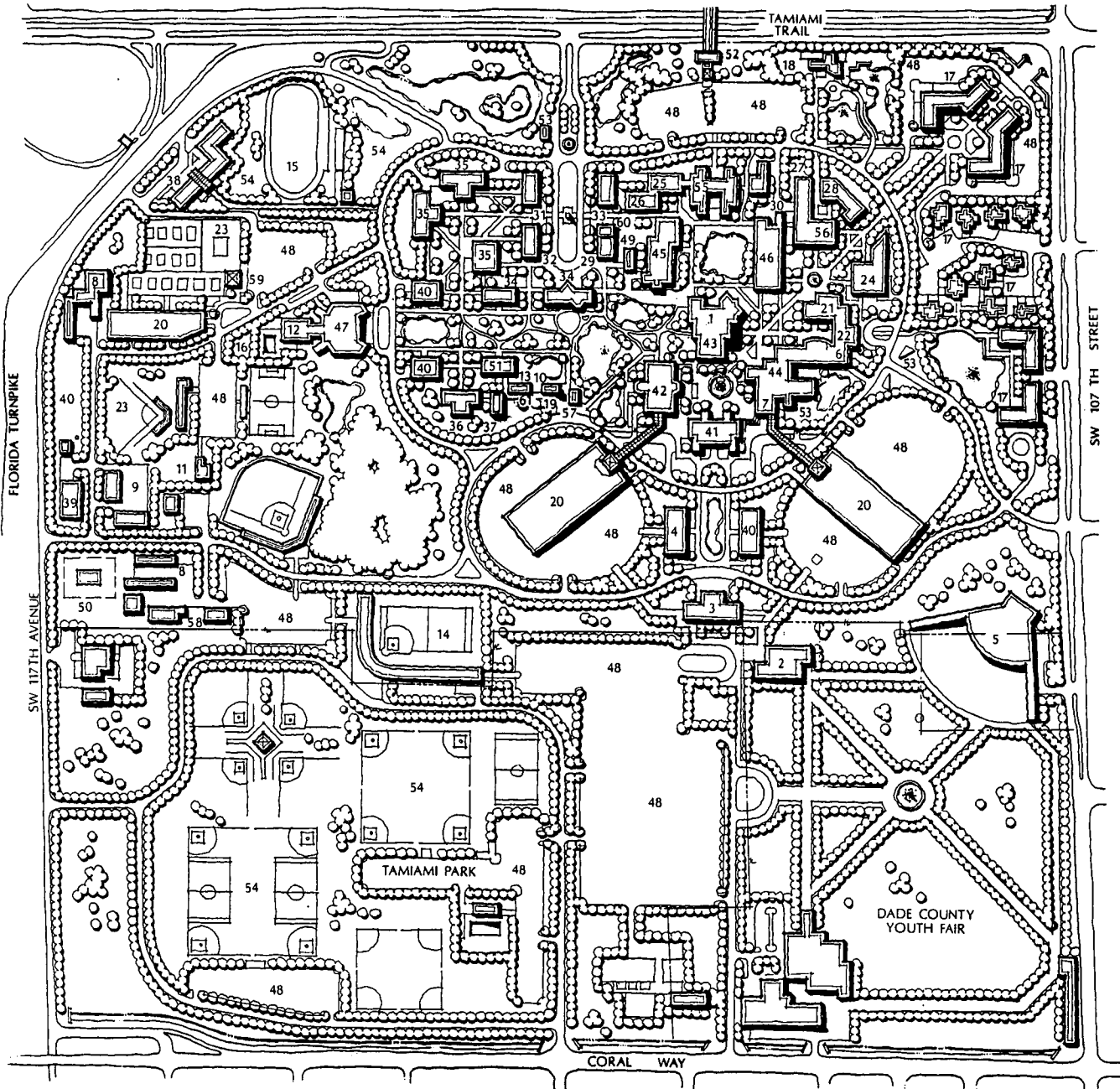
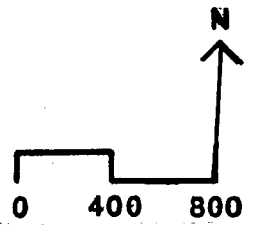
At University Park, new concepts include the joint use of facilities with Tamiami Park and the Dade County Youth Fair, and a new mall which establishes connections to Tamiami Park and the Youth Fair property to the south. At North Miami, the design alternatives phase studied the location of new facilities as an extension of the existing building zone and preservation of waterfront views and open space along the waterfront. To enhance this concept, twin 22-story academic towers are envisioned to frame the main entrance and establish a focus and identity for the North Miami Campus.

Within the overall planning framework a series of activity areas called precincts were defined and alternatives for each were studied. At University Park, the precincts included the Professional School area to the west of the existing entry mall, a new mall to connect the campus core to the west campus, a complex of smaller buildings around the old Tamiami Airport Tower, the student housing at the northeast corner of the campus, the Arts Complex and another new south mall linking it to the campus core, the new Bookstore location, and circulation and parking to serve the expanded campus. At North Miami, the precinct studies included the Conference Center, recreation fields, entry road and towers location, and potential housing locations. The Physical Plan for each campus, shown on the following pages, was based on the preferred alternatives for each precinct.

Illustrative Plan: University Park

- | | | |
|-----------------------------|---|---|
| 1. Library Addition | 23. Recreation Area | 44. Ernest R. Graham University Center (University House) |
| 2. Arts Complex I | 24. Health and Life Science | 45. Vierdes Haus |
| 3. Arts Complex II | 25. Engineering II | 46. Owa Ehan |
| 4. Arts Complex III | 26. Engineering III | 47. Golden Panther Arena |
| 5. Amphitheater | 27. Physical Sciences | 48. Surface Parking |
| 6. Student Center Expansion | 28. Molecular Biology | 49. Central Utility |
| 7. Bookstore Building | 29. Computing/SERDAC | 50. FPL Substation |
| 8. Purchasing Building | 30. Greenhouse | 51. Business/Technical Innovation Center |
| 9. Physical Plant Building | 31. Education | 52. Metro Station |
| 10. Public Safety | 32. Business II | 53. Visitor Information |
| 11. Child Care Center | 33. Business III | 54. Recreation Potential |
| 12. Fitness Center | 34. Business & Finance | 55. Engineering & Computer Science |
| 13. Health/Wellness Center | 35. Future Professional School | 56. Chemistry & Physics |
| 14. Multi-Purpose Stadium | 36. Social Sciences | 57. Duplicating Center |
| 15. 400 Meter Track | 37. Labor Research/English Language Institute | 58. Ceramics Building |
| 16. Pool/Spa | 38. Elementary School | 59. Tennis Center |
| 17. Student Housing | 39. Hurricane Center | 60. Health Building |
| Honor's House | 40. Future Development | 61. Health/Wellness Expansion |
| Greek Housing | 41. Charles E. Perry (Primera Casa) | |
| 18. President's House | 42. Deuxieme Maison | |
| 19. Faculty Club | 43. Athenaeum | |
| 20. Parking Decks | | |
| 21. Student Services | | |
| 22. Student Administration | | |

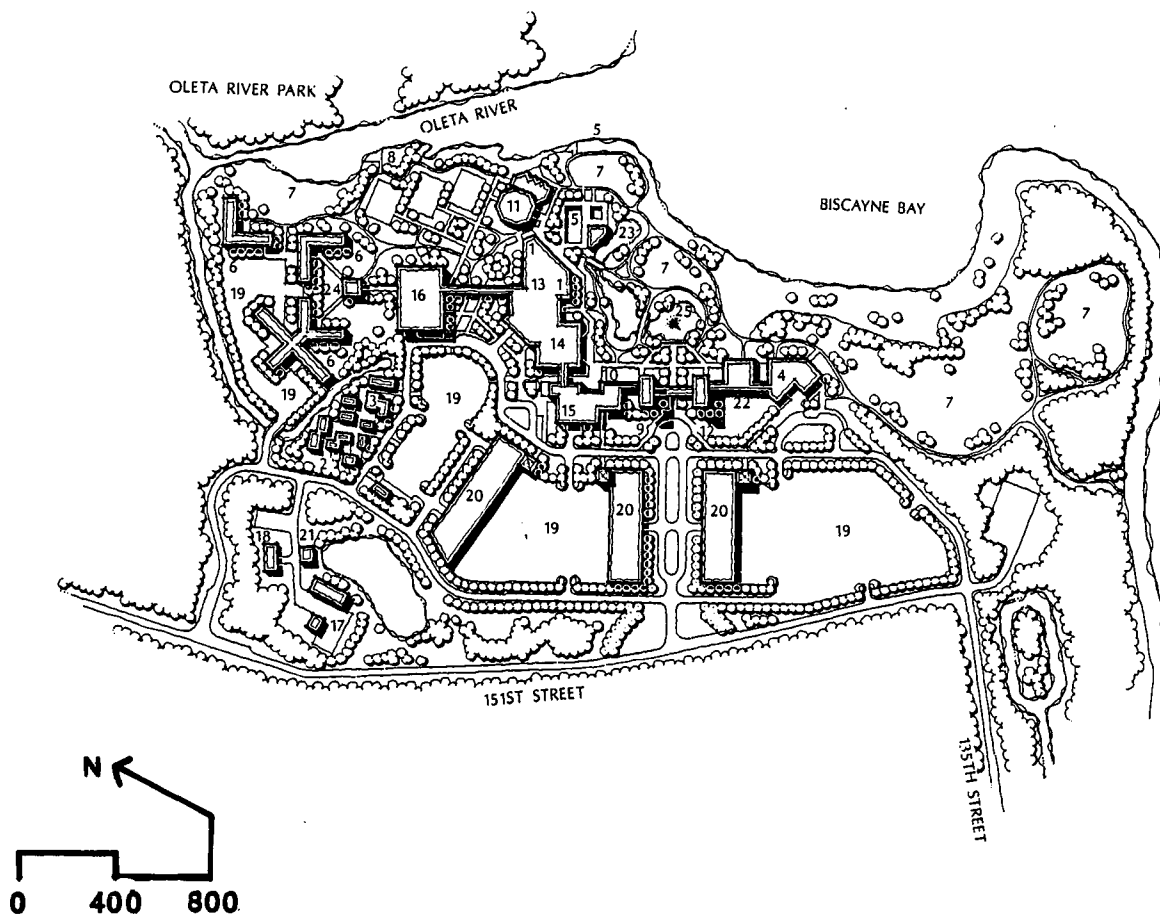
Illustrative Plan: University Park



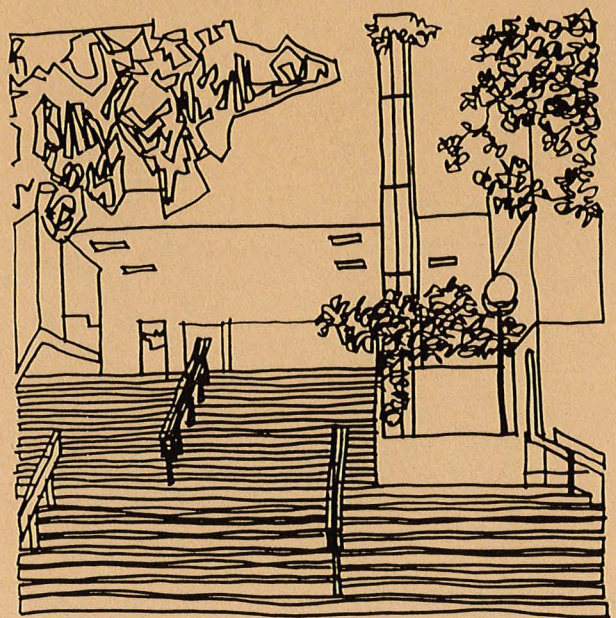
MASTER PLAN UPDATE 1991 - 2006
Planning and Design Report

Illustrative Plan: North Miami Campus

- | | | |
|--------------------------------------|--------------------------------|-------------------------------|
| 1. Student Center Expansion | 10. Academic IV/Nursing School | 19. Surface Parking |
| 2. Grants/Auxiliary | 11. Hospitality Expansion | 20. Parking Decks |
| 3. Health Center Complex | 12. Future Professional School | 21. Public Safety |
| 4. Conference Center | 13. Student Center | 22. Future Academic Site |
| 5. Water Sport Activity Area | 14. Academic I | 23. Pool House |
| 6. Housing | 15. Academic II | 24. Housing Activities Center |
| 7. Recreation | 16. Library & Expansion | 25. Pond Expansion |
| 8. Marine Biology | 17. Physical Plant | |
| 9. Public Affairs and Communications | 18. Central Receiving | |



1. INTRODUCTION



1. Introduction

Project Overview

The TAC/SDM joint venture was commissioned by Florida International University (FIU) to update the Master Plan for University Park and the North Miami Campus, which was last updated in April 1987. The work was divided into three tasks: Needs Assessment, Planning/Design and Master Plan documentation. The work began in early April 1991 and was completed three months later.

During the Needs Assessment task, the consultants visited University Park and the North Miami Campus, reviewed planning materials, and met with representatives of FIU, Dade County Parks Department, and the Dade County Youth Fair. The Needs Assessment Report, submitted May 1991, documents the work completed in this task and identifies the University's facilities needs to the year 2006.

Following the completion of the Needs Assessment task, design alternatives were developed for siting the programmed facilities on each of the two campuses. A series of workshops were held at FIU with the President, Vice Presidents and faculty groups to discuss and refine the design alternatives. The planning and design alternatives task, as refined in the workshops, was documented in the Interim Planning and Design Report, submitted June 1991.

The proposed final plan was again reviewed with University administration and revised to incorporate their comments. The Final Report for the Master Plan Update was based on this recommended plan.

Mission Statement of Florida International University

Florida International University (FIU) is a comprehensive, urban, and multi-campus institution offering a broad array of undergraduate and graduate programs in the State's largest population center. A relatively young, vibrant university, dedicated to going beyond conventional excellence, FIU offers degree programs, conducts basic applied research, and provides public service. Imparting acquired knowledge through excellent teaching, fostering creativity in all areas of academic life, and creating new knowledge through research are the primary functions and overall mission of the University. Teaching, nurturing creativity and its expression, and aggressively pursuing its research agenda are the most important ways for the University to serve the region, the State and the nation. Committed to both quality and access, FIU is resolved to meet the educational needs of the traditional student, the part-time student, and a population that will inevitably become lifelong learners.

Chartered in 1965, the University opened its doors in 1972 as an upper division and beginning graduate institution to the largest entering class in United States collegiate history. With the addition of lower-division courses centered around a rigorous, liberal arts core curriculum, FIU has gone on to add Master's, Ph.D. and Ed.D. degree programs. New Colleges of Engineering and Health have been added to the Colleges of Business Administration and Education, and to the Schools of Public Affairs and Services, Computer Science, Journalism and Mass Communication, and Hospitality Management to prepare professionals in these growing fields. Balancing the educational and research needs of a dynamic, growing population with the strengths and resources of the University is a fundamental principle governing the University's evolution and development.

The University's location in a growing cosmopolitan area enables it to provide educational services in the context of an urban environment, rich in its diversity of people, languages and cultures. Greater Miami's community allows the University faculty and students a special opportunity to study ways to promote greater international understanding. Greater Miami is also a major center of commerce, communication and technology. The twin themes of a major business center and an international community run strongly through the institution's curriculum and programs.

Preparing men and women for work in the professions—including business, education, engineering, computer science, hospitality management, public affairs and social service, health and communications, while building upon a strong foundation in the arts and sciences, is a major goal of FIU. Aided by the University's increasingly prominent centers and institutes, for example, the Latin American and Caribbean Center, the Center for Labor Research and Studies, the Institute for Public Policy and Citizenship Studies, the Southeast Florida Center on Aging, the Multilingual and Multi-cultural Studies Center and the Women's Studies Center, FIU will seek to expand and develop in the social sciences. Further growth of the University's programs in the visual and performing arts, including the creation of the New World School for the Arts, will also be emphasized. Finally, the University will give priority to the development of the biological, physical and engineering sciences in the next decade.

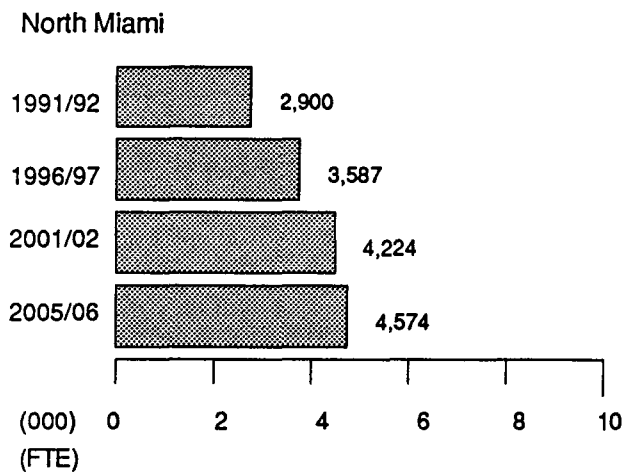
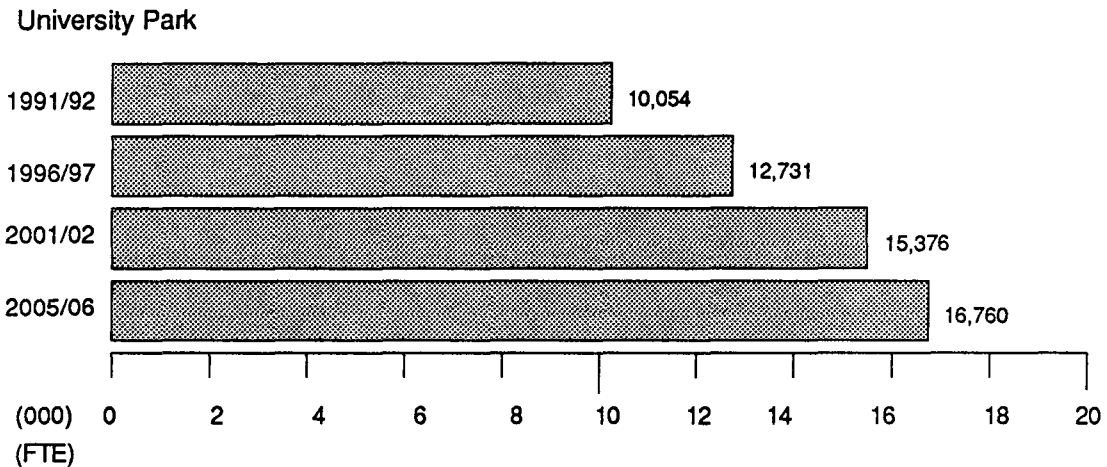
The projected growth and diversity of the metropolitan area to be served require FIU to respond to the emerging needs in international business, high technology industry, health and social services, communications, and in our public schools. The University intends to continue its close association with the public schools and meet the educational needs of their administrators, teachers and students.

Along with its international commitment, FIU is resolved to meet the public's needs for higher education not only in Monroe and Dade Counties but also in rapidly growing Broward County. Cooperative efforts involving the combined resources and faculties of the two state universities in the area are hastening the development of coordinated degree programs, research and service to the public and private sectors in Broward County.

The student body now numbers nearly 22,000, with about half of the students attending part time, and about 6 percent from abroad. The University will continue to balance its programs for full and part-time degree-seeking students and to address the special needs of mature students and lifelong learners so characteristic of South Florida. The University recognizes that the information explosion, and the increased rate of technological change in all professions, will pass the traditional concept of education as a "once-in-a-lifetime" experience, and accepts the challenge of providing a 21st century education.

Student Enrollment Projections Summary

Student enrollment, as projected by FIU, is expected to increase at a moderate rate up to the year 2006, as shown in the chart below. Enrollment for University Park is projected to increase from 10,054 student FTE's in the academic year 1991/92 to 16,760 student FTE's in 2005/06, an increase of 6,706 student FTE's or approximately 4-5% per year. At the North Miami Campus, enrollment is expected to increase from 2,900 student FTE's in 1991/92 to 4,574 student FTE's in 2005/06, or 3-4% per year. Detailed projections by level and by discipline for each campus, provided in Appendix A, were the basis for projecting space requirements.

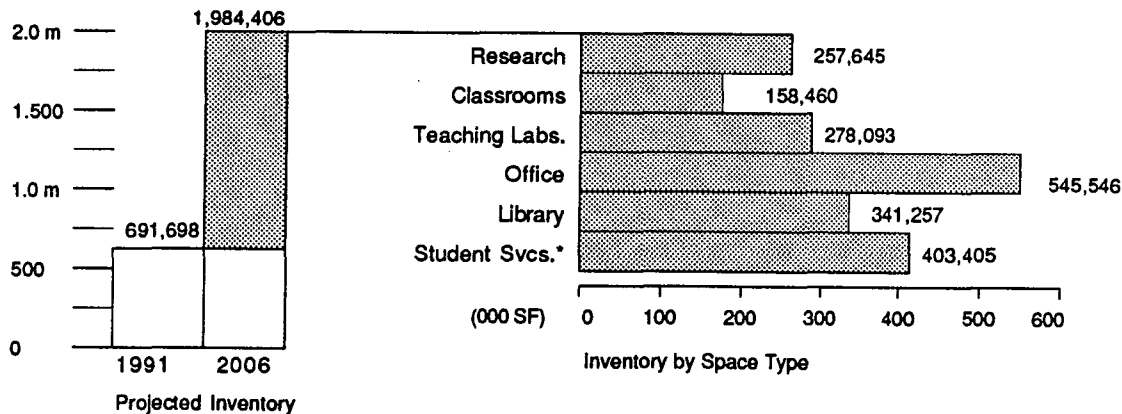


Projected Space Requirements Summary

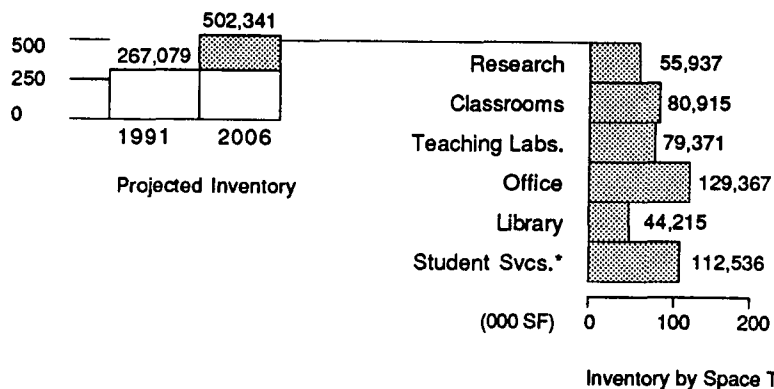
Based on student FTE enrollment projections, FIU's Facilities Management Department projected space needs for University Park and the North Miami Campus to the year 2006. Proposed projects were added to the existing space inventory to establish the total projected space inventory and to compare projected space needs with projected inventory. The Projected Space Requirements charts, which appear in Appendix B, show the relationship between proposed facilities and the University's projected space needs for each five year planning period. An analysis of the type of space represented by each proposed project was completed for each campus. This analysis indicates that, while there is some variation among the space types, overall the proposed projects will meet the University's space needs for the next fifteen years.

The chart below compares the existing and projected space inventory for each campus and the projected square footage by space type. For University Park, the 1991-92 inventory is 691,698 square feet. By 1995-96, with the addition of the proposed Phase I projects, the projected inventory will be 1,142,406 square feet, an increase of 450,000 square feet over five years. For the North Miami Campus, the 1991-92 inventory will be 267,079 square feet. With the addition of the Phase I projects, this inventory is projected to increase to 362,341 square feet, an increase of nearly 100,000 square feet.

University Park



North Miami



* Includes auditorium/exhibit, instructional, media, student services, gymnasium and support services.

Campus Life

Student Life

FIU, with more than 22,000 students, is the largest public university in South Florida and the fifth largest of Florida's 31 colleges and universities. While the majority of students are residents of Florida, the diverse student body also includes students from across the United States and over one hundred foreign countries. About half of the students are part-time and the average age is 27.

The University provides a variety of services and activities to meet the needs of all FIU students, to enhance their educational experience, and to provide a well-rounded environment. The Student Center, the hub of student life on campus, houses the bookstore, cafeteria, meeting rooms, and a gameroom.

As a member of the National Collegiate Athletic Association (NCAA), FIU students participate in intercollegiate athletics in baseball, basketball, cross-country, golf, tennis, and soccer. The Golden Panther Arena is a multi-purpose facility for the University's physical education, athletics and recreation program. The campus Fitness Centers provide complete Nautilus equipment. The Aquatic Center at the North Miami Campus provides a 50 meter x 25 yard pool for recreational and instructional use.

In the future, as the number of residential and commuter students increases, the sense of "community" can be reinforced by providing additional student facilities and services on campus. Such facilities and services may include additional commercial uses and expanded recreational facilities. These facilities may be sized to serve the larger community surrounding the campus.

Faculty Life

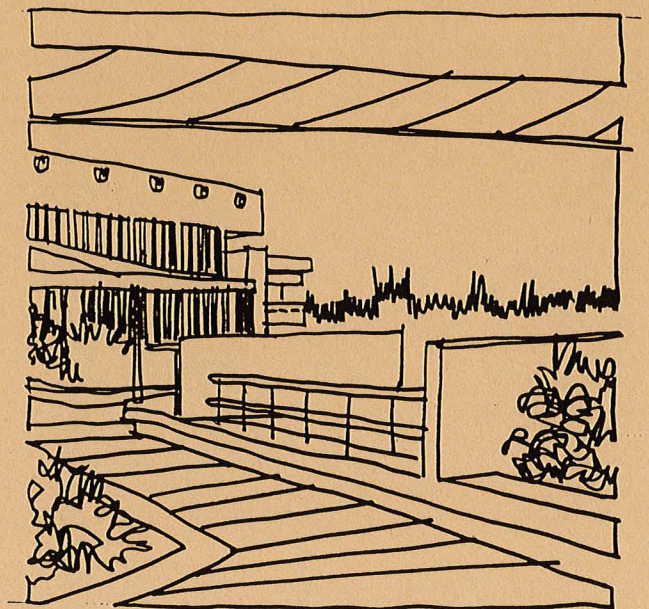
Faculty life at the campuses of Florida International University primarily revolve around the interaction of faculty, staff, and students in the department, school or college. The libraries and food service programs in the Student Center buildings provide daily spheres of faculty life. Throughout the year special speakers, colloquia and conferences bring faculty together for academic exchanges of ideas. The annual faculty convocation held each fall is the only event in which all faculty share in a communal event focusing on honoring teaching, research, service and advising. A central theme usually weaves together the convocation with a keynote speaker and seminar leaders brought to campus for the special occasion. Graduation ceremonies are also important occasions in the life of faculty. Faculty frequently attend sports events in the University Park sports arena and many take an active part on extramural volleyball, baseball and basketball teams.

Facilities generally serve both faculty and students. The child care centers on each campus provide a safe and reliable service for dependents of faculty. The Nautilus centers provide exercise equipment and programs. At University Park the faculty club provides members with reasonably priced food in a collegial, yet casual, environment.

The Faculty Senate is the officially recognized body representing faculty. On salary and personnel issues faculty are represented at the State University System level by the United Faculty of Florida.

All programs and facilities are designed to provide superb educational experiences to undergraduate and graduate students, and to support the faculty's pursuit of outstanding research and service.

2. ACADEMIC PLAN



2. Academic Plan

Mission of Academic Affairs

The primary mission of Academic Affairs is to provide superb educational experiences to undergraduate and graduate students, to perform outstanding research, and to serve the community. Academic Affairs also provides lifelong learning opportunities, non-credit courses and research library resources to South Florida residents.

As teachers, faculty impart knowledge and skills. As researchers, their systematic investigations lead to inventions, reinterpretations and innovative applications of knowledge and technique, and they present this publicly for critique by their professional peers. As providers of service, faculty use their professional expertise and technical skills to address the needs of the university and their profession; and volunteer their skills to the community or greater society. To support these endeavors, Academic Affairs marshals resources for academic programs and communicates a perspective which is long-range, institution-wide and international.

Academic Affairs meets these goals by carefully recruiting and evaluating faculty, support personnel and deans, and by regarding and retaining those doing excellent work. The Division continually seeks to improve teaching, advising, research, and service through an energetic program of faculty development.

Academic Affairs evaluates new program and degree proposals in the context of the University's overall mission. It plans programs so that enrollments, facilities, and Board of Regents' approval are synchronized. It supports and coordinates regular reviews of established programs and those programs that require reaccreditation.

Academic Affairs is also responsible for lecture series, honorary societies, academic integrity, and academic support services for students. To further the University's research, teaching and service mission, Academic Affairs supports a variety of centers and institutes each with a specific academic emphasis.

Program Development

In 1984 the Florida State Legislature mandated the development of a plan to assure a comprehensive public university presence in Southeast Florida. This plan meant that through the combined offerings of Florida Atlantic University and Florida International University, a full range of undergraduate, graduate, and professional programs will be available to the population in the region. This commitment, which is at the heart of the implementation of new degree programs and the enrollment projections, brings together the development of a wide range of programs and degree levels with a commitment to research, while achieving a sense of university community, and realizing the critical mass necessary to achieve these goals.

The 1985 Plan for a Comprehensive University Presence in Southeast Florida, adopted by the Board of Regents (BOR) and the Post Secondary Education Planning Commission, detailed a systematic and coordinated effort to accelerate the expansion of academic program development and implementation. The geographical distribution of present and future populations, as well as the changing social, political, and economic composition of this region have been determinants of the nature and sequence of programs, instructional levels, research emphasis, and service provisions.

Several general assumptions from the 1990-1995 Academic Affairs Strategic Plan serve as a foundation for facilities planning and decision making. It is essential that the leadership of all divisions of the University recognize and support the primary role of academic affairs in the mission of the University. This is essential because it directs the highest priority in all matters to our mission of teaching, research and service to the community. Teaching, nurturing creativity and its expression, and aggressively pursuing its research agenda are the most important ways for the University to serve the region, the state and the nation.

Research should be considered in the broadest sense insuring that all disciplines and their perspectives are part of the overall research mission. Consolidation of colleges and schools to North Miami and University Park is important to building a research university especially in the sciences and engineering. Furthermore, each professional school should be housed primarily on one campus or the other as consistent with its mission to meet student and community needs. On the other hand, it is necessary that some professional schools and the College of Arts and Sciences maintain their presence on both campuses to provide courses to other schools and to continue its own degree programs. This goal of consolidating colleges and schools on one campus or the other extends to the development of new facilities which should be designed to accommodate the growth of programs by phased expansions of buildings horizontally, vertically or immediately adjacent to the initial structure. Although the use of building space is considered within the context of overall University-wide needs, new buildings should include a combination of faculty offices, laboratories, classrooms and auditoriums which would accommodate the projected needs of programs for which the building is planned.

In accordance with our memorandum of agreement with Florida Atlantic University, FIU is committed until 1993 to providing an urban university presence in Broward County which offers degree programs primarily in the areas of business, nursing, hospitality management, social services, education and construction management. The University's Broward programs and services after 1993 will be determined by a strategic planning process which fully considers BOR and legislative mandates, CUP funding, and the University's mission and priorities. Broward programs at Davie and the University Tower are included in the facilities development plan of Florida Atlantic University which is the lead university for Broward County. FIU presence in Broward will be reevaluated by the University prior to the end of the 1993 FIU/FAU memorandum of agreement. A new FAU building in Davie is to be completed in 1993 which is expected to accommodate the FIU Davie programs.

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Planning and Design Report

FIU must have the library resources to support the research agenda of the University. Graduate level research collections should be developed at the library where the graduate program is offered: North Miami or University Park. University Park should develop reference and research collections capable of supporting broad-based and intensive research activities. The University Park library will expand to house the growth of research collections in a single 12- to 15-story building at the center of the campus. The recently completed North Miami library building can accommodate the anticipated North Miami growth by expanding into the third floor administrative offices and rooms presently used as classrooms.

Academic Affairs Facility-Related Goals

GOAL: Achieve \$25.4 million in sponsored research. 1989/90=\$10.2 90/91=\$12.3 95/96=\$25.4

GOAL: Effectively plan and manage projected growth in student enrollments.

	University Park		North Miami		Broward		Total	
	Hct	FTE	Hct	FTE	Hct	FTE	Hct	FTE
1990-91	16,522	9,653	4,786	2,796	892	521	22,199	12,970
1991-92	17,092	10,054	4,930	2,900	908	534	22,930	13,488
1992-93	17,938	10,614	5,151	3,048	936	554	24,025	14,216
1993-94	18,813	11,198	5,369	3,196	966	575	25,148	14,969
1994-95	19,733	11,816	5,596	3,351	1,005	602	26,334	15,769
1995-96	20,333	12,249	5,755	3,467	1,049	632	27,138	16,348
2000-01	24,247	15,060	6,665	4,140	1,319	819	32,231	20,019
2005-06	26,146	16,760	7,135	4,574	1,480	949	34,761	22,283

GOAL: Continue to develop the quality and depth of library collections on both campuses. Total volumes: 1989/90=887,771 90/91=954,354 91/92=1,006,843 92/93=1,062,219 93/94=1,120,641 94/95=1,182,276 95/96=1,247,301.

Planned Academic Facilities

UNIVERSITY PARK

*Chemistry and Physics 1991 (56)**

This project, which is nearing completion, will house the departments of chemistry and physics.

Biology Greenhouse Phase I 1991, Phase II Conservatory 1992 (30)

The Greenhouse is under construction next to the Engineering Building. The Conservatory is to be located north of greenhouse.

Business Administration, Phase I 1991-1992 (34)

This 36,590 square foot facility is under construction. It will contain office spaces for approximately 116 faculty and 25 administration and support staff. The building provides computer facilities (1=200 seat, 1=30, 2=75).

Twenty First Century Elementary School 1991-1996 (38)

The elementary laboratory school will be used as a research site for designing educational systems of the future.

Library Addition Phase I 1992-1993 (1)

The library addition will expand areas for collections, seating and faculty research carrels as well as consolidate media resource services and retrofits informational systems. The addition will add two floors to the existing three-story building and infills the third floor. This adds 71,000 square feet to the existing building for an estimated cost of \$10,500,000 plus infrastructure costs.

Arts Complex I 1992-1993 (2)

The Arts Complex will provide a major campus facility of faculty offices, practice facilities, and a concert hall/theater for arts educational units in the College of Arts and Sciences. It integrates and expands the arts-related educational programs and activities. The facility will contain a 600-seat auditorium, a 150-seat recital hall, and a 150-seat laboratory theatre. (34,500 square feet at \$10,200,000).

Labor Research Center/English Language Institute 1992 (37)

This Center will contain 11 classrooms and 22 offices at a construction cost of \$2,100,000.

Education 1993-1994 (31)

The Education building will contain laboratories and faculty offices for the College of Education and for large size classrooms (1=400,2=200). It will accommodate offices for 90 faculty members, and support staff (37,500 square feet at \$8,500,000).

Health and Life Sciences 1994-95 (24)

This building will provide laboratories, offices, and classrooms for the College of Health, Departments of Psychology and Biology.

Library Addition Phase II 1995-1996 (1)

Phase II of the Library expansion will add four more floors containing 100,000 square feet for a cost of \$12,200,000 plus infrastructure costs.

Arts Complex II 1995-1996 (3)

This new facility for the Departments of Music, Visual Arts and Dance will contain 60 offices, several classrooms, teaching laboratories and technical rooms. It will also house two 1200-seat auditoriums.

Engineering II 1995/1996 (25)

Phase II of the Engineering Building will include a 80,000 square foot addition for Electrical and Computer (E & C) Engineering.

Social Sciences 1996-1997 (36)

The Social Sciences building will accommodate the departments of Political Science, International Relations, Sociology/Anthropology, Economics, and the Latin American and Caribbean Center. (70,000 square feet).

University Park International Center and Conference Center 1996-2000 (31)

Housing and conference center for international students and visiting faculty will be provided in this facility. It will also house the Division of Continuing Education and an Executive Training Center.

Research Park 1996-2000 (off campus)

Research Park will provide space for joint research activities between the University, private enterprise and governmental agencies. (Separate from campuses)

Library Addition Phase III 1998-2000 (1)

The final phase of construction will add six tower floors of 165,000 square feet at a cost of \$14,000,000 plus infrastructure.

Chemistry and Physics 1999-2001 (27)

This will be the second phase of development of Chemistry and Physics Building.

Engineering III 2001-2002 (26)

This addition to the Engineering Building will provide 110,000 square feet.

Business/Technology/Innovation Center 2001-2006 (51)

The economic development, training and assistance center will be located off campus.

Molecular Biology Building 2003-2004 (28)

This facility will contain chemistry, microbiology, and genetics laboratories with connected faculty offices. It will also provide technical and scientific equipment rooms, general use faculty and staff offices, classrooms, and seminar rooms.

Arts Complex III 2004-2005 (4)

This Complex will provide space for the Arts Museum with collection storage, curatorial and research laboratories.

Law School (35)

Planning for a future law school, as a potential joint faculty with FAMU, is based on an enrollment of 500 students and a law library.

Library Addition Phase IV 2005-2006 (1)

Phase IV will complete the expansion of the Library with a four-story extension and an addition on top of the existing roof areas adding 90,100 square feet for a construction cost of \$7,600,000.

Business Administration II and III (33)

Two new buildings for the School of Business Administration, Business II and Business III, will provide 68,000 and 55,000 square feet, respectively.

NORTH MIAMI CAMPUS

Hospitality Management 1992 (11)

The renovations of the Trade Center Building, which are nearly complete, will accommodate the facility needs of the School of Hospitality Management. In addition, the second floor will contain classrooms for general use.

Marine Biology Facility 1991-1996 (8)

This research laboratory facility will be located on waterfront with boat docks, fish tanks, and impounded lagoons. It will include offices for 10 faculty, students and staff, and seminar/classrooms.

Community Education Conference Center 1993/1994 (4)

This new facility will include conference rooms, a lobby area, restrooms, kitchen and dining facilities, and offices. Offices will be occupied by the Division of Continuing Education, the Southeast Florida Center on Aging, and the Elders Institute. Continuing Education classes offered by any department will be able to schedule use of the conference center. A 400-seat auditorium will provide opportunities for group meetings and class gatherings. (52,000 square feet at \$10,000,000)

Family Support Education and Training Center (Grants Auxiliary Building Complex) 1993/1994 (2)

This will be an interdisciplinary center for education, training and research aimed at high risk children and families. The complex will involve faculty from School of Public Affairs and Services, School of Nursing, College of Health, College of Education, College of Arts and Sciences and senior staff of the Bertha Abess Children's Center. It will contain specially designed classrooms and offices for faculty and student interns, and the administrative offices of the Bertha Abess Children's Center.

Public Affairs/Communication 1994/1995 (9)

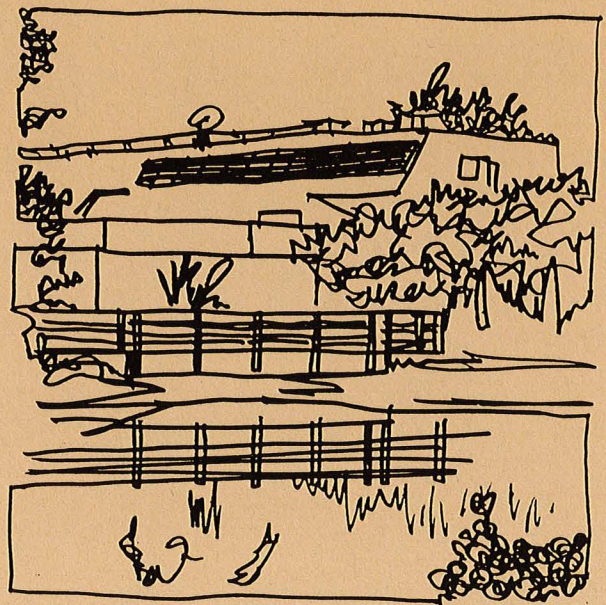
This new facility will provide 18 classrooms, 43 faculty offices and all other offices for Public Affairs and Journalism. The classrooms will be sized as follows: 4=30, 3=45, 7=65, 2=100, 2=200. (55,000 square feet at \$9,200,000).

Nursing 1997-2000 (10)

This will contain faculty research and office space with specialized nursing demonstration laboratories. At a minimum, a three story building will be provided containing a nurse computer laboratory, a nurse-managed, family-centered clinic with space for medical records, physical examination rooms, patient teaching classrooms, clinical facilities, and a 100 person auditorium for seminars, symposia, and continuing education.

* These numbers reflect the item numbers on the legend of the master plan.

3. STUDENT PLAN



3. Student Plan

Mission of Student Affairs

The mission of the Division of Student Affairs is to contribute to the students' total educational process by creating a learning environment which fosters personal growth and development; promotes cultural diversity; provides programs and services which enhance intellectual, social, cultural, physical, emotional, and spiritual development; and prepares students to become contributing members of the community.

FIU meets the needs of full-time, part-time, and life-long learners through a variety of programs and services. Among these are:

Student Government

The Student Government Association (SGA), comprising senators from all schools and colleges, provides representation for students within the University community. SGA Committees have been established to address issues of concern to students; among them are finance, academic, athletic, policy, social and cultural committees. The SGA also includes a judicial branch which is responsible for resolving conflicts among student organizations. The SGA's Social and Cultural Committee develops performing arts, athletic, and recreational programs and special events.

Athletics/Recreation

FIU is a member of the National Collegiate Athletic Association and participates in Division 1 competition in baseball, basketball, cross-country, golf, soccer and tennis.

The Golden Panther Arena, with a seating capacity of 5,000, includes facilities for basketball, volleyball, special events, physical education classes, a multi-purpose room and racquetball courts.

Among the other athletic and recreational facilities are lighted baseball and soccer fields with a seating capacity of 1,500, and tennis courts. The Aquatic Center at North Miami includes an olympic-sized pool with a diving well. The Center is used for both instructional and recreational programs throughout the year.

Student Support

Student Centers

The student centers provide a focus for student life on campus. Among the functions located in the student center are the bookstore, cafeteria, grill, vending machines, lounge, ballroom, meeting rooms, gamerooms, radio station, theater, post office, ticketmaster, and automatic bank tellers.

Housing

Housing for single and married students is provided in apartment style units. The residential setting enhances the academic environment by providing opportunities for student interaction and cultural exchange.

Health Services

The Student Health Service provides primary care and prevention/health promotion programs at a clinic on campus.

International Student Programs and Services

The International Student Services office assists international students with immigration, cultural, personal, and financial needs.

Minority Students Programs and Services

Programs for minority students include personal, academic, social and cultural services for enrolled students as well as prospective and pre-enrolled students.

Counseling Services

The Student Counseling Service offers counseling to students on personal and social problems, career guidance, and psychological and vocational testing.

Commuter Services

The programs offered by Commuter Services address the needs of students who do not live on campus, increasing their attendance and social interaction.

Disabled Student Services

Services for students with disabilities include special accommodations and access, learning aids and equipment, and counseling and referrals.

Student Clubs

There are over 100 student clubs and organizations including services clubs, sports oriented clubs, honoraries, and special interest groups. These organizations provide students opportunities to expand their interests, develop new skills, and become involved in the University community.

Art Museum

Exhibitions of local and national artists are presented at the Art Museum at University Park. Art work by students is also featured. The Museum serves the broader public as well as the student community.

Greek Organizations

There are 13 Greek organizations on campus, including 8 fraternities and 5 sororities, that provide leadership, personal development and team building opportunities for students.

Planned Student Facilities

In response to projected student service needs for the year 2006, the Division of Student Affairs proposes the construction of several new facilities and the expansion of current facilities at University Park and the North Miami Campus. The following summary of student service needs is based on the Division of Student Affairs "Projected Physical Plan Needs for the Division of Student Affairs" (April 25, 1991).

UNIVERSITY PARK

Student Housing - 1993-95 (17)

Student housing will be expanded in three phases. The first phase involves an additional 1,000 beds at University Park. University Park housing would be located in the northeast or west side of the campus and include three buildings housing 300 or 400 students each.

Each facility will include suites housing four students with two double occupancy units connected by a toilet/bathroom. Resident Assistant rooms will be single occupancy with private bathrooms. There will be a ratio of one Resident Assistant for every 40 students. There will also be an apartment for a live-in coordinator.

The ground floor of each building will include a common entrance, lobby area, mail room, staff offices, laundry facilities, storage areas, maintenance workroom, vending area, library, computer lab, and recreational/meeting room(s). Every floor will have a small kitchen area for resident use.

In 1995, a dining area with seating for 600 will be added to provide contracted meal plans for residents.

Greek Housing - 1995-99 (17)

At the present time, there are 13 national Greek organizations on campus, with a membership within fraternities and sororities totaling approximately 600 students. It is projected that a minimum of 20 Greek organizations will be on campus by the year 2015. This would include a projected membership of approximately 1,200 students.

Student Housing - 1997-99 (17)

The next phase of residence hall construction will include an additional 1,000 beds at University Park. With the completion of this phase, there will be 3,702 beds available on the two campuses including current and new construction. A summary of the housing program appears at the end of this section.

Three new buildings, identical in design to those built between 1993-95, will house 300 or 400 students each in double rooms arranged as suites with connecting bathrooms. There will be a Resident Advisor for every 40 students. There will be an apartment for a live-in coordinator.

On the first floor of each building will be recreational space, storage space, offices, a mail room, lobby, reception area, vending, library, computer lab and laundry facilities. Adequate space for maintenance and custodial purposes will also be provided. Each floor will have a kitchen area for resident use.

Athletics (23)

When considering athletic needs as they relate to the expansion of the University into Tamiami Park, emphasis needs to be placed on the shared use of existing facilities as well as the current activities of the Dade County Youth Fair and the Dade County Parks Department. In particular, the existing park facilities, which include an olympic pool, eight tennis courts, four volleyball courts, four baseball fields, four softball and four little league baseball fields, need to be retained along with adjacent parking. The planned baseball/football complex complements existing park and University facilities.

Recreational space needs for intramurals and student recreation will be accommodated by retaining existing activities stations and further developing the following facilities:

Recreation fields at University Park will provide a minimum of 25 acres of play space. Existing sites on Tamiami Park could be retained for recreational fields, which would be used for intramural and recreational play. Development of a 400 meter track at University Park with appropriate accoutrements will be located south of the recreation soccer fields in keeping with the 1987 Master Plan Update.

Student Center - Phase I 1991; Phase II 1994; Phase III (6)

By the fall semester of 1991, Phase I of the present renovation/expansion of the Student Center, the Charles E. Perry Building (formerly University House) at University Park, will be complete. Phase I provides administrative offices for the Division of Student Affairs as well as newly created spaces for a snack bar, cafeteria, outdoor dining, multi-purpose facility, game room and student lounges.

Phase II is projected for completion by 1994. It will provide an 11,000 square foot food court and arcade where the bookstore was originally planned, a new 20,000 square foot bookstore and an additional 12,000 square foot mini-mall or courtyard with retail stores, specialty food shops, a post office, travel agency and additional lounge space. Enclosing all or a portion of the first floor will allow for climate control of existing open areas.

CITF funding for Phase III has been requested to provide adequate offices and work space equipped with computers for the student newspaper and other student organizations, including Greeks and Student Government. Other needs include remodeling of first floor and third floor offices to include meeting rooms, the Presidential Suite and additional guest rooms for overnight accommodations.

Student Services Building (21)

A student services building will house the following offices: Office of the Vice President for Student Affairs and staff, Counseling Center, International Student Services, Career Planning and Placement, Disabled Student Services, Minority Student Services, Judicial Affairs, and Greek Affairs. In addition, space will be needed for conference and meeting rooms. These offices could be located in a two- or three-story building. The structure should be conveniently and centrally situated on the campus.

Child Care Center - 1991-96 (11)

A 3,000-4,000 square foot child care center is required at University Park to accommodate the child care needs of students, faculty and staff. This facility should be somewhat removed from the mainstream of the campus and provide convenient access for dropping off and picking up the children.

Public Safety and Parking Auxiliary (10)

The projected campus support complex includes funding for Public Safety space. Funds for this purpose need to be combined with funds for the parking auxiliary to provide one facility for both operations. The new facility could be an addition to the present Tower facility or be constructed as a stand alone building elsewhere on campus. At one time it was suggested that the Tower might become a faculty club. Should this occur, a suitable location for the Public Safety/Parking Auxiliary Building needs to be identified.

Health Services/Wellness - Phase I - 1991-96 (13)

Construction will begin on the new Health/Wellness Center very soon. By the late 1990's, there will be a need for an addition to this facility to accommodate increased enrollment and expanded wellness activities.

NORTH MIAMI CAMPUS

Student Housing - 1993-95 (6)

Phase I of student housing is scheduled for 1993-95 and calls for the construction of an additional 400 beds. A site has not yet been determined. A summary of the housing program appears at the end of this section.

Athletics (7)

Recreational space needs for intramurals and student recreation will be accommodated by an additional 15 acres or more of recreational fields. A new pool house building will include changing rooms, bathrooms, storage, and entrance control for the pool.

Student Center - Phase I - 1991-96 (1)

Planning for a \$2.1 million addition/renovation is currently underway. The size of this project is not sufficient to meet the needs of the campus by the time the project is completed. Another addition to the building of 30,000-40,000 square feet will be required to provide lounge, meeting, mini-mall and office space.

The development of the Student Center on both campuses into central meeting places is important as this will encourage students to stay on campus and interact with other members of the University community.

Child Care Center - Phase I - 1991-96 (2)

A 1,500-2,000 square foot Child Care Center is required to accommodate the child care needs of students, faculty and staff. This facility should be somewhat isolated from the campus and provide convenient access.

Health Services/Wellness Center - Phase I - 1991-96 (3)

Planning and design of the new Health Center building will begin during the fall of 1991. An expansion to the Health/Wellness Center will be required by the late 1990's.

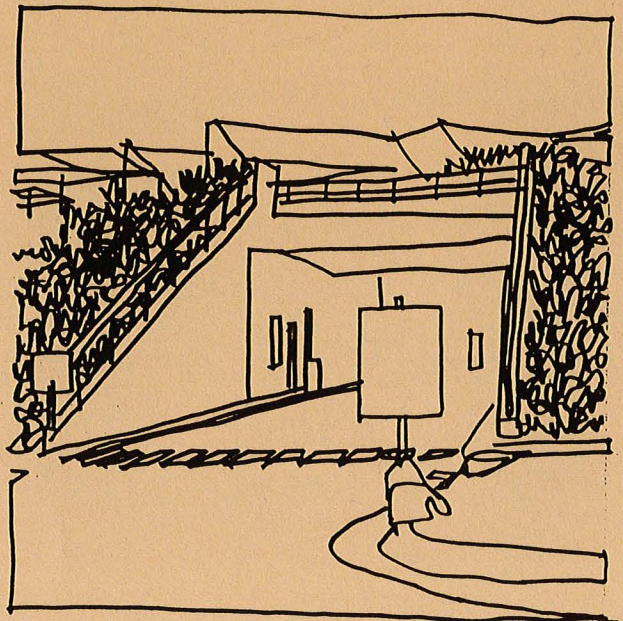
Student Housing Program Summary

The student housing program developed by FIU to meet future housing needs, as described in the previous section, is summarized below. At present, the number of housing beds is equal to approximately 6% of the student body (headcount). It is expected that there will be an increasing demand for campus housing in the future as undergraduate enrollment continues to grow relative to the total student body. A planning standard of 10% of the student body residing on campus has been established by FIU for projecting campus housing requirements. At a projected enrollment of 35,000 students in 2006, the University would require 3,500 beds.

The program for University Park indicates that three new residence halls with a combined capacity for 2,000 students will be required. Added to the existing 750 beds, this would provide a total of 2,750 beds at University Park. At the North Miami Campus, a 400 bed residence hall planned for Phase I would increase the number of dormitory beds from 550 to 950. With a total of 3,700 beds programmed for 2006, FIU will be able to achieve its goal of having 10% of the student body residing on campus.

	University Park		North Miami	
Phase I				
Residence Halls	300 beds	73,778 SF	400 beds	102,120 SF
	300	73,778		
	400	102,120		
Dining	530 seats	14,885		
Subtotal	1000 beds	264,561 SF		102,120 SF
Phase II				
Residence Halls	400	102,120 SF		
	300	73,778		
	300	73,778		
Subtotal	1000	249,676		
Total Added	2000 beds	514,237		
Existing	750 beds		550 beds	
2006 Total UP	2750		NMC	950 (3700 beds University-wide)

4. IMPLEMENTATION PLAN



4. Implementation Plan

Support Facilities Resources

The following new or expanded support facilities are planned over the next fifteen years.

Business and Finance Administration (34)

This facility will house the Business and Finance office and support functions.

President's House (18)

This will provide a residence for the University President, including public function areas and private quarters. (12,000 square feet at \$2,000,000).

Bookstore (7)

A new 20,000 square foot bookstore will serve the region as well as the student population.

Public Safety (10)

A 4,000 square foot facility will provide offices and support for Public Safety administrative staff.

Purchasing (8)

This 10,000 square foot addition will include central stores, mailroom, central receiving, and housekeeping storage.

Physical Plant (9)

This complex provides nearly 20,000 square feet of offices, storage, workshops, groundskeeping repair and equipment and support space for the Physical Plant and a 15,000 square foot maintenance facility providing storage and workshops for this department.

Facilities Program Summary

The Program Summary chart appears on the following three pages. This chart lists new and expanded facilities for University Park and the North Miami Campus proposed by the Divisions of Academic Affairs and Student Affairs to accommodate projected increases in student enrollment. These projects are described in more detail under Planned Academic Facilities and Planned Student Facilities. The estimated cost and proposed phasing for these projects is provided in the Financial Resources Plan.

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Planning and Design Report

Program Summary
University Park

	FACILITY	PROGRAM	PHASE	COST/FUNDING	LEGEND NO.
ACADEMIC CORE					
Library Addition - 4 phases	N	500,000 SF	1-4	\$49.4M PECO	1
ACADEMIC: ARTS					
Arts Complex I & IFS	N	53,500 SF	1	\$10.2M PECO	2
Arts Complex II	N	62,000 SF	1	\$12.4M PECO	3
Arts Complex III	N	50,000 SF	3	PECO	4
CAMPUS SUPPORT					
Student Union Expansion	N/R	24,000 SF	1	AUX	6
Bookstore Building	N	20,000 SF	1	\$2.5M AUX	7
Purchasing Building (expansion of Central Receiving)	N	10,500 SF	1	\$8.7M PECO	8
Physical Plant building	N	33,500 SF	1	included in 8	9
Public Safety	E	4,000 SF	1	\$300,000 AUX	10
Child Care Center	N	4,500 SF	1	\$600,000 AUX-CITF	11
Fitness Center	N	13,000 SF	1	1.37M CITF	12
Health/Wellness Center	N	9,000 SF	1	\$1.3M CITF	13
Multi-Purpose Stadium Complex	N	10,000 SF	1	\$3.2M TOTAL \$0.8 Private \$1.5M CITF	14
Computing Operations/SERDAC	N/R	23,800 SF	1	AUX-PECO	29
400 Meter Track	N	6 - 8 acres	1	\$150,000 CITF	15
Pool/Spa	N	10,500 SF	1	\$400,000 CITF	16
Student Housing	N	514,000 SF	1/2	\$22M/\$20M AUX	17
Honors House	N		1	CITF	17
President's House	N	12,000 SF	1	\$2M private	18
Faculty Club	R	3,500 SF	1	\$300,000 CITF	19
Parking Decks	N	3000-4000 cars	2/3	\$18M/\$24M AUX	20
Student Services Building	N/R	36,400 SF	1	CITF-PECO	21
Student Administration	N		1	CITF-PECO	22
Greek Housing	N	15 acres/10 houses	1	private	17
Recreation Area	N	25 acres	2	CITF	23
Perry renovation 1st floor	R		1	CITF-PECO	41

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Program Summary
University Park

	FACILITY	PROGRAM	PHASE	COST/FUNDING	LEGEND NO.
ACADEMIC: TECHNICAL					
Health and Life Science Building	N	62,440 SF	1	\$9.6M PECO	24
Engineering II	N	90,000 SF	1	\$12.4M PECO	25
Engineering III	N	110,000 SF	3	\$14M PECO	26
Physical Sciences	E	60,000 SF	2	\$10M PECO	27
Molecular Biology	N	100,000 SF	3	\$14M PECO	28
Greenhouse/Conservatory	E	4,500 SF	1	\$.5M Private/ Ed. Ehan.	30
ACADEMIC: PROFESSIONAL					
Education	N	44,095 SF	1	\$7.55M PECO	31
Business II	N	68,157 SF	1	\$11.4M PECO	32
Business III	N	55,000 SF	2	\$8M PECO	33
Business & Finance/Administration	E	80,000 SF	2	PECO	34
Future Professional School	N	70,000 SF	3	PECO	35
Social Sciences	N	70,000 SF	2	PECO	36
Labor Research Studies Center/ English Language Institute	N	17,390 SF	1	\$1.3M PECO \$0.8M AUX	37
International Center and Conference Center	N	12,000 SF	2	PECO	31
Business/Technical Innovation Center	N	30,000 SF	3	PECO	51
EXTERNAL FACILITIES					
Elementary School	N	5 acres	1	Dade Co. School Bd.	38
Hurricane Center	N	20-40,000 SF	1	NOAA (Federal)	39
Metro Station	N	50'x 100' parcel	3	Dade County	52
Research Park	N		3		-
Amphitheater	N	20,000 seats	1	\$20M Private	5

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Program Summary
North Miami Campus

	FACILITY	PROGRAM	PHASE	COST/FUNDING	LEGEND NO.
ACADEMIC CORE					
Library Addition	E		3	PECO	16
ACADEMIC: ARTS					
No current programs					
CAMPUS SUPPORT					
Student Center Expansion	E	12,495 SF	1	\$2.1M CITF	1
Grants/Auxiliary Building Complex					2
-Family support education and training center	N	35,000 SF	1	\$3.5M private	
-Duplication Center	N		1	\$400,000 AUX	
-Child Care Center	N	3,200 SF	1	\$450,000 CITF	
Health Center Complex	N	2,793 SF	1	\$466,000 CITF	3
Conference Center	N	42,000 SF	1	\$10.8M AUX	4
Water Sport Activity Area	N		1	CITF	5
Housing Activities Center	N	2,000 SF	1	AUX	24
Housing	N	102,000 SF	1	AUX	6
Recreation	N	15 acres	2	CITF	7
Pool House	N	2,000 SF	2	CITF	23
Parking Decks	N	1000 cars	3	\$6.0M AUX	20
ACADEMIC: TECHNICAL					
Marine Biology	N	10,000 SF	1	PECO	8
ACADEMIC: PROFESSIONAL					
Public Affairs and Communication	N	54,500 SF	1	\$9.2M PECO	9
Academic IV/Nursing School	N	45,000 SF	2	PECO	10
Hospitality Expansion	R	15,371 SF	1	\$2.2M PECO	11
Future Professional School	N	95,000 SF	3	PECO	12

1. N=New
R= Renovated
E= Expansion

2. Phase 1 - 1991-1996
Phase 2 - 1996-2001
Phase 3 - 2001-2006

3. PECO- Statewide funding for educational projects
CITF- Statewide funding for student related projects
AUX- Fees generated by University

Financial Resources Plan

Sources of funding, project type and estimated funding levels for each five year planning phase are as follows:

PECO	Educational Projects	\$ 75.0 M
CITF	Student-related Projects	\$ 20.0 M
AUX	Parking	\$ 2.5 M

The Financial Plans for each campus, which are presented on the following pages, show projects that are currently planned for each phase and those project costs which are currently known. The educational projects for both University Park and the North Miami Campus would call for nearly \$110 million in PECO funding in Phase I. This would exceed the anticipated Phase I funding level of \$75 million by \$35 million. Phase I CITF projects, for which costs are known, total nearly \$10.5 million for both campuses, as compared with anticipated funding of \$15-20 million for each five year phase.

Financial Resources Plan for University Park

The combined total funding for PECO and CITF projects planned for Phase I at University Park is nearly \$97 million. Student housing, at a proposed cost of \$22 million, and Greek housing would be financed through revenue bonds. Parking lots and decks would be funded through Auxiliary funds.

CITF Projects

PHASE I

Pool	\$ 0.40 M
Fitness Center	1.37 M
Health Wellness	1.37 M
Student Center Expansion	
Bookstore	2.40 M
Faculty Club	0.30 M
Honor's House	
Childcare	0.60 M
Stadium	1.50 M
400 Meter track	
Student Services Bldg.	

PHASE II

Recreation 25 acres	0.40 M
---------------------	--------

PHASE III

PECO Projects

PHASE I

Arts Complex I	\$ 10.40 M
Library Addition I/II	27.80 M
Education	7.55 M
Arts Complex II	12.40 M
Business II	11.40 M
Labor Research Center	01.30 M
(w/AUX Suppl.)	
Computing Oper//SERDAC	
(w/AUX.)	
Engineering II	
Health and Life Sci	09.60 M
Student Services	
Support	08.70 M
PC Renovation	

PHASE II

Int'l Conference Center	
Social Sciences	
Library Addition III	14.00 M
Physical Sciences	
Business III	08.00 M
Bus & Finance/Admin.	

PHASE III

Library Addition IV	7.60 M
Engineering III	
Molecular Biology	
Arts III	
Business Innov. Tech Center	
Future Professional School (Law)	

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AUX Projects

PHASE I

Public Safety - Decal (CITF Loan)	\$ 0.30 M
Bookstore Bldg.	2.50 M
Student Union Exp.	
Student Housing	20.00 M
Comp. Operations/SERDAC (w/PECO Supplement)	
Labor Res. Center/ELI (w/PECO)	0.80 M

PHASE II

Parking Decks	10.00 M
---------------	---------

PHASE III

Parking Decks	14.00 M
---------------	---------

Private Projects

PHASE I

Amphitheatre	\$ 20.00 M
Multi-purpose Stadium (supplement)	0.80 M
President's House	2.00 M
Greek Housing	
Greenhouse/Conservatory (matching Ed. Enhance)	0.50 M

Financial Resources Plan for North Miami Campus

CITF and PECO projects planned for the North Miami Campus for Phase I, for which cost information is currently available, total nearly \$23 million. Student housing, as proposed, would cost an additional \$6 million, and would be financed through revenue bonds. Parking lots and decks would be funded through Auxiliary funds.

CITF Projects

PHASE I

Student Center	\$ 2.10 M
Health Wellness	0.47 M
Water Sports	

PHASE II

Recreation 15 acres
Pool House

PHASE III

AUX Projects

PHASE I

Housing	
Duplicating Center	0.40 M
Childcare Center	0.45 M
(CITF Loan)	
Housing Activities	

PHASE II

PHASE III

Parking Decks	0.60 M
---------------	--------

PECO Projects

PHASE I

Public Affairs	\$ 9.20 M
Conference Center	9.00 M
Hospitality Mgt.	2.20 M
Marine Biology	

PHASE II

Nursing Expansion

PHASE III

Future Prof. School
Library Expansion

Private Projects

PHASE I

Family Support/ Ed. Training Center	3.50 M
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MASTER PLAN UPDATE 1991 - 2006
Planning and Design Report

Staff Resources

University Park currently has over 1,800 faculty and staff positions, as shown in the chart below. During each of the three five-year planning periods, the number of faculty and staff positions will be expanding as the student enrollment increases. By 1995-96, the number of faculty and staff is estimated to be 2,112, an increase of 300 positions. By the end of the fifteen-year planning period, the projected number of faculty and staff is estimated to be 3,019, an increase of over 1,200 positions.

At North Miami, there are currently 569 faculty and staff positions.

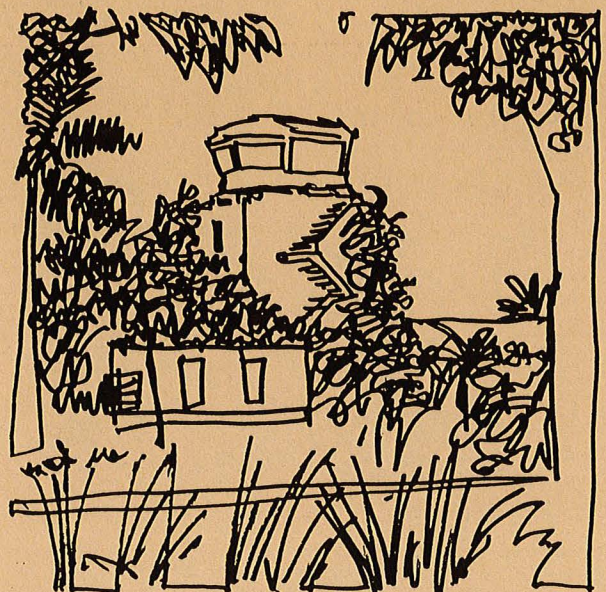
University Park

	Plan 1991/92	Plan 1996/97	Plan 2001/02	Plan 2005/06
<hr/>				
Office Positions:				
E&G A&P FTE	128	148	176	212
E&G USPS FTE	667	766	918	1102
E&G OPS FTE	87	95	111	126
E&G FAC FTE	659	802	1026	1292
C&G FTE	94	105	119	135
OTHER FTE	176	196	223	25
Total Office Positions	1812	2112	2573	3119

North Miami

	Plan 1991/92	Plan 1996/97	Plan 2001/02	Plan 2005/06
<hr/>				
Office Positions:				
E&G A&P FTE	38	44	55	66
E&G USPS FTE	214	250	305	371
E&G OPS FTE	34	40	49	60
E&G FAC FTE	218	269	349	444
C&G FTE	31	37	46	56
OTHER FTE	35	41	50	61
Total Office Positions	569	681	854	1058

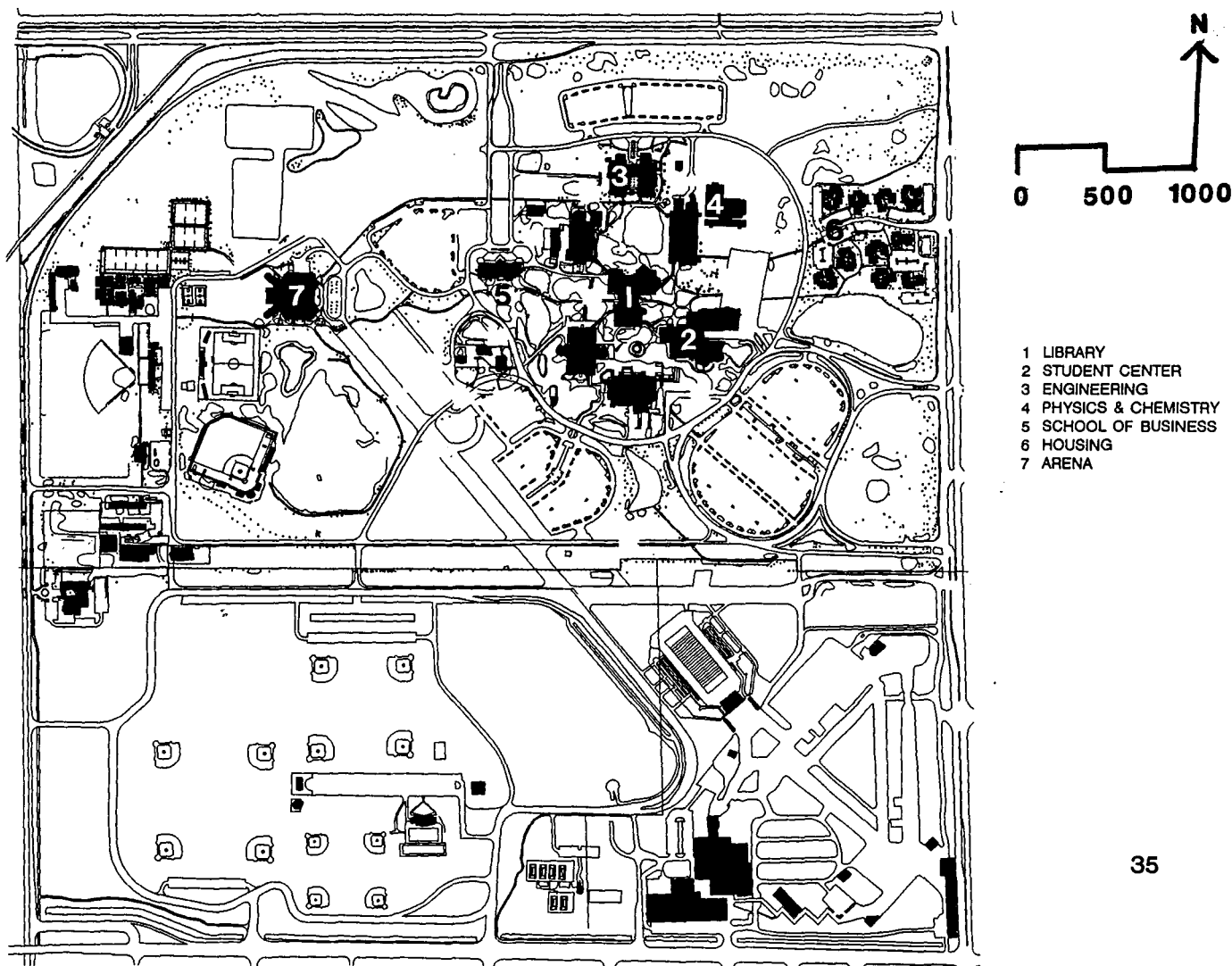
5. PLANNING ANALYSIS: UNIVERSITY PARK



5. Planning Analysis: University Park

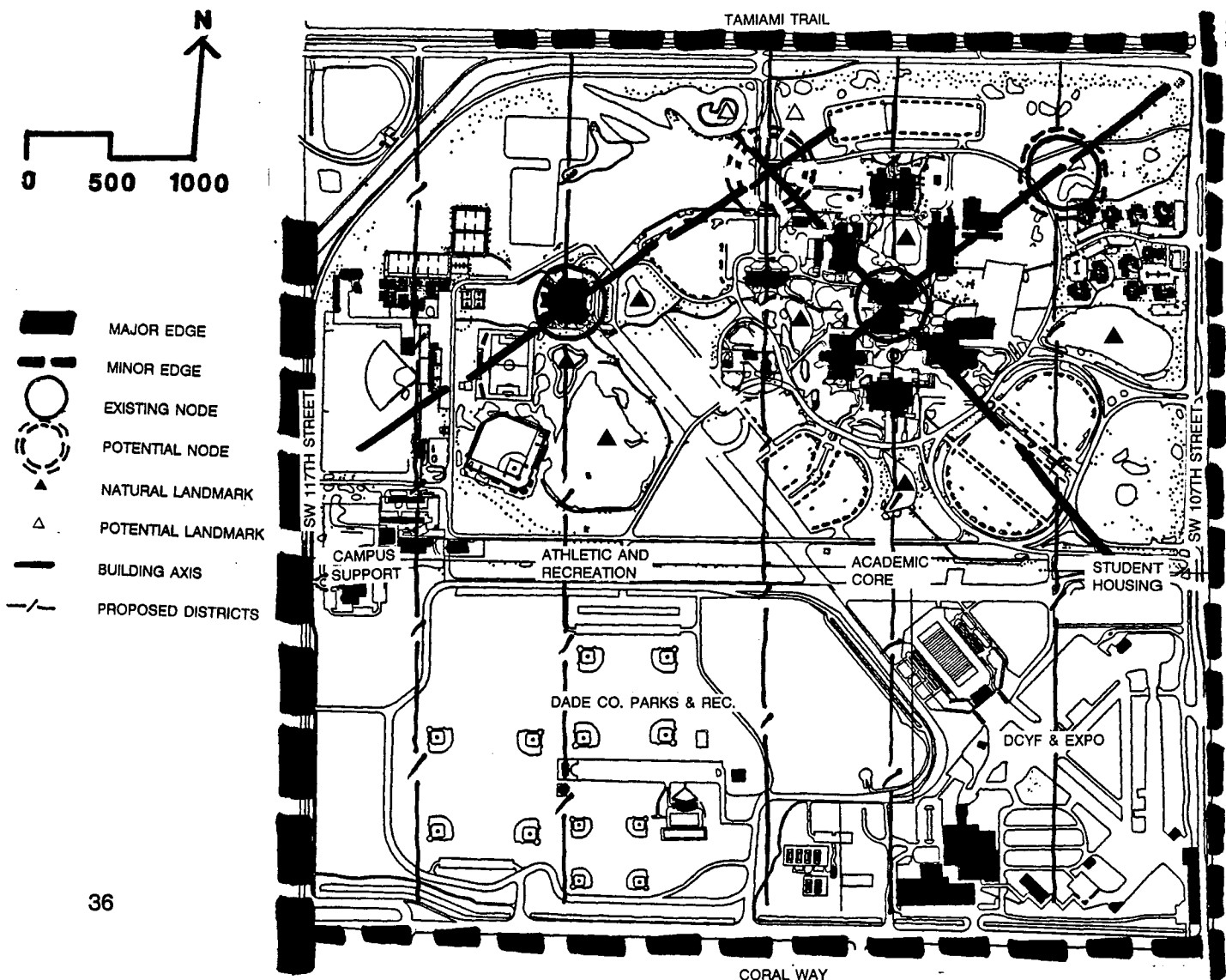
Existing Conditions

University Park is organized with all major academic facilities within the loop road, as shown on the Existing Conditions plan. The academic core contains functions which serve the entire campus, including the Library and the Student Center. Two quadrangles for academic facilities have been established to the north and south of the Library. The Engineering building, completed since the 1987 Master Plan Update, establishes the second quadrangle. A third quadrangle is underway northeast of the Library, now that the Physics and Chemistry Building has been completed. As recommended in the 1987 Master Plan Update, the principal entrance to the campus from the Tamiami Trail has been reinforced by a mall. The new School of Business Administration building is sited as an anchor at the end of the mall. Outside the loop road, the student housing area is located to the east. The athletic facilities and campus support functions are located to the west of the academic core.



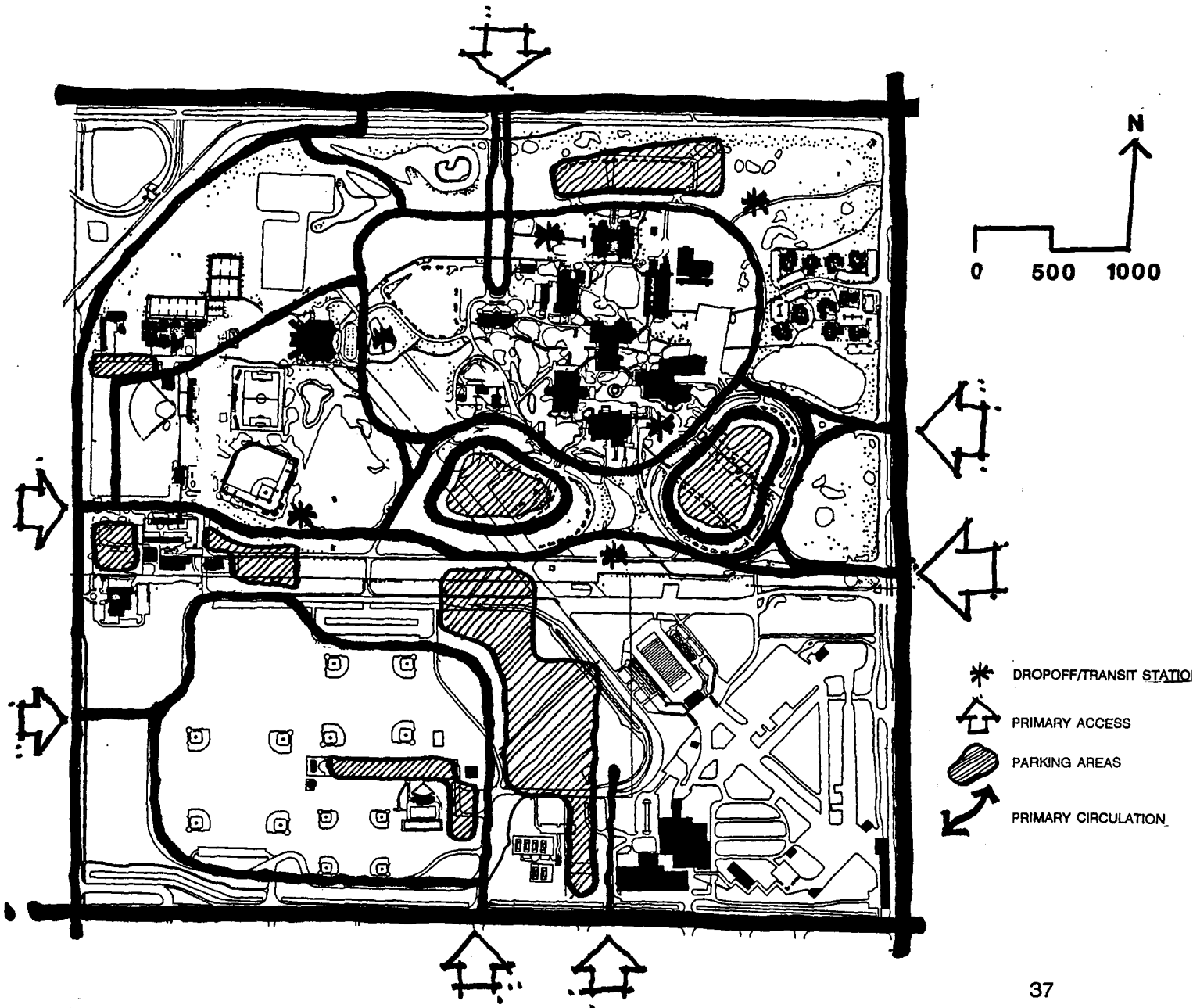
Visual Form Analysis

The visual form of the campus was re-analyzed to develop an understanding of the existing development pattern and to identify future development sites which would reinforce the focus of the campus organization. The visual form diagram identifies the campus image as it is perceived by the individual through five form-giving elements: edges, districts, nodes, landmarks, and paths. Edges of the campus are formed by the Tamiami Trail (8th Street) to the north, SW 107th Street to the east, and SW 117th Avenue to the west. The Dade County property is bordered by Coral Way to the south. Paths include the entrance roads to the campus and the loop road. Districts are formed by clusters of buildings of similar functions, such as the academic core, student housing, athletic, and campus support areas. Relationships among districts and individual buildings within districts are identified by axis lines. Nodes, or points of activity, such as the Library/Student Center, Arena, and the main campus entrance, occur at the intersection points.



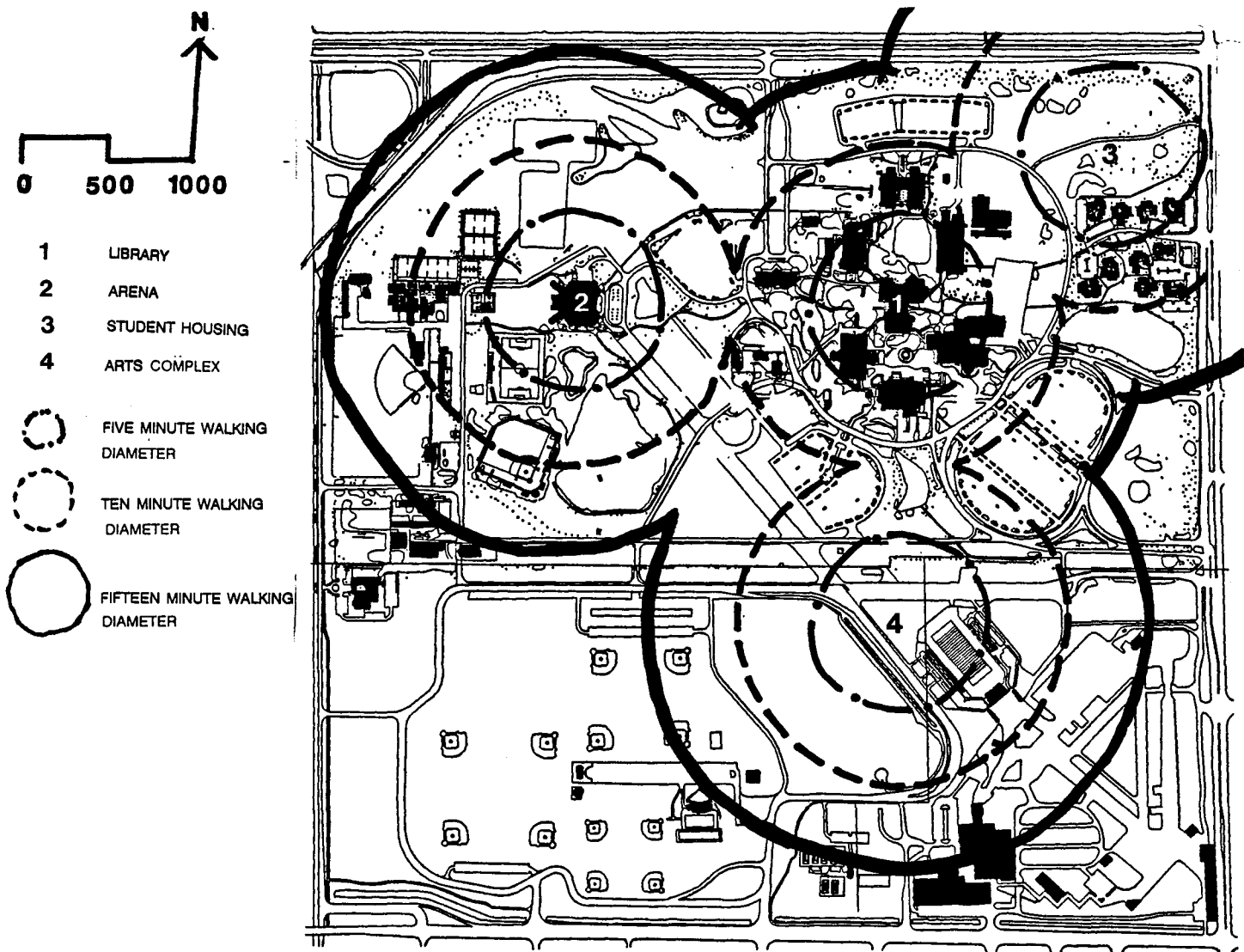
Circulation, Parking and Access Analysis

As shown on the Vehicular Circulation Plan, the primary entrance to the campus is from the Tamiami Trail on the north, with secondary access points from SW 107th Street on the east and from SW 117 Street on the west. The loop road provides primary circulation within the campus and will become a two-way road when the final segment is completed in 1992. From this road, access is provided to campus parking areas.



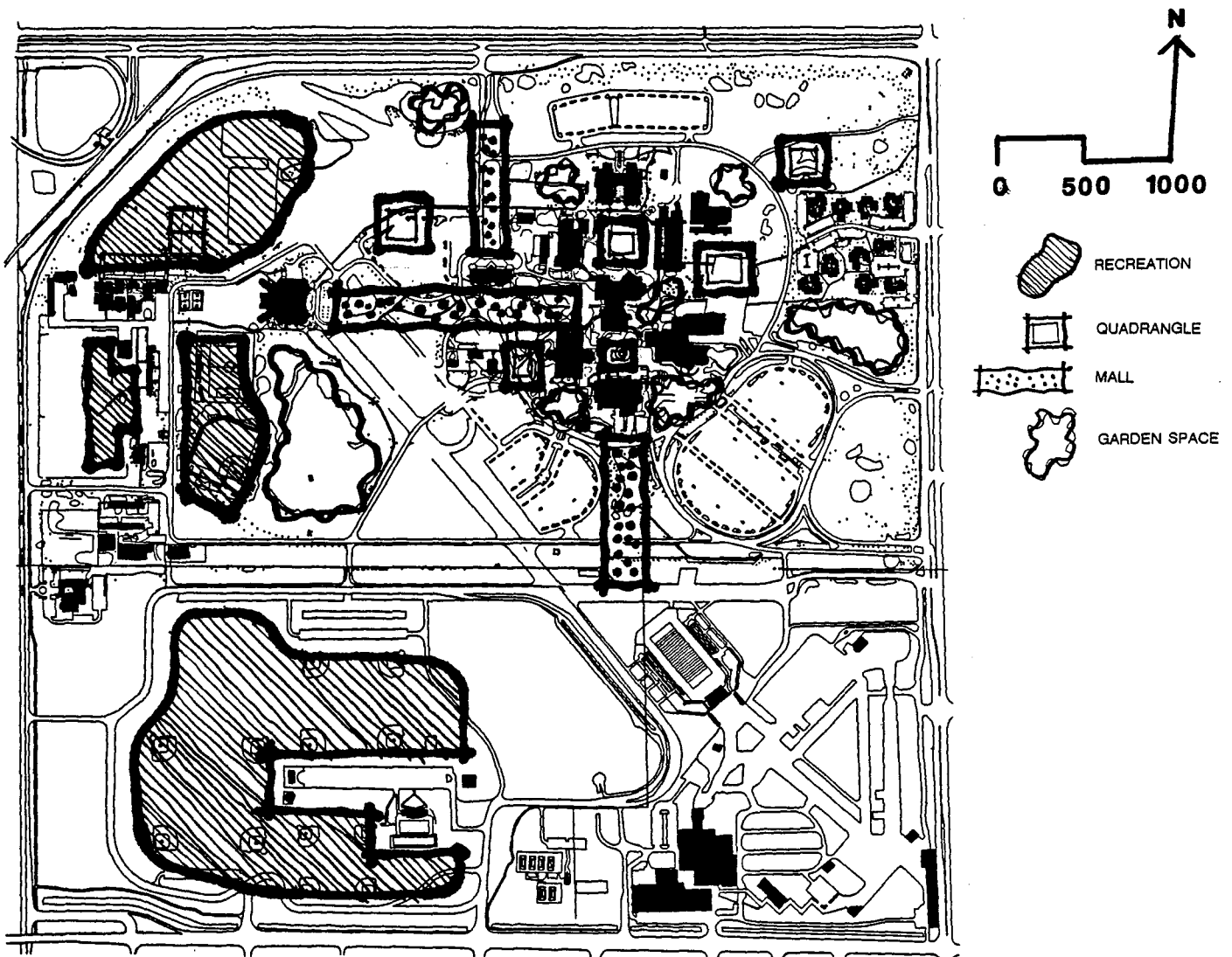
Pedestrian Circulation Analysis

A pedestrian campus within the loop road is considered the most important objective for the physical plan. The existing parking area within the loop road will eventually be relocated to achieve this objective. Given Miami's hot and humid climate during the summer months, a 6-8 minute walking distance was used as the standard in planning the academic core. For example, as illustrated in the walking distance diagram, the walking time between the Engineering building and the Library is 2 1/2 minutes. Covered walkways are desirable and should be incorporated in planning for pedestrian circulation.



Open Space Analysis

The Open Space Development plan shows the location of quadrangles, the entry mall, natural areas, ponds and other pedestrian zones. Two new malls, to the south and to the west, will strengthen the pedestrian connections to areas of future new development on the campus. Future development also includes an additional 25 acres of recreational space and potential joint use facilities with the Dade County Parks Department and the Dade County Youth Fair.



Utilities Analysis

The Utility Infrastructure for University Park has undergone major developments in the last five years. These expansions and modifications have coincided with the construction of the latest buildings. For the majority of cases, the programmed infrastructure components have been executed. However, some items have been left out due to funding problems. These items, related to the sewer system expansion on the east campus area, should be the first priority for any new infrastructure development.

On the 1987 Master Plan Update of five years ago there were other major development items in long range planning that have not been instituted yet. They consist mostly of the development, extension and reliability enhancement of the domestic/fire water mains around the west campus. This area is scheduled to receive new buildings in the near future. Therefore, this utility component should be scheduled to support this growth.

The zone of expansion to the south of the campus was not addressed in the last update. This area will necessitate utility expansions which should be linked to the existing loops. Electrical power is available right at the campus property line.

Water is available at SW 107th Avenue. The connection to the mains should later be linked to the loop around the Perry Building, formerly Primera Casa. Sewer facilities will be linked to the existing gravity networks via forced mains.

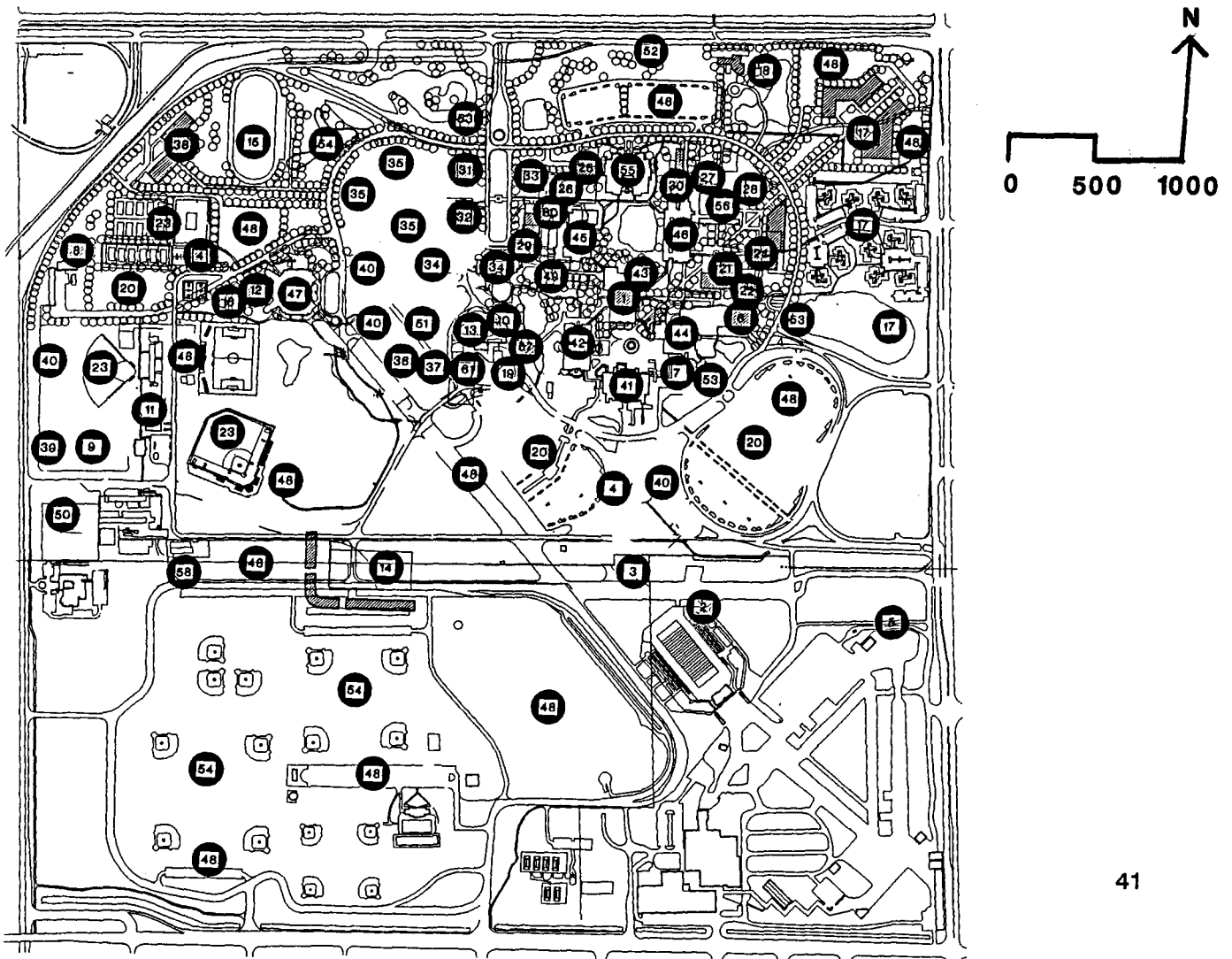
Telephone links are also available at SW 107th Avenue. There are also existing conduits south of Perry Building which could be used.

Storm drainage will be treated at each new building with french drain type structures.

Another phase of expansion for the Chiller Plant must be contemplated especially in light of the dramatic growth of this campus. The chilled water loop will have to be extended to serve the new areas.

Programmed Facilities

The Program Diagram below was developed to illustrate the suggested locations for programmed facilities and to study the relationships between existing and proposed development. The numbers on the diagram refer to the Program Summary chart, which is in the Implementation Plan section of this report. The underlying concept for siting new facilities was to reinforce the existing pattern of development and to enhance the focus of the campus. New academic facilities were located to complete the quadrangle framed by the Chemistry and Physics and Owa Ehan Buildings. New professional schools are located along the entry mall, with the existing School of Business Administration. A new mall with additional buildings to the west links the academic core to the athletic facilities. New student housing is clustered near the existing student housing. As agreed with the Dade County Parks Department and the Dade County Youth Fair, the Arts Complex I, Stadium, and Amphitheater are sited as shared facilities on property owned by both parties. A new mall to the south of Perry Building connects the new Arts Complexes to the existing academic facilities to the north.

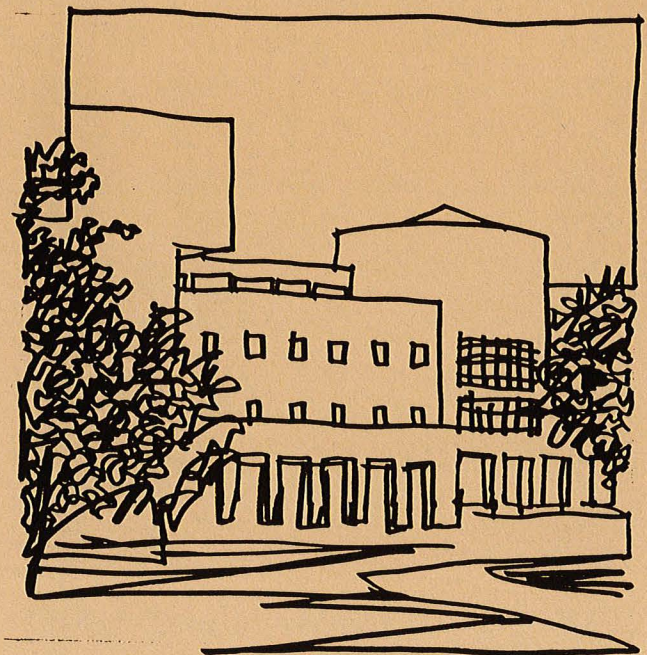


Planning Issues: University Park

Several planning objectives emerged from the analysis of the campus:

- A pedestrian zone should be maintained within the loop road.
- New development should maintain the character of existing quadrangles and reinforce campus organization and focus.
- Expansion of existing buildings, particularly vertical expansion, should be considered instead of new smaller detached buildings.
- Parking garages should be considered as a means to conserve valuable developable land.
- The anticipated continued predominance of commuter students should be considered in siting facilities and in planning for vehicular circulation and parking.
- Discussions on joint use of facilities should continue to be pursued with the Dade County Parks Department and the Dade County Youth Fair.

6. THE PHYSICAL PLAN: UNIVERSITY PARK



6. The Physical Plan: University Park

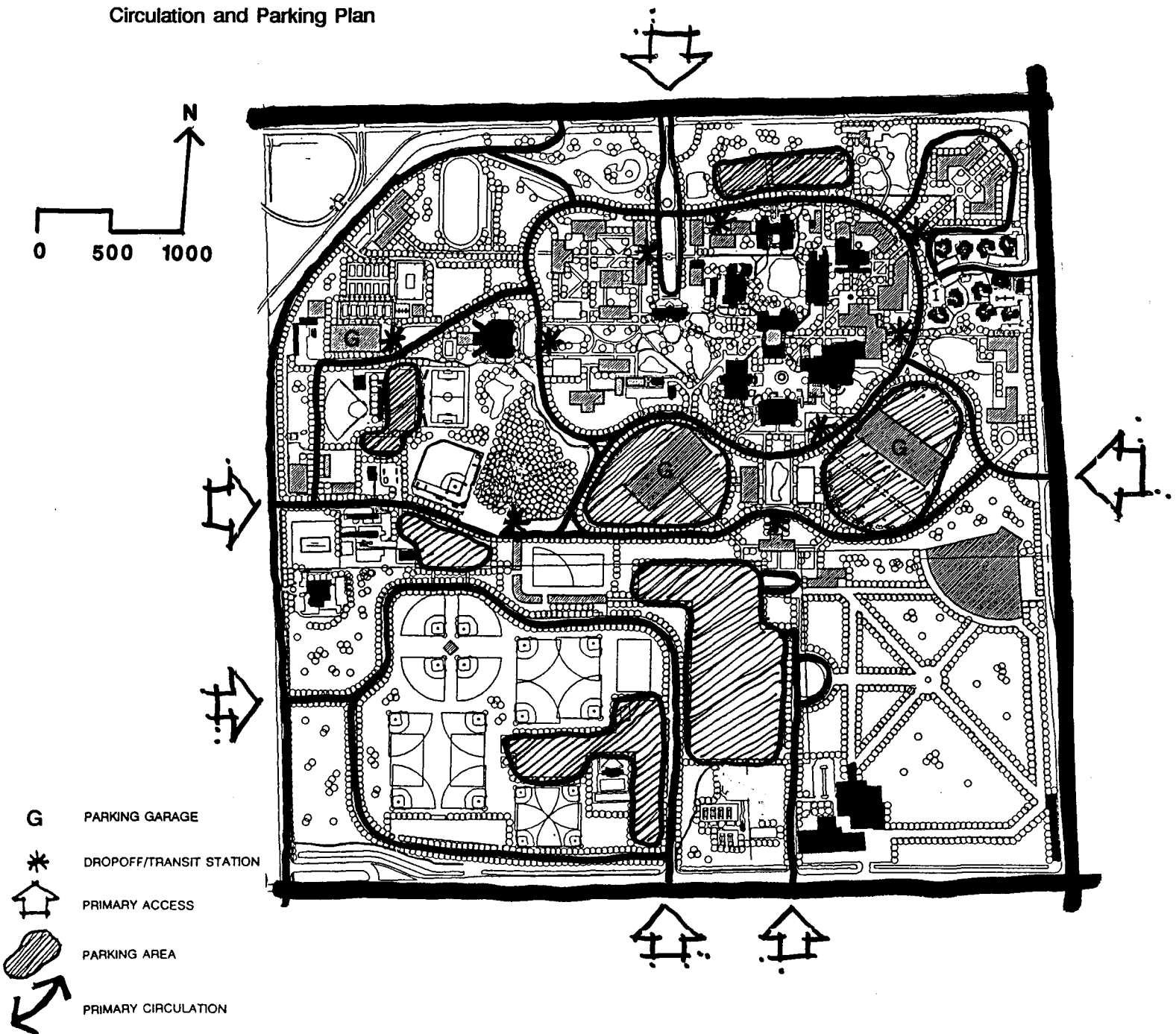
Circulation and Parking Plan

The circulation on the campus is organized into two main systems. The first is the east/west access road that allows entry on 117th and 107th Streets. The second is the loop road that encloses the academic core and allows the main entrance to the campus from the Tamiami Trail.

With the completion of the loop road, funded with the first library addition, this system will be two-way and provide for internal circulation. Access to parking will be primarily from the loop road so that circulation will be easily understood. The campus support area will be reorganized and new access provided for truck deliveries and maintenance vehicles which would not mix with everyday campus traffic.

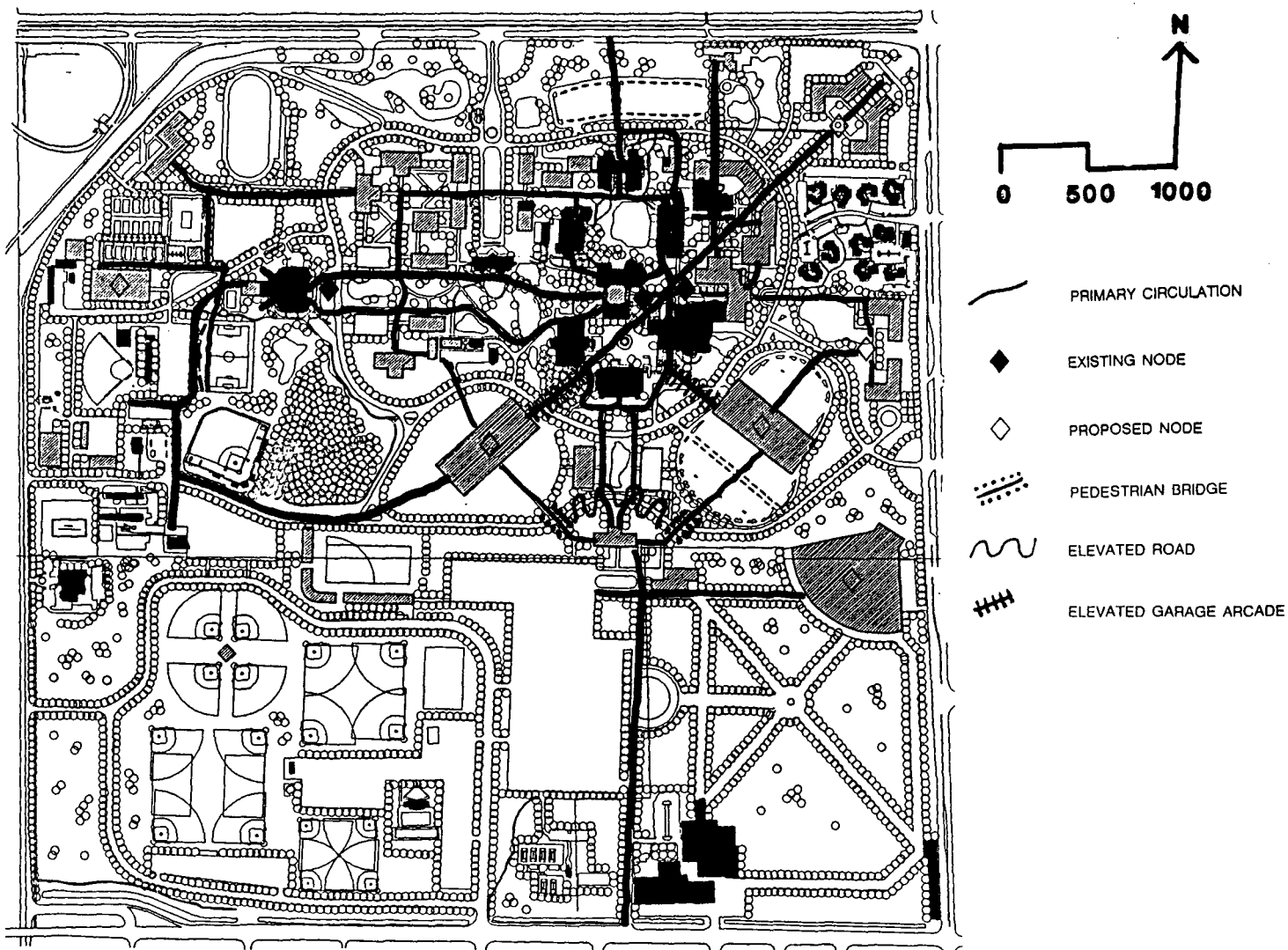
Future parking requirements are projected to be approximately 11,700 cars at the enrollment level of 16,760 FTE in 2006. To accommodate this projected parking an estimated 3,225 spaces would need to be provided in addition to parking from the 1987 Master Plan Update (which is 8,500 spaces). To reduce the land required for parking, three locations for future parking decks are suggested. Each of the decks, located in the central area of the campus, would hold 1,500-2,000 cars and be integrated with a pedestrian circulation system to link the campus together. The deck behind the Golden Panther Arena would hold about 1,000 cars, primarily for recreation and event parking for the arena.

Circulation and Parking Plan



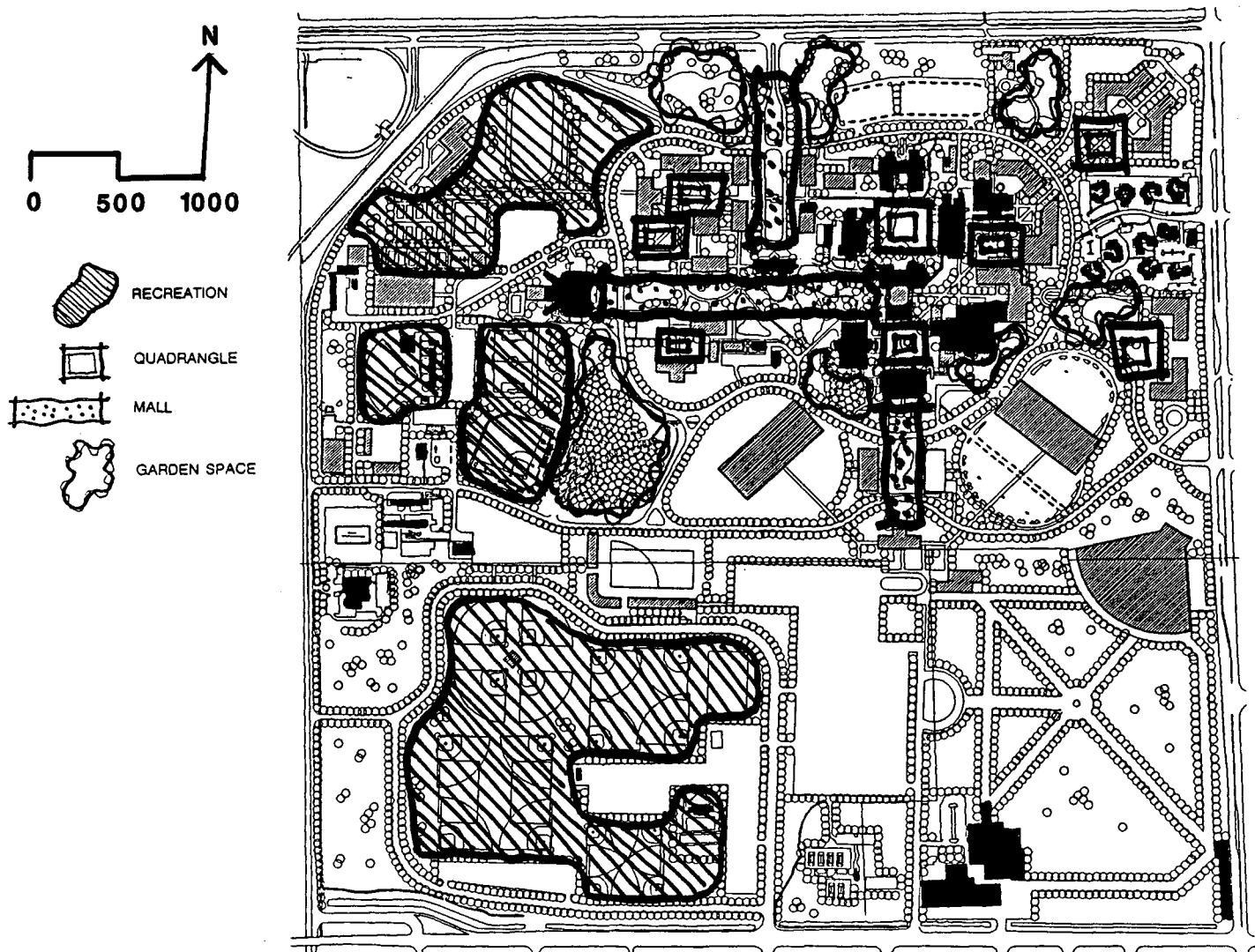
Pedestrian Circulation

Pedestrian circulation will be integrated with the parking areas and decks to the center of the academic core. Two new pedestrian bridges will carry pedestrian traffic from the new parking garages to the Arts Complex. A section of elevated roadway links the south mall to the Arts Complex. In addition, two elevated garage arcades radiate from parking decks, across the loop road, connecting to the academic core. Covered pedestrian links between buildings should be provided with all new projects.



Open Space Development

The open space plan is a framework of quadrangles and malls that are formed by existing and future building placement. The framework provides a coherent structure to campus pedestrian circulation and campus image. Natural areas, ponds and garden spaces enhance the traditional spaces and give the campus a "Florida feeling", setting the school apart from other universities. The entrance mall to the campus with its Royal Palms, further emphasizes the identity of a Miami campus in South Florida. However, xeriscape principles should be employed between garden and special spaces, such as the entrance mall to the campus, to conserve water use. These aspects of planting and open space are unique to Florida International University. The image and character available to FIU are enhanced by this physical plan and future expansion is meant to build upon these unique attributes.



Infrastructure

University Park Utility Analysis and Recommendations

The purpose of this analysis is to establish the status of the water, sewer, drainage, chilled water (air conditioning) supply/distribution, electrical and telephone systems at University Park as well as to evaluate present capacities and future needs in a coordinated effort with planned, orderly campus growth. The update includes the latest components added, with buildings recently completed or in process of construction. The infrastructure will be revised to extend their capabilities to absorb campus growth up to the year 2006. A summary of the analysis is presented below and the complete utilities analysis and plans are provided in Appendix D.

Water Distribution Summary

The existing internal water distribution at University Park in most cases meets the present and future consumptive and fire flow demands. System reliability was improved considerably with the latest modifications to the infrastructure. Further improvements, as described, must be considered to enhance reliability and extend service to new building sites. Another recommended feature is the addition of sectioning valves to the existing loop as well as to the new piping extensions. It is suggested that every time a tap is added to service new construction, new valves are also added to each side of the loop.

Sewage Collection Summary

The sewage collection system serving the main section of University Park is adequate for present needs. The practice of piggy-back discharging should be discontinued and future extensions to service the planned buildings should follow the master planning approach in accordance with the recommendations described here.

Roads and Drainage Summary

As the work in progress or that about to commence is completed, the campus internal road communications will be greatly enhanced. Interface with existing roads south of the campus property line should be carefully considered and controlled to prevent unnecessary traffic.

Present drainage facilities have proven adequate. They should be modified and improved in accordance with proper storm disposal management practices as campus growth continues.

Chilled Water Supply Summary

The following work on the chilled water distribution should be accomplished during Phase I (1991-1996) of the Master Plan, in order of priority:

- (1) Exchange of Refrigerant Gas for Chillers 1, 2, and 4
- (2) Exchange of Old Chiller 3 for a New 900 Ton Machine Rated for Refrigerant HCFC-123
- (3) Updated Chilled Water Pumping Requirements

This work, especially (2) and (3), should be scheduled to coincide with the Education Office Building. For Phase II, the Central Utility Building should be enlarged one bay and a new 2,000 ton chiller installed along with corresponding cooling tower, chiller, and condenser water pumps.

Aside from plant capacity improvements, the energy consumption aspect should be focused upon. The area of energy storage appears to be the most feasible concept for implementation. Basically, it would consist of curtailing chiller capacity during the peak electrical consumption periods (i.e. 2-8PM). Chilled water production during those periods would be satisfied by ice storage cells. These cells would in turn be charged by a smaller chiller during offpeak electrical demand hours (i.e. 11PM-6AM).

For the ability to shut down major equipment (i.e. chillers, cooling towers, condenser water pumps) on request, the local utility, F P & L, will charge the University an advantageous rate. Furthermore, F P & L has an incentive program which awards customers who introduce demand-saving devices, such as ice storage, with a lump sum based on the number of refrigeration units (tons) saved by the energy storage facility.

Another incentive program already in place has F P & L paying customers for replacing old chillers with new, efficient machines. This program returns up to 11% of the total replacement costs to the customer. Florida International University may qualify retroactively for the two chillers it replaced and will certainly get the entitlement when old chiller no. 3 is replaced.

Electrical Distribution Summary

A substantial incentive program is offered by F P & L to commercial customers who introduce thermal storage systems that help to shave peak demand. The maximum electrical demand per billing cycle, as measured at the meter at fifteen or thirty minute intervals, determines the rate at which kilowatt-hour consumption is charged.

An ice or chilled water storage system, for example, will allow the chillers to be supplemented to meet load requirements without exceeding a predetermined peak demand.

Stored thermal energy may be produced overnight by a small chiller. At that hour, most other equipment is shut down and outdoor temperatures are cooler, thus better system efficiency is achieved. Another benefit of a thermal storage system is the readily available capacity to handle shock loads due to chiller malfunction, large assemblies of occupants, etc. See section on Chilled Water Supply and Distribution for additional discussion on this subject.

Other energy related incentive programs are already in place. A chiller retrofit rebate program is discussed in Chilled Water Supply and Distribution.

Florida Power and Light is also evaluating other energy saving programs, some of them in the area of lighting. It is very possible that in the near future, there will be rebates or other types of incentives for efficient ballasts, lighting controls, fixtures with efficient illumination, etc.

Telephone and Communication Summary

Fiber-optic service will be extended to the Library (AT) Building to coincide with the Phase I Expansion Project now in design.

The telephone company (Southern Bell) is planning an expansion step which will carry Fiber-optic service to west campus. To accomplish this, they will be installing a second vault - computer at the Athletic Building (Arena) south side. This service is planned for 1992.

As part of the Master Plan Update, the existing ductbanks must be extended to serve the new buildings. At the same time, the network must be extended to serve existing buildings. Figure V shows the proposed extensions of the underground ductbanks. One system will be extended from the manhole serving the Chemistry and Physics Building. A new set of four 4-inch diameter conduits will go north then east on the outboard side of the existing perimeter road. There are existing pipe sleeves below the road to be used for crossing under it. This extension will serve the President's House with one 4-inch diameter conduit. This section should coincide with the construction of the President's House. The continuation of the ductbank east and then south will serve the new dormitories on the northeast corner, the existing dormitories, and the Health and Life Sciences Building. Continuation of this four 4-inch ductbank from the take-off manhole for the President's House to a manhole east of the Health and Life Sciences Building should be funded in the program for this building.

A bank of four 4-inch conduits to serve the Arts Complex should extend south from the existing Perry Building Fiber-optic vault to the new Art Building core. This conduit bank should be included in the program for the Arts Complex I.

From the West Campus future Fiber-optic vault, a bank of four 4-inch conduits should run south to a manhole near the proposed Multi-Purpose Stadium. This ductbank length will coincide with the Stadium construction. An intermediate manhole shall be provided for a lateral Westward four 4-inch ductbank to serve the Campus Support Complex. This lateral extension should be included in the program for the Campus Support Complex.

Another two 4-inch ductbank should be extended westward from the projected vault at the Golden Panther Arena. This section of ductbank should link to the Central Receiving Building and adjacent structures. This extension should be included in the Campus Support Complex Program.

Finally, a ductbank consisting of four 4-inch conduits should extend north and west from an existing manhole adjacent to the Business building. This extension will serve the Education office building and future structures in that general area. Conduits will use existing sleeves to cross under the new Tamiami - Business building entrance road. This conduit extension should be included in the Education office building program.

It is recommended that all new ductbanks be PVC conduits encased in concrete.

Facilities Plan

The Facilities Plan is based on the planning analyses and precinct studies, which were described earlier in this report. The integration and interaction of all the parts form a new plan that adheres to the spirit of the 1987 plan, but updates the physical design to accommodate the programmed facilities. The plan also allows for the shared use of certain facilities in Tamiami Park in cooperation with the Dade County Youth Fair. This updated development plan builds on the existing campus organization by reinforcing established uses and campus zones. These include the academic core, student housing, athletic/recreational, and campus support zones. New precincts were established to accommodate new program requirements for the Arts Complex and Professional School, while contributing to the cohesiveness of the campus.

Phasing

Phase I: 1991-1996

Within the academic core, the addition to the Library, a 15-story tower built in four stages, will begin construction. The Student Center will be expanded and a new Bookstore addition will be constructed. A new Faculty Club and food court will be included in the expanded Student Center. To the north of the academic core, the new Health and Life Sciences Building will be built in the new quadrangle established by the Chemistry and Physics Building. Engineering II, a 90,000 square foot addition to Engineering I, will be connected to the original building by a pedestrian bridge above the existing service drive. The Greenhouse, located near the Engineering Building, will also be built in this phase. Four new buildings will be built along the entrance mall, including a new Education Building, new Computing Operations/SERDAC Center, Business II and Business III. Adjoining the entry mall, a new Business and Finance Building will be built which will allow the existing Business I building to be converted to an Administration Building. A series of smaller facilities will be developed around the old Airport Tower, which houses the Public Safety department. These facilities include the Labor Research Center and the Health and Wellness Center. The construction of the Social Science Building, on cross axis with the West Mall area, will continue the development of this campus area. New support facilities located on the west campus will include Purchasing and the Child Care Center. To the south of the campus core, the Arts I Complex, Arts II Complex, Stadium and Amphitheater will be developed as joint use facilities with the Dade County Youth Fair. The new President's House will also be built in Phase 1. New Student Housing includes a total of 250,000 square feet to be built in two towers on the northeast corner of the campus, adjacent to the existing housing area. The Honors House could also be included in the Phase 1 Housing, or it could be a freestanding building. New recreation facilities include a Fitness Center adjacent to the Arena, a new 400 meter track, and a Pool and spa.

Phase II: 1996-2001

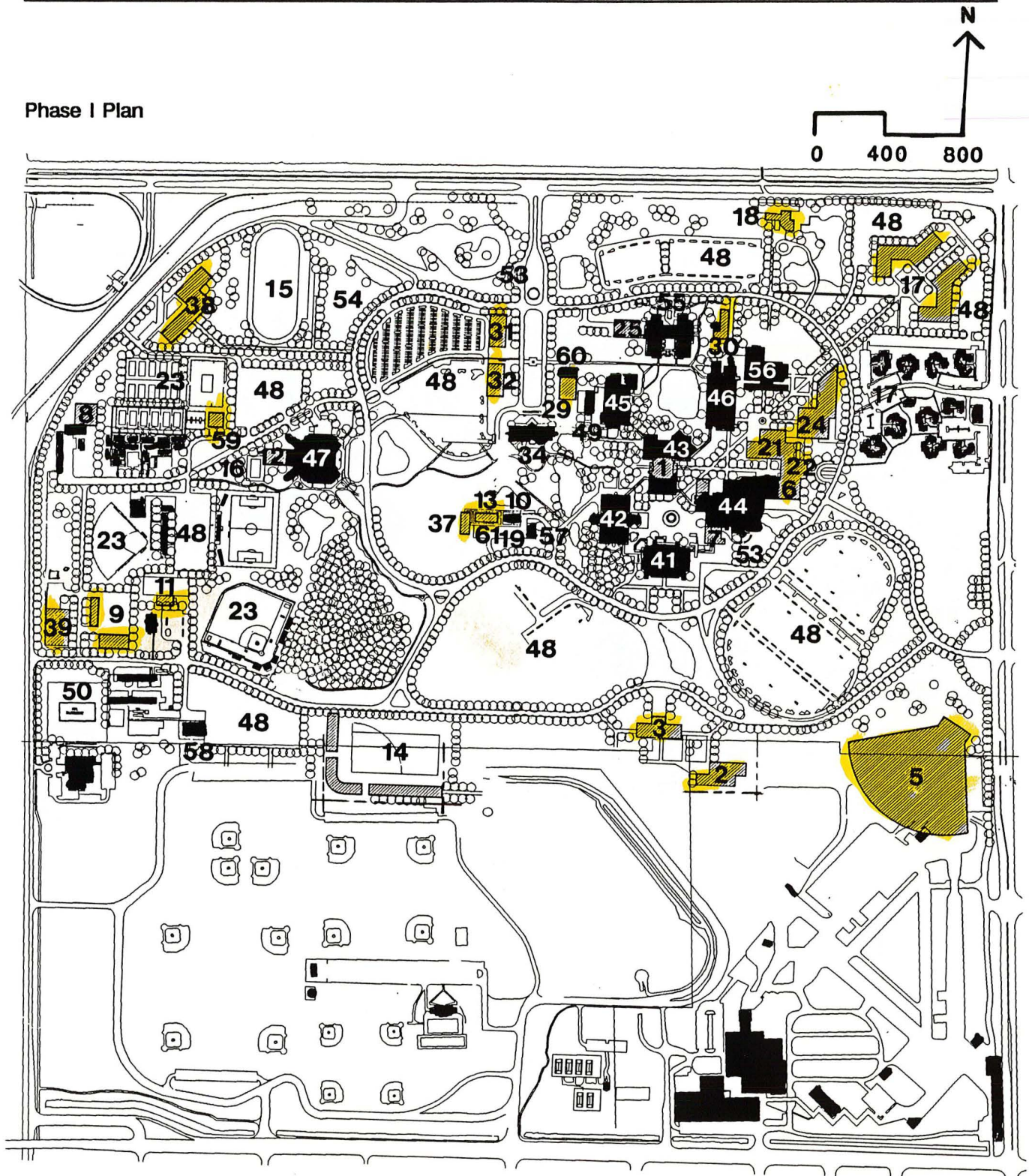
In Phase II, Physical Sciences will be built as an addition to the existing Chemistry and Physics Building. Two six-story dormitories will be built in the new housing area at SW 107th Street, each with 125,000 square feet. Two new parking decks, with a capacity of 2,000 cars each, will be built to replace the existing parking lots south of the academic core.

Phase III: 2001-2006

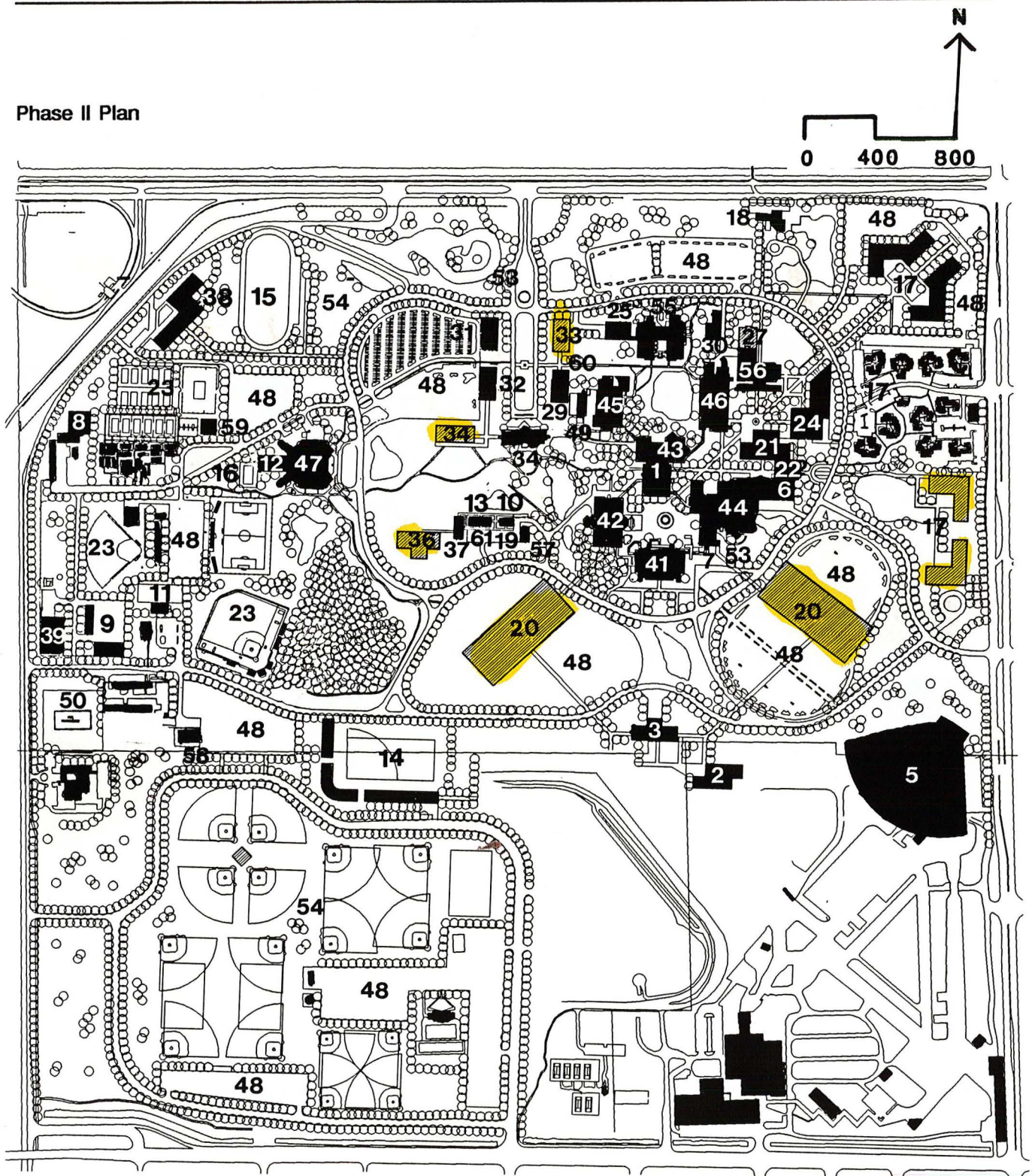
In this phase, a five-story Engineering III will be constructed adjacent to Engineering II. A new Molecular Biology Building will be built completing the Chemistry and Physics/Health and Life Sciences Quadrangle and the Arts III Complex will be built. A future building site for an undesignated building completes the development of the south mall. A third parking deck will also be built in this phase. This deck, with a capacity for 1,000 cars, is planned to provide approximately one half of the parking requirement of the Arena. Three new buildings for the future Professional School will be built along the west mall area. The International Conference Center and Business Innovation Technology Center will also be located in a new building on the west mall. This building is sized at 80,000 square feet to make it similar in scale to the surrounding buildings.

- | | | |
|-----------------------------|---|---|
| 1. Library Addition | 23. Recreation Area | 44. Ernest R. Graham University Center (University House) |
| 2. Arts Complex I | 24. Health and Life Science | 45. Viertes Haus |
| 3. Arts Complex II | 25. Engineering II | 46. Owa Ehan |
| 4. Arts Complex III | 26. Engineering III | 47. Golden Panther Arena |
| 5. Amphitheater | 27. Physical Sciences | 48. Surface Parking |
| 6. Student Center Expansion | 28. Molecular Biology | 49. Central Utility |
| 7. Bookstore Building | 29. Computing/SERDAC | 50. FPL Substation |
| 8. Purchasing Building | 30. Greenhouse | 51. Business/Technical Innovation Center |
| 9. Physical Plant Building | 31. Education | 52. Metro Station |
| 10. Public Safety | 32. Business II | 53. Visitor Information |
| 11. Child Care Center | 33. Business III | 54. Recreation Potential |
| 12. Fitness Center | 34. Business & Finance | 55. Engineering & Computer Science |
| 13. Health/Wellness Center | 35. Future Professional School | 56. Chemistry & Physics |
| 14. Multi-Purpose Stadium | 36. Social Sciences | 57. Duplicating Center |
| 15. 400 Meter Track | 37. Labor Research/English Language Institute | 58. Ceramics Building |
| 16. Pool/Spa | 38. Elementary School | 59. Tennis Center |
| 17. Student Housing | 39. Hurricane Center | 60. Health Building |
| Honor's House | 40. Future Development | 61. Health/Wellness Expansion |
| Greek Housing | 41. Charles E. Perry (Primera Casa) | |
| 18. President's House | 42. Deuxieme Maison | |
| 19. Faculty Club | 43. Athenaeum | |
| 20. Parking Decks | | |
| 21. Student Services | | |
| 22. Student Administration | | |

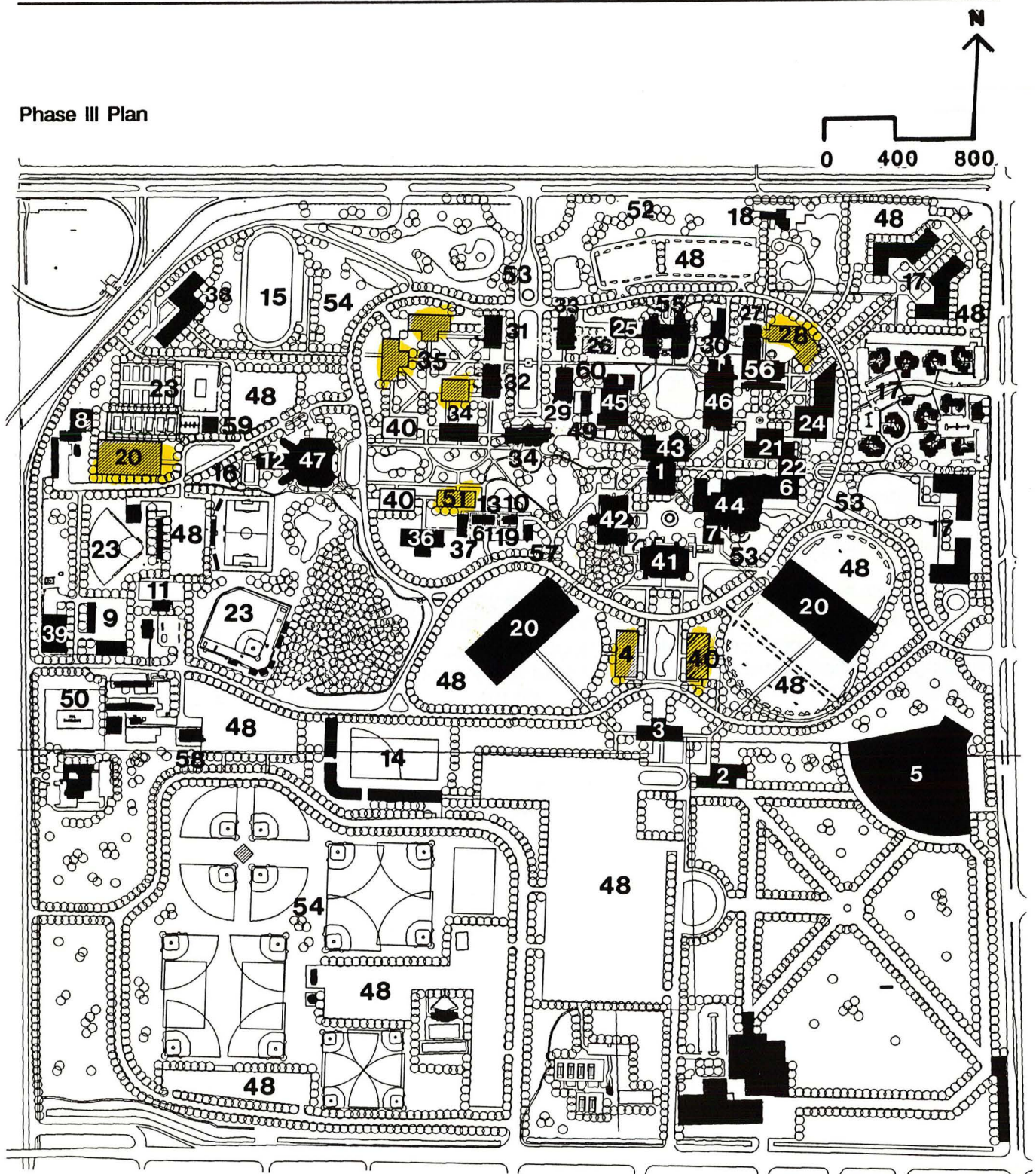
Phase I Plan



Phase II Plan



Phase III Plan



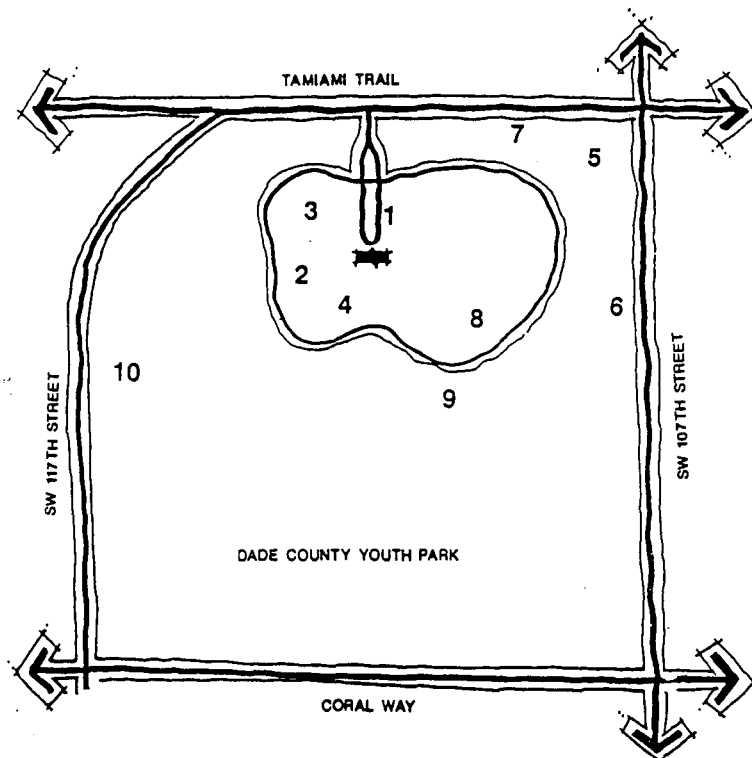
Campus Precincts

Precincts were defined as special areas of the campus, or "hot spots", requiring focused study to determine the best layout for campus spaces and buildings. These areas needed to be organized internally and then integrated with the overall framework of the master plan to enhance the campus fabric.

The following precincts were identified:

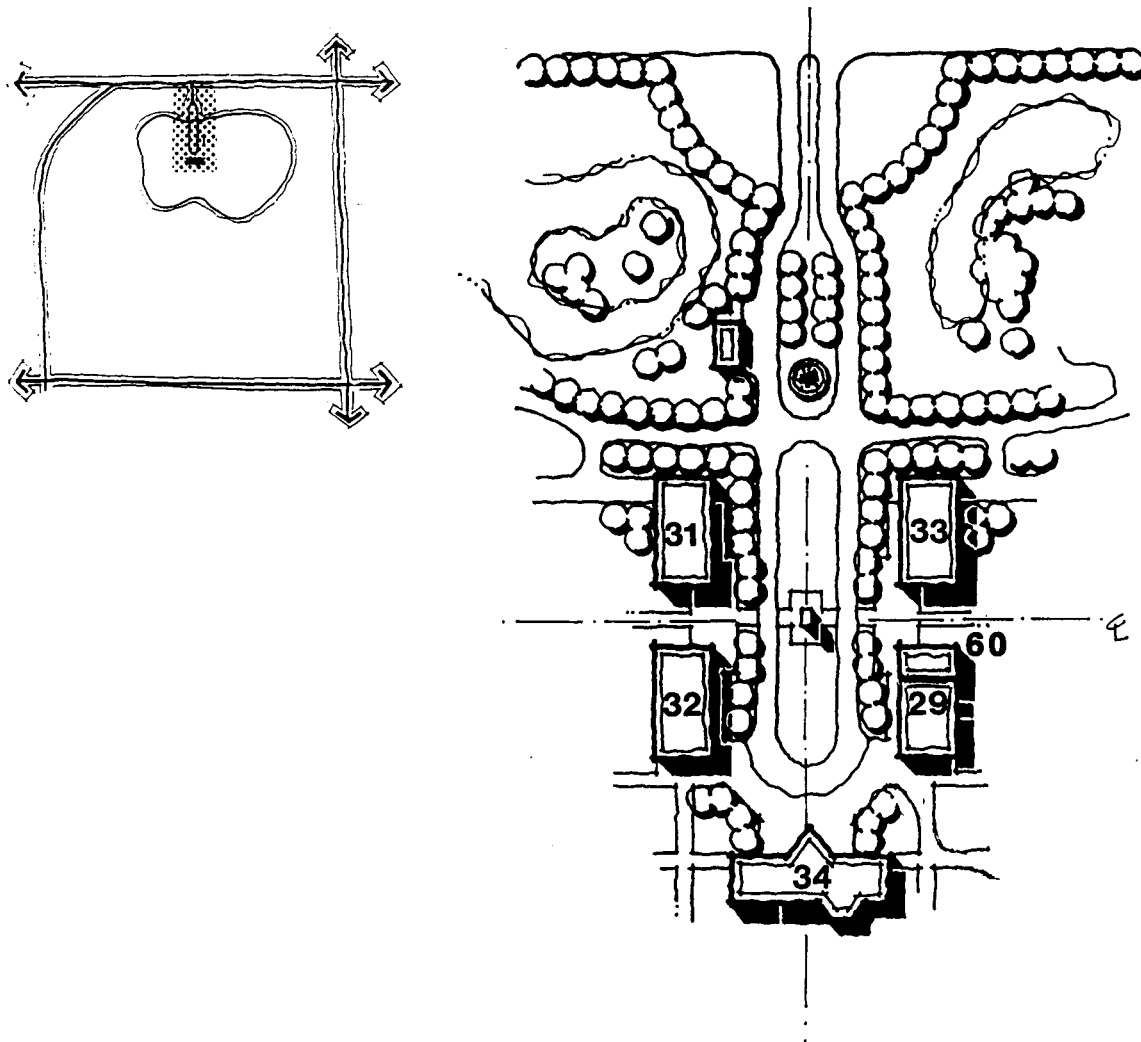
1. Entry Mall
2. West Mall Area
3. Professional School Quadrangle
4. Tower Area
5. Northeast Housing Corner
6. Student Housing at SW 107th Street
7. President's House
8. Bookstore Location
9. Arts Complex
10. Campus Support Area

The Campus Precinct diagram below shows the location of these precincts. Alternatives for each precinct were studied by the consultants and refined through discussions. The individual precinct diagrams, which appear on the following pages, illustrate the preferred layout for each area. Buildings identified in these diagrams are keyed to the legends for the Phasing plans. The solutions that were chosen for each precinct form the elements of the Facilities Plan.



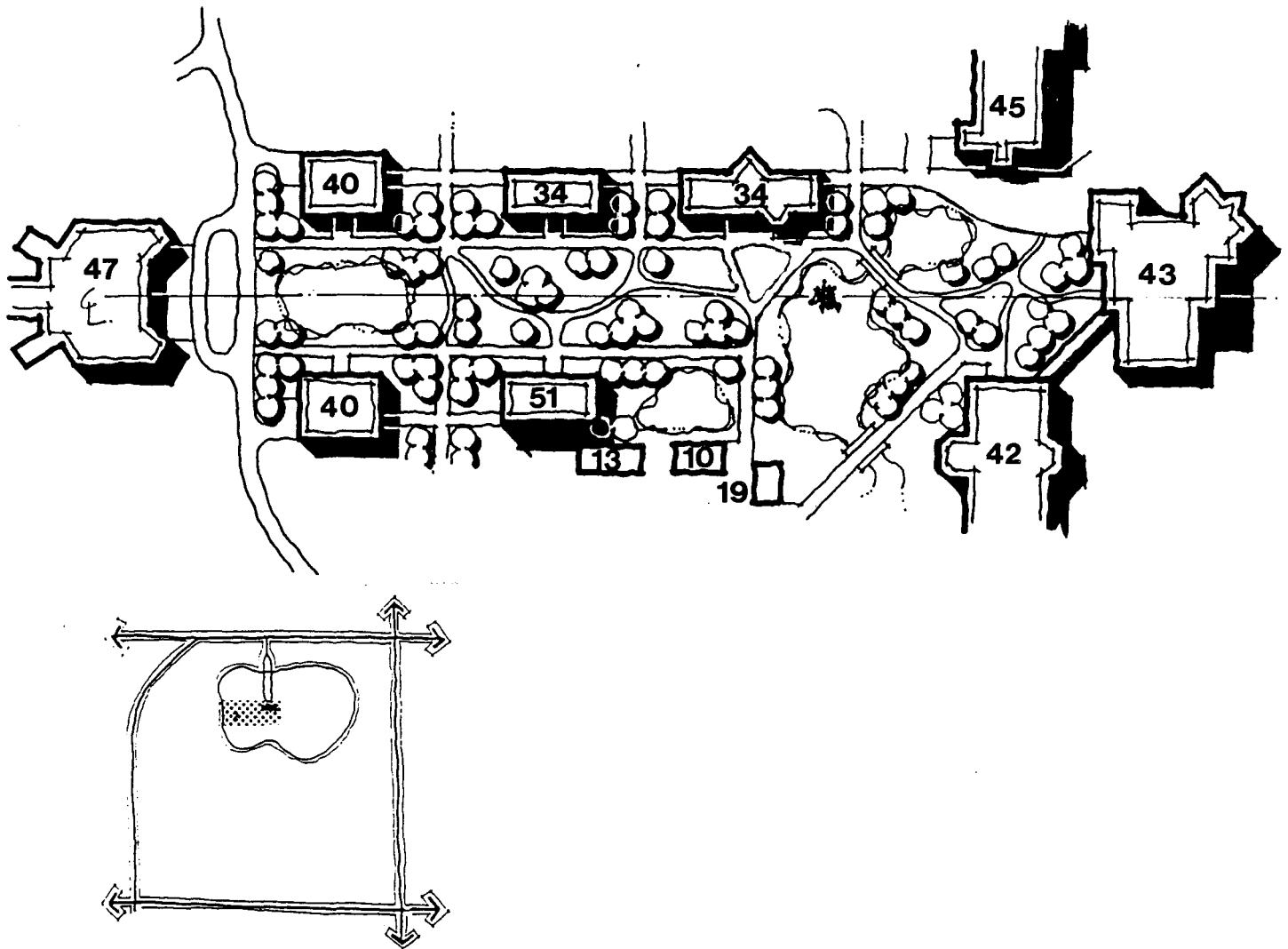
1. Entry Mall

The implementation of the entry mall concept, introduced in the 1987 Master Plan Update, has been initiated with the design of the entry mall and the construction of the School of Business Administration at the terminus of the mall. The campanile, originally described in the 1987 Plan, is maintained to add a significant landmark and focal point at this entrance. The image of the University and the prominence of this entry is further reinforced in this plan by locating four new buildings along the entry mall. To enhance their visual impact, these buildings are envisioned as having unified architectural design elements, such as tile roofs and an arcade along the mall. The existing Health Building should be absorbed in the new construction on the Mall. This building should be architecturally integrated with any proposed structure that will be designed.



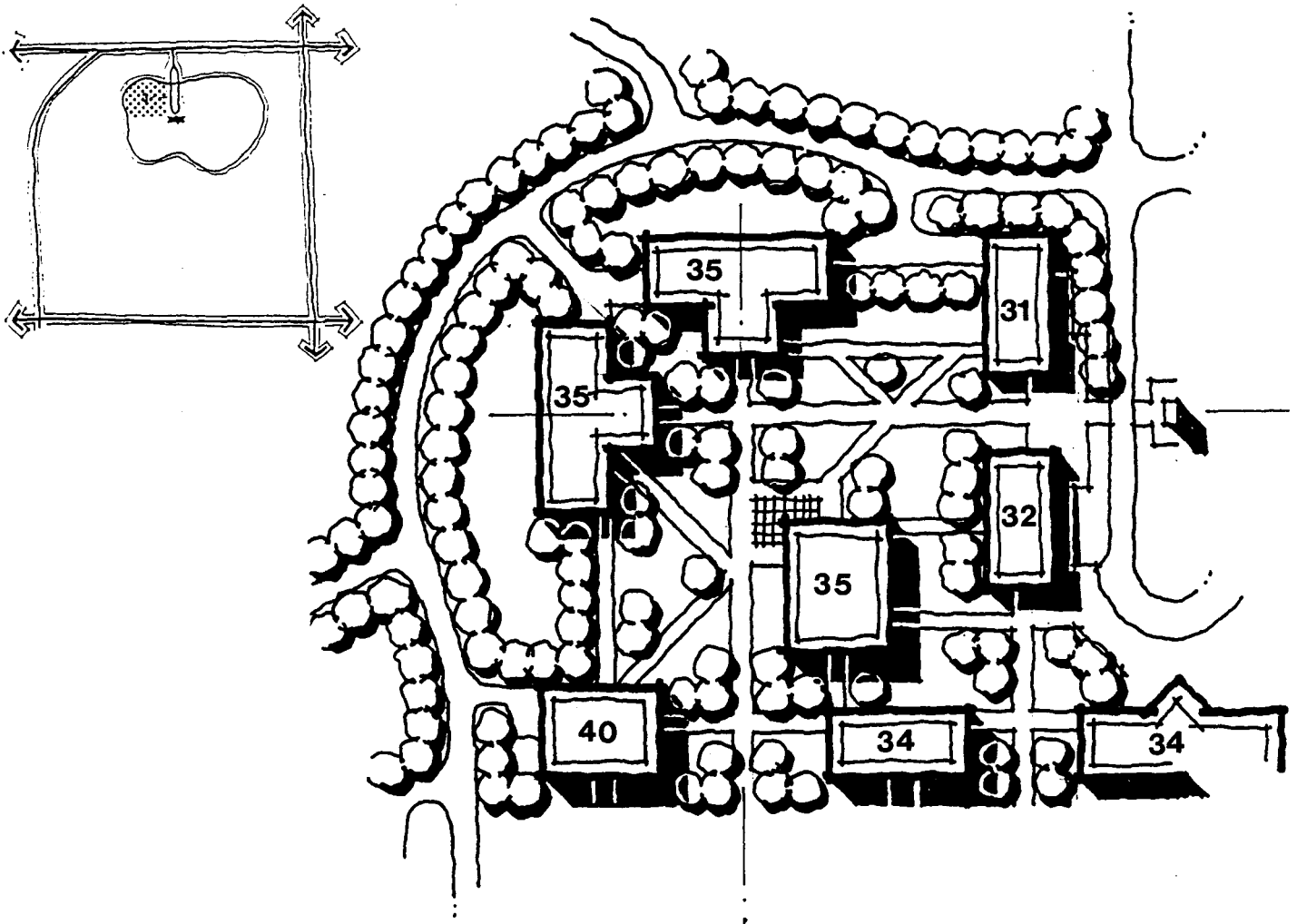
2. West Mall Area

The West Mall concept was introduced to reinforce the relationship between the academic core and the athletic and campus facilities on the west campus. The concept for the mall also integrates the entry mall and the new School of Business Administration as well as the proposed Professional School quadrangle located to the north. The mall is designed as an informal, pedestrian-oriented space with potential sites for several new academic buildings. The West Mall area was studied emphasizing the east-west connection between the Library and the Golden Panther Arena and the Professional School area to the north. In the preferred alternative, which is illustrated below, the buildings are sited along the mall to correspond to the building sites in the Professional School quadrangle to the north and to maintain open space connections between these two areas.



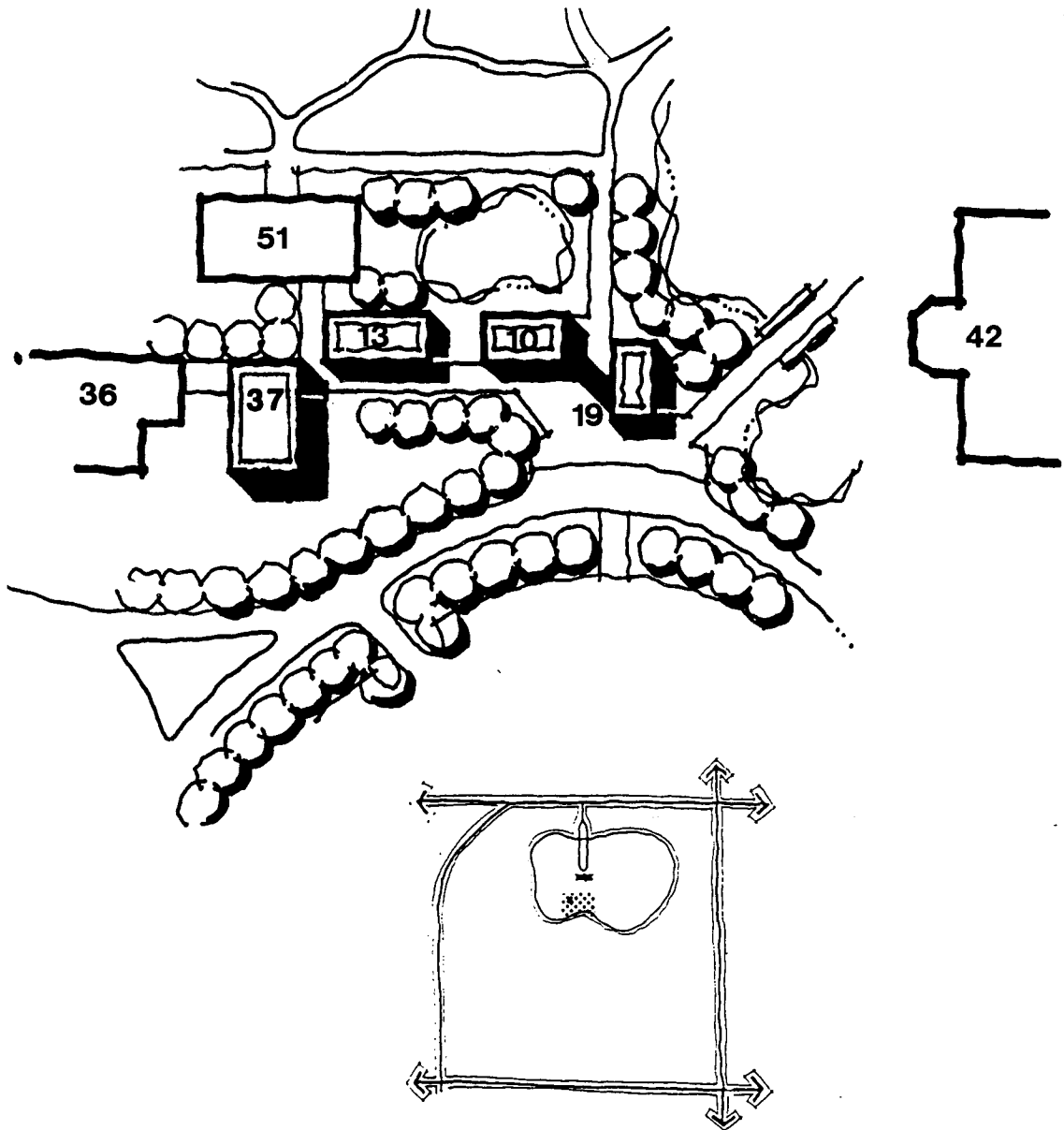
3. Professional School Quadrangle

A new professional school area is planned to the west of the main campus entrance. This area of the campus provides both a prominent location and a private setting which is removed from the central campus but still within the loop road. Two new buildings are located near the loop road, and vehicular connections to the loop road are provided. A third building sited to the southeast completes the quadrangle. The buildings are located to frame a central courtyard, maintaining this space as an open area. The quadrangle relates visually to both the main entry mall and the west mall, but has an internal focus.



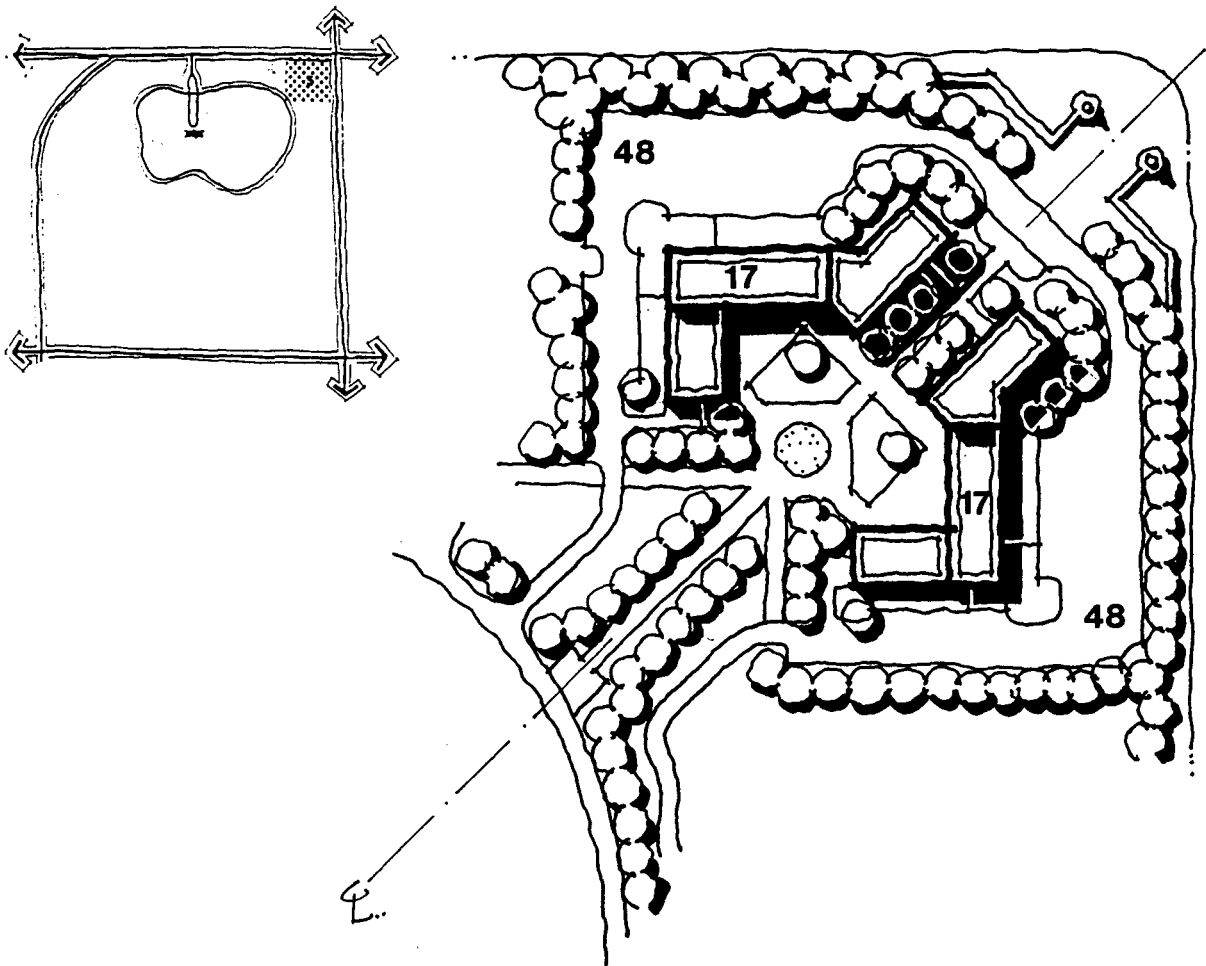
4. Airport Tower Area

The old Airport Tower area is planned as a special area of the campus for smaller facilities which are currently included in the program for University Park as well as other small facilities which may be added at a later time. Facilities planned for this area are the Faculty Club, Labor Research Studies Center, Public Safety, and the Health and Wellness Center. Four new buildings frame a courtyard with the Tower at the center. Vehicular connections to the loop road are provided and a pedestrian/open space connection is maintained with the School of Business.



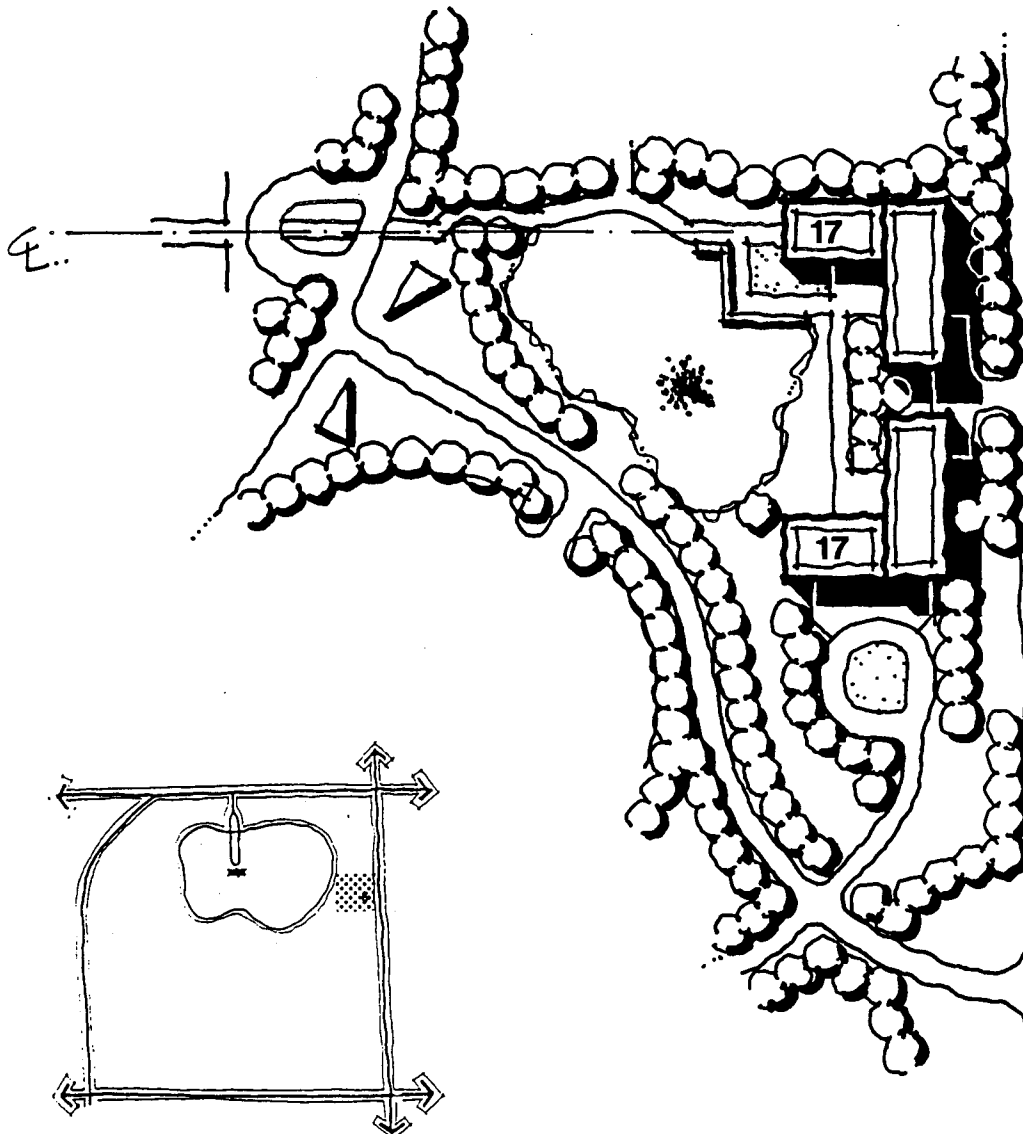
5. Northeast Housing Corner

New student housing is planned near the existing student housing area in the northeast corner of the campus, consistent with the 1987 Master Plan Update. The new housing is intended to establish a strong image for the University at this corner and a view through the housing area to the main campus from the northeast. This image could be further reinforced by a gateway, walls, and trees, also providing privacy for the housing area. The new housing would consist of two dormitory buildings, each with a mid-rise section located near the street, and a low-rise section facing the inner campus. The dining area and commons area would be located in the low-rise portion of the complex. The dormitories are organized around a central courtyard, providing an internal focus to the new housing area, and creating a sense of community. A new pedestrian street connects the courtyard with the main campus. An S-shaped road for vehicular circulation integrates the new and existing student housing areas and provides access to resident student parking, located at the periphery of the student housing area. Connecting this road to the loop road serving the main campus is not recommended, as this would encourage increased traffic through the student housing area.



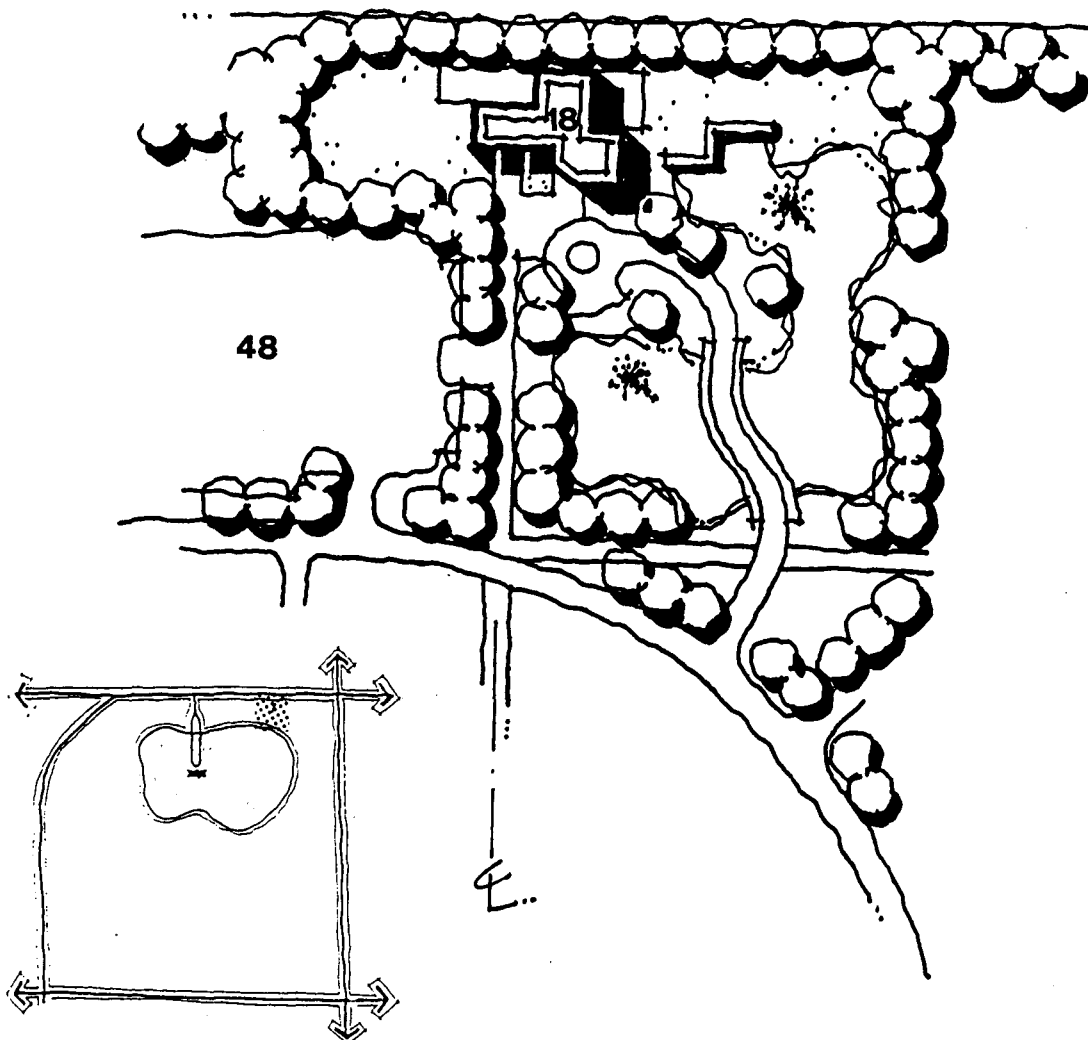
6. Student Housing at SW 107th Street

To accommodate the program for student housing, the student housing area is extended to the south along SW 107th Street. The two new dormitories, which have parking for students included in the structure, are accessible from the SW 107th Street campus entry. This housing area is also conveniently located near the campus core with pedestrian connections to the Student Center.



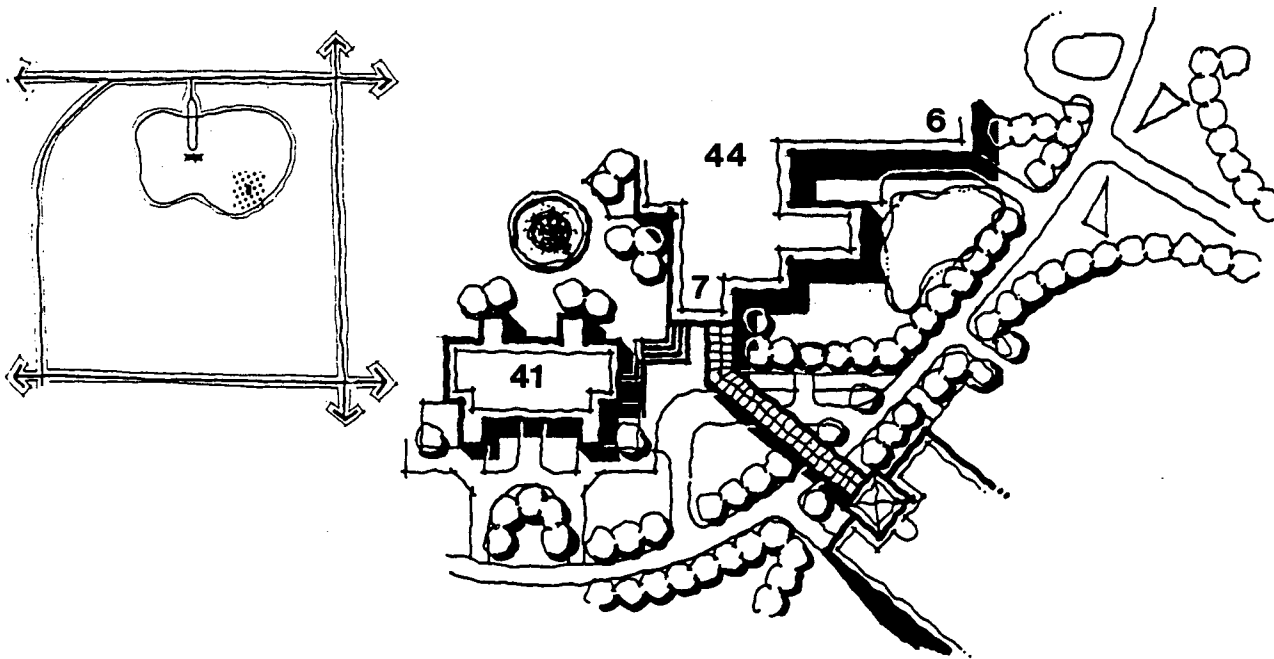
7. President's House

The site selected for the President's House, located off the loop road near the student housing area, has the advantages of accessibility from the loop road and visibility from the campus and the Tamiami Trail. Potential noise, traffic, accessibility, visibility, and attractiveness of the site were criteria used in selecting this site. Among the amenities of the site are relative privacy, proximity to the lake, prominence on the loop road and potential for landscape treatment. The landscape design incorporates a new lake, a pedestrian connection to the Chemistry and Physics Building and other campus buildings, berming for additional privacy, and integration with the landscape treatment for the main campus entrance which is currently being developed. To enhance views to the house, the principal public access road curves and bridges across the lake. The President's House is envisioned as presenting a formal facade to the main public entry along the loop road. Public function areas would be oriented toward this entry, while the living quarters would be separate and lead to a private garden.



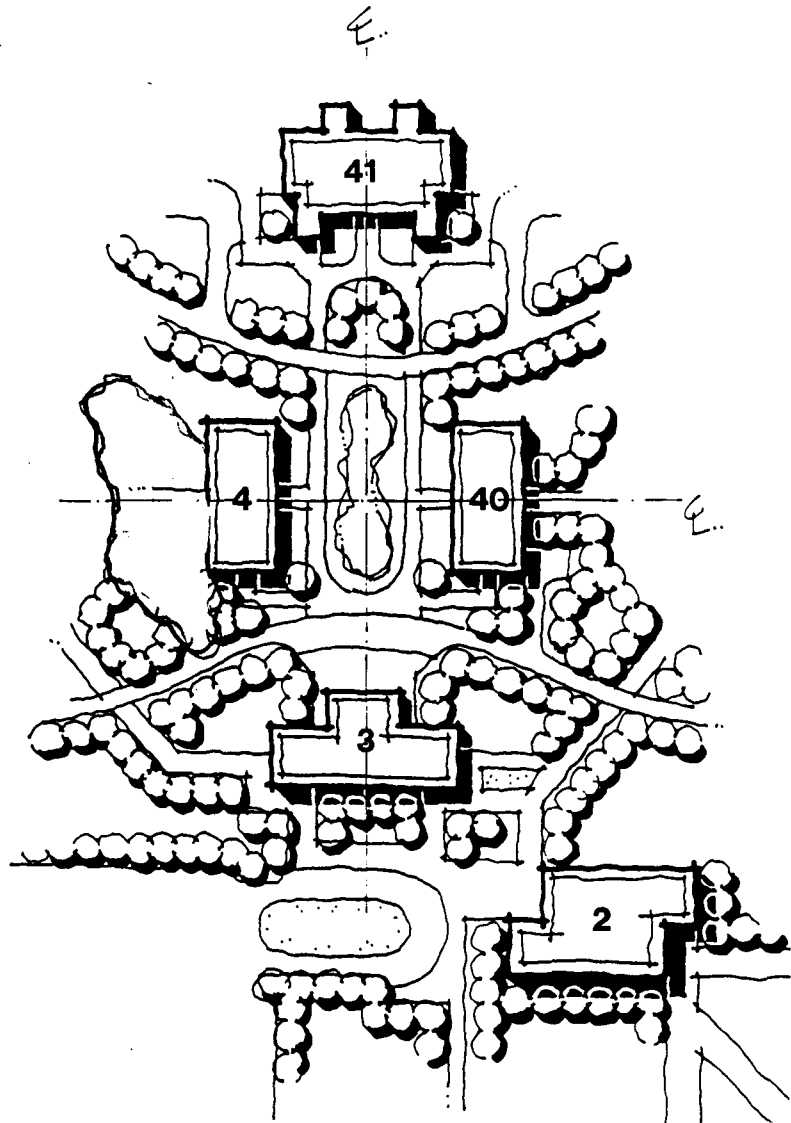
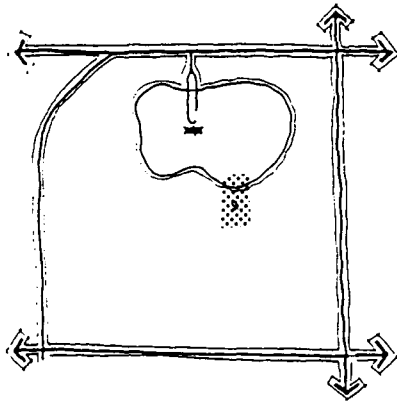
8. Bookstore Location

During the design phase, five alternative locations for the Bookstore were identified and evaluated. The evaluation was based on a ranking system which incorporated the following criteria: vehicular access, pedestrian access, visibility, continuity with existing campus organization, service access, fire access and construction/implementation. Based on this analysis, the site to the south of the Graham Center was recommended. This site offers both direct access from the loop road and the potential for parking, which would enable the Bookstore to serve the public community, and a core campus location in an area of high student pedestrian traffic. This building site would also create a well formed space with existing campus buildings and a highly visible focal point from the interior or exterior of the academic core. Furthermore, it will allow future expansion of academic areas and would not interfere with construction of the Library addition. Finally, this site will allow for relatively unobtrusive service and excellent fire access to all surrounding buildings. The Bookstore would have a physical connection to the Graham Center, integrating the functions provided by these facilities. The small amphitheater that now exists between the Graham Center and the loop road should remain as an amenity for student activities.



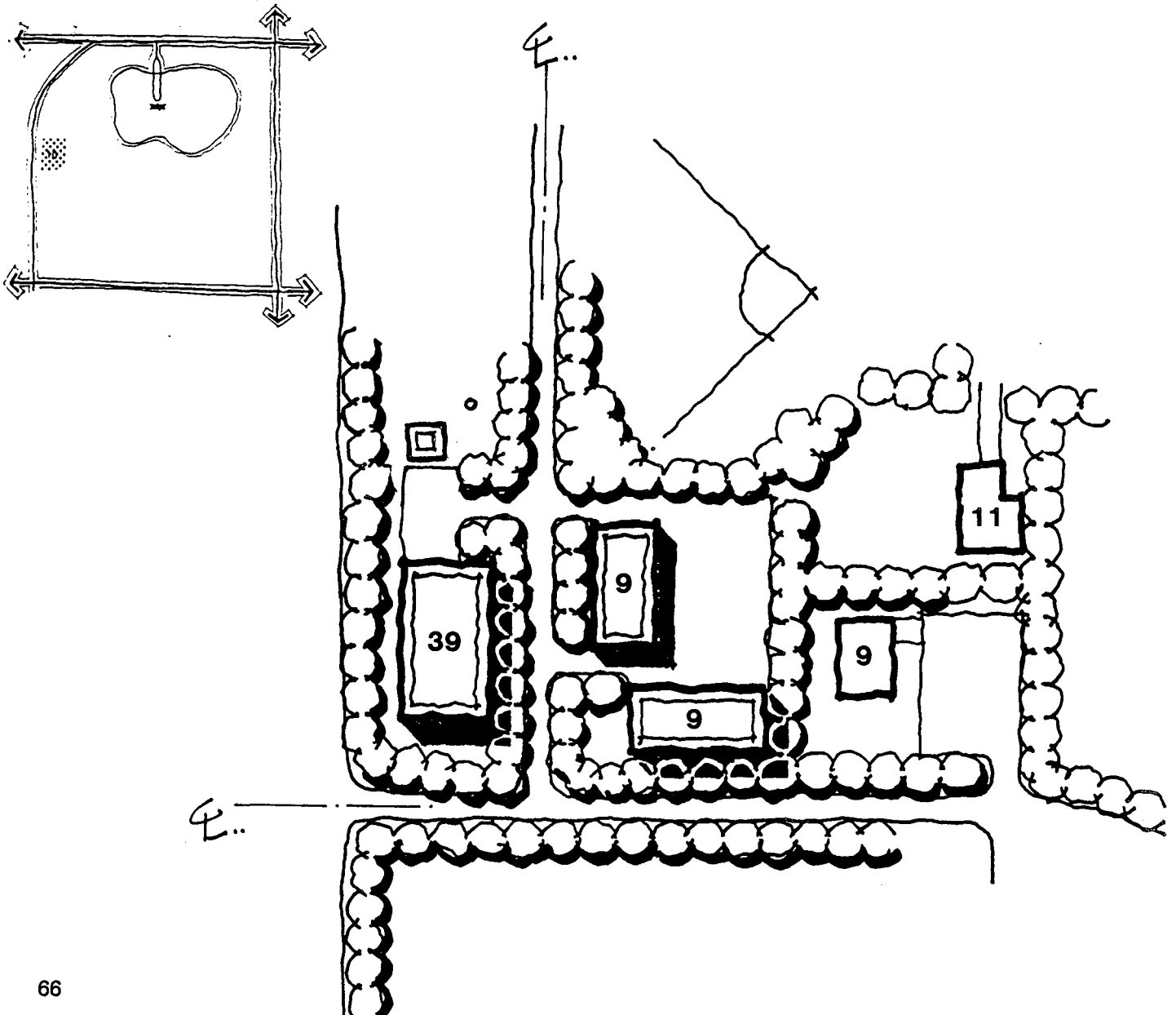
9. Arts Complex

Arts Complex I, which will be a facility shared by FIU and the Dade County Youth Fair, is located on property owned by both parties. Arts II and Arts III, which will be located to the south of the Perry Building on FIU owned property, will reinforce the connection between the three arts buildings and the main campus. Arts II and Arts III are located along a pedestrian mall, together with a site for an undesignated future building. The east-west access road and the campus loop road provide access to the complex and to the adjacent parking decks. When the mall development to the south of the Perry Building occurs, portions of the existing fruit tree arboretum will be carefully relocated and replanted in and around the new pond and buildings.

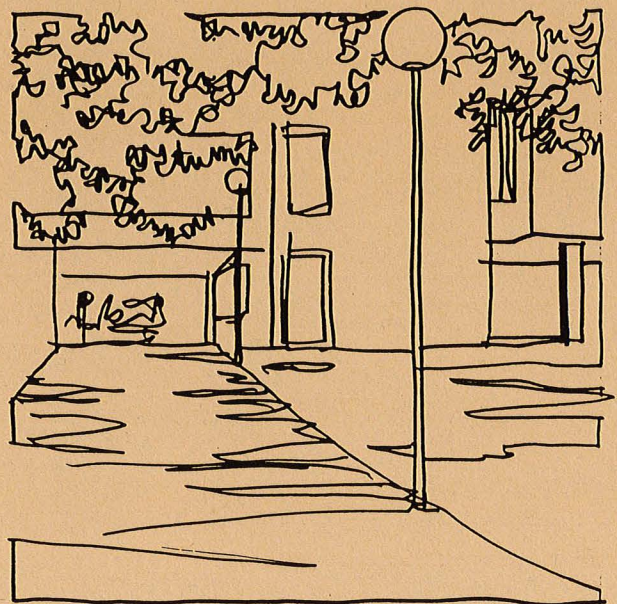


10. Campus Support Area

Expansion of the campus support area on the west campus is planned to provide new facilities for the Hurricane Center, Child Care Center and new Physical Plant buildings. The Child Care Center is to be combined with the existing public facilities building. The facilities for the Hurricane Center will include the center building, the inflation and balloon release building, and parking. A new access road with connections to the loop road and new parking areas are planned to serve this area of the campus.



7. PLANNING ANALYSIS: NORTH MIAMI CAMPUS

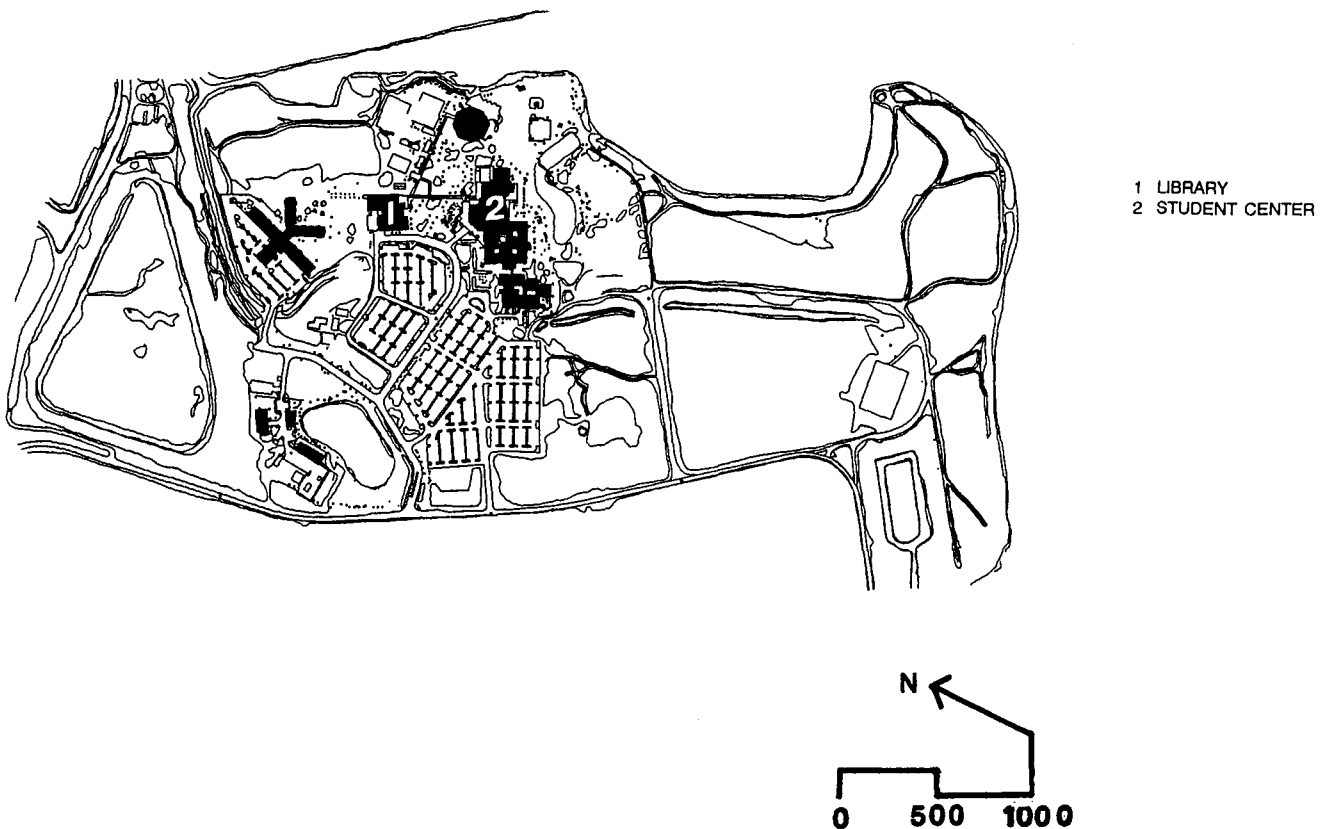


7. Planning Analysis: North Miami Campus

Existing Conditions

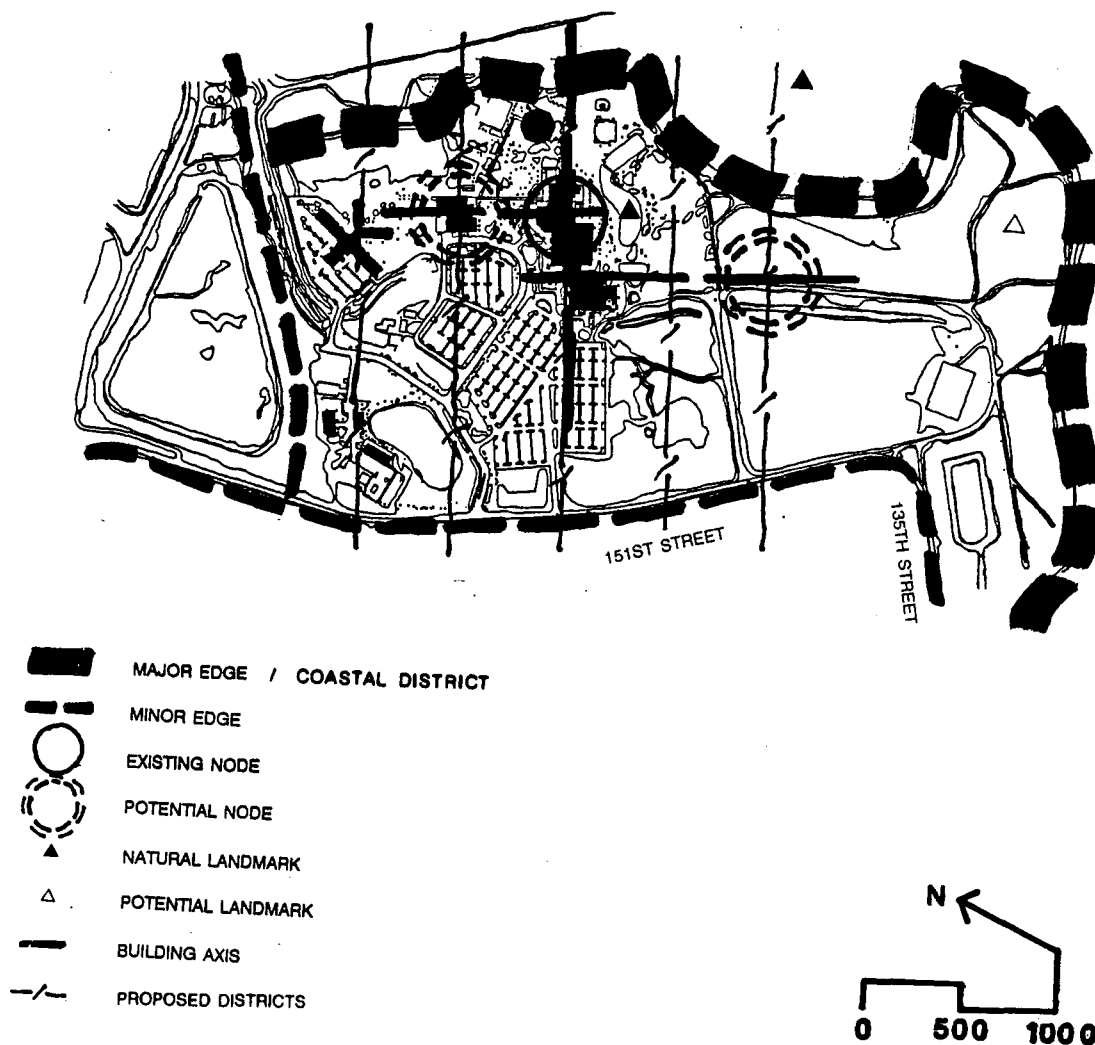
The North Miami Campus is organized in three linear bands: a waterfront/open space zone, a building zone, and a parking and circulation zone. Along the waterfront, the band of open space provides a pedestrian zone which allows panoramic views of the waterfront from the campus. Campus buildings form a linear band parallel to the waterfront. Parking and circulation form the third zone, providing access to the campus buildings without intruding upon the waterfront or open space. By restricting cars to this zone, a pedestrian campus is maintained.

Since the 1987 Master Plan Update was completed, new development on this campus has included the expansion of the Library, the Holocaust Center, and new parking areas.



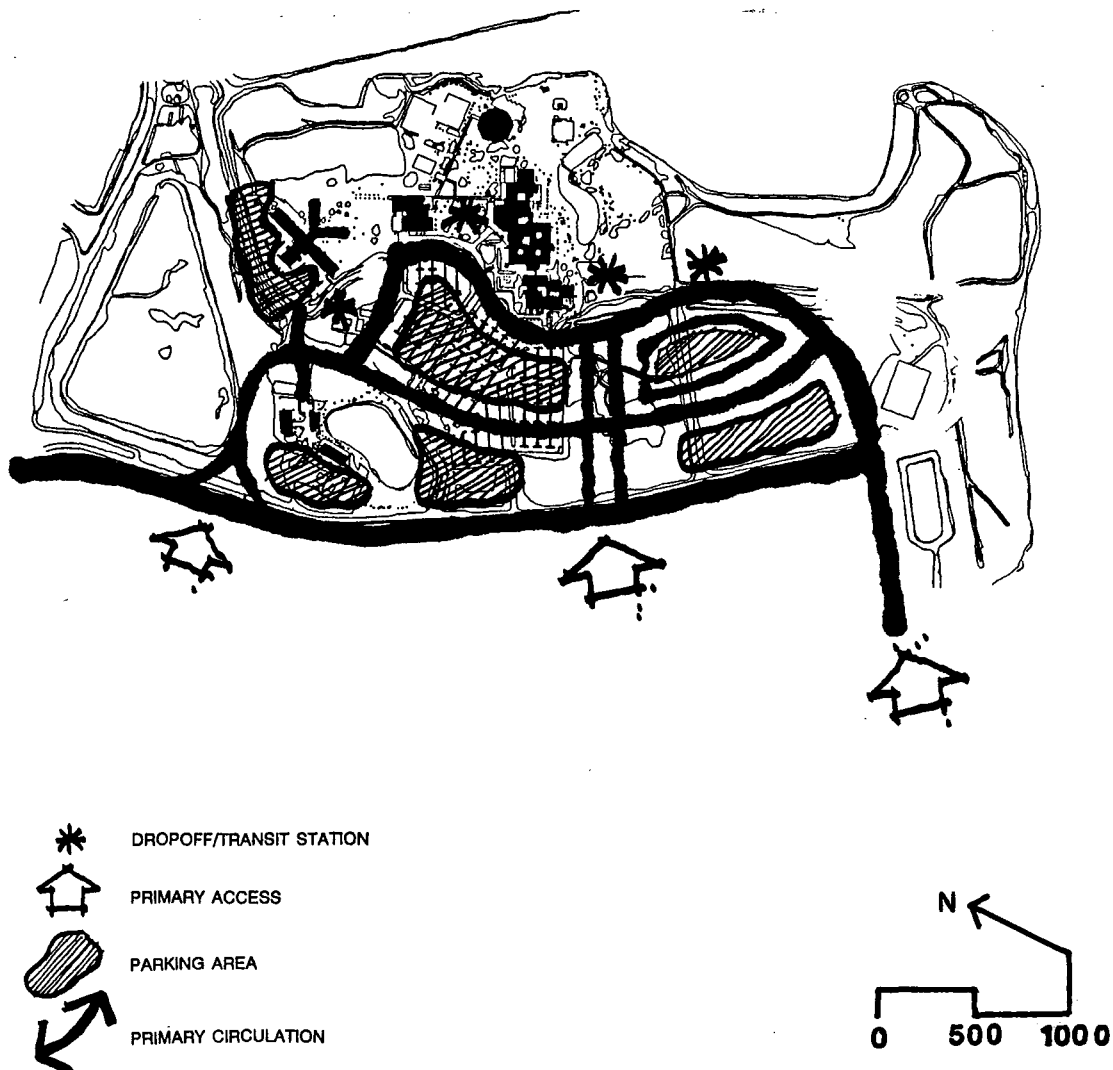
Visual Form Analysis

The Visual Form Diagram of the North Miami Campus identifies the edges, districts, nodes, landmarks and paths which give the campus its form. The campus is bounded by 151st Street and the waterfront, which form its edges. Districts include the academic buildings, student housing, recreation and campus support. Nodes, or activity centers, occur at the juncture of pedestrian routes. Paths for vehicular circulation include the access road to the campus from 151st Street and circulation roads within parking areas. Since this is a pedestrian campus, pedestrian paths are also important in understanding the visual form of the campus.



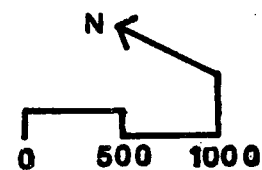
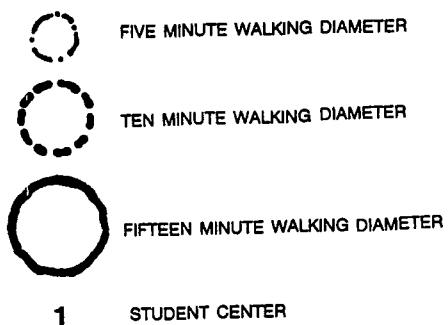
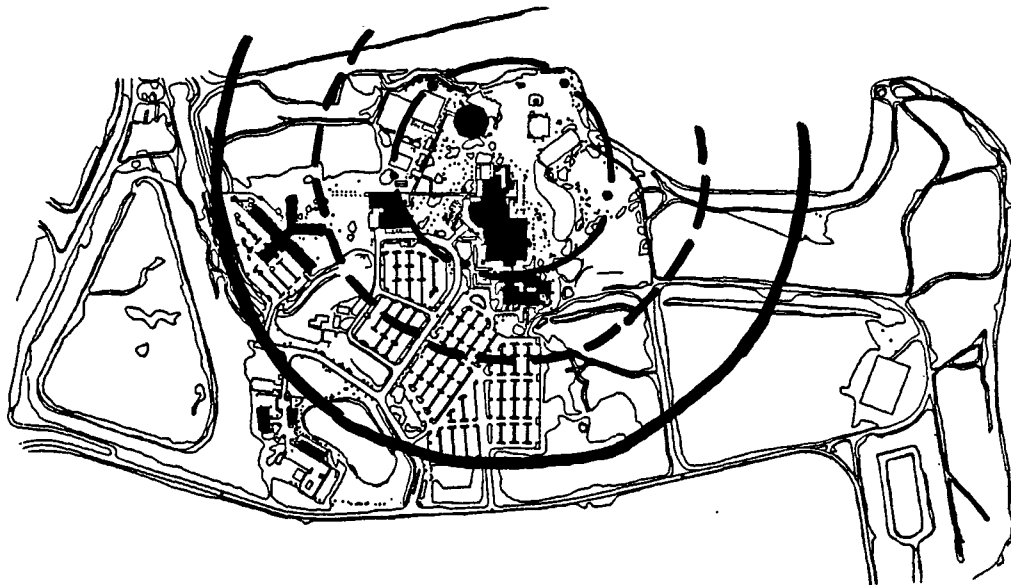
Circulation, Parking and Access Analysis

The vehicular circulation system includes the access road from NE 151st Street and the parking areas. A second entrance from NE 135th Street will provide a direct connection to the regional highway system and improve access to the campus. A main entrance road with a mall will provide a ceremonial entrance to the campus. The 1987 Master Plan Update has been followed in the construction of additional parking areas with the main entrance road shifted southward to focus on the new towers and accommodate future parking decks.



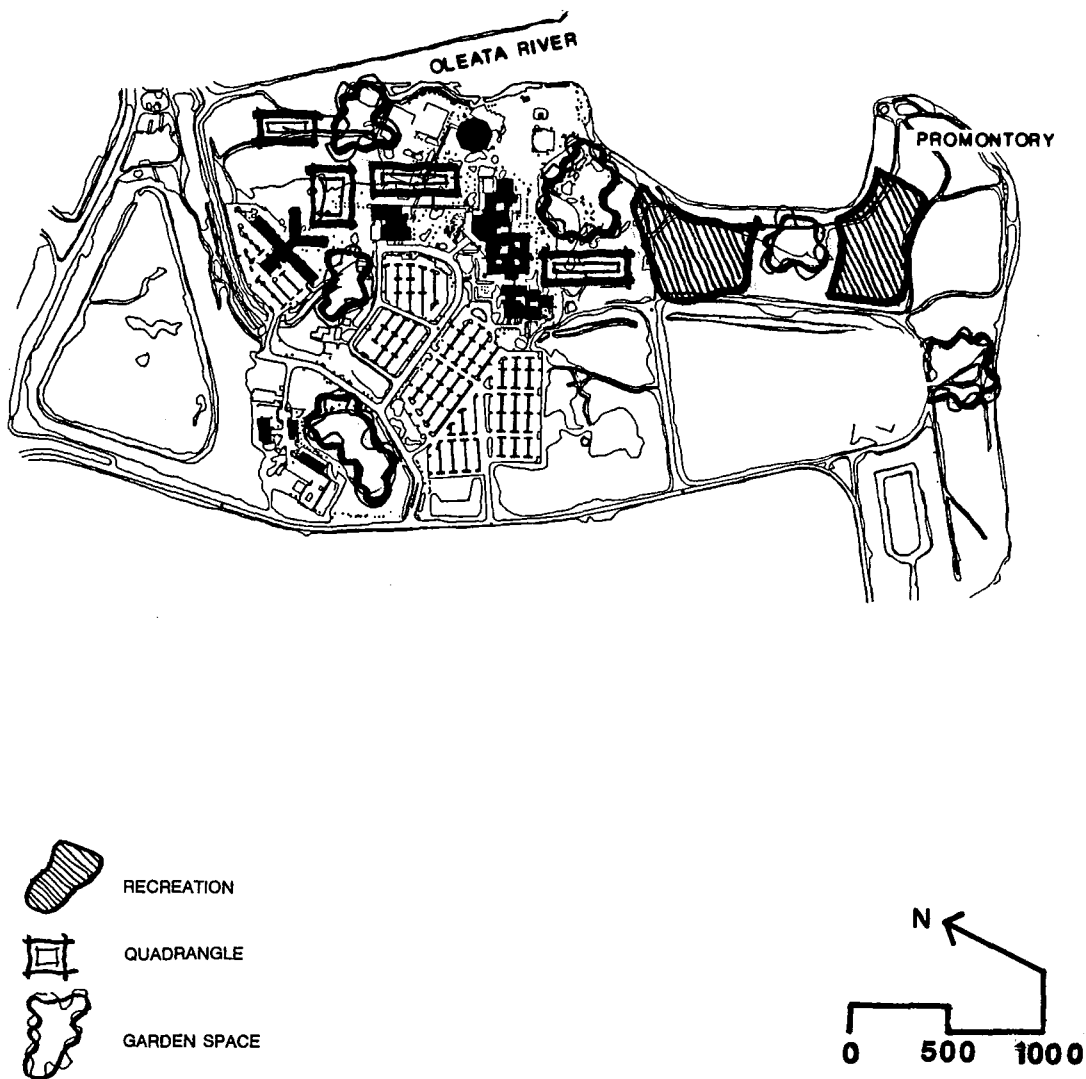
Pedestrian Circulation Analysis

The pedestrian circulation system is organized to take pedestrians from the parking areas to the academic facilities, student housing and waterfront areas. An informal pedestrian spine connects the academic, housing and recreation areas. The future development of the North Miami campus should reinforce the pedestrian character of the campus.



Open Space Analysis

As shown on the Open Space diagram, the proposed future development of the campus would reinforce the existing pattern of open space by maintaining a pedestrian campus and by preserving the band of open space along the waterfront. Of special importance is the garden and pathway system located between the academic buildings and the Oleta River to the northeast. The promontory to the east of the developed campus is held in reserve for the future.



Utilities Analysis

No major utility work has been done on the North Miami Campus since the last 1987 Master Plan Update, except for a water main extension to serve some smaller projects as well as the links for the new Library Project.

Projected campus growth is being considered on the areas south of Academic II Building, terrains west of the Lagoon, and on the peninsular promontory south of the Lagoon.

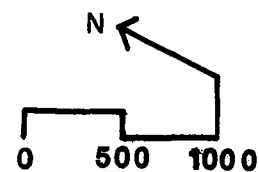
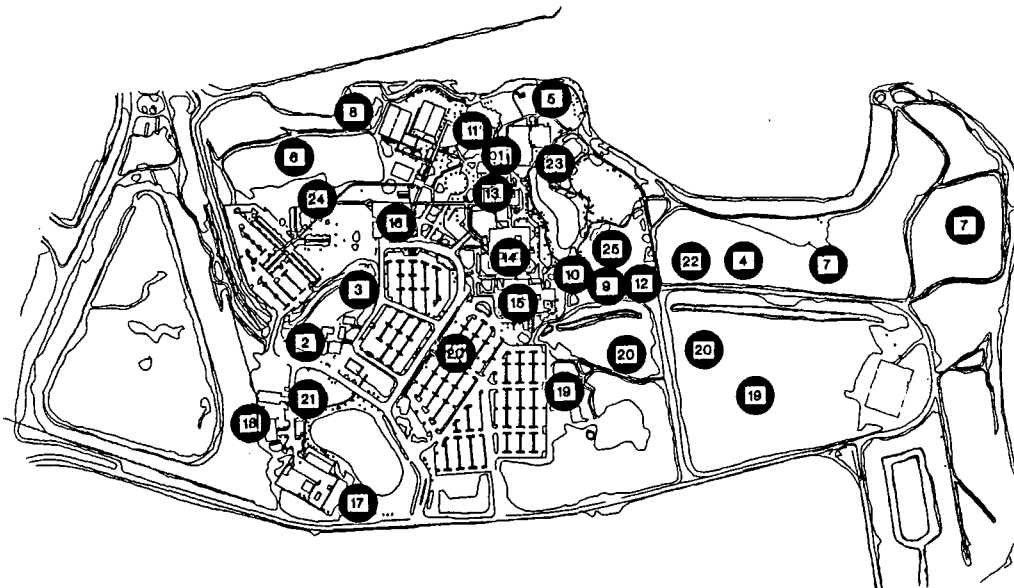
There are both sanitary (gravity) and domestic/fire water mains of adequate size bordering these areas running on an approximate north-south axis. Connecting lines to each individual building will be required as well as the formation of secondary water loops for reliable fire protection.

Electrical and telephone services will have to be extended from existing lines either from the campus core or from NE 135th Street.

Chilled water services from Central Utility Plant are available. They were capped for future extension near the Academic II Building. At present, the plant is being used considerably below its capacity. The nature and usage of future buildings will determine if they should be connected to the Central Plant or be served by a stand alone system.

Programmed Facilities

The Programmed Facilities diagram below shows suggested locations for new facilities. The numbers on the diagram refer to the Program Summary chart, which is in the Implementation Plan section of this report. New academic expansion will extend the existing pattern of development for academic facilities within the building zone, and will be oriented toward the waterfront to take advantage of the views. The new Conference Center is located as the terminus of the building spine. It is sited to benefit from waterfront views, accessibility, and is in an isolated location adjacent to the academic center. The new towers and campus development would be located near the Conference Center where they would conveniently serve both residential and commuter students. A new professional school may also be located in one of the towers. New student housing would be located near the existing student housing area. A cluster of smaller student service and community related facilities would be located near the existing student housing and parking areas.

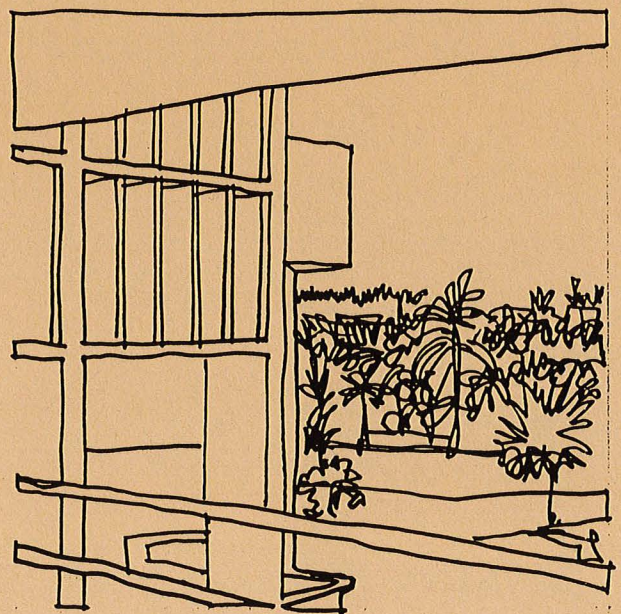


Planning Issues: North Miami Campus

The analysis of the campus identified the following planning issues:

- New development should follow existing patterns. The open space along the water should be maintained and new buildings should be aligned with existing development.
- Except for service, no motor vehicles should be allowed to penetrate the pedestrian and academic zones.
- The pedestrian quality of the inner campus should be preserved and vehicular circulation should not be extended to the water.
- The unique qualities of the site, its waterfront and views, should be preserved and enhanced by the future development of the campus.

8. THE PHYSICAL PLAN: NORTH MIAMI CAMPUS

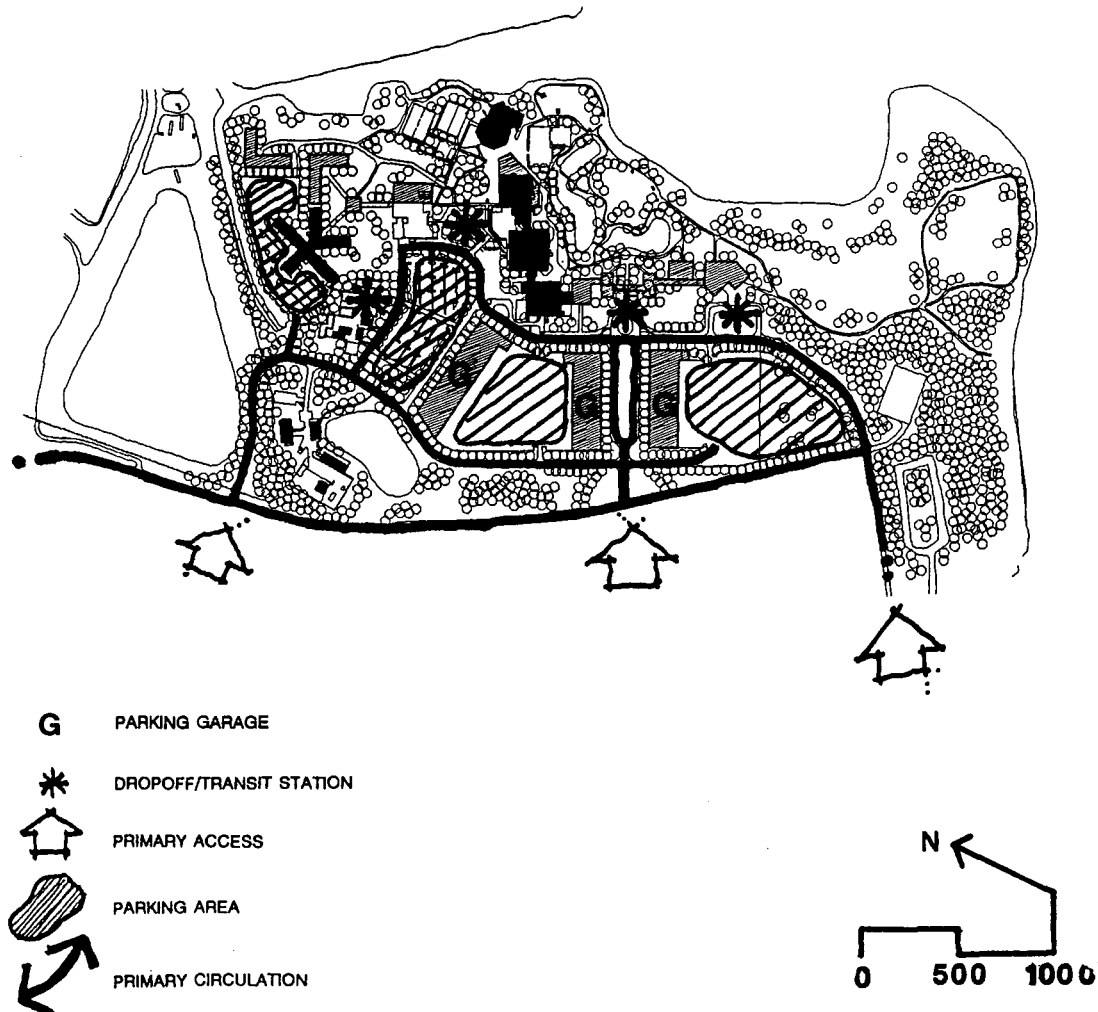


8. The Physical Plan: North Miami Campus

Circulation and Parking Plan

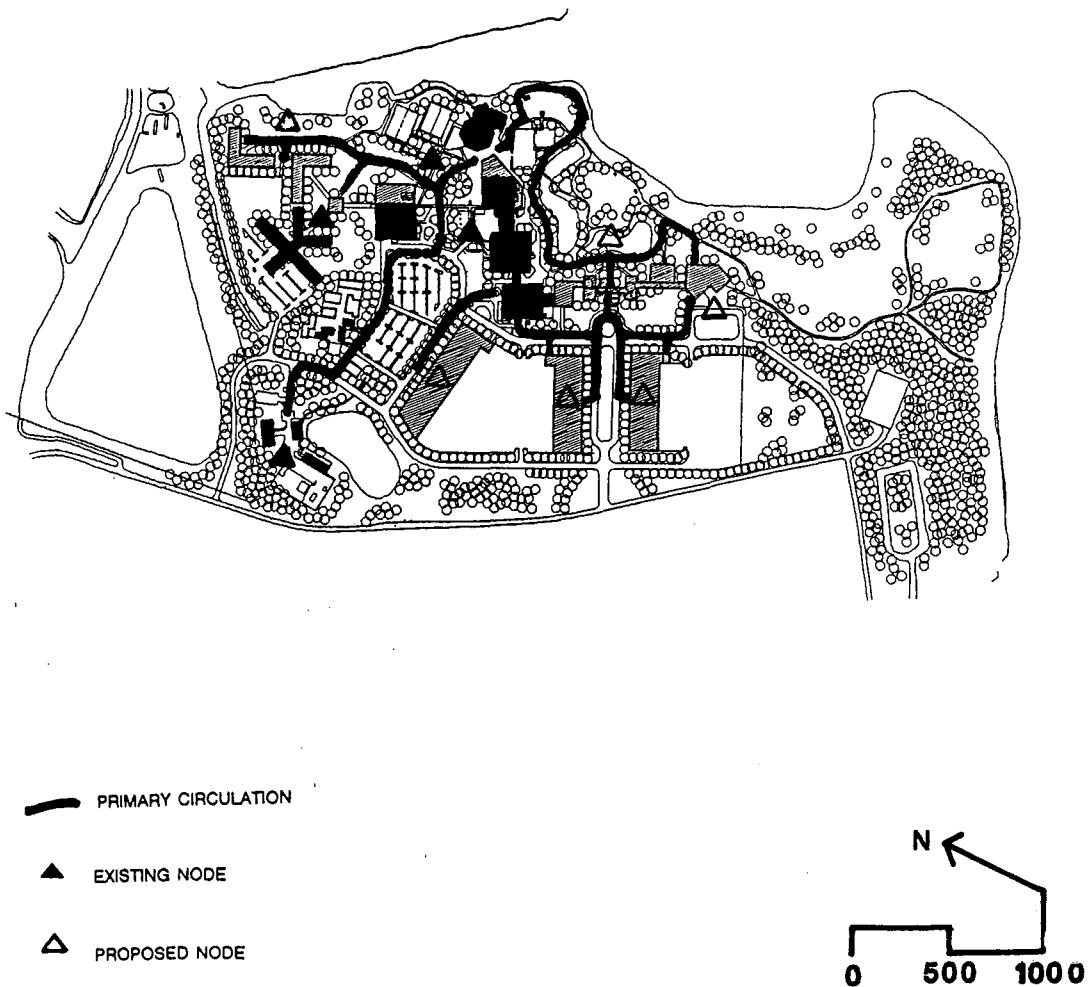
The road system proposed in the 1987 Master Plan Update is an organizational tool for the development of this campus. The proposed new entrance mall can be constructed with the increase in parking that is required for Phase I. In the first phase opening NE 135th Street is necessary for proper access for the new Conference Center.

Parking for 3,000 cars was provided for in the 1987 Master Plan. It is estimated that 4,000 cars would be required in the year 2006. To accommodate this additional parking, two parking decks are proposed to flank the entrance and provide parking space for 500 cars in each deck.



Pedestrian Circulation

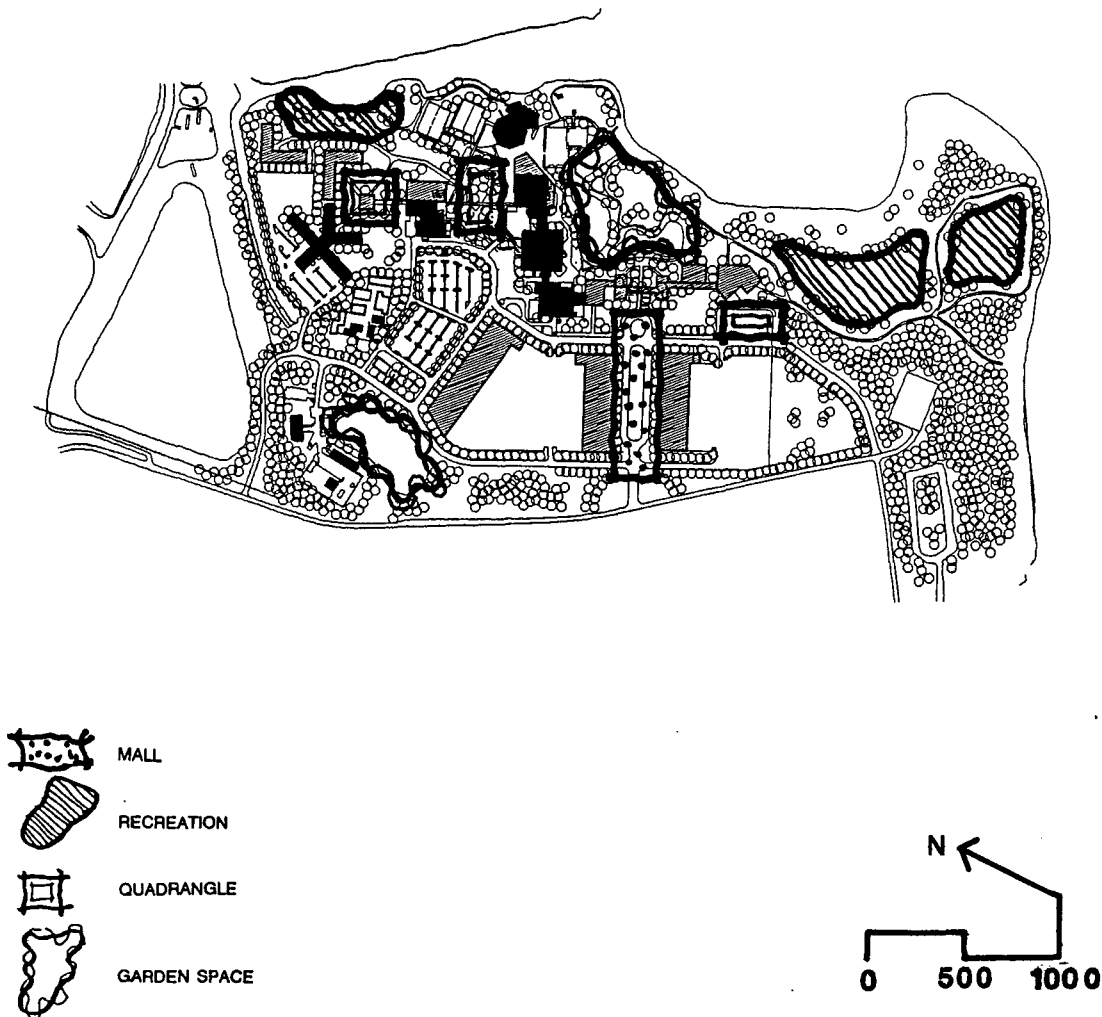
The pedestrian circulation plan maintains the pedestrian character of the academic core and extends the pedestrian linkages to encompass new development and provide connections to parking areas. Covered pedestrian links between buildings should be provided with all new projects. The waterfront and inner campus are preserved as pedestrian zones.



Open Space Development

The development of the entrance mall with the focus on the towers will become the image of the North Miami Campus. Together with the view of the water and bay beyond, this is truly a unique opportunity to provide a dynamic campus space and an image for the North Miami Campus. It builds on the existing pattern of open space by maintaining a linked pedestrian campus and preserving a band of open space along the waterfront.

The natural area with ponds and gardens enhances the image and provides a campus space with a view unmatched at other universities.



Infrastructure

North Miami Campus Utility Analysis and Recommendations

The purpose of this analysis is to establish the status of the water, sewer, drainage, chilled water (air conditioning) supply/distribution, electrical, and telephone systems at this campus and to evaluate the infrastructure requirements in relation to the planned campus growth. A summary of the analysis is presented below and the complete utilities analysis and plans are provided in Appendix D.

Water Distribution Summary

The existing internal water distribution system of the North Miami Campus meets the present consumptive and fire flow demands.

Future expansion to the network in the area of the proposed dormitories should coincide with that project. Expansion of the loop by the recently built HRS Complex should be closed to the water main by the Library. Approximately 500 feet of 8 inch diameter pipe are required. This section should be included with the future individual structures planned for this general area. (See Figure VI).

The other area of expansion is to the southwest of the existing parkway. This proposed loop will serve buildings and parking garages planned for this area.

Sewage Collection Summary

The sewage collection system serving the North Miami Campus is adequate for present and future needs. Gravity line extensions will be required to accommodate future growth (See Figure VII).

The existing 4,000 gallon grease trap serving the cafeteria at the Student Center is adequate for present service. Additional trapping facilities may be required if future food service expansion is added.

A 1,000 gallon chemical dilution trap is presently serving the Academic II. This facility is adequate for handling chemical products discharged from laboratories.

Roads, Drainage and Coastline Erosion Summary

The North Miami Campus is surrounded on the north and northeast sides by the Intracoastal Waterway and Biscayne Bay respectively. The existing coastline consists of a combination of silty/sand sections with extensive mangroves. This natural lowlands did suffer continuously from coastal erosion.

Metropolitan Dade County has embarked on an ambitious project to save the seashore from further erosion. For that purpose, they have cleared a strip approximately fifty feet in depth along the Northeast shoreline. A rock buffer zone has been placed as a contention barrier between the sea and the shoreline. The narrow lagoons so defined are being filled with mangroves which are already growing.

A small estuary has been cut into the east shoreline. The mouth of it has been defined by a rock rip-rap. This estuary runs about a mile into the marshy land south of Bay Vista Boulevard.

The North Miami Campus has two access roads. Present access to the campus is solely through the NE 151st Street entrance, while access from NE 135th Street is presently blocked.

The campus itself has a main entrance on the perimeter road which continues east and allows for a smooth flowing traffic pattern to all points of the campus.

The system of roads is tied to the old Interama Plan and has blended into the path of the campus development and existing water and sewer line extensions. A complete loop road with convenient access from NE 135th Street will facilitate a smooth traffic flow to the future buildings according to the development of the Master Plan Update.

Included in the road program is the connecting road from NE 151th Street (North entrance road) to the NE 135th Street entrance road for easy access to those members of the community and campus population that will attend special events and desire to travel a more direct route to I-95.

A new main entrance to the campus is being planned, as well as a secondary access road, to serve the future Conference Center. Once completed, they will provide accessibility to both sides of the campus and their respective parking areas will be improved.

Chilled Water Supply Summary

Plant capacity is currently adequate to handle the new Conference Center. Efficiency, refrigerant changeover, and pumping capacity are issues that require prompt attention and should be interfaced along with the forthcoming buildings.

Electrical Distribution Summary

The existing vault at the Academic II Building has spare capacity to handle the proposed Conference Center. The program for this building must therefore include conduit extensions from this vault up to the Conference Center site. The future Academic III Building will also be served from this extension.

For the expansion to the eastern areas, the utility company will have the choice of extending the existing in-campus service which features the primary/alternate service or extend an overhead service which is presently dead ended at 135th Street. Figure IX shows the service extensions.

The electrical section for University Park, provided in Appendix D, dwells on the various energy savings programs now offered by F P & L. They are also applicable to this campus. Furthermore, F P & L is contemplating similar rebates for lighting control, efficient lighting fixtures, and ballasts. We recommend that all new buildings be designed taking these features into consideration.

Telephone Distribution Summary

In keeping with the conversion plan, it is planned to design the new buildings with the Fiber-Optic System. To achieve this goal, it will be necessary to extend in an easterly direction, a four 4-inch conduit bank from the Academic II control point to the vicinity of the new Conference Center. There it would terminate with a manhole for future continuation. Intermediate manholes will be provided to serve the Academic III Building. Figure X shows the proposed conduit layouts.

Again, we strongly recommend, especially in this campus, that the conduit banks be encased in concrete for protection against brackish subsurface water.

Facilities Plan: North Miami Campus

The unique quality of this campus is the waterfront location. The newly planned facilities have been organized to emphasize this quality. The connection to the waterfront is reinforced by preserving waterfront open space and siting new buildings to view the waterfront while maintaining view corridors between buildings and focusing the arrival towards a view of the water. New facilities are set back from the waterfront to define a continuous park and natural area along the water's edge.

A landscaped entrance mall is envisioned similar to University Park. The new towers will form a focus for the campus and create a new image. The roadway layout creates a boulevard that establishes the entrance from NE 151st Street extension as the formal or public campus entrance. The NE 135th Street entrance will ultimately serve as an important entrance for students and faculty approaching from the south using the freeway. A campus loop will completely encircle the parking area allowing pedestrian orientated arrival points at the building entrances.

Phasing

Phase I: 1991-1996

The School of Public Affairs and Communications is a major new academic facility to be built in Phase I. The Student Center will also be expanded and the Hospitality Management renovation will be completed. The new Conference Center will be sited to enhance views of the waterfront. On the waterfront, a new Marine Biology facility and a Water Sport Activity area will be constructed. Student housing will be expanded with the construction of a new 400 bed dormitory. New support facilities include the Grants Auxiliary Building Complex and the Student Health Center.

Phase II: 1996-2001

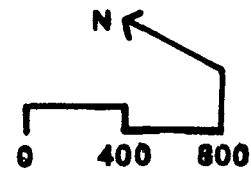
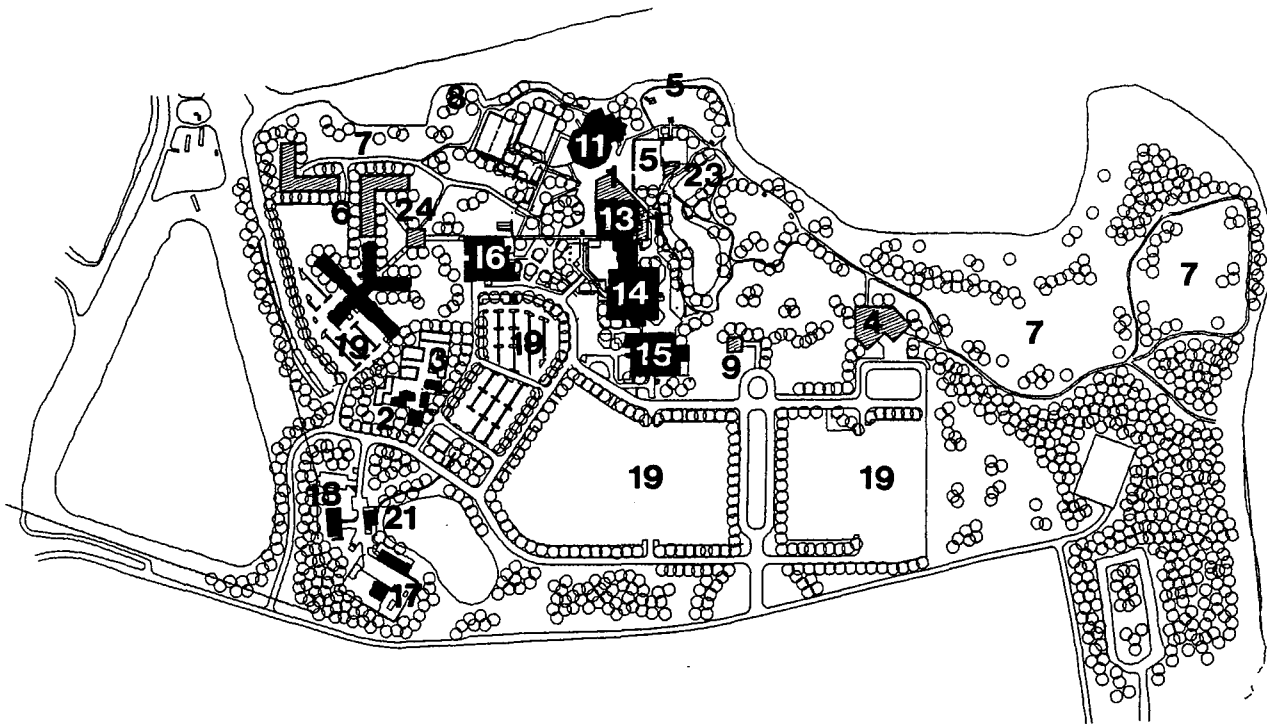
The School of Nursing is to be built in Phase II. New recreation facilities will include a Pool House and 15 acres of new recreational fields.

Phase III: 2001-2006

A future Professional School will be built in Phase III. The Library will also be expanded in this phase. The campus' increased parking needs will be met with the construction of new parking decks.

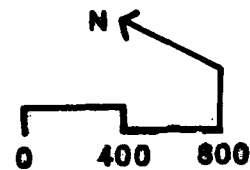
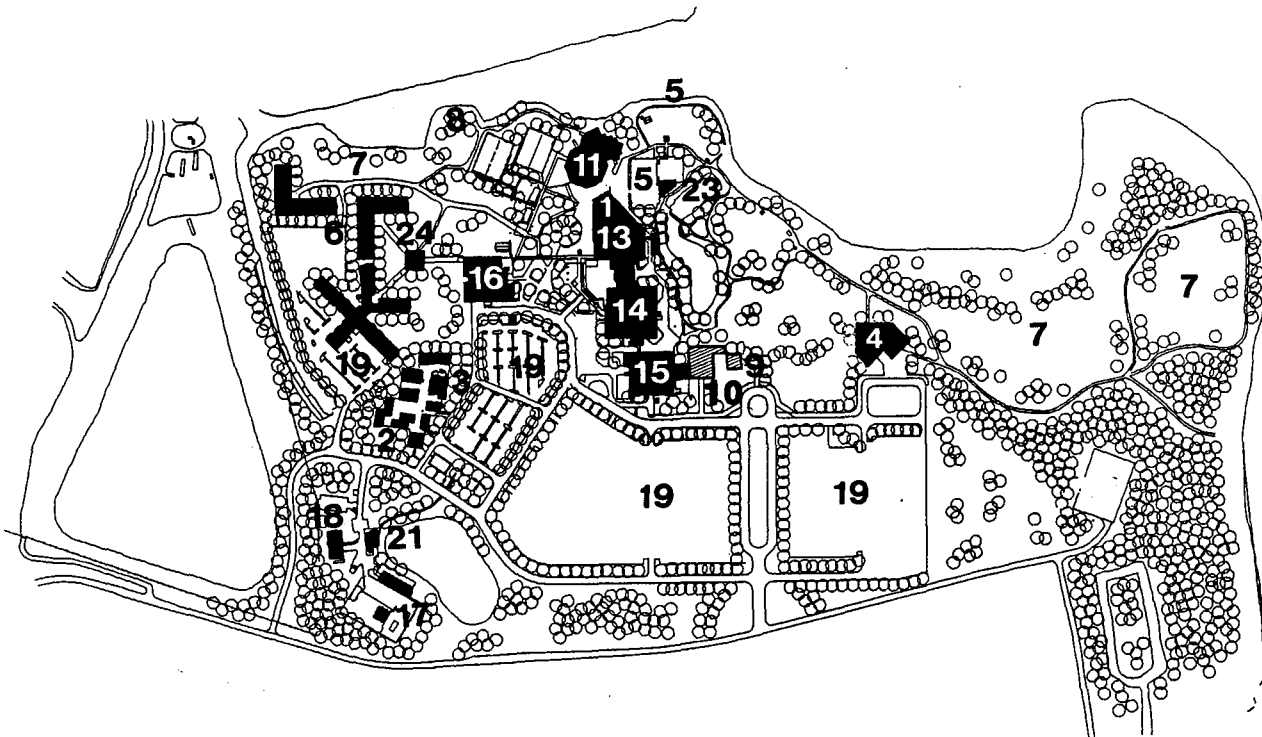
Phase 1 Plan

- | | | |
|------------------------------|--------------------------------|--------------------------|
| 1. Student Center Expansion | 10. Academic IV/Nursing School | 19. Surface Parking |
| 2. Grants/Auxiliary | 11. Hospitality Expansion | 20. Parking Decks |
| 3. Health Center Complex | 12. Future Professional School | 21. Public Safety |
| 4. Conference Center | 13. Student Center | 22. Future Academic Site |
| 5. Water Sport Activity Area | 14. Academic I | 23. Pool House |
| 6. Housing | 15. Academic II | 24. Housing Activities |
| 7. Recreation | 16. Library & Expansion | 25. Pond Expansion |
| 8. Marine Biology | 17. Physical Plant | |
| 9. Public Affairs | 18. Central Receiving | |



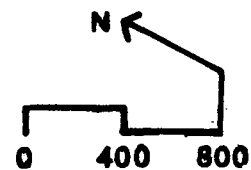
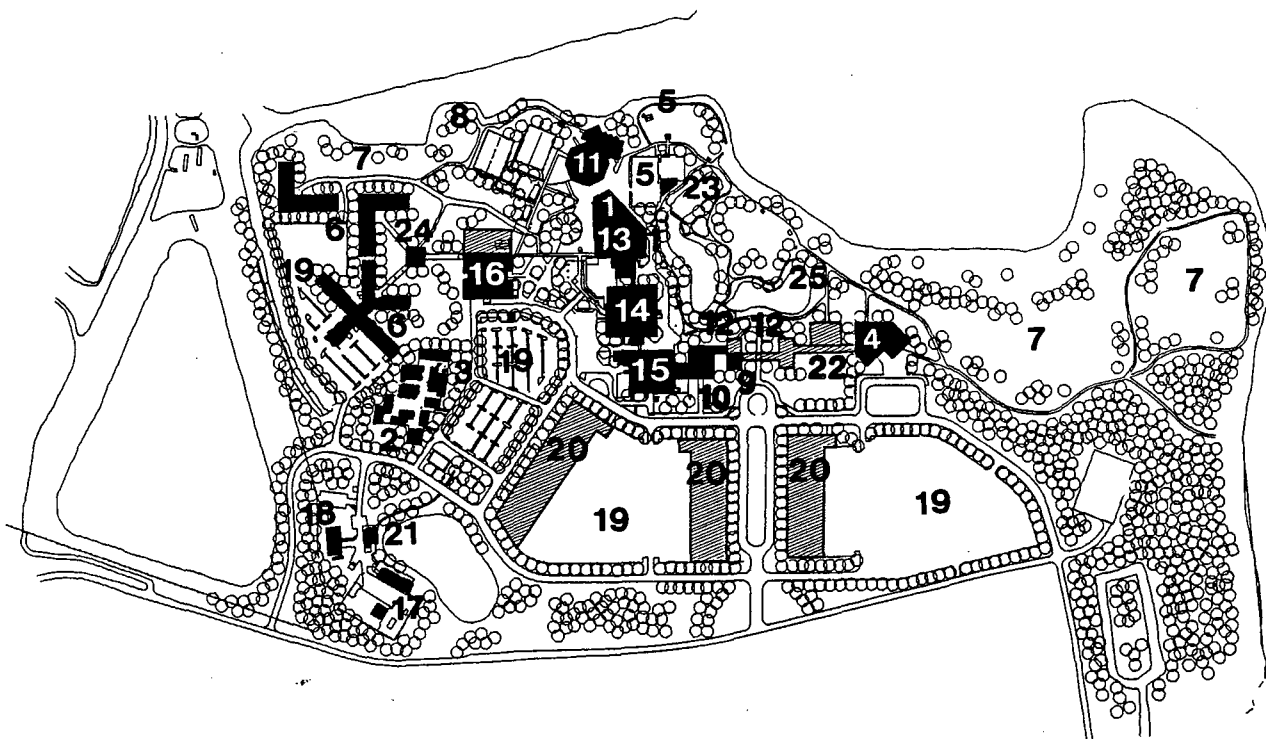
Phase 2 Plan

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|------------------------------|--------------------------------|--------------------------|
| 1. Student Center Expansion | 10. Academic IV/Nursing School | 19. Surface Parking |
| 2. Grants/Auxiliary | 11. Hospitality Expansion | 20. Parking Decks |
| 3. Health Center Complex | 12. Future Professional School | 21. Public Safety |
| 4. Conference Center | 13. Student Center | 22. Future Academic Site |
| 5. Water Sport Activity Area | 14. Academic I | 23. Pool House |
| 6. Housing | 15. Academic II | 24. Housing Activities |
| 7. Recreation | 16. Library & Expansion | 25. Pond Expansion |
| 8. Marine Biology | 17. Physical Plant | |
| 9. Public Affairs | 18. Central Receiving | |



Phase 3 Plan

- | | | |
|------------------------------|--------------------------------|--------------------------|
| 1. Student Center Expansion | 10. Academic IV/Nursing School | 19. Surface Parking |
| 2. Grants/Auxiliary | 11. Hospitality Expansion | 20. Parking Decks |
| 3. Health Center Complex | 12. Future Professional School | 21. Public Safety |
| 4. Conference Center | 13. Student Center | 22. Future Academic Site |
| 5. Water Sport Activity Area | 14. Academic I | 23. Pool House |
| 6. Housing | 15. Academic II | 24. Housing Activities |
| 7. Recreation | 16. Library & Expansion | 25. Pond Expansion |
| 8. Marine Biology | 17. Physical Plant | |
| 9. Public Affairs | 18. Central Receiving | |

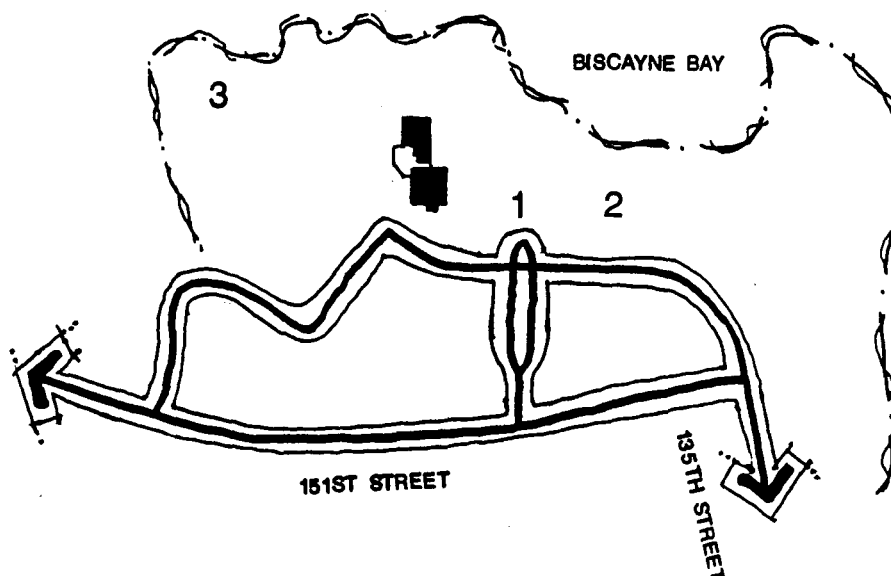


Campus Precincts

Precincts were defined as special areas of the campus, or "hot spots", requiring focused study to determine the best layout for campus spaces and buildings. These areas needed to be organized internally and integrated with the overall framework of the master plan to enhance the campus fabric. The precincts that were studied for the North Miami Campus included:

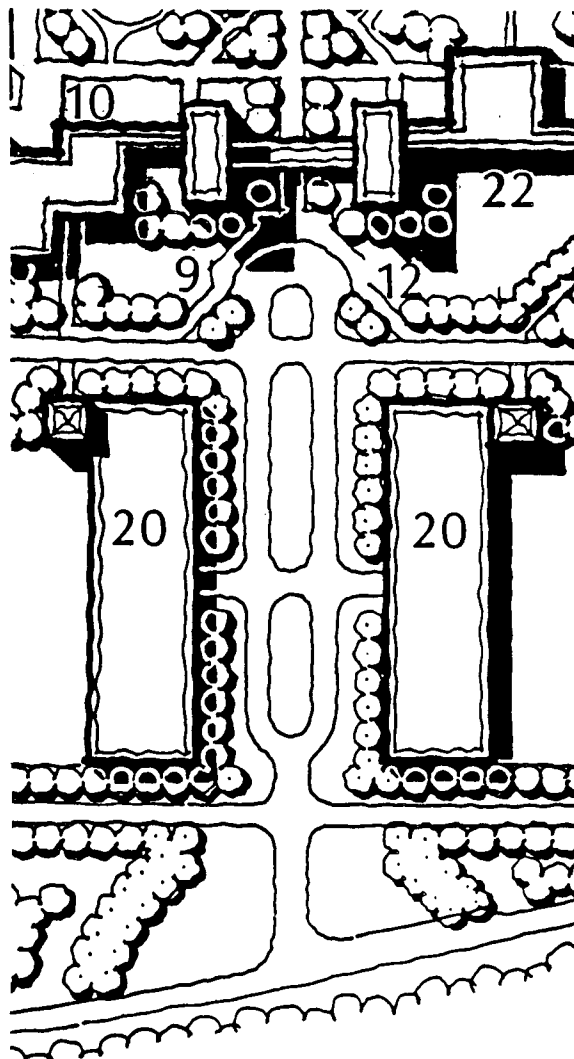
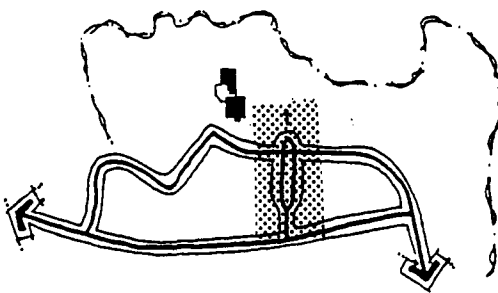
1. Tower Development and Entry Road
2. Conference Center Location
3. Student Housing

The diagram below shows the location of each precinct. The diagrams on the following pages illustrate the concept for each precinct.

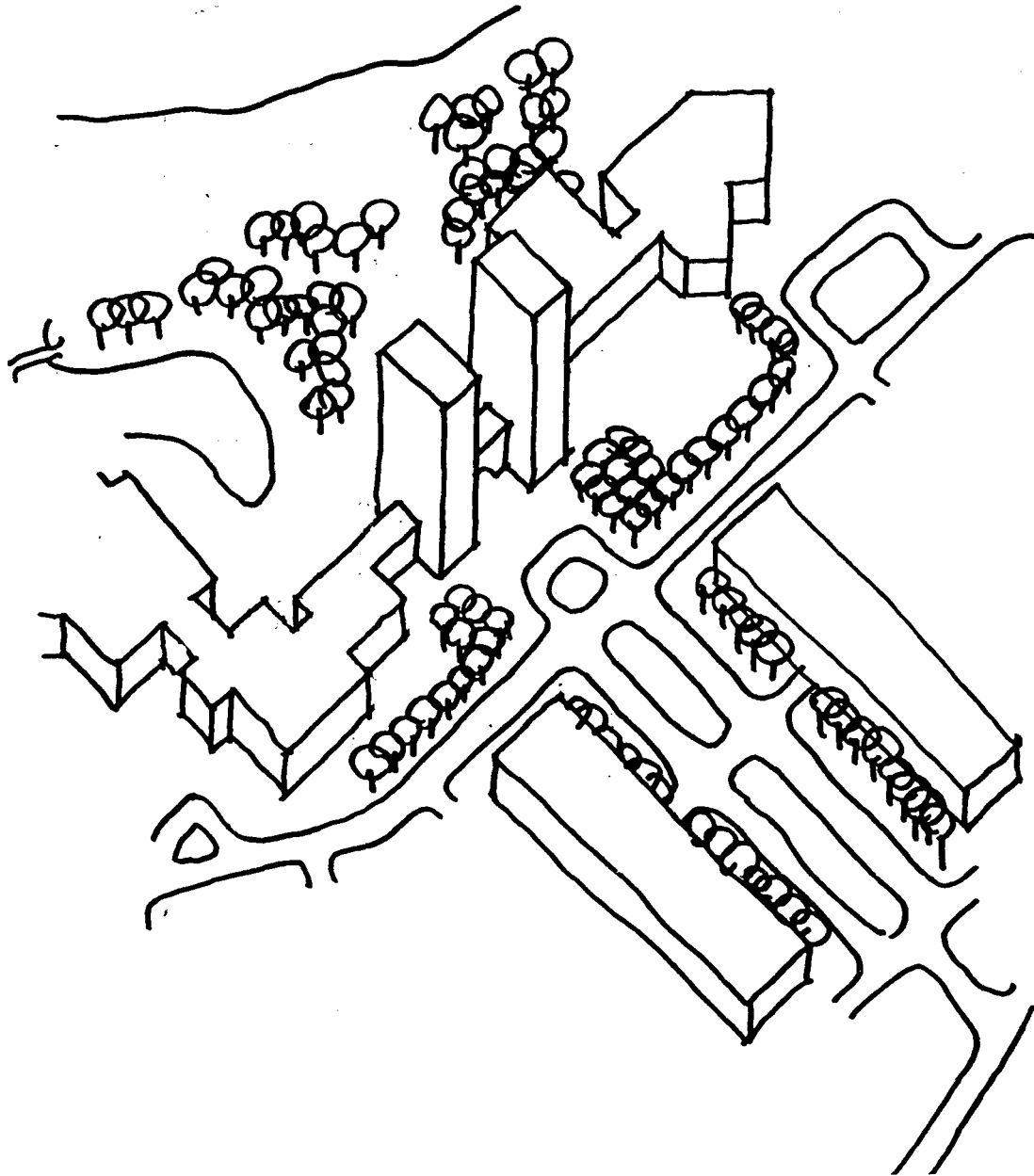


1. Tower Development and Entry Road

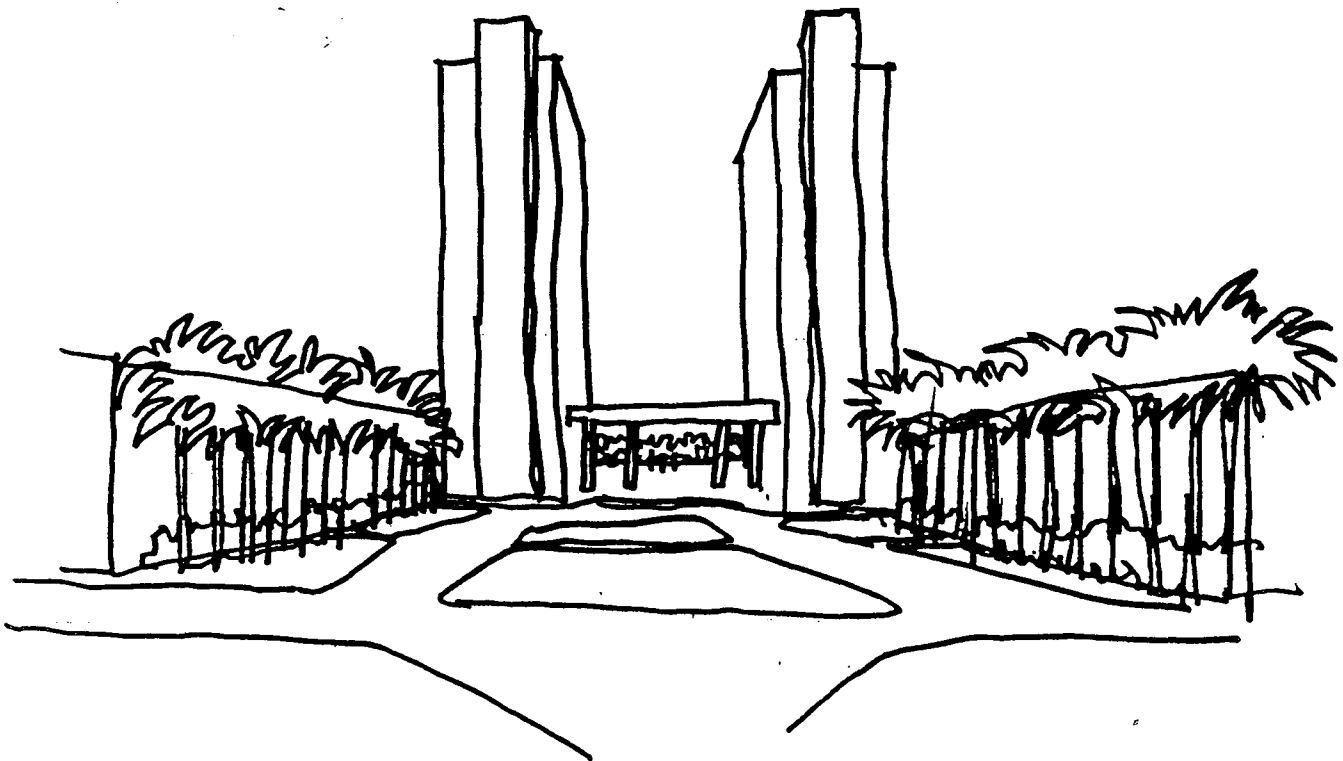
Alternatives were explored for creating a ceremonial entrance to the North Miami Campus. Both alternatives sought to establish a gateway marking the entrance to the campus with a formal entrance mall lined with palms. The first alternative, a mid-rise solution, called for twin 8-story buildings with floorplates of 20,000 square feet each. The second alternative was a high-rise solution with two identical 16-story towers, having floorplates of 7,200 square feet. In both alternatives, two low-rise parking decks are located along the entry mall. Among the criteria used to evaluate the alternatives were program flexibility, phasing, image, and cost. The selected alternative, the high-rise concept, was preferred for its stronger image and lower cost. The two towers will enhance the campus' special character and improve its visibility from Biscayne Bay. For funding reasons, it is unlikely that the two towers would be built at one time, but the concept can still be effectively implemented in phases.



Axionmetric view of Tower and Entrance Mall

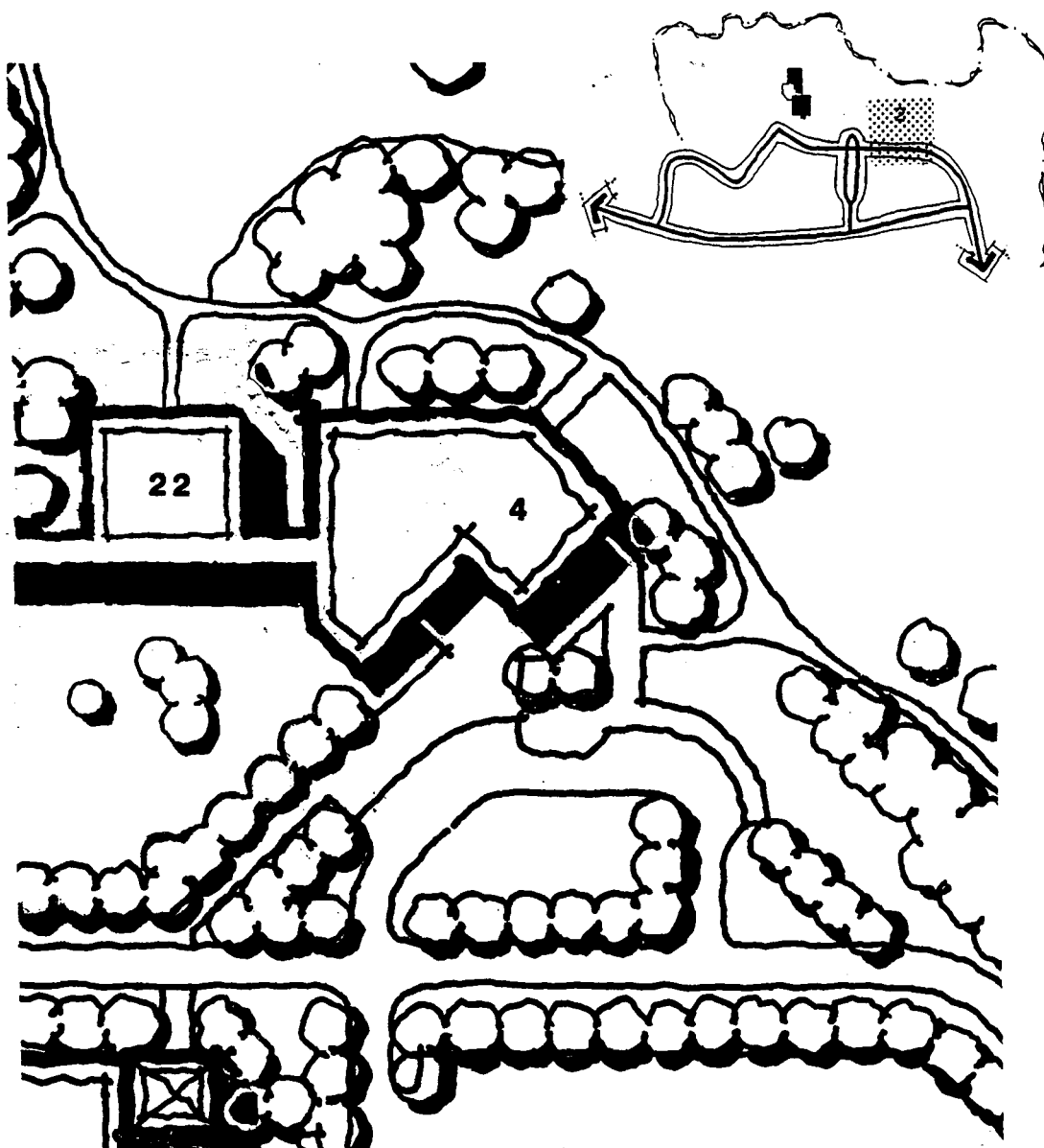


Eye level view at campus entrance



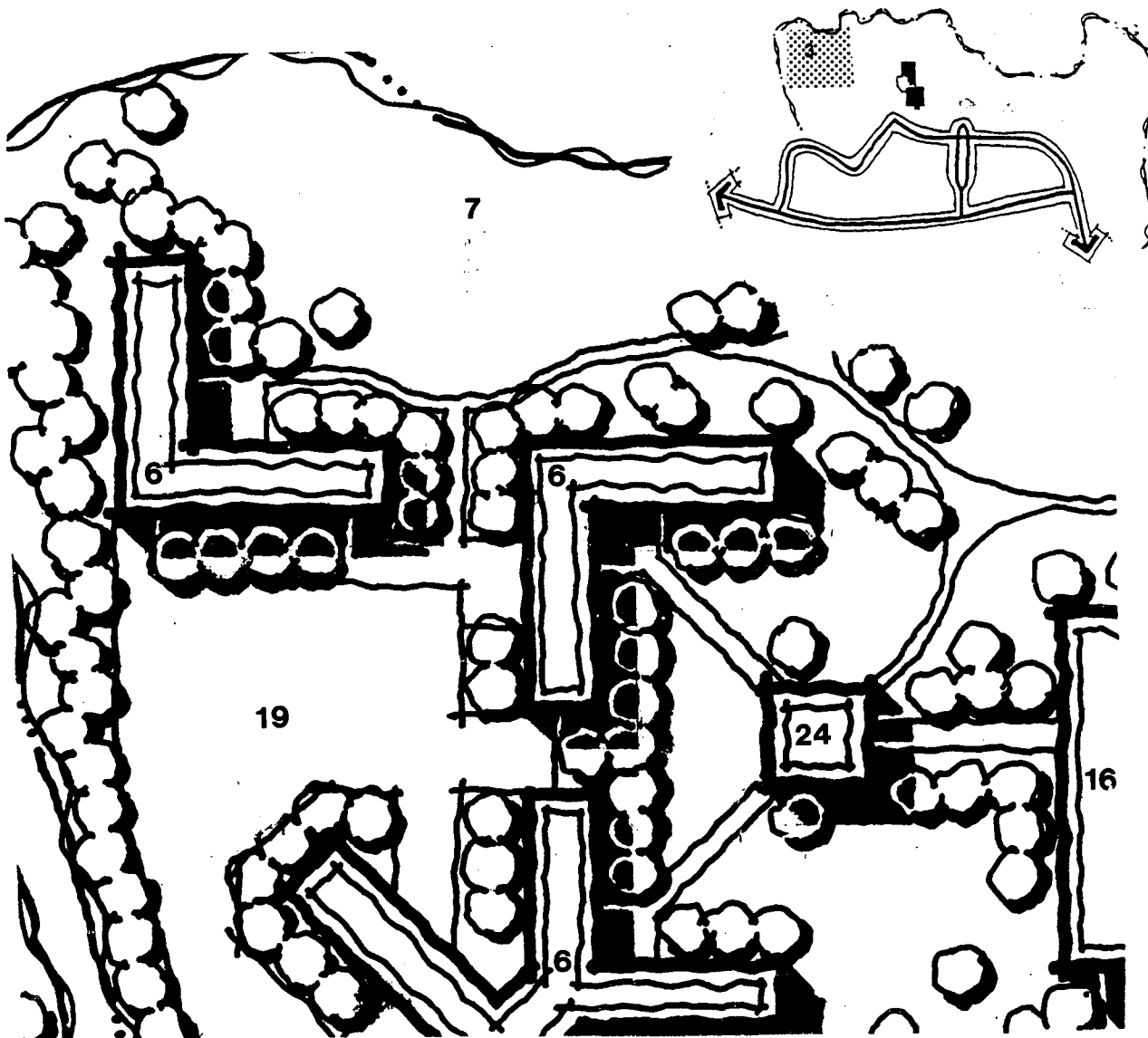
2. Conference Center Location

The site for the Conference Center is aligned with the academic buildings facing onto the waterfront. This location affords direct access to the Conference Center from the loop road and the adjacent parking deck. This location also allows for future expansion of the academic center and does not impinge upon the future development of the promontory.

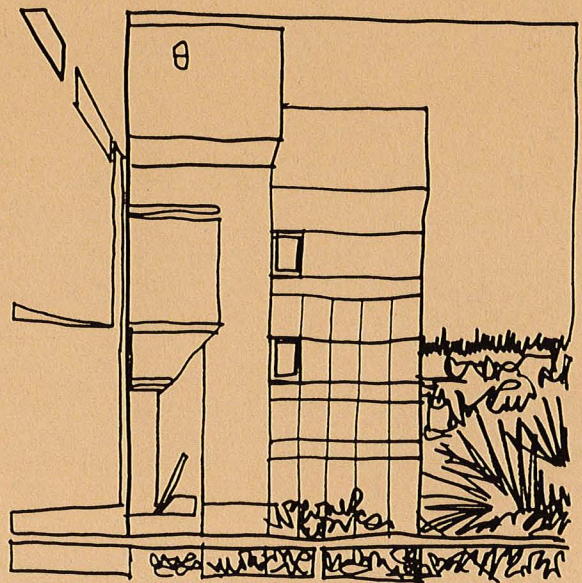


3. Student Housing

Two new L-shaped dormitories are located adjacent to the existing housing area. The integration of the housing areas will promote a sense of community among the students residing on campus. Other advantages of this site include its proximity to the waterfront, open space and recreational areas.



9. APPENDICES



Appendix A: 1991-2006 Enrollment Projections by Campus, Level and Discipline

FLORIDA INTERNATIONAL UNIVERSITY
 FULL TIME EQUIVALENT STUDENT (FTE) PROJECTIONS
 DISTRIBUTION BY LEVEL AND DISCIPLINE BASED ON 1990-1991 ACADEMIC YEAR

UNIVERSITY PARK

	-----1991/1992-----					-----1996/1997-----					-----2001/2002-----					-----2006/2007-----				
	LD	UD	GD	T/D	TOTAL	LD	UD	GD	T/D	TOTAL	LD	UD	GD	T/D	TOTAL	LD	UD	GD	T/D	TOTAL
02 AGRI SCIENCE	0	6	0	0	6	0	7	0	0	7	0	7	0	0	7	0	8	0	0	8
04 ARCHITECTURE	64	169	45	0	278	103	178	72	1	354	117	192	105	4	418	123	202	134	5	464
06 BUSINESS	0	1,488	417	2	1,907	0	1,564	671	7	2,242	0	1,694	985	19	2,698	0	1,781	1,257	24	3,062
09 COMMUNICATION	0	8	3	0	11	0	8	5	0	13	0	9	7	0	16	0	9	9	0	18
11 COMPUTER SCIENCE	165	244	24	4	437	267	257	38	13	575	303	278	56	38	675	319	292	71	49	731
13 EDUCATION	11	1,080	427	29	1,547	17	1,135	687	109	1,948	19	1,230	1,008	312	2,569	20	1,292	1,287	398	2,997
14 ENGINEERING	35	433	119	11	598	56	455	192	42	745	64	493	281	120	958	67	518	359	153	1,097
15 ENGR RELATED	7	3	1	0	11	11	3	2	0	16	12	4	3	0	19	13	4	4	0	21
16 FOR LANGUAGE	234	110	25	0	369	380	116	40	0	536	432	126	58	0	616	454	132	74	1	661
17 ALLIED HEALTH	1	162	7	1	171	2	170	12	2	186	2	184	17	6	209	2	194	22	8	226
18 HEALTH SCIENCE	0	43	25	0	68	0	45	41	0	86	0	49	60	0	109	0	51	76	1	128
19 HOME ECONOMICS	25	109	16	1	151	41	114	25	4	184	46	124	37	12	219	49	130	47	15	241
23 LETTERS	251	245	31	0	527	408	257	50	0	715	463	279	74	0	816	487	293	94	1	875
24 LIB/GEN STUDIES	0	18	0	1	19	0	18	0	3	21	0	20	0	8	28	0	21	0	10	31
26 LIFE SCIENCE	124	140	36	7	307	201	148	58	27	434	228	160	84	75	547	240	168	108	96	612
27 MATHEMATICS	149	490	23	0	662	242	515	37	0	794	274	558	55	0	887	288	586	70	0	944
30 MULTI-DISCIPLINE	0	52	1	0	53	0	55	1	0	56	0	59	2	0	61	0	62	2	0	64
31 PARKS/RECREATION	0	18	1	0	19	0	18	2	0	20	0	20	3	0	23	0	21	4	0	25
38 PHILOSOPHY/REL	118	46	0	0	164	191	48	1	0	240	217	53	1	0	271	228	55	1	0	284
40 PHYSICAL SCIENCE	216	257	60	6	539	351	270	96	24	741	399	293	141	68	901	419	308	180	86	993
42 PSYCHOLOGY	70	302	29	6	407	114	317	46	22	499	129	343	68	62	602	136	361	86	79	662
43 PROT SERVICES	0	122	24	0	146	0	128	39	0	167	0	138	58	0	196	0	145	74	0	219
44 PUBLIC AFFAIRS	0	69	49	0	118	0	72	78	0	150	0	78	115	0	193	0	82	147	0	229
45 SOCIAL SCIENCE	324	673	115	7	1,119	526	707	185	25	1,443	598	766	271	73	1,708	628	806	346	93	1,873
50 VIS/PERF ARTS	195	212	13	0	420	316	223	20	0	559	359	241	30	0	630	377	253	38	0	668
TOTAL FTE'S	1,989	6,499	1,491	75	10,054	3,226	6,828	2,398	279	12,731	3,662	7,398	3,519	797	15,376	3,850	7,774	4,490	1,019	17,133
HEADCOUNT	17,092					21,006					24,602					26,556				

FLORIDA INTERNATIONAL UNIVERSITY
 FULL TIME EQUIVALENTS (FTE) PROJECTIONS
 DISTRIBUTION BY LEVEL AND DISCIPLINE BASED ON 1990-1991 ACADEMIC YEAR

NORTH MIAMI CAMPUS

	-----1991/1992-----					-----1996/1997-----					-----2001/2002-----					-----2006/2007-----				
	LD	UD	GD	T/D	TOTAL	LD	UD	GD	T/D	TOTAL	LD	UD	GD	T/D	TOTAL	LD	UD	GD	T/D	TOTAL
02 AGRI SCIENCE	0	1	0	0	1	0	1	0	0	1	0	1	0	0	1	0	1	0	0	1
04 ARCHITECTURE	0	0	0	0	0	1	0	0	0	1	1	0	0	0	1	1	0	0	0	1
06 BUSINESS	0	777	90	0	867	0	817	146	0	963	0	885	213	0	1,098	0	930	272	0	1,202
09 COMMUNICATION	0	177	16	0	193	0	186	26	0	212	0	201	38	0	239	0	212	48	0	260
11 COMPUTER SCIENCE	35	21	0	0	56	57	22	0	0	79	64	24	0	0	88	68	25	0	0	93
13 EDUCATION	0	163	37	2	202	0	171	60	8	239	0	186	87	24	297	0	195	111	30	336
14 ENGINEERING	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15 ENGR RELATED	0	0	0	0	0	1	0	0	0	1	1	0	0	0	1	1	0	0	0	1
16 FOR LANGUAGE	91	4	0	0	95	149	4	0	0	153	169	4	0	0	173	177	5	0	0	182
17 ALLIED HEALTH	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 HEALTH SCIENCE	0	219	96	0	315	0	230	155	1	386	0	249	227	2	478	0	262	289	3	554
19 HOME ECONOMICS	13	7	0	0	20	22	8	0	0	30	25	8	0	0	33	26	9	0	0	35
23 LETTERS	90	93	16	0	199	146	97	26	0	269	166	105	38	0	309	174	111	48	0	333
24 LIB/GEN STUDIES	0	26	0	0	26	0	27	0	0	27	0	29	0	0	29	0	31	0	0	31
26 LIFE SCIENCE	48	0	0	0	48	78	0	0	0	78	88	0	0	0	88	93	0	0	0	93
27 MATHEMATICS	36	56	0	0	92	58	59	0	0	117	66	64	0	0	130	69	67	0	0	136
30 MULTI-DISCIPLINE	0	16	0	0	16	0	17	0	0	17	0	19	0	0	19	0	20	0	0	20
31 PARKS/RECREATION	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38 PHILOSOPHY/REL	18	6	0	0	24	29	6	0	0	35	33	7	0	0	40	35	7	0	0	42
10 PHYSICAL SCIENCE	44	6	0	0	50	72	6	0	0	78	81	7	0	0	88	85	7	0	0	92
42 PSYCHOLOGY	24	118	10	2	154	39	124	16	8	187	44	135	24	24	227	47	142	31	30	250
43 PROT SERVICES	0	66	10	0	76	0	69	15	0	84	0	75	23	0	98	0	79	29	0	108
44 PUBLIC AFFAIRS	0	65	118	3	186	0	68	190	12	270	0	74	278	33	385	0	78	355	42	475
45 SOCIAL SCIENCE	73	135	6	0	214	119	141	9	0	269	135	153	13	0	301	142	161	17	0	320
50 VIS/PERF ARTS	35	30	1	0	66	57	32	2	0	91	64	34	3	0	101	68	36	4	0	108
TOTAL FTE'S	507	1,986	400	7	2,900	828	2,085	645	29	3,587	937	2,260	944	83	4,224	986	2,378	1,204	105	4,673
HEADCOUNT					4,930					5,919					6,758					7,243

Appendix B: Projected Space Requirements

Analysis Of Space Needs By Category - Fifteen Year - University Park
26-Jun-91

FLORIDA INTERNATIONAL UNIVERSITY

	Teaching		Research		Office	Auditorium Exhibit	Inst Media	Student Services	Support		TOTAL
	Classroom	Laboratory	Library	Laboratory					Gymnasium	Services	
Space Needs 1995-96:	95,333	147,173	153,653	121,939	402,126	36,747	12,125	91,868	59,747	56,036	1,176,747
Total 91-92 Proj Inventory	68,264	151,172	52,107	43,340	203,351	33,243	12,189	62,610	53,386	12,036	691,698
Planned Projects:											
Bio-Greenhouse IIA	0	0	0	3,805	0	0	0	0	0	150	3,955
Joint Ctr/Dispute Resolution	4,040	2,275	750	0	4,655	0	110	0	0	592	12,422
Arts Complex I	0	7,880	0	0	4,735	23,825	0	0	0	1,822	38,262
Education	6,000	5,712	0	0	17,720	0	0	275	0	1,789	31,496
Campus Support Complex	0	0	0	0	11,420	0	0	0	0	36,681	48,101
Health & Life Sciences	9,000	7,000	0	15,000	11,000	500	0	0	0	2,100	44,600
Library Addition I	0	0	64,000	0	4,500	0	0	0	0	2,946	71,446
Library Addition II	0	0	70,000	0	8,500	0	0	0	0	4,300	82,800
Arts Complex II	3,156	35,054	0	0	4,000	1,500	0	0	0	850	44,560
Engineering II	10,000	10,000	0	25,000	9,000	650	0	0	0	2,733	57,383
Business Admin II	10,000	4,000	2,400	0	29,465	0	0	500	0	2,318	48,683
Renovation for Bus & Fin Administration*	0	0	0	0	0	0	0	0	0	0	0
Computing	0	0	0	0	22,700	0	0	0	0	1,100	23,800
Student Services	0	0	0	0	17,000	0	0	8,000	0	1,000	26,000
Total 95-96 Proj Inventory	110,460	223,093	189,257	87,145	348,046	59,718	12,299	71,385	53,386	70,417	1,225,206
Net Space Needs:	(15,127)	(75,920)	(35,604)	34,794	54,080	(22,971)	(174)	20,483	6,361	(14,381)	(48,459)
Percent of Needs:	116%	152%	123%	71%	87%	163%	101%	78%	89%	126%	104%

Space Needs 2000-01:	115,452	176,389	179,656	215,171	485,902	45,180	14,592	112,950	68,180	70,674	1,484,146
Total 95-96 Proj Inventory	110,460	223,093	189,257	87,145	348,046	59,718	12,299	71,385	53,386	70,417	1,225,206
Planned Projects:											
Int'l Conference Center	10,000	0	0	0	6,000	6,000	1,000	10,000	0	2,000	35,000
Social Sciences	5,000	10,000	0	22,000	10,000	0	0	500	0	2,500	50,000
Library Addition III	0	0	90,000	0	35,000	10,000	15,000	7,500	0	7,500	165,000
Physical Sciences II	8,000	10,000	0	12,500	10,000	0	0	500	0	2,000	43,000
Business Admin III	5,000	5,000	5,000	2,000	20,000	0	0	500	0	2,000	39,500
Business & Finance Administration	5,000	5,000	5,000	2,000	20,000	0	0	500	0	2,000	39,500
Total 2000-01 Proj Inven	143,460	253,093	289,257	125,645	449,046	75,718	28,299	90,885	53,386	88,417	1,597,206
Net Space Needs:	(28,008)	(76,704)	(109,601)	89,526	36,856	(30,538)	(13,707)	22,065	14,794	(17,743)	(113,060)
Percent of Needs:	124%	143%	161%	58%	92%	168%	194%	80%	78%	125%	108%

* Conversion of 22,378 NASF of faculty offices to administrative offices (Estimated cost \$1,500,000).

	Classroom	Teaching Laboratory	Library	Research Laboratory	Office	Auditorium Exhibit	Inst Media	Student Services	Gymnasium	Support Services	TOTAL
Space Needs 2005-06:	127,430	194,917	194,513	263,491	536,567	50,280	16,117	125,700	73,280	79,115	1,661,410
Total 2000-01 Proj Inven	143,460	253,093	289,257	125,645	449,046	75,718	28,299	90,885	53,386	88,417	1,597,206
Planned Projects:											
Library Addition IV	0	0	50,000	0	20,000	5,000	6,000	5,000	0	4,100	90,100
Engineering III	5,000	10,000	1,000	50,000	31,000	3,000	1,000	3,000	0	6,000	110,000
Molecular Biology	5,000	5,000	1,000	35,000	18,000	2,000	1,000	1,000	0	3,400	71,400
Arts Complex III	0	0	0	15,000	2,500	15,000	500	1,000	0	1,700	35,700
Professional School	5,000	10,000	0	22,000	10,000	0	0	500	0	2,500	50,000
Business/Technology/Innovation Center	0	0	0	10,000	15,000	0	0	3,500	0	1,500	30,000
Total 2005-06 Proj Inven	158,460	278,093	341,257	257,645	545,546	100,718	36,799	104,885	53,386	107,617	1,984,406
Net Space Needs:	(31,030)	(83,176)	(146,744)	5,846	(8,979)	(50,438)	(20,682)	20,815	19,894	(28,502)	(322,996)
Percent of Needs:	124%	143%	175%	98%	102%	200%	228%	83%	73%	136%	119%

Analysis Of Space Needs By Category - Fifteen Year - North Miami Campus
26-Jun-91

FLORIDA INTERNATIONAL UNIVERSITY

	Teaching Classroom	Laboratory	Library	Research Laboratory	Office	Auditorium Exhibit	Inst Media	Student Services	Gymnasium	Support Services	TOTAL
Space Needs 1995-96:	27,990	22,603	47,477	40,706	111,578	10,401	2,530	26,003	0	14,464	303,752
Total 91-92 Proj Inventory	28,550	51,946	44,215	737	80,642	6,999	3,085	25,186	832	24,887	267,079
Planned Projects:											
Conference Center	0	0	0	0	2,200	0	0	33,500	0	1,785	37,485
Public Affairs/Communication	28,050	0	0	0	9,030	0	0	0	0	1,854	38,934
Hospitality Management 2nd Floor Compl	6,815	2,425	0	0	1,395	0	0	1,065	0	0	11,700
Marine Biology	1,500	0	0	3,200	2,100	0	0	0	0	343	7,143
Total 95-96 Proj Inventory	64,915	54,371	44,215	3,937	95,367	6,999	3,085	59,751	832	28,869	362,341
Net Space Needs:	(36,925)	(31,768)	3,262	36,769	16,211	3,402	(555)	(33,748)	(832)	(14,405)	(58,589)
Percent of Needs:	232%	241%	93%	10%	85%	67%	122%	230%	0%	200%	119%

Space Needs 2000-01:	33,094	27,013	53,092	58,312	130,172	12,420	3,005	31,050	0	17,408	365,566
Total 95-96 Proj Inventory	64,915	54,371	44,215	3,937	95,367	6,999	3,085	59,751	832	28,869	362,341
Planned Projects:											
Nursing	1,000	5,000	0	20,000	14,000	2,000	300	600	0	2,100	45,000
Total 2000-01 Proj Inven	65,915	59,371	44,215	23,937	109,367	8,999	3,385	60,351	832	30,969	407,341
Net Space Needs:	(32,821)	(32,358)	8,877	34,375	20,805	3,421	(380)	(29,301)	(832)	(13,561)	(41,775)
Percent of Needs:	199%	220%	83%	41%	84%	72%	113%	194%	0%	178%	111%

Space Needs 2005-06:	36,332	29,790	56,646	69,411	142,164	13,722	3,306	34,305	0	19,284	404,960
Total 2000-01 Proj Inven	65,915	59,371	44,215	23,937	109,367	8,999	3,385	60,351	832	30,969	407,341
Planned Projects:											
Future Professional School	15,000	20,000	0	32,000	20,000	0	0	3,000	0	5,000	95,000
Total 2005-06 Proj Inven	80,915	79,371	44,215	55,937	129,367	8,999	3,385	63,351	832	35,969	502,341
Net Space Needs:	(44,583)	(49,581)	12,431	13,474	12,797	4,723	(79)	(29,046)	(832)	(16,685)	(97,381)
Percent of Needs:	223%	266%	78%	81%	91%	66%	102%	185%	0%	187%	124%

Appendix C: Academic Programs by Degree Levels

**Current and Planned Academic Programs
1991 TO 2006**

Degree Levels: B=Baccalaureate, M=Master, S=Specialist, D=Doctorate

COLLEGE OF ARTS AND SCIENCES

Art B

Biological Science B, Biology M, D

Creative Writing M

Chemistry B, M, **NEW** D 1993+

Communication B, Mass Communication M

Computer Science B, M, D

*Dance **NEW** B 1991

Economics B, M, D

English B, MFA, **NEW** M 1993+, D 1995+

Environmental Studies B, Environmental and Urban Systems M

French B, **NEW** M 1993+, D 1995+

Geology B, M, **NEW** D 1993+

*Geography **NEW** B 1995+

German B

History B, M, **NEW** D 1993+

Hispanic Studies M, **NEW** D 1995+

Humanities B, **NEW** M 1995+

International Relations B, **NEW** D 1992

International Studies M

*Latin America and Caribbean Studies **NEW** B 1993+, M 1995+, D

Liberal Studies B

Linguistics M, **NEW** D 1992

Mathematical Sciences B, M

Mathematics B

Music B, **NEW** M 1994+

Philosophy B, **NEW** M 1995+

Physics B, M, **NEW** D 1994+

Political Science B, **NEW** M 1993+, D 1995+

Portuguese B

Psychology B, M, D

Religious Studies B, **NEW** M 1994+

Sociology/Anthropology B, Comparative Sociology M, **NEW** D 1992

Spanish B

Statistics B, **NEW** M 1993+, D 1995+

Theatre B, **NEW** MFA 1993+

*Visual Arts **NEW** M 1993+

COLLEGE OF BUSINESS ADMINISTRATION

Accounting B, M

Business Administration B

Majors: Finance, International Business, Management, Management Information Systems, Marketing, Personnel Management

Business Administration M

Tracks: Finance, International Business, Management Information Systems, Taxation

Business Administration D

*Executive NEW MBA 1992+

COLLEGE OF EDUCATION

Adult Education and Human Resource Development D

Art Education B, M

Biology Education B

Business Education B, M **PHASED OUT 1991+**

Chemistry Education B

Community College Teaching D

Counselor Education (School and Community) M

Curriculum and Instruction S, D

Diagnostic Teaching M

Majors: Emotional Disturbance, Mental Retardation, and Specific Learning Disabilities

Early Childhood Education M

Educational Leadership M, S, D

Elementary Education B, M

English Education B, M

Exceptional Student Education D

History Education B

Health Occupations Education B, M

Home Economics Education B, M

Industrial Arts Education M

International Development Education M

Mathematics Education B, M

Modern Languages Education

Majors in French, Spanish and German B

Majors in French and Spanish M

Music Education B, M

Parks and Recreation Management B

Parks and Recreation Administration M

Physical Education B, M

Reading M

School Psychology M

Science Education M

Social Studies Education B, M

Special Education

Majors: Emotional Disturbance, Mental Retardation, and Specific Learning Disabilities B

Teaching English to Speakers of Other Languages (TESOL) M

Technology Education B

Vocational Education (majors in Technical Education and Vocational Industrial Education) B, M

COLLEGE OF ENGINEERING AND DESIGN

Apparel Management B
Architectural Technology B
Civil Engineering B, M **NEW D 1993+**
Computer Engineering B, M
Construction Management B, M
Electrical Engineering B, M, **NEW D 1992**
Environmental Engineering M
Environmental and Urban Systems M
Industrial Engineering B, M, **NEW D 1995+**
Interior Design B
Mechanical Engineering B, M, **NEW D 1993+**
Landscape Architecture M

COLLEGE OF HEALTH

Dietetics and Nutrition B, M, **NEW Dietetics and Nutrition D 1992**
Medical Record Administration B
Medical Technology B, Medical Laboratory Sciences M
Occupational Therapy B,M
Physical Therapy B, M
Prosthetics and Orthotics B
Public Health M

SCHOOL OF HOSPITALITY MANAGEMENT

Hospitality Management B
Hotel and Food Service Management M

SCHOOL OF NURSING

Nursing B, **NEW M 1992, D 1995+**

SCHOOL OF PUBLIC AFFAIRS AND SERVICES

Criminal Justice B, M
Health Services Administration B, M
*Public Policy **NEW M 1993+**
Public Administration B, M, D
Social Work, B, M, **NEW Social Welfare D 1991, (Pending BOR approval June 1991)**

PROFESSIONAL SCHOOLS

*Law **NEW D 1995+**
*Library Science **NEW M 1995+**

Appendix D: Utility Infrastructure

UTILITY ANALYSIS AND RECOMMENDATIONS

UNIVERSITY PARK

Purpose of the Utilities Update

The purpose of this analysis is to establish the status of the water, sewer, drainage, chilled water (air conditioning) supply/distribution, electrical and telephone systems at the Florida International University, University Park and to evaluate the present capacities, and future needs in a coordinated effort with planned, orderly campus growth. The update includes the latest components added with the buildings recently completed or in process of construction. The infrastructure will be revised to extend their capabilities to absorb campus growth up to the year 2006. Figures referenced in the text are provided at the end of this section.

WATER DISTRIBUTION SYSTEM

Source of Water Supply

University Park is served by the distribution system of the Miami-Dade Water and Sewer Authority Department (MDWASAD) which draws its water supply from the Biscayne aquifer and treats it at the Alexander Orr Water Treatment Plant. The treatment consists of lime softening, filtration and disinfection.

THE MDWASAD has existing mains at the West, North and East boundaries of the campus. The existing distribution system within the campus is supplied by connections to the MDWASAD's 12 inch diameter water main at the East on S.W. 107th Avenue and by a 36 inch diameter water main at the West on S.W. 117 Avenue utilizing a 12 inch diameter main. As a result of the previous Utility Master Plan Update, a 16 inch diameter main is presently being connected to the existing 30 inch diameter main running East-West along S.W. 8th Street.

Other improvements added with the just completed Chemistry and Physics Building and the Graham Center Expansion include the extension of a 12 inch diameter main bordering the new Northeast Corner Loop Road (See Fig. I). This pipe effectively links the connections to the MDWASAD existing mains at 107 Avenue and the Tamiami Trail (S.W. 8 Street).

Approximately 12,000 lineal feet of 12 inch diameter water mains and about 35 fire hydrants will be required to cover projected campus growth, especially along the Northwest, West, and South areas. Figure I shows the proposed pipe extensions.

Hydraulic analysis of the proposed system indicated that fire flows at all areas within the campus will be available and well within the parameters established by the Fire Department.

Type of Use

The MDWASAD water supply is primarily for potable use and secondarily for fire protection.

Existing Piping and Hydrants

The existing campus water distribution system consists of approximately: 1,200 feet of 16 inch diameter pipe, 13,000 feet of 12 inch diameter pipe, 1,300 feet of 8 inch diameter pipe, and 2,000 feet of 6 inch diameter pipe.

There are 36 hydrants servicing the campus for fire protection.

Consumptive Use and Fire Flow Capabilities

The existing distribution system is adequate for consumptive use and it meets fire flow requirements as set forth under Chapter 32 of the Dade County Public Works Design Manual. Projected looping will provide better reliability.

In order to achieve this, existing dead end loops such as the one servicing the Golden Panther Arena and single main services such as the ones servicing the Viertes Haus, Library and Owa Ehan Buildings, as well as isolated supply loops such as the existing student housing, should be interconnected on a priority basis. (See Figure I.)

Building Meters

The existing buildings within the campus all have separate water meters . An existing central sewage meter measures total sewage flow. Under normal circumstances, water consumption and sewage flow are very close. Since the cost of sewage service is a function of the water usage, water use can best be controlled by utilizing individual meters. Thus, if prescribed minimum water usage cannot be met by the served building, multiple connections to the water meter would be recommended.

Present-Year 2006 Estimated Average Daily Demand

Average Daily Flows for the Florida International University, University Park Campus computed from billing records shows an average consumption of 153,475 GPD for the past ten months. This level is below the statistical values of the Utility Industry.

Statistical Consumption (Present):

$$\begin{array}{rcl} \text{Commuting Students} & - & 16,342 \times 14 = 228,788 \text{ GPD} \\ \text{Housed Students} & - & 750 \times 100 = \underline{75,000} \text{ GPD} \\ & & 303,788 \text{ GPD} \end{array}$$

Average Daily Flows:

$$\begin{array}{rcl} 228,788 \text{ GPD} / 16 \text{ hrs/d} / 60 \text{ min/hr} & = & 230 \text{ GPM} \\ 75,000 \text{ GPD} / 24 \text{ hrs/d} / 60 \text{ min/hr} & = & \underline{52} \text{ GPM} \\ & & 282 \text{ GPM} \end{array}$$

Total Peak Hour Flow:

$$282 \text{ GPM} \times 3 = 846 \text{ GPM}$$

Projected enrollment for the year 2006 will give the following statistical consumption values:

$$\begin{array}{rcl} \text{Commuting Students } 23,396 \times 14 \text{ GPD} & = & 327,544 \text{ GPD} \\ \text{Housed Students } 2,750 \times 100 \text{ GPD} & = & \underline{275,000 \text{ GPD}} \\ & & 602,544 \text{ GPD} \end{array}$$

Average Daily Flows:

$$\begin{array}{rcl} 327,544 \text{ GPD} / 16 \text{ hrs/d} / 60 \text{ min/hr} & = & 341 \text{ GPM} \\ 275,000 \text{ GPD} / 24 \text{ hrs/d} / 60 \text{ min/hr} & = & \underline{191 \text{ GPM}} \\ & & 532 \text{ GPM} \end{array}$$

Total Peak Hour Flow:

$$532 \text{ GPM} \times 3 = 1,596 \text{ GPM}$$

Maximum consumption on the year 2006 would be 602,544 GPD. If we apply the actual versus the statistical correction factor ($153,475 \text{ GPD} / 303,788 \text{ GPD} = 51\%$) to the 2006 value, it will result in $602,544 \text{ GPD} \times 0.51 = 307,297 \text{ GPD}$.

Summary

The existing internal water distribution at FIU University Park in most cases meets the present and future consumptive and fire flow demands. System reliability was improved considerably with the latest modifications to the infrastructure. Further improvements as described must be considered to enhance reliability and extend service to new building sites. Another recommended feature is the addition of sectioning valves to the existing loop as well as to the new piping extensions. It is suggested that every time a tap is done to service new construction, new valves are added to each side of the loop.

SEWAGE COLLECTION AND DISPOSAL SYSTEM

Sewage Sources

The principal source of sewage at Florida International University, University Park is domestic sewage from the usage of the restrooms, kitchens and student housing facilities.

Limited amounts of laboratory sewage waste are neutralized prior to combining with the domestic sewage. Most of the laboratory waste comes from the recently inaugurated Chemistry and Physics Building. This facility features a state of the art chemical waste treatment system. It consists of dilution tanks for acid type wastes and collection devices for organic type compounds which includes solvents. These will allow off-campus safe disposal of such wastes.

Existing Collection, Piping and Transmission System

The sewage collection system at University Park consists of approximately 7,000 feet of gravity mains, 7,600 feet of force mains, and 3 sewage lift stations that pump to a master sewage pumping station that delivers to the force main system of the Miami-Dade Water and Sewer Authority Department for treatment by the MDWASAD at the Virginia Key Sewage Treatment Plant.

The existing system makes use of piggy-back stations; that is, gravity systems are pumped and discharged into another gravity system. This practice requires smaller pumps with lesser heads since the discharge is to atmosphere at the discharging manhole. Drawbacks to this approach are the overloading conditions that are created in the receiving/collection system and pumping station, and the chance that infiltration problems could go unnoticed and, therefore, increase pumping costs.

As part of the previous Utility Master Plan Update, the infrastructure to separate one of the existing lift stations from the piggy-back system was put in place. A new force main was directly connected to the pipe (force main) joining the effluent of the Master Sewage Pumping Station to MDWASAD Street Main. (See Figure II). This infrastructure component was added in two parts with the Chemistry and Physics and the Business Buildings. It now remains to add another Master Pumping Station to hook to the just installed force main. This station will handle East Campus growth at the same time alleviating the load on the existing Master Station by receiving gravity and force discharge from Dormitories, Graham Center and New Buildings to the South-Southeast.

Comparison of Water Purchase vs. Sewage Flow

The Florida International University, University Park Master Pumping Station Flows are presently metered through a magnetic meter. The comparison of water purchase vs. sewage flow is based on the billing records provided by the University staff.

The average sewage flow for the latest ten months is 141,333 GPD. This amount compares very closely to the water consumption which is 153,475 GPD. The sewer is 92% of the water flow which indicates that there is no significant infiltration and that the amount of water from the system used for landscaping irrigation is minimal.

Infiltration

Due to the high water table conditions that generally exist in South Florida, most gravity sewer lines are subject to infiltration from groundwater sources. In order to control and minimize the effects of infiltration, maintenance programs such as line isolation, flow measuring and line TV examination should be periodically conducted.

It is recommended that the existing gravity systems on University Park be inspected on a five year schedule by using the line TV examination method. This will assure the continued integrity of the gravity system.

Future Connections

The present gravity system can be extended to provide for service to a portion of the anticipated development. Other portions of the future expansion will require lift stations that will deliver the sewage by manifold to the existing force mains. Based on the latest campus development, two additional master pumping stations and two lift stations together with approximately 7,500 feet of force main will be required. About 8,300 feet of gravity main extension to the existing system will provide for the balance of the proposed campus development.

One Master Sewage Pumping Station should be located by the existing lift station at the Housing area as previously discussed. The force main for this station as well as part of the gravity sewer piping is already in place. This pumping station should have been installed as part of the Graham Center Expansion Project nearing its completion. Therefore, this station should be high in the list of utility priorities. Once in place, this station will handle the programmed expansion in the East, Northeast and Southeast areas. (See Figure II). Funds for this Master Pumping Station should be allocated in the budget for the upcoming Education Office Building.

The Second Master Pumping Station should be located on the West side of campus to handle the existing sewage plus the programmed growth on that side (i.e., Campus Support Complex, Multi-Purpose Stadium, etc.) Existing lift stations on West Campus Discharge East into the gravity system which in turn goes through the existing Main Pumping Station. The new proposed station should fall within the budget and construction time frame for the Multi-Purpose Stadium (Baseball). Its discharge will go directly into the MDWASAD line running North-South along S.W. 117th Avenue. Figure II indicates the proposed location and piping connections.

Present-Year 2006 Estimated Average Daily Demand

Previously discussed projections for water consumption based upon industry accepted statistical values and corrected by the percentage factor of actual consumption vs. statistical use from present records showed an estimated average daily consumption in the year 2006 of 307,297 GPD. This water consumption projection when corrected by 0.92% factor as shown on the 10 month average shows that sewage flow figures for the year 2006 will be 282,713 GPD.

Meter Installation

Metering of sewage flows is usually done for the purpose of charging for treatment or determining plant flows. New technology has made it possible to utilize ultrasonic flow meters and recording instruments which allows better management of the maintenance and repair of the water and sewer system. Comparison of water purchase vs. sewage flows is a very valuable tool. The value of this comparison is that leaky plumbing, infiltration, and system overload can be diagnosed.

It is recommended that ultrasonic flow meters be installed in the discharge side of the master sewage pumping stations.

Ultrasonic meters offer accuracy, reliability, instantaneous and totalizing readouts, have no moving parts, are not plagued by buildups and fouling, and, in short, are ideal for sewage metering.

Pumping Station Maintenance

The introduction of two additional Master Pumping Stations will alleviate the load on the existing one, thus allowing for a more thorough and periodic maintenance. By maintaining some of the existing force mains made obsolete by the proposed stations, the maintenance of the new Pumping Stations will be facilitated.

Summary

The sewage collection system serving the main section of the Florida International University, University Park is adequate for present needs. The practice of piggy-back discharging should be discontinued and future extensions to service the planned buildings should follow the master planning approach in accordance with the recommendations described herein.

ROADS AND DRAINAGE

Flood Criteria

Flood criteria for the Florida International University, University Park area is set at elevation +7. The flood criterion is the minimum prescribed ground level based on an estimate of the highest water level expected to occur once in 10 years.

Maps showing elevations currently required are filed in the Public Records of Dade County and are part of the Dade County Public Works Manual. These are minimum allowable elevations for crowns of streets and for land surface as required by Chapter 28 of the Metropolitan Dade County Code. These elevations are subject to continual review and are revised as drainage improvements become effective. Reasonable protection from flood damage will result only from proper combinations of filling, grading, and installation of drainage facilities.

As a minimum, all new construction of roads and parking facilities should follow these standards.

Grading

Flood Criteria Elevations establish minimum elevations for land to be developed. Land filled to such elevations must be carefully graded and shaped. Slopes must trend away from structures or areas to be protected, and the area must be properly graded to direct surface runoff into the drainage system. Future roads and parking facilities at University Park should conform to Section C3 of the Dade County Public Works Manual requirements.

Existing and Future Drainage Systems

Disposal systems are termed positive drainage systems or seepage systems. Positive systems include canals and storm sewers that drain through a continuous outfall to the bay or ocean; whereas seepage systems drain into the ground water, and may consist in part of basins and pipe systems which dead end at lakes. Until such lakes are connected to a continuous outfall to the bay, they are not considered as positive drainage systems. Seepage trenches design depends considerably on runoff, hydraulic head, size, number of seepage drains, and transmissibility of the subsurface which is to receive storm water. Design must be supported by data from special tests made to determine seepage characteristics, one such acceptable test being the USGS-PWD Slug Test developed by the U.S. Geological Survey and the Metro Dade County Public Works Department. Other tests are listed in Manual IV of the South Florida Water Management District.

The exfiltration method (seepage system) most commonly used in Dade County consists of French drains or exfiltration trenches which work by allowing the water to be collected in a catch basin and then passing it through a trench which allows a lateral movement of the aquifer. (The Biscayne Aquifer is composed mainly of very porous limestone.) Another method commonly used is drainage to land locked lakes. The system consists of a series of catch basins collecting the storm runoff and then conveying the runoff in an enclosed pipe in an open channel flow fashion down to a low point of discharge. The low point of discharge is usually located at or below the water level in one of the land locked lakes. Continuing to use this type of drainage system is not encouraged due to the fact that a lot of pollutants and many nutrients do go in with the first flush of water into the lakes. Therefore, the nitrification process is accelerated in the lakes and canals.

Presently, the several lakes on the campus receive runoff from the parking lots and from the green areas either via the catch basins and drainage pipes or by overland flow. The system can be adapted to receive the overflow of seepage facilities and perform a better function in the Campus Storm Water Management.

A properly managed system with a combination of exfiltration trenches to provide good detention of the first flush and then a system of lakes to take care of the overflow or the extra runoff being taken in by the catch basins on campus should be able to provide the best possible drainage. The lakes act as retention basins, and in the event of a major flood, at least one lake should be provided with the proper pumpage to discharge into the Snapper Creek Canal (S.W. 117 Avenue canal) which in turn will discharge directly into the bay past the salinity structures. As Campus growth is changing grassy lands into buildings, roads, and parking facilities, this safety relief pumping should be focused on.

Storm Frequency and Disposal

"Frequency" as used herein refers to rainfall frequency or to storm frequency and not of flood frequency unless specifically stated. The design of frequency to be used will depend on a balance between costs of a drainage facility and the damage it will present. After preliminary selection of drainage facility sizes, evaluation should be made of the damage that would be caused by flooding resulting from more intense, and less intense, storms.

For University Park, the frequency selected should be the 10 year frequency. Exfiltration systems should be designed in accordance with the South Florida Water Management District regulatory criteria as per the South Florida Water Management District Manual IV or Metro Dade County's Public Works Manual Section D4.

Roads

Florida International University, University Park has several access roads. Housing has access from S.W. 107th Avenue.

The campus has a main entrance on S.W. 107 Avenue which continues West and allows for a circular, smooth flowing traffic pattern. Another main entrance is being developed at S.W. 8th Street (Tamiami Trail). A loop road in the Northeast quadrant connects to both these entrances. This loop road is being continued on the West side of the Tamiami Trail entrance. The construction of this road is about to start. When finished, it will loop around the Business Building, Public Safety Building, Health Clinic, and the Center for Conflict Resolution.

New road connections will be required for the Arts Complex Phase I. This planned road improvements (see Architectural/Planning part of this report) will also afford controlled access to the campus from the Youth Fair Grounds. A section of road re-alignment on the West Campus access from 117 Avenue will have to be included with the Multi-purpose Stadium (Baseball).

Summary

As the work in progress or that about to commence is completed, the campus internal road communications will be greatly enhanced. Interface with existing roads South of the campus property line should be carefully considered and controlled to prevent unnecessary traffic.

Present drainage facilities have proven adequate. They should be modified and improved in accordance with proper storm disposal management practices as campus growth continues.

CHILLED WATER SUPPLY AND DISTRIBUTION SYSTEM

General Description

Nine of the ten major buildings completed or about to be completed in this campus are served with chilled water for air conditioning from a Central Utility Plant. The tenth building, Athletic Arena, due to its remoteness within the campus and operational nature has its own source of chilled water service. The Owa Ehan Building, even though connected to the network, has a stand alone chiller. This unit provides service during Central Utility Plant stand down hours. Several areas within this building require continuous air conditioning to satisfy environmental demands from experiments in progress.

Chilled water supply and return is carried to the buildings via an underground piping loop extending North and East; South and East from the Central Utility Plant. (See Figure III). A complete piping loop surrounds the existing Academic Core Buildings.

Central Utility Plant Present Conditions

The Chiller Plant in its original configuration was built during the mid-nineteen seventies. A recent expansion was completed in 1990. This update consisted of various project/components combined to achieve a coordinated result. These components consisted of: replacement of an existing chiller with a new one on a Shared Savings Payback Program, installation of a new chiller and replacement of another existing with Shared Project/State Energy Program Funds, and new pumping, piping, and building expansion with funds included under the Physical Sciences Building Project.

Presently, the Chiller Plant features three new chillers of 900 tons each and an older machine of 1,193 ton capacity. New chillers sport an efficiency of approximately 0.6 kw/ton. The efficiency of the older one is in the order of 0.9 to 1.0 kw/ton. All machines are in a parallel configuration.

The other main components of the plant consist of both chilled and condenser water pumps and an array of cooling towers connected by a common sump. Chilled water pumps (three) were replaced with new units during the 89-90 update. Also, a twin cell cooling tower was added side by side to the existing ones.

Plant Future Requirements

Following is a summary of present and future recommendations.

A.	Approximate Present Building Net	
	Square Footage Served By Central Chilled Water Plant	535,000 SQ FT
B.	Present Plant Average Usage	1400-1600 TONS
C.	Approximate Planned Net Square Footage	
	Growth Phase I (1991-1996)	440,000 SQ FT
D.	Total Plant Tonnage Required At End of Phase I (1996)	2,550 TONS
E.	Approximate Planned Net Square Footage Growth Phase II and III (1996-2006)	745,000 SQ FT
F.	Total Plant Tonnage	
	Required at End of Phase II (2001)	4,500 TONS

The current capacity of the Plant is 3,900 tons. Roughly 1,200 tons of this total are in existing chiller #3 which is an outdated machine. In its present configuration, the Chiller Plant has capacity to absorb the growth in Phase I (up to 1996).

Aside from the Central Utility Building capacity, there is a 180 ton air cooled chiller serving the Owa Ehan building. This machine is connected to the piping loop and therefore, it enhances the total available capacity to 4,080 tons. However, there are various concerns which will have a bearing on the Plant operation. The first is the replacement of the older chiller by a new efficient machine. This exchange should be scheduled as soon as convenient. It could be programmed to coincide with the construction of the Education Office Building.

Another major concern is the changeover of the existing refrigerant gas in the chillers (CFC-11) to a more environmentally friendly refrigerant like HCFC-123. In this process, the capacity of the existing (newly installed) machines get derated by approximate 50-70 tons each. These machines will then produce 830 tons instead of 900 tons. Assuming the old machine is exchanged for one already rated at 900 tons with the new refrigerant, then the Plant capacity will be 3,390 tons [2,550T + 1,400T - Item 7.3 (B + D)]. Capacity thus provides for the requirements up to 1996 with almost 840 ton redundancy in a machine. This will allow for maintenance and repair downtime.

The third major concern with the Plant's present configuration is the chilled water pumping ability. The distribution loop concept is discussed below. As a result of the Phase I expansion, long chilled water legs will have to be tapped off the existing loop. This will require an updated hydraulic study as well as pump arrangement, number, and size revisions. The logical approach would be to make this effort coincide with the replacement of (old) chiller no. 3. This step is thus recommended to coincide with the Education Office Building.

Plant capacity will have to be increased for the expansion beyond 1996 (Phases II and III). The Central Utilities Building and all the piping systems have been prepared for the addition of a bay and another chiller, plus auxiliaries including a cooling tower.

The tonnage of this chiller should be firmly evaluated at the time of the next Master Plan Update. Based on current estimates, it should be a 2,000 ton unit. At the time of its installation, programmed for the first Phase II construction, this machine being "State of the Art" should become the lead machine. With this unit, the Plant will meet the 4,500 ton operating requirement plus one machine redundancy.

Chilled Water Distribution Loop Present Condition

The original loop extends North and South from Utility Plant. The North leg turns East toward the Owa Ehan Building. The South leg has several branches serving the Library/Auditorium (AT Bldg.) and the Graham Center (UH Bldg.). Last leg goes to Perry Building. (See Figure III.)

Latest improvements to the loop consisted of a continuation of the East-West leg to the Chemistry and Physics Building and from there, an extension North-South to join with the leg to Graham Center. The entire loop is complete and has been provided with manholes and sectioning valves on the newer sections. The East-West portion of the loop serving the Library (AT Building) and Graham Center will be increased in size coinciding with the Library Expansion Project now under design.

Building Chilled Water System/Loop Interface

The existing buildings and the new ones are designed for a primary/secondary pumping arrangement. The campus uses the primary pumps at the Central Utility Building to effect the chilled water distribution through the loop. The secondary pumps at each building will distribute the secondary chilled water to the air handlers. The Utility Plant should operate on a constant primary chilled water supply temperature of 44 degrees F. Return water temperature will be allowed to swing since the chiller arrangement does not lend itself to variable pumping.

All buildings use a primary/secondary interface. This interface is somewhat different for University House. Here, the secondary pumping is an inline booster type arrangement. The Graham Center Expansion Project added another primary/secondary piping/pumping interface, but left the existing one in place. The next Graham Center Addition Project should include an homologation effort to eliminate the existing (old) secondary pump and serve this entire building with the newer one.

All new buildings should have a primary/secondary system also. Secondary pumps will draw primary water from the loop and circulate it through the air handling coils. All air handlers except the last in the network will be equipped with two-way valves. The last unit will have a three-way valve. At the discretion of the particular Design Engineer for each building, this arrangement may be substituted by a pipe bypass at the end of the secondary distribution network. In this case, the bypass should have a pressure compensating valve. This system for new buildings will allow water flows to be varied according to load configuration.

The Chiller Plant has a "State of the Art" Energy Management System for its equipment and it also houses the Central Energy Management Computer which links most of the other campus buildings.

Summary

The following work in relation to the chilled water distribution should be accomplished during Phase I (1991-1996) of the Master Plan. They are listed in order of priority.

- (1) Exchange of Refrigerant Gas for Chillers 1, 2, and 4. Caution is recommended for this step in light of recently published adverse information on the new refrigerant.
- (2) Exchange of Old Chiller 3 for a New 900 Ton Machine Rated for Refrigerant HCFC-123.
- (3) Updated Chilled Water Pumping Requirements. (As discussed previously under "Future Plant Requirements").

This work, especially (2) and (3), should be scheduled to coincide with the Education Office Building. For Phase II (1996-2001), the Central Utility Building should be enlarged one bay and a new 2,000 ton chiller installed along with corresponding cooling tower, chiller, and condenser water pumps.

Aside from Plant capacity improvements, the energy consumption aspect should be focused upon. The area of energy storage appears to be the most feasible concept for implementation. Basically, it would consist in the curtailing of chiller capacity during the peak electrical consumption periods (i.e. 2 PM-8PM). Chilled water production during those periods would be satisfied by ice storage cells. These cells would in turn be charged by a smaller chiller during offpeak electrical demand hours (i.e. 11PM-6AM).

For the ability to shutdown major equipment (i.e. - chillers, cooling towers, condenser water pumps) on request, the local utility F P & L will charge the University an advantageous rate. Furthermore, F P & L has an incentive program which will award customers introducing demand shaving devices such as ice storage with a lump sum based on the number of refrigeration units (tons) saved by the energy storage facility.

Another incentive program already in place has F P & L paying customers for replacing old chillers with new efficient machines. This program returns up to 11% of the total replacement costs back to the customer. Florida International University may qualify retroactively for the two chillers it replaced and will certainly get the entitlement when old chiller no. 3 is replaced.

ELECTRICAL DISTRIBUTION

Present Distribution Network

University Park is presently serviced by two interlocked main feeders running North-South at 107 Avenue and at 117 Avenue. Each of these feeders is connected to a separate substation. In this fashion the campus core may be fed from one or the other source, providing flexibility and backup capability should one service fail. West Campus is serviced by a feeder at 117 Avenue only.

The Buildings at West Campus are fed by overhead pole service while the main campus core is served by a system of underground ductbanks and manholes.

Florida Power and Light has just completed the construction of a substation on an easement located at the Southwest corner of the campus.

Future Provisions by Utility

As part of their 1992 program, the local Utility is planning a new East-West underground ductbank run to replace the existing one. This new ductbank will feature various manholes with tap-off points to serve the campus expansion, as well as to lend reliability to the existing (old) distribution network.

It is projected for the new ductbank to run East from the substation on West Campus to the facilities at S.W. 107 Avenue. It will be aligned parallel with the FIU/Youth Fair boundary line, running on the campus side. Immediate coordination with the planned location of the Multi-Purpose Stadium (Baseball), the three buildings of the Art Complex, and the Amphitheater will be required to expedite a permanent location for the new ductbank. Figure IV indicates a proposed location for the new ductbank.

Rate Structure and Alternate Electrical Distribution Modes

A substantial incentive program is offered to commercial customers introducing thermal storage systems which will help to shave peak demand. The maximum electrical demand per billing cycle as measured at the meter at fifteen or thirty minute intervals determines the rate at which kilowatt-hour consumption is charged.

An ice or chilled water storage system, for example, will allow the chillers to be supplemented to meet load requirements without exceeding a predetermined peak demand.

Stored thermal energy may be produced overnight by a small chiller. At that hour, most other equipment is shutdown and outdoor temperatures are cooler, thus achieving better system efficiency. Another benefit of a thermal storage system is the readily available capacity to handle shock loads due to chiller malfunction, large assemblies of occupants, etc.

Other energy related incentive programs are already in place. A chiller retrofit rebate program is discussed under Chilled Water Supply and Distribution.

Florida Power and Light is also evaluating other energy saving programs, some of them in the area of lighting. It is very possible that in the near future, there will be rebates or other types of incentives for efficient ballasts, lighting controls, fixtures with efficient illumination, etc.

TELEPHONE AND COMMUNICATION DISTRIBUTION

Present Distribution Network

The campus is served by a main feeder entering from SW 107th Avenue. An existing network of underground cables, manholes, and pullboxes crisscrosses the campus.

A new Fiber-Optic System is being gradually introduced to the campus. The first vault-computer is located on the South side of the Perry Building. Fiber-Optic service has been extended to the Engineering Building, Chemistry and Physics Building, and to the Business Building, now under construction.

Future Expansions

Fiber-Optic service will be extended to the Library (AT) Building coinciding with the Phase I Expansion Project now in Design Phase.

The telephone company (Southern Bell) is planning an expansion step which will carry Fiber-Optic service to West Campus. To accomplish this, they will be installing a second vault - computer at the Athletic Building (Arena) on the South side. This service is planned for 1992.

As part of the Master Plan Update, the existing ductbanks must be extended to serve the new Buildings. At the same time, the network must be extended to serve existing Buildings. Figure V shows the proposed extensions of the underground ductbanks. One system will be extending from the manhole serving the Chemistry and Physics Building. A new set of (4) - 4 inch diameter conduits will go North then East on the outboard side of the existing perimeter road. There are existing pipe sleeves below the road to be used for crossing under it. This extension will serve the President's House with one 4 inch diameter conduit. This section should coincide with the construction of the President's House. The continuation of the ductbank East and then South will serve the New Northeast Dormitories, the existing ones, and the Health and Life Sciences Building. Continuation of this (4) - 4 inch ductbank from the take-off manhole for the President's House to a manhole East of the Health and Life Sciences Building should be funded in the program for this Building.

A bank of (4) - 4 inch conduits to serve the Arts Complex should extend South from the existing Perry Building Fiber-Optic Vault to the new Art Building Core. This conduit bank should be included in the program for the Arts Complex I.

From the West Campus Future Fiber-Optic Vault, a bank of (4) - 4 inch conduits should run South to a manhole near the proposed Multi-Purpose Stadium. This ductbank length to coincide with the Stadium construction. An intermediate manhole shall be provided for a lateral Westward (4) - 4 inch ductbank to serve the Campus Support Complex. This lateral extension should be included in the program for the Campus Support Complex.

Another (2) - 4 inch ductbank should be extended Westward from the projected vault at the Golden Panther Arena. This section of ductbank should link to the Central Receiving Building and adjacent structures. This extension should be included in the Campus Support Complex Program.

Finally, a ductbank consisting of (4) - 4 inch conduits should extend North and West from an existing manhole adjacent to the Business Building. This extension will serve the Education Office Building and future structures in that general area. Conduits to use existing sleeves to cross under new Tamiami - Business Building entrance road. This conduit extension should be included in the Education Office Building Program.

It is recommended that all new ductbanks be PVC conduits encased in concrete.

NORTH MIAMI CAMPUS

Purpose of the Utilities Update

The purpose of this analysis is to establish the status of the water, sewer, drainage, chilled water (air conditioning) supply/distribution, electrical, and telephone systems at this campus and to evaluate the infrastructure requirements in relation to the planned, campus growth.

WATER DISTRIBUTION SYSTEM

Source of Water Supply

The North Miami Campus is served by the distribution system of the City of North Miami which buys its water supply from the Miami Dade Water and Sewer Authority Department (MDWASAD) which in turn draws its water supply from the Biscayne aquifer and treats it at the Hialeah-Preston Water Treatment Plant. The existing distribution system within the campus is connected to the City of North Miami 30 inch diameter water main at the south end on NE 135th Street and by a 16 inch diameter water main at the north end of the campus.

Type of Use

The City of North Miami water supply is primarily for potable use and secondarily for fire protection. Water for lawn sprinklers is also provided by metered connections to the city mains. The campus is about to receive a new source of water for its irrigation needs. The MDWASAD North Regional Sewage Treatment Plant has extended a main from their facilities off Bay Vista Boulevard to a point near the campus just behind the Public Safety/Physical Plant Building Complex. From this point it will be picked up by FIU through an in-house project and pipes extended through the campus to connect with existing lawn sprinklering system. The Sewage Plant will be furnishing tertiary treated effluent strictly for irrigation purposes. Once completed, this project will constitute a major step in fresh water conservation and significant savings to the University.

Existing Piping and Hydrants

The existing campus water distribution system approximately consists of 4,600 feet of 16 inch diameter pipe, 1,500 feet of 12 inch diameter pipe, 600 feet of 10 inch diameter pipe and 1,400 feet of 8 inch diameter pipe.

There are 17 hydrants servicing the campus for fire protection.

Consumptive Use and Fire Flow Capabilities

The existing distribution system is adequate for consumptive use and meets fire flow requirements as set forth under Chapter 32 of the Dade County Public Works Design Manual. However, it does require more hydrants in order to provide better reliability.

Future Connections

Proposed future building construction will require minor additions to the system for service extension and added reliability. Additions can be handled best as the building program progresses. The ultimate system will require the addition of approximately 2,500 lineal feet of 12 inch and 2,000 lineal feet of 8 inch diameter water mains and about 10 fire hydrants. These enhancements should include additional hydrants around the Hospitality Management Building.

Building and Sprinkler Meters

The existing buildings and sprinkler areas within the campus are metered separately. As previously discussed, the sprinkler system will be receiving a new source of water and it is recommended that they install flow indicators for maintenance purposes.

Present-Year 2006 Estimated Average Daily Demand

Average Daily Flows for the Florida International University North Miami Campus computed from billing records shows an average consumption of 74,275 GPD for the past 10 month period.

Statistical Consumption (Present)

$$\begin{array}{rcl} \text{Commuting Students} & - 44,287 \times 14 \text{ GPD} & = 60,018 \text{ GPD} \\ \text{Housed Students} & - 652 \times 100 \text{ GPD} & = \underline{65,200 \text{ GPD}} \\ & & 125,218 \text{ GPD} \end{array}$$

Actual vs. Statistical Correction Factor

$$\frac{75,275}{125,218} = 0.59\%$$

Projected enrollment for the year 2006 will give the following statistical consumption values:

$$\begin{array}{rcl} \text{Commuting Students} & - 6,183 \times 14 \text{ GPD} & = 86,562 \text{ GPD} \\ \text{Housed Students} & - 952 \times 100 \text{ GPD} & = \underline{95,200 \text{ GPD}} \\ & & 181,762 \text{ GPD} \end{array}$$

Applying the correction factor, it can be predicted that the water consumption for the year 2006 will be:

$$181,762 \text{ GPD} \times 0.59 = 107,240 \text{ GPD}$$

Summary

The existing internal water distribution system of the Florida International University, North Miami Campus meets the present consumptive and fire flow demands.

Future expansion to the network in the area of the proposed dormitories should coincide with that project. Expansion of the loop by the recently built HRS Complex should be closed to the water main by the Library. Approximately 500 feet of 8 inch diameter pipe are required. This section should be included with the future individual structures planned for this general area. (See Figure VI).

The other area of expansion is to the Southwest of the existing campus. This proposed loop will serve the Buildings and parking garages planned for this area.

SEWAGE COLLECTION SYSTEM

Sewage Sources

The principal source of sewage at the Florida International University, North Miami Campus, is domestic sewage from the usage of the restrooms, kitchens and student housing facilities.

Limited amounts of laboratory sewage waste are neutralized prior to combining it with the domestic sewage. Under EPA, FDER and DERM (Chapter 24), all dischargers to sewer are required to pretreat and render waste safe for handling at the POTW.

Existing Collection, Pumping and Transmission System

The sewage collection system of the North Miami Campus consists of approximately 5,400 feet of gravity mains, 3,000 feet of force main and one sewage pumping station that delivers to the force main system of the Miami-Dade Water and Sewer Authority Department for treatment by the MDWASAD at the North Regional Sewage Treatment Plant.

Comparison of Water Purchase vs. Sewage Volume

The Florida International University North Miami Campus master pumping station (this pumping station is owned by the city of North Miami) flows are not presently metered through a magnetic or doppler meter. For a true comparison between water purchased vs. sewage volume a sewage measuring program must be initiated. This program must take into account subterranean water intrusion to obtain accurate data.

Current Average Sewer Discharge is 50,570 GPD. This number is based on University billing records for the last 10 months. Water consumption for the same period is 74,275 GPD. Based on this proportion, the sewage discharge for the year 2006 may be estimated to be:

$$107,240 \text{ GPD} \times 50,570 \text{ GPD} / 74,275 \text{ GPD} = 73,015 \text{ GPD}$$

Meter Installation

Metering of sewage flows is usually done for the purpose of charging for treatment or determining plant flows. New technology has made it possible to utilize ultrasonic flow meters and recording instruments which allow better management of the maintenance, the water purchased versus sewage volumes, is a useful parameter by comparison; leaky plumbing, infiltration, and system overload may be diagnosed.

Infiltration

Due to the high water table conditions that generally exist in South Florida, most gravity sewer lines are subject to the effects of infiltration, maintenance programs such as line isolation, flow measuring and line TV examination should be periodically conducted.

Future Connections

The present gravity system can be extended to provide for service to most of the anticipated development. The Dormitories may require lift stations that will deliver the sewage by manifolding to the existing 12 inch diameter force main.

Summary

The sewage collections system serving the Florida International University, North Miami Campus is adequate for present and future needs. Gravity line extensions will be required to accommodate future growth. (See Figure VII.)

Existing 4,000 Gallon grease trap serving cafeteria at the Student Center is adequate for present service. Additional trapping facilities may be required if future food service expansion is contemplated.

A 1,000 gallon chemical dilution trap is presently serving the Academic II. This facility is adequate for handling chemical products discharge from laboratories.

ROADS, DRAINAGE, AND COASTLINE EROSION

Flood Criteria

Flood Criteria for the Florida International University, North Miami Campus area is set at elevation +5. The flood criteria is the minimum prescribed ground level based on estimates of the highest water level expected to occur once in ten years. Reasonable protection from flood damage will result only from proper combinations of filling, grading, and installation of drainage facilities. Storm surge flood levels must be considered when planning ground floor elevations.

Existing and Future Drainage Systems

Disposal systems are termed positive drainage systems or seepage systems. Positive systems include canals and storm sewers that drain through a continuous outfall to the Bay; whereas seepage systems drain into ground water, and may consist in part of basins and pipe systems which dead end at lakes.

The location of the North Miami Campus does not allow for the economical design of exfiltration facilities because of the ground conditions (i.e., poor swampy soils). In accordance with the SFWMD design practices and the Dade County Water Resources DEFM dry retention ponds capable of holding the first 1/2 inch of runoff must be incorporated into the design. The ponds in turn will be connected to land locked lakes.

Storm Frequency and Disposal

"Frequency" as used herein refers to rainfall frequency or to storm frequency and not to flood frequency unless specifically stated. The design frequency to be used will depend on a balance between cost of a drainage facility and the damage it will prevent.

For the Florida International University North Miami Campus, the frequency selected should be the 10 year frequency.

Future dry retention systems should be designed in accordance with the South Florida Water Management District regulatory criteria as per the South Florida Water Management District Manual IV or Metro Dade County's Public Works Manual Section D4.

Coastline Erosion

The Florida International University North Miami Campus is surrounded on the North and Northeast sides by the Intracoastal Waterway and Biscayne Bay respectively. Existing coastline consists of a combination of silty/sand sections with extensive mangroves. This natural lowlands did suffer continuously from coastal erosion.

Metropolitan Dade County has embarked on an ambitious project to save the seashore from further erosion. For that purpose, they have cleared a strip approximately fifty feet in depth along the Northeast shoreline. A rock buffer zone has been placed as a contention barrier between the sea and the shoreline. The narrow lagoons along the northeast edge between the new rocks and the shore are being planted with mangroves which are already growing.

A small estuary flows out into the East shoreline. The mouth of it has been defined by a rock rip-rap. This estuary runs about a mile out from the marshy land South of Bay Vista Boulevard.

Roads

The Florida International University, North Miami Campus has two access roads. Access from NE 135th Street is presently blocked. Present access to the campus is solely through the NE 151st Street entrance.

The campus itself has a main entrance on the perimeter road which continues East and allows for a smooth flowing traffic pattern to all points of the campus.

The system of roads is tied to the old Interama Plan and has blended into the path of the campus development and existing water and sewer line extensions. A complete loop road with convenient access from NE 135th Street will facilitate a smooth traffic flow to the future buildings according to the development of the Master Plan Update.

Included in the road program is the connecting road from NE 151st Street (North entrance road) to the NE 135th Street entrance road for easy access to those members of the community and campus population that will attend special events and desire to travel a more direct route to I-95.

Summary

A new main entrance to the campus is being planned, as well as a secondary access road to serve the Future Conference Center. Once completed, accessibility to both sides of the campus and the respective parking areas will be improved.

At present existing dormitories are disposing of their storm drainage to the surrounding grassy areas. Future construction in the vicinity of these dormitories must take into account the modification of the disposal methods to discharge into filtration trenches or retention ponds.

CHILLED WATER SUPPLY AND DISTRIBUTION SYSTEM

General Description

A Central Utility Building containing three chillers and their auxiliary equipment provide chilled water to all of the existing academic buildings with provisions for future extensions. A primary/secondary pumping system operating through a two pipe loop carry the chilled water to and from the various campus structures. The Central Utility Building has a present capacity of 1,000 tons of refrigeration. This capacity includes a 350 ton unit which was added with the Library Building.

A 215 ton chiller, which was serving the Trade Center, is presently being relocated to the Central Utility Building and connected into the system.

Central Utility Plant - Present Conditions

In its present configuration, the Plant has enough capacity to handle the current load and absorb the forthcoming Conference Center, still maintaining approximately 100% redundancy.

There are three major concerns with the Plant which require immediate focusing. First is the forthcoming 1992 Legislation requiring substitution of refrigerant CFC-11 for a more environmentally friendly refrigerant HCFC-123. Due to the advanced age of most of the North Campus machines, it is doubtful that they may be retrofitted with the new refrigerant.

The second consideration is the low efficiency of the existing machines. The new "State of the Art" chillers operate on an efficiency of less than 0.6 kw/ton. This represents an improvement of between 30 to 40 percent on the existing chillers. It is important to remember the ongoing Florida Power and Light rebate on chiller replacement to improve efficiency. This program was discussed on the University Park section of this report. It is very much applicable to this campus also.

Finally, the third concern with the Plant is the existing pumping capabilities, especially when they must be stretched out to handle the Conference Center.

Future Requirements

The shortrange (1991-1996) expansion of this campus includes approximately a total of 135,000 s.f. of new construction. Most of these buildings will be fed from the Chiller Plant. First in priority, is the Conference Center with 42,000 square feet, Public Affairs/Communication at 65,000 s.f. is the following major building in priority.

As indicated before, the existing Plant can absorb the Conference Center in its present configuration. Piping extensions and pumping revisions to handle this building must be included in its program. At the same time, chiller replacement, both for efficiency sake and refrigerant type, must be considered. If other financing methods cannot be found, the cost of starting the chiller upgrade program needs to be included in the Conference Center budget. This burden can be lessened by the Utility rebate.

There are other methods of financing chiller replacement, for example: shared savings program or State of Florida Energy Grants. Both of these methods have been successfully implemented at University Park Chiller Plant.

The balance of the Chiller Plant changeover should be coordinated to coincide with the Public Affairs/Communications Building Program.

In its final configuration, the Chiller Plant should have a total capacity of approximately 2,100 to 2,400 tons of refrigeration broken into three equally sized 700 to 800 ton machines with its complement of chilled and condenser water pumps.

Chilled Water Distribution Loop Present Condition

At present, the loop has been extended to serve all existing buildings. Taps for future extension have been left at the edge of the Academic II.

Coinciding with the construction of the Conference Center, the piping loop must be extended to service it. This loop extension will also be prepared to handle Public Affairs/Communications when it comes on line. Future buildings on the South axis will be handled by this leg through further extensions. See figure VIII.

Summary

Plant capacity has immediate adequacy for handling the new Conference Center. Efficiency, refrigerant changeover, and pumping capacity are issues that require prompt addressing and should be interfaced along with the forthcoming buildings. Loop requirements have been addressed in the previous section.

ELECTRICAL DISTRIBUTION

Present Distribution Network

Main power feed to the campus follows the existing entry road to the Central Utilities Building. From there, Academic I, Student Center, and Chiller Plant are served. Pool area tennis courts are served from the Hospitality Management Building vault. Academic II Building has its own direct feed with vault, transformers, and switch gear. The Physical Plant, Public Safety, and Central Receiving have their own transformer. Academic I, II, the Student Center, and Central Utilities buildings have two feeders with a throw over switch at the FPL vault. The existing housing buildings also have their own independent power feed with transformer. The Library and Hospitality Management buildings have only one feeder each.

Future Provisions

As per the FPL, the existing vault at Academic II Building has spare capacity to handle the proposed Conference Center. The program for this Building must therefore include conduit extensions from this vault up to the Conference Center site. Future Academic III Building will also be served from this extension. FIU favors an independent extension of the 13.2 KV primary to each of these buildings.

For the expansion to the Eastern areas, the utility will have the choice of extending the existing in-campus service which features the primary/alternate service or extend an overhead service which is now dead ended at 135th Street. Figure IX shows the service extensions.

The electrical section for University Park dwells on the various energy savings programs now offered by F P & L. They are also applicable to this campus. Furthermore, F P & L is contemplating similar rebates for lighting control, efficient lighting fixtures, and ballasts. We recommend that all new buildings be designed taking these features into consideration.

TELEPHONE DISTRIBUTION

Present Distribution Network

The existing telephone system is a University owned "Rolm" type. This system has suffered from reliability problems through the years. Some of these problems have been related to water table intrusion to the distribution conduit/wiring network.

At present, this system is fed from a control point at Academic II Building. Existing Housing Building is fed through the main campus switching system.

It is planned to continue using this existing network to derive a reasonable return on the investment. At the same time, it is planned to start a progressive conversion to the Southern Bell Fiber-Optic System now serving parts of University Park.

Future Provisions

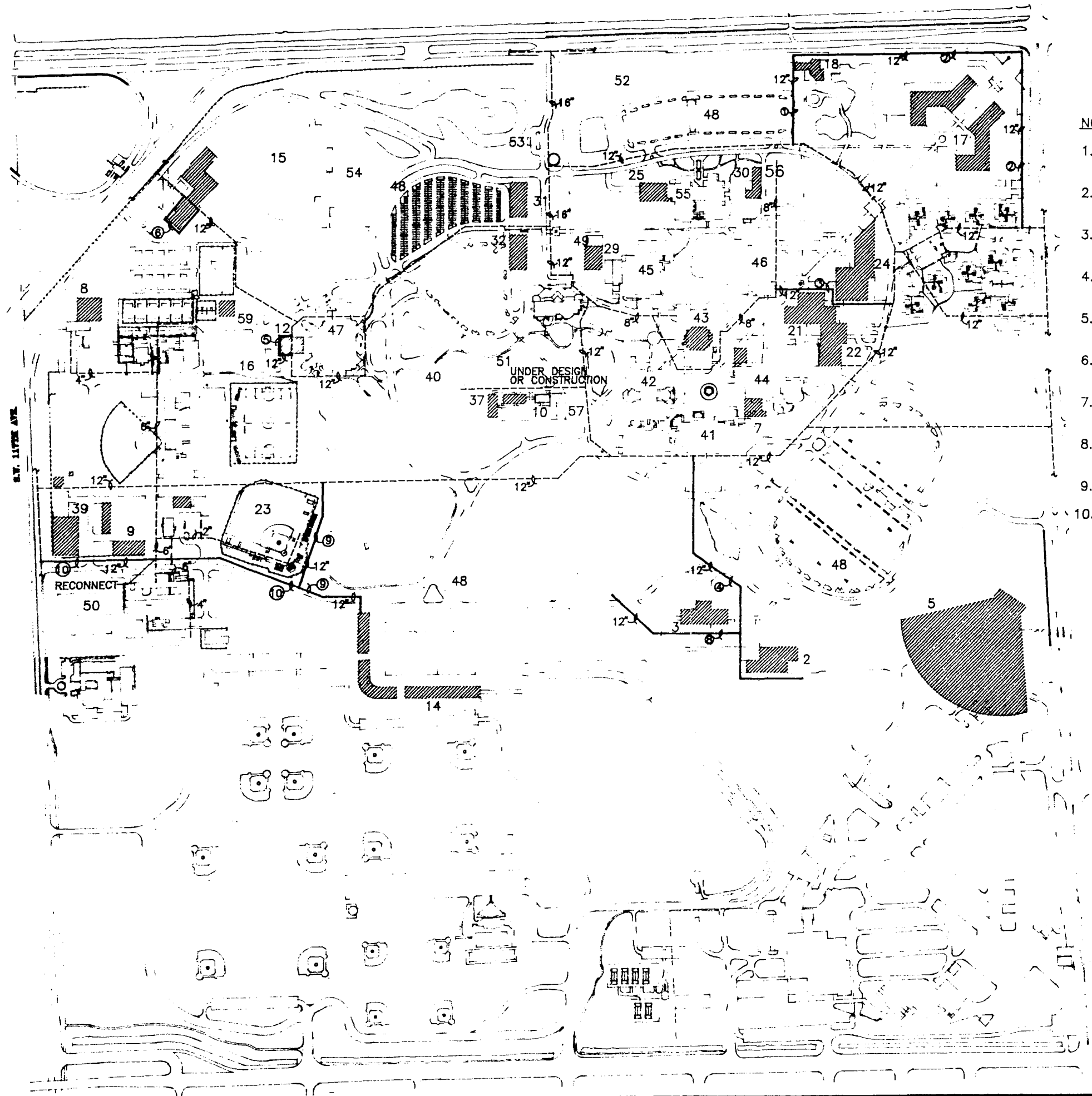
In keeping with the conversion plan, it is planned to design the new buildings with the Fiber-Optic System. To achieve this goal, it will be necessary to extend in an Easterly direction, a (4) - 4 inch conduit bank from the Academic II control point to the vicinity of the new Conference Center. There it would terminate with a manhole for future continuation. Intermediate manholes will be provided to serve the Academic III Building. Figure X shows the proposed conduit layouts.

Again, we strongly recommend, especially in this campus, that the conduit banks be encased in concrete for protection against brackish subsurface water.

F.I.U. - University Park
Building List

1. Library Addition
2. Arts Complex I
3. Arts Complex II
4. Arts Complex III
5. Amphitheater
6. Student Center Expansion
7. Bookstore Building
8. Purchasing Building
9. Physical Plant Building
10. Public Safety
11. Child Care Center
12. Fitness Center
13. Health/Wellness Center
14. Multi-Purpose Stadium
15. 400 Meter Track
16. Pool/Spa
17. Student Housing
 - Honor's House
 - Greek Housing
18. President's House
19. Faculty Club
20. Parking Decks
21. Student Services
22. Student Administration
23. Recreation Area
24. Health and Life Science
25. Engineering II
26. Engineering III
27. Physical Sciences
28. Molecular Biology
29. Computing/SERDAC
30. Greenhouse
31. Education
32. Business II
33. Business III
34. Business & Finance
35. Future Professional School
36. Social Sciences
37. Labor Research/English Language Institute
38. Elementary School
39. Hurricane Center
40. Future Development
41. Charles E. Perry
 - (Primera Casa)
42. Deuxieme Maison
43. Athenaeum
44. Ernest R. Graham University Center
 - (University House)
45. Viertes Haus
46. Owa Ehan

- 47. Golden Panther Arena
- 48. Surface Parking
- 49. Central Utility
- 50. FPL Substation
- 51. Business/Technical Innovation Center
- 52. Metro Station
- 53. Visitor Information
- 54. Recreation Potential
- 55. Engineering & Computer Science
- 56. Chemistry & Physics
- 57. Duplicating Center
- 58. Ceramics Building
- 59. Tennis Center
- 60. Health Building
- 61. Health/Wellness Expansion



NOTES:

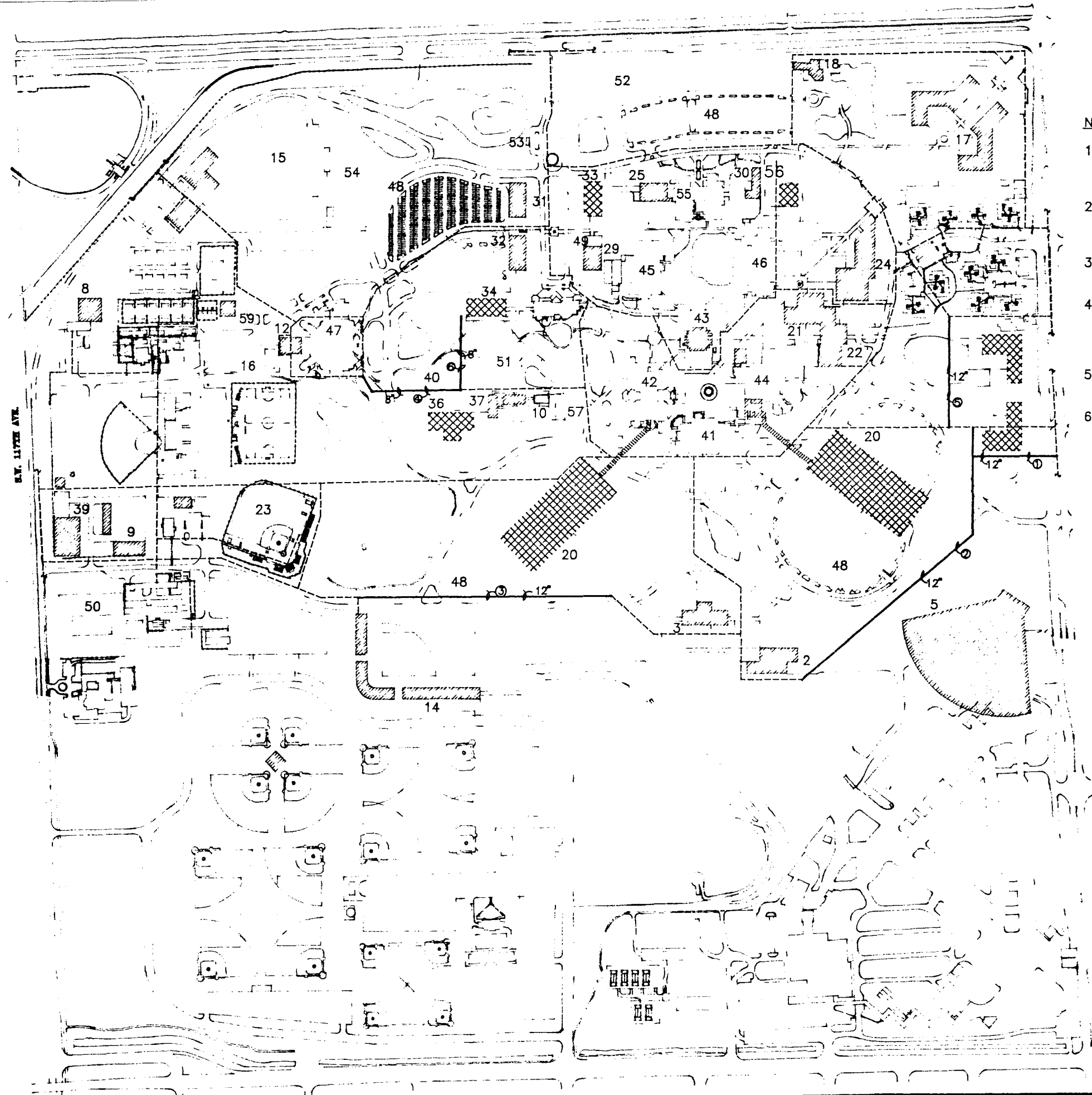
1. 12" LOOP SARTER SECTION TO COINCIDE WITH PRESIDENT'S HOUSE.
2. 12" LOOP COMPLETION LEGS TO COINCIDE WITH STUDENT HOUSING.
3. 12" LEG TO COINCIDE WITH LIBRARY EXPANSION PHASE II.
4. 12" SOUTHERN EXTENSION TO COINCIDE WITH ARTS ARTS COMPLEX I.
5. 12" PIPE RELOCATION TO CLEAR SITE FOR GOLDEN PANTHER ARENA EXPANSION.
6. 12" PIPE RELOCATION TO CLEAR SITE FOR ELEMENTARY SCHOOL.
7. INITIAL 12" SECTION OF A NEW LOOP TO COINCIDE WITH EDUCATION OFFICE BUILDING.
8. INITIAL 12" SECTION OF A NEW LOOP TO COINCIDE WITH ARTS COMPLEX II.
9. 12" LEG TO COINCIDE WITH MULTIPURPOSE STADIUM.
10. 12" SECTION CONNECTED AT ONE END TO STREET MAIN AT OTHER END TO LOOP SECTION.

FIGURE 1 A UTILITIES PHASE I

DOMESTIC WATER/FIRE
SCALE: 425' = 1" - 0"

SYMBOL LEGEND:

- EXISTING UTILITY  PHASE I BUILDING
 ————— NEW UTILITY



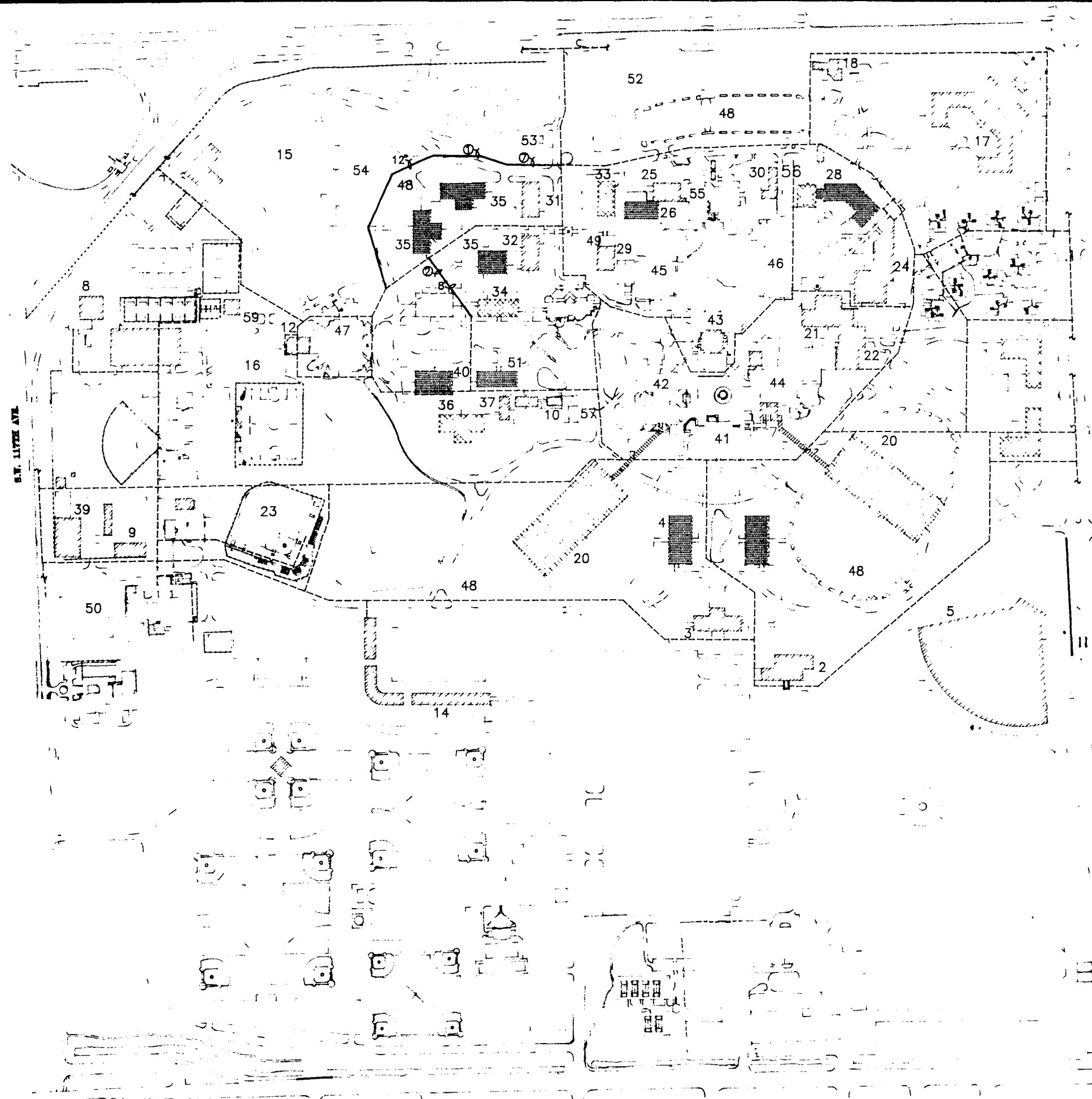
NOTES:

1. 12" SECTION TO BE SET IN PLACE BEFORE EXISTING ONE IS REMOVED TO CLEAR SITE FOR NEW STUDENT HOUSING.
2. 12" SECTION TO COMPLETE LOOP WITH ARTS COMPLEX I LEG BUILT IN PHASE I. PART OF THIS LEG COULD BE CONTRIBUTED EARLY BY AMPHITHEATER PROJECT.
3. 12" SECTION TO COINCIDE WITH WESTERN PARKING STRUCTURE.
4. CONCLUSION OF 8" LOOP SECTION STARTED WITH CONTRIBUTIONS OF LABOR RELATIONS AND HEALTH/ WELLNESS BUILDINGS. TO COINCIDE WITH SOCIAL SCIENCE BUILDING.
5. 12" PIPE LEG FOR LOOP CLOSURE TO COINCIDE WITH STUDENT HOUSING BUILDING.
6. FIRST SECTION OF INTERCONNECTING 8" LEG TO COINCIDE WITH BUSINESS AND FINANCE BUILDING.

FIGURE I B UTILITIES PHASE II
DOMESTIC WATER/FIRE
 SCALE: 425' = 1" - 0"

SYMBOL LEGEND:

- | | |
|------------------------|--|
| ----- EXISTING UTILITY |  PHASE I BUILDING |
| ———— NEW UTILITY |  PHASE II BUILDINGS |






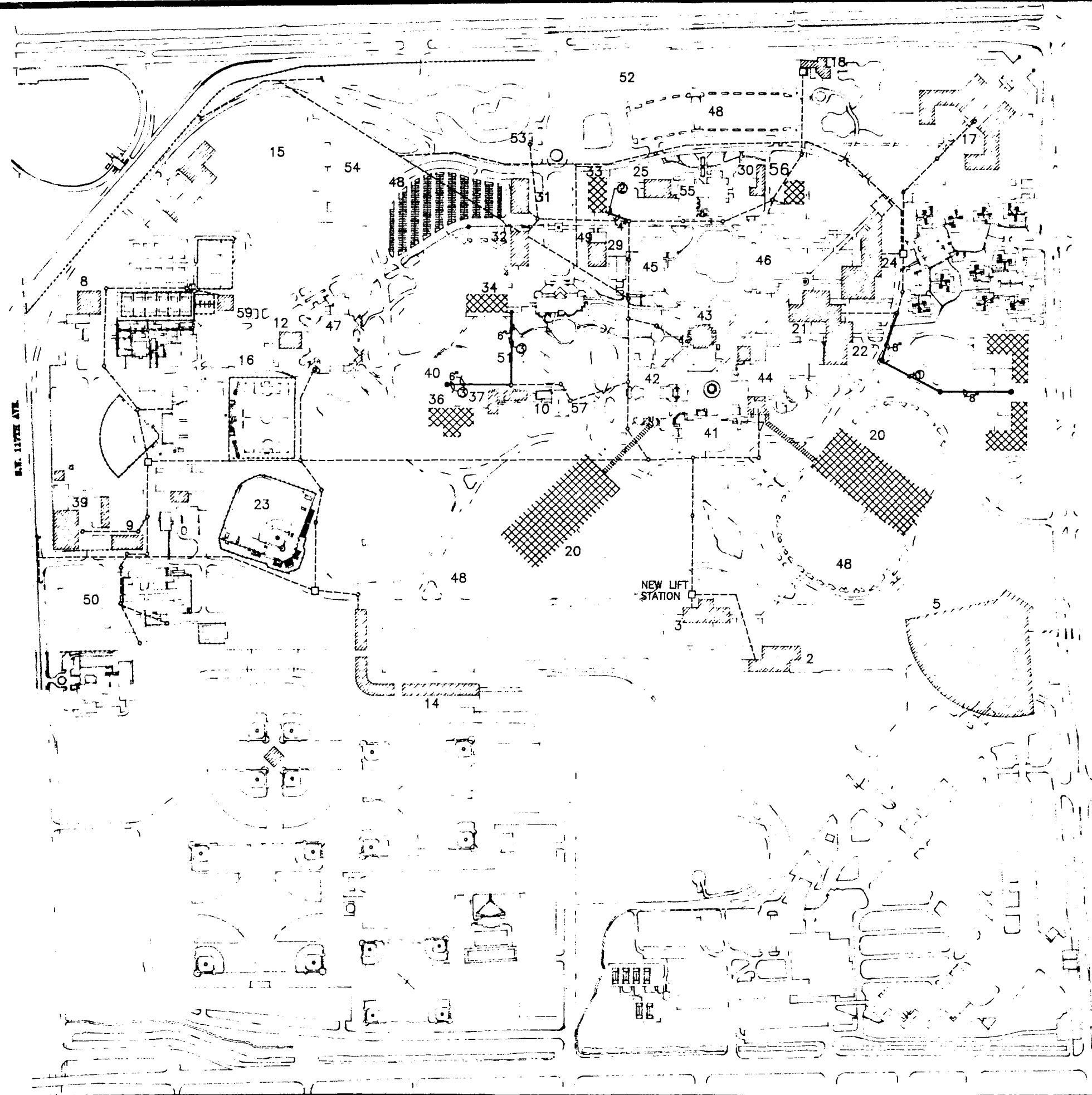
NOTES:

1. 12" CONCLUSION OF LOOP STARTED IN PHASE I WITH SECTION INTRODUCED WITH EDUCATION OFFICE BUILDING; TO COINCIDE WITH NEW PROFESSIONAL SCHOOLS.
2. CONCLUSION OF 8" LOOP STARTED WITH BUSINESS AND FINANCE BUILDING. THIS SECTION TO COINCIDE WITH NEW PROFESSIONAL SCHOOLS.

N **FIGURE I C UTILITIES PHASE III**
DOMESTIC WATER/FIRE
 SCALE: 425' = 1" - 0"

SYMBOL LEGEND:

- | | |
|------------------------|---|
| ----- EXISTING UTILITY |  PHASE I BUILDING |
| ———— NEW UTILITY |  PHASE II BUILDINGS |
| |  PHASE III BUILDINGS |





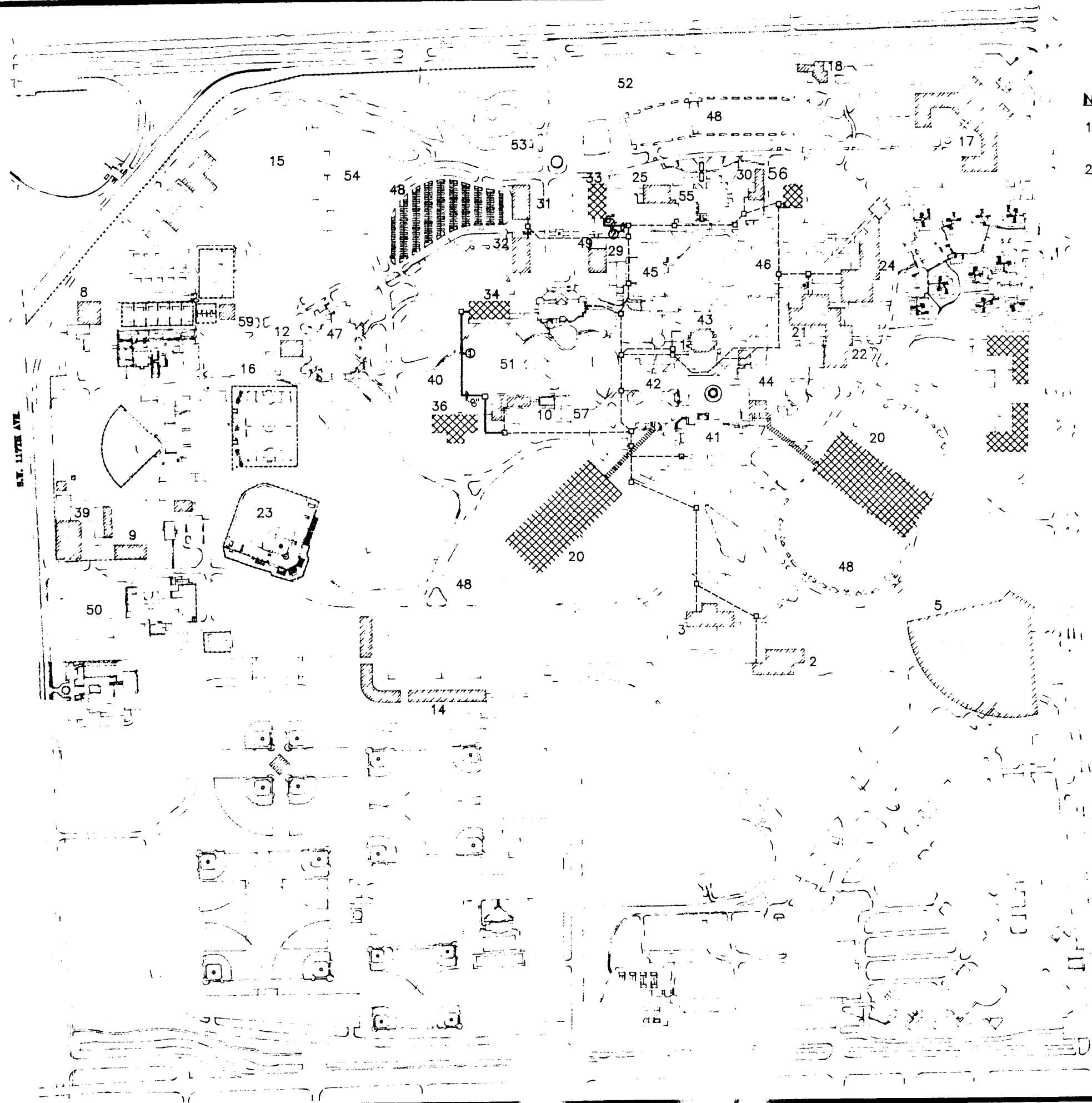
NOTES:

1. SECTION OF 8" GRAVITY PIPE TO COINCIDE WITH NEW STUDENT HOUSING.
2. 4" GRAVITY PIPE TO COINCIDE WITH BUSINESS III BLDG.
3. 6" GRAVITY PIPE TO COINCIDE WITH SOCIAL SCIENCES AND BUSINESS/FINANCE BUILDINGS.

N **FIGURE II B UTILITIES PHASE II**
○ **SANITARY**
 SCALE: 425' = 1" - 0"

SYMBOL LEGEND:

- | | | | |
|-------|------------------|---|--------------------|
| ----- | EXISTING UTILITY |  | PHASE I BUILDING |
| ———— | NEW UTILITY |  | PHASE II BUILDINGS |



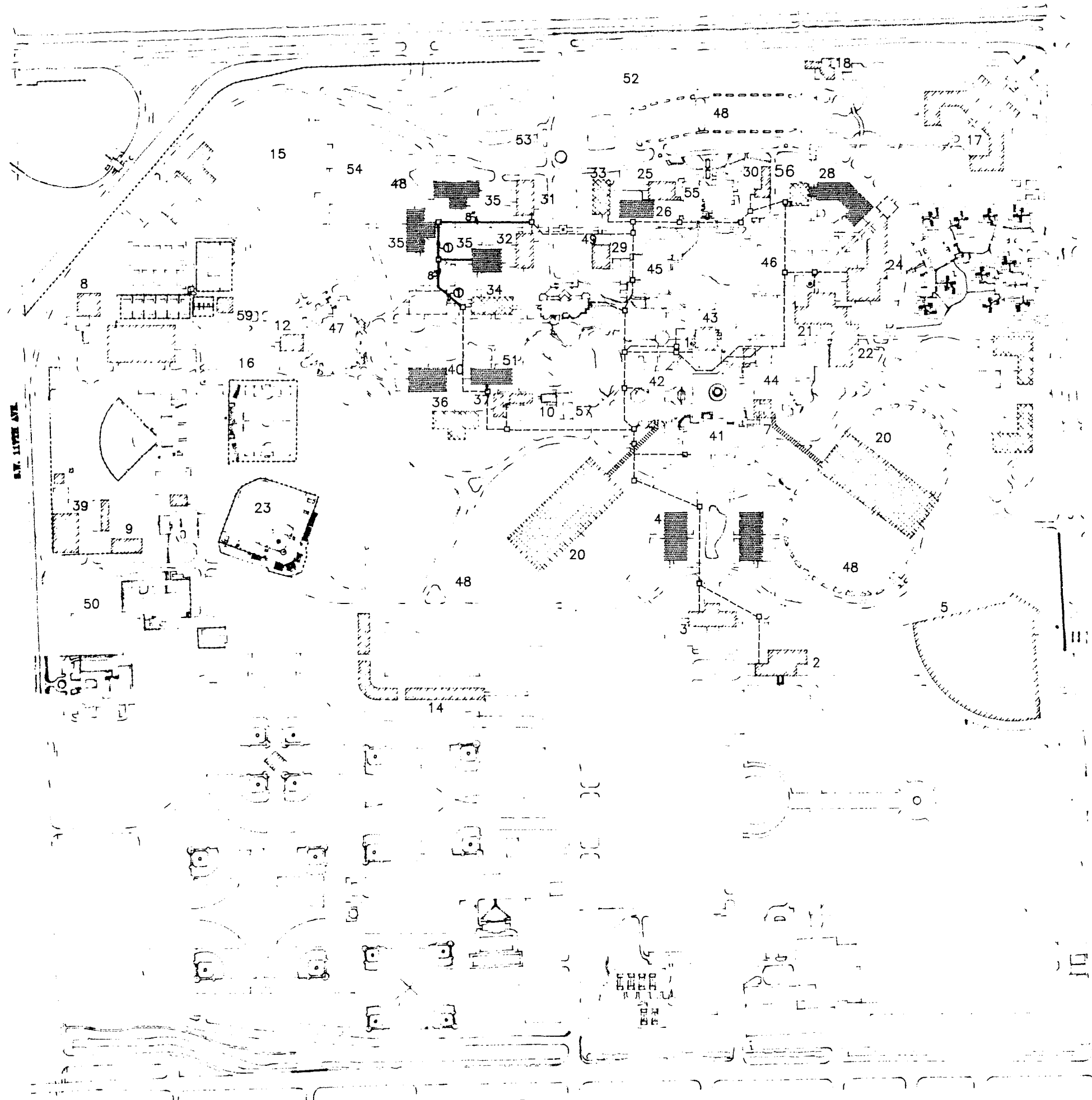
NOTES:

1. LOOP EXTENSION TO COINCIDE WITH BUSINESS/FINANCE BUILDING AND WITH SOCIAL SCIENCE BUILDING.
2. EXTENSION TO COINCIDE WITH BUSINESS III BUILDING.

N **FIGURE III B UTILITIES PHASE II**
CHILLED WATER DISTRIBUTION
 SCALE: 425' = 1" - 0"

SYMBOL LEGEND:

- | | |
|------------------------|--|
| ----- EXISTING UTILITY |  PHASE I BUILDING |
| ———— NEW UTILITY |  PHASE II BUILDINGS |






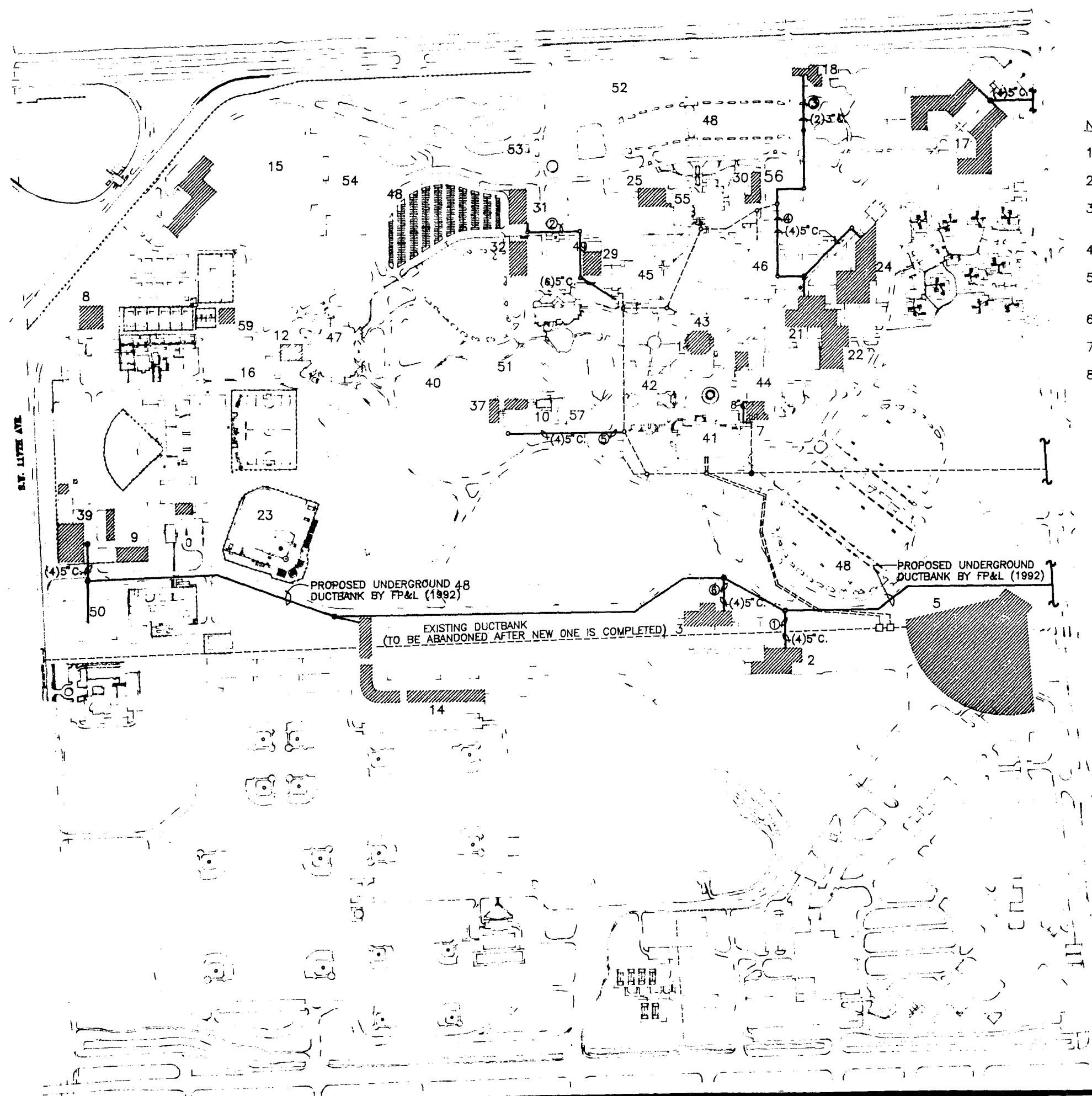
NOTES:

1. COMPLETION OF NEW LOOP TO COINCIDE WITH THE CONSTRUCTION OF THE PROFESSIONAL SCHOOL CORE OF BUILDINGS.

N **FIGURE III C UTILITIES PHASE III**
CHILLED WATER DISTRIBUTION
 SCALE: 425' = 1" - 0"

SYMBOL LEGEND:

- | | |
|------------------------|---|
| ----- EXISTING UTILITY |  PHASE I BUILDING |
| ———— NEW UTILITY |  PHASE II BUILDINGS |
| |  PHASE III BUILDINGS |



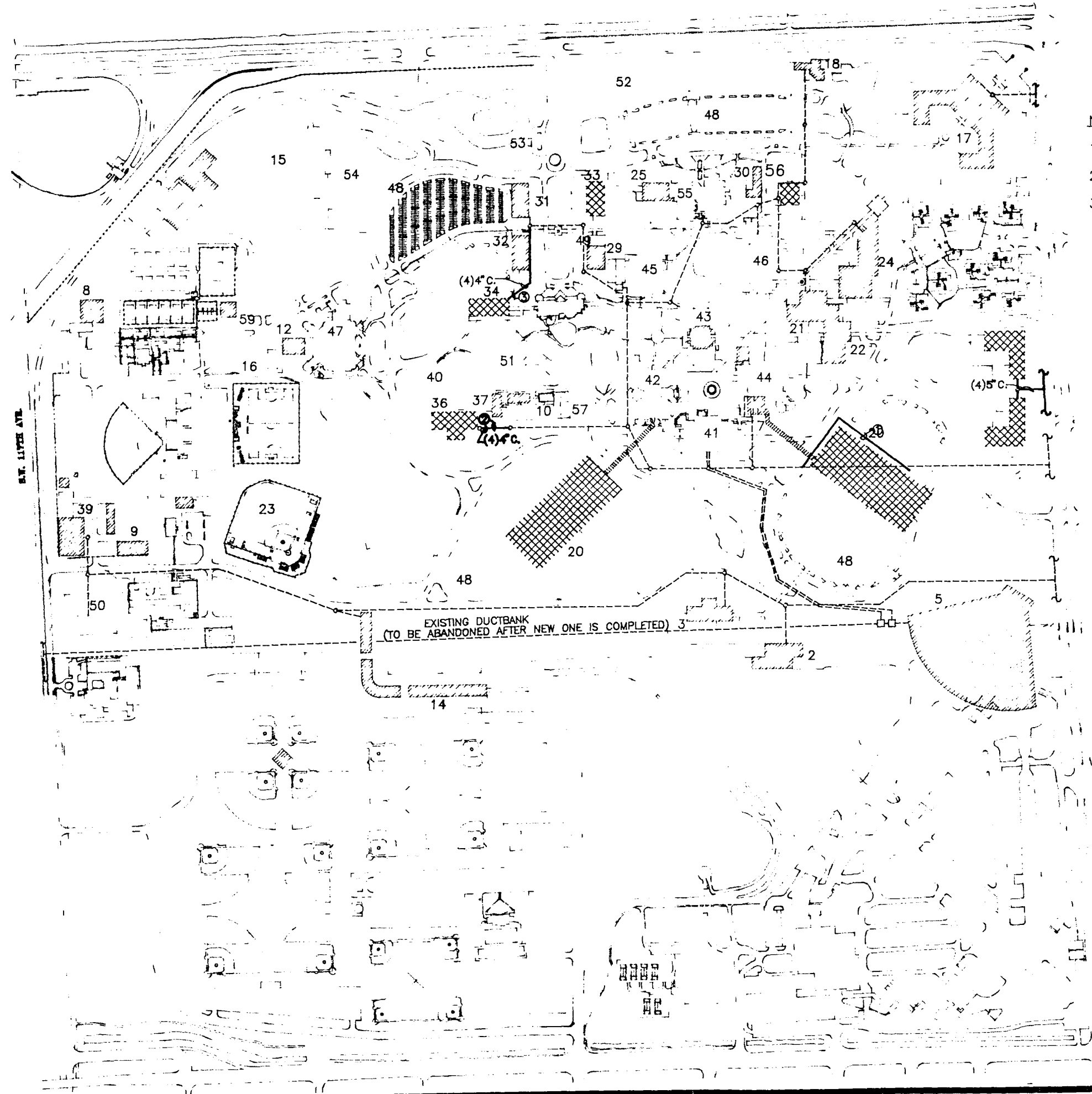
NOTES:

1. SERVICE TO ARTS COMPLEX I.
2. EXTENSION FOR EDUCATION OFFICE BUILDING.
3. SERVICE TO PRESIDENT'S HOUSE. COULD ALTERNATIVELY BE SERVICED FROM STREET.
4. SERVICE TO HEALTH AND LIFE SCIENCES BUILDING
5. SERVICE TO LABOR RESEARCH, HEALTH/WEALTH AND MINOR BUILDINGS SOUTH OF BUSINESS I.
6. EXTENSION TO ARTS COMPLEX II.
7. WEST CAMPUS BUILDINGS FED FROM STREET SERVICE.
8. REROUTE EXISTING SERVICE.

N **FIGURE IV A UTILITIES PHASE I**
ELECTRICAL DISTRIBUTION
 SCALE: 425' = 1" - 0"

SYMBOL LEGEND:

- EXISTING UTILITY  PHASE I BUILDING
- NEW UTILITY



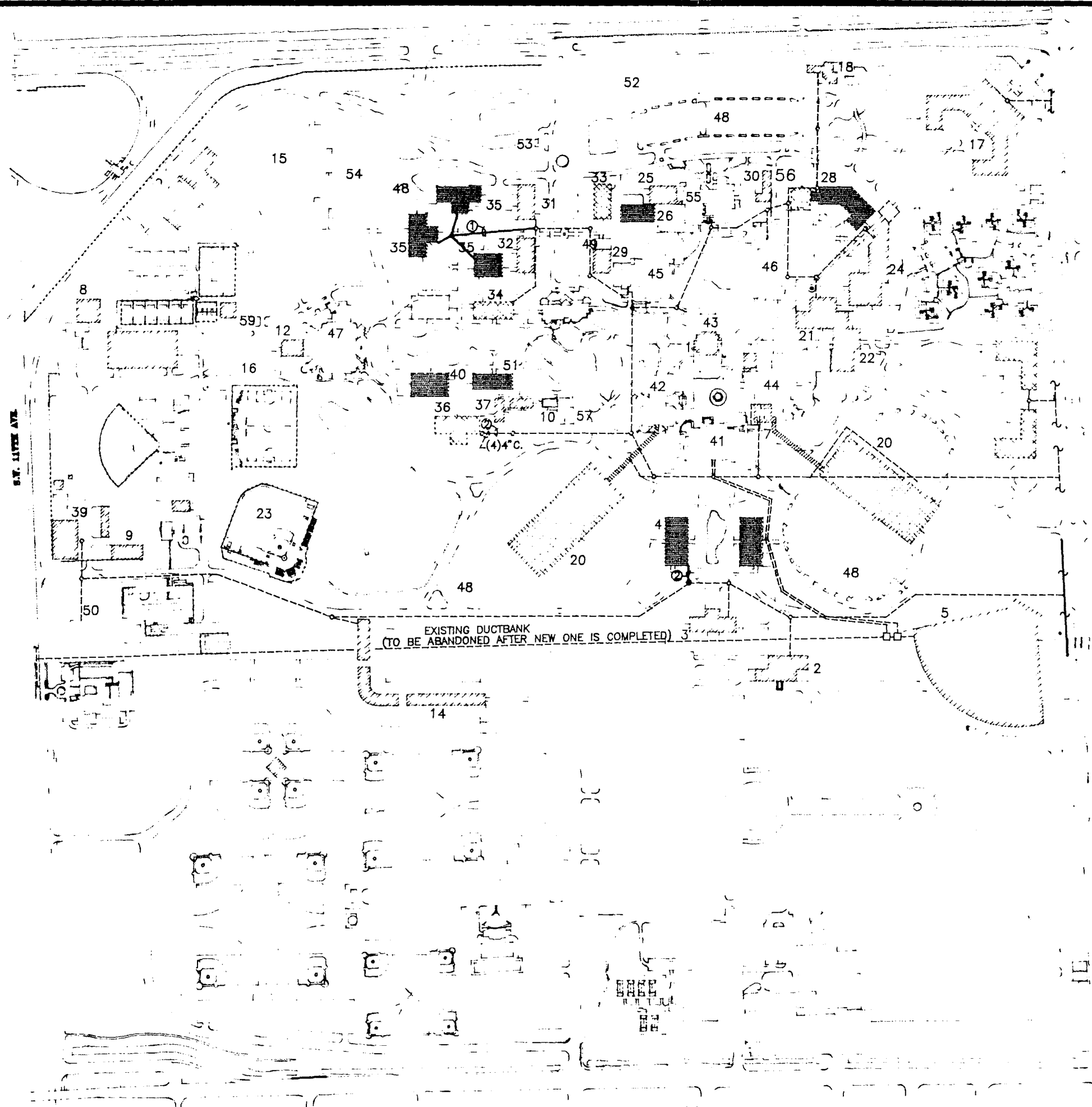
NOTES:

1. REROUTE EXISTING DUCTBANK.
2. EXTENSION TO SOCIAL SCIENCES BUILDING.
3. SERVICE TO BUSINESS AND FINANCE BUILDING.

FIGURE IV B UTILITIES PHASE II
ELECTRICAL DISTRIBUTION
 SCALE: 425' = 1" - 0"

SYMBOL LEGEND:

- | | |
|------------------------|--|
| ----- EXISTING UTILITY |  PHASE I BUILDING |
| ———— NEW UTILITY |  PHASE II BUILDINGS |

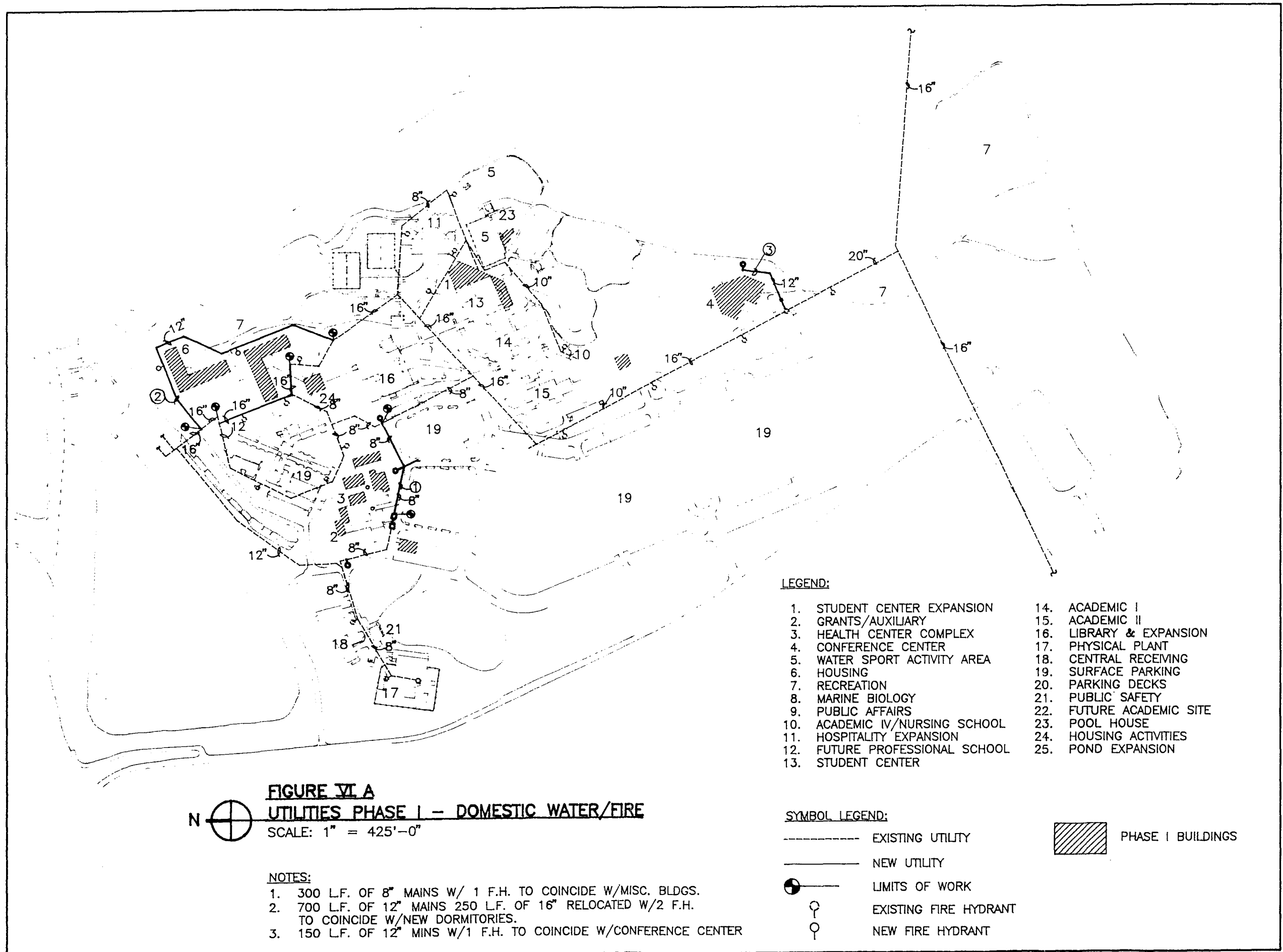


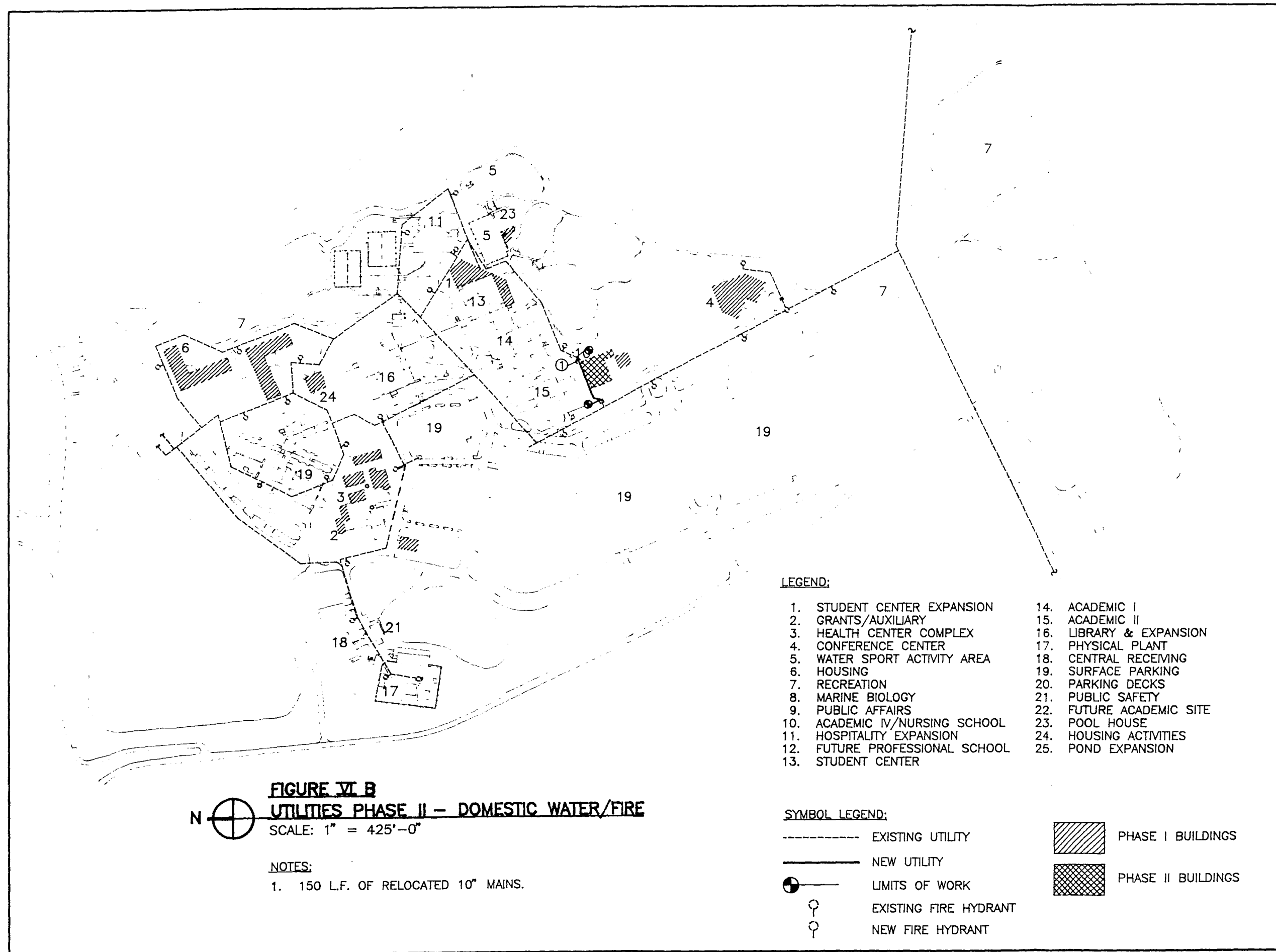
- NOTES:**
1. EXTENSION FOR WEST CAMPUS BUILDINGS.
 2. SERVICE TO ARTS COMPLEX III.

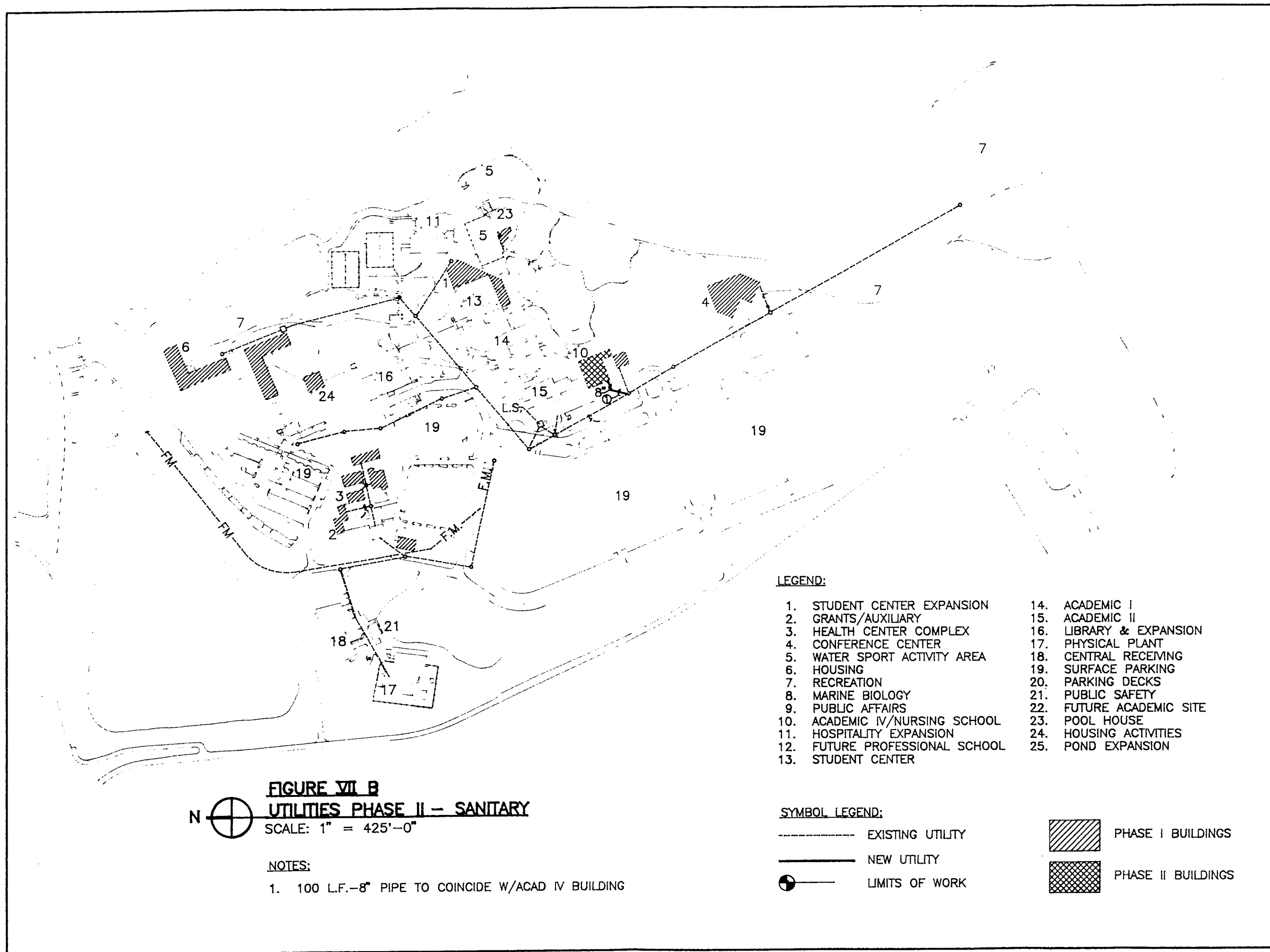
N **FIGURE IV C UTILITIES PHASE III**
ELECTRICAL DISTRIBUTION
 SCALE: 425'-1"=0'

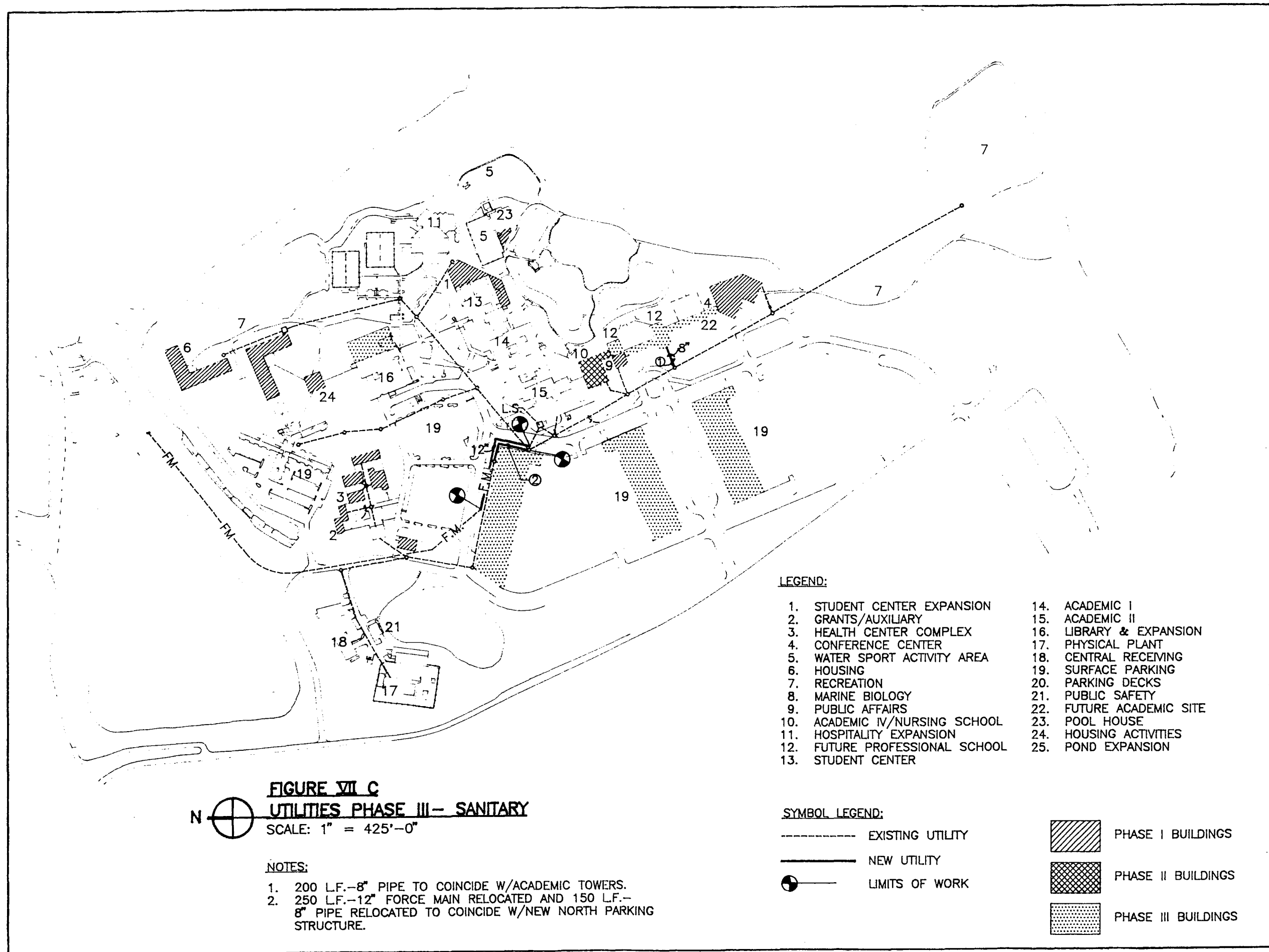
SYMBOL LEGEND:

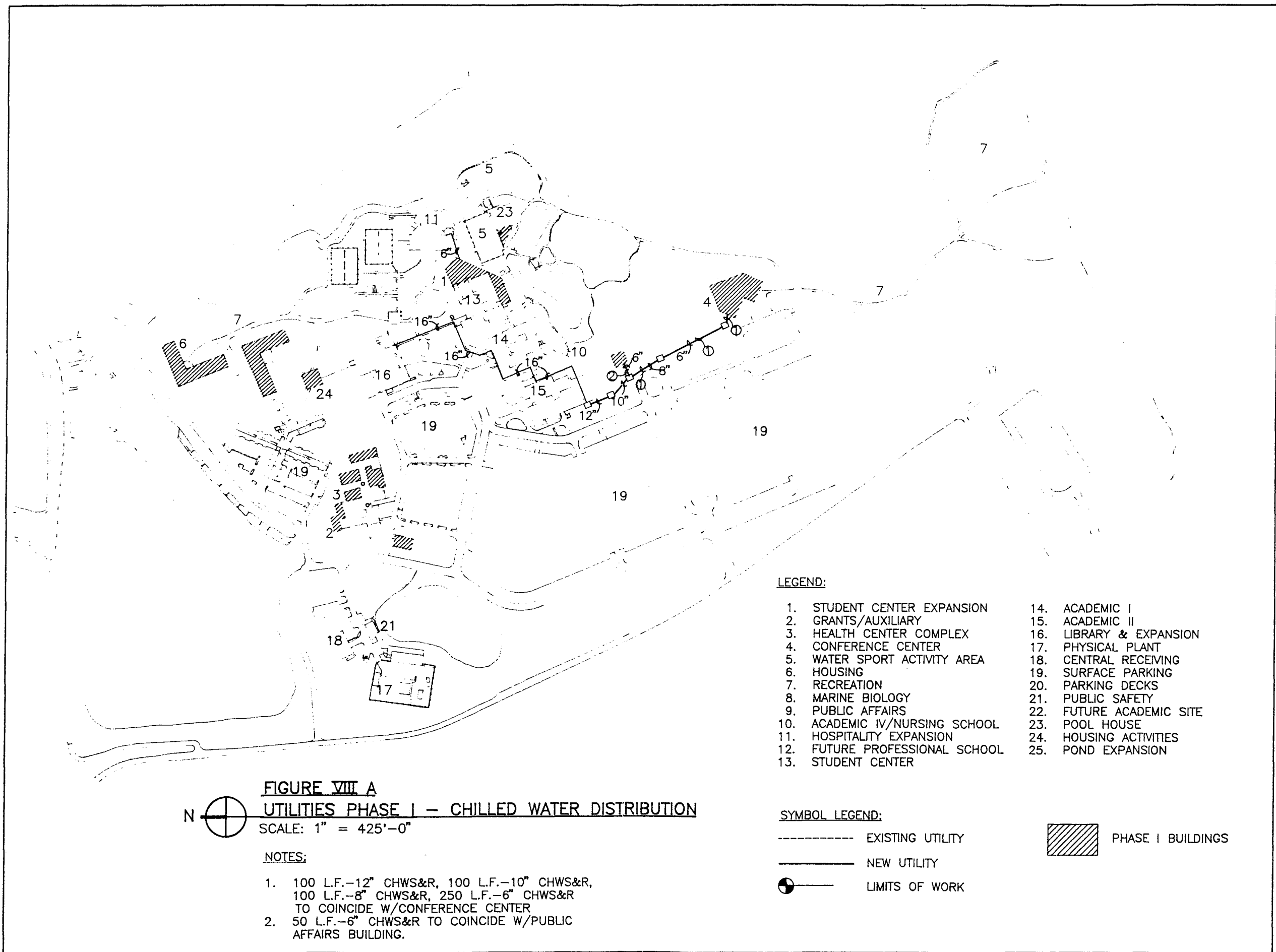
-----	EXISTING UTILITY		PHASE I BUILDING
————	NEW UTILITY		PHASE II BUILDINGS
			PHASE III BUILDINGS

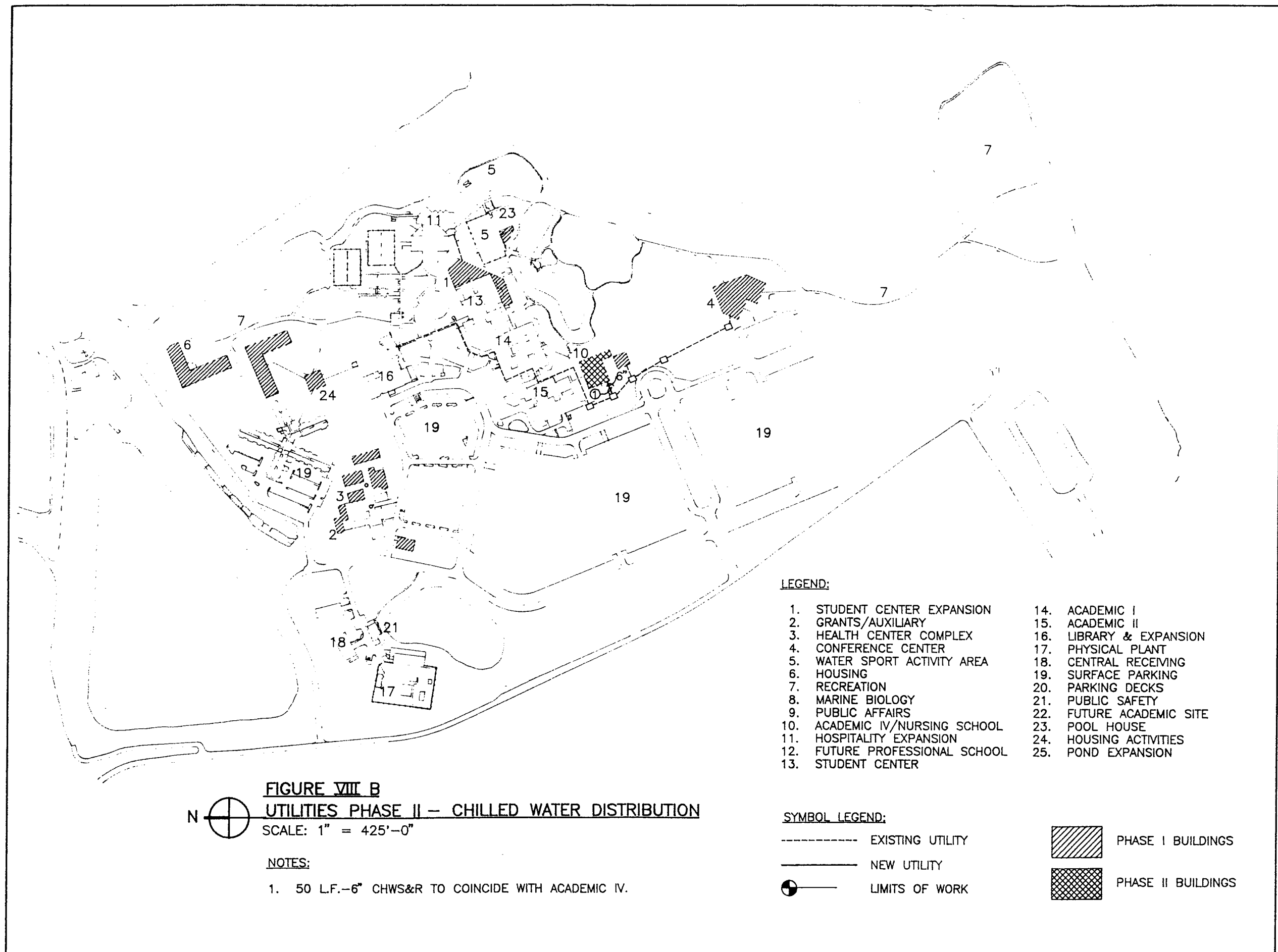


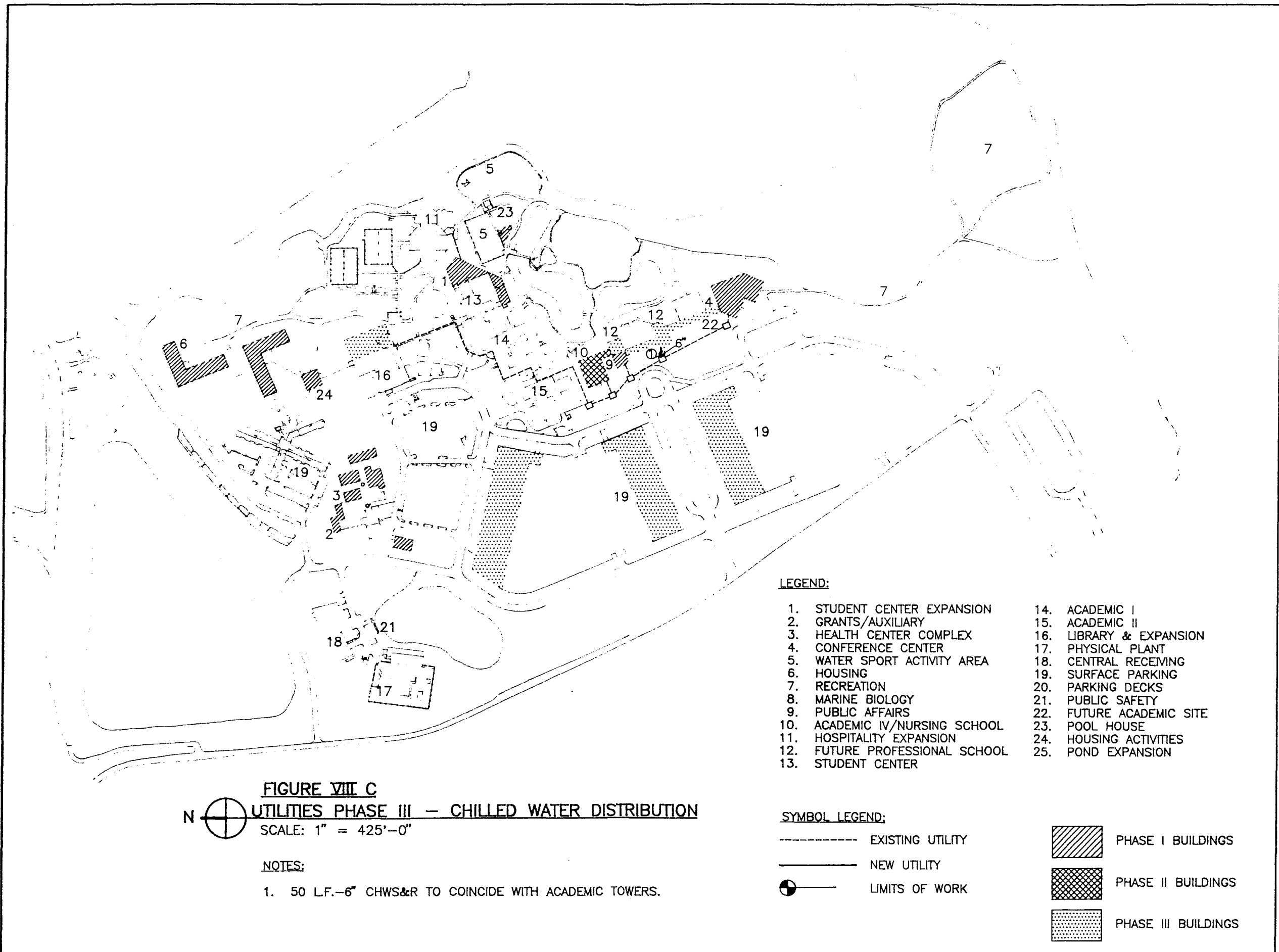


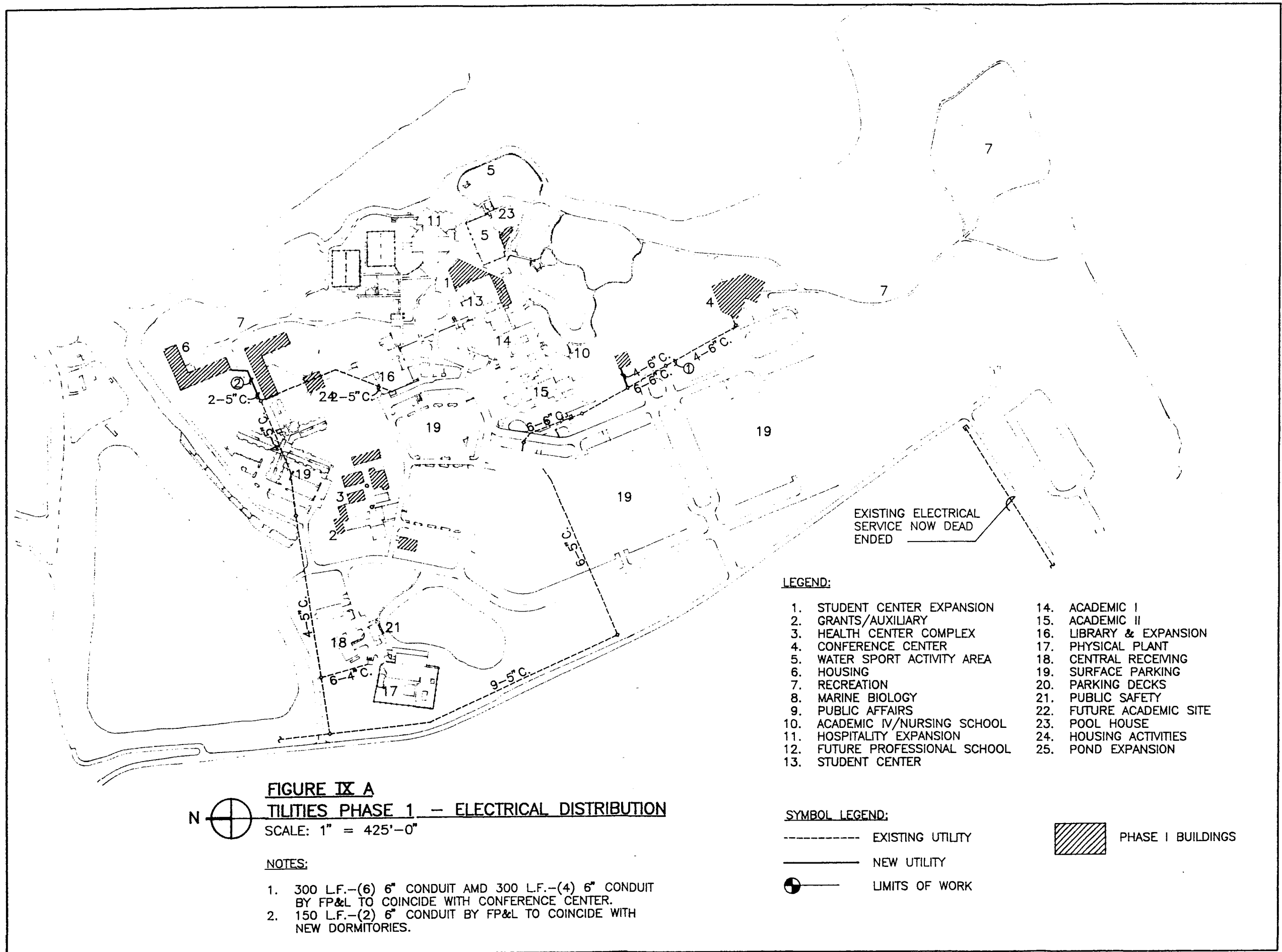


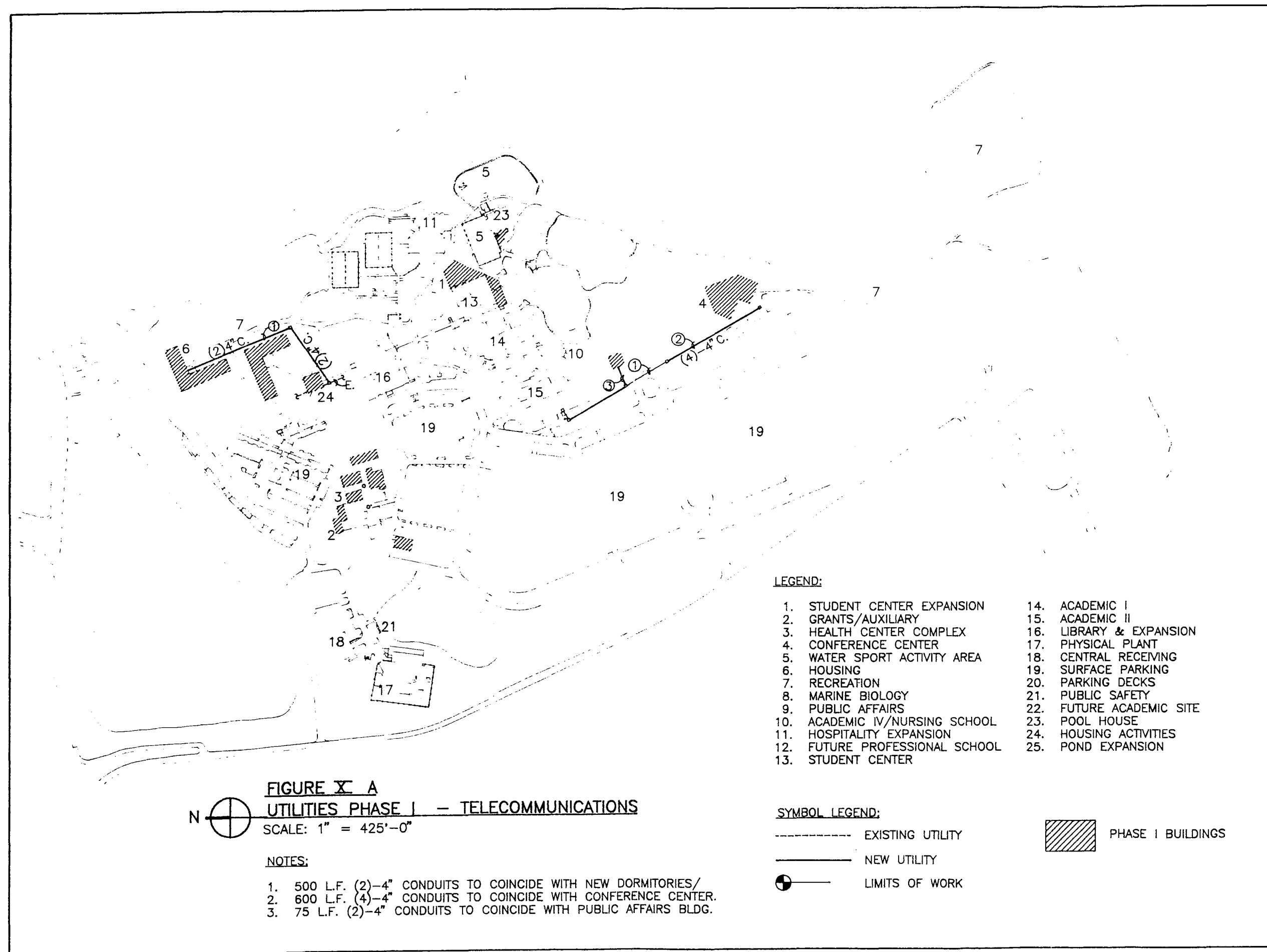












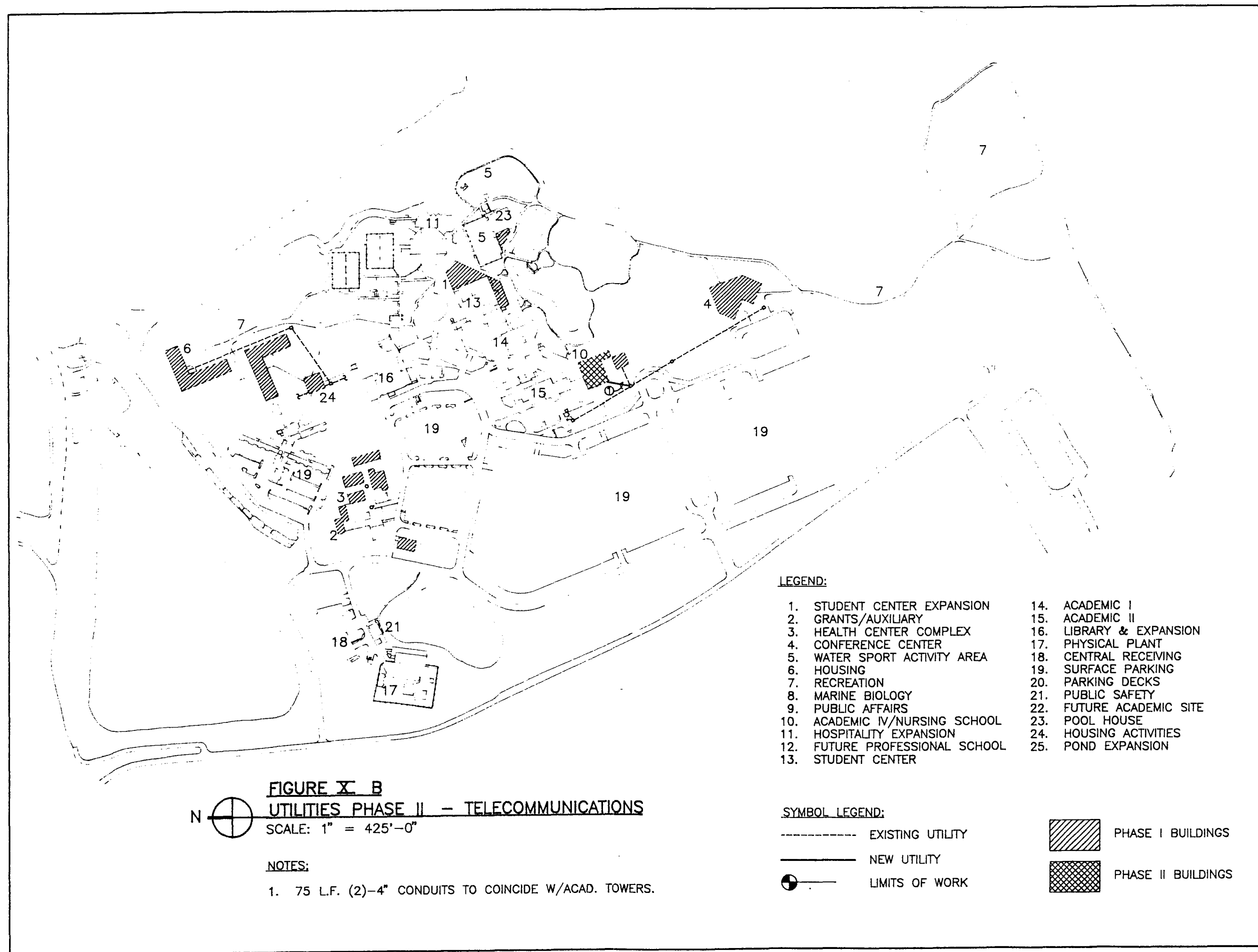
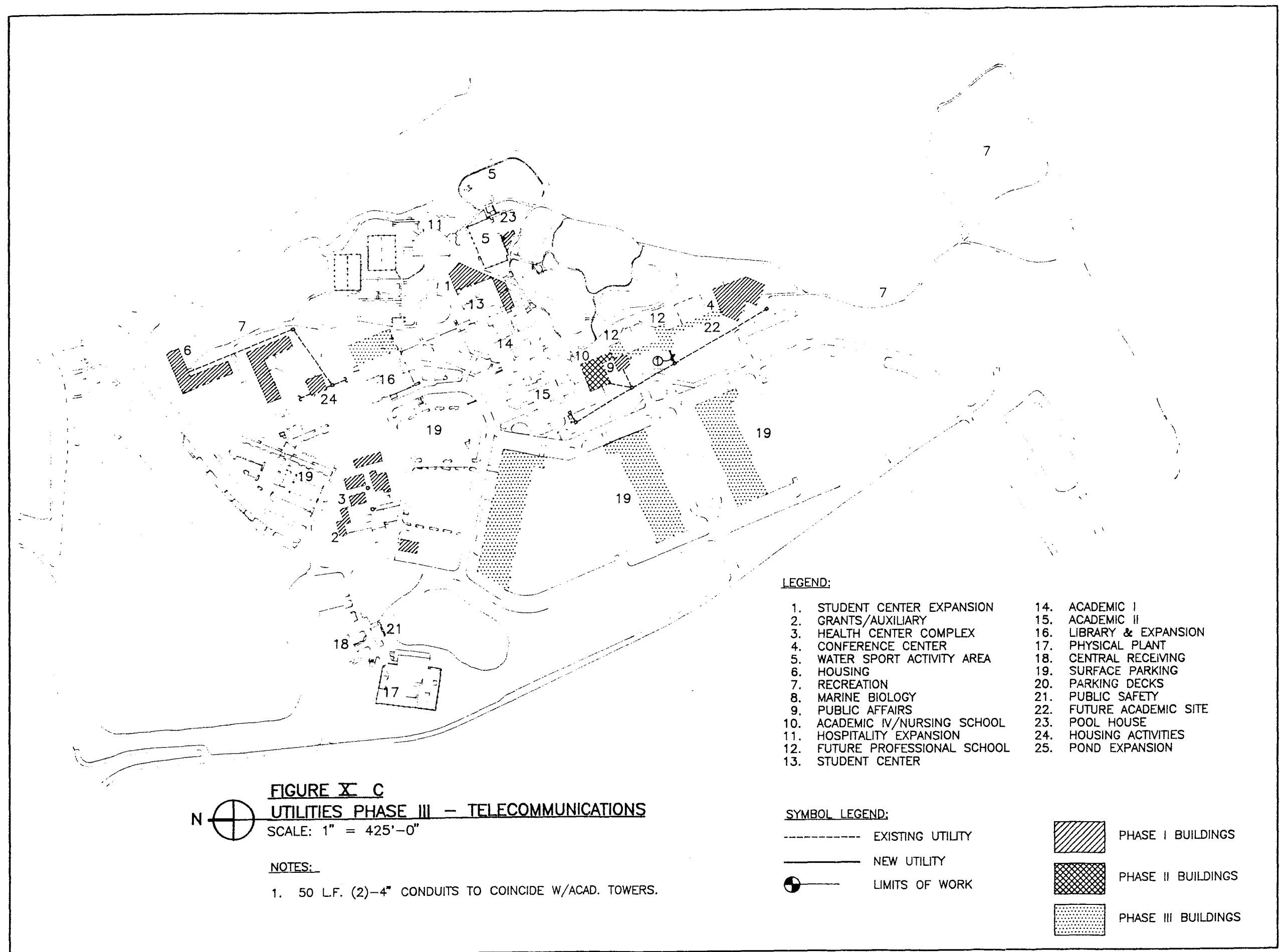


FIGURE X B
UTILITIES PHASE II - TELECOMMUNICATIONS
 SCALE: 1" = 425'-0"

NOTES:
 1. 75 L.F. (2)-4" CONDUITS TO COINCIDE W/ACAD. TOWERS.

- LEGEND:**
- | | |
|--------------------------------|--------------------------|
| 1. STUDENT CENTER EXPANSION | 14. ACADEMIC I |
| 2. GRANTS/AUXILIARY | 15. ACADEMIC II |
| 3. HEALTH CENTER COMPLEX | 16. LIBRARY & EXPANSION |
| 4. CONFERENCE CENTER | 17. PHYSICAL PLANT |
| 5. WATER SPORT ACTIVITY AREA | 18. CENTRAL RECEIVING |
| 6. HOUSING | 19. SURFACE PARKING |
| 7. RECREATION | 20. PARKING DECKS |
| 8. MARINE BIOLOGY | 21. PUBLIC SAFETY |
| 9. PUBLIC AFFAIRS | 22. FUTURE ACADEMIC SITE |
| 10. ACADEMIC IV/NURSING SCHOOL | 23. POOL HOUSE |
| 11. HOSPITALITY EXPANSION | 24. HOUSING ACTIVITIES |
| 12. FUTURE PROFESSIONAL SCHOOL | 25. POND EXPANSION |
| 13. STUDENT CENTER | |
-
- SYMBOL LEGEND:**
- | | |
|------------------------|--------------------|
| ----- EXISTING UTILITY | PHASE I BUILDINGS |
| ———— NEW UTILITY | PHASE II BUILDINGS |
| LIMITS OF WORK | |



Appendix E: Bibliography

Bibliography of Collected Information

Current and Planned Academic Programs 1991-2006

Distribution of 1990-91 FTE's by Level and Discipline

Long Term Enrollment Planning

Academic Affairs Facilities Plan 1991-2006, April 26, 1991

1990-95 Academic Affairs Strategic Plan, November 2, 1990 (Draft)

Amphitheater Feasibility Study, March 11, 1991

Strategic Research Plan, June 21, 1990

Projected Physical Needs for the Division of Student Affairs, April 15, 1991

FIU Organization Chart, September 1990

Program Area Summary and Project Budget Summary

- Arts Complex Phase I

- Public Affairs/Communications

- Joint Center/Dispute Resolution Building

- Multi-Purpose Stadium Complex

- NMC Student Health Center

- Campus Support Complex

Master Plan for Business and Finance (memo)

Campus Housing

Capital Improvement Program - 5 Year Project Priority List 1991-96

Site Plans for new facility 1990-2010

Projected Physical Plan Needs for the Division of Student Affairs, April 25, 1991

SPAC Facilities Planning Subcommittee, Memorandum on Facilities Plan, April 20, 1991