MARCH 2011

PHASE 4: CONCEPT ALTERNATIVES

FACILITIES MASTER PLAN

CAPITAL PLAN YEARS 2013 TO 2023
STATE UNIVERSITY CONSTRUCTION FUND & BINGHAMTON UNIVERSITY
SUCF PROJECT NUMBER 07839

PERKINS
+WILL

CONTENTS

4.0 Introduction

Binghamton University is a public research University Center in the State University of New York (SUNY) system. The University includes six schools and offers comprehensive undergraduate and graduate programs in over 130 areas of study.

The University's 619-acre campus is located in Vestal, NY, in the Southern Tier region of Upstate New York. The University also includes a new downtown campus, as well as a number of smaller support facilities in the Southern Tier region.

The State University Construction Fund (SUCF) engaged Perkins+Will to conduct a Facilities Master Plan (FMP) report for the University. The intent of the FMP is to qualify and evaluate the University's existing facilities, and provide a plan for future capital projects to support the University's mission.

The study was initiated in January of 2010, and consists of five phases: Campus Profile, Assessment of Conditions, Analysis of Space Needs, Concept Alternatives, and Final Recommendations.

This report, Concept Alternatives, is the fourth phase of five comprising the Facilities Master Plan for Binghamton University. The document presents three concepts for future development of the University over the course of the two capital funding cycles 2013 to 2018 and 2018 to 2023.

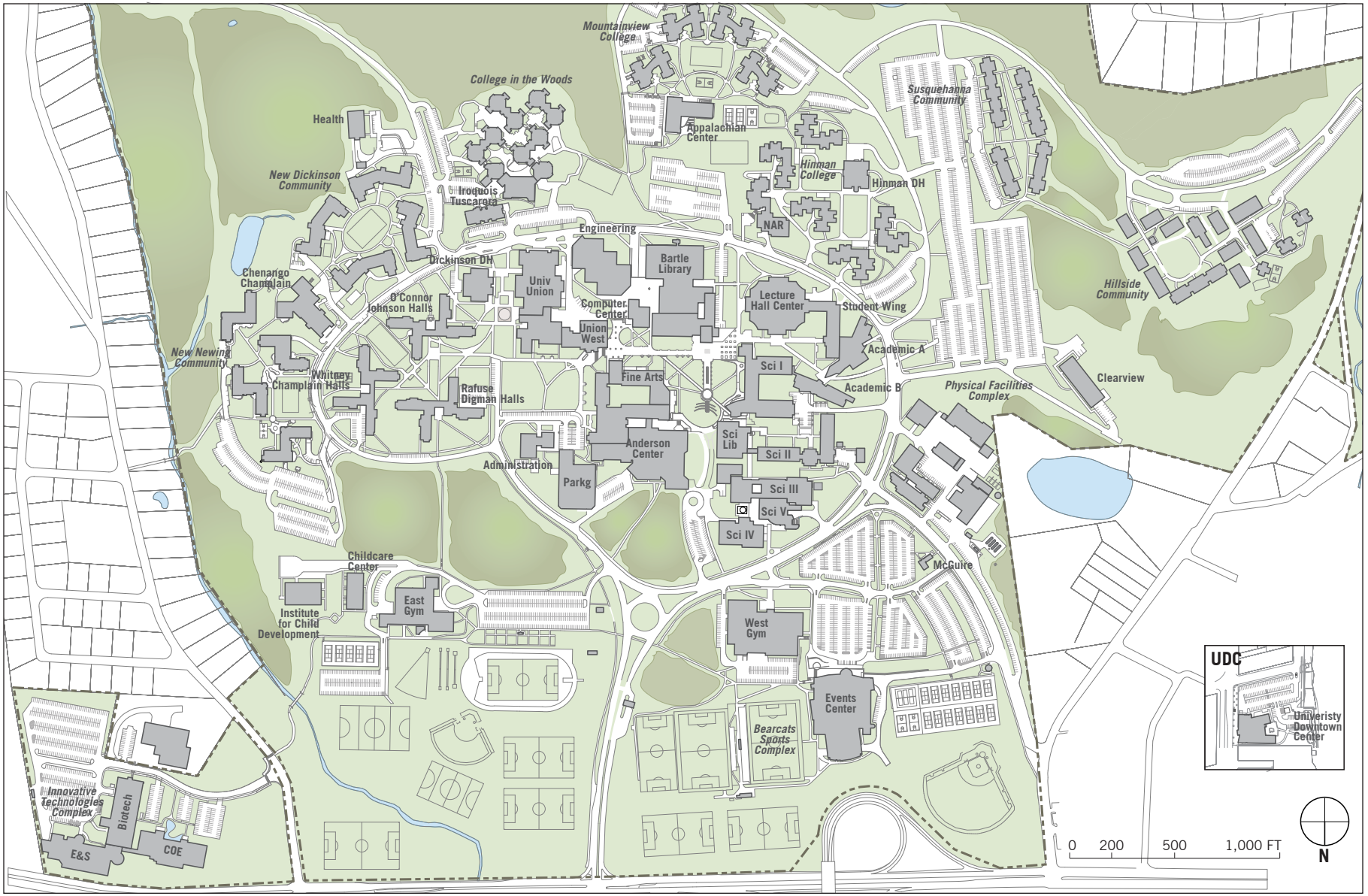


FIGURE 4.0A Binghamton University Existing Campus

4.1 Summary Findings

4.1.1 ACADEMIC MISSION AND STRATEGIC PLAN

ACADEMIC MISSION

Binghamton University defines itself as a premier public university. As such, the University's mission is to enrich the lives of people in the region, nation, and world, through discovery, education, and engagement.

The University identifies its academic mission as follows:

"Our mission is to provide an affordable, world-class education to high-caliber students from culturally and economically diverse backgrounds. Our focus is always on the student. Our internationally renowned faculty members produce amazing scholarship and art, and bring their spirit of inquiry and discovery into the classroom."

As a part of its academic mission, the University identifies three key components:

World Wise. Binghamton University believes that a 21st century college education requires a deep engagement with the world. It strives to provide students with a distinctly global experience and foster international perspective in all aspects of college life.

Innovative. The University values curiosity and exploration in art and culture; in science and engineering; about people, families, communities, and nations. It continually invests in learning and discovery on multiple platforms to meet the needs of every student. It is committed to providing members of the campus community with high-caliber facilities. Additionally, the University engages in industry partnerships, building a reputation as a nationally recognized research institution.

Engaged. The University is committed to providing students with an exciting, fulfilling, and rewarding college experience. It offers a wide array of programming in clubs and organizations, recreational and athletic activities, and at residential-colleges to support the complete BU student.

STRATEGIC PLAN

In 2010, Binghamton University issued an update to its strategic plan, following a number of shifts in its planning environment. During the year, the University underwent a series of leadership changes. In addition, an international fiscal downturn greatly constrained the resources available to the University.

The University's strategic plan identifies a commitment to sustain excellence during the period of transition, blending traditional and innovative approaches to create effective actions. Its vision is as follows:

"Binghamton will distinguish itself as a stellar institution of higher education, one that combines an international reputation for graduate education, research, scholarship and creative endeavor with the best undergraduate programs available at any public university."

To achieve it's goals, the University strives to be educationally excellent, innovative, collaborative, global, resourceful, and technological.

EDUCATIONALLY EXEMPLARY

+ Increase the number of tenure/tenure-track faculty who will advance the mission of discovery and learning in both established and emerging programs.
+ Grow and strengthen graduate education.
+ Ensure that Binghamton's undergraduate programs are world-class and visionary.
+ Enhance Binghamton's transfer initiatives.
+ Use research findings and campus assessments to improve student learning.
+ Enhance the role the Division of Student Affairs plays in undergraduate education for students both on and off campus.

INNOVATIVE

+ Provide a "state-of-the-art" environment for research and scholarly activities.
+ Expand University leadership as a "green" campus.

COLLABORATIVE

+ Foster a campus culture of respect.
+ Foster collaborative management principles.
+ Make professional development a University-wide priority.
+ Foster engagement with our communities of interest.
+ Promote the use of research and scholarship in our external communities.

GLOBAL

+ Foster research opportunities with institutions abroad.
+ Enhance students' preparation for a global society.
+ Increase students' exposure to global research and scholarship.
+ Create a synergistic global network of our international students and alumni abroad.

RESOURCEFUL

+ Increase and further diversify educational opportunities.
+ Seek revenue flexibility.
+ Encourage faculty and staff to seek sponsored program funds that advance their particular intellectual interests.
+ Provide competitive doctoral stipends.
+ Develop multiple sources of support for undergraduate students.
+ Successfully meet the goals of the comprehensive gifts campaign.
+ Promote effective deployment of resources.
+ Enhance the University's planning and evaluation processes.
+ Develop a new adaptive master plan for facilities and grounds.

TECHNOLOGICAL

+ Enrich instructional methodologies employed by faculty.
+ Capitalize on the digitization of information.
+ Leverage technology to provide excellent services.
+ Enhance delivery of computing services.

4.1.2 CAMPUS OVERVIEW

Binghamton University consists of a number of State-owned and Binghamton University Foundation-owned properties. In all, the University property comprises 33 parcels for a total of 1,507 acres. Additionally, the Binghamton Foundation established University Plaza LLC as a subsidiary, not-for-profit student housing corporation to develop University Plaza Apartments on Vestal Parkway. University Plaza LLC owns the project for 30 years on land leased from Newman Development. The University maintains no direct link to the private student housing development, which is managed by Ambling Management Co.

SUMMARY OF PROPERTY LOCATIONS

Owned

1. The main BU Campus comprises seven State-owned parcels (619 acres), four NYS Housing Finance Agency-owned parcels (4.2 acres), and 16 Foundation-owned parcels (317.4 acres).
2. The University Downtown Center comprises two State-owned parcels in downtown Binghamton (1.7 acres).
3. 426-428 Commerce Road comprises two Foundation-owned parcels in Vestal (1.63 acres).
4. The Glendale Property comprises one Foundation-owned forested parcel in Union (562.7 acres).

Leased

5. Library Annex at Conklin (Leased facility).
6. Art Factory in downtown Binghamton, housing the Small Business Development Center (Leased facility).
7. Center for Advanced Microelectronics Manufacturing (CAMM) at Endicott Technologies, Inc. (Use agreement).

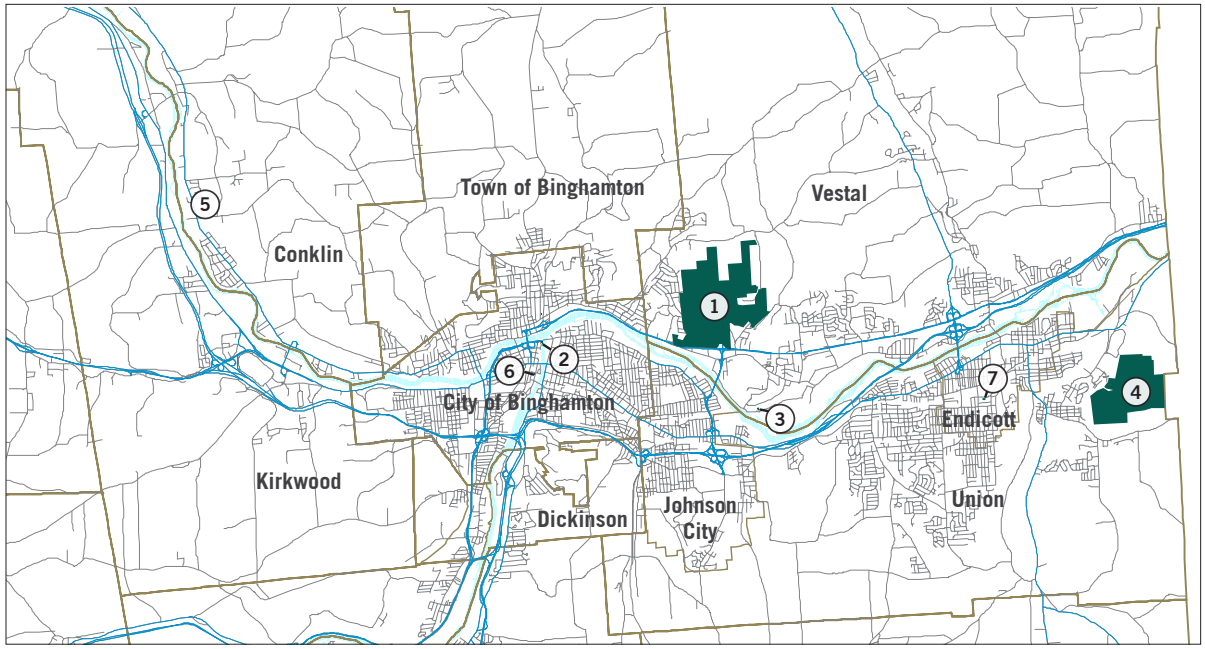


FIGURE 4.1.2A Existing Property Location Map

4.1.3 ASSESSMENT OF CONDITIONS

SUCF and Binghamton University jointly conducted a campus-wide Building Conditions Assessment Survey (BCAS) in 2007. The Assessment evaluates the condition of state-owned facilities based on four major categories: Building Exterior, Building Interior, Mechanical and Plumbing, and Building Electrical. Components of each major category are evaluated for condition on a four-point scale of poor, fair, good, and excellent.

Phase 2 Assessment of Conditions of the facilities master plan confirmed and updated the conditions data reported in the BCAS. Updates are informed by field observations, capital projects, and interviews conducted with facilities management and operations personnel. The figure at the right presents a summary of conditions assessment findings. A composite conditions score of either satisfactory or unsatisfactory is presented for each building based on a weighted averaging of component scores.

The conditions assessment indicates a significant need for renovation at Binghamton University's legacy facilities. Approximately half of today's campus was in existence by 1969. Legacy buildings are characterized by heavy concrete and masonry facades, double-loaded corridors, large lecture halls, and narrow classroom depths. Many remain in operation today, and while they have been well-maintained and are in sound condition, structurally, they require extensive mechanical upgrades and reprogramming to meet contemporary pedagogy needs.

Buildings of primary concern are the Bartle Library, Computer Center, Fine Arts Building, and Sciences Complex.

Buildings that were constructed or have undergone major renovation more recently are in satisfactory condition.

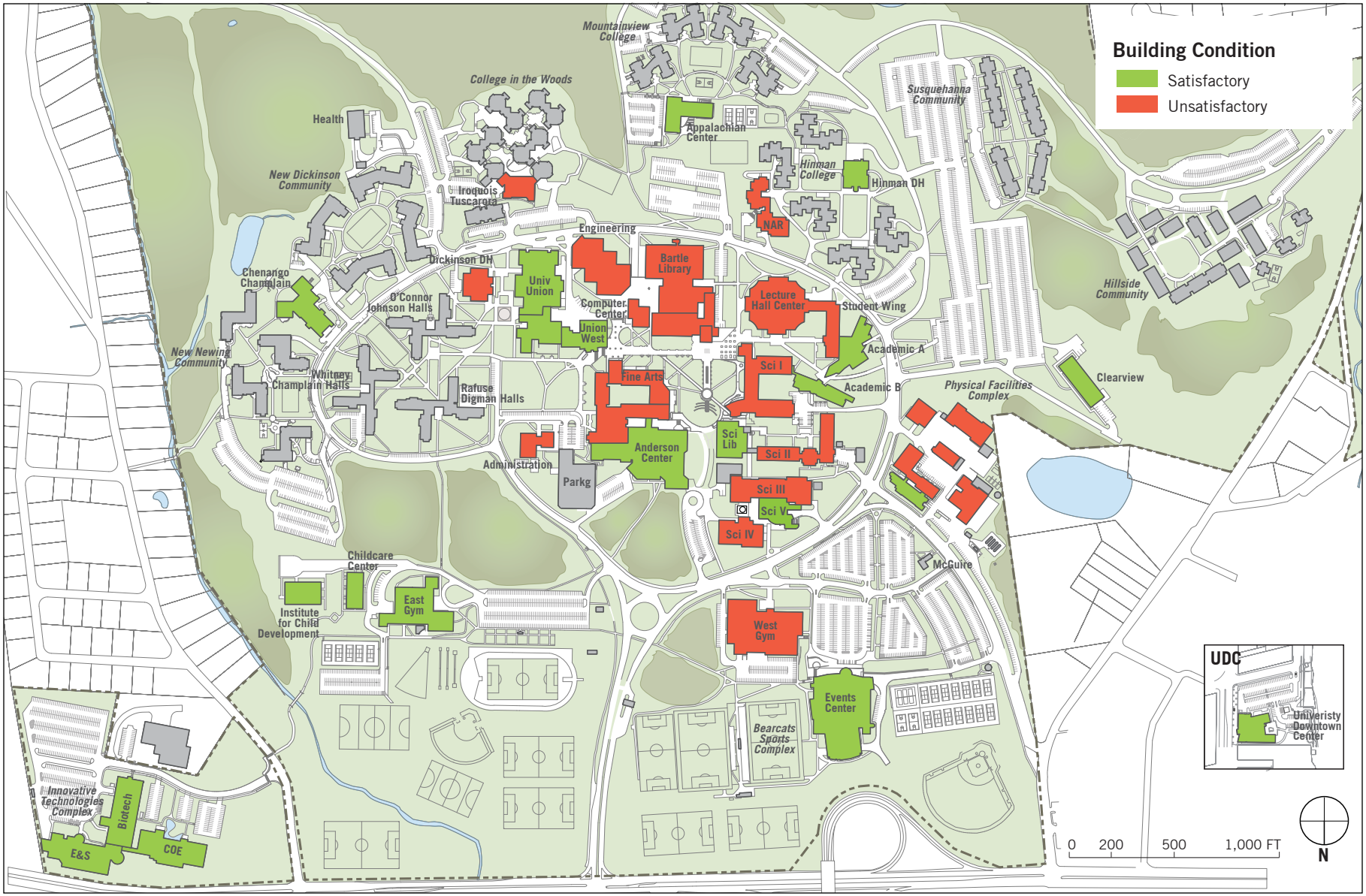


FIGURE 4.1.3A Summary of Building Condition Assessment Survey, updated 2010

4.1.4 ENROLLMENT PROJECTIONS

As a part of the FMP process, Binghamton University's Enrollment Management Group conduced enrollment analysis and issued a projections that reflect its vision for expansion through 2023.

CAMPUS ENROLLMENT PROJECTIONS

The campus projects an overall enrollment growth of 54 percent, or approximately 8,000 FTEs, through 2023. The campus anticipates continual growth throughout the planning period of 2013 to 2023.

The campus projects undergraduate enrollment to grow by 47 percent and graduate level enrollment to increase by a substantive 89 percent. Given these figures, the campus projects that undergraduate enrollment will account for about 78 percent of its total enrollment growth, with graduate enrollment accounting for the remaining 22 percent. This will shift the University's balance of undergraduate to graduate students slightly from its current ratio of 82:18 to a ratio of 78:22.

YEAR	UNDERGRAD	GRAD	TOTAL
2009 (Actual)	12,135	2,590	14,725
2013	13,205	2,823	16,028
2018	14,933	4,280	19,213
2023	17,829	4,902	22,731

FIGURE 4.1.4A Binghamton Enrollment Projections (FTE), Source: Enrollment Management Group Enrollment Projections

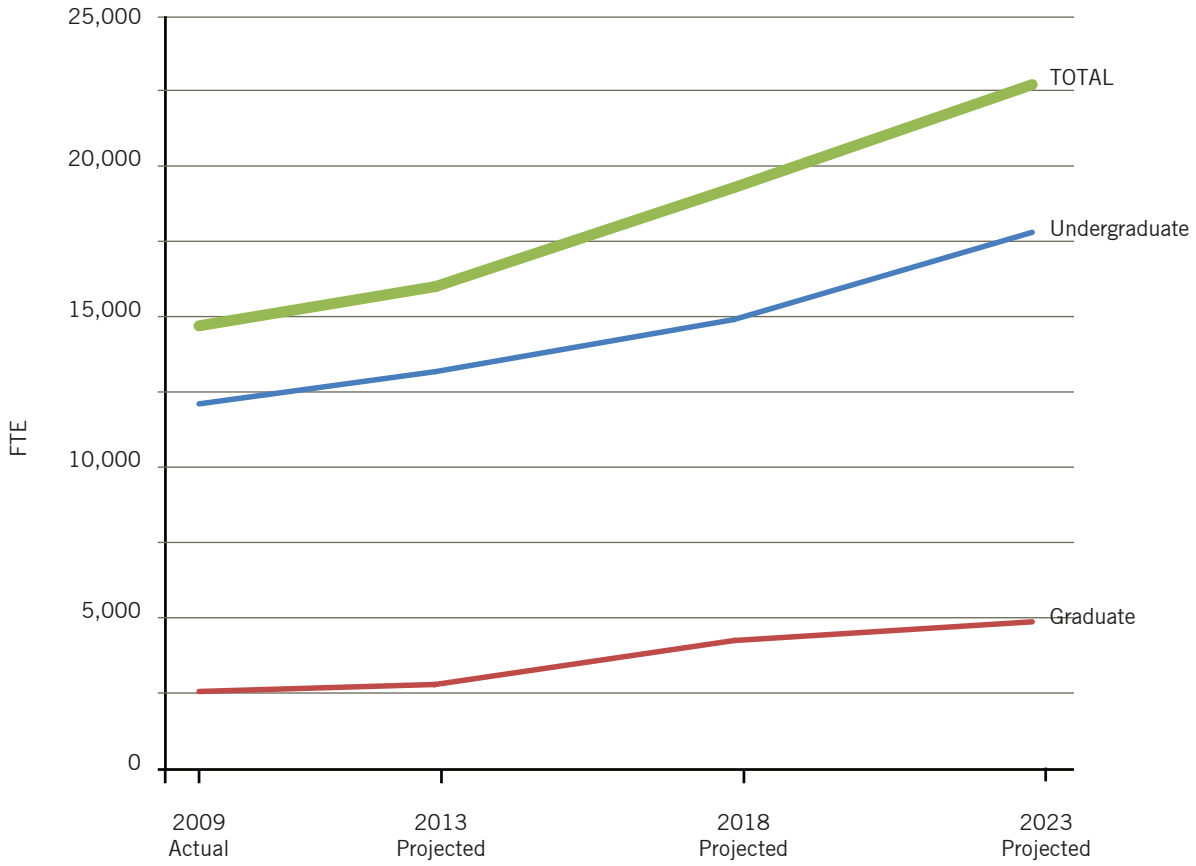


FIGURE 4.1.4B Binghamton Enrollment Projections (FTE), Source: Enrollment Management Group Enrollment Projections

4.1.5 SPACE NEEDS

At a macro-level, Binghamton University operates at a level of assignable square footage per student FTE significantly less than other SUNY institutions, particularly among the University Centers. As reported in section 3.4.2 Benchmarking of Existing Space, in 2009 BU reported a total of 133 ASF per student AAFTE campus-wide, compared with an average of 180 ASF per AAFTE among the other three University Centers. This indicates that BU functions at a highly efficient level, occupying approximately 25 percent less space per student FTE than its system peers.

Further analysis demonstrates that Binghamton University's main campus operates with even greater facilities efficiency. The main campus in Vestal is the location of nearly 95 percent of total facilities, and operates at 121 ASF per student FTE. Due to limited academic programming, the University's secondary location at the University Downtown Center reports 66 ASF per student FTE.

MAGNITUDE OF SPACE NEEDS AT BU

The space needs assessments for Binghamton University for the planning dates of 2009, 2013, 2018, and 2023 are summarized in the chart to the right. The University faces a significant magnitude of need through the planning period. The SUNY assessment indicates a campus-wide need of 2.1 million ASF in 2013 and 2.6 million ASF in 2023. The alternate assessment indicates a more substantive need of 2.5 million ASF in 2013 and 2.9 million ASF in 2023.

ACADEMIC VERSUS SUPPORT SPACE

A facilities inventory for an institution of higher education is comprised of two main components: academic space and support space. Academic space includes all classrooms and labs where instruction occurs, departmental office facilities, and research facilities. Support space includes shared auxiliary facilities required on a campus to support the daily lives of the campus community, such as libraries, student and faculty activity space, student services, administrative services, athletic and recreation space, campus services, and building services.

Binghamton University's 2009 inventory reports a ratio of 40 percent academic to 60 percent support space, an expected proportion for a residential university of its size and type.

The space needs assessment projects this ratio to shift toward the academic side for 45 percent academic space and 55 percent support space. As the University's population grows, a more linear increase in academic space will be required to support the campus population. Assuming the continued concentration of programming at the main campus, efficiency will be gained on the support space side.

PLANNING HORIZONS

Due to the magnitude of enrollment growth and associated space needs, it is important for the FMP to prioritize overall need when sequencing the capital projects in Phases 4 and 5. This will ensure that the correct types of facilities are provided early in the plan, facilities growth in University-identified strategic programs and catalyzing future cycles of renovation.

To aid in prioritization, space needs are separated into two planning horizons: a near-term Building Capacity Period followed by a long-term Sustained Growth Period.

The Building Capacity Period achieves the two-fold purpose of redressing existing facilities capacity and condition issues while also aligning overall facilities provision with the University's revised academic and strategic mission.

The Sustained Growth Period builds on the foundation of the Building Capacity Period, achieving additional facilities capacity to support the University's enrollment growth over the planning horizon, through 2023.

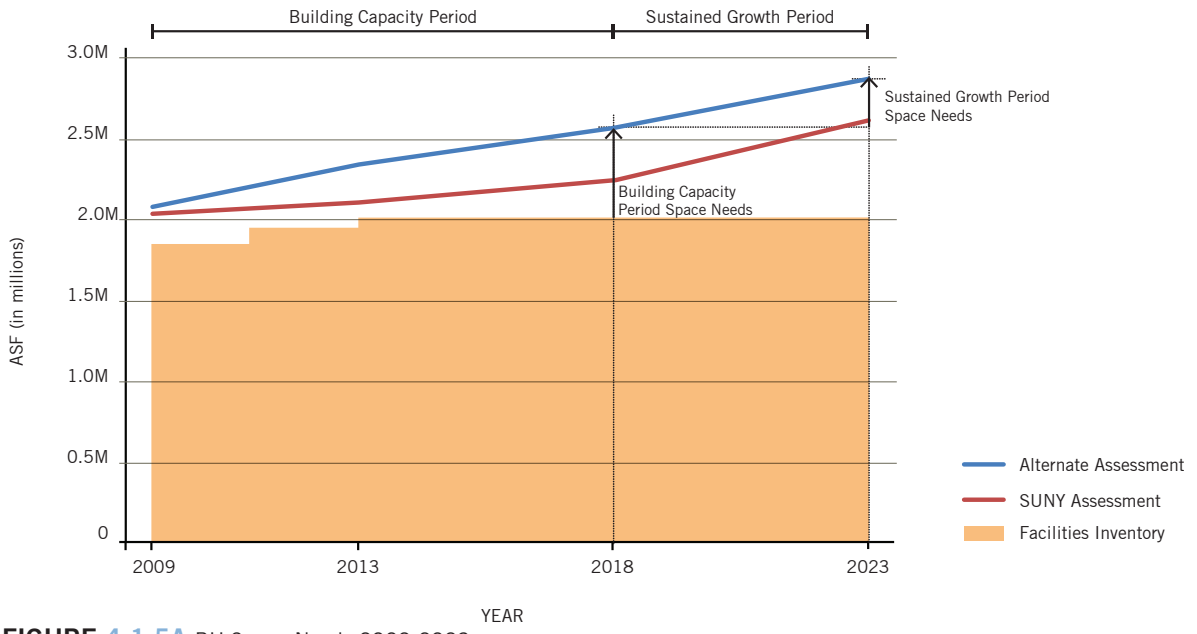


FIGURE 4.1.5A BU Space Needs 2009-2023

4.2 Planning Principles

4.2.1 OVERVIEW

The Planning Principles for the facilities master plan represent the translation of Binghamton University's academic mission and strategic vision into planning criteria.

The Principles result from the synthesis of two primary data sets, University Drivers and Resource Drivers, which are presented in sections 4.2.1 and 4.2.2. The University Drivers reflect the University's strategic plan document, and indicate how the FMP addresses and makes manifest elements of the plan. The Resource Drivers reflect best practice approaches toward program relocation, renovation, and new construction.

The Planning Principles address four key components of University development: Growth of Binghamton University, Academic Facilities, Support Facilities, and Open Space and Circulation. The Principles serve as the drivers of development for the plan.

4.2.2 UNIVERSITY DRIVERS

EDUCATIONALLY EXEMPLARY

Binghamton University strives to foster a comprehensive learning environment characterized by thoughtfully designed curricula, challenging courses, meaningful interactions with faculty and professional staff, and extensive opportunities for personal growth. The FMP addresses this goal through the following drivers:

+ Provides classrooms, computer labs, class laboratories with the physical environment to support BU's pursuits in innovative teaching and learning.
+ Creates informal learning environments throughout campus for members of the University community to gather, interact, and collaborate.
+ Identifies opportunities for collocation of academic or research units and for provision of new facilities.

INNOVATIVE AND ADAPTIVE

Binghamton University recognizes that innovation flourishes when diverse perspectives are shared, discussed and debated in an environment of respect, and remains committed to the advancement of new ideas, methods, and approaches. The FMP addresses this goal through the following drivers:

+ Identifies the facilities requirements of the University's innovative efforts, particularly spaces that are absent from the University's current portfolio.
+ Creates spaces that are capable of multitasking to accommodate different users and functions.
+ Develops a master plan that is nimble in its response to the different future scenarios that may unfold.

COLLABORATIVE

Binghamton University fosters a collaborate community, with members that engage one another within the campus and also engage with those beyond the campus. The FMP addresses this goal through the following drivers:

+ Provides spaces throughout campus for formal and informal collaboration to occur among students and faculty.
+ Provides touch-down spaces to support interdisciplinary research among multiple departments.
+ Increases access to BU by fostering institutional identity at all sites and potential future "opportunity sites."

GLOBAL

Binghamton University seeks to increase faculty, staff, student and alumni engagement with counterparts in other nations, and bring knowledge and insights from work conducted around the world and incorporate advancements into the work done on campus. The FMP addresses this goal through the following drivers:

+ Use technology to overcome the physical limitations of space and connect students with worldwide opportunities and link BU's multiple locations.
+ Provide facilities that are comparable to or superior to those found elsewhere to attract and retain world-renowned faculty and students.
+ Develop the main campus and other locations in a sustainable manner.

RESOURCEFUL

Binghamton University aims to maintain the commitment to making available the resources required to achieve the institution's mission of discovery, learning, and engagement, and deploying all resources thoughtfully and effectively. The FMP addresses this goal through the following drivers:

+ Maximize the value of existing facilities and infrastructure investments in and around the Brain.
+ Enhance the utilization of existing campus facilities, considering program redistribution, qualitative condition improvements and new construction.
+ Identify opportunities to collocate academic or research units that utilize similar facilities.

TECHNOLOGICAL

Binghamton University strives to enrich the instructional methodologies employed by faculty, with particular emphasis on capitalizing on the digitization of information and leverage technology to provide excellent services. The FMP addresses this goal through the following drivers:

+ Incorporate technology into learning environments to support pedagogy.
+ Identify opportunities for technology to increase access

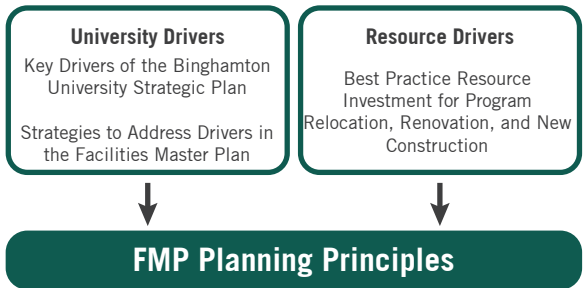


FIGURE 4.2.1A Planning Principles Process Diagram

to the University's unique collections (books, scientific specimens, special collections, etc.), while reducing facilities requirements.

+ Adapt interactive service technologies to supplement and enhance what today are face-to-face encounters.

4.2.3 RESOURCE DRIVERS

Binghamton University is committed to developing a plan that makes the best use of its resources while realizing its strategic goals. Resources are considered to include capital expenditures, facilities, time, and labor. The FMP addresses resource goals through the following drivers:

PROGRAM RELOCATION

+ Consider the desired long-term location of program and move program only once to its desired long-term location.
+ Co-locate complimentary program functions.
+ Align building capabilities with program needs.
+ Vacate space that may be repurposed to provide the highest and best use toward meeting strategic objectives.

RENOVATION

+ Renovate large, contiguous zones of space for maximum impact and renovate to build beautiful, permanent program space.
+ Consider the cost-effectiveness of renovation projects and invest minimal capital in swing space.
+ Provide swing space that will serve multiple future renovations.
+ Achieve minimal campus disruption.

NEW CONSTRUCTION

+ Add program space that cannot be achieved effectively through renovation of existing facilities.
+ Use new construction to catalyze cycles of substantive renovation.
+ Use new construction to enhance the connectivity between existing facilities.

4.2.4 PLANNING PRINCIPLES

GROWTH OF BU

+ Retain existing primary facilities locations at the Brain, the Innovative Technology Center (ITC) and the University Downtown Center (UDC), with the Brain serving as the academic core.
+ To maximize utilization of existing and future facilities, pursue development in and around the Brain.
+ Pursue strategic development at the ITC and the UDC.
+ Remain open to development at other opportunity sites in the community, with emphasis on sites that strengthen University partnerships.

OPEN SPACE & CIRCULATION

+ Clarify campus organization by reinforcing primary circulation axes and featuring the locations where they intersect.
+ Maintain the Lois B. DeFleur Walkway, the Central Campus Commons and the Peace Quad as open spaces, anchored by the axes intersections.
+ Increase connectivity between campus facilities to create a more walkable campus.
+ Lessen pedestrian/vehicular conflicts around East Drive and West Drive.
+ Project the spirit of BU at all campus entrances, highlighting Vestal Parkway as the main entrance.

ACADEMIC FACILITIES

+ Establish the facilities relationships between undergraduate teaching and graduate faculty research space.
+ Align classroom and teaching lab inventory with pedagogy.
+ Consolidate physical collections and storage, while distributing access and displaying unique resources.
+ Due to specialized facilities, maintain existing precincts of Science and Fine Arts.

SUPPORT FACILITIES

+ Complement centralized student life spaces in the University Union with distributed spaces, integrated throughout all campus facilities.
+ Align facilities with the University's goal to support student engagement in physical activities.
+ Co-locate student support services for efficiency and improved student service.
+ Enhance and clarify the visitor's experience, considering arrival, parking, wayfinding, and facilities to welcome guests and project the spirit of BU.
+ Maintain primary administration functions in the Couper Administration Building.
+ Develop campus infrastructure around a model of sustainability.

4.3 Land & Building Use

4.3.1 OVERVIEW

A facilities master plan is a long-term physical plan that synthesizes an institution's academic goals and programmatic needs with physical conditions, implementation logistics, and cycles of funding sources. The intent of the plan document is to serve as an effective planning tool for the coming years.

This section of the plan presents concept alternatives for future development at Binghamton University. The recommendation is derived from key data sets compiled in Phases 1, 2, and 3 of the FMP, including elements of the University's profile such as strategic and academic plans, building conditions assessments, quantitative space needs assessments, and qualitative assessments such as interviews, committee meetings, roundtable discussions, etc.

The three concept alternatives present a variety of solutions for meeting the University's facilities requirements associated with existing deficiencies and future growth. Considering a range of plan scenarios enables the plan to develop responses to possible future conditions that are currently not able to be known. Additionally, it provides for better understanding of the interdependencies and implications of a given scenario. Capital projects associated with the three concept alternatives are summarized in the chart to the right.

PLANNING HORIZONS

The FMP addresses facilities needs over two capital funding cycles from 2013-2018 and 2018-2023. The plan also considers the years leading up to 2013, in effort to set up for major projects over the two cycles.

As summarized in Phases 2 and 3 of the FMP, Binghamton University will experience significant facilities needs through 2023 given the age of existing facilities and projected enrollment growth. Due to the overall magnitude of growth, it is important that the FMP prioritizes need. This will ensure that the right type of space is executed early in the plan, allowing for targeted growth in strategic programs and catalyzing future cycles of renovation.

To aid in prioritization, the concept alternatives separate total facilities needs for Binghamton University into two planning horizons: a near-term period of Building Capacity followed by a longer-term period of Sustained Growth.

Building Capacity Period. The Building Capacity Period achieves the two-fold purpose of redressing existing facilities capacity and conditions issues while also aligning facilities with the University's revised academic and strategic missions.

Sustained Growth Period. The Sustained Growth Period builds on the foundation of the Building Capacity period, achieving additional facilities capacity to support the University's enrollment growth over the planning horizon, through 2023.

PROGRAM FAMILIES

To support plan clarity, the concept alternatives organize the University into manageable planning units consisting of clusters of departments or programs. Through these program families, linkages and potential adjacencies between components emerge. The concept alternatives contain a section for each program family, describing primary goals and strategies for redevelopment. To further communicate prioritization, a graphic bar accompanies each program family section, placing the proposed strategies into one of three phases: near-term, intermediate-term, or long-term.

A summary table at the end of each concept alternative provides a flowchart for sequencing all of the proposed strategies and projects for each phase of the master plan.

CONCEPT METRICS	GSF
CONCEPT A	
Renovation	**1,323,900**
New Construction	**1,202,700**
Building Capacity Period	312,700
Sustained Growth Period	890,000
CONCEPT B	
Renovation	**1,351,700**
New Construction	**1,357,400**
Building Capacity Period	492,400
Sustained Growth Period	865,000
CONCEPT C	
Renovation	**1,308,300**
New Construction	**1,425,400**
Building Capacity Period	675,900
Sustained Growth Period	749,500

FIGURE 4.3.1A Overview of Three Concept Alternatives

Program Families	*Departments and Programs*
Harpur Fine Arts, Humanities, Social Sciences, Math	Africana Studies, Art History, Art Studio, Asian & Asian-American Studies, Cinema, Classical & Near Eastern Studies, Comparative Literature, Economics, English, General Literature & Rhetoric, Geography, German & Russian Studies, History, Judaic Studies, Latin American & Caribbean Studies, Mathematics, Medieval Studies, Music, Philosophy, Political Science, Romance Languages & Literature, Sociology, Theater, Women's Studies
Harpur Sciences & Anthropology	Anthropology, Biology, Chemistry, Geological Sciences & Environmental Studies, Lab Animal Resources, Physics, Applied Physics & Astronomy, Psychology
Watson Engineering	Bioengineering, Computer Science, Electrical Engineering, Engineering Design, Mechanical Engineering, Systems & Industrial Engineering
Professional Programs	Clinical Campus, College of Community and Public Affairs, School of Education, School of Management, School of Nursing
Classrooms & Computer Labs	General Classrooms, Lecture Halls, Seminar Rooms, Computer Labs and PODs
Centers, Institutes & Grant Funded Programs	All Centers and Institutes*, Organized Research Program Development, Public Archaeology Facility, Research & Sponsored Programs, Sponsored Program Development, Start Up Suite
Libraries	University Library
Student Activities, Student Services, Administration, ITS	Student Activities & Student Service**, Administration***, Computer Services, Computer Services Operations, Educational Communications, Enginet,
Athletics, Recreation, Health & Wellness Studies	Athletics, Director's Office HPE, Physical Education (Health & Wellness Studies), Recreation
Campus Services & Building Services	Custodial Services, Environmental Health & Safety, Physical Facilities, University Police

List of departments is not comprehensive of all campus departments.

FIGURE 4.3.1B FMP Program Families and Constituent Departments and Programs

*Centers and Institutes: New York State Center of Excellence at BU: Small Scale Systems Integrated Packaging (S3IP), consisting of Center for Advanced Microelectronics Manufacturing (CAMM), Center for Autonomous Solar Power (CASP), Integrated Electronics Engineering Center. Organized Research Centers: Center for Advanced Information Technologies (CAIT), Center for Advanced Sensors and Environmental Systems (CASE), Center for Applied Community Research and Development (CACRD), Center for Cognitive and Psycholinguistic Sciences (CaPS), Center for Development and Behavioral Neuroscience (CDBN), Center for the Historic Study of Women & Gender (CHSWG), Center for Integrated Watershed Studies (CIWS), Center for Interdisciplinary Studies in Philosophy, Interpretation, and Culture (CPIC), Center for Leadership Studies (CLS), Center for Medieval and Renaissance Studies (CEMERS), Center for Science, Mathematics, and Technology Education (CSMTE), Center for the Teaching of American History (CTAH), Center for Writers (CW), Clinical Science and Engineering Research (CSERC), Institute for Materials Research (IMR), Institute of Biomedical Technology (IBT), Linux Technology Center (LTC), Public Archaeology Facility (PAF), Roger L. Kresge Center for Nursing Research (KCNR). Institute of Advanced Studies: Fernand Braudel Center for the Study of Economies, Historical Systems, and Civilizations (FBC), Institute for Advanced Studies in Humanities (IASH), Institute for Asia and Asian Diasporas (IAAD), Center for Korean Studies (CKS), Institute for Evolutionary Studies (Evos), Institute of Global Cultural Studies (IGCS), Institute for Intergenerational Studies, Watson Institute for Systems Excellence (WISE). Other Centers and Institutes: Center for Computing Technologies, Center for Research in Translation, Center on Democratic Performance, Confucius Center, Global Publications, Handbook of the World, Institute for Child Development, Medieval & Early Renaissance Center, Primary & Preventative Health.

**Student Activities & Student Services: Academic Advising, Admissions, Binghamton Scholars, Campus Life, Career Development Center, Center for Civic Engagement, Child Care, Dean of Students, English as a Second Language, Educational Opportunity Program, Financial Aid, Hillel National Organization, International Student and Scholar Services, Languages Across the Curriculum, Office of International Programs, Services for Students with Disabilities, Student Health Services, Student Organizations, TRIO & Veteran's Programs, University Counseling Center, University Registrar, University Union, Writing Center

***Administration: Accounts Payable, Alumni & Parent Relations, Auxiliary Services, Auxiliary Services Corporation, Binghamton Foundation, Budgeting Office, Business Affairs, Central Duplicating & Printing, Chief Administrative Office, Compliance & Risk Management, Continuing Education and Outreach, Creative Services, Employee Assistance Program, Dean of CCPA, Dean of Harpur College, Dean of the School of Education, Dean of the School of Management, Dean of the School of Nursing, Enrollment Management, Faculty Senate, Graduate School Provost, Harpur's Ferry, Human Resources, International Affairs, Institutional Studies, Internal Controls, Off Campus College, Purchasing, Sodexho, Strategic Partnership for Industrial Resurgence, Student Affairs Assessment, Student Conduct Office, Telecommunications, Translation Program, Union Offices, University Communications, University Copy Center, VP for Academic Affairs, VP for External Affairs, VP for Finance & Management, VP for Research, VP for Student Affairs

4.3.2 SITE DEVELOPMENT STRATEGY

Binghamton University currently occupies two main campus sites, one in Vestal and one in downtown Binghamton, supplemented by select additional specialized off-campus locations. As the University continues to grow, it will build upon the critical mass of academic programming and facilities located at its main campus in Vestal, while also remaining open to development at opportunity sites in the broader region.

MAIN CAMPUS

The University's main campus in Vestal serves as the primary hub for academic programming and student life and contains over 90 percent of the institution's total facilities. The campus includes academic and research buildings, student activities and student services, administrative offices, athletics and recreation facilities, and student housing.

In the future, the University plans to maintain the main campus as its primary location, retaining existing academic and student life programs. As a result, projected 2023 enrollment growth disproportionately affects the main campus, yielding substantive facilities needs. New academic facilities will support growth in the liberal arts, sciences, and professional programs, while support facilities will provide additional student life space to support a growing population. Additionally, new facilities will serve a critical role in facilitating extensive cycles of renovation in legacy buildings.

UNIVERSITY DOWNTOWN CENTER

The University Downtown Center (UDC) in downtown Binghamton accommodates the College of Community and Public Affairs and supporting program. Due to the programs close affiliation with community organizations, the location downtown in close proximity to the community works well for CCPA. The facility also contains BU's center for outreach.

In the future, the University intends to maintain the UDC as the primary location for CCPA. With future enrollment increases and associated demands for space, the program may be required to make use of facilities at the main campus to supplement existing facilities downtown.

OFF-CAMPUS LOCATIONS

The University maintains a number of off-campus locations that are either State-owned, Foundation-owned, or leased. In most instances, off-campus locations support a specific institutional focus, such as library material storages at the Library Annex or vehicle parking and physical facilities storage at the Commerce Road facility. Off-campus locations include the following: 426-428 Commerce Road (Foundation-owned), Glendale Property forested parcel (Foundation-owned), Library Annex at Conklin (leased), Art Factory Small Business Development Center (leased), and the Center for Advanced Microelectronics Manufacturing at Endicott Interconnect (use agreement).

OPPORTUNITY SITES

As a vibrant University Center in the SUNY system, Binghamton University is an integral part of its surrounding region. In the future, opportunities for development of University facilities may arise at sites outside of the main campus or the UDC. To remain nimble to such opportunities, the FMP carries key program elements as distinct, separate entities that may be placed at the most opportune location at the time of project realization. For example, the plan approaches the Law School in this manner.

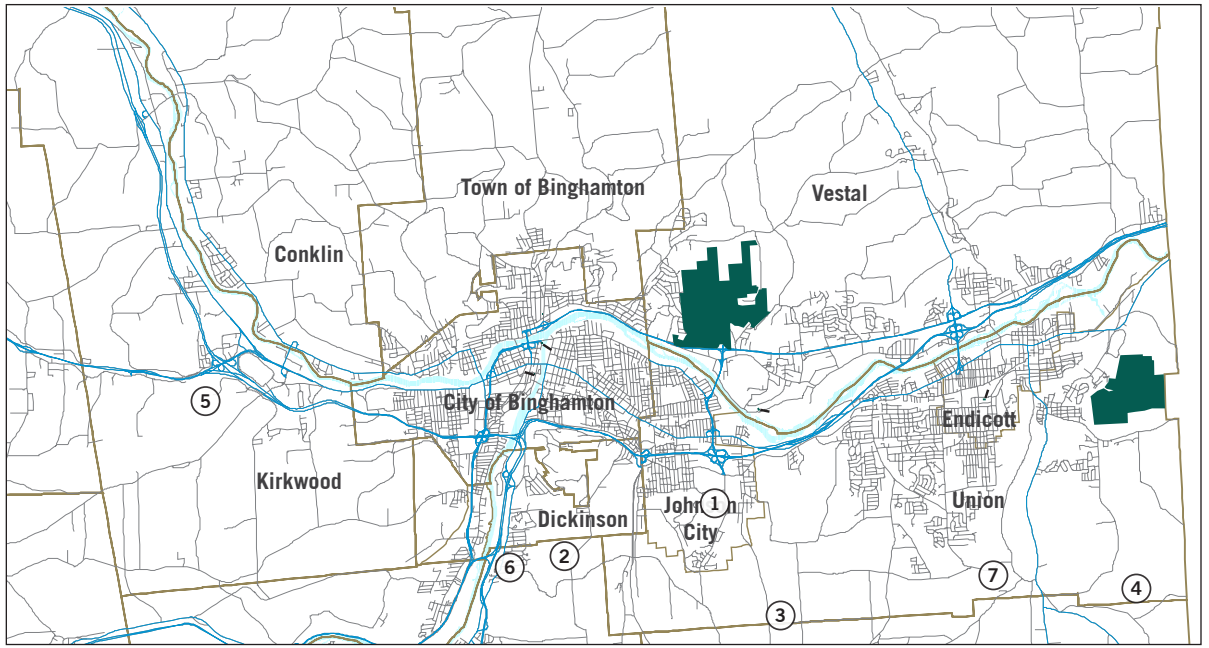


FIGURE 4.3.2A Existing Property Location Map

1. Main Campus (State and Foundation Owned)
2. University Downtown Center (State Owned)
3. 426-428 Commerce Road (Foundation Owned)
4. Glendale Property Forested Parcel (Foundation Owned)
5. Library Annex at Conklin (Leased)
6. Art Factory (Leased)
7. CAMM at Endicott Interconnect (Use Agreement)

4.3.3 BUILDING CAPACITY PERIOD

The Building Capacity period achieves the two-fold purpose of redressing existing facilities capacity and conditions issues while also aligning facilities with BU's revised academic and strategic missions.

Over time universities often experience variable growth, resulting in local instances of surplus and deficit in facilities. Campuses also must address issues of facilities condition and qualitative alignment with contemporary pedagogy.

Binghamton University is currently undergoing a leadership transition, resulting in a shifting of focus in certain strategic areas. This period of the plan will identify where additional or differing facilities are required to support the University's mission.

CONCEPT ALTERNATIVES

The following pages outline three concept alternatives for the period. They identify projects for each alternative by program family, and prioritize them into one of three phases: near-term, intermediate-term, and long-term. Each concept alternative achieves the following:

+ Align facilities with the Binghamton University's academic and strategic missions and meet basic space needs,
+ Conduct comprehensive renovation of legacy facilities for conditions, mechanical, and pedagogy upgrades,
+ Co-locate key programs in renovated or new facilities to showcase unique programmatic features of Binghamton

A principal role of the concept alternatives is to scenario plan for the University's possible alternate futures. To this end, the three alternatives diverge in their manifestation of the above goals to consider a full range of solutions. The concepts consider issues of the overall quantity of new construction and scale of new construction projects, the degree to which space needs are met for individual departments, and the location of the new School of Law on campus or off-campus.

BUILDING CAPACITY PERIOD CONCEPT METRICS	GSF
CONCEPT A	
Renovation	1,024,900
New Construction	312,700
Major Initiatives: + New Globalization Center at the Visitor's Lot + New Student and Academic Center at the East Campus + Major Additions within the Sciences Complex + New School of Law at an Off Campus Location + Interdisciplinary Academic Center at Computer Center + Major renovations at Bartle Library, the Fine Arts Building, and the Sciences Complex	
CONCEPT B	
Renovation	1,058,500
New Construction	492,400
Major Initiatives: + New Globalization Center at the Visitor's Lot + New School of Law at the East Campus + New ITC Natural Sciences at the ITC Campus + Student Success Center at Computer Center + Major renovations at Bartle Library, the Fine Arts Building, and the Sciences Complex	
CONCEPT C	
Renovation	1,090,100
New Construction	675,900
Major Initiatives: + New Academic Center at the Visitor's Lot + New Globalization Center at the East Campus + New ITC Natural Sciences at the ITC Campus + New School of Law at an Off Campus Location + Student Success Center at Computer Center + Major renovations at Bartle Library, the Fine Arts Building, and the Sciences Complex	

FIGURE 4.3.3A Summary of Concept Alternatives

4.3.3A CONCEPT A

Concept A outlines a development plan for Binghamton University that meets basic programmatic space needs and renovation requirements with a minimal amount of new construction. Concept A locates the new School of Law off-campus. The figure on the opposite page illustrates major and minor renovations, new construction, and existing buildings in Concept A.

CONCEPT A METRICS	GSF
Renovation	1,024,900
New Construction	312,700

Major Initiatives:

+ New Globalization Center at the Visitor's Lot
+ New Student and Academic Center at the East Campus
+ Major Additions within the Sciences Complex
+ New School of Law at an Off Campus Location
+ Interdisciplinary Academic Center at Computer Center
+ Major renovations at Bartle Library, the Fine Arts Building, and the Sciences Complex

FIGURE 4.3.3A-1 Concept A Metrics

CATEGORY	DESCRIPTION
Not Considered	Residential hall-related projects not considered in the scope of the FMP.
Existing To Remain	Buildings of recent construction or renovation that significantly fulfill their purpose.
Minor to Moderate Renovation & Reprogramming	Buildings that require full or partial minor to moderate upgrades including relocation of interior partitions, upgrade of finishes, exterior facade work, etc. but whose internal systems are still viable. Similarly, buildings that will be reconfigured to house new functions but will only require minor architectural upgrades.
Major Renovation & Reprogramming	Buildings that are structurally sound but require significant overhaul of building systems and architectural modifications to conform with current life safety and accessibility standards. Given the extent of such building renovations, these are considered candidates for wholesale reprogramming.
New Construction	New construction serves the dual purpose of providing additional high-quality program space on campus to support the University's population, as well as facilitating major renovation of existing facilities. New construction takes the form of entirely new buildings or additions to existing facilities.
No New Investment	Buildings that are structurally deficient, would require excessive capital investment to meet anticipated campus needs, or where further capital investment exceeds building value.

FIGURE 4.3.3A-2 Facilities Investment Legend

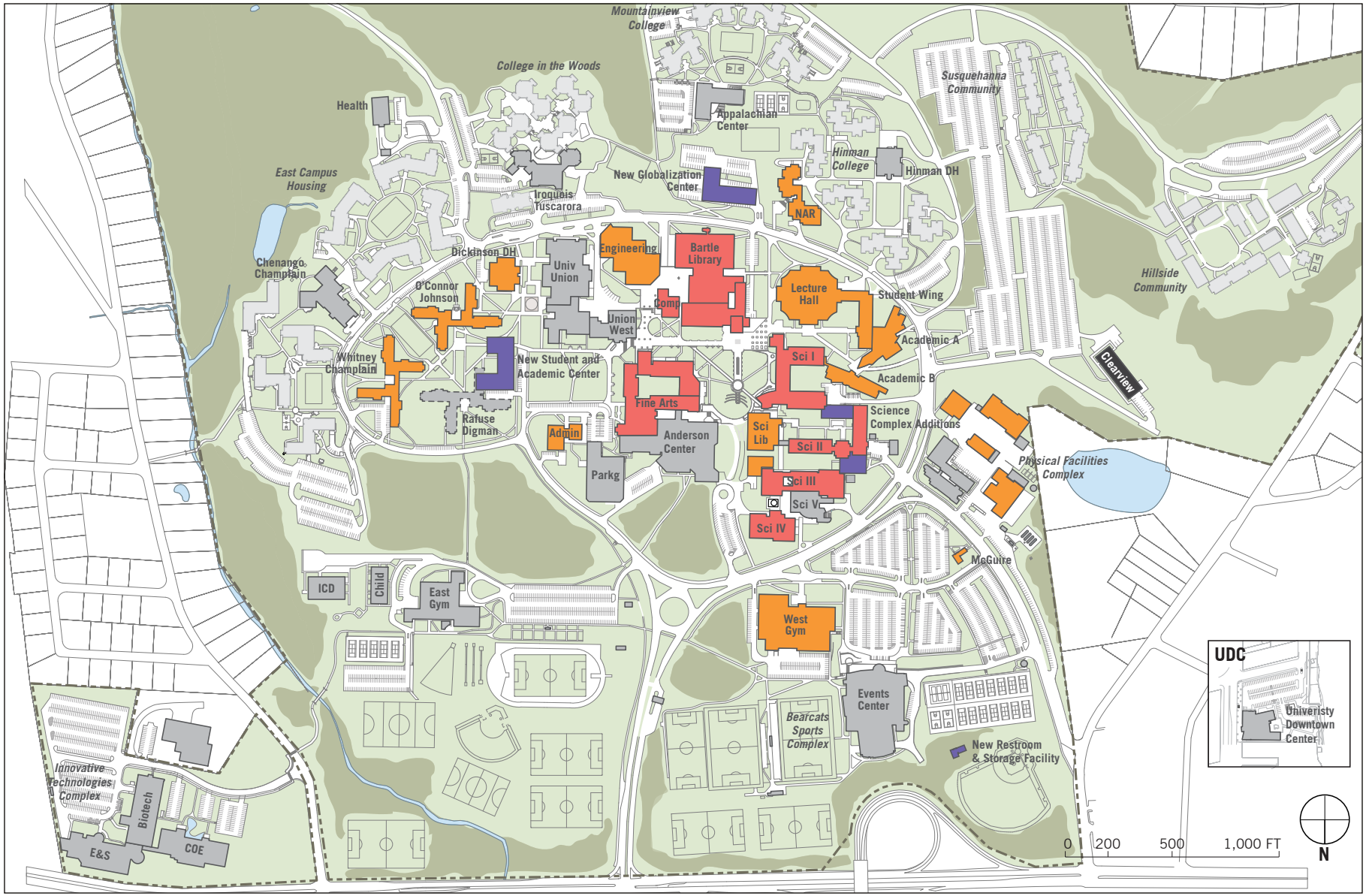


FIGURE 4.3.3A-3 Facilities Investment Summary

RENOVATION

The concept conducts major phased renovation projects at prominent legacy academic facilities, including Bartle Library, the Computer Center, Dickinson Dining Hall, the Engineering Building, the Fine Arts Building, and Sciences I-IV. More modest renovation projects occur at the Science Library and the Student Wing. Local renovations for targeted reprogramming or program backfill occur at Academic A, Academic B, the Administration Building, and the West Gym.

Two residence halls in the Original Dickinson Community at the East Campus, O'Connor Johnson Hall and Rafuse Digman Hall, are repurposed for academic and support programming. Rafuse Digman Hall serves primarily as swing space and O'Connor Johnson Hall serves as partial swing space to facilitate major renovation at Bartle Library and the Fine Arts Building.

NEW CONSTRUCTION

The concept's major new building construction initiatives showcase programs that are unique to Binghamton University, while also enhancing the institution's facilities inventory and catalyzing the renovation of legacy buildings.

Major renovation projects are supported by a series of infill additions within the Brain that modestly expand capacity, improve circulation issues, and provide local modern facilities that cannot be accommodated in legacy buildings. Additions also afford the opportunity to complement the heavy concrete and masonry aesthetic of legacy facilities with lighter facades that reveal the activities occurring within buildings and blur the boundaries between indoor and outdoor places.

Globalization Center. A new Globalization Center at the Visitor's Parking Lot highlights the University's commitment to internationalization, featuring a complement of globally-focused Harpur academic programs and providing a new home for the campus' range of student support services for international students and domestic students participating in international programming.

Student and Academic Center. A new Student Service and Academic Center at the East Campus provides new capacity and expansion space for the University's academic and student support programming.

Sciences Additions. Two additions within the Science Complex provide high-quality sciences research space to support capacity expansion, improve connectivity within the Complex, and facilitate renovation of legacy buildings.

School of Law. A new School of Law to accommodate the University's future academic program is planned for construction at location off of the main campus.

Rest room and Storage Facility. A new Rest room and Storage Facility located adjacent to the baseball and softball diamond provides services adjacent to fields and seating.

PLAN COMPONENTS	PROGRAM
1. Academic A and B Program Backfill	Professional Expansion
2. Administration Building Program Backfill	Administration Program
3. Bartle Library Renovation	Harpur Programs, Libraries
4. Computer Center Renovation & Addition	New Interdisciplinary Academic Center
5. Dickinson DH Renovation	Student Services One-Stop
6. Engineering Building Renovation	Watson Programs
7. Fine Arts Building Reno & Circulation Additions	Fine Arts Programs (Minus Cinema)
8. Lecture Hall Center Upgrades	Conditions Improvement
9. McGuire Building Reno	SUCF Site Reps
10. Nelson A. Rockefeller Renovation	Classrooms, Student Services
11. O'Connor Johnson Renovation	ITS, Geography, Alumni, Dept Office Swing Space
12. Physical Facilities Complex Renovation	Physical Facilities Program
13. Sciences I-IV Renovation	Harpur Science Programs
14. Science Library Renovation	Anthropology, Libraries
15. Student Wing Renovation	Classrooms, Cinema, Professional Expansion
16. University Union Program Backfill	Student Activities Program
17. West Gym Renovation	Student Athlete Center, HWS Instructional Center
18. Whitney Champlain Renovation	Dept Office Swing Space
19. NEW Globalization Center	Classrooms, Harpur Program, Student Services
20. NEW Restroom & Storage Facility	Athletics, Rec, HWS
21. NEW Science I/II Addition	Harpur Science Programs
22. NEW Science II/III Addition	Harpur Science Programs
23. NEW Student and Academic Center	Stu Services, Classrooms, Harpur Program
24. NEW School of Law (Off Campus)	School of Law Program

FIGURE 4.3.3A-4 Concept A Proposed Development Plan Legend

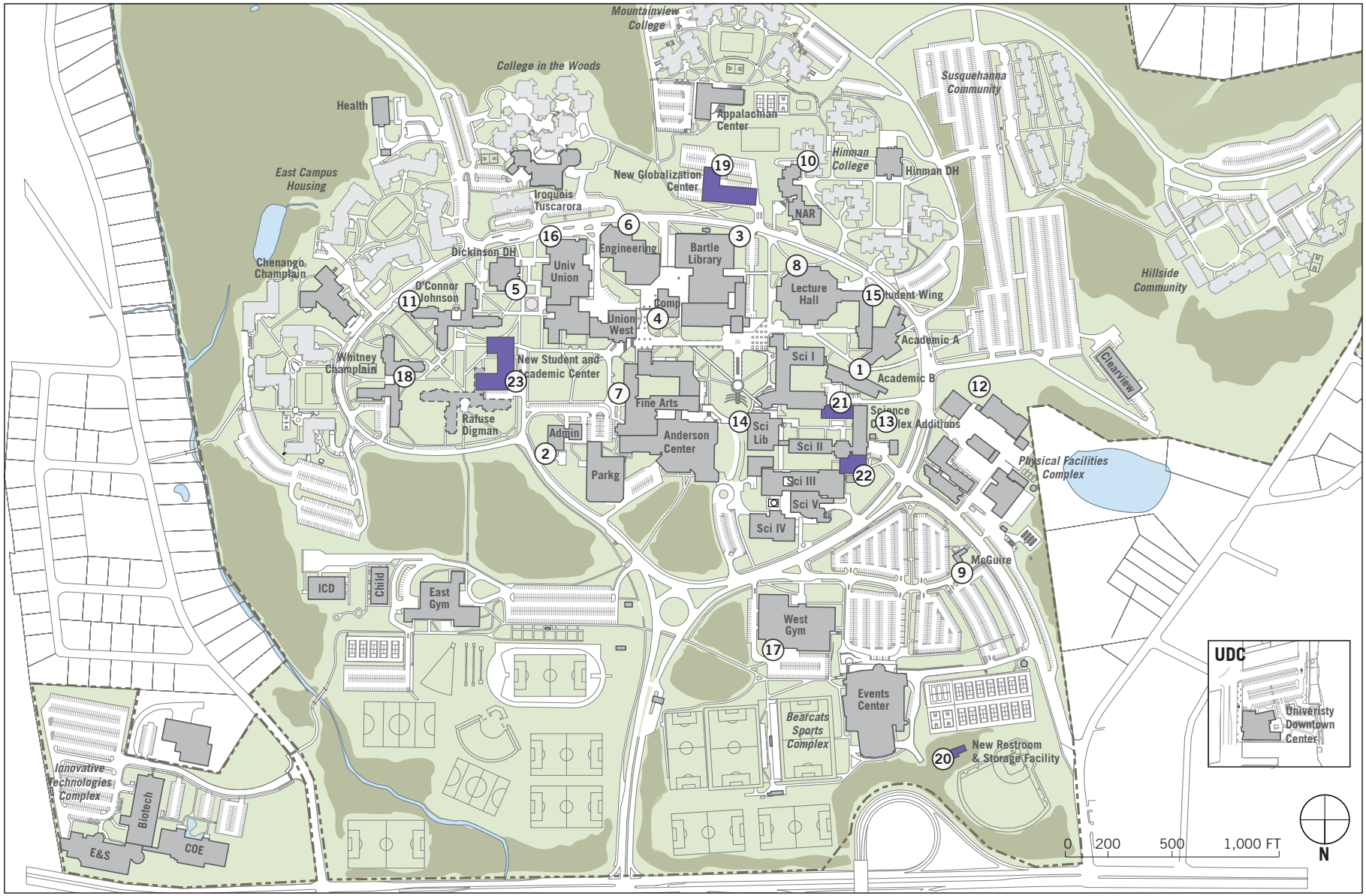


FIGURE 4.3.3A-5 Concept A Proposed Development Plan Summary

CONCEPT A

HARPUR FINE ARTS, HUMANITIES, SOCIAL SCIENCES, MATHEMATICS

GOALS

Renovate Bartle Library, the Fine Arts Building, and the Student Wing for improved condition and utility of facilities.

Bartle Library and the Fine Arts Building are two legacy campus facilities that were constructed with the founding of the campus and added on to multiple times to facilitate expansion as the University grew. Facilities in both buildings reflect dated pedagogic approaches, have major circulation and wayfinding issues, and require upgrade of building systems and interior finishes. The plan conducts comprehensive renovation of the two buildings to clarify building organization, simplify circulation and introduce new major campus circulation routes, and upgrade mechanical systems and finishes. Departmental facilities are modeled to provide unique identify for each entity, while supporting inter-departmental collaboration and sharing of support facilities.

The Student Wing at the Lecture Hall Center is a more recent building. However, over the course of past years the building has been adapted for use as classrooms and departmental facilities, different functions than its original program. Renovations at the Student Wing improve the condition and utility of departmental facilities, with an emphasis on technology upgrades.

Right-size departmental facilities to meet expanded or contracted space needs.

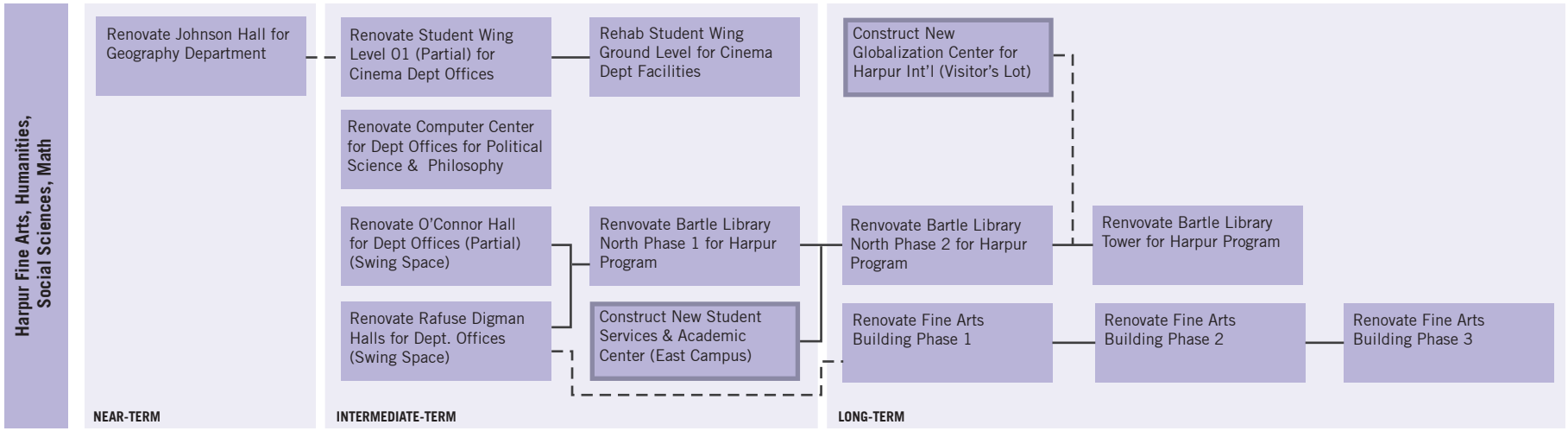
The rich history of Harpur College at Binghamton University emphasizes the provision of a liberal arts education experience for all students, particularly at the undergraduate level. This is reflected in the University's core educational requirements. As a result, a large demand is placed on the Harpur departments in the Fine Arts, Humanities and Social Sciences. The Math department also experiences high demand as a result of general education requirements, majors, and engineering-related pre-requisite programming. Due to rapid growth of the University over the past decade, many departments have fallen behind the curve of demand and require additional facilities to meet current student populations. The plan right-sizes departmental facilities to address existing surpluses and deficits and prepare departments for the effects of future growth.

Upgrade technology to create spaces that meet the technological demands of contemporary pedagogy.

Technology is driving dramatic change in higher education pedagogy as well as the expectations and learning styles of today's students. To support learning across campus, in both formal and informal learning environments, the plan upgrades departmental facilities to respond to technological requirements across scales.

Showcase the University's commitment to internationalization at a new Globalization Center that houses key globally-focused Harpur academic programs.

Binghamton University emphasizes internationalization on various levels. One key component of the commitment is the provision of numerous globally-minded academic programs and supporting research centers and institutes. A new Globalization Center co-locates academic departments with a global-focus to showcase the University's distinctive programming.



STRATEGY

NEAR-TERM

In the near-term, Johnson Hall is renovated for ITS and the Geography department. The move of Geography to Johnson Hall vacates most of the second level of the Student Wing, facilitating future renovation of the first two levels of the building.

INTERMEDIATE-TERM

Intermediate-term projects consist of a series of more modest renovations that catalyze large-scale renovations at Bartle Library and the Fine Arts Building.

To begin, renovations at the Johnson Hall and Dickinson Dining Hall vacate the first two levels of the Student Wing. Level 01 is renovated first for departmental offices to support both the Cinema department and School of Management expansion. Upon completion, Cinema offices are relocated from level 02, facilitating renovation of that level for high-quality small and medium section-size classrooms and seminar rooms. Space provided for Cinema at level 01 also allow offices from the ground level to be relocated, vacating space at the ground level. The vacated space, combined with additional swing space at Rafuse Digman will begin a cycle of renovation at the ground level. These renovations re-configure the Cinema department facilities and provide technology upgrades for departmental instructional lab and lab support space to reflect contemporary pedagogy.

A second component of the intermediate-term renovates and constructs an addition to the existing Computer Center to create a new Interdisciplinary Center. The Center will house three academic departments: History, Philosophy, and Political Science, as well as supporting academic and support functions. Existing ITS server facilities will remain at the ground level of the building. Relocation of the departments will vacate space in Bartle Library at the ground level and in the tower to facilitate future major renovations for Harpur program and the University Libraries. See the adjacent figure for the Interdisciplinary Center program.

A third major element of the intermediate-term plan is extensive renovation of legacy residence halls in the Original Dickinson Community for an Alumni & Visitor's Center and departmental office swing space. O'Connor Hall is renovated first for the Binghamton University Alumni & Visitor's Center at the main level and departmental swing space on the upper levels. The Asian & Asian-American Studies is relocated to the swing space created at O'Connor Hall, vacating additional space at the ground level of the Bartle Library and setting up for the first phase of major renovation of the University Library.

Following the renovation of O'Connor Hall, Rafuse Digman Halls are renovated for departmental swing space. In the intermediate-term, the swing space facilitates the first phase of major renovations at Bartle Library North for Harpur departmental programs. In the long-term, the swing space supports major renovations of the Fine Arts Building.

LONG-TERM

Long-term projects include continued major renovation efforts from the intermediate-term and new construction to support capacity expansion.

First, phases 2 and 3 of major renovation of Harpur departmental facilities at Bartle Library are continued in the long-term. Phase 2 is supported by swing space at Rafuse Digman Halls. Phase 3 is supported by facilities at a new Globalization Center, constructed at the existing Visitor's Parking Lot. The building will showcase BU's commitment to internationalization, housing its diverse internationally-focused academic programs, student support services, and student organizations. See the adjacent figure for the Globalization Center Program.

Additionally, major renovation of the Fine Arts Building is initiated in the long-term. Renovation provides upgraded facilities for Art History, Art Studio, Music, and Theater. A key element of the renovation is re-configuration of circulation through the Fine Arts Building to support an additional cross-campus pedestrian route and provide informal gathering space for members of the campus community. Swing space at Rafuse Digman is re-allocated from support of Bartle Library renovation to renovation of the Fine Arts Building in the long-term.

NEW GLOBALIZATION CENTER	PROPOSED ASF
General Classrooms	20,200
Computer POD	1,200
International Academic Programs	12,900
International Offices (Student Services)	8,400
International Centers & Institutes	4,200
Cafe	400
Informal Lounge & Study Space	2,400
Group Study Rooms	1,000
Satellite Library Portal	1,200
Building Services / Custodial	1,000
TOTAL	**52,900**
Available	*70,000*

FIGURE 4.3.3A-6 Proposed Globalization Center

INTERDISCIPLINARY CENTER AT THE COMPUTER CENTER	PROPOSED ASF
General Classrooms	1,200
Computer POD	300
History	12,500
Philosophy	5,600
Political Science	8,400
Philosophy, Interpretation & Culture	1,000
Informal Lounge & Study Space	1,200
Group Study Rooms	700
Satellite Library Portal	500
ITS Servers & Watson Servers	5,100
Building Services / Custodial	700
TOTAL	**37,200**
Available	*37,200*

FIGURE 4.3.3A-7 Proposed Interdisciplinary Center

CONCEPT A

HARPUR SCIENCES

GOALS

Renovate Sciences I-IV to align facilities with contemporary curriculum delivery and technological requirements.

Sciences I-IV were constructed and occupied prior to 1975. Since that time, scientific practice and pedagogy has undergone significant change, and facilities at the University have been unable to keep up. There is a serious need to renovate legacy buildings in the Sciences Complex so that they may support contemporary curriculum delivery and technological requirements, as well as for improved mechanical systems and clarity of building circulation routes. These upgrades are essential for health and safety, and for faculty and researcher recruitment and retention.

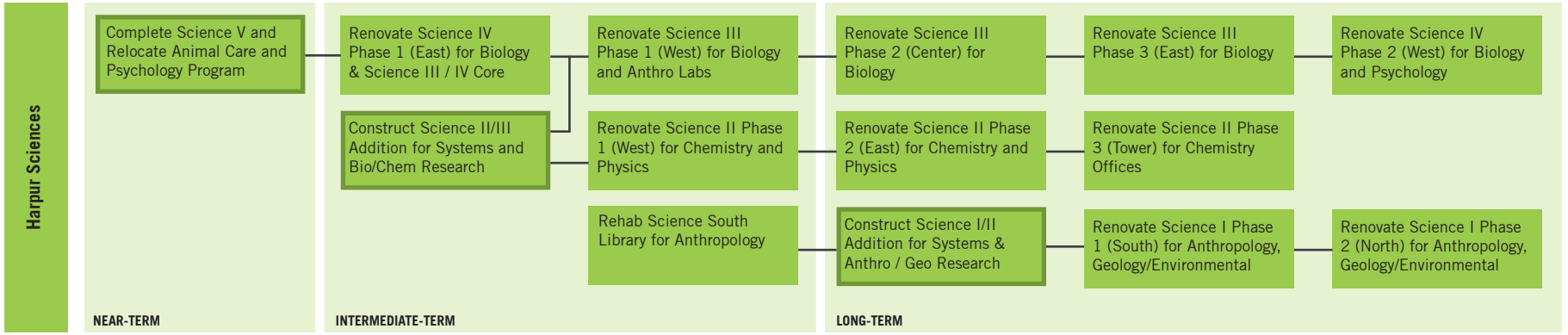
Maximize facilities at the Sciences Complex by right-sizing departments whose space needs differ from that which they occupy and consolidating departmental storage requirements.

Many department's facilities needs have shifted since the construction of buildings within the Sciences Complex due to pedagogical and technological changes as well as shifting emphasis within the Division. As a result, some departments require right-sizing to meet an expanded or contracted need.

To aid in right-sizing departments in the context of limited facilities resources, space that is currently utilized as storage space is evaluated for re-purposing. The plan seeks strategies to consolidate storage facilities while engaging technology to expand access to archived resources.

Construct additions within the Sciences Complex to provide high-technology research facilities as well as expanded capacity for science departments and mechanical upgrades.

Due to facilities age, it is difficult to provide high-precision space for contemporary technology-supported research in legacy buildings at the Sciences Complex. New additions within the complex add such research spaces to the University's inventory while also supporting expansion of the sciences and improving connectivity between existing buildings.



STRATEGY

NEAR-TERM

In the near-term, the new Science III building is completed for Lab Animal Resources and Psychology Program. Designated existing facilities in Science IV and the III/IV Core are relocated to Science V, vacating a critical mass of space in Science IV to begin a cycle of phased renovations.

INTERMEDIATE-TERM

The intermediate-term begins with the renovation of Science IV East for Biology program. Upon completion, the renovation vacates a portion of Science III West.

Concurrently with the Science IV East renovation, a modest addition is constructed between Sciences II and III. The addition supports comprehensive renovations of the two adjacent buildings by providing vertical mechanical service upgrades and improving circulation connectivity. New assignable square footage at the addition provide centralized, high-technology research facilities to support Biology and Chemistry research programs.

Following the completion of mechanical upgrades at the Science II/III Addition, the initial phases of renovation at Sciences II and III are initiated. Science II is renovated for Chemistry and Physics facilities. Science III is renovated for Biology facilities and Anthropology wet-labs.

As a separate track, the a rehabilitation of the Science Library is conducted in the intermediate term for consolidation of University Library program and provision of facilities for Anthropology.

LONG-TERM

In the long-term, the plan calls for continuation of major phased renovation projects from the intermediate term, as well as the initiation of additional major renovations at Science I.

Phase 1 renovations conducted during the intermediate-term at Sciences II, III, and IV support continued phased renovation of the buildings, for completion in the long-term.

A second addition located between Sciences I and II is constructed to provide vertical mechanical service upgrades, improved circulation connectivity, and high-technology research facilities to support Anthropology and Geology/Environmental Sciences. Space gained in the addition, coupled with space gained through the consolidation of Anthropology in to the Science Library, catalyzes a phased of renovation at Science I.

SCIENCE I/II ADDITION	PROPOSED ASF
Anthropology	4,800
Geological & Environmental	10,000
Informal Lounge & Study Space	800
Building Services / Custodial	800
TOTAL	**16,400**
Available	*16,400*

FIGURE 4.3.3A-8 Proposed Science I/II Addition

SCIENCE II/III ADDITION	PROPOSED ASF
Chemistry	12,400
Physics	2,400
Informal Lounge & Study Space	800
Building Services / Custodial	800
TOTAL	**16,400**
Available	*16,400*

FIGURE 4.3.3A-9 Proposed Science I/II Addition

CONCEPT A

WATSON SCHOOL OF ENGINEERING

GOALS

Consolidate Engineering program to the new ITC Engineering and Sciences, ITC Biotechnology, and the Engineering Building to co-locate departments.

Upon completion of ITC Engineering and Sciences, the School of Engineering will occupy four buildings across two campus locations: Bartle Library and the Engineering Building at the Brain and ITC Biotechnology and ITC Engineering and Sciences at the ITC Campus. The location of program by campus is a factor of department, with certain departments located at each campus, and function, with the ITC Campus featuring research facilities and the Brain campus as the location of undergraduate instruction. In the future, engineering program is expected to maintain presence at both the Brain and the ITC Campus. Due to the inherent division between the campuses, the plan seeks consolidation within each campus location to improve the flow of departmental facilities, clarify operations, and reduce the need for redundant facilities. To achieve consolidation at the Brain, program is vacate from Bartle Library to a renovated Engineering Building.

Provide designated facilities for the freshman foundational program in Engineering Design in the Engineering Building.

The Engineering Design program offers first-year engineering students a strong foundation through personal faculty contact, peer support in small group sections, and hands-on project-based immersion. The program has the dual intention of aiding students in identifying their strengths and interests for a successful sophomore transition, and positioning students for long-term success in the engineering profession. The Engineering Design program currently utilizes facilities at the ground level of Bartle Library, which are intended to be phased off-line. Comprehensive renovation of the Engineering Building allows for creation of new facilities tailored to meet the needs of the unique program.

Upgrade instructional laboratories to provide facilities that meet industry standards and address contemporary methods of curriculum delivery and technological requirements.

Comprehensive renovation of the Engineering Building and the relocation of facilities from Bartle Library provides the opportunity to upgrade instructional laboratories. New lab facilities reflect contemporary pedagogy, with a focus on integrated technology and meeting industry standards so that students may experience a seamless transition to the profession.

STRATEGY

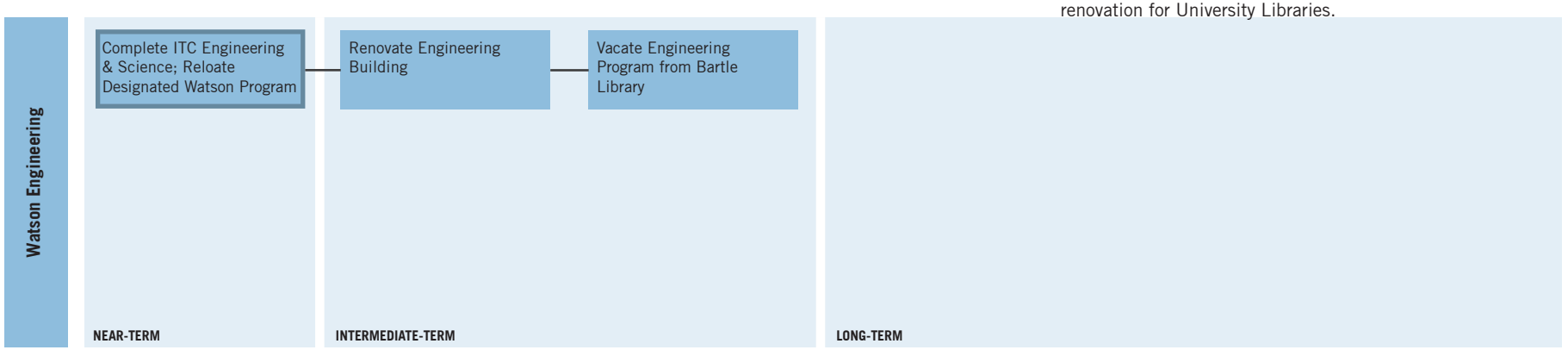
NEAR-TERM

In the near-term, construction of the new ITC Engineering & Science is completed. The following departments are relocated to the new facility: the dean's office and administration, all non-instructional components of Electrical and Computer Engineering and Mechanical Engineering. The move will vacate space within the Engineering Building as well as at the Ground Level of Bartle Library.

INTERMEDIATE-TERM

The School of Engineering's space needs for the planning period are met in the intermediate-term with renovation of the Engineering Building. A comprehensive phased renovation of the building is conducted, initiated by space vacated with completion of the ITC Engineering & Science. The building houses undergraduate instructional components of all departments, as well as the balance of departmental facilities for Computer Science and Systems & Industrial. A new suite for the Engineering Design program is also incorporated.

Renovation of the Engineering Building allows for relocation of all programs that are currently in the Bartle Library, vacating space at the ground level of the library. This space facilitates renovation for University Libraries.



PROFESSIONAL PROGRAMS

GOALS

Provide additional capacity for the Schools located in Academic A and B that have outgrown their existing facilities.

Academic A and B were constructed for the University's School of Education, School of Management, and School of Nursing at a time when the population was significantly less than it is today. To support existing program populations and future projected growth, additional departmental space and expanded laboratory facilities are required for the Schools to expand. The plan provides expansion capacity in the Student Wing and through program backfill at Academic A and B.

Provide competitive laboratory facilities that meet industry standards and address changing technological needs.

Changing pedagogy, particularly in Management and Nursing, are driving demand for new typologies of instructional space. Both are seeing an increase in technology-enhanced simulation facilities that allow students to experience a wider range of applications in an instructional setting prior to entering the profession. The plan calls for modest upgrades to existing laboratory facilities on campus to meet shifting technological demands.

Construct a new School of Law building to support the University's future academic program.

Binghamton University is moving forward with its proposal to establish a new School of Law. The School is projected to come on-line in the 2015-2018 time frame. The plan constructs a new facility for the School of Law at an off-campus location within the surrounding region. At this time the precise location is undefined, however the plan recommends a site that complements existing campus development locations or fosters other strategic relationships within the community.

STRATEGY

INTERMEDIATE-TERM

In the intermediate-term, the level 01 of the Student Wing is renovated for departmental offices. A portion of these offices support modest expansion for the School of Management, whose location in Academic A adjoins the Student Wing. In conjunction with the expansion, select offices in Academic A may be taken off-line to allow for expansion of existing laboratory facilities.

Additionally, a new School of Law is constructed at an off-campus location in the intermediate-term.

LONG-TERM

In the long-term, modest facilities expansion for the School of Education and School of Nursing is provided in Academic B in space vacated by Academic Advising. Following completion of the new Student Services and Academic Center at the East Campus, the Academic Advising department is relocated, vacating space in Academic B.

CONCEPT A

CLASSROOMS AND COMPUTER LABS

GOALS

Provide a variety of classroom typologies to support the full range of contemporary pedagogy needs.

The majority of the classrooms in Binghamton University's existing inventory are located in legacy buildings that date from the 1960s to 1980s. Facilities reflect the pedagogy of the time, which tended to emphasize lecture-style teaching. At a macro-scale, the provision of a balanced inventory of classrooms is gauged using the metric of ASF per station. The existing inventory reports an average of just under 16.0 ASF per station, reflecting an inventory heavy in lecture-style rooms.

During the time since many existing classrooms were built, significant pedagogy shifts have impacted higher education. Pedagogy shifts result in a dramatic shift in instructional delivery from teacher-centric to learner-centric. As a result, contemporary pedagogy engages a wider array of instructional methodologies, and thus places increasingly diverse demands on classrooms, a primary location for instruction. To reflect the full range of classroom typologies required to support contemporary pedagogy, the FMP establishes a target average of 22.0 ASF per station.

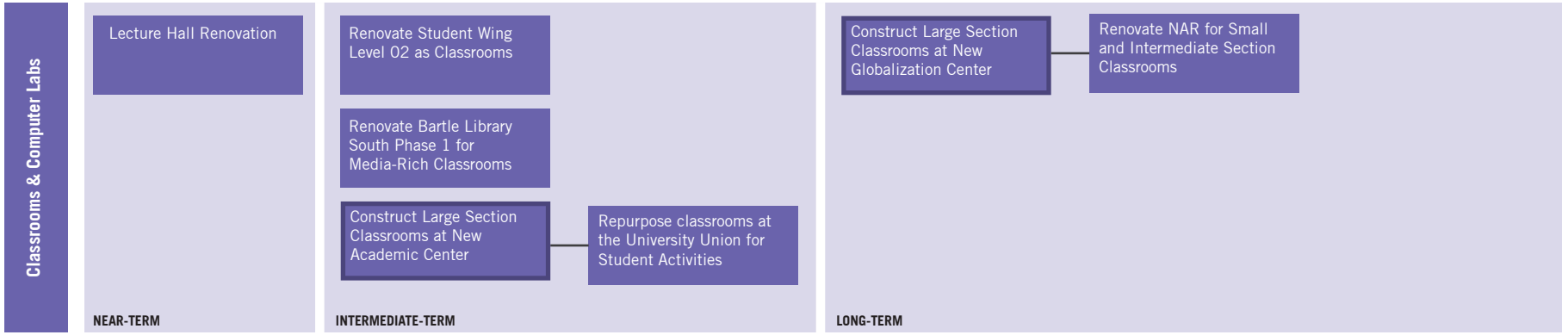
The target ASF per station is achieved over the course of the planning period as new classrooms are introduced to complement legacy facilities. New classrooms emphasize group-based and project-based learning, technology-enhanced learning, and other alternate strategies, as well as provision of contemporary facilities for large-section lectures.

Improve the overall quality of the University's classroom inventory through renovation and replacement.

Classrooms at the University's main campus comprise less than six percent of the total inventory, yet are the location of over 80 percent of total instruction, making a high-quality classroom inventory an investment with a strong return. The following factors are considered in provision of quality classrooms: configuration to support instructional style, quality and durability of furnishings and finishes, lighting, and technology.

Provide a consistent level of basic technology in every classroom, complemented with distinct media-rich facilities at the Bartle Library Media Center and in new academic buildings.

Technology is a primary driver in the pedagogy shifts that impact higher education. The majority of today's students incorporate basic technology into nearly every aspect of their learning processes. Specialized distance learning and technology-enhanced courses employ more advanced technologies. To support the technological demands of students, all classrooms incorporate a basic level of technology. Specialized facilities in new buildings and at the Bartle Library Media Center include media-rich technologies to support more technology-intensive coursework.



STRATEGY

NEAR-TERM

In the near-term, the Lecture Hall Center is renovated for an interior finish upgrade.

INTERMEDIATE-TERM

In the intermediate-term, key renovations projects at the Student Wing and Bartle Library as well as construction of the new Student Service and Academic Center specifically impact the University's classroom inventory.

First, the plan expands the inventory of classrooms at the Student Wing through renovation of the second level to medium-section classrooms and small-section seminar rooms. The second level of the Student Wing is vacated with the relocation of Geography to Johnson Hall, Cinema offices to the first level of the Student Wing, and EOP offices to University Union North. To support the integrated learning styles of today's students, instructional space is complemented with informal student lounge and study spaces.

Secondly, the plan creates a designated hub of media-rich instructional environments in a Media Center located at the ground level of Bartle Library. The ground level of the Library is vacated with relocation of engineering program to the ITC Engineering & Science and Engineering Building; major academic departments to the Interdisciplinary Center at the Computer Center and swing space in O'Connor Hall; and consolidation or relocation of remaining discrete program elements.

The Media Center contains a core of media-rich classrooms, computer classrooms, and group study rooms. Classroom facilities are complemented by the University Center for Training and Development, offices for Educational Communications, and an InfoCommons. Existing University library administrative offices and receiving and cataloguing services are re-configured and maintained adjacent to the receiving dock on the east side of the space. A high-activity zone of informal student lounge and study space is located along the north edge of the Media Center in the zone that separates Bartle Library north and south. The existing stair and entryway at the main level is replaced for a treatment that utilizes lighter materials and more glass, to allow natural light to reach the lower level. Portions of the floor area at the main level are removed for increased sectional connection. See the adjacent chart for Media Center program.

New large-section classrooms are provided in the intermediate term with construction of the new Student Service and Academic Center at the East Campus. For program details refer to Concept A: Student Services, Student Activities, Administration, ITC.

Additionally, phased renovation projects of legacy facilities address classroom upgrades in the intermediate-term at Bartle Library, Fine Arts, and the Sciences Complex. The provision of new classroom facilities allows legacy classrooms to be taken offline temporarily during renovation. Renovations will replace classrooms within legacy facilities for a distributed inventory.

LONG-TERM

In the long-term, new large-section classrooms are provided in the Globalization Center, constructed at the Visitor's Parking Lot. The building also provides small-section seminar rooms to support local academic programming.

Following the completion of the Globalization Center, existing international programs are relocated from Nelson A. Rockefeller, allowing the building to be renovated for additional medium- and small-section classrooms. Existing student services, such as the Discovery Program outlet are retained.

Phased renovation of projects of legacy facilities continue to address classrooms upgrades across campus in the long-term. Projects include continued renovation at Bartle Library, Sciences I and II, and the Fine Arts Building.

MEDIA CENTER	PROPOSED ASF
Media-Rich Classrooms & Seminar Rooms	6,000
Computer Classrooms	1,800
InfoCommons	4,400
Informal Lounge & Study Space	6,800
Center for Training & Development	800
Educational Communications	400
Library Administrative Offices and Circulation Services	9,600
Building Services / Custodial	1,600
TOTAL	**31,400**
Available	*31,400*

FIGURE 4.3.3A-10 Proposed Media Center at Bartle Library

STUDENT WING RENOVATION	PROPOSED ASF
LEVEL 01	**14,600**
Cinema	7,800
Professional Programs	6,200
Informal Lounge & Study Space	400
Building Services / Custodial	200
LEVEL 02	**10,500**
Classrooms and Seminar Rooms	8,700
Group Study Rooms	800
Informal Lounge & Study Space	800
Building Services / Custodial	200
TOTAL	**25,100**
Available	*25,100*

FIGURE 4.3.3A-11 Proposed Student Wing Renovation

CONCEPT A

CENTERS, INSTITUTES, GRANT FUNDED PROGRAMS

Goals

Provide state-of-the-art facilities for S3IP and its affiliated programs at the ITC Center of Excellence.

Binghamton University's Center of Excellence is designated as a New York State Center of Excellence and brings together partners from government, industry, and academia to provide opportunities for collaboration that advances microelectronics research and development. The new ITC Center of Excellence building will house the Small Scales Systems Integration and Packaging (S3IP) and its affiliate programs.

Continually improve quality and quantity facilities for existing centers, institutes and grant funded programs through various renovation and new construction projects.

BU conducts research in multiple venues and is home to a number of diverse centers, institutes, and grant funded programs. Some programs are directly affiliated with a particular department and are co-located with that department. Other programs function in a more interdisciplinary manner and draw on expertise from multiple departments. New construction and renovation of legacy facilities identifies the range of needs of the University's centers, institutes, and grant-funded programs and provides the appropriate facilities.

Provide seed space for future centers and institutes to encourage innovation.

In keeping with the University's commitment to innovation, the plan provides facilities to support future avenues of research in the form of seed space for future centers and institutes.

STRATEGY

NEAR-TERM

In the near-term, the ITC Engineering and Sciences building is completed. The facility incorporates high-quality spaces for centers, institutes, and grant funded programs associated with engineering programs. Additionally, the ITC Center of Excellence provides state-of-the-art facilities for Binghamton University's Center of Excellence, S3IP, and its affiliate programs.

INTERMEDIATE-TERM

In the intermediate-term, new construction projects and phased renovations of legacy facilities in the intermediate-term incorporate new and renovated facilities for centers, institutes, and grant funded programs. Key projects also incorporate seed space for growth of new centers and institutes.

LONG-TERM

New construction projects and phased renovations in the long-term incorporate new and renovated facilities for centers, institutes, and grant funded programs. Key projects also incorporate seed space for growth of new centers and institutes.

LIBRARIES

Goals

Reprogram libraries at the main campus to reduce facilities emphasis on stacks and collection storage and amplify emphasis on the Library as the center of the University's intellectual community, fostering inquiry and collaboration.

Technology and pedagogical shifts have profoundly impacted the nature of the library for institutions of higher education. Once approached as a repository for knowledge with an emphasis on reference and retrieval of print collections, the digital age has transformed the role of the library from a store of collections to a hub of information transfer and interpersonal interaction. Binghamton University's Libraries are at the forefront of the shift, providing leadership to the University community in strategies for engaging information resources for teaching, learning, and research.

While shifting to incorporate new models of information access and delivery, the University's Libraries continue to house distinguished print and special collections. With the advent of data locating technology and inter-library loan programs, the University is experiencing an increase in circulation of its print collections, particularly for more rare resources.

Reprogramming of facilities redistributes space to allow the physical environment to exhibit the Library's role as an intellectual hub of knowledge transfer. The plan engages compact storage strategies and technology to consolidate the facilities occupied by collections storage while increasing access. Facilities gained in the consolidation meet growing space needs for information kiosks, InfoCommons, formal and informal study space, and group meeting facilities.

Conduct a comprehensive renovation of library program at Bartle Library and the Science Library to improve conditions.

University libraries occupy the north and south side of Bartle Library and the Science Library. Both buildings were constructed in the 1960s and 1970s according to a model of information storage and access that is much different than the contemporary model. With reprogramming, library facilities are upgraded for conditions improvements to clarify circulation routes, upgrade mechanical systems, and improve interior finishes.

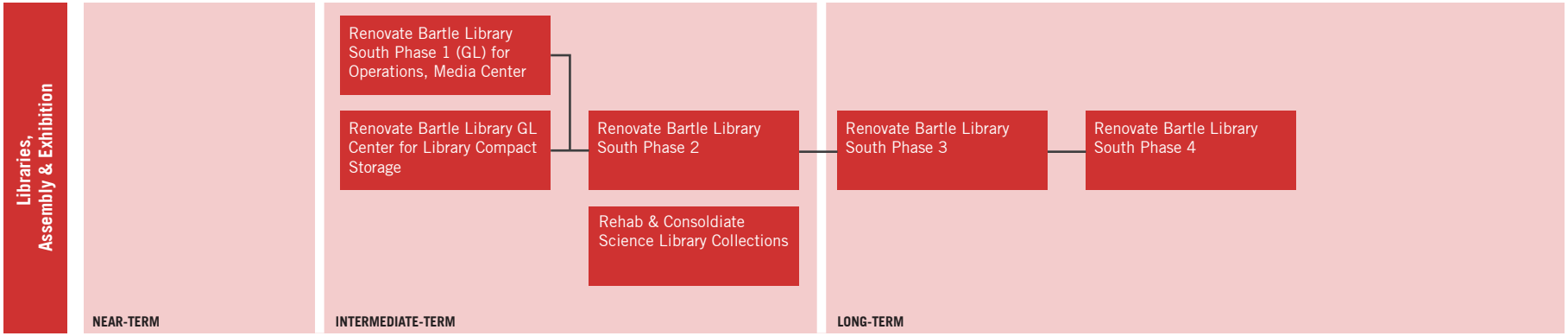
Upgrade facilities to support the University's information access and management strategies that engage technology and innovative programming to anticipate changes and trends in scholarship, publishing, and education.

Comprehensive reprogramming and renovation of library facilities allow for the integration of state-of-the-art technologies to support evolving models of information access and delivery. Reprogramming addresses issues of space organization and layout to encourage members of the campus community to engage technology resources. A new Media Center provides a concentration of technology rich instruction and collaboration spaces to support technology-enhanced learning. The Media Center serves as a test location for developing technologies that the University is engaging on a trial basis and considering adopting. Renovation of library spaces also installs core technology infrastructure into buildings that were constructed prior to its existence. Infrastructure upgrades are built to be nimble to future technology shifts, allowing for ease of upgrade.

STRATEGY

INTERMEDIATE-TERM

Two key projects in the intermediate-term initiate a phased renovation of library program at Bartle Library. A first phase renovation at the ground level of Bartle Library renovates the south wing for conditions and building system improvements to support a Media Center that includes media-rich classrooms, InfoCommons, the University Center for Training and Development, library administrative offices, and library operations facilities. For detailed program, see Concept A: Classrooms and Computer Labs. A second project at the ground level of Bartle Library renovates the center portion for compact shelving storage to support consolidation of print collections



LIBRARIES, CONTINUED

from the stacks on upper levels. The installation of compact shelving likely requires structural upgrades to the floor slab. Together, the two projects at the ground level provide the type and quantity of facilities required to catalyze phased renovation of the remainder of library facilities at Bartle Library. Phased renovation of the south wing of Bartle Library is continued in the intermediate-term with Phase 2 of the project.

Renovations to the Science Library are also conducted in the intermediate-term. Facilities are upgraded for technology infrastructure and contemporary information delivery models. Existing library operations and seating lounges are reprogrammed to achieve greater efficiency. Library collections are similarly consolidated at the lower level of the building, however without the use of compact shelving. Space vacated at the Science Library supports Anthropology program that is relocated from Science I, initiating phased renovation of that building.

LONG-TERM

In the long-term, phased renovation of library program at Bartle Library is continued, with each renovation catalyzing the next until plan completion. The special collections, now located at the north side of the first two floors, are consolidated to occupy facilities at the south side and a more modest quantity of space at the north side. Renovation of the fourth level of the south wing incorporates a circulation path that connects a walkway from the new Globalization Center at the Visitor's Parking lot to the heart of campus with a walkway through the building to the atrium between the north and south portions of Bartle Library. The connection enhances the physical centrality of the Library with respect to campus circulation patterns, furthering it as the center of the University's intellectual community.

STUDENT ACTIVITIES, STUDENT SERVICES, ADMINISTRATION, INFORMATION TECHNOLOGY SERVICES

GOALS

Co-locate student service functions at the Dickinson Dining Hall for efficiency and improved service.

Technology and shifting expectations for service have profoundly impacted the delivery of student services provided by departments such as Financial Aid, Student Accounts, etc. Technology has moved student service accounting into a digital database format. This allows for many services to be delivered in an on-demand online environment, a model Binghamton University has adapted that is now expected by the majority of students and families.

As a result of shifts in technology and delivery methods, the space requirements for student services have changed. The plan co-locates student service functions for easy and direct access into Dickinson Dining Hall, a facility that supports an open-plan layout that better suits the departments' needs in providing improved efficiency and service.

Showcase the University's commitment to internationalization by co-locating related student services and student organizations at the new Globalization Center.

International students comprise a large portion of Binghamton University's student body. In addition, through its academic programming and strategic branding, domestic students are encouraged to understand global issues and participate in programs abroad. As a result, the University offers a wide range of services for both international students and domestic students to support its internationalization goals. In addition, a number of student organizations and campus events exist to celebrate the University's global emphasis. The new Globalization Center provides a venue for the University to showcase such programs.

Maintain a distributed model of student academic support facilities, supported by new core student advising facilities at the new Student and Academic Center.

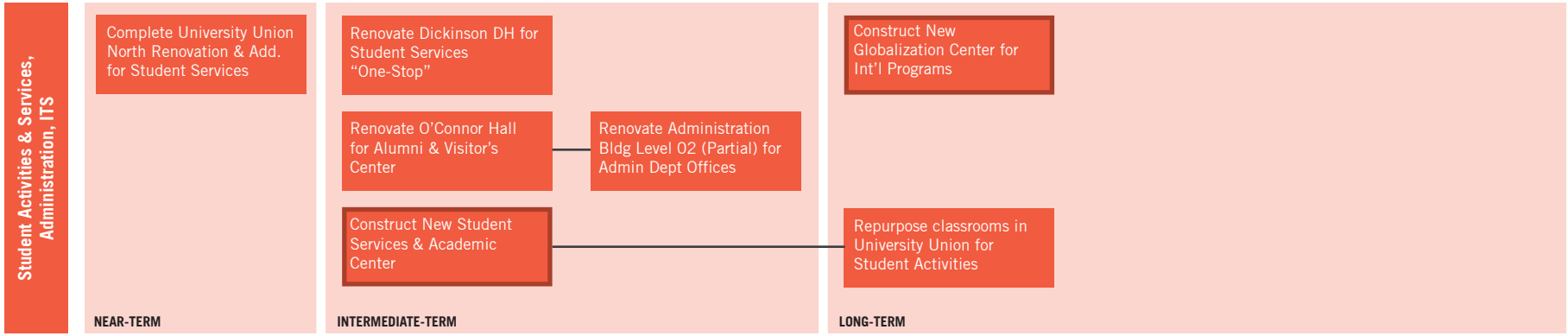
Binghamton University has developed a distributed model for student academic support. Under the model, academic support facilities are located in close adjacency to nodes of student activity, particularly at the University Union and within the residential colleges. Future development maintains the distributed model for services, and enhances it with a new core student advising facility, located at the new Student and Academic Center.

Complement centralized student life spaces in the University Union with distributed spaces that are integrated throughout all campus facilities.

The University Union is the campus hub for student life. It contains a wide range of functions including food service, bookstore, recreation and game rooms, student organization offices, lounge space, etc. Future development maintains the University Union as the primary centralized student life facility, and complements it with distributed informal student lounge and study space that is integrated throughout all campus facilities. Co-locating "soft seating" lounge space with formal learning environments supports serendipitous encounters, informal information exchange, and learning outside of the classroom.

Provide a designated place for Binghamton University alumni at O'Connor Hall.

Binghamton University's Alumni Association has over 100,000 members, and grows with each graduating class. Alumni actively participate in a broad range of events on campus all throughout the calendar year. Alumni are supported by the University's Alumni Relations department. To foster continued alumni involvement with the University and its current students, the plan provides a designated Alumni Center at O'Connor Hall within the Brain.



STUDENT ACTIVITIES, STUDENT SERVICES, ADMINISTRATION, INFORMATION TECHNOLOGY SERVICES, CONTINUED

STRATEGY

NEAR-TERM

In the near-term, the University Union North Renovation and Addition project is completed. The project provides academic support services and facilities for student organizations at the University Union. Key program elements include offices for EOP, a tutoring and TRIO tutoring center, and a new Center for Career Development. The project also corrects existing circulation issues that exist between the original building and the University Union West addition.

INTERMEDIATE-TERM

A number of projects in the intermediate-term support student activity, student services, administration, and ITS initiatives. Dickinson Dining Hall is taken off-line as a dining facility and renovated for a Student Services One-Stop. The facility is modeled around a contemporary technology-enriched method of delivery for student services, with an open-plan organization to accommodate and efficiently serve large crowds at key points in the academic year. See the adjacent figure for Student Services One-Stop program.

O'Connor Hall is renovated for an Alumni and Visitor's Center at the main level with departmental office swing space at upper levels. The Alumni and Visitor's Center include the Alumni Relations and Binghamton Foundation departments, supported by reception and gathering spaces. Relocation of the two departments to O'Connor Hall vacates a portion of the second level of the Administration Building. This space is moderately renovated for the administrative department Purchasing, which are currently located in the McGuire Building. Relocation of these departments facilitates renovation of the McGuire Building for SUCF site representative offices, resulting in the removal of existing SUCF trailers.

A new building located at the East Campus provides expansion for student services in the intermediate-term. The new Student and Academic Center includes a new location for the undergraduate and graduate Admissions departments in close adjacency to other student services in the Dickinson Dining Hall. The building also includes a new academic advising center that showcases the University's advising services and commitment to student success. Relocation of Admissions and Advising vacate space in Academic A and B for professional program expansion.

LONG-TERM

In the long-term, new classrooms provided in the new Student and Academic Center expand and improve overall classroom inventory and allow classrooms in the University Union to be taken off-line and the space repurposed for student activities. See adjacent figure for Student and Academic Center Program. The new Globalization Center at the Visitor's Parking Lot provides high quality facilities and showcases the University's internationally-related student services and student organizations. The building includes the following programs: English as a Second Language, International Student & Scholar Services, Languages Across the Curriculum, Office of International Programs, Translation Program, as well as internationally-related centers and institutes and student organization facilities. For program details refer to Concept A: Harpur Fine Arts, Humanities, Social Sciences, Math.

STUDENT SERVICES ONE-STOP	PROPOSED ASF
Admissions	1,100
Financial Aid	4,600
Student Accounts	4,200
University Registrar	4,800
TOTAL	**14,600**
Available	*14,600*

FIGURE 4.3.3A-12 Proposed Student Services One-Stop

STUDENT AND ACADEMIC CENTER	PROPOSED ASF
General Classrooms	13,300
English	18,800
Math	16,600
Harpur Advising Center	4,700
Admissions	7,700
Center & Institutes	1,700
Writing Center	1,600
Informal Lounge & Study Space	2,400
Group Study Rooms	1,000
Satellite Library Portal	800
Cafe	400
Building Services / Custodial	1,000
TOTAL	**70,000**
Available	*70,000*

FIGURE 4.3.3A-13 Proposed Student and Academic Center

ATHLETICS, RECREATION, HEALTH & WELLNESS STUDIES

GOALS

Provide a designated academic center for student athletes and expand instructional facilities for Health & Wellness Studies at the West Gym.

Binghamton University's athletic program includes 21 sports and over 400 student athletes. In keeping with the University's commitment to academic excellence and to meet NCAA academic requirements, student athletes must be provided with a designated academic center. Due to program growth, the existing academic center in the West Gym requires expansion to support the population of student athletes.

The Health & Wellness Studies (HWS) coursework at Binghamton University teaches students the practical skills and behaviors of healthy living and strives to engage all students in development of life-long wellness. As a core curriculum requirement, the program is directly impacted by increases in the University's population. It has experienced significant demand increase in the past few years, and projects further increases with future growth.

Provide a new facility for the storage of athletic and recreation equipment and rest rooms adjacent to the baseball and softball field.

To support recent upgrades to the baseball and softball diamond, rest room facilities are required adjacent to spectator seating. The provision of storage allows for equipment to be kept within closer range to the diamond and reduces storage demand at the West Gym.

STRATEGY

NEAR-TERM

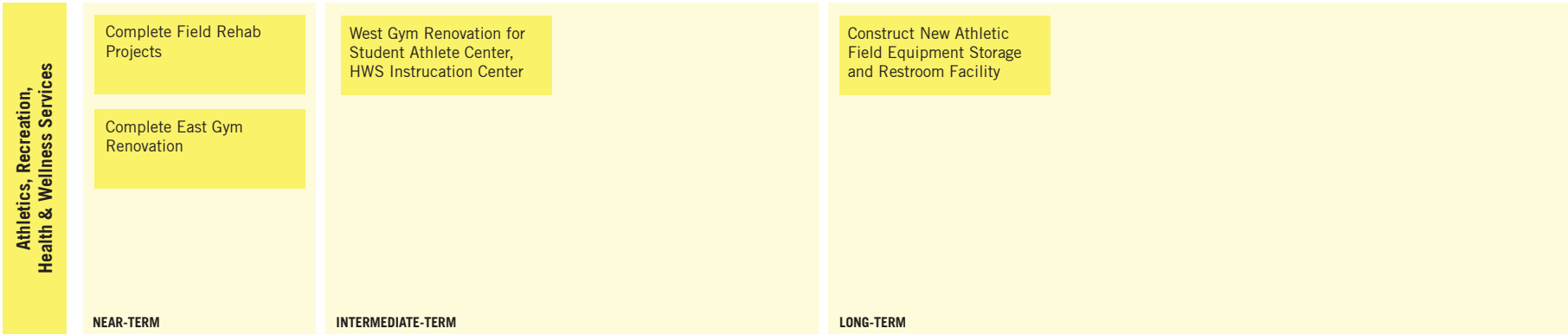
In the near-term, field rehabilitation projects and a comprehensive renovation of the East Gym contribute to upgrades of athletics, recreation, and health and wellness studies facilities.

INTERMEDIATE-TERM

In the intermediate-term, a portion of the West Gym at the northeast corner is renovated for an academic and instruction center to support student athletes and the HWS program. Six of the eight existing racquetball courts, which are under utilized, are take off-line and subdivided for additional program space. This space is combined with the existing student athlete suite. Renovation on of the complete space yields two suites of complementing program for instruction and learning.

LONG-TERM

In the long-term, a new storage and rest room facility is constructed adjacent to the baseball and softball diamond to meet existing storage needs and comply with requirements for provision of rest rooms within a given distance of spectator seating.



CONCEPT A

CAMPUS SERVICES AND BUILDING SERVICES

GOALS

Upgrade infrastructure at Central Heating Plant to allow for increased capacity.

The Central Heating Plant contains four boilers that provide high temperature hot water (HTHW) to many buildings in the area of the Brain at the main campus. The Plant currently operates at a fraction of its capacity (1) as that operating capacity meets the current load demand and (2) because increasing the capacity would result in the University exceeding its DEC Title V permit for emissions. Recently the central HTHW system was expanded to include the East Campus Housing, raising output of the Plant to just within the emissions limits.

Future growth at the main campus that is tied into the HTHW system will require boilers at the Central Heating Plant to operate at a higher capacity. To achieve this, the Plant must be upgraded for emissions, monitoring, and control. The plan outlines infrastructure upgrades to facilitate increased capacity.

Renovate legacy buildings in the Physical Facilities Complex to maximize their useful capacity.

Physical Facilities is charged with maintaining, operating, and protecting Binghamton University's facilities and environs to provide an atmosphere that is conducive to learning, safe, and attractive for members of the University community. Growth in student population, addition to the University's inventory of facilities, and major capital new construction and renovation projects increase the demands placed on the Physical Facilities department.

The existing Physical Facilities Complex located to the west of the Brain is the primary location for the department's centralized operations. The Complex is located on a highly constrained site, bounded by the M parking lots, West Drive, the Bunn Hill Access Road, and the University's site boundary. The Complex contains six buildings, four of which require upgrades for condition due to age. To meet the demands associated with future growth within the context of site limitations, legacy buildings are renovated within the plan in a manner that maximizes their capacity.

Create a designated facility for SUCF site representatives and allow for removal of existing trailers.

SUCF site representatives working at the University currently operate out of trailers that are located immediately south of the Physical Facilities Complex. The plan provides SUCF reps with lightly renovated office and meeting space in the McGuire Building, located at the west side of the F parking lots. The move allows for the removal of existing SUCF trailers.

STRATEGY

INTERMEDIATE-TERM

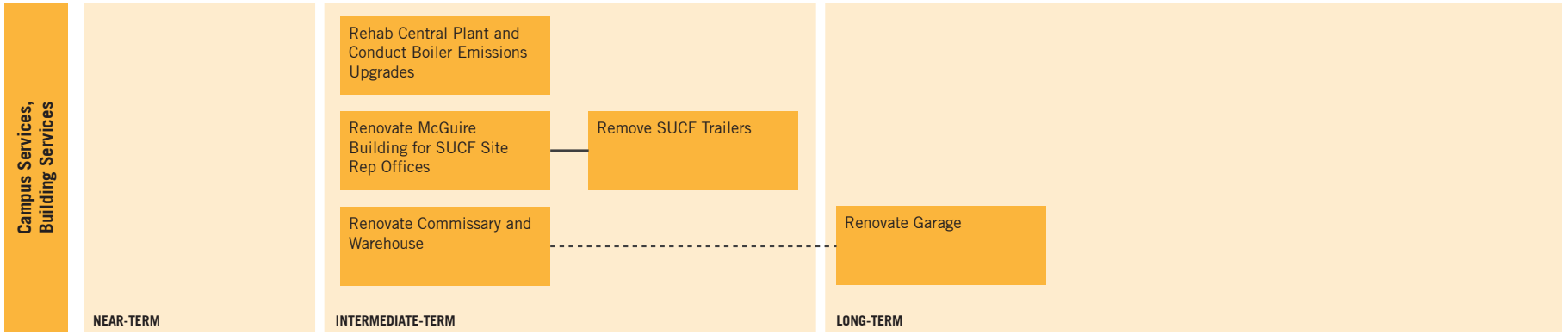
A key project in the intermediate term is an infrastructure upgrade at the Central Heating Plant for emissions to allow for increased capacity.

The McGuire Building is moderately renovated for office and meeting space for SUCF site representatives. The renovation is facilitated by projects at O'Connor Hall and the Administration Building. Renovation of O'Connor for an Alumni Center vacates a portion of the second floor of the Administration Building, which is renovated for the departments that currently occupy the McGuire Building.

Renovations are also conducted at the Commissary and Warehouse. Renovations upgrade building conditions and to maximize the capacity of the buildings to support future campus growth.

LONG-TERM

In the long-term, renovation within legacy facilities at the Complex is continued at the Garage. The building is renovated for conditions upgrades and to maximize capacity to support future campus growth.



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4.3.3B CONCEPT B

Concept B outlines a development plan for Binghamton University that meets programmatic space needs and renovation requirements with a more substantive amount of new construction. Concept B locates the new School of Law at the main campus.

CONCEPT B METRICS	GSF
Renovation	1,058,500
New Construction	492,400

Major Initiatives:

+ New Globalization Center at the Visitor's Lot
+ New School of Law at the East Campus
+ New ITC Natural Sciences at the ITC Campus
+ Student Success Center at Computer Center
+ Major renovations at Bartle Library, the Fine Arts Building, and the Sciences Complex

FIGURE 4.3.3B-1 Concept B Metrics

CATEGORY	DESCRIPTION
Not Considered	Residential hall-related projects not considered in the scope of the FMP.
Existing To Remain	Buildings of recent construction or renovation that significantly fulfill their purpose.
Minor to Moderate Renovation & Reprogramming	Buildings that require full or partial minor to moderate upgrades including relocation of interior partitions, upgrade of finishes, exterior facade work, etc., but whose internal systems are still viable. Similarly, buildings that will be reconfigured to house new functions but will only require minor architectural upgrades.
Major Renovation & Reprogramming	Buildings that are structurally sound but require significant overhaul of building systems and architectural modifications to conform with current life safety and accessibility standards. Given the extent of such building renovations, these are considered candidates for wholesale reprogramming.
New Construction	New construction serves the dual purpose of providing additional high-quality program space on campus to support the University's population, as well as facilitating major renovation of existing facilities. New construction takes the form of entirely new buildings or additions to existing facilities.
No New Investment	Buildings that are structurally deficient, would require excessive capital investment to meet anticipated campus needs, or where further capital investment exceeds building value.

FIGURE 4.3.3B-2 Facilities Investment Legend

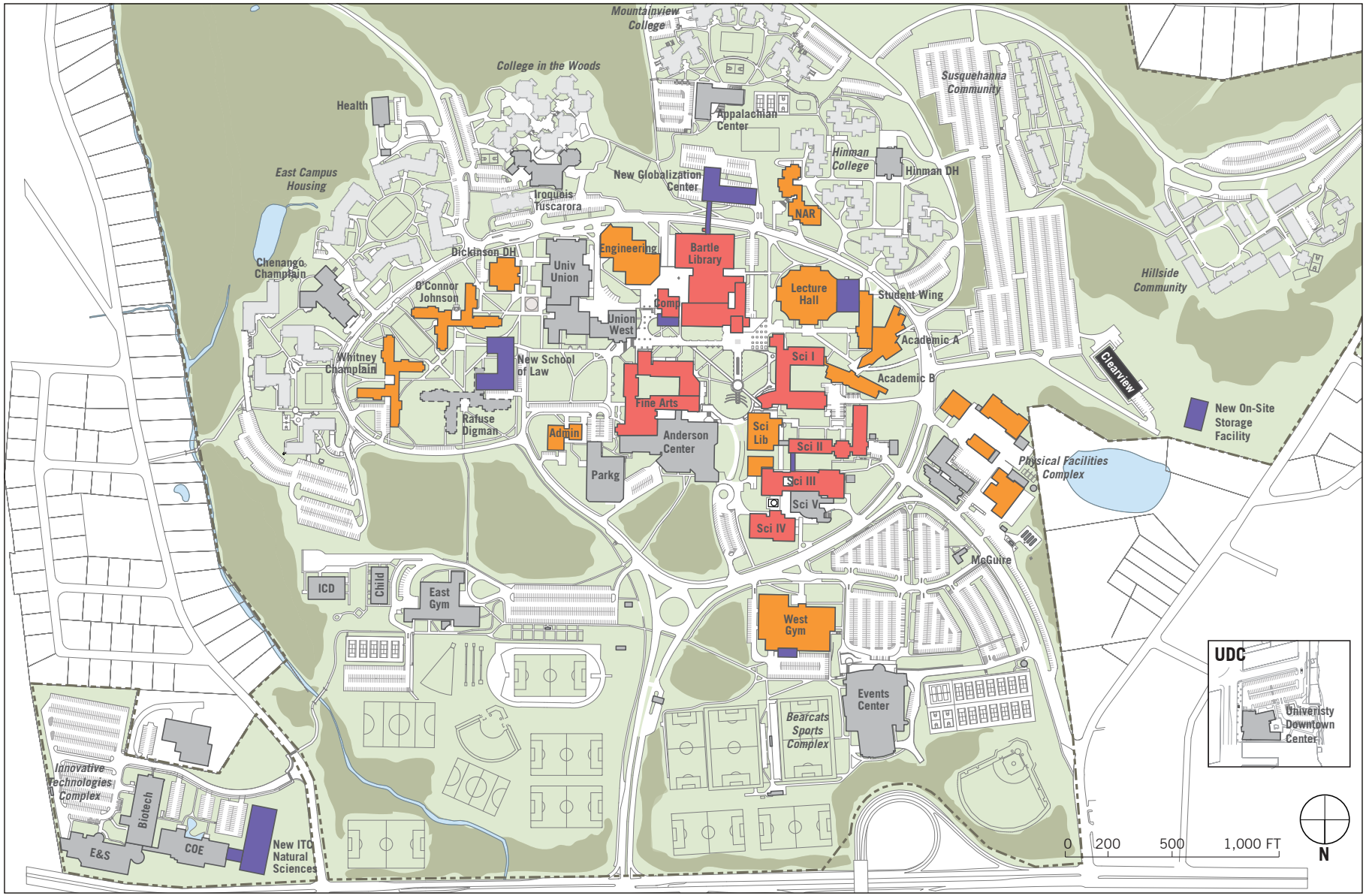


FIGURE 4.3.3B-3 Concept B Facilities Investment

RENOVATION

The concept conducts major phased renovation projects at prominent legacy academic facilities, including Bartle Library, the Computer Center, Dickinson Dining Hall, the Engineering Building, the Fine Arts Building, and Sciences I-IV. More modest renovation projects occur at the Science Library and the Student Wing. Local renovations for targeted reprogramming or program backfill occur at Academic A, Academic B, the Administration Building, and the West Gym.

Two residence halls in the Original Dickinson Community at the East Campus, O'Connor Johnson Hall and Rafuse Digman Hall, are repurposed for academic and support programming. Rafuse Digman Hall serves primarily as swing space to facilitate major renovation at Bartle Library and the Fine Arts Building.

NEW CONSTRUCTION

The concept's major new building construction initiatives showcase programs that are unique to Binghamton University, while also enhancing the institution's facilities inventory and catalyzing the renovation of legacy buildings.

Major renovation projects are supported by a series of infill additions within the Brain that modestly expand capacity, improve circulation issues, and provide local modern facilities that cannot be accommodated in legacy buildings. Additions also afford the opportunity to complement the heavy concrete and masonry aesthetic of legacy facilities with lighter facades that reveal the activities occurring within buildings and blur the boundaries between indoor and outdoor places.

Globalization Center. A new Globalization Center at the Visitor's Parking Lot highlights the University's commitment to internationalization, featuring a complement of globally-focused Harpur academic programs and providing a new home for the campus' range of student support services for international students and domestic students participating in international programming. The Globalization Center would also assist with recruitment and retention of overseas students, an area not affected by unfavorable demographics.

ITC Natural Sciences. The new ITC Natural Sciences at the ITC Campus serves as a gateway to the ITC and provides the University with state-of-the-art research laboratories, test and measurement facilities, and research computing facilities to support growth in research in the natural sciences. In addition, the ITC Natural Sciences adds the first undergraduate instructional classrooms and laboratories to the ITC Campus, facilitating use by undergraduate students.

School of Law. A new School of Law to accommodate the University's future academic program is planned for construction at location off of the main campus.

On-Site Storage Facility. The on-site remote storage facility provides storage at the main campus for the University Libraries and Physical Facilities, allowing facilities within campus buildings to be re-purposed to meet other program requirements. Storage for the Libraries is climate-controlled to allow for storage of collections that are currently within campus buildings and at the Annex in Conklin.

PLAN COMPONENTS	PROGRAM
1. Academic A & B Program Backfill	Professional Program Expansion
2. Administration Building Program Backfill	Administration Program
3. Bartle Library Renovation	Harpur Programs, University Libraries
4. Computer Center Renovation & Addition	New Student Success Center
5. Dickinson DH Renovation	Student Services One-Stop
6. Engineering Building Renovation	Watson Programs
7. Fine Arts Building Renovation & Circulation Additions	Fine Arts Programs (Minus Art History)
8. Lecture Hall Center Upgrades and Addition	Conditions Improvement, Lecture Halls
9. McGuire Building Renovation	SUCF Site Reps
10. Nelson A. Rockefeller Renovation	Classrooms, Student Services
11. O'Connor Johnson Renovation	ITS, Geography, Alumni, Dept Office Swing Space
12. Physical Facilities Complex Renovations	Physical Facilities Program
13. Sciences I-IV Renovation	Harpur Sciences Program
14. Science Library Renovation	Anthropology, University Libraries
15. Student Wing Renovation	Classrooms, Professional Program Expansion
16. University Union Program Backfill	Student Activities Program
17. West Gym Renovation and Addition	Student Athlete Center, HWS Instructional Center
18. Whitney Champlain Renovation	Dept Office Swing Space
19. NEW Globalization Center	Classrooms, Harpur Program, Student Services
20. NEW ITC Natural Sciences	Harpur Sciences & Watson Programs, Classrooms
21. NEW School of Law	School of Law Program
22. NEW On-Site Storage Facility at Bunn Hill Road	Physical Facilities, University Libraries Program

FIGURE 4.3.3B-4 Concept B Proposed Development Plan Legend

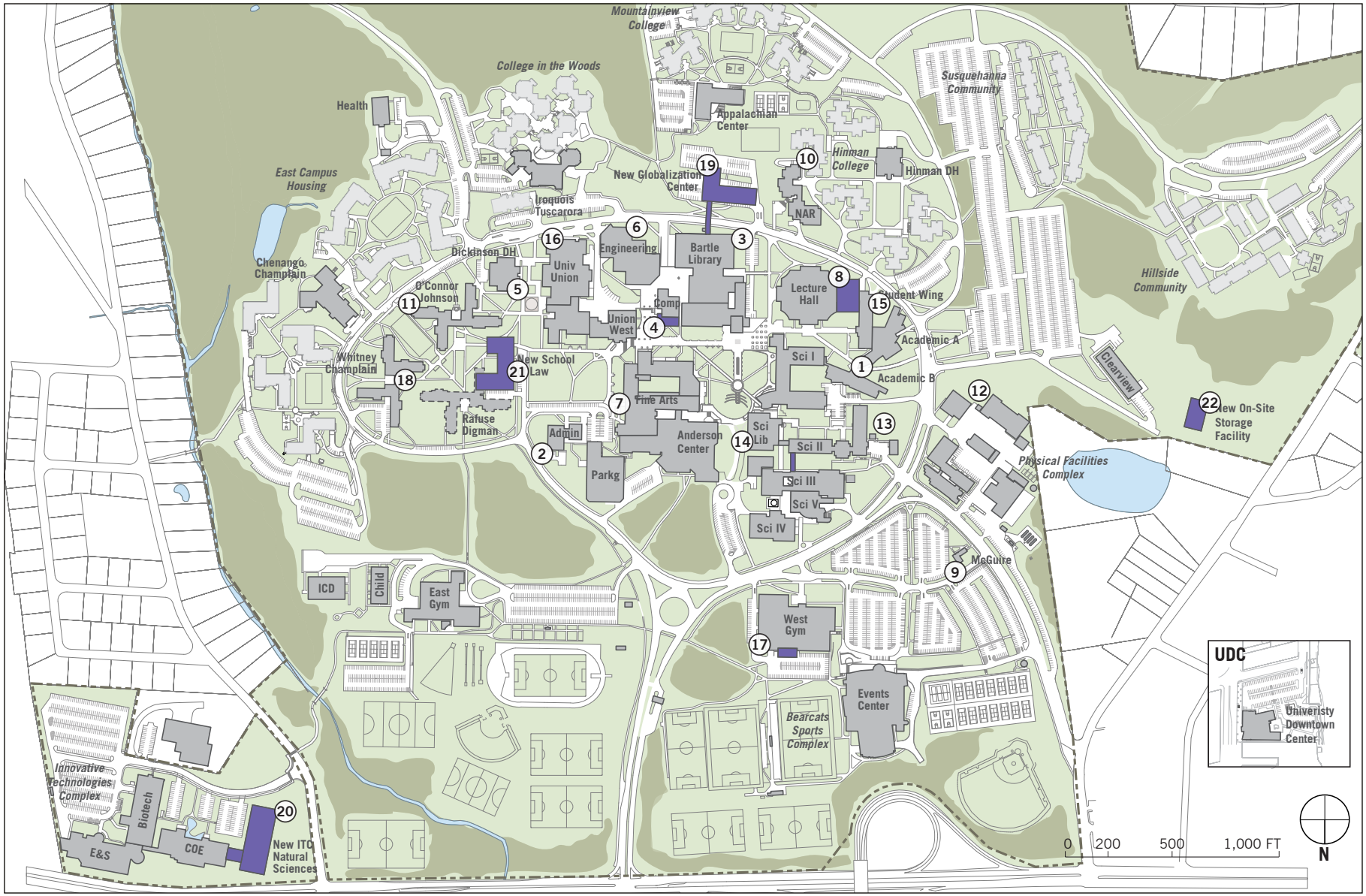


FIGURE 4.3.3B-5 Concept B Proposed Development Plan

CONCEPT B

HARPUR FINE ARTS, HUMANITIES, SOCIAL SCIENCES, MATHEMATICS

GOALS

Renovate Bartle Library, the Fine Arts Building, and the Student Wing for improved condition and utility of facilities.

Bartle Library and the Fine Arts Building are two legacy campus facilities that were constructed with the founding of the campus and added on to multiple times to facilitate expansion as the University grew. Facilities in both buildings reflect dated pedagogic approaches, have major circulation and wayfinding issues, and require upgrade of building systems and interior finishes. The plan conducts comprehensive renovation of the two buildings to clarify building organization, simplify circulation and introduce new major campus circulation routes, and upgrade mechanical systems and finishes. Departmental facilities are modeled to provide unique identify for each entity, while supporting inter-departmental collaboration and sharing of support facilities.

The Student Wing at the Lecture Hall Center is a more recent building. However, over the course of past years the building has been adapted for use as classrooms and departmental facilities, different functions than its original program. Renovations at the Student Wing improve the condition and utility of departmental facilities, with an emphasis on technology upgrades.

Right-size departmental facilities to meet expanded or contracted space needs.

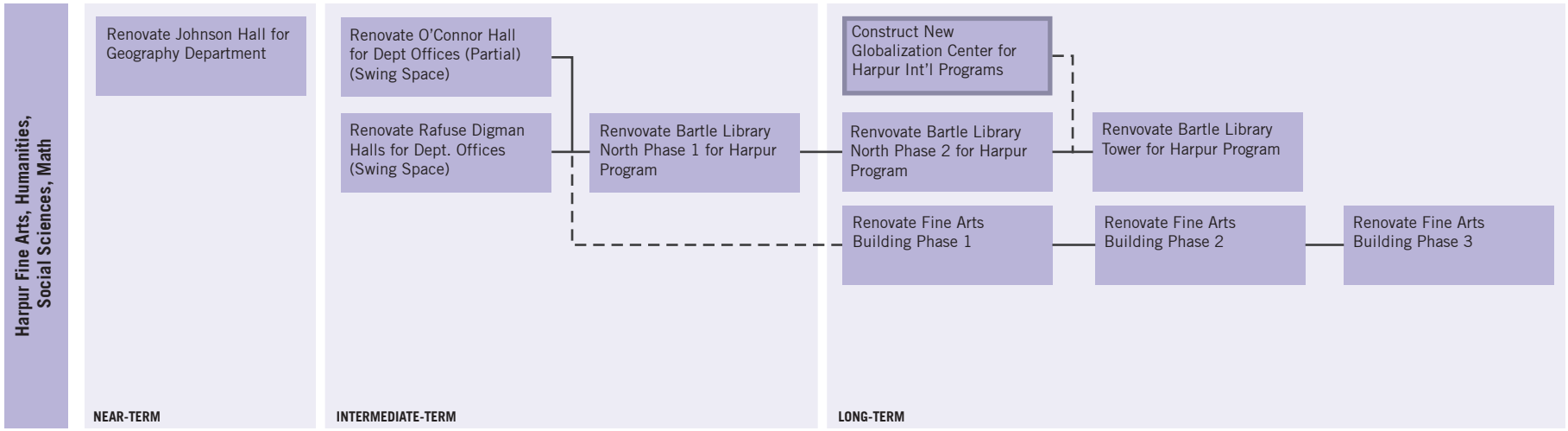
The rich history of Harpur College at Binghamton University emphasizes the provision of a liberal arts education experience for all students, particularly at the undergraduate level. This is reflected in the University's core educational requirements. As a result, a large demand is placed on the Harpur departments in the Fine Arts, Humanities and Social Sciences. The Math department also experiences high demand as a result of general education requirements, majors, and engineering-related pre-requisite programming. Due to rapid growth of the University over the past decade, many departments have fallen behind the curve of demand and require additional facilities to meet current student populations. The plan right-sizes departmental facilities to address existing surpluses and deficits and prepare departments for the effects of future growth.

Upgrade technology to create spaces that meet the technological demands of contemporary pedagogy.

Technology is driving dramatic change in higher education pedagogy as well as the expectations and learning styles of today's students. To support learning across campus, in both formal and informal learning environments, the plan upgrades departmental facilities to respond to technological requirements across scales.

Showcase the University's commitment to internationalization at a new Globalization Center that houses key globally-focused Harpur academic programs.

Binghamton University emphasizes internationalization on various levels. One key component of the commitment is the provision of numerous globally-minded academic programs and supporting research centers and institutes. A new Globalization Center co-locates academic departments with a global-focus to showcase the University's distinctive programming.



STRATEGY

NEAR-TERM

In the near-term, Johnson Hall is renovated for ITS and the Geography department. The move of Geography to Johnson Hall vacates most of the second level of the Student Wing, facilitating future renovation of the first two levels of the building.

INTERMEDIATE-TERM

Intermediate-term projects consist of a series of renovations at legacy residence halls in the Original Dickinson Community that catalyze large-scale renovations at Bartle Library and the Fine Arts Building.

O'Connor Hall is renovated first for the Binghamton University Alumni & Visitor's Center at the main level and departmental swing space on the upper levels. The Asian & Asian-American Studies is relocated to the swing space created at O'Connor Hall, vacating space additional at the ground level of the Bartle Library and setting up for the first phase of major renovation of the University Library.

Following the renovation of O'Connor Hall, Rafuse Digman Halls are renovated for departmental swing space. In the intermediate-term, the swing space facilitates the first phase of major renovations at Bartle Library North for Harpur departmental programs. In the long-term, the swing space supports major renovations of the Fine Arts Building.

LONG-TERM

Long-term projects include continued major renovation efforts from the intermediate-term and new construction to support capacity expansion.

First, phases 2 and 3 of major renovation of Harpur departmental facilities at Bartle Library are continued in the long-term. Phase 2 is supported by swing space at Rafuse Digman Halls. Phase 2 moves the Art History department from the Fine Arts Building to the Library, facilitating renovation at Fine Arts. Phase 3 is supported by facilities at a new Globalization Center, constructed at the existing Visitor's Parking Lot. The building will showcase BU's commitment to internationalization, housing its diverse internationally-focused academic programs, student support services, and student organizations. See the adjacent figure for the Globalization Center Program.

Additionally, major renovation of the Fine Arts Building is initiated in the long-term. Renovation provides upgraded facilities for Art Studio, Music, and Theater and new facilities for the Cinema department, which is moved over from the Student Wing. Space vacated in the Student Wing is re-purposed for School of Management expansion.

A key element of the renovation is re-configuration of circulation through the Fine Arts Building to support an additional cross-campus pedestrian route and provide informal gathering space for members of the campus community. Swing space at Rafuse Digman is re-allocated from support of Bartle Library renovation to renovation of the Fine Arts Building in the long-term.

NEW GLOBALIZATION CENTER	PROPOSED ASF
General Classrooms	20,200
Computer POD	1,200
International Academic Programs	12,900
International Offices (Student Services)	8,400
International Centers & Institutes	4,200
Cafe	400
Informal Lounge & Study Space	2,400
Group Study Rooms	1,000
Satellite Library Portal	1,200
Building Services / Custodial	1,000
TOTAL	**52,900**
Available	*70,000*

FIGURE 4.3.3B-6 Proposed Globalization Center

CONCEPT B

HARPUR SCIENCES

GOALS

Renovate Sciences I-IV to align facilities with contemporary curriculum delivery and technological requirements.

Sciences I-IV were constructed and occupied prior to 1975. Since that time, scientific practice and pedagogy has undergone significant change, and facilities at the University have been unable to keep up. There is a serious need to renovate legacy buildings in the Sciences Complex so that they may support contemporary curriculum delivery and technological requirements, as well as for improved mechanical systems and clarity of building circulation routes. These upgrades are essential for health and safety, and for faculty and researcher recruitment and retention.

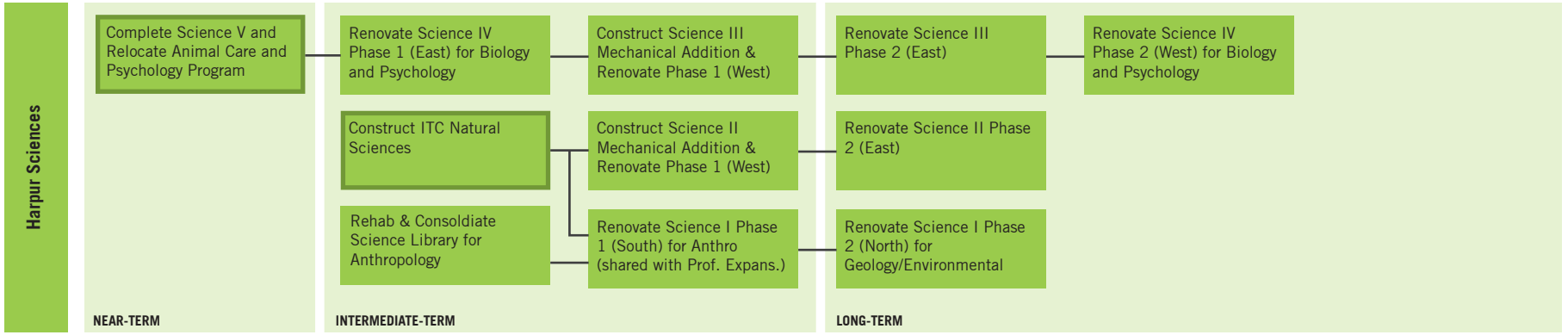
Maximize facilities at the Sciences Complex by right-sizing departments whose space needs differ from that which they occupy and consolidating departmental storage requirements.

Many department's facilities needs have shifted since the construction of buildings within the Sciences Complex due to pedagogical and technological changes as well as shifting emphasis within the Division. As a result, some departments require right-sizing to meet an expanded or contracted need.

To aid in right-sizing departments in the context of limited facilities resources, space that is currently utilized as storage space is evaluated for re-purposing. The plan seeks strategies to consolidate storage facilities while engaging technology to expand access to archived resources.

Construct a new ITC Natural Sciences building to provide high-technology research facilities as well as expanded capacity for science departments.

Due to facilities age, it is difficult to provide high-precision space for contemporary technology-supported research in legacy buildings at the Sciences Complex. The new ITC Natural Sciences at the ITC Campus serves as a gateway to the ITC and provides the University with state-of-the-art research laboratories, test and measurement facilities, and research computing facilities to support growth in research in the natural sciences. In addition, the ITC Natural Sciences adds the first undergraduate instructional classrooms and laboratories to the ITC Campus, facilitating use by undergraduate students.



STRATEGY

NEAR-TERM

In the near-term, the new Science V building is completed for Lab Animal Resources and Psychology Program. Designated existing facilities in Science IV and the III/IV Core are relocated to Science V, vacating a critical mass of space in Science IV to begin a cycle of phased renovations.

INTERMEDIATE-TERM

The intermediate-term begins with the renovation of Science IV East for Biology program. Upon completion, the renovation vacates a portion of the west side of Science III. A minor addition is constructed on the building to provide upgraded vertical mechanical services, and the first phase of the renovation is conducted for Biology program and specific Anthropology labs.

The early portion of the intermediate-term plan calls for the addition of the new ITC Natural Sciences building. The building, located at the ITC Campus, provides new high-quality research facilities to support research initiatives the science and engineering departments. It also adds the first undergraduate instructional facilities at the ITC to support increased undergraduate involvement in research. The building's programming is anchored around the Materials Science program, an innately interdisciplinary program. It includes facilities for Chemistry, Geological Sciences & Environmental Studies, Physics, as well as other engineering programs. See the adjacent figure for program details.

The ITC Natural Sciences building also plays a key role in facilitating comprehensive renovation of facilities at the Sciences Complex. The building provides a critical mass of new space that, when combined with the new Science V, allow Sciences I-IV to be renovated in fewer phases that of more GSF each, a strategy that provides benefits for the University on the levels cost, time, and disruption.

The completion of the ITC Natural Sciences vacates a critical amount of space within Sciences I and II to facilitate the first phases of major renovations. The first phase renovation at Science II includes a modest addition to provide upgraded vertical mechanical services.

The first phase renovation of Science I is further supported by space gained through renovation of the Science Library. The Science Library is renovated in the intermediate-term for consolidation of University Library program and provision of facilities for Anthropology.

LONG-TERM

In the long-term, the plan calls for continuation of major phased renovation projects from the intermediate term. Phase 1 renovations conducted during the intermediate-term at Sciences I-IV support continued phased renovation of the buildings, for completion in the long-term.

ITC NATURAL SCIENCES	PROPOSED ASF
General Classrooms	9,800
Harpur Sciences	44,800
Watson Engineering	18,600
Allied Health, Nursing & Professional Programs	10,200
Centers & Institutes	31,000
Incubator Space	14,600
Student Lounge, Group Study Rooms, Cafe, Library Portal	15,800
Building Services / Custodial	5,200
TOTAL	**150,000**
Available	*150,000*

FIGURE 4.3.3B-7 Proposed ITC Natural Sciences

CONCEPT B

WATSON ENGINEERING

Goals

Consolidate Engineering program to the new ITC Engineering and Sciences, ITC Biotechnology, and the Engineering Building to co-locate departments. Expand program into the new ITC Natural Sciences when it comes on-line.

Upon completion of ITC Engineering and Sciences, Watson programs will occupy four buildings across two campus locations: Bartle Library and the Engineering Building at the Brain and ITC Biotechnology and ITC Engineering and Sciences at the ITC Campus. The location of program by campus is a factor of department, with certain departments located at each campus, and function, with the ITC Campus featuring research facilities and the Brain campus as the location of undergraduate instruction. In the future, engineering program is expected to maintain presence at both the Brain and the ITC Campus. Due to the inherent division between the campuses, the plan seeks consolidation within each campus location to improve the flow of departmental facilities, clarify operations, and reduce the need for redundant facilities.

Provide designated facilities for the freshman foundational program in Engineering Design in the Engineering Building.

The Engineering Design program offers first-year engineering students a strong foundation through personal faculty contact, peer support in small group sections, and hands-on project-based immersion. The program has the dual intention of aiding students in identifying their strengths and interests for a successful sophomore transition, and positioning students for long-term success in the engineering profession. The Engineering Design program currently utilizes facilities at the ground level of Bartle Library, which are intended to be phased off-line. Comprehensive renovation of the Engineering Building allows for creation of new facilities tailored to meet the needs of the unique program.

Upgrade instructional laboratories to provide facilities that meet industry standards and address contemporary methods of curriculum delivery and technological requirements.

Comprehensive renovation of the Engineering Building and the relocation of facilities from Bartle Library provides the opportunity to upgrade instructional laboratories. New lab facilities reflect contemporary pedagogy, focusing on integrated technology and meeting industry standards so that students may experience a seamless transition to the profession.

STRATEGY

NEAR-TERM

In the near-term, construction of the new ITC Engineering & Science is completed at the ITC Campus. The following departments are relocated to the new facility: the dean's office and administration, all non-instructional components of Electrical & Computing Engineering and Mechanical Engineering. The move will vacate space within the Engineering Building as well as at the Ground Level of Bartle Library.

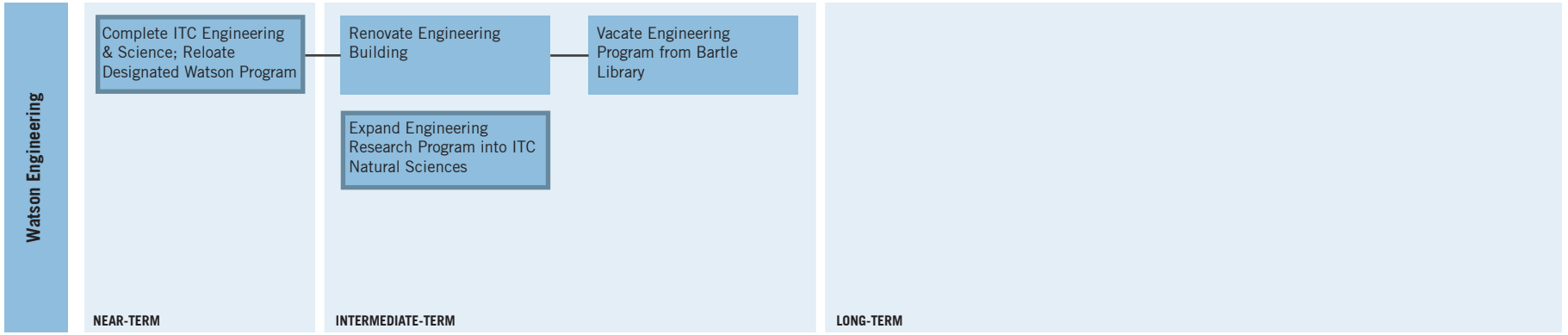
INTERMEDIATE-TERM

The School of Engineering's space needs for the planning period are met in the intermediate-term with renovation of facilities at the Engineering Building and program expansion into the new ITC Natural Sciences.

A comprehensive, phased renovation of the Engineering Building is initiated by space vacated with completion of the ITC Engineering & Science. The building is renovated to house the undergraduate instructional components of all of the School's departments. A new suite for the foundational Engineering Design program is also incorporated into the building.

The new ITC Natural Sciences at the ITC Campus provides upgraded facilities and expansion for the Computer Sciences and Systems and Industrial Engineering departments, particularly supporting research programming.

Renovation of the Engineering Building and expansion into the ITC Natural Sciences allow for relocation of all Watson programs that are currently in the Bartle Library, vacating space at the ground level of the library.



PROFESSIONAL PROGRAMS

GOALS

Provide additional capacity for the Schools located in Academic A and B that have outgrown their existing facilities.

Academic A and B were constructed for the University's School of Education, School of Management, and School of Nursing at a time when the population was significantly less than it is today. To support existing program populations and future projected growth, additional departmental space and expanded laboratory facilities are required for the Schools to expand. The plan provides expansion capacity in the Student Wing and through program backfill at Academic A and B and expansion into a renovated Science I.

Provide competitive laboratory facilities that meet industry standards and address changing technological needs.

Changing pedagogy, particularly in Management and Nursing, are driving demand for new typologies of instructional space. Both are seeing an increase in technology-enhanced simulation facilities that allow students to experience a wider range of applications in an instructional setting prior to entering the profession. The plan calls for modest upgrades to existing laboratory facilities on campus to meet shifting technological demands.

Construct a new School of Law building to support the University's future academic program.

Binghamton University is moving forward with its proposal to establish a new School of Law. The School is projected to come on-line in the 2015-2018 time frame. The plan constructs a new facility for the School of Law at an on-campus at East Campus.

STRATEGY

INTERMEDIATE-TERM

In the intermediate-term, the first level of the Student Wing is renovated for departmental offices to support expansion for the School of Management, whose location in Academic A adjoins the Student Wing. In conjunction with the expansion, select offices in Academic A may be taken off-line to allow for expansion of existing laboratory facilities.

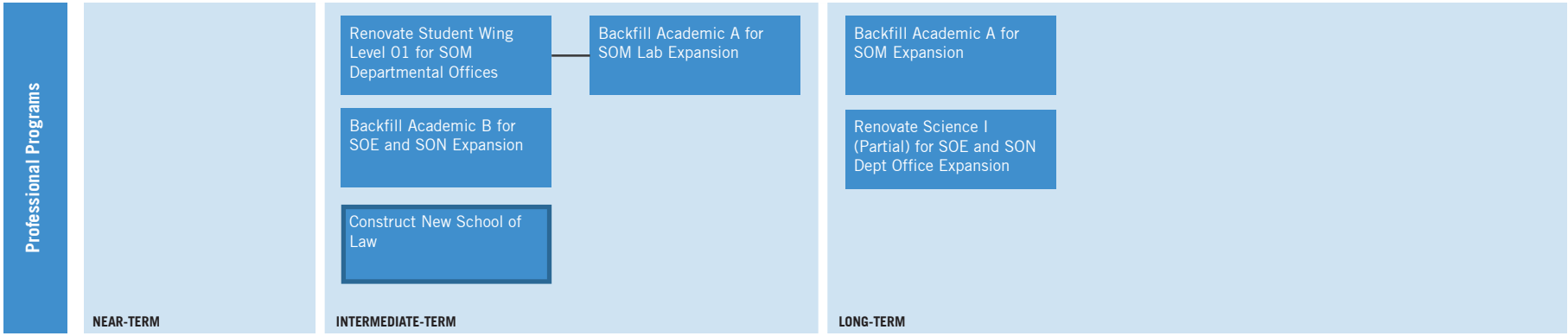
School of Education and School of Nursing expansion occur in the intermediate-term following the relocation of the Harpur Advising suite to the Student Success Center at the existing Computer Center.

Additionally, a new School of Law is constructed as the first building at the new East Campus expansion to house the University's new law program.

LONG-TERM

In the long-term, additional facilities expansion is provided for the School of Management at Academic A in the space vacated by the Admissions suite, which is relocated to the new Globalization Center.

Additional facilities expansion is provided for the Schools of Education and Nursing in the south wing of Science I.



CONCEPT B

CLASSROOMS & COMPUTER LABS

GOALS

Provide a variety of classroom typologies to support the full range of contemporary pedagogy needs.

The majority of the classrooms in Binghamton University's existing inventory are located in legacy buildings that date from the 1960s to 1980s. Facilities reflect the pedagogy of the time, which tended to emphasize lecture-style teaching. At a macro-scale, the provision of a balanced inventory of classrooms is gauged using the metric of ASF per station. The existing inventory reports an average of just under 16.0 ASF per station, reflecting an inventory heavy in lecture-style rooms.

During the time since many existing classrooms were built, significant pedagogy shifts have impacted higher education. Pedagogy shifts result in a dramatic shift in instructional delivery from teacher-centric to learner-centric. As a result, contemporary pedagogy engages a wider array of instructional methodologies, and thus places increasingly diverse demands on classrooms, a primary location for instruction. To reflect the full range of classroom typologies required to support contemporary pedagogy, the FMP establishes a target average of 22.0 ASF per station.

The target ASF per station is achieved over the course of the planning period as new classrooms are introduced to complement legacy facilities. New classrooms emphasize group-based and project-based learning, technology-enhanced learning, and other alternate strategies, as well as provision of contemporary facilities for large-section lectures.

Improve the overall quality of the University's classroom inventory through renovation and replacement.

Classrooms at the University's main campus comprise less than six percent of the total inventory, yet are the location of over 80 percent of total instruction, making a high-quality classroom inventory an investment with a strong return. The following factors are considered in provision of quality classrooms: configuration to support instructional style, quality and durability of furnishings and finishes, lighting, and technology.

Provide a consistent level of basic technology in every classroom, complemented with distinct media-rich facilities at the Bartle Library Media Center and in new academic buildings.

Technology is a primary driver in the pedagogy shifts that impact higher education. The majority of today's students incorporate basic technology into nearly every aspect of their learning processes. Specialized distance learning and technology-enhanced courses employ more advanced technologies. To support the technological demands of students, all classrooms incorporate a basic level of technology. Specialized facilities in new buildings and at the Bartle Library Media Center include media-rich technologies to support more technology-intensive coursework.

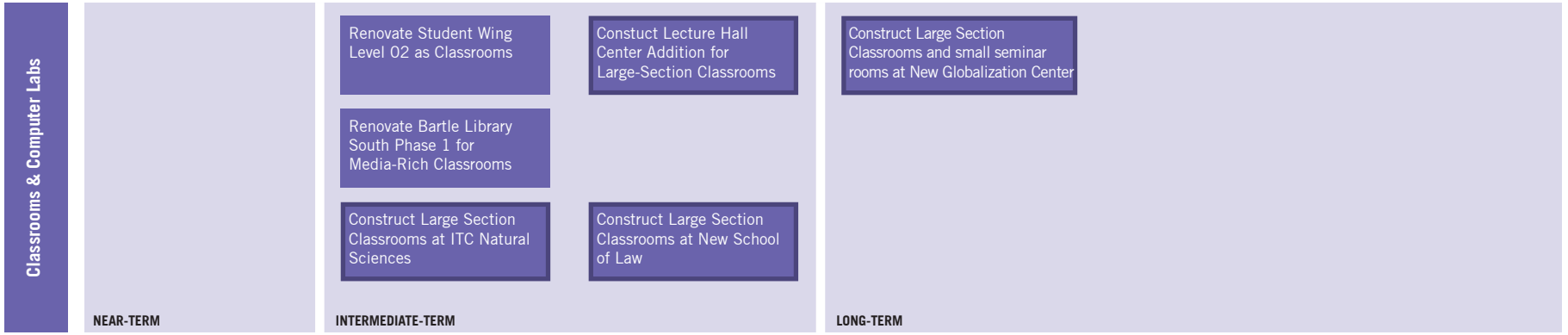
STRATEGY

INTERMEDIATE-TERM

In the intermediate-term, key renovations projects at the Student Wing and Bartle Library as well as construction of large section classrooms at ITC Natural Sciences specifically impact the University's classroom inventory.

First, the plan expands the inventory of classrooms at the Student Wing through renovation of the second level to medium-section classrooms and small-section seminar rooms. The second level of the Student Wing is vacated with the relocation of Geography to Johnson Hall and Cinema offices to the first level of the Student Wing. To support the integrated learning styles of today's students, instructional space is complemented with informal student lounge and study spaces.

Following renovations to the Student Wing, a Lecture Hall Center addition is constructed between the existing Lecture Hall Center and Student Wing to facilitate capacity expansion, particularly with large section lecture halls. The addition includes informal lounge and study spaces for students as well as a cafe. It also re-orients circulation through the building, providing connectivity from the quadrangle to the north through to West Drive to the south.



Secondly, the plan creates a designated hub of media-rich instructional environments in a Media Center located at the ground level of Bartle Library. The ground level of the Library is vacated with relocation of engineering program to the ITC Engineering & Science and Engineering Building; major academic departments to the Interdisciplinary Center at the Computer Center and swing space in O'Connor Hall; and consolidation or relocation of remaining discrete program elements.

The Media Center contains a core of media-rich classrooms, computer classrooms, and group study rooms. Classroom facilities are complemented by the University Center for Training and Development, offices for Educational Communications, and an InfoCommons Computer POD. Existing University administrative offices and receiving and cataloguing services are re-configured and maintained adjacent to the receiving dock on the east side of the space. A high-activity zone of informal student lounge and study space is located along the north edge of the Media Center in the zone that separates Bartle Library north and south. The existing stair and entryway at the main level is replaced for a treatment that utilizes lighter materials and more glass, to allow natural light to reach the lower level. Portions of the floor area at the main level are removed for increased sectional connection. See the adjacent chart for Media Center program.

New large-section classrooms are provided in the intermediate term with construction of the ITC Natural Sciences at the ITC Campus and the School of Law at the East Campus.

Additionally, phased renovation projects of legacy facilities address classroom upgrades in the intermediate-term. Such projects include: Phase 1 renovation of Bartle Library north, Phase 1 renovation of Sciences I and II, renovation of the Science Library.

LONG-TERM

In the long-term, new large-section classrooms are provided in the Globalization Center, constructed at the Visitor's Parking Lot. The building also provides small-section seminar rooms to support local academic programming.

Phased renovation of projects of legacy facilities continue to address classrooms upgrades across campus in the long-term. Projects include continued renovation at Bartle Library, Sciences I and II, and the Fine Arts Building.

STUDENT WING RENOVATION	PROPOSED ASF
LEVEL 01	**14,600**
Cinema	7,800
School of Management	6,200
Informal Lounge & Study Space	400
Building Services / Custodial	200
LEVEL 02	**10,500**
Classrooms and Seminar Rooms	8,700
Group Study Rooms	800
Informal Lounge & Study Space	800
Building Services / Custodial	200
TOTAL	
Available	*25,100*

FIGURE 4.3.3B-8 Proposed Student Wing Renovation

LECTURE HALL ADDITION	PROPOSED ASF
Lecture Halls	11,500
Cafe	400
Group Study Rooms	800
Informal Lounge & Study Space	800
Satellite Library Portal	400
Building Services / Custodial	300
TOTAL	**14,200**
Available	*14,200*

FIGURE 4.3.3B-9 Proposed Lecture Hall Addition

MEDIA CENTER	PROPOSED ASF
Media-Rich Classrooms & Seminar Rooms	6,000
Computer Classrooms	1,800
InfoCommons Computer POD	4,400
Informal Lounge & Study Space	6,800
Center for Training & Development	800
Educational Communications	400
Library Administrative Offices and Circulation Services	9,600
Building Services / Custodial	1,600
TOTAL	**31,400**
Available	*31,400*

FIGURE 4.3.3B-10 Proposed Media Center

CONCEPT B

CENTERS, INSTITUTES, GRANT FUNDED PROGRAMS

GOALS

Provide state-of-the-art facilities for S3IP and its affiliated programs at the ITC Center of Excellence.

Binghamton University's Center of Excellence is designated as a New York State Center of Excellence and brings together partners from government, industry, and academia to provide opportunities for collaboration that advances microelectronics research and development. The new ITC Center of Excellence building will house the Small Scales Systems Integration and Packaging (S3IP) and its affiliate programs.

Continually improve quality and quantity facilities for existing centers, institutes and grant funded programs through various renovation and new construction projects.

BU conducts research in multiple venues and is home to a number of diverse centers, institutes, and grant funded programs. Some programs are directly affiliated with a particular department and are co-located with that department. Other programs function in a more interdisciplinary manner and draw on expertise from multiple departments. New construction and renovation of legacy facilities identifies the range of needs of the University's centers, institutes, and grant-funded programs and provides the appropriate facilities.

Provide seed space for future centers and institutes to encourage innovation.

In keeping with the University's commitment to innovation, the plan provides facilities to support future avenues of research in the form of seed space for future centers and institutes.

STRATEGY

NEAR-TERM

In the near-term, the ITC Engineering and Sciences building is completed. The facility incorporates high-quality spaces for centers, institutes, and grant funded programs associated with engineering programs.

INTERMEDIATE-TERM

In the intermediate-term, the ITC Center of Excellence provides state-of-the-art facilities for Binghamton University's Center of Excellence, S3IP, and its affiliate programs.

The new ITC Natural Sciences building provides facilities for the Materials Science program and other affiliated research centers and institutes.

Additionally, new construction projects and phased renovations of legacy facilities in the intermediate-term incorporate new and renovated facilities for centers, institutes, and grant funded programs. Key projects also incorporate seed space for growth of new centers and institutes.

LONG-TERM

New construction projects and phased renovations in the long-term incorporate new and renovated facilities for centers, institutes, and grant funded programs. Key projects also incorporate seed space for growth of new centers and institutes.

LIBRARIES

GOALS

Reprogram libraries at the main campus to reduce facilities emphasis on stacks and collection storage and amplify emphasis on the Library as the center of the University's intellectual community, fostering inquiry and collaboration.

Technology and pedagogical shifts have profoundly impacted the nature of the library for institutions of higher education. Once approached as a repository for knowledge with an emphasis on reference and retrieval of print collections, the digital age has transformed the role of the library from a store of collections to a hub of information transfer and interpersonal interaction. Binghamton University's Libraries are at the forefront of the shift, providing leadership to the University community in strategies for engaging information resources for teaching, learning, and research.

While shifting to incorporate new models of information access and delivery, the University's Libraries continue to house distinguished print and special collections. With the advent of data locating technology and inter-library loan programs, the University is experiencing an increase in circulation of its print collections, particularly for more rare resources.

Reprogramming of facilities redistributes space to allow the physical environment to exhibit the Library's role as an intellectual hub of knowledge transfer. The plan engages compact storage strategies and technology to consolidate the facilities occupied by collections storage while increasing access. Facilities gained in the consolidation meet growing space needs for information kiosks, InfoCommons, formal and informal study space, and group meeting facilities.

Conduct a comprehensive renovation of library program at Bartle Library and the Science Library to improve conditions.

University libraries occupy the south side of Bartle Library and the Science Library. Both buildings were constructed in the 1970s according to a model of information storage and access that is much different than the contemporary model. With reprogramming, library facilities are upgraded for conditions improvements to clarify circulation routes, upgrade mechanical systems, and improve interior finishes.

Upgrade facilities to support the University's information access and management strategies that engage technology and innovative programming to anticipate changes and trends in scholarship, publishing, and education.

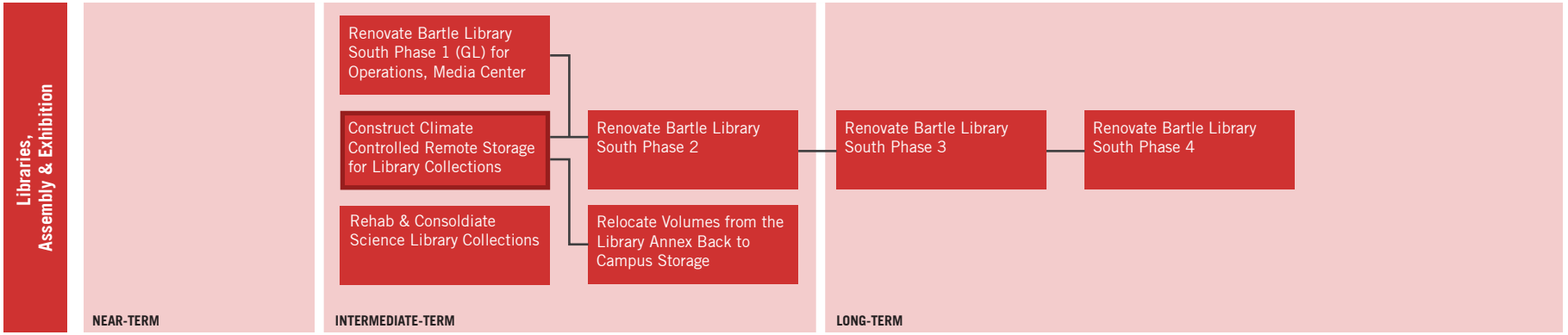
Comprehensive reprogramming and renovation of library facilities allow for the integration of state-of-the-art technologies to support evolving models of information access and delivery. Reprogramming addresses issues of space organization and layout to encourage members of the campus community to engage technology resources. A new Media Center provides a concentration of technology rich instruction and collaboration spaces to support technology-enhanced learning. The Media Center serves as a test location for developing technologies that the University is engaging on a trial basis and considering adopting. Renovation of library spaces also installs core technology infrastructure into buildings that were constructed prior to its existence. Infrastructure upgrades are built to be nimble to future technology shifts, allowing for ease of upgrade.

STRATEGY

INTERMEDIATE-TERM

Two key projects in the intermediate-term initiate a phased renovation of library program at Bartle Library. A first phase renovation at the ground level of Bartle Library renovates the south wing for conditions and building system improvements to support a Media Center that includes media-rich classrooms, InfoCommons, the University Center for Training and Development, library administrative offices, and library operations facilities. For detailed program, see Concept B: Classrooms and Computer Labs.

A second project constructs an on-site remote storage facility at the main campus for climate controlled collections storage. The storage allows for the consolidation of print collections



CONCEPT B

LIBRARIES, CONTINUED

from the stacks on upper levels of Bartle Library. It also allows off-site collections stored at the Library Annex to be relocated back to the main campus.

Together, the two projects provide the type and quantity of facilities require to catalyze phased renovation of the remainder of library facilities at Bartle Library.

Phased renovation of the south wing of Bartle Library is continued in the intermediate-term with Phase 2 of the project.

Renovations to the Science Library are also conducted in the intermediate-term. Facilities are upgraded for technology infrastructure and contemporary information delivery models. Existing library operations and seating lounges are reprogrammed to achieve greater efficiency. Library collections are similarly consolidated at the lower level of the building, however without the use of compact shelving. Space vacated at the Science Library supports Anthropology program that is relocated from Science I, initiating phased renovation of that building.

LONG-TERM

In the long-term, phased renovation of library program at Bartle Library is continued, with each renovation catalyzing the next until plan completion. The special collections, now located at the north side of the first two floors, are consolidated to occupy facilities at the south side and a more modest quantity of space at the north side. Renovation of the fourth level of the south wing incorporates a circulation path that connects a walkway from the new Globalization Center at the Visitor's Parking lot to the heart of campus with a walkway through the building to the atrium between the north and south portions of Bartle Library. The connection enhances the physical centrality of the Library with respect to campus circulation patterns, furthering it as the center of the University's intellectual community.

STUDENT ACTIVITIES, STUDENT SERVICES, ADMINISTRATION, INFORMATION TECHNOLOGY SERVICES

GOALS

Co-locate student service functions at the Dickinson Dining Hall for efficiency and improved service.

Technology and shifting expectations for service have profoundly impacted the delivery of student services provided by departments such as Financial Aid, Student Accounts, etc. Technology has moved student service accounting into a digital database format. This allows for many services to be delivered in an on-demand online environment, a model Binghamton University has adapted that is now expected by the majority of students and families.

As a result of shifts in technology and delivery methods, the space requirements for student services have changed. The plan co-locates student service functions for easy and direct access into Dickinson Dining Hall, a facility that supports an open-plan layout that better suits the departments' needs in providing improved efficiency and service.

Showcase the University's commitment to internationalization by co-locating related student services and student organizations at the new Globalization Center.

International students comprise a large portion of Binghamton University's student body. In addition, through its academic programming and strategic branding, domestic students are encouraged to understand global issues and participate in programs abroad. As a result, the University offers a wide range of services for both international students and domestic students to support its internationalization goals. In addition, a number of student organizations and campus events exist to celebrate the University's global emphasis. The new Globalization Center provides a venue for the University to showcase such programs.

Maintain a distributed model of student academic support facilities, supported by new core student advising facilities at a new Student Success Center at the Computer Center.

Binghamton University has developed a distributed model for student academic support. Under the model, academic support facilities are located in close adjacency to nodes of student activity, particularly at the University Union and within the residential colleges. Future development maintains the distributed model for services, and enhances it with a new core student advising facility.

Complement centralized student life spaces in the University Union with distributed spaces that are integrated throughout all campus facilities.

The University Union is the campus hub for student life. It contains a wide range of functions including food service, bookstore, recreation and game rooms, student organization offices, lounge space, etc. Future development maintains the University Union as the primary centralized student life facility, and complements it with distributed informal student lounge and study space that is integrated throughout all campus facilities. Co-locating "soft seating" lounge space with formal learning environments supports serendipitous encounters, informal information exchange, and learning outside of the classroom.

Provide a designated place for Binghamton University alumni at O'Connor Hall.

Binghamton University's Alumni Association has over 100,000 members, and grows with each graduating class. Alumni actively participate in a broad range of events on campus all throughout the calendar year. Alumni are supported by the University's Alumni Relations department. To foster continued alumni involvement with the University and its current students, the plan provides a designated Alumni Center at O'Connor Hall within the Brain.

STUDENT ACTIVITIES, STUDENT SERVICES, ADMINISTRATION, INFORMATION TECHNOLOGY SERVICES, CONTINUED

STRATEGY

NEAR-TERM

In the near-term, the University Union North Renovation and Addition project is completed. The project provides academic support services and facilities for student organizations at the University Union. Key program elements include offices for EOP, a tutoring and TRIO tutoring center, and a new Center for Career Development. The project also corrects existing circulation issues that exist between the original building and the University Union West addition.

INTERMEDIATE-TERM

A number of projects in the intermediate-term support student activity, student services, administration, and ITS initiatives.

Dickinson Dining Hall is taken off-line as a dining facility and renovated for a Student Services One-Stop. The facility is modeled around a contemporary technology-enriched method of delivery for student services, with an open-plan organization to accommodate and efficiently serve large crowds at key points in the academic year. See the adjacent figure for Student Services One-Stop program.

O'Connor Hall is renovated for an Alumni and Visitor's Center at the main level with departmental office swing space at upper levels. The Alumni and Visitor's Center include the Alumni Relations and Binghamton Foundation departments, supported by reception and gathering spaces. Relocation of the two departments to O'Connor Hall vacates a portion of the second level of the Administration Building. This space is moderately renovated for the administrative departments Commission and Purchasing, which are currently located in the McGuire Building. Relocation of these departments facilitates renovation of the McGuire Building for SUCF site representative offices, resulting in the removal of existing SUCF trailers.

Renovation and addition to the Computer Center provides expansion for student services in the intermediate-term. The building includes the Harpur Dean's office, a new academic advising center, space for Harpur centers and institutes, the Binghamton Scholars program, as well as supporting lounge and group study spaces. The existing ITS server facilities remain at the ground level. Relocation of program vacates space in Academic B for professional program expansion and in Bartle Library to facilitate renovation.

LONG-TERM

In the long-term, the new Globalization Center at the Visitor's Parking Lot provides high quality facilities and showcases the University's internationally-related student services and student organizations. The building includes the following programs: English as a Second Language, International Student & Scholar Services, Languages Across the Curriculum, Office of International Programs, Translation Program, as well as internationally-related centers and institutes and student organization facilities. For program details refer to Concept B: Harpur Fine Arts, Humanities, Social Sciences, Math. The Globalization Center also includes a new location for the undergraduate and graduate Admissions departments.

Following the completion of the Globalization Center, existing international programs are relocated from Nelson A. Rockefeller, allowing the building to be renovated for additional student service and administrative swing space. Existing programs such as the Discovery Program and Hinman Library outlet, are retained.

STUDENT SUCCESS CENTER	PROPOSED ASF
Media-Rich Seminar Rooms	10,000
Harpur Dean's Office	3,200
Harpur Advising Center	4,800
Centers & Institutes	800
Centers & Institutes Incubator	1,200
Binghamton Scholars Program	800
Bridges to Baccalaureate Program	800
Informal Lounge & Study Space	1,600
Group Meeting Rooms	800
Library Media Portal	500
ITS Server Rooms	4,000
Engineering Server Rooms	1,200
Building Services / Custodial	800
TOTAL	**30,500**
Available	*30,500*

FIGURE 4.3.3B-11 Proposed Student Success Center

STUDENT SERVICES ONE-STOP	PROPOSED ASF
Admissions	1,100
Financial Aid	4,600
Student Accounts	4,200
University Registrar	4,800
TOTAL	**14,600**
Available	*14,600*

FIGURE 4.3.3B-12 Proposed Student Services One-Stop

ATHLETICS, RECREATION, HEALTH & WELLNESS STUDIES

GOALS

Provide a designated academic center for student athletes and expand instructional facilities for Health & Wellness Studies at the West Gym.

Binghamton University's athletic program includes 21 sports and over 400 student athletes. In keeping with the University's commitment to academic excellence and to meet NCAA academic requirements, student athletes must be provided with a designated academic center. Due to program growth, the existing academic center in the West Gym requires expansion to support the population of student athletes.

The Health & Wellness Studies (HWS) coursework at Binghamton University teaches students the practical skills and behaviors of healthy living and strives to engage all students in development of life-long wellness. As a core curriculum requirement, the program is directly impacted by increases in the University's population. It has experienced significant demand increase in the past few years, and projects further increases with future growth.

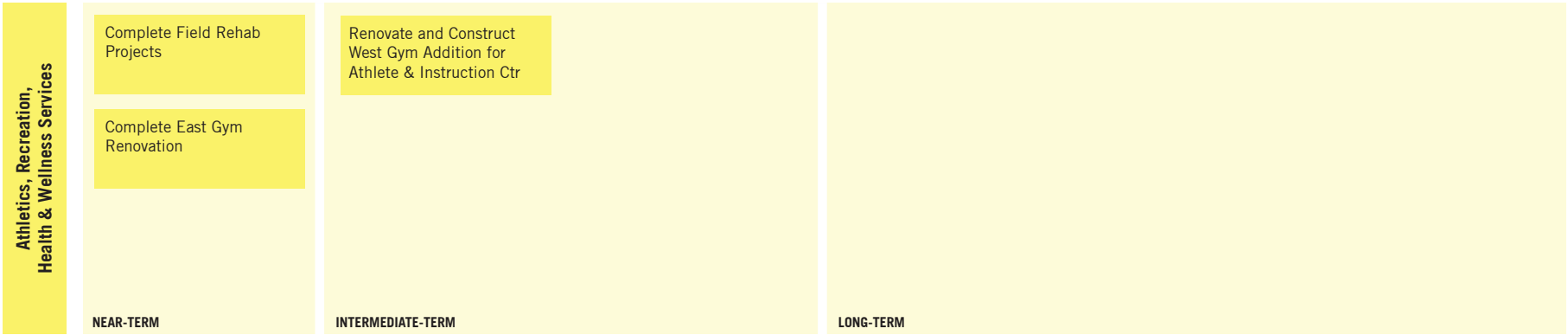
STRATEGY

NEAR-TERM

In the near-term, field rehabilitation projects and a comprehensive renovation of the East Gym contribute to upgrades of athletics, recreation, and health and wellness studies facilities.

INTERMEDIATE-TERM

In the intermediate-term, a renovation and addition project at the northwest corner of the West Gym is conducted for an academic and instruction center to support student athletes and the HWS program. Six of the eight existing racquetball courts, which are under utilized, are take off-line and subdivided for additional program space. This space is combined with the existing student athlete suite. Renovation of the complete space yields two suites of complementing program for instruction and learning.



CONCEPT B

CAMPUS SERVICES, BUILDING SERVICES

GOALS

Upgrade infrastructure at Central Heating Plant to allow for increased capacity.

The Central Heating Plant contains four boilers that provide high temperature hot water (HTHW) to many buildings in the area of the Brain at the main campus. The Plant currently operates at a fraction of its capacity (1) as that operating capacity meets the current load demand and (2) because increasing the capacity would result in the University exceeding its DEC Title V permit for emissions. Recently the central HTHW system was expanded to include the East Campus Housing, raising output of the Plant to just within the emissions limits.

Future growth at the main campus that is tied into the HTHW system will require boilers at the Central Heating Plant to operate at a higher capacity. To achieve this, the Plant must be upgraded for emissions. The plan outlines infrastructure upgrades to facilitate increased capacity.

Renovate legacy buildings in the Physical Facilities Complex to maximize their useful capacity and construct storage building to expand capacity.

Physical Facilities is charged with maintaining, operating, and protecting Binghamton University's facilities and environs to provide an atmosphere that is conducive to learning, safe, and attractive for members of the University community. Growth in student population, addition to the University's inventory of facilities, and major capital new construction and renovation projects increase the demands placed on the Physical Facilities department.

The existing Physical Facilities Complex located to the west of the Brain is the primary location for the department's centralized operations. The Complex is located on a highly constrained site, bounded by the M parking lots, West Drive, the Bunn Hill Access Road, and the University's site boundary. The Complex contains six buildings, four of which require upgrades for condition due to age. To meet the demands associated with future growth within the context of site limitations, legacy buildings are renovated within the plan in a manner that maximizes their capacity.

Create a designated facility for SUCF site representatives and allow for removal of existing trailers.

SUCF site representatives working at the University currently operate out of trailers that are located immediately south of the Physical Facilities Complex. The plan provides SUCF reps with lightly renovated office and meeting space in the McGuire Building, located at the west side of the F parking lots. The move allows for the removal of existing SUCF trailers.

STRATEGY

INTERMEDIATE-TERM

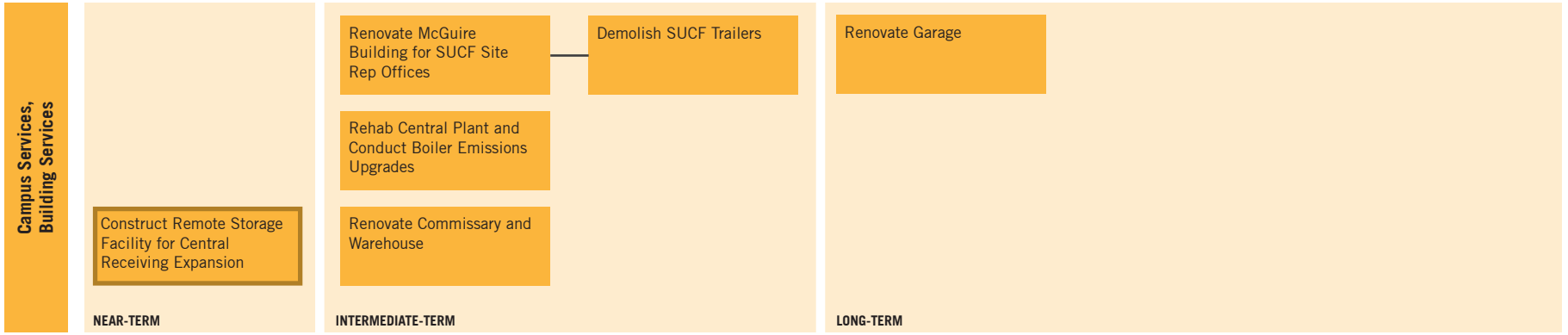
A key project in the intermediate term is an infrastructure upgrade at the Central Heating Plant for emissions to allow for increased capacity.

The McGuire Building is moderately renovated for office and meeting space for SUCF site representatives. The renovation is facilitated by projects at O'Connor Hall and the Administration Building. Renovation of O'Connor for an Alumni Center vacates a portion of the second floor of the Administration Building, which is renovated for the departments that currently occupy the McGuire Building.

Renovations are also conducted at the Commissary and Warehouse. Renovations upgrade building conditions and to maximize the capacity of the buildings to support future campus growth. A new on-site remote storage facility at the main campus provides expanded capacity for storage components of the Physical Facilities operation.

LONG-TERM

In the long-term, renovation within legacy facilities at the Complex is continued at the Garage. The building is renovated for conditions upgrades and to maximize capacity.



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4.3.3C CONCEPT C

Concept C outlines a development plan for Binghamton University that meets programmatic space needs and renovation requirements with a the most substantive amount of new construction. Concept C locates the new School of Law off-campus.

CONCEPT C METRICS	GSF
Renovation	1,090,100
New Construction	675,900

Major Initiatives:

+ New Academic Center at the Visitor's Lot
+ New Globalization Center at the East Campus
+ New ITC Natural Sciences at the ITC Campus
+ New School of Law at an Off Campus Location
+ Student Success Center at Computer Center
+ Major renovations at Bartle Library, the Fine Arts Building, and the Sciences Complex

FIGURE 4.3.3C-1 Concept C Metrics

CATEGORY	DESCRIPTION
Not Considered	Residential hall-related projects not considered in the scope of the FMP.
Existing To Remain	Buildings of recent construction or renovation that significantly fulfill their purpose.
Minor to Moderate Renovation & Reprogramming	Buildings that require full or partial minor to moderate upgrades including relocation of interior partitions, upgrade of finishes, exterior facade work, etc. but whose internal systems are still viable. Similarly, buildings that will be reconfigured to house new functions but will only require minor architectural upgrades.
Major Renovation & Reprogramming	Buildings that are structurally sound but require significant overhaul of building systems and architectural modifications to conform with current life safety and accessibility standards. Given the extent of such building renovations, these are considered candidates for wholesale reprogramming.
New Construction	New construction serves the dual purpose of providing additional high-quality program space on campus to support the University's population, as well as facilitating major renovation of existing facilities. New construction takes the form of entirely new buildings or additions to existing facilities.
No New Investment	Buildings that are structurally deficient, would require excessive capital investment to meet anticipated campus needs, or where further capital investment exceeds building value.

FIGURE 4.3.3C-2 Facilities Investment Legend

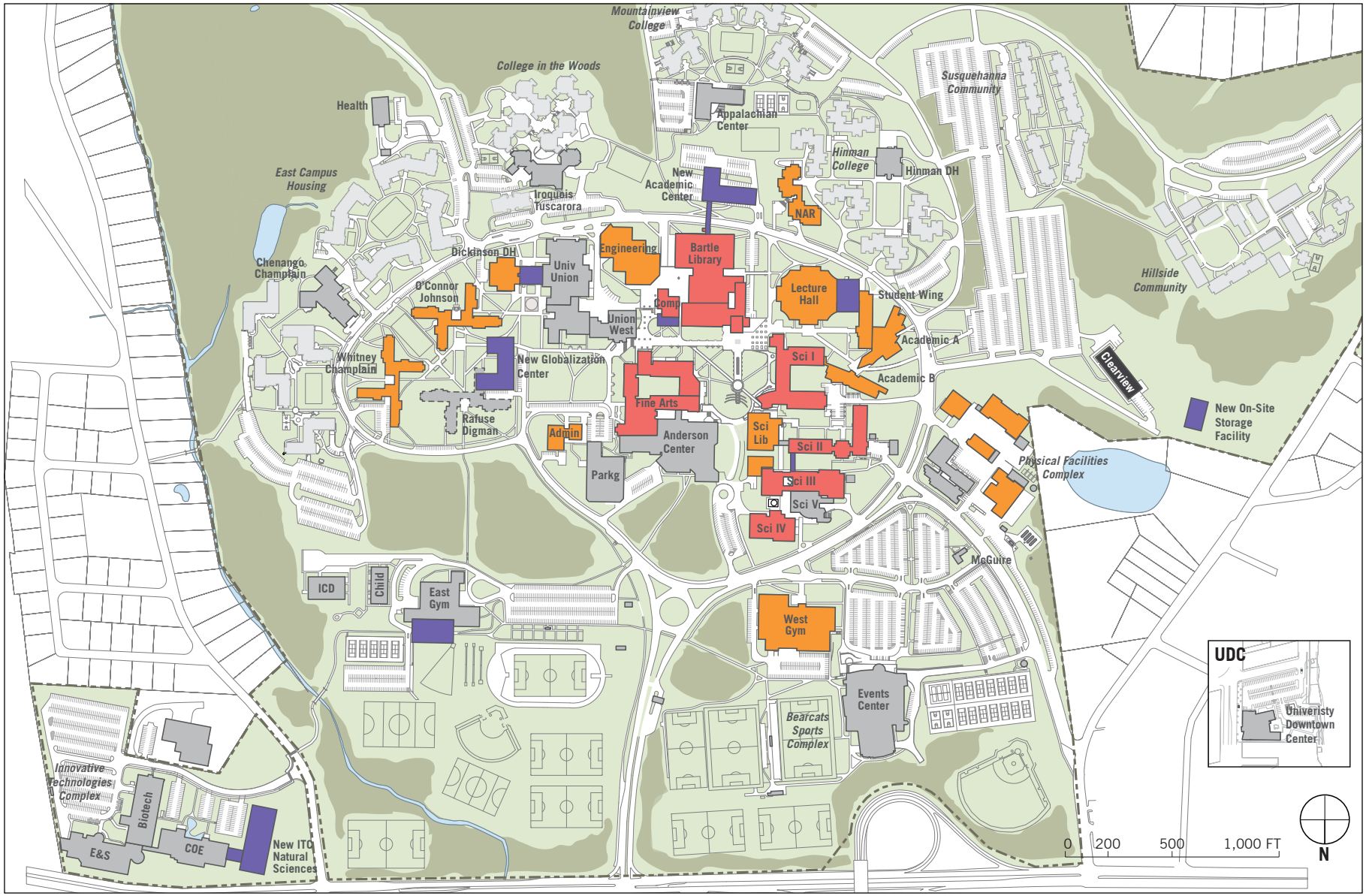


FIGURE 4.3.3C-3 Facilities Investment

CONCEPT C

RENOVATION

The concept conducts major phased renovation projects at prominent legacy academic facilities, including Bartle Library, the Computer Center, Dickinson Dining Hall, the Engineering Building, the Fine Arts Building, and Sciences I-IV. More modest renovation projects occur at the Science Library and the Student Wing. Local renovations for targeted reprogramming or program backfill occur at Academic A, Academic B, the Administration Building, and the West Gym.

Two residence halls in the Original Dickinson Community at the East Campus, O'Connor Johnson Hall and Rafuse Digman Hall, are repurposed for academic and support programming. Rafuse Digman Hall serves primarily as swing space to facilitate major renovation at Bartle Library and the Fine Arts Building.

NEW CONSTRUCTION

The concept's major new building construction initiatives showcase programs that are unique to Binghamton University, while also enhancing the institution's facilities inventory and catalyzing the renovation of legacy buildings.

Major renovation projects are supported by a series of infill additions within the Brain that modestly expand capacity, improve circulation issues, and provide local modern facilities that cannot be accommodated in legacy buildings. Additions also afford the opportunity to complement the heavy concrete and masonry aesthetic of legacy facilities with lighter facades that reveal the activities occurring within buildings and blur the boundaries between indoor and outdoor places.

Academic Center. A new Academic Center at the Visitor's Parking Lot accommodates key academic programs that serve a large portion of the University's population, including English and Math, as well as interdisciplinary programs. The facility also contains high-quality classroom and lecture hall facilities to support student population growth.

Globalization Center. A new Globalization Center at the East Campus highlights the University's commitment to internationalization, featuring a complement of globally-focused Harpur academic programs and providing a new home for the campus' range of student support services for international students and domestic students participating in international programming.

ITC Natural Sciences. The new ITC Natural Sciences at the ITC Campus serves as a gateway to the ITC and provides the University with state-of-the-art research laboratories, test and measurement facilities, and research computing facilities to support growth in research in the natural sciences. In addition, the ITC Natural Sciences adds the first undergraduate instructional classrooms and laboratories to the ITC Campus, facilitating use by undergraduate students.

School of Law. A new School of Law to accommodate the University's future academic program is planned for construction at a location off of the main campus.

On-Site Remote Storage Facility. The on-site remote storage facility provides storage at the main campus for the University Libraries, allowing facilities within campus buildings to be re-purposed to meet other program requirements. Storage for the Libraries is climate-controlled to allow for storage of collections that are currently within campus buildings and at the Annex in Conklin.

PLAN COMPONENTS	PROGRAM
1. Academic A & B Program Backfill	Professional Program Expansion
2. Administration Building Program Backfill	Administration Program
3. Bartle Library Renovation	Harpur Programs, Libraries
4. Computer Center Reno & Add	Student Success Center
5. Dickinson DH Renovation & Addition	Student Services One-Stop, Admissions
6. East Gym Addition	Recreation Courts
7. Engineering Building Renovation	Watson Programs
8. Fine Arts Building Renovation & Circulation Additions	Fine Arts Programs (Minus Cinema)
9. Institute for Child Development Addition	ICD Program
10. Lecture Hall Center Upgrades and Addition	Conditions Improvements, Lecture Halls
11. McGuire Building Reno	SUCF Site Reps
12. Nelson A. Rockefeller Renovation	Classrooms, Student Services
13. O'Connor Johnson Renovation	ITS, Geography, Alumni, Dept Office Swing Space
14. Physical Facilities Complex Renovations and Addition	Physical Facilities Program
15. Sciences I-IV Renovation	Harpur Sciences Program
16. Science Library Renovation	Anthropology, Libraries
17. Student Wing Renovation	Classrooms, Cinema, Professional Programs
18. Union Program Backfill	Student Activities Program
19. West Gym Renovation	Student Athlete Center, HWS Instructional Center
20. Whitney Champlain Renovation	Dept Office Swing Space
21. NEW Academic Center	Classrooms, Harpur
22. NEW Globalization Center	Classrooms, Harpur Program, Student Services
23. NEW ITC Natural Sciences	Harpur Sciences & Watson Programs, Classrooms
24. NEW On-Site Storage Facility at Bunn Hill Road	University Libraries
25. NEW School of Law (Off-Campus)	School of Law Program

FIGURE 4.3.3C-4 Concept C Proposed Development Plan Summary

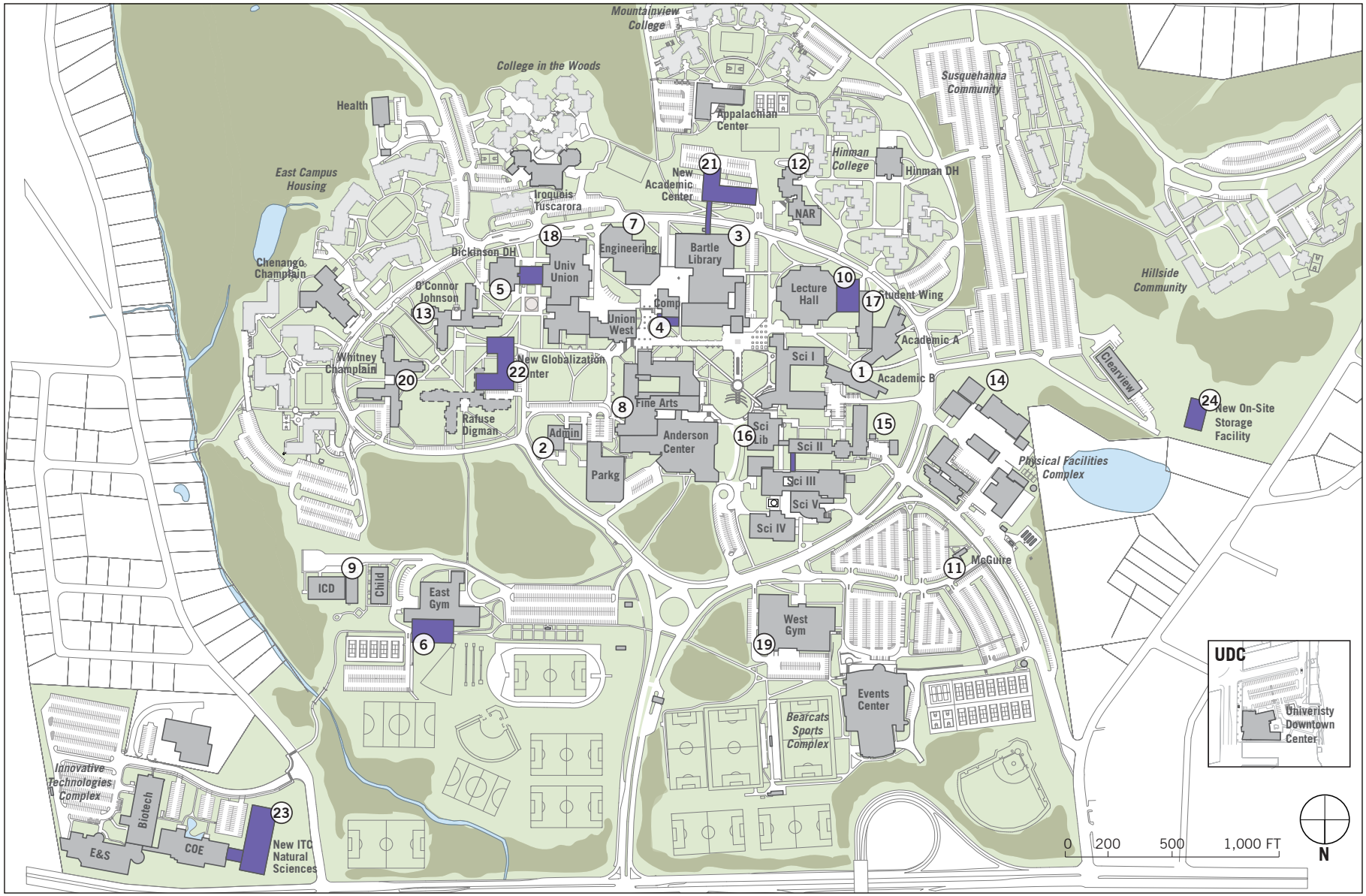


FIGURE 4.3.3C-5 Concept C Proposed Development Plan

CONCEPT C

HARPUR FINE ARTS, HUMANITIES, SOCIAL SCIENCES, MATHEMATICS

GOALS

Renovate Bartle Library, the Fine Arts Building, and the Student Wing for improved condition and utility of facilities.

Bartle Library and the Fine Arts Building are two legacy campus facilities that were constructed with the founding of the campus and added on to multiple times to facilitate expansion as the University grew. Facilities in both buildings reflect dated pedagogic approaches, have major circulation and wayfinding issues, and require upgrade of building systems and interior finishes. The plan conducts comprehensive renovation of the two buildings to clarify building organization, simplify circulation and introduce new major campus circulation routes, and upgrade mechanical systems and finishes. Departmental facilities are modeled to provide unique identify for each entity, while supporting inter-departmental collaboration and sharing of support facilities.

The Student Wing at the Lecture Hall Center is a more recent building. However, over the course of past years the building has been adapted for use as classrooms and departmental facilities, different functions than its original program. Renovations at the Student Wing improve the condition and utility of departmental facilities, with an emphasis on technology upgrades.

Right-size departmental facilities to meet expanded or contracted space needs.

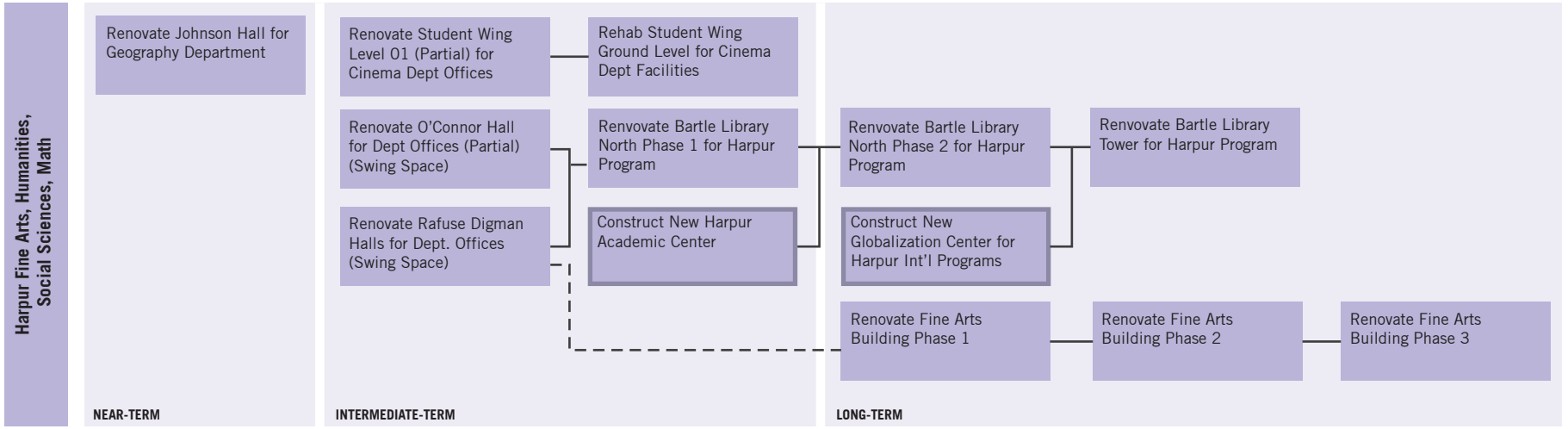
The rich history of Harpur College at Binghamton University emphasizes the provision of a liberal arts education experience for all students, particularly at the undergraduate level. This is reflected in the University's core educational requirements. As a result, a large demand is placed on the Harpur departments in the Fine Arts, Humanities and Social Sciences. The Math department also experiences high demand as a result of general education requirements, majors, and engineering-related pre-requisite programming. Due to rapid growth of the University over the past decade, many departments have fallen behind the curve of demand and require additional facilities to meet current student populations. The plan right-sizes departmental facilities to address existing surpluses and deficits and prepare departments for the effects of future growth.

Upgrade technology to create spaces that meet the technological demands of contemporary pedagogy.

Technology is driving dramatic change in higher education pedagogy as well as the expectations and learning styles of today's students. To support learning across campus, in both formal and informal learning environments, the plan upgrades departmental facilities to respond to technological requirements across scales.

Showcase the University's commitment to internationalization at a new Globalization Center that houses key globally-focused Harpur academic programs.

Binghamton University emphasizes internationalization on various levels. One key component of the commitment is the provision of numerous globally-minded academic programs and supporting research centers and institutes. A new Globalization Center co-locates academic departments with a global-focus to showcase the University's distinctive programming.



STRATEGY

NEAR-TERM

In the near-term, Johnson Hall is renovated for ITS and the Geography department. The move of Geography to Johnson Hall vacates most of the second level of the Student Wing, facilitating future renovation of the first two levels of the building.

INTERMEDIATE-TERM

Intermediate-term projects consist of continued renovation at the Student Wing and a series of renovations at legacy residence halls in the Original Dickinson Community that catalyze large-scale renovations at the Fine Arts Building. Capacity expansion also occurs in the intermediate-term with construction of a new Academic Center.

To begin, renovations at Johnson Hall and Dickinson Dining Hall vacate the first two levels of the Student Wing. The first level is renovated for departmental offices to support both the Cinema department and School of Management expansion. Upon completion, Cinema offices are relocated from the second level, facilitating renovation of that level for high-quality classrooms and seminar rooms. Space provided for Cinema at the first level also allows offices from the ground level to be relocated, vacating space to begin a cycle of renovation at the ground level. These renovations re-configure Cinema department facilities and provide technology upgrades for departmental instructional lab and lab support spaces to reflect contemporary pedagogy.

O'Connor Hall is renovated first for the Binghamton University Alumni & Visitor's Center at the main level and departmental office swing space at upper levels. The Asian & Asian American Studies department is relocated to the swing space at O'Connor Hall, vacating space at the ground level of Bartle Library and setting up for the first phase renovation of the library.

Following renovation of O'Connor Hall, Rafuse Digman Halls are renovated for departmental swing space. In the intermediate-term, the swing space facilitates the first phase of major renovations at Bartle Library North for Harpur departmental programs. In the long-term, the swing space supports major renovation of the Fine Arts Building.

To provide adequate facilities to meet existing deficits and prepare for future demand, Harpur programs require capacity expansion, provided at a new Harpur Academic Center. The building will be located at the existing Visitor's Parking Lot immediately south of the Library, and will be connected back to the main library with a pedestrian overpass bridge, ensuring direct access from within the Brain. The Academic Center will contain programs that serve large portions of BU's population, including English and Mathematics, as well as an interdisciplinary center that includes Philosophy and Political Science. The facility will also contain high-quality, technology-rich classrooms, particularly at the larger section size, group meeting space, informal student lounge and study space, and media-portals that allow remote access to library material. Upon completion and relocation of departments, the building will vacate a significant amount of space in the Library to facilitate further renovation.

LONG-TERM

Long-term projects include continued major renovation efforts from the intermediate-term and new construction to support capacity expansion.

First, phases 2 and 3 of major renovation of Harpur departmental facilities at Bartle Library are continued in the long-term. Phase 2 is supported by swing space at Rafuse Digman Halls. Phase 3 is supported by facilities at a new Globalization Center, constructed at the existing Visitor's Parking Lot. The building will showcase BU's commitment to internationalization, housing its diverse internationally-focused academic programs, student support services, and student organizations. See the adjacent figure for the Globalization Center Program.

Additionally, major renovation of the Fine Arts Building is initiated in the long-term. Renovation provides upgraded facilities for Art History, Art Studio, Music, and Theater. A key element of the renovation is re-configuration of circulation through the Fine Arts Building to support an additional cross-campus pedestrian route and provide informal gathering space for members of the campus community. Swing space at Rafuse Digman is re-allocated from support of Bartle Library renovation to renovation of the Fine Arts Building in the long-term. Rafuse Digman will provide departmental office facility swing space only.

NEW GLOBALIZATION CENTER	PROPOSED ASF
General Classrooms	20,200
Computer POD	1,200
International Academic Programs	12,900
International Offices (Student Services)	8,400
International Centers & Institutes	4,200
Cafe	400
Informal Lounge & Study Space	2,400
Group Study Rooms	1,000
Satellite Library Portal	1,200
Building Services / Custodial	1,000
TOTAL	**52,900**
Available	*70,000*

FIGURE 4.3.3C-6 Proposed Globalization Center

ACADEMIC CENTER	PROPOSED ASF
General Classrooms	13,300
Computer POD	800
English	18,800
Mathematics	16,600
Philosophy	5,200
Political Science	7,600
Center for Philosophy, Interpretation & Culture	900
Creative Writing Center	1,600
Informal Lounge & Study Space	2,400
Group Study Rooms	1,000
Satellite Library Portal	800
Building Services / Custodial	1,000
TOTAL	**70,000**
Available	*70,000*

FIGURE 4.3.3C-7 Proposed Academic Center

CONCEPT C

HARPUR SCIENCES

GOALS

Renovate Sciences I-IV to align facilities with contemporary curriculum delivery and technological requirements.

Sciences I-IV were constructed and occupied prior to 1975. Since that time, scientific practice and pedagogy has undergone significant change, and facilities at the University have been unable to keep up. There is a serious need to renovate legacy buildings in the Sciences Complex so that they may support contemporary curriculum delivery and technological requirements, as well as for improved mechanical systems and clarity of building circulation routes. These upgrades are essential for health and safety, and for faculty and researcher recruitment and retention.

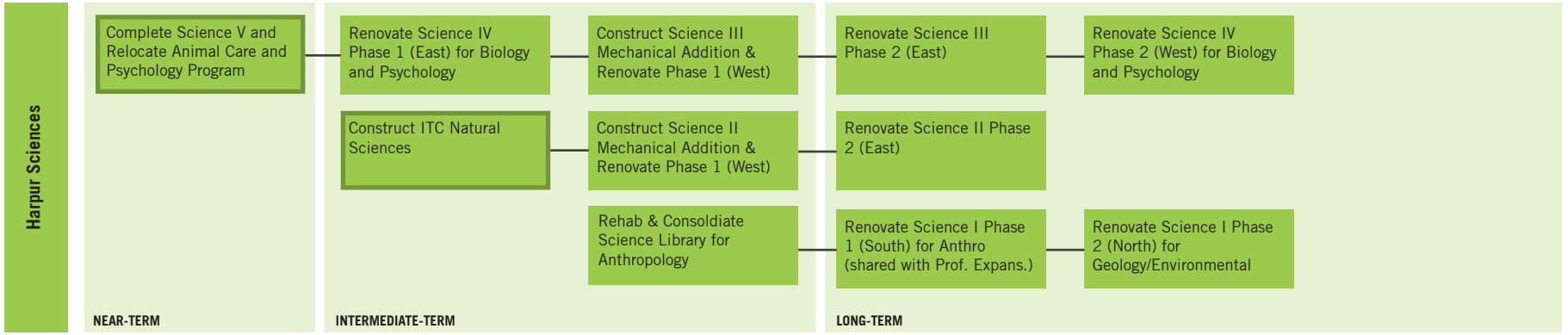
Maximize facilities at the Sciences Complex by right-sizing departments whose space needs differ from that which they occupy and consolidating departmental storage requirements.

Many department's facilities needs have shifted since the construction of buildings within the Sciences Complex due to pedagogical and technological changes as well as shifting emphasis within the Division. As a result, some departments require right-sizing to meet an expanded or contracted need.

To aid in right-sizing departments in the context of limited facilities resources, space that is currently utilized as storage space is evaluated for re-purposing. The plan seeks strategies to consolidate storage facilities while engaging technology to expand access to archived resources.

Construct a new ITC Natural Sciences building to provide high-technology research facilities as well as expanded capacity for science departments.

Due to facilities age, it is difficult to provide high-precision space for contemporary technology-supported research in legacy buildings at the Sciences Complex. The new ITC Natural Sciences at the ITC Campus serves as a gateway to the ITC and provides the University with state-of-the-art research laboratories, test and measurement facilities, and research computing facilities to support growth in research in the natural sciences. In addition, the ITC Natural Sciences adds the first undergraduate instructional classrooms and laboratories to the ITC Campus, facilitating use by undergraduate students.



STRATEGY

NEAR-TERM

In the near-term, the new Science V building is completed for Lab Animal Resources and Psychology Program. Designated existing facilities in Science IV and the III/IV Core are relocated to Science V, vacating a critical mass of space in Science IV to begin a cycle of phased renovations.

INTERMEDIATE-TERM

The intermediate-term begins with the renovation of Science IV East for Biology program. Upon completion, the renovation vacates a portion of the west side of Science III. A minor addition is constructed on the building to provide upgraded vertical mechanical services, and the first phase of the renovation is conducted for Biology program and specific Anthropology labs.

The early portion of the intermediate-term plan calls for the addition of the new ITC Natural Sciences building. The building, located at the ITC Campus, provides new high-quality research facilities to support research initiatives the science and engineering departments. It also adds the first undergraduate instructional facilities at the ITC to support increased undergraduate involvement in research. The building's programming is anchored around the Materials Science program, an innately interdisciplinary program. It includes facilities for Chemistry, Geological Sciences & Environmental Studies, Physics, as well as other engineering programs. See the adjacent figure for program details.

The ITC Natural Sciences building also plays a key role in facilitating comprehensive renovation of facilities at the Sciences Complex. The building provides a critical mass of new space that, when combined with the new Science V, allow Sciences I-IV to be renovated in fewer phases that of more GSF each, a strategy that provides benefits for the University on the levels cost, time, and disruption.

The completion of the ITC Engineering and Sciences vacates a critical amount of space within Sciences I and II to facilitate the first phases of major renovations. The first phase renovation at Science II includes a modest addition to provide upgraded vertical mechanical services.

The first phase renovation of Science I is further supported by space gained through renovation of the Science Library. The Science Library is renovated in the intermediate-term for consolidation of University Library program and provision of facilities for Anthropology.

LONG-TERM

In the long-term, the plan calls for continuation of major phased renovation projects from the intermediate term. Phase 1 renovations conducted during the intermediate-term at Sciences I-IV support continued phased renovation of the buildings, for completion in the long-term.

ITC NATURAL SCIENCES	PROPOSED ASF
General Classrooms	9,800
Harpur Sciences	44,800
Watson Engineering	18,600
Allied Health, Nursing & Professional Programs	10,200
Centers & Institutes	31,000
Incubator Space	14,600
Student Lounge, Group Study Rooms, Cafe, Library Portal	15,800
Building Services / Custodial	5,200
TOTAL	**150,000**
Available	*150,000*

FIGURE 4.3.3C-8 Proposed ITC Natural Sciences

CONCEPT C

WATSON ENGINEERING

GOALS

Consolidate Engineering program to the new ITC Engineering and Sciences, ITC Biotechnology, and the Engineering Building to co-locate departments. Expand program into the new ITC Natural Sciences when it comes on-line.

Upon completion of ITC Engineering and Sciences, Watson programs will occupy four buildings across two campus locations: Bartle Library and the Engineering Building at the Brain and ITC Biotechnology and ITC Engineering and Sciences at the ITC Campus. The location of program by campus is a factor of department, with certain departments located at each campus, and function, with the ITC Campus featuring research facilities and the Brain campus as the location of undergraduate instruction.

In the future, engineering program is expected to maintain presence at both the Brain and the ITC Campus. Due to the inherent division between the campuses, the plan seeks consolidation within each campus location to improve the flow of departmental facilities, clarify operations, and reduce the need for redundant facilities.

Provide designated facilities for the freshman foundational program in Engineering Design in the Engineering Building.

The Engineering Design program offers first-year engineering students a strong foundation through personal faculty contact, peer support in small group sections, and hands-on project-based immersion. The program has the dual intention of aiding students in identifying their strengths and interests for a successful sophomore transition, and positioning students for long-term success in the engineering profession. The Engineering Design program currently utilizes facilities at the ground level of Bartle Library, which are intended to be phased off-line. Comprehensive renovation of the Engineering Building allows for creation of new facilities tailored to meet the needs of the unique program.

Upgrade instructional laboratories to provide facilities that meet industry standards and address contemporary methods of curriculum delivery and technological requirements.

Comprehensive renovation of the Engineering Building and the relocation of facilities from Bartle Library provides the opportunity to upgrade instructional laboratories. New lab facilities reflect contemporary pedagogy, with a focus on integrated technology and meeting industry standards so that students may experience a seamless transition to the profession.

STRATEGY

NEAR-TERM

In the near-term, construction of the new ITC Engineering & Science is completed at the ITC Campus. The following departments are relocated to the new facility: the dean's office and administration, all non-instructional components of Electrical & Computing Engineering and Mechanical Engineering. The move will vacate space within the Engineering Building as well as at the Ground Level of Bartle Library.

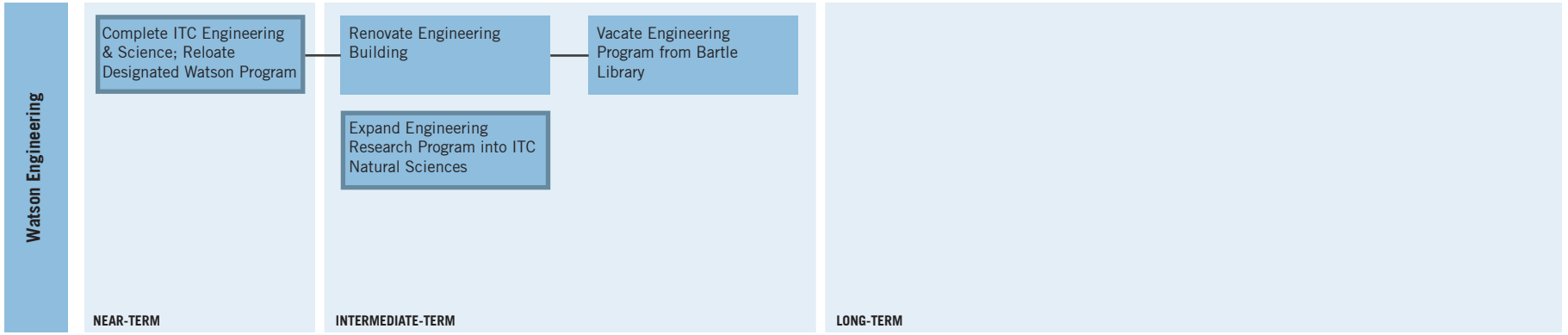
INTERMEDIATE-TERM

The School of Engineering's space needs for the planning period are met in the intermediate-term with renovation of facilities at the Engineering Building and program expansion into the new ITC Natural Sciences.

A comprehensive, phased renovation of the Engineering Building is initiated by space vacated with completion of the ITC Engineering & Science. The building is renovated to house the undergraduate instructional components of all of the School's departments. A new suite for the foundational Engineering Design program is also incorporated into the building.

The new ITC Natural Sciences at the ITC Campus provides upgraded facilities and expansion for the Computer Sciences and Systems and Industrial Engineering departments, particularly supporting research programming.

Renovation of the Engineering Building and expansion into the ITC Natural Sciences allow for relocation of all Watson programs that are currently in the Bartle Library, vacating space at the ground level of the library.



PROFESSIONAL PROGRAMS

GOALS

Provide additional capacity for the Schools located in Academic A and B that have outgrown their existing facilities.

Academic A and B were constructed for the University's School of Education, School of Management, and School of Nursing at a time when the population was significantly less than it is today. To support existing program populations and future projected growth, additional departmental space and expanded laboratory facilities are required for the Schools to expand. The plan provides expansion capacity in the Student Wing and through program backfill at Academic A and B and expansion into a renovated Science I.

Provide competitive laboratory facilities that meet industry standards and address changing technological needs.

Changing pedagogy, particularly in Management and Nursing, are driving demand for new typologies of instructional space. Both are seeing an increase in technology-enhanced simulation facilities that allow students to experience a wider range of applications in an instructional setting prior to entering the profession. The plan calls for modest upgrades to existing laboratory facilities on campus to meet shifting technological demands.

Construct a new School of Law building to support the University's future academic program.

Binghamton University is moving forward with its proposal to establish a new School of Law. The program is projected to come on-line in the 2015-2018 time frame. The plan constructs a new facility for the School of Law at an off-campus location within the surrounding region. At this time the precise location is undefined, however the plan recommends a site that complements existing campus development locations or fosters other strategic relationships within the community.

STRATEGY

INTERMEDIATE-TERM

In the intermediate-term, the first level of the Student Wing is renovated for departmental offices. A portion of these offices will support expansion of the School of Management, whose location in Academic A adjoins the Student Wing. In conjunction with the expansion, select offices in Academic A may be taken off-line to allow for expansion of existing laboratory facilities.

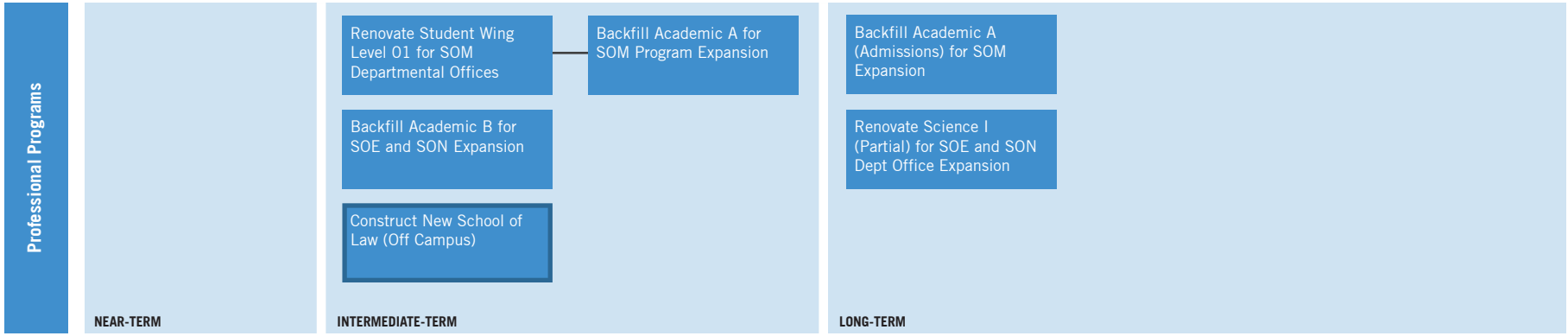
The relocation of the Harpur Advising suite from Academic B to the Student Success Center at the existing Computer Center facilitates modest expansion for the School of Education and School of Nursing.

Additionally, a new School of Law is constructed at an off-campus location to support the University's new academic program.

LONG-TERM

In the long-term, additional facilities expansion is provided for the School of Management at Academic A in the space vacated by the Admissions suite, which is relocated to the Dickinson Dining Hall addition.

Additional facilities expansion is provided for the Schools of Education and Nursing in the south wing of Science I.



CONCEPT C

CLASSROOMS & COMPUTER LABS

GOALS

Provide a variety of classroom typologies to support the full range of contemporary pedagogy needs.

The majority of the classrooms in Binghamton University's existing inventory are located in legacy buildings that date from the 1960s to 1980s. Facilities reflect the pedagogy of the time, which tended to emphasize lecture-style teaching. At a macro-scale, the provision of a balanced inventory of classrooms is gauged using the metric of ASF per station. The existing inventory reports an average of just under 16.0 ASF per station, reflecting an inventory heavy in lecture-style rooms.

During the time since many existing classrooms were built, significant pedagogy shifts have impacted higher education. Pedagogy shifts result in a dramatic shift in instructional delivery from teacher-centric to learner-centric. As a result, contemporary pedagogy engages a wider array of instructional methodologies, and thus places increasingly diverse demands on classrooms, a primary location for instruction. To reflect the full range of classroom typologies required to support contemporary pedagogy, the FMP establishes a target average of 22.0 ASF per station.

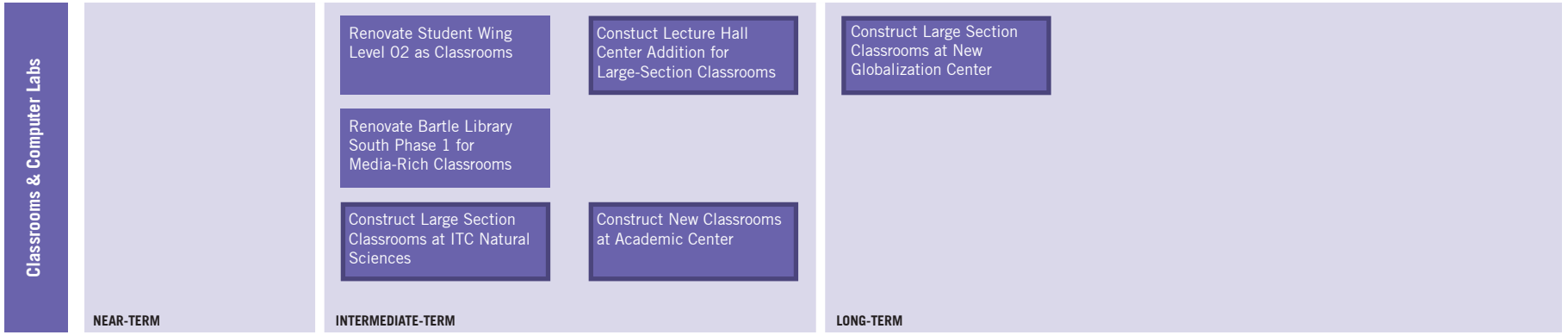
The target ASF per station is achieved over the course of the planning period as new classrooms are introduced to complement legacy facilities. New classrooms emphasize group-based and project-based learning, technology-enhanced learning, and other alternate strategies, as well as provision of contemporary facilities for large-section lectures.

Improve the overall quality of the University's classroom inventory through renovation and replacement.

Classrooms at the University's main campus comprise less than six percent of the total inventory, yet are the location of over 80 percent of total instruction, making a high-quality classroom inventory an investment with a strong return. The following factors are considered in provision of quality classrooms: configuration to support instructional style, quality and durability of furnishings and finishes, lighting, and technology.

Provide a consistent level of basic technology in every classroom, complemented with distinct media-rich facilities at the Bartle Library Media Center and in new academic buildings.

Technology is a primary driver in the pedagogy shifts that impact higher education. The majority of today's students incorporate basic technology into nearly every aspect of their learning processes. Specialized distance learning and technology-enhanced courses employ more advanced technologies. To support the technological demands of students, all classrooms incorporate a basic level of technology. Specialized facilities in new buildings and at the Bartle Library Media Center include media-rich technologies to support more technology-intensive coursework.



STRATEGY

INTERMEDIATE-TERM

In the intermediate-term, key renovations projects at the Student Wing, Lecture Hall addition, ITC Natural Sciences Building, and Bartle Library as well as construction of the new Student Service and Academic Center specifically impact the University's classroom inventory.

First, the plan expands the inventory of classrooms at the Student Wing through renovation of the second level to medium-section classrooms and small-section seminar rooms. The second level of the Student Wing is vacated with the relocation of Geography to Johnson Hall and Cinema offices to the first level of the Student Wing. To support the integrated learning styles of today's students, instructional space is complemented with informal student lounge and study spaces.

Following renovations to the Student Wing, a Lecture Hall Center addition is constructed between the existing Lecture Hall Center and Student Wing to facilitate capacity expansion, particularly with large section lecture halls. The addition includes informal lounge and study spaces for students as well as a cafe. It also re-orients circulation through the building, providing connectivity from the quadrangle to the north through to West Drive to the south.

Secondly, the plan creates a designated hub of media-rich instructional environments in a Media Center located at the ground level of Bartle Library. The ground level of the Library is vacated with relocation of engineering program to the ITC Engineering & Science and Engineering Building; major academic departments to swing space in O'Connor Hall; and consolidation or relocation of remaining discrete program elements.

The Media Center contains a core of media-rich classrooms, computer classrooms, and group study rooms. Classroom facilities are complemented by the University Center for Training and Development, offices for Educational Communications, and an InfoCommons Computer POD. Existing University administrative offices and receiving and cataloguing services are re-configured and maintained adjacent to the receiving dock on the east side of the space. A high-activity zone of informal student lounge and study space is located along the north edge of the Media Center in the zone that separates Bartle Library north and south. The existing stair and entryway at the main level is replaced for a treatment that utilizes lighter materials and more glass, to allow natural light to reach the lower level. Portions of the floor area at the main level are removed for increased sectional connection. See the adjacent chart for Media Center program.

New large-section classrooms are provided in the intermediate term with construction of the ITC Natural Sciences at the ITC Campus, the Academic Center at the Visitor's Lot, and the Globalization Center at the East Campus.

Additionally, phased renovation projects of legacy facilities address classroom upgrades in the intermediate-term. Such projects include: Phase 1 renovation of Bartle Library north, Phase 1 renovation of Sciences I and II, renovation of the Science Library.

LONG-TERM

In the long-term, new large-section classrooms are provided in the Globalization Center, constructed at the Visitor's Parking Lot. The building also provides small-section seminar rooms to support local academic programming.

Phased renovation of projects of legacy facilities continue to address classrooms upgrades across campus in the long-term. Projects include continued renovation at Bartle Library, Sciences I and II, and the Fine Arts Building.

LECTURE HALL ADDITION	PROPOSED ASF
Lecture Halls	11,500
Cafe	400
Group Study Rooms	800
Informal Lounge & Study Space	800
Satellite Library Portal	400
Building Services / Custodial	300
TOTAL	**14,200**
Available	*14,200*

FIGURE 4.3.3C-9 Proposed Lecture Hall Addition

MEDIA CENTER	PROPOSED ASF
Media-Rich Classrooms & Seminar Rooms	6,000
Computer Classrooms	1,800
InfoCommons Computer POD	4,400
Informal Lounge & Study Space	6,800
Center for Training & Development	800
Educational Communications	400
Library Administrative Offices and Circulation Services	9,600
Building Services / Custodial	1,600
TOTAL	**31,400**
Available	*31,400*

FIGURE 4.3.3C-10 Proposed Media Center

CONCEPT C

CENTERS, INSTITUTES & GRANT FUNDED PROGRAMS

GOALS

Provide state-of-the-art facilities for S3IP and its affiliated programs at the ITC Center of Excellence.

Binghamton University's Center of Excellence is designated as a New York State Center of Excellence and brings together partners from government, industry, and academia to provide opportunities for collaboration that advances microelectronics research and development. The new ITC Center of Excellence building will house the Small Scales Systems Integration and Packaging (S3IP) and its affiliate programs.

Construct addition to program expansion for the Institute for Child Development and facilitate removal of existing ICD trailers.

The Institute for Child Development at Binghamton University promotes the welfare of children who are challenged by autism and other developmental, learning, and emotional disorders. Through research and training programs, the program disseminates basic and applied knowledge about disorders. The program has experienced growth, exceeding the capacity of its facility at the ICD building. As a result, administrative offices have relocated out of the main building into a series of temporary trailers. The addition to the ICD provides high-quality program space to meet instructional, departmental, and research needs, while facilitating removal of the trailers.

Continually improve quality and quantity facilities for existing centers, institutes and grant funded programs through various renovation and new construction projects.

BU conducts research in multiple venues and is home to a number of diverse centers, institutes, and grant funded programs. Some programs are directly affiliated with a particular department and are co-located with that department. Other programs function in a more interdisciplinary manner and draw on expertise from multiple departments. New construction and renovation of legacy facilities identifies the range of needs of the University's centers, institutes, and grant-funded programs and provides the appropriate facilities.

Provide seed space for future centers and institutes to encourage innovation.

In keeping with the University's commitment to innovation, the plan provides facilities to support future avenues of research in the form of seed space for future centers and institutes.

STRATEGY

NEAR-TERM

In the near-term, the ITC Engineering and Sciences is completed. The facility incorporates spaces for centers, institutes, and grant funded programs Watson programs.

INTERMEDIATE-TERM

In the intermediate-term, the ITC Center of Excellence provides state-of-the-art facilities for Binghamton University's Center of Excellence, S3IP, and its affiliate programs.

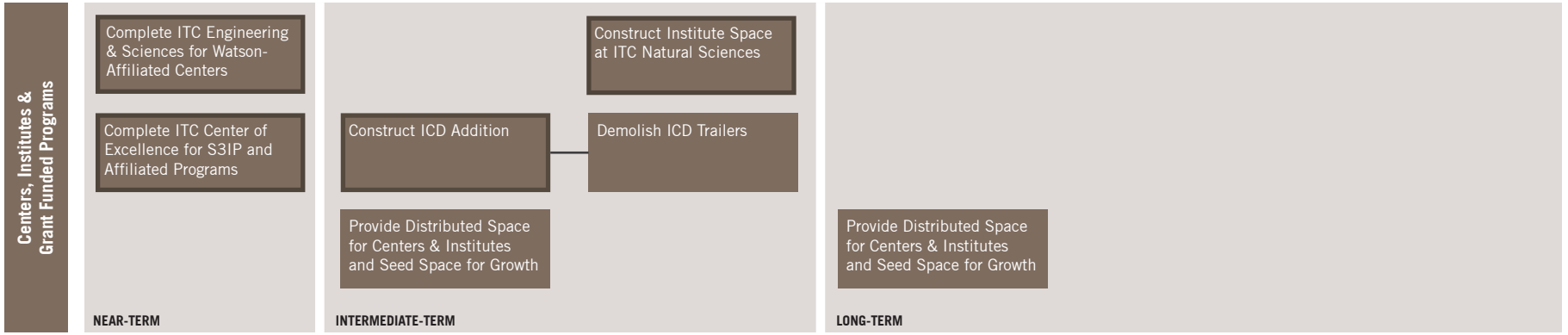
The new ITC Natural Sciences building provides facilities for the Materials Science program and other affiliated research centers and institutes.

An addition to the Institute for Child Development provides program space for departmental facilities, as well as instructional and research facilities. Upon completion of the addition, existing trailers located in the adjacent parking lot may be removed.

Additionally, new construction projects and phased renovations of legacy facilities in the intermediate-term incorporate new and renovated facilities for centers, institutes, and grant funded programs. Key projects also incorporate seed space for growth of new centers and institutes.

LONG-TERM

New construction projects and phased renovations in the long-term incorporate new and renovated facilities for centers, institutes, and grant funded programs. Key projects also incorporate seed space for growth of new centers and institutes.



LIBRARIES

GOALS

Reprogram libraries at the main campus to reduce facilities emphasis on stacks and collection storage and amplify emphasis on the Library as the center of the University's intellectual community, fostering inquiry and collaboration.

Technology and pedagogical shifts have profoundly impacted the nature of the library for institutions of higher education. Once approached as a repository for knowledge with an emphasis on reference and retrieval of print collections, the digital age has transformed the role of the library from a store of collections to a hub of information transfer and interpersonal interaction. Binghamton University's Libraries are at the forefront of the shift, providing leadership to the University community in strategies for engaging information resources for teaching, learning, and research.

While shifting to incorporate new models of information access and delivery, the University's Libraries continue to house distinguished print and special collections. With the advent of data locating technology and inter-library loan programs, the University is experiencing an increase in circulation of its print collections, particularly for more rare resources.

Reprogramming of facilities redistributes space to allow the physical environment to exhibit the Library's role as an intellectual hub of knowledge transfer. The plan engages compact storage strategies and technology to consolidate the facilities occupied by collections storage while increasing access. Facilities gained in the consolidation meet growing space needs for information kiosks, InfoCommons, formal and informal study space, and group meeting facilities.

Conduct a comprehensive renovation of library program at Bartle Library and the Science Library to improve conditions.

University libraries occupy the south side of Bartle Library and the Science Library. Both buildings were constructed in the 1970s according to a model of information storage and access that is much different than the contemporary model. With reprogramming, library facilities are upgraded for conditions improvements to clarify circulation routes, upgrade mechanical systems, and improve interior finishes.

Upgrade facilities to support the University's information access and management strategies that engage technology and innovative programming to anticipate changes and trends in scholarship, publishing, and education.

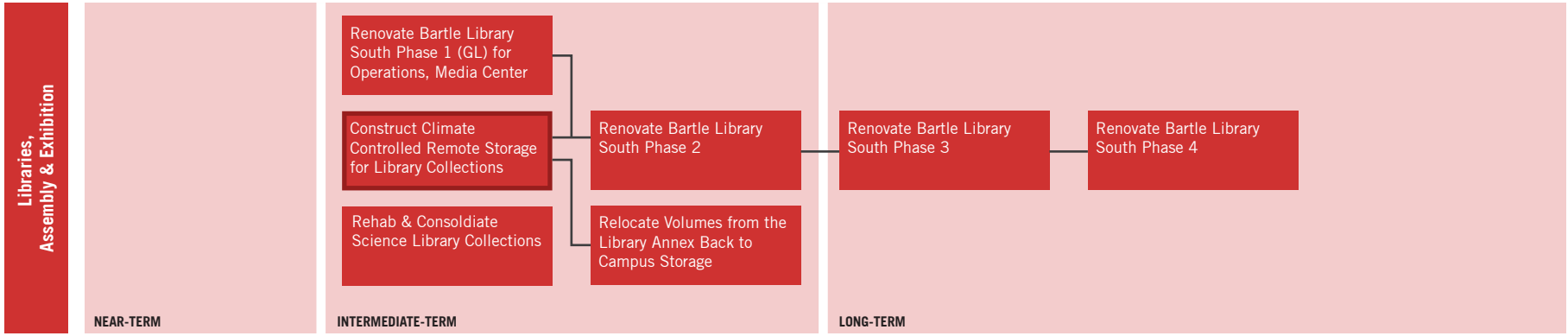
Comprehensive reprogramming and renovation of library facilities allow for the integration of state-of-the-art technologies to support evolving models of information access and delivery. Reprogramming addresses issues of space organization and layout to encourage members of the campus community to engage technology resources. A new Media Center provides a concentration of technology rich instruction and collaboration spaces to support technology-enhanced learning. The Media Center serves as a test location for developing technologies that the University is engaging on a trial basis and considering adopting. Renovation of library spaces also installs core technology infrastructure into buildings that were constructed prior to its existence. Infrastructure upgrades are built to be nimble to future technology shifts, allowing for ease of upgrade.

STRATEGY

INTERMEDIATE-TERM

Two key projects in the intermediate-term initiate a phased renovation of library program at Bartle Library. A first phase renovation at the ground level of Bartle Library renovates the south wing for conditions and building system improvements to support a Media Center that includes media-rich classrooms, InfoCommons, the University Center for Training and Development, library administrative offices, and library operations facilities. For detailed program, see Concept B: Classrooms and Computer Labs.

A second project constructs an on-site remote storage facility at the main campus for climate controlled collections storage. The storage allows for the consolidation of print collections from the stacks on upper levels of Bartle Library. It also allows



CONCEPT C

LIBRARIES, CONTINUED

off-site collections stored at the Library Annex to be relocated back to the main campus.

Together, the two projects provide the type and quantity of facilities require to catalyze phased renovation of the remainder of library facilities at Bartle Library.

Phased renovation of the south wing of Bartle Library is continued in the intermediate-term with Phase 2 of the project.

Renovations to the Science Library are also conducted in the intermediate-term. Facilities are upgraded for technology infrastructure and contemporary information delivery models. Existing library operations and seating lounges are reprogrammed to achieve greater efficiency. Library collections are similarly consolidated at the lower level of the building, however without the use of compact shelving. Space vacated at the Science Library supports Anthropology program that is relocated from Science I, initiating phased renovation of that building.

LONG-TERM

In the long-term, phased renovation of library program at Bartle Library is continued, with each renovation catalyzing the next until plan completion. The special collections, now located at the north side of the first two floors, are consolidated to occupy facilities at the south side and a more modest quantity of space at the north side. Renovation of the fourth level of the south wing incorporates a circulation path that connects a walkway from the new Globalization Center at the Visitor's Parking lot to the heart of campus with a walkway through the building to the atrium between the north and south portions of Bartle Library. The connection enhances the physical centrality of the Library with respect to campus circulation patterns, furthering it as the center of the University's intellectual community.

STUDENT ACTIVITIES, STUDENT SERVICES, ADMINISTRATION, INFORMATION TECHNOLOGY SERVICES

GOALS

Co-locate student service functions at the Dickinson Dining Hall for efficiency and improved service and construct an addition for undergraduate and graduate admissions.

Technology and shifting expectations for service have profoundly impacted the delivery of student services provided by departments such as Financial Aid, Student Accounts, Bursar, and Admissions. Technology has moved student service accounting into a digital database format. This allows for many services to be delivered in an on-demand online environment, a model Binghamton University has adapted that is now expected by the majority of students and families.

As a result of shifts in technology and delivery methods, the space requirements for student services have changed. The plan co-locates student service functions for easy and direct access into Dickinson Dining Hall, a facility that supports an open-plan layout that better suits the departments' needs in providing improved efficiency and service. The offices for undergraduate and graduate admissions are accommodated in an addition to the building that provides a welcoming experience for visitors and prospective students and allows for co-location of admissions with the other student functions.

Showcase the University's commitment to internationalization by co-locating related student services and student organizations at the new Globalization Center.

International students comprise a large portion of Binghamton University's student body. In addition, through its academic programming and strategic branding, domestic students are encouraged to understand global issues and participate in programs abroad. As a result, the University offers a wide range of services for both international students and domestic students to support its internationalization goals. In addition, a number of student organizations and campus events exist to celebrate the University's global emphasis. The new Globalization Center provides a venue for the University to showcase such programs.

Maintain a distributed model of student academic support facilities, supported by new core student advising facilities at a new Student Success Center at the Computer Center.

Binghamton University has developed a distributed model for student academic support. Under the model, academic support facilities are located in close adjacency to nodes of student activity, particularly at the University Union and within the residential colleges. Future development maintains the distributed model for services, and enhances it with a new core student advising facility, located at the new Student and Academic Center.

Complement centralized student life spaces in the University Union with distributed spaces that are integrated throughout all campus facilities.

The University Union is the campus hub for student life. It contains a wide range of functions including food service, bookstore, recreation and game rooms, student organization offices, lounge space, etc. Future development maintains the University Union as the primary centralized student life facility, and complements it with distributed informal student lounge and study space that is integrated throughout all campus facilities. Co-locating "soft seating" lounge space with formal learning environments supports serendipitous encounters, informal information exchange, and learning outside of the classroom.

Provide a designated place for Binghamton University alumni at O'Connor Hall.

Binghamton University's Alumni Association has over 100,000 members, and grows with each graduating class. Alumni actively participate in a broad range of events on campus all throughout the calendar year. Alumni are supported by the University's Alumni Relations department. To foster continued alumni involvement with the University and its current students, the plan provides a designated Alumni Center at O'Connor Hall within the Brain.

STUDENT ACTIVITIES, STUDENT SERVICES, ADMINISTRATION, INFORMATION TECHNOLOGY SERVICES, CONTINUED

STRATEGY

NEAR-TERM

In the near-term, the University Union North Renovation and Addition project is completed. The project provides academic support services and facilities for student organizations at the University Union. Key program elements include offices for EOP, a tutoring and TRIO tutoring center, and a new Center for Career Development. The project also corrects existing circulation issues that exist between the original building and the University Union West addition.

INTERMEDIATE-TERM

A number of projects in the intermediate-term support student activity, student services, administration, and ITS initiatives.

Dickinson Dining Hall is taken off-line as a dining facility and renovated for a Student Services One-Stop. The facility is modeled around a contemporary technology-enriched method of delivery for student services, with an open-plan organization to accommodate and efficiently serve large crowds at key points in the academic year. See the adjacent figure for Student Services One-Stop program.

O'Connor Hall is renovated for an Alumni and Visitor's Center at the main level with departmental office swing space at upper levels. The Alumni and Visitor's Center include the Alumni Relations and Binghamton Foundation departments, supported by reception and gathering spaces. Relocation of the two departments to O'Connor Hall vacates a portion of the second level of the Administration Building. This space is moderately renovated for the administrative departments Commission and Purchasing, which are currently located in the McGuire Building. Relocation of these departments facilitates renovation of the McGuire Building for SUCF site representative offices, resulting in the removal of existing SUCF trailers.

Renovation and addition to the Computer Center provides expansion for student services in the intermediate-term. The building includes the Harpur Dean's office, a new academic advising center, space for Harpur centers and institutes, the Binghamton Scholars program, as well as supporting lounge and group study spaces. The existing ITS server facilities remain at the ground level. Relocation of program vacates space in Academic B for professional program expansion and in Bartle Library to facilitate renovation.

LONG-TERM

In the long-term, the new Globalization Center at the East Campus provides high quality facilities and showcases the University's internationally-related student services and student organizations. The building includes the following programs: English as a Second Language, International Student & Scholar Services, Languages Across the Curriculum, Office of International Programs, Translation Program, as well as internationally-related centers and institutes and student organization facilities. For program details refer to Concept C: Harpur Fine Arts, Humanities, Social Sciences, Math. The Dickinson Dining Hall addition includes a new location for the undergraduate and graduate Admissions departments.

Following the completion of the Globalization Center, existing international programs are relocated from Nelson A. Rockefeller, allowing the building to be renovated for additional student service and administrative swing space. Existing programs such as the Discovery Program and Hinman Library outlet, are retained.

STUDENT SERVICES ONE-STOP	PROPOSED ASF
Admissions	1,100
Financial Aid	4,600
Student Accounts	4,200
University Registrar	4,800
TOTAL	**14,600**
Available	*14,600*

FIGURE 4.3.3C-11 Proposed Student Services One-Stop

STUDENT SUCCESS CENTER	PROPOSED ASF
Media-Rich Seminar Rooms	10,000
Harpur Dean's Office	3,200
Harpur Advising Center	4,800
Centers & Institutes	2,000
Binghamton Scholars Program	800
Bridges to Baccalaureate Program	800
Informal Lounge & Study Space	1,600
Group Meeting Rooms	800
Library Media Portal	500
ITS Server Rooms	4,000
Engineering Server Rooms	1,200
Building Services / Custodial	800
TOTAL	**30,500**
Available	*30,500*

FIGURE 4.3.3C-12 Proposed Student Success Center

ATHLETICS, RECREATION, HEALTH & WELLNESS STUDIES

GOALS

Provide a designated academic center for student athletes and expand instructional facilities for Health & Wellness.

Binghamton University's athletic program includes 21 sports and over 400 student athletes. In keeping with the University's commitment to academic excellence and to meet NCAA academic requirements, student athletes must be provided with a designated academic center. Due to program growth, the existing academic center in the West Gym requires expansion to support the population of student athletes. The Health & Wellness Studies (HWS) coursework at Binghamton University teaches students the practical skills and behaviors of healthy living and strives to engage all students in development of life-long wellness. As a core curriculum requirement, the program is directly impacted by increases in the University's population. It has experienced significant demand increase in the past few years, and projects further increases with future growth.

Provide additional indoor court space to support a wide array of recreational activities and meet high capacity demands.

Campus Recreational Services at Binghamton University offers a wide array of activities that take place both indoors and outdoors. Activities range from recreational to competitive. The goal of recreation is to provide health opportunities outside of the classroom and complement the experiences students receive elsewhere in campus life, contributing to the complete BU student. The department supports an average of 1,500 to 2,000 students each day. Given recent population growth at the University, Campus Recreational Services is unable to accommodate student demand for recreation activities. A particular area of facilities constraint occurs with the scheduling of indoor court space, which is a versatile space type that supports a number of programs. The plan provides additional court space for use by campus recreation to support current and future enrollment.

Upgrade an outdoor field with artificial turf and lighting to provide expand utilization in inclement weather and for an extended season.

The combined use by Athletic, Recreation, and Health & Wellness Studies programming places a high demand on outdoor fields at Binghamton University. The limiting factor pertaining to usage is field condition, which is impacted by duration of use and local weather conditions. Existing natural grass fields require a great deal of maintenance, and even with such are not capable of supporting extended use. Provision of an artificial turf field with lights facilitates significant capacity expansion at outdoor facilities in inclement weather. Additionally, by extending outdoor usage on campus, it has the consequence of reducing demand at indoor and off-campus facilities, thus presenting an opportunity to extend outdoor playing seasons and better accommodate students class schedules.

STRATEGY

NEAR-TERM

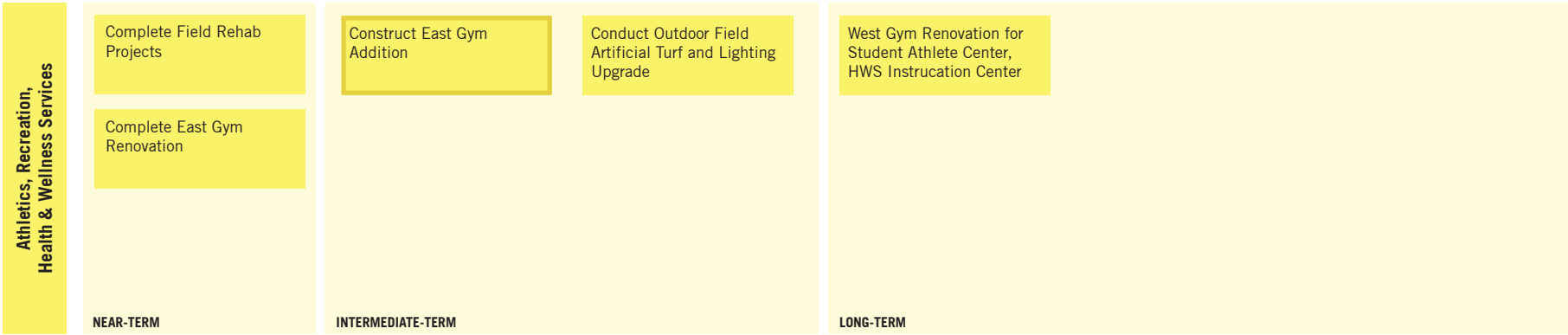
In the near-term, field rehabilitation projects and a comprehensive renovation of the East Gym upgrade athletics, recreation, and health and wellness facilities.

INTERMEDIATE-TERM

In the intermediate-term, an addition to the East Gym provides expanded court space of the size of three basketball courts to support demand for Campus Recreation. The addition is integrated into the newly renovated building to make use of existing support facilities such as a locker rooms. Additionally, one outdoor field is upgraded for artificial turf and outdoor lighting to support extended usage.

LONG-TERM

In the long-term, a renovation and addition project at the northwest corner of the West Gym is conducted for an academic and instruction center to support student athletes and the HWS program. Six of the eight existing racquetball courts, which are under utilized, are take off-line and subdivided for additional program space. This space is combined with the existing student athlete suite. Renovation of the space yields two suites of complementing program for instruction and learning.



CONCEPT C

CAMPUS SERVICES & BUILDING SERVICES

GOALS

Upgrade infrastructure at Central Heating Plant to allow for increased capacity.

The Central Heating Plant contains four boilers that provide high temperature hot water (HTHW) to many buildings in the area of the Brain at the main campus. The Plant currently operates at a fraction of its capacity (1) as that operating capacity meets the current load demand and (2) because increasing the capacity would result in the University exceeding its DEC Title V permit for emissions. Recently the central HTHW system was expanded to include the East Campus Housing, raising output of the Plant to just within the emissions limits.

Future growth at the main campus that is tied into the HTHW system will require boilers at the Central Heating Plant to operate at a higher capacity. To achieve this, the Plant must be upgraded for emissions. The plan outlines infrastructure upgrades to facilitate increased capacity.

Renovate legacy buildings in the Physical Facilities Complex to maximize useful capacity and construct an addition to expand capacity.

Physical Facilities is charged with maintaining, operating, and protecting Binghamton University's facilities and environs to provide an atmosphere that is conducive to learning, safe, and attractive for members of the University community. Growth in student population, addition to the University's inventory of facilities, and major capital new construction and renovation projects increase the demands placed on the Physical Facilities department.

The existing Physical Facilities Complex located to the west of the Brain is the primary location for the department's centralized operations. The Complex is located on a highly constrained site, bounded by the M parking lots, West Drive, the Bunn Hill Access Road, and the University's site boundary. The Complex contains six buildings, four of which require upgrades for condition due to age. To meet the demands associated with future growth within the context of site limitations, legacy buildings are renovated within the plan in a manner that maximizes their capacity.

Create a designated facility for SUCF site representatives and allow for removal of existing trailers.

SUCF site representatives working at the University currently operate out of trailers that are located immediately south of the Physical Facilities Complex. The plan provides SUCF reps with lightly renovated office and meeting space in the McGuire Building, located at the west side of the F parking lots. The move allows for the removal of existing SUCF trailers.

STRATEGY

INTERMEDIATE-TERM

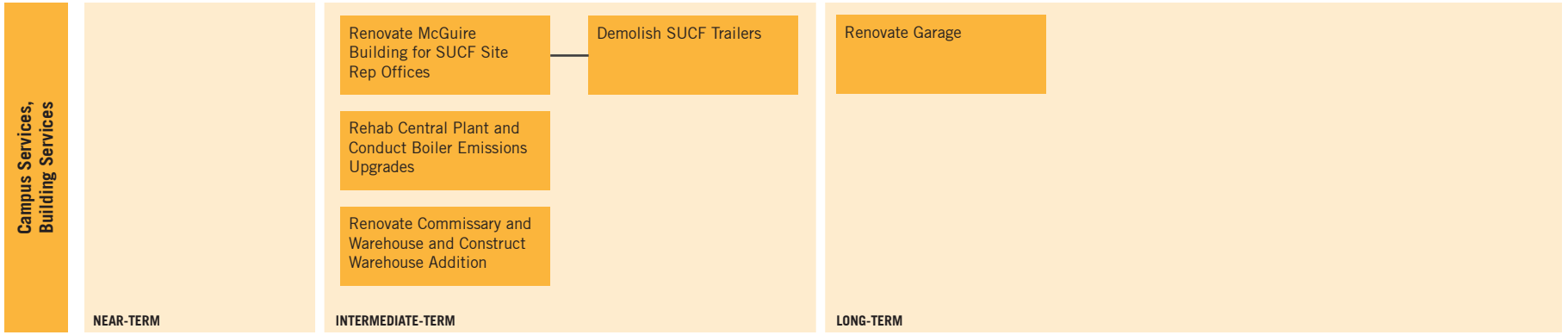
A key project in the intermediate term is an infrastructure upgrade at the Central Heating Plant for emissions to allow for increased capacity.

The McGuire Building is moderately renovated for office and meeting space for SUCF site representatives. The renovation is facilitated by projects at O'Connor Hall and the Administration Building. Renovation of O'Connor for an Alumni Center vacates a portion of the second floor of the Administration Building, which is renovated for the departments that currently occupy the McGuire Building.

Renovations are also conducted at the Commissary and Warehouse. Renovations upgrade building conditions and to maximize the capacity of the buildings to support future campus growth. An addition to the Warehouse provides expanded capacity for storage components of the Physical Facilities operation.

LONG-TERM

In the long-term, renovation within legacy facilities at the Complex is continued at the Garage. The building is renovated for conditions upgrades and to maximize capacity to support future campus growth.



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4.3.4 SUSTAINED GROWTH PERIOD

Developing on the foundation established during the Building Capacity period, the Sustained Growth period achieves facilities expansion capacity to support enrollment growth through 2023. Given the magnitude of growth, the University requires significant expansion in both academic and support facilities. The chart at the right outlines program requirements for seven new buildings. Concepts A and B, which provide three new buildings in the first period, require all seven buildings. Concept C, which provides four new buildings in the first period, requires buildings one through six.

Preferred development sites for future construction are identified on the diagram on the opposite page. Development at the main campus is recommended within range of existing development: at the East Campus, adjacent to the Sciences Complex, and adjacent to the East Gym. Benefits to development at such locations include: the opportunity to locate new buildings adjacent to existing buildings for easy access and to yield greater utilization of both existing and new; densification, which fosters the culture of a walkable campus and aids in traffic demand management strategies; and access to existing campus infrastructure and reduced infrastructure costs associated with development.

CONCEPT METRICS	GSF
CONCEPT A	
Renovation	299,000
New Construction	890,000
CONCEPT B	
Renovation	293,200
New Construction	865,000
CONCEPT C	
Renovation	218,200
New Construction	749,500

FIGURE 4.3.4A Sustained Growth Period Space Needs

PLAN COMPONENTS	PROGRAM	GSF
1. Academic Building	General Classrooms and Lecture Halls; Computer POD; Harpur Academic Departmental Program: Fine Arts, Humanities, Social Sciences; Centers & Institutes Facilities; Distributed Lounge and Informal Study Space; Group Study Rooms; Satellite Library Portal	125,000
2. Sciences Building	General Classrooms; Harpur Sciences Departmental Program, with emphasis on research and facilities with high technical requirements; Distributed Lounge and Informal Study Space; Group Study Rooms; Satellite Library Portal	125,000
3. School of Management	General Classrooms and Computer Classrooms; Entire School of Management; Distributed Lounge and Informal Study Space; Group Study Rooms; Satellite Library Portal; Cafe Kiosk	100,000
4. Student Center	Central "Forum" for Informal Gathering; Large Assembly Space for Designated Student Activity Use; Distributed Lounge and Informal Study Space; Group Study Rooms; Office Space for Student Organizations; New Bookstore with Retail; Supporting Food Service and/or Cafe	110,000
5. Student Recreation Center	Indoor Court Space for Three Basketball Courts; Men's and Women's Locker Rooms; Weight Room; Fitness and Aerobic Rooms; Administrative Offices	90,000
6. Physical Facilities Expansion	Storage and Staging Facilities; Garage Expansion; Administrative Office Expansion	40,000
7. Additional Academic Building	General Classrooms and Lecture Halls; Computer POD; Harpur Academic Departmental Program: Fine Arts, Humanities, Social Sciences; Centers & Institutes Facilities; Distributed Lounge and Informal Study Space; Group Study Rooms; Satellite Library Portal	125,000

FIGURE 4.3.4B Sustained Growth Period Projects

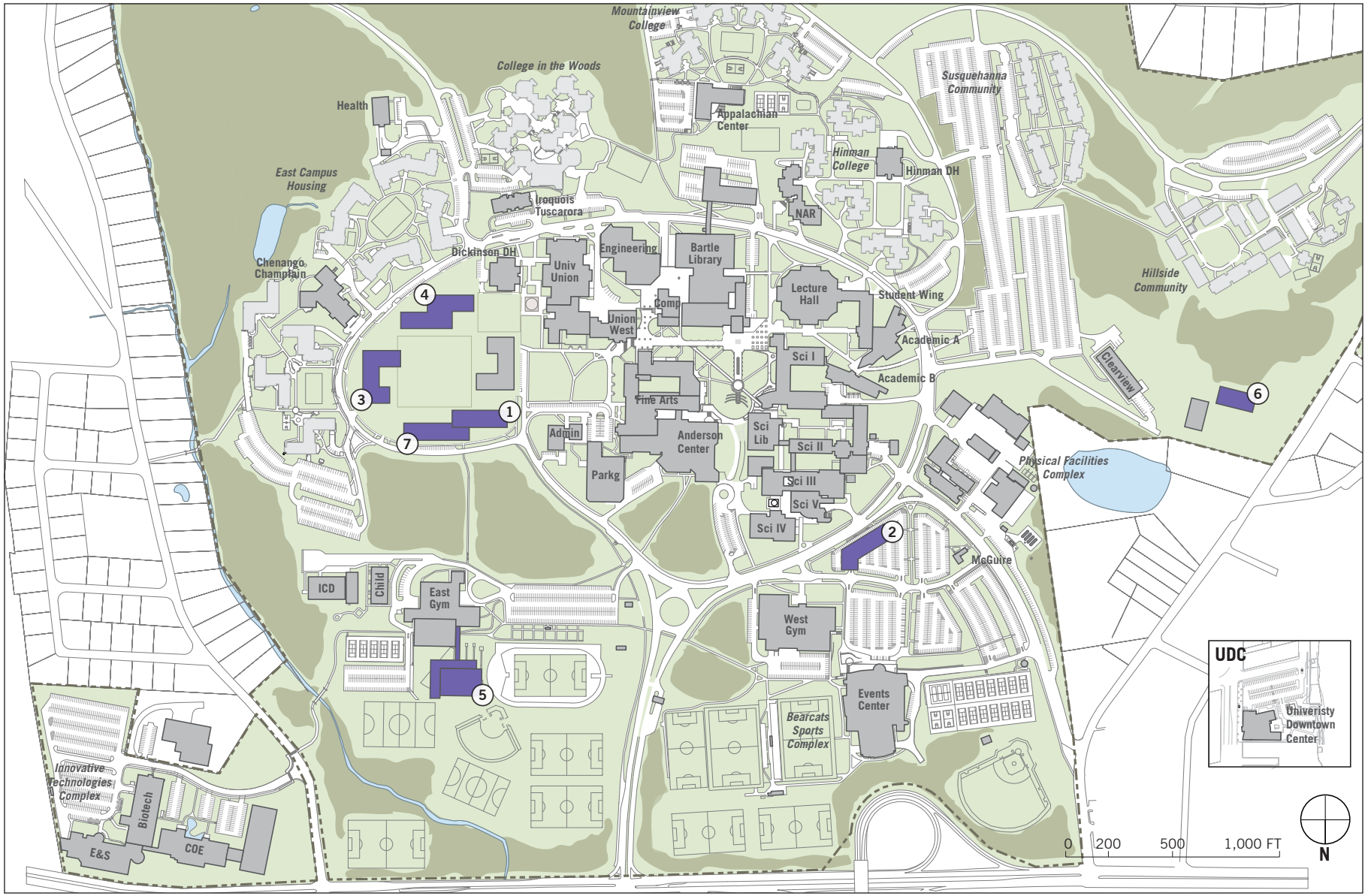

FIGURE 4.3.4C Sustained Growth Period Projects

4.4 Infrastructure

4.4.1 CENTRAL HEATING PLANT & HIGH TEMPERATURE HOT WATER

CENTRAL HEATING PLANT

SYSTEM CAPACITY

The University's Central Heating Plant has three 100,000 MBH boilers and one 50,000 MBH boiler. Of the total, three are capable of burning coal and wood, and one burns coal only. A project is currently in design that replaces the oldest coal-only 100MMBH boiler with a newer model that is capable of burning both coal and wood. The Central Heating Plant serves buildings at the main campus, with the exception of certain residence halls that are served by local gas-fired boilers. The Plant does not serve the ITC Complex.

Currently full existing demand at the main campus is approximately 50MMBH and can be handled by one of the 100MMBH boilers operating at half-capacity. The East Campus Housing and the transition of the Original Dickinson Community residence halls to the HTHW system will add a demand of approximately 25MMBH each, for a new total demand of 100MMBH.

The Central Heating Plant has the capacity to serve both the revised load due to near-term inventory changes and is also projected to have sufficient capacity to serve the full extent of future build-out due to enrollment growth. The constraining factor in increasing usage of the Plant is compliance with a DEC Title V permit for emissions, which is detailed in System Opportunities and Constraints below.

SYSTEM CONDITION

The Central Heating Plant is in good operating condition. Recent projects have improved material handling and controls. Heating Plant Upgrade project 07A26 will replace the remaining antiquated boiler and improve the Plant's ability to burn biomass.

SYSTEM OPPORTUNITIES AND CONSTRAINTS

The primary constraint related to the Central Heating Plant is emissions. The University campus operates under a DEC Title V permit for emissions, which imposes a cap on emissions of NOx, HCl, and SOx among other chemicals such as paints and refrigerants. The permit has the effect of limiting the capacity at which the Plant operates. As a result, a significant portion of the main campus is not connected to the HTHW system, despite the fact that the Plant has sufficient boiler capacity.

To allow the Plant to support the East Campus Housing, the University introduced burning of wood chips. This reduces emissions per MMBH of heat produced, allowing the Plant to operate at a higher load capacity while staying within the limits of the Title V cap.

The University is currently investigating alternative fuel strategies that would allow for further increase in boiler capacity within the emissions cap. One alternative is the use of natural gas, which burns with fewer emissions, however is typically less cost-efficient. Another alternative fuel strategy is a cogeneration plant. Refer to section 4.4.2 High Temperature Hot Water for details on alternate fuel strategies.

If the University maintains its current fuel types, the Central Heating Plant would require upgrades for emissions reduction to allow the system to stay under the Title V cap. This project would require the installation of Baghouses, SCR for anhydrous ammonia neutralization, and flue gas desulphurization to existing stacks at the Plant. As an alternate, a new boiler with emissions control could be installed, and employed as the primary unit. A comprehensive study is required to determine project requirements.

HIGH TEMPERATURE HOT WATER

SYSTEM CAPACITY

The existing high temperature hot water system (HTHW) has sufficient capacity to serve all buildings within the Brain as well as those immediately south of East Drive and West Drive.

The system has recently been extended to the east to serve the new East Campus Housing, however it does not serve the other residential college complexes to the south and west of the Brain.

The boiler plant has the capacity to provide additional heat output if the stack emissions are reduced. This would allow increased boiler output while staying within the Title V emissions cap. Additional HTHW mains serving other portions of campus and future new growth could then be added to the system.

For capacity and condition information on the boilers in the Central Heating Plant, refer to section 4.4.1 Central Heating Plant.

SYSTEM CONDITION

The HTHW system distribution piping has undergone replacement, and is nearly all in good condition. The last section of original piping that extends through part of the Science Complex will be replaced by 2012. The piping that extends from the Central Heating Plant to the new East Campus Housing has been recently replaced and is in good condition.

Heat exchangers in new campus buildings are in good condition. Many older buildings on the main campus contain original heat exchangers that are in need of replacement as facilities are renovated.

SYSTEM OPPORTUNITIES AND CONSTRAINTS

The opportunity exists to extend the HTHW system along East and West Drives at the south edge of the Brain to serve existing residential college complexes that are currently served by direct natural gas fired boilers. Production of HTHW from the Central Plant coal and wood boilers is commonly about half the cost of the natural gas purchased to feed individual boilers. However, there is some inefficiency for the long pipe run to the buildings.

Construction of a cogeneration plant on the east side of campus presents an opportunity to provide additional HTHW capacity on that side of campus without increasing the loads on HTHW mains from the Central Heating Plant. Such a plant, if connected to the HTHW system, could operate during the summer, picking up domestic hot water and sterilization loads

campus-wide and allowing for shut down of the Central Heating Plant boilers during the summer months. The cogeneration plant could then supplement the HTHW plant during the heating season to meet load demand while removing the exhaust heat from the cogeneration engines.

4.4.2 CHILLED WATER

SYSTEM CAPACITY

The existing chilled water supply for the campus is produced and distributed at the individual buildings, with some chiller and tower sharing at the Science Complex and among Bartle Library and Engineering Building.

Currently chillers are at-capacity, with capacities matching the existing loads in the buildings. Redevelopment of academic buildings, conversion of residential buildings to academic functions, and construction of new buildings on campus will produce additional cooling loads that will that require chilled water capacity be added. Future projects should be served with new dedicated electrical centrifugal chillers, a frictionless bearing type chiller that has excellent efficiency.

SYSTEM CONDITION

Chilled water on campus is provided by a blend of absorption chillers and electrical centrifugal chillers. The original absorption chillers serving legacy buildings on campus have undergone replacement from 1997 through 2010, with the exception of chillers at the Couper Administration Building and a portion of the Lecture Hall Center. The campus has migrated to electrical centrifugal chillers with a life expectancy of ten to 20 years remaining in previous replacement projects.

Cooling towers have been replaced routinely, resulting in an existing mixed inventory of those that are new, rebuilt, and in need of repair.

The chilled water piping within most legacy buildings is original. In any building over 40 years old, piping should be evaluated for replacement as a part of major facilities upgrade.

SYSTEM OPPORTUNITIES AND CONSTRAINTS

With future campus growth, the opportunity exists to construct satellite central chiller plant clusters to serve groupings of new buildings with sufficient load diversity. Through such load diversity, a satellite chiller plant would allow for the installation of a lower total equipment capacity than standard local units.

Additionally, the construction of a new cogeneration near the Science Complex could provide cooling for the six buildings in the complex as well as the Events Center by producing HTHW from the exhaust stack to operate an absorption chiller. The existing centrifugal chillers could remain as a backup cooling source or be moved to service new loads at other campus locations.

Operating natural gas-fired cogeneration engines to generate electricity alone is not practical. However, by capturing the waste heat from the exhaust stack to generate HTHW, the waste heat can be used to heat buildings and generate cooling. The waste heat from the engine block can also be captured to generate domestic hot water. The combination of electricity, hot water, and chilled water produced by the plant from the initial combustion of natural gas in the engine makes it feasible to operate. A cogeneration plant could have sufficient HTHW capacity to service all summer loads of the campus, allowing the shut down of the boilers.

4.4.3 DOMESTIC WATER

SYSTEM CAPACITY

The domestic water distribution system for the main campus is fed from two separate street mains along Vestal Parkway, Route 434. The two mains combine at the Information Booth at Center Drive to feed three 1,000,000-gallon storage tanks, which provide a stable system pressure and fire storage capacity. The minimum storage capacity required to meet the flow requirements for a fire event and one day domestic use (minimum recommendations per the Ten States Standards), is less than 1,000,000 gallons. Therefore, the existing tanks have sufficient capacity to support existing usage and significant future growth.

Due to the high tank elevation, they provide a system pressure of 230 psi at the pump house, located near the traffic circle. The pressure is reduced to 110 psi for distribution to buildings. This reduced pressure is appropriate for plumbing throughout the campus and fire protection in most buildings.

SYSTEM CONDITION

Much of the domestic water distribution system at the heart of the main campus is original, dating back to the 1960s, and is beyond its dependable life expectancy. The campus has water system upgrade projects scheduled for completion in 2012 to replace the water main through the Brain and replace key pressure reducing stations and isolation valves. A long-range plan for replacement of the remaining original piping after the 2012 project should be designed.

As growth has occurred outside of the Brain, the system has been expanded. Piping outside of the Brain varies in age, however most has good serviceable life expectancy.

The distribution from the connection point at Route 434 to the water tanks requires further study to evaluate for condition. The water storage tanks are noted to be in good condition. One was installed in 2000, and the other two were inspected in 2009 and noted to be in good condition.

SYSTEM OPPORTUNITIES AND CONSTRAINTS

The opportunity exists for upgrade and reconfiguration of the domestic water system with future major renovation of legacy facilities at the Brain. A separate fire branch line could be taken off of the pressure main from the storage tanks, ahead of the pressure reducing valves. This line could run with a higher rated pressure to serve new sprinkler services in tower facilities requiring upgrades, including the Library, Science II, or the Couper Administration Building. This would be an effective alternative to installing fire pumps for sprinkler system upgrades.

With future growth, the provision of a second return main from the storage tanks down to one of the main branches should be studied. A second main would provide additional capacity and system redundancy. Should the current main to the tanks fail, this main could also maintain incoming flow. Currently the campus has limited capacity to handle problems with the existing tank main. If there is an issue with the main, the utility service and main pumps must by-pass the tanks, serving the campus without the benefit of pressure stabilization and matching of peak flow demand.

4.4.4 SANITARY SEWER

SYSTEM CAPACITY

The sanitary sewer system has two main connections to the municipal sewage system near the intersection of Vestal Parkway and Murray Hill Road, one 12-inch connection and one 15-inch connection. From this point, they extend south to branch out across the Brain and along the west perimeter of campus to the residential colleges.

The sizes of the system mains are small for the quantity of buildings they connect, particularly at the West Drive main and the west main that serves the largest residential college concentration, both of which are 8-inch mains. Sections of the older 8-inch main were replaced with 12-inch mains by a process of pipe busting to accommodate the East Campus Housing, however portions of the 8-inch system remain downstream.

The Events Center and development in the northwest quadrant of the campus is collected in a sewage pump station north of the Events Center, which pumps to connect to a gravity system at the traffic circle. Preference is to provide gravity sewage flow, where possible, as sewage grinder pumps require significant maintenance due to inappropriate objects that may be flushed into the system and plug impellers.

SYSTEM CONDITION

The core of the sanitary sewer system is still the original piping that was installed at the founding of the campus. Issues exist with inadequate sizing and known locations of failing pipe. Piping upgrades to route mains around new building construction has resulted in a disjointed system with portions of campus that have no access to sewer mains except through buildings. Although recent survey work has improved understanding of the system connectivity between manholes, much of the underground piping remains unknown in terms of condition and size.

A detailed study is recommended to understand the condition of manholes and piping location, condition, and size. This study should inform a long-range plan outlining strategies for immediate system repair or replacement and new future sewer main installations.

SYSTEM OPPORTUNITIES AND CONSTRAINTS

Any future major road improvements should include implementation of sewer system upgrades. Future development at the main campus should remove sections of abandoned sewer piping and clarify system distribution routes, as possible.

To serve potential future growth at the west side of campus, including any possible residential expansion, and to provide relief on the east mains and a gravity outlet for the Events Center, the opportunity exists for a new sewer connection along Bunn Hill Road. A study is recommended to evaluate the feasibility of installing this west campus sewer main.

4.4.5 STORM DRAIN

SYSTEM CAPACITY

Storm water flows in three general directions off of the main campus: to the east, down the center, and to the west.

Storm water at the east side of campus drains into Lake Lieberman, which is currently meeting its maximum potential retention capacity. To reduce the amount of storm water flow through the middle of the Brain, the water from the residential colleges on the hill, Moutainview College and College-in-the-Woods, is diverted laterally to the east. Storm water from the East Campus Housing is also diverted to Lake Lieberman.

Storm water from the center of campus drains through a system of pipes and down along the main entrance drive. The Visitor's Parking Lot and the land immediately north of the Brain drains down the hill, joining into the storm systems that run north between the academic buildings, picking up roof and courtyard runoff along the way. Specific drainage problems exist between Bartle Library and the Engineering Building, where large storm events cause flooding to the service deck at the lower level and carry the potential for significant flood damage to the basements of the buildings. There are also several other buildings on campus that have ground water penetrating into basement levels and require additional subsurface drainage.

The systems running through the Brain join together along the north side of the East and West Drives, and run down both sides of the main entrance drive. The system on the west side of the entrance drive empties into a retention pond near Route 434. This pond was observed overflowing during the spring of 2009, with surface water flooded onto the roadway and closing one lane.

The west parking lots and Susquehanna and Hillside residential colleges drain to the north and along the South Connector Road to the Bunn Hill Access Road. Here the system picks up drainage from major parking lots M and F, before discharging into a swale along Route 434 adjacent to the 201 loop.

There is currently no capacity in the system to retain additional storm water runoff created by the addition of new buildings or site work.

SYSTEM CONDITION

The physical condition and age of the storm water system is largely undocumented. There exist some areas with deteriorating manhole covers or broken connections.

The system consists of a mixture of piping and structures that were put into place with the original campus, and then extended, re-routed, or abandoned. Although a remapping of the system was recently conducted, there exists a large portion of the distribution between the academic buildings within the Brain that requires further study. Specifically, there appear to be sections of abandoned piping not identified as such, outlets from courtyard systems that are not documented, and incomplete documentation at Lot M. There is no storm drainage documentation for the ITC site. Additionally, pipe sizes are not documented.

A thorough conditions survey is recommended to determine system replacement or enlargement requirements.

SYSTEM OPPORTUNITIES AND CONSTRAINTS

The campus requires a long-range plan for storm water system upgrades, storm water quantity and quality control, and to meet sustainability opportunities.

Any future redevelopment of residential housing at the west campus should include an upgrade of the storm water system on that side of campus. Drainage from the Hinman Community, which is currently routed into the central system between the Lecture Hall Center and Bartle Library, should be redirected to the west campus system to reduce demand at the Brain.

Storm water piping at the central system within the academic buildings require evaluation for condition and capacity. The grading at the loop north of the Bartle Library and the Engineering Building should be evaluated to ensure water from the road is not running into the plaza. The University Commons renovation and any other site or road work should include upgrades to the storm water system.

The northern edge of campus is the best location for implementation of long-range storm water management. Additional detention ponds should be constructed between the new baseball and softball field, intramural fields, and Route 434. The soil at this location is the best for water absorption.

The new ITC Center of Excellence building includes a storm water storage system beneath the parking lot for reuse as grey water. The water will be utilized for cooling water make-up and irrigation. Cooling tower evaporation and bleed-off consume 70 percent of the water used in the academic buildings, and represent a significant opportunity for use of grey water. New parking lots, major parking lot renovations, and major new construction projects should consider underground storage systems for this purpose.

4.4.6 ELECTRICAL

SYSTEM CAPACITY

The main substation at the University is fed from two 34 KV circuits from NYSEG. The existing active circuit from NYSEG has the capacity to serve significant future growth at the main campus but could reach capacity near the end of the proposed growth.

The University is currently conducting a multi-phased project to upgrade the existing electrical distribution capacity at the main campus. Upon project completion, the substation capacity will increase from 24,000 KVA to 32,700 KVA. The upgraded system will provide sufficient capacity to meet the existing peak demand of 18,000 KVA and is anticipated to meet future peak demands with new construction at the main campus.

The project will also replace existing electrical distribution infrastructure, rated at 4,800 volts and 13,200 volts, to distribution rated at 12,470 volts. This will require future replacement of several existing transformers on campus to match operation at these voltages. All distribution on campus will be at 12,470 volts when the project is complete.

The main electrical substation does not serve the ITC Complex, which receives separate service from NYSEG directly from Vestal Parkway.

SYSTEM CONDITION

The existing substation 34 KV / 12.4 KV transformers and switchgear area are currently being replaced in a fifteen-year program that began in 2005 and will be conducted in two phases. Upon completion, the substation will be in excellent condition. The first transformer upgrade installation at the substation is scheduled for completion in 2011.

The duct bank distribution along the north side of the Brain from the substation has been replaced and new feeders are being installed, both in the duct bank and extending to the building main electric rooms.

A series of additional projects are necessary to replace building transformers rated at 4.8 KV or 12.3 KV. Additional projects will be required prior to the new circuits being switched over to the upgraded 12.5 KV voltage. An existing program includes future projects to replace the duct bank on the south side of the Brain, where circuits will be replaced. Following this project, additional transformers will require replacement. Until the program is complete, there will be feeders, manholes, switchgear, and transformers in use that have reached the end of reliable service.

SYSTEM OPPORTUNITIES AND CONSTRAINTS

Based on past studies, the University has an understanding of the projects required to fully upgrade electrical infrastructure, however funding for design and construction is required for implementation. Such projects include: building transformer replacements, the south Brain duct bank design and construction, and the second phase of the main substation upgrade.

Duct banks under construction are being upgraded with spare conduit capacity and will be able to receive addition future circuits to feed new building construction in and around the Brain. Duct bank extension will be required for new development to the west.

Feeders have not yet been replaced to many buildings. The original 4800 volt feeder system cannot be fully switched out until the building 4800 transformers and switchgear have been replaced.

The main campus substation is fed from two 34 KV circuits from NYSEG. The active circuit currently has the capacity to serve proposed growth at the University. The back-up feeder, which is shared with local distribution, does not normally carry a load from BU, and currently does not have spare capacity to handle the full campus load should the primary circuit fail. There exists the opportunity to upgrade this circuit, however is no agreement with NYSEG to do so. See greater detail in section 4.4.9 Emergency Power.

4.4.7 EMERGENCY POWER

SYSTEM CAPACITY

The University campus is currently served by 45 fixed emergency generators dedicated to individual buildings and shared between adjacent buildings. The existing emergency power system is not designed to keep the campus operating during a prolonged power outage. It provides power for safe evacuations of most buildings and to maintain the central heating plants.

Of the total units, 11 are sized greater than 75 kW and are capable of handling some equipment load along with emergency lighting and alarms. Buildings with data hubs or laboratories have the larger units. The five largest units serve the Central Heating Plant, Events Center, ITC Complex, Sciences III/IV, and the Science Library and Greenhouse. These units provide power to operate sensitive equipment, HVAC, and lighting.

Of the total units, 22 are fueled by natural gas and 18 are fueled by diesel. The reliability of the natural gas supply is limited as the University purchases it under an “interruptible rate” plan.

The current life safety upgrade program is expected to replace portable temporary generators at the Computer Center and Health Center.

SYSTEM CONDITION

The generators and the related automatic transfer switches are of varying age. Generators are commonly used lightly when installed as stand-by equipment, resulting in a good life expectancy for most equipment.

SYSTEM OPPORTUNITIES AND CONSTRAINTS

A failure of the main power feed from NYSEG would result in the evacuation of most of the main campus, as the back-up feeder does not have sufficient capacity to carry the full load. A delay of two hours minimum is predicated before transfer to the back utility feeder can be expected. For all but the most critical areas, emergency power will support only safe egress of the buildings. The main heating plant will operate, but most of the building HVAC systems that rely on air handling units will not.

The utility operating the local Goudy Generating Plant in Johnson City, which serves the BU campus, has recently announced that they will shut down the station in the Spring of 2011. This has implications for the University of making it more reliant upon the whole NYSEG grid rather than a local feeder, and also puts added pressure on back-up systems.

As previously discussed, the back-up feeder connected to the local neighborhood distribution does not have sufficient capacity to accept an automatic transfer of the full BU load. Time will be lost coordinating load shedding on campus to reduce the load before NYSEG is able to throw the switch in the BU substation to the back-up circuit.

The status of many of the back-up generators as natural gas fired adds further complexity to the emergency power system, as the natural gas is purchased at an "interruptible rate" from the utility. Should the utility call for an interruption during a period of high demand that coincides with a power failure, all of the gas generators will be off-line, with the exception of the Central Plant generator which may be switched over to propane.

The life safety upgrade project for 2011 was intended to review the system has been deferred to 2012 for completion.

The opportunity exits for a cogeneration plant to improve the emergency power system at the main campus. The plant could provide a significant amount of generation capacity that could serve a severely reduced load campus-wide, with the impact of keeping campus facilities from shutting down. Individual building diesel generators capable of running food operations, HVAC systems, elevators, and computer networks should be considered for all buildings on campus.

As an alternative to load reduction and provision of alternate emergency power, the University may negotiate with NYSEG for the upgrade of the back-up 34 kV circuit. This would allow for automatic switch-over should the primary feeder fail. The cost of such an upgrade is unknown at this time. The solution would not address situations in which all aerial power lines are simultaneously damaged, such as recent ice storms.

4.4.8 NATURAL GAS

SYSTEM CAPACITY

The existing natural gas piping feeds the campus from Bunn Hill Road to the Central plant. This portion of the system is owned by the Utility. The distribution from central plant across the campus is owned by the Campus. The system feeds Central plant as a back-up supply to the coal/wood fuel. The distribution from there crosses the north part of campus feeding dining halls and boilers in the dorm complexes and radiates south between the buildings inside the brain to feed boiler plants in the Library and University. Union. Smaller branch lines run to individual buildings with needs for lab equipment, food services or dedicated process equipment. With the transfer of East Campus Housing to high temperature hot water there is additional spare capacity in the system. The gas distribution is at 23 PSI pressure allowing a large capacity in the relatively small 3 and 4 inch lines.

SYSTEM CONDITION

The original steel piping has all been replaced with plastic gas piping underground and is in good condition.

SYSTEM OPPORTUNITIES AND CONSTRAINTS

The campus buys gas at an interruptible rate which allows NYSEG to shut off the campus in an emergency. In January 2011, a break in the main transmission pipe through the southern tier caused NYSEG to shut off BU for three days. During the outage the campus supplied a mix of propane and air into the distribution from its storage tanks at the central plant. This kept the remote gas equipment in operation. This is not a desirable solution for the emergency generators that run on natural gas, however. The gas generators should be phased out in favor of diesel except for those that are directly connected to the liquid propane tank.

The gas piping can support new boilers in future housing projects. It also could support new remote hot water or steam generators on campus that could allow the total shutdown of the Central Boiler plant during the summer once the last two remaining absorption chillers are replaced.

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4.5 Circulation

4.5.1 OVERVIEW

Each day Binghamton University's campus is active with students, faculty, staff, and visitors moving from one place to another by walking, bicycling, driving, or riding. Circulation routes define how and where each user traverses the campus to their destination, and serve a defining role in the experience of the campus.

APPROACH TO CIRCULATION

As the student and campus population at Binghamton University increases, it will become important to define circulation routes. Clearly defined routes help users find their way around campus to their destination, reduce conflicts and promote safety among different modes of transport, and showcase the full range of transportation options that exist.

Due to the campus location, it is understood that the automobile will remain an important mode of transportation for members of the BU community. However, given the magnitude of projected growth, the University will reach a point at which the campus is longer able to support the existing culture of single occupant vehicles as it does now. As a result, future development at the campus must promote alternate modes of transportation, including walking, bicycling, and use of transit, in order to gradually reduce the magnitude of vehicular traffic.

The circulation plan outlined in the FMP develops a strategy for effective movement of University's full population for years to come by emphasizing the following drivers:

Create a campus that promotes walking and biking. Walking and biking are low-cost, sustainable modes of transportation that also have associated health benefits. The circulation plan encourages walking and biking through enhanced connectivity pathways, including connectivity between buildings, creation of a pedestrian preferred zone at the south side of the Brain to reduce pedestrian-vehicular conflicts, and improvements to site accessibility.

Provide easy access to transit. Transit presents the opportunity to move more people to, from, and around campus using a single vehicle, resulting in a sustainable way to reduce the impact of single occupant vehicles. Transit options at BU include the University's Off Campus College Transport (OCCT) service, Broome County Transit, and commercial bus service shuttle. The circulation plan promotes the use of transit by enhancing the ease of access and improving connectivity between campuses.

Reduce the volume of vehicular circulation. To provide effective circulation for the campus community in the future given the magnitude of growth, BU will need to become less reliant on the single occupant automobile. The circulation plan identifies strategies to reduce the impact of remaining vehicular traffic by minimizing the need for vehicles to circulate within the campus. This is achieved by defining specific vehicular preferred routes to destinations, such as parking, and moving vehicles directly to those routes. Pedestrian preferred zones at areas of high pedestrian activity complement vehicular zones by discouraging vehicular traffic. Additionally, special consideration is given to vehicular routes for emergency and service vehicles, recognizing the need for these vehicles to service campus facilities, particularly in and around the Brain.

Meet parking demand. Parking demand is directly related to the volume of single occupant automobile traffic on campus. To effectively support the magnitude of future growth at BU, the overall reduction in the volume of vehicular circulation on campus must also reduce the overall parking demand. The circulation plan outlines near, middle, and long term strategies toward the parking. Near term strategies seek to enhance the utilization of existing lots, with a focus on recognizing the differential value of parking areas, particularly for handicap, service, and visitors in and around the Brain. Middle term strategies identify key locations on campus that may support the additional surface parking lots. Long term strategies provide parking expansion with vertical parking structures, complement on-campus parking with off-campus solutions, and seek strategies to enhance alternative modes of transportation to reduce the overall parking demand.

4.5.2 PEDESTRIAN AND BICYCLE CIRCULATION

Improved walkablility and bikeablility at the BU campus will reduce vehicular congestion, promote to the health of members of the campus community, and contribute to a sustainable future. The FMP creates a campus that promotes walking and biking by clarifying existing routes and providing new routes to create a network of pathways with strong connectivity between destinations.

CONNECTIVITY

The plan expands the existing network of pathways to more comprehensively connect between campus locations, including locations in and around the Brain, as well a peripheral locations such as the ITC Campus, outdoor fields, and natural areas. Designated bicycle routes are provided along roadways, and bicycle parking kiosks are provided in close adjacency to key amenities.

Extension of existing circulation routes. Existing major circulation routes within the Brain are clarified and enhanced with landscape and signage. New major routes build upon the existing network of pathways for greater connectivity. In many locations pedestrian routes move through buildings to promote walking even in instances of the inclement weather often experienced in the region.

New east-west circulation route. An important new circulation route is the second east-west connection provided along the north side of the Brain, extending from the F parking lots at the west, through the Sciences Complex and Fine Arts Building, to the Peace Quad and East Campus. This route allows for more direct connection between the east and west campus with less grade change. A designated public circulation corridor is provided through the Fine Arts Building, allowing program within to be showcased for the campus population.

Direct access to Appalachian Hall. Development at the existing Visitor's Parking Lot provides a new, more direct, and safer pedestrian route extending between Appalachian Hall and the Brain. The route is provided as an outdoor path between Appalachian Hall and the new Interdisciplinary Academic Center building, with a single cutback to accommodate the slope of the hill. A direct walkway connection is provided through the Academic Center to Bartle Library within the Brain, bridging over West Drive.

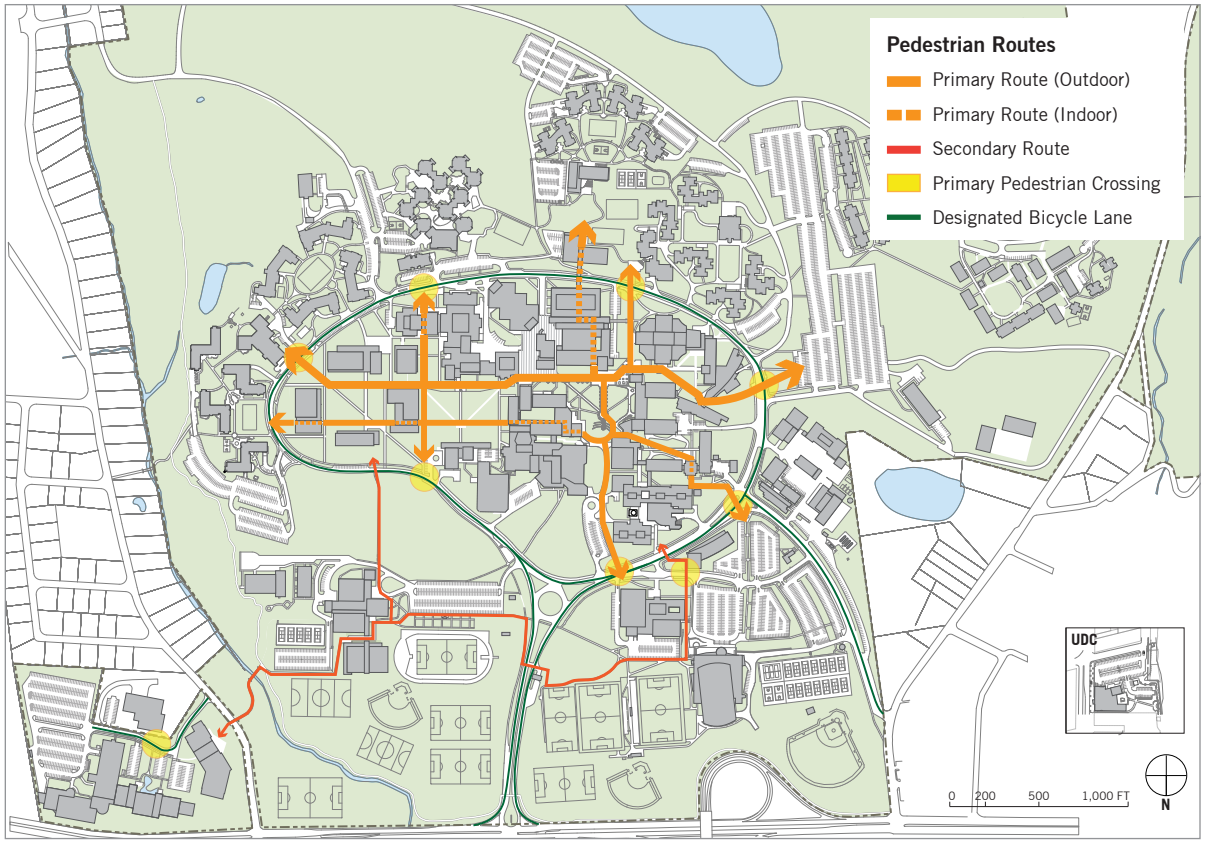


FIGURE 4.5.2A Proposed Pedestrian and Bicycle Routes

Pathway to the ITC Campus. Future expansion of the ITC Campus will result in an increase in pedestrian traffic between it and the Brain. To encourage walking between the two locations, designated pedestrian pathways are provided to connect the ITC Campus with key locations at the Brain. The routes improve the pedestrian experience with consideration for topography, landscaping, and site lighting.

PEDESTRIAN PREFERRED ZONE

Organization of the campus locates primary academic facilities inside the Brain and primary residential functions outside of the Brain with the zones separated by East and West Drives. Pedestrian migration across the road create a number of pedestrian-vehicular conflict points, potential safety concerns. The FMP establishes a designated pedestrian preferred zone along the south portion of East and West Drives, extending from the East Campus Housing around to the entrance between Academic A and B. This portion of the roadway is open to vehicles, however measures are taken to reduce the impact of vehicular traffic including strategies outlined in section 4.5.3 to reduce the volume of traffic as well as traffic calming measures such as raised crosswalks with surface differentiation, pedestrian right-of-way signage, landscape and streetscape interventions defining a pedestrian friendly sense of place.

4.5.3 TRANSIT

The use of transit presents a sustainable method to move members of the BU campus community to, from, and around campus and results in an overall reduction in the use of single occupant automobiles. Growth of the campus population will require an increase in the use of transit by members of the campus community in order the effectively move the full population. As such, the FMP defines overall circulation routes that promote the use of transit.

EASY ACCESS TO TRANSIT

Transit options at BU currently include the 12-route, University-operated OCCT service, five Broome County Transit (BCT) routes, and a van shuttle connection service to local commercial bus lines. To accommodate an increase in the use of transit, the FMP locates infrastructure to make services easy to access and convenient for members of the campus community to use when moving between destinations. The diagram at the right provides an overview of transit access points.

Hierarchy of access points. The plan establishes a hierarchy of access points to provide stops in close adjacency to demand points. Access points include primary transit exchange points, secondary stops between campus locations, and tertiary stops for main campus locations only. Primary transit exchange points are provided along the south side of the Brain and at the Bunn Hill Connector Road. The Campus and off-campus OCCT routes, BCT routes, and shuttle service routes stop at these exchange points for easy access and transfer.

OCCT access points distributed around the Brain. Access points to the OCCT at the main campus are distributed around the Brain at 1/4 mile intervals so that access is never more than a five minute walk away.

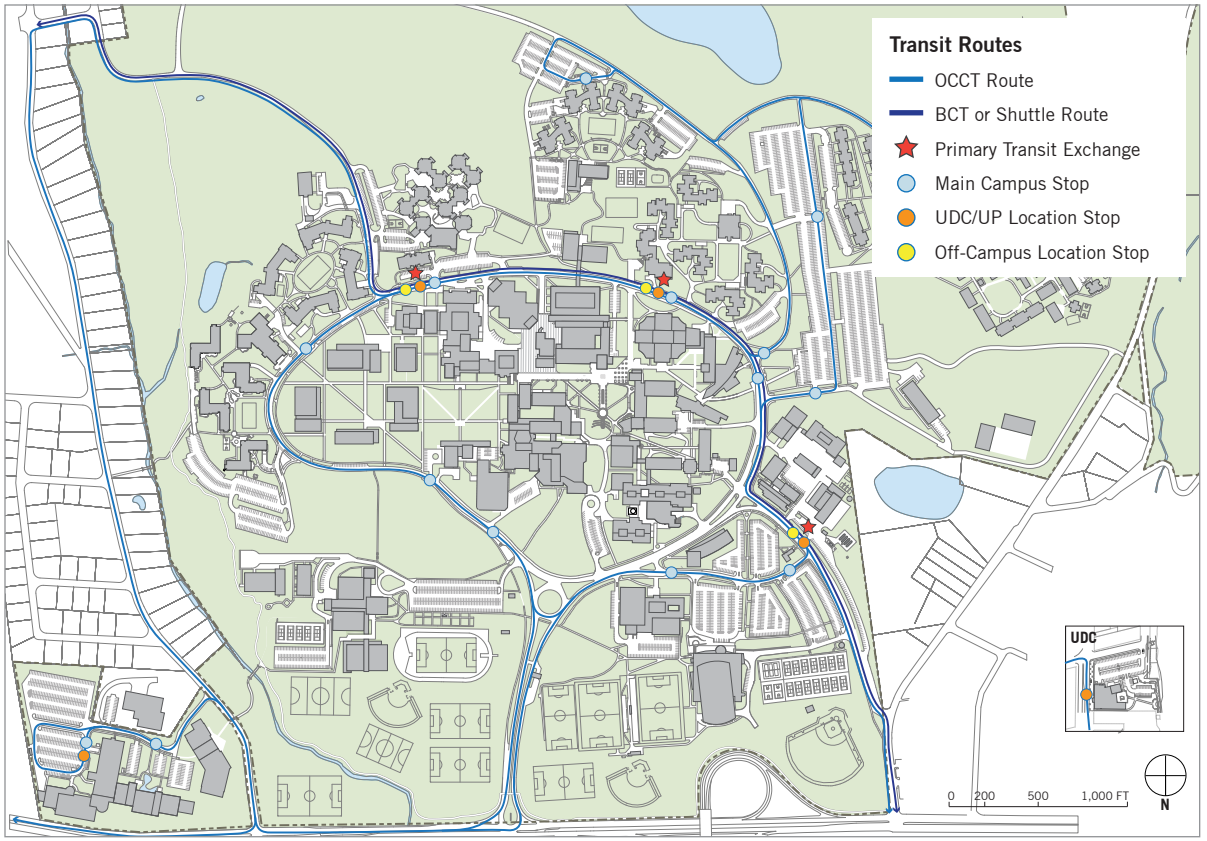


FIGURE 4.5.3A Proposed Transit Routes

CAMPUS AND COMMUNITY CONNECTIVITY

OCCT at the main campus. The OCCT shuttle provides excellent connectivity at the main campus, which includes areas in and around the Brain, the residential communities, and the ITC Campus. Proposed stops at the main campus are indicated on the diagram with a light blue dot.

OCCT between campus locations. The OCCT shuttle also provides direct connectivity between the main campus, the University Downtown Center, and the University Plaza residential community. An additional stop at the ITC Campus is recommended for the shuttle connecting between the main campus and the University Downtown Center.

OCCT in the community. The OCCT shuttle connects to a number of locations in surrounding communities. Proposed stops correspond with the primary transit exchange points and are indicated on the diagram with a yellow dot.

Broome County Transit and other shuttle services. Broome County Transit routes that serve the campus include routes 5, 15, 17, 25, and 47. Other shuttle services connect between the campus and Broome County Bus Terminal in downtown Binghamton. Proposed stops correspond with the primary transit exchange points and are indicated on the diagram with a yellow dot.

4.5.4 VEHICULAR CIRCULATION

Binghamton University is located at the nexus of three major interstates that connect the northeast: Interstate 81 extending north-south, and Interstates 86 and 88 extending east-west. This roadway framework makes the University highly assessable by vehicle from locations across the southern tier of New York.

The main campus is located in Vestal, New York in a suburban area. Due to its location, the automobile is currently an important mode of transportation to and from campus for members of the campus community, and will likely remain such in the future. However, given the magnitude of projected growth, the University will reach a point at which the campus is longer able to support the existing culture of single occupant vehicles as it does now. The plan seeks strategies to provide effective circulation for the entirety of the University's future growth through newly designed roadways that limit the volume of traffic where pedestrians are most active and moving vehicles directly to their destinations to reduce circulation within the campus.

CONSIDERATION OF ROADWAY ALTERNATIVES

To determine the best solution for mitigating pedestrian-vehicular conflict points around the Brain at East and West Drives, three alternates for vehicular circulation are considered. The alternatives, shown in the diagrams to the right, study a range of solutions related to partial closure of the roadways for a zone of pedestrian mall.

Alternate A. Alternate A closes a portion of East and West Drives at the south side of the Brain for a pedestrian mall and reroutes traffic to the East and West Access Roads. As a result, the pedestrian-vehicular conflict zone is reduced in length, however the volume of traffic on the Access Roads is increased. Other implications of Alternate A include an increased travel distance for vehicles, more difficult east-west travel and campus wayfinding for vehicles, parking lot access issues, and service access coordination requirements.

Alternate B. Alternate B closes a portion of East and West Drives at the south side of the Brain for a pedestrian mall and creates grand turn-arounds at either end for vehicular traffic. As a result, the pedestrian-vehicular conflict zone is reduced in length. However, to function effectively, the turn-arounds would have to be sufficiently large to accommodate both cars and busses and prevent traffic bottlenecks. Other implications of Alternate B include continued difficult east-west travel, however improved vehicular wayfinding from Alternate A, moderate increased volume on the Access Roads, parking lot access issues, and serve access coordination requirements.

Alternate C. Alternate C retains vehicular access to the full length of East and West Drives at the south side of the Brain, and employs aggressive traffic calming measures to mitigate pedestrian-vehicular conflicts. This option results in the most clear wayfinding for vehicles, the smallest volume impact on the Access roads, and few parking lot access or service access issues. For this option to be successful, the streetscape along the south portion of the Brain must be updated for traffic calming measures, and the University must support a culture change for traffic reduction in the zone.

PREFERRED ALTERNATE

The matrix below evaluates the three alternates against key issues identified by the University and planning team. With consideration of the outlined factors, Alternate C was selected for further development in the final recommendation in Phase 5. This Alternate was selected because it most closely reflects the current circulation configuration, and it was deemed that the benefits of A and B did not outweigh their shortcomings.

KEY ISSUES	ALT A	ALT B	ALT C
Partial road closure to reduce the vehicular conflict zone.			
Ease of vehicular wayfinding and overall access.			
Traffic rerouted to Access Roads to increase traffic volume there. (Assumed to be a negative impact).			
Results in parking lot access issues.			
Requires service access coordination.			

FIGURE 4.5.4A Roadway Alternatives Summary

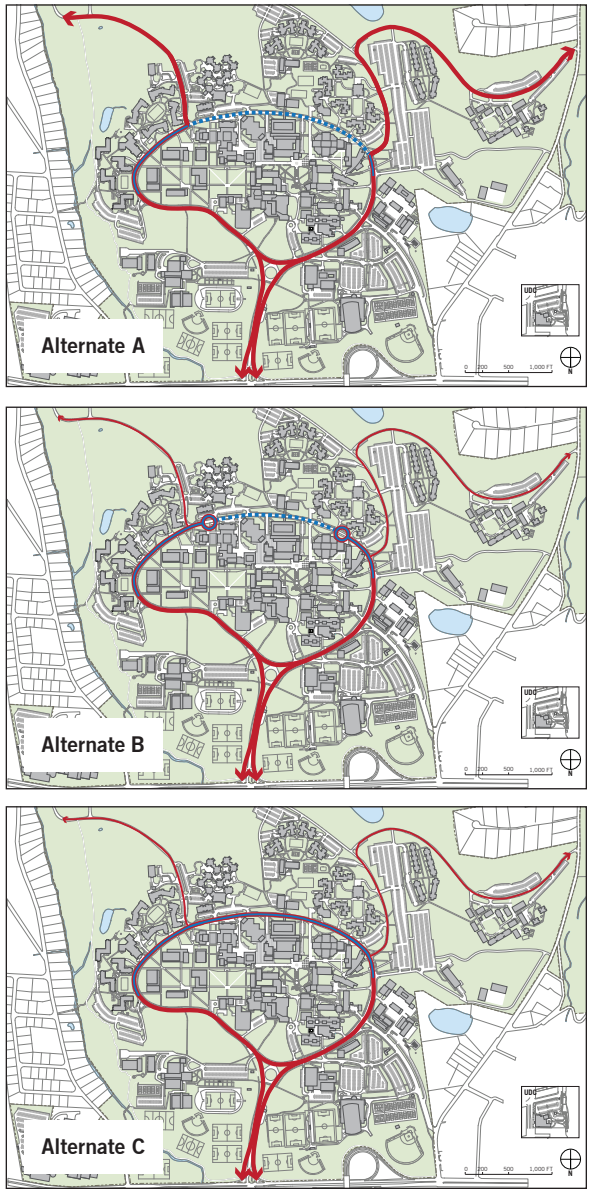


FIGURE 4.5.4B Roadway Alternates

ALTERNATE C: DEFINE ROADWAY ZONES

The plan gives definition and hierarchy to the roadways at BU's main campus by designating them as either a pedestrian preferred zone or a primary or secondary vehicular preferred zone. The different zone types are represented with different streetscape and landscape solutions. Organization by zones breaks up the campus into more local, unique places, which aids in campus placemaking and wayfinding. It also allows for sections of roadway to be more closely aligned with functional requirements. Each zone is described below in greater detail, and illustrated with diagrams on the opposite page.

Vehicular preferred zones. Main vehicular access routes, particularly those connecting between campus entrances and primary parking locations, are designated as vehicular preferred zones. These zones contain two lanes of traffic in either direction to accommodate a higher volume of vehicles. In key locations, one lane directly serves as an access lane to parking. Center Drive, the north portions of East and West Drives, and Bunn Hill Access Road are defined as the major vehicular preferred zones. East and West Access Roads and other peripheral roadways are identified as secondary vehicular routes as they are primarily used for vehicular traffic due to their location.

Pedestrian preferred zones. The portion of East and West Drives extending from the East Campus Housing to the Academic Complex is identified as a pedestrian preferred zone. This stretch of roadway divides academic functions within the Brain from residential functions outside the Brain, which results in a high volume of pedestrian crossing. This portion of the roadway remains open to vehicles, however strong traffic calming and traffic demand management measures are employed to reduce the overall volume and discourage causal passing through.

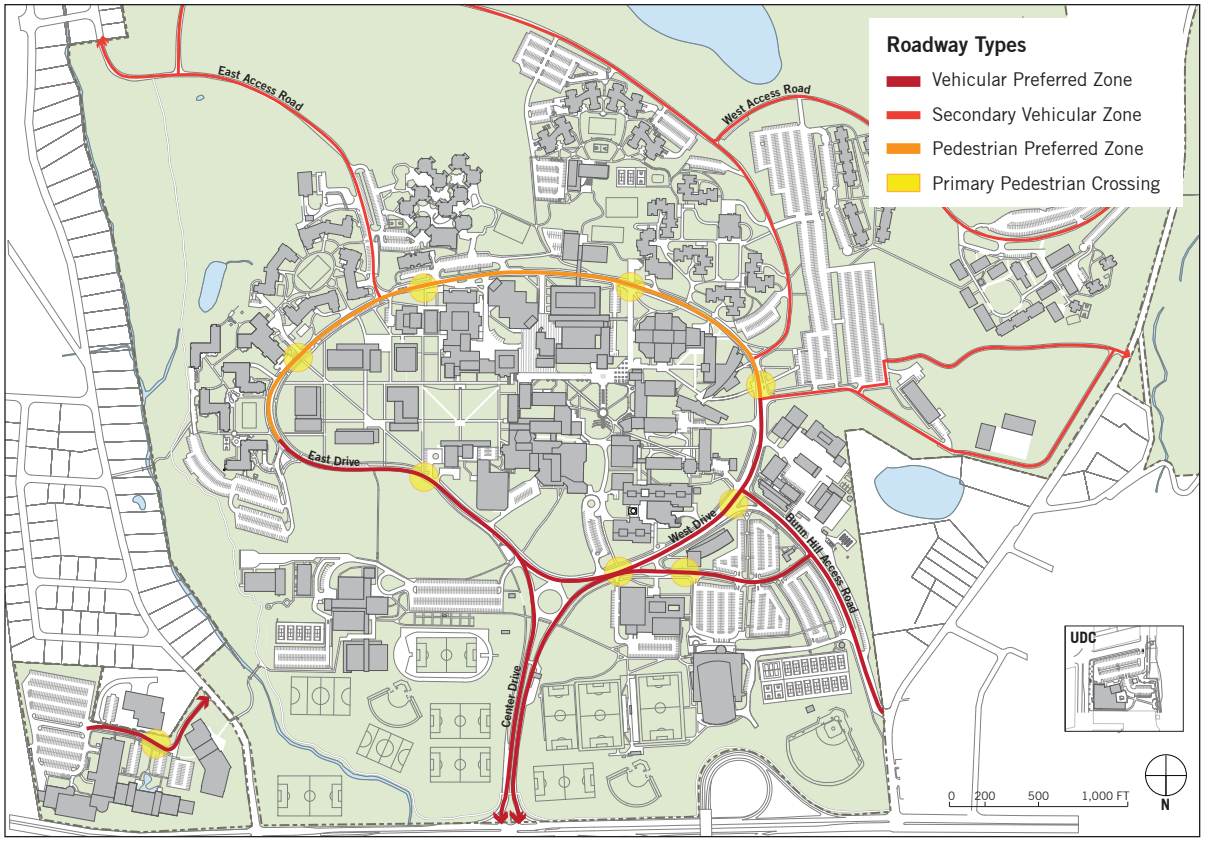


FIGURE 4.5.4C Proposed Roadway Types

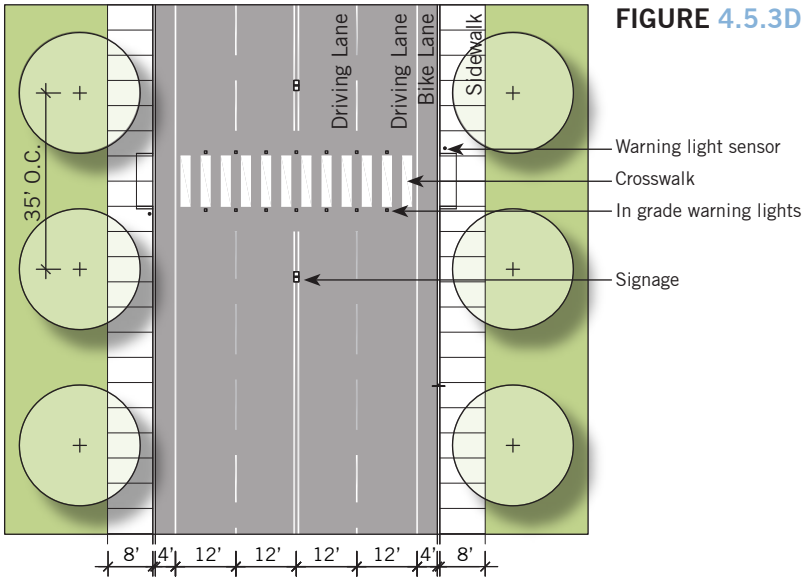


FIGURE 4.5.3D Vehicular Preferred Roadway Prototype

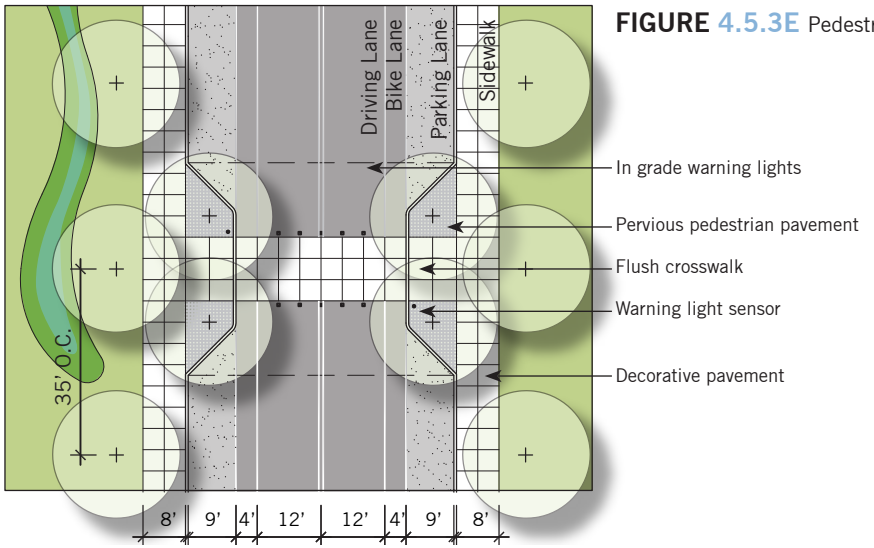


FIGURE 4.5.3E Pedestrian Preferred Roadway Prototype

REDUCE TRAFFIC WITHIN THE CAMPUS

While members of the BU campus community will rely on use of the automobile for travel to and from campus, it is possible to reduce the overall volume of vehicular travel within the campus. As the University's population grows, this will become increasingly necessary, particularly within the identified pedestrian priority zone.

To reduce the volume of vehicular circulation on campus, vehicles are routed directly from the entrances to parking destinations. The plan establishes two major categories of parking destinations, corresponding with primary user groups: first-time users or visitors, and routine users.

Users that do not fall into these two categories include those with disabilities that use accessible parking spaces and those with passes to park in designated locations, such as the Administration Building parking garage. The plan maintains parking amenities for these users, either at existing locations or with new facilities.

First time users and visitors. First time users and visitors are often less familiar with the campus and visit for shorter periods of time. Common destinations for this user group include the admissions office, the Alumni Center, the Administration Building, Clearview Hall or Science IV for participation in a study, the Globalization Center for a visit to the International Offices, or a designated campus location to visit a specific individual.

Parking for first time users and visitors is provided in closer adjacency to key destinations. The Q Lots and parking adjacent to the new Academic Center provide access to locations within the Brain. Parking at the drop off outside of the Administration Building and within the existing garage provide access to the Administration Building. Designated parking adjacent to Science IV and Clearview Hall provide access for those visiting to participate in studies.

Returning users. Returning users comprise the largest cohort of the daily campus population, and include the students, faculty, and staff members that come to campus on a regular basis. They visit a wide range of destinations across campus, with many visiting multiple sites within the course of a single day.

Due to the number of returning users, vehicular strategies for this group have the greatest opportunity to reduce the overall volume of traffic on campus. As such, users are encouraged to park in lots along the north side of campus that are directly accessible from the entrances without traveling through the pedestrian preferred zone. The plan also establishes a new entrance and arrival route for returning users off of Bunn Hill Road to access the M Lots.

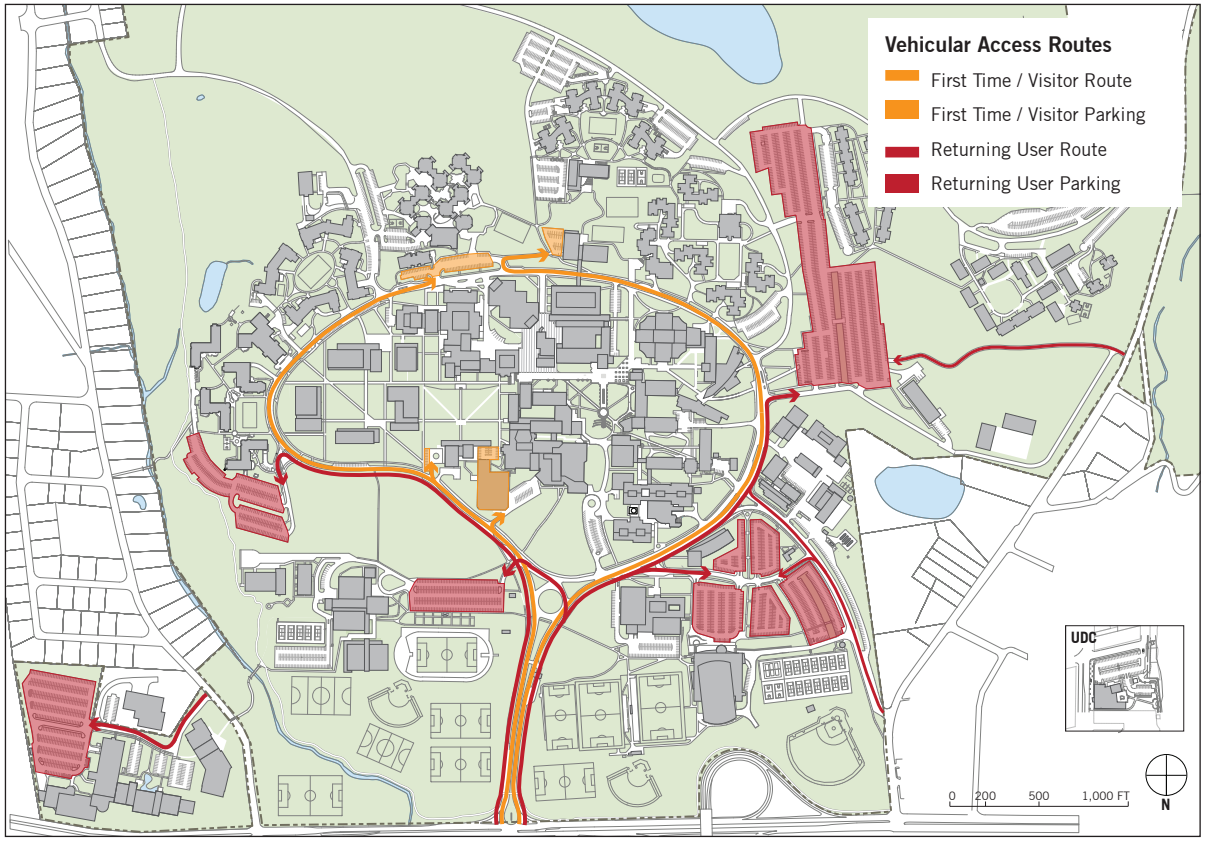


FIGURE 4.5.3F Parking Access Routes and Destinations

IMPLEMENTATION CONSIDERATIONS

Implementation of the vehicular strategies outlined in this section require a combination of physical campus upgrades and modifications to existing vehicular and parking policy. Upgrades to the physical campus are addressed through streetscape and landscape site improvements. However, in order to successfully reduce the volume of vehicular traffic within the campus, alterations to the physical environment must be complemented with policy modifications to define designated parking locations for different user groups and encourage a culture of alternate transportation at Binghamton University.

4.5.4 PARKING

Parking demand is directly related to the volume of single occupant automobile traffic on campus. As demonstrated, to effectively support the magnitude of future growth projected for BU, the overall volume of vehicular circulation and associated parking need must be reduced.

Binghamton University's main campus currently contains just under 7,000 parking spaces both in and around the Brain and at the ITC Campus. To provide parking for projected population growth at the same level as current parking, the number of spaces on campus would need to increase by 50 percent, or about 3,500 spaces. This quantity of parking would correspond with 26 acres of additional paved surface parking and have significant associated construction and operational costs.

Given the range of site constraints at the main campus, there does not exist sufficient land of an appropriate grade to accommodate this quantity of additional surface parking. Much of the land on the main campus west, south, and east of the Brain is characterized by significant grade changes. To level these portions for surface parking would take considerable effort and in most instances require the removal of significant tree cover.

As an alternative to surface parking on campus, the University could consider the development of structured parking or tiered garages. However, at the current time there are important procedural and policy hurdles that would need to be addressed in order to build more structured parking on campus. Given the relative costs, such new construction would very likely not be supported by special initiative funding. Instead, fees would need to be charged to pay down the debt service on bonds issued through a state agency, such as the Dormitory Authority of the State of New York (DASNY).

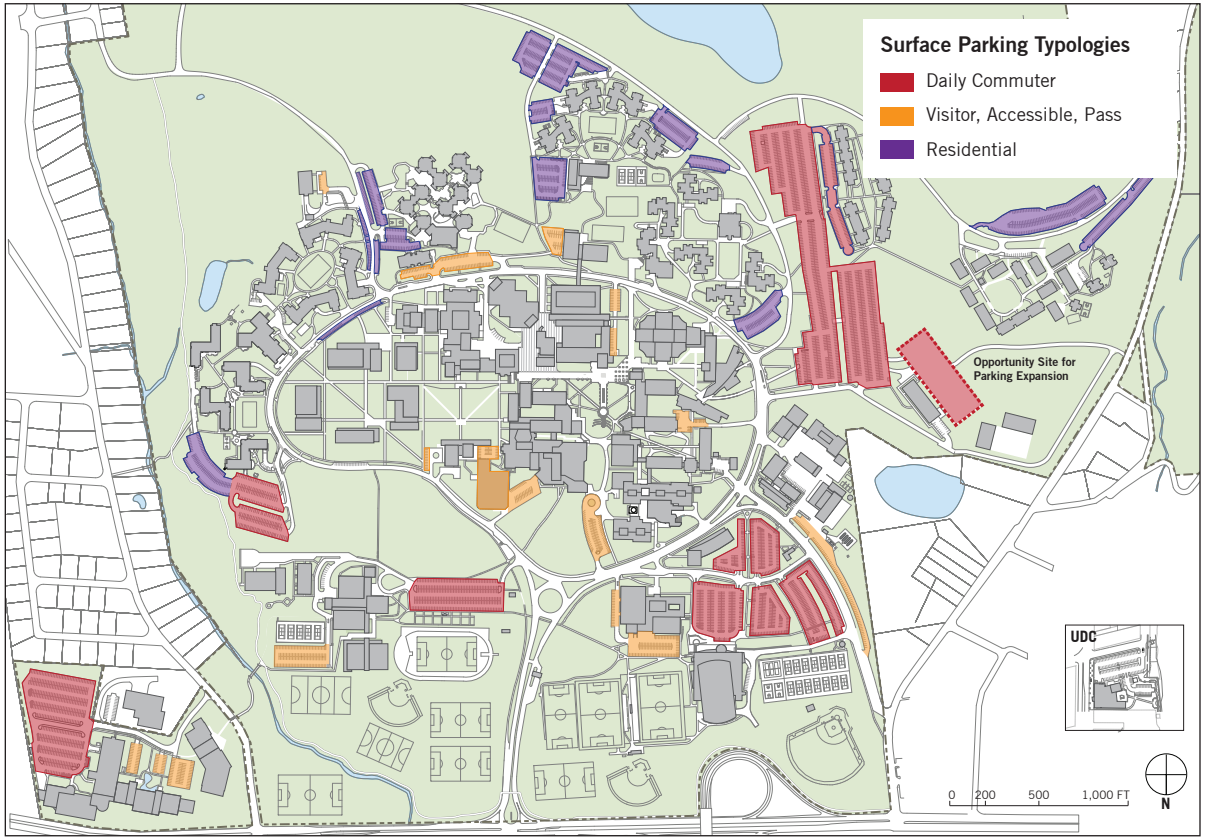


FIGURE 4.5.4A Surface Parking Typologies

NEAR-TERM: IMPROVE EXISTING LOT UTILIZATION

In the near-term, the parking strategy seeks to promote an evolution of parking practices on campus through key policy shifts. As a part of the broader intention to foster a culture of a walk-able campus and reduce the vehicular impact in and around the Brain, parking must be evaluated and designated differential value.

Clarifying the nomenclature of the existing distributed lots and associating those lots with specific values and parking passes, the University can begin to reduce the practice of searching for spaces and its associated vehicular traffic. Additionally, this practice allows the University to recognize that parking spaces located within and immediately surrounding the Brain and in other key locations have heightened value in the spectrum of campus parking. These spaces are crucial in supporting members of the campus community with disabilities, for University visitors and guests, and for service vehicle use.

MIDDLE-TERM: MODERATE EXPANSION CAPACITY

In the intermediate term it is advisable for the University to provide some moderate expansion to the capacity of parking on campus through the construction of an additional surface lot. Given the paucity of flat land conducive to surface parking the opportunities for such development are limited. The best apparent option is sited to the southwest of Clearview Hall: a modest lot that is well suited to minor regrading and paving. Furthermore, this location is proximate to the west entrance to the campus, supporting the attempt to direct vehicles coming onto campus as quickly as possible into lots in an effort to minimize single-passenger traffic around the Brain.

LONG-TERM: MEET FULL DEMAND GIVEN GROWTH

Given the anticipated significant enrollment growth, it will be necessary for the University to consider a range of options ranging from structured parking to policy changes. As noted above, to provide the existing ratio of parking to an expanded quantity of students and staff will require the creation of an additional 3,500 spaces by 2023. Given the improbability that this quantity can be accomplished entirely through the construction of parking garages it will be necessary to consider provision of remote parking lots likely connected to the main campus by OCCT buses.

4.6 Landscape

4.6.1 OVERVIEW

A strong landscape presence reflects the culture of a community and provide a sense of place, critical components of a successful university campus. The campus consists of varied components that serve many roles. It facilitates circulation and movement between built nodes, fosters interaction between members of the campus community, and provides designated places to support a wide array of activities, from large group assembly to individual reflection. Effective landscape design and networks of open spaces knit together disparate elements of a campus to create a cohesive whole.

Binghamton University's existing landscape at the main campus is characterized by a dualism of formal quadrangles and pedestrian spines at the Brain, balanced with pockets of wooded areas at the perimeter and sweeping natural zones around the periphery.

Future development at the main campus poses a significant opportunity to enhance the landscape and move it into greater alignment with the University's strategic plan. The following section outlines landscape recommendations for Binghamton University.

LANDSCAPE CHARACTER

Recommendations for landscape character outline opportunities to build a rich network of places and promote sustainable landscape solutions across Binghamton University's campus.

Build a rich network of places. From the Peace Quad, to the natural areas, to open spaces at each residential college, Binghamton University's campus already contains outdoor places that serve as the backdrop of campus life. The FMP builds on the network of places that define BU by enhancing what is existing and capitalizing on opportunities to create new. The plan defines a clear hierarchy of open spaces, aligns them with ideal functions, and outlines how landscape and building projects can optimize their ability to project the spirit of BU.

Promote sustainable landscape solutions. Binghamton University is ranked among the top green institutions in the nation for its culture of sustainability. In addition, the campus features abundant natural systems and landscapes, including varied ecosystems that range from woodland to marsh, and habitats for a wide array of species. The FMP preserves existing natural landscapes and builds on them by pulling threads of natural systems all throughout the campus. Additionally, the plan identifies opportunities for sustainable solutions at built landscapes, such as quadrangles and outdoor playing fields. These solutions showcase BU's commitment to sustainability and transform the campus into a teaching environment.

DESIGN OF PROTOTYPICAL SPACES

Prototypical spaces recommendations outline strategies to address landscape improvements at a campus entrance condition, major quadrangles and pedestrian spines, local quadrangles, and hardscape plazas.

FURTHER STUDY: LANDSCAPE MASTER PLAN

Given the findings of the landscape study conducted for the FMP, it is recommended that the University conduct a comprehensive landscape master plan. The recommendations in sections 4.5 Circulation and 4.6 Landscape of this report serve as the basis of a landscape master plan in terms of circulation organization, streetscape and pathway prototypes, landscape character and open space organization.

The recommended landscape master plan should study the following items in greater detail:

+ Development of standard campus site furnishings, such as lighting, trash receptacles, bus shelters, etc.,
+ Development of standard campus materials,
+ Development of a standard campus planting palette,
+ Development of a standard campus aesthetics guideline,
+ Development of a standard campus wayfinding and signage package.

Conceptual Site Plan Legend

1. Main Campus Entrance
2. Native Planting and Retention Pond Entry Feature
3. Peace Quad and Pedestrian Spine
4. Science Quadrangles
5. Engineering Plaza
6. University Commons
7. University Commons Expansion
8. ITC Campus
9. Pathway to ITC Campus
10. Parking Lot Bio-Filtration
11. Pedestrian Mall
12. Athletic & Recreation Fields
13. Existing Wooded Areas Adjacent to the Brain
14. Existing Natural Areas

FIGURE 4.6.1A Conceptual Site Plan

4.6.2 LANDSCAPE CHARACTER

BUILD A RICH NETWORK OF PLACES

Open spaces on at a university campus facilitate movement, provide place for formal gathering and informal encounters, and offer the opportunity for solitary study or respite. Well designed spaces on a campus effectively become a network of places that serve as the backdrop for campus life. This network of places projects the spirit of the university, and is central the student, faculty, staff, and visitor experience of the campus.

The FMP builds on the network of places that define BU by enhancing what is existing and capitalizing on opportunities to create new ones.

DEFINE A HIERARCHY OF OPEN SPACES

To support the wide range of activities that occur on a university campus, open spaces must be varied in size, formality, and landscape treatment. Establishing a hierarchy of spaces ensures that the full range of space types are provided. It also makes it easier for routine users and visitors alike to organize the campus in their mind, helping them to identify where they are and find their way to their destination.

A hierarchy of spaces categorizes campus locations along a range of typologies. The diagram on the opposite page illustrates the open space hierarchy established for Binghamton University. It defines spaces as campus entrance, major quadrangle, local quadrangle, hardscape plaza, or residential quadrangle.

Within the broader, consistent language of landscape treatment used at the campus-level, the opportunity exists to provide variation to the landscape character at specific zones. The following narrative outlines components of each category and identifies opportunities for unique treatment of the different components.

Campus entrances. The main entrance to Binghamton University's main campus is located at Center Drive off of Vestal Parkway. This entrance is retained as primary in the future. Landscape and signage interventions at the main entrance announce the presence and strongly project the spirit of BU to those traveling along Vestal Parkway.

The entry along Bunn Hill Road via the Bunn Hill Access Road is maintained as a secondary entrance to the main campus. It serves the functional role of leading more to key parking lots than the main entrance, and is less formally defined. Additional tertiary entry points are maintained at the East and West Access Roads, connecting through the campus natural areas.

The main entrance to the ITC Campus is located off of Murray Hill Road. Future construction of the new ITC Health and Natural Sciences relocates the entry drive to the south and provides opportunity to enhance the character of the space with landscape and signage.

Major quadrangles. Full development at Binghamton University's main campus features a rhythm of three quadrangles within the Brain: the University Commons, the Peace Quad, and the East Campus Quadrangle. The three quadrangles are defined by a compact arrangement of academic and student life buildings. The University Commons and Peace Quad are components of the existing campus that are retained and strengthened with future development. The East Campus Quadrangle builds on the existing framework of open spaces with future development at the East Campus.

+ **Formal landscape at the University Commons.** The University Commons is the western-most quadrangle within the Brain. It is defined by the Science Complex to the west, the Fine Arts Building to the East, and Bartle Library to the south. At its north edge, the University Commons blends into an linear open space that extends the length of the Brain. Reflecting the topography of the region, the quadrangle experiences significant topography change, moving downhill from Bartle Library to the north.

  Located at the existing academic core, the University Commons is formal in nature. Upon completion of a quadrangle rehabilitation project, the space will feature a linear pathway element running north-south, anchored by hardscape plazas at either end. The primary linear element is to be supported by a network of pathways that extend diagonally through the space to connect between primary destinations. Upgrades to the University Commons will also adjust the topography of the site in such a way that improves the view corridor from the south, extending from West Drive to the tower at Bartle Library. An opportunity exists to extend the University Commons to the south to showcase this view corridor in the entry sequence to the campus.

+ **A place for gathering at the Peace Quad.** The Peace Quad is located to the east of the University Commons. It is currently defined by the Fine Arts Building to the west, the Administration Building to the north, the Original Dickinson Community to the east, and the University Union to the south. The new Globalization Center will define the eastern edge of the Quad. The space has moderate topography change, with slight downhill movement to the north, as evident by standing runoff water.

  The Peace Quad is currently the eastern-most academic quadrangle at the main campus and is a culturally significant space for members of the University community to gather. With development at the east campus, the Peace Quad will become the central major open space, gaining in prominence and serving as a transition space between the east and west campus.

  Future development enhances the condition and usability of the Peace Quad through landscape upgrades while maintaining the character of the space as a place on campus for gathering. Prominent circulation axes are defined to connect the east and west sides of campus at the north and south edges of the space. An additional visual and physical corridor is established at the eastern edge of the space on axis with the new admissions addition to the Dickinson Dining Hall.

+ **Natural landscape at the East Campus Quad.** The plan establishes a new quadrangle at the east campus that is defined by future new buildings, including the Globalization Center to the west, new academic and professional buildings to the north and east, and a new student and academic center to the south. Prominent cross-campus circulation axes travel through the space along the north and south edges. The space is also located in close range of the new East Campus Housing.

  Binghamton University is committed to sustainable practices, as represented by its campus landscape and built environment, curriculum offerings, and the myriad of clubs and organizations around the theme. The East Campus Quad presents an opportunity to create a prominent open space at the heart of campus around a natural landscape. The space will have the effect of creating a sustainable micro-environment at the east campus while also serving as a working landscape to educate members of the campus community on the possibilities and benefits of naturalized landscape treatments.

Local quadrangles. A university's main quadrangles are supported by a series of secondary, local quadrangles. The spaces are often smaller and set back from primary pedestrian circulation routes. They serve as opportunities to create unique and more intimate senses of place within the larger landscape framework. Prominent local quadrangles at BU include the Sciences quadrangles, the University Commons extension to the north and south, the Peace Quad extension to the south, a new academic commons adjacent to the Interdisciplinary Academic Center, and the ITC Campus. Additional locations to define local quadrangles away from the Brian include the open spaces surrounding the Institute for Child Development and Child Care Center, as well as Clearview Hall.

Hardscape plaza. Hardscape plazas facilitate circulation among buildings in densely developed portions of a campus. Plazas evoke zones of more urban environment and provide places for different types of student programming. A hardscape plaza exists at the Engineering Plaza.

Outdoor fields and courts. Outdoor fields and courts support a wide array of formal and informal campus athletic, recreation, and physical activities. At BU fields and courts are clustered at the north side of campus along Vestal Parkway.

Residential Quadrangles. Each residential college is formed around an open space or series of open spaces. The residential colleges form smaller, localized sub-communities within the University. BU students often forge strong connections with their residential college and identify it as a defining element in their university experience. In keeping with the culture of distinctly defined residential college experiences, the opportunity exists to define unique landscape treatment for each college.

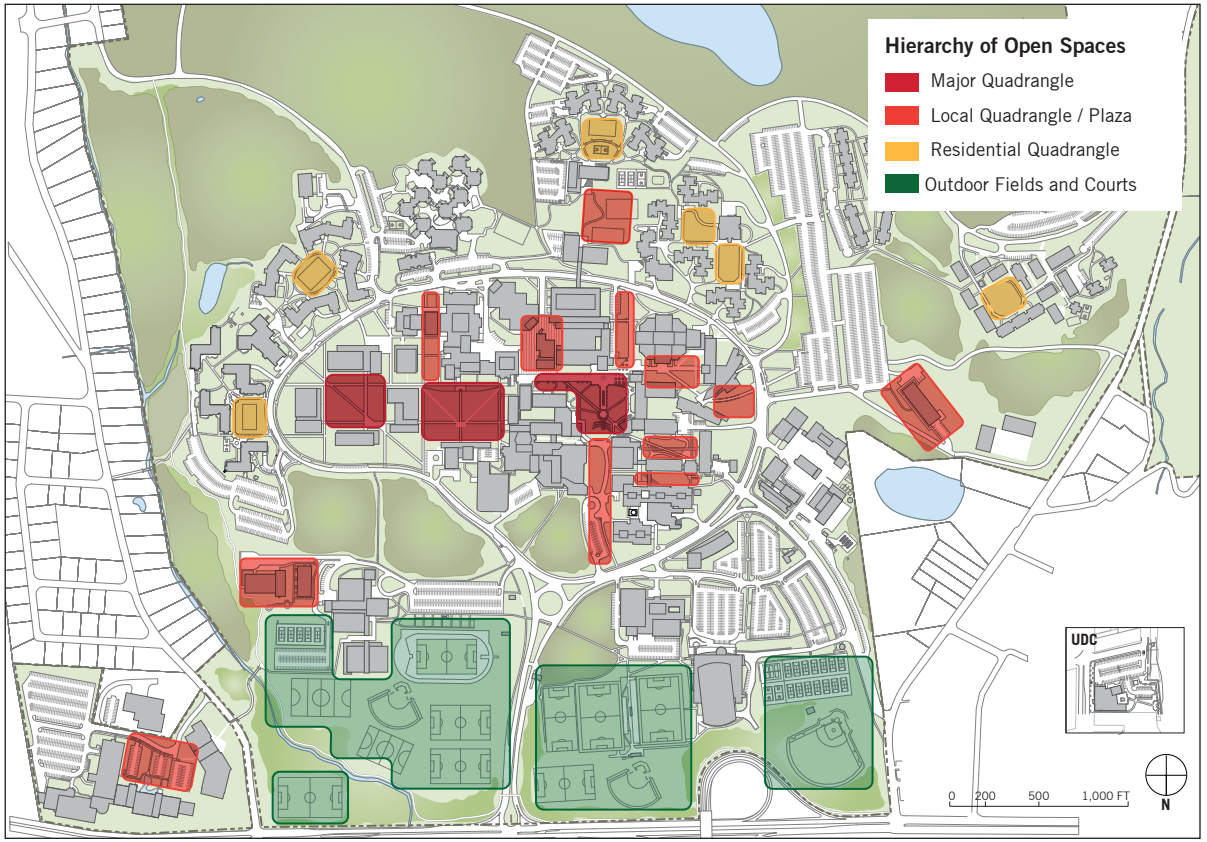


FIGURE 4.6.2A Hierarchy of Open Spaces

OPTIMIZE THE PEDESTRIAN EXPERIENCE

As described in the circulation plan, to support its future campus population Binghamton University must improve the walkability of its campus and foster a culture of pedestrian circulation between campus locations. Walking is a sustainable mode of transportation that also has associated health benefits. The plan outlined in section 5.5.2 Pedestrian Circulation identifies strategies to enhance campus walkability by clarifying existing routes and providing new routes to create a network of pathways with strong connectivity between destinations.

The campus landscape is also a critical component in providing a successful pedestrian experience. Effective landscapes for pedestrian circulation achieve the following:

+ **Clearly connect between destinations.** A fundamental role of pedestrian routes is to connect between destination points on campus, including buildings, outdoor amenities, and parking. Pedestrians often travel along the most direct route between locations; pathways should be provided along these lines of demand and scaled according to the flow of traffic along the route. Landscape helps to clearly define pedestrian routes. The width and treatment of the paved surface provides hierarchy within a network of pathways. Plantings and trees define the edges of pathways and reinforce visual axes.
+ **Foster interaction between members of the campus community.** As members of the campus community move around campus, informal encounters and gatherings often occur. The network of pathways can support such interaction by providing sufficient width to allow for groups of people to walk together and pass each other. Additionally, benches and gathering areas located immediately off of pathways provide designated places for pedestrians to stop and gather.
+ **Provide rich landscape treatments.** Landscape treatments that incorporate a variety of color, texture, and size enhance the pedestrian experience of moving around campus. Where possible, native species should be selected to reduce maintenance requirements and ensure the success of the landscape environment. Natural environments also create working landscapes that may be used as teaching tools within the campus.

PROMOTE SUSTAINABLE LANDSCAPE SOLUTIONS

CREATE THREADS OF NATURAL LANDSCAPE THROUGHOUT THE CAMPUS

Binghamton University's campus features a large natural zone along the southern portion of the site, and additional pockets of natural zones located in and around the Brain. With future development a thread of natural landscape is pulled from the south side of the campus around the eastern edge to the north side, defining the edge along Vestal Parkway. A pathway is provided through the natural zone, extending the network of pathways at the natural areas. This extension showcases the campus' natural landscape along Vestal Parkway and projects the University's commitment to sustainability to the community.

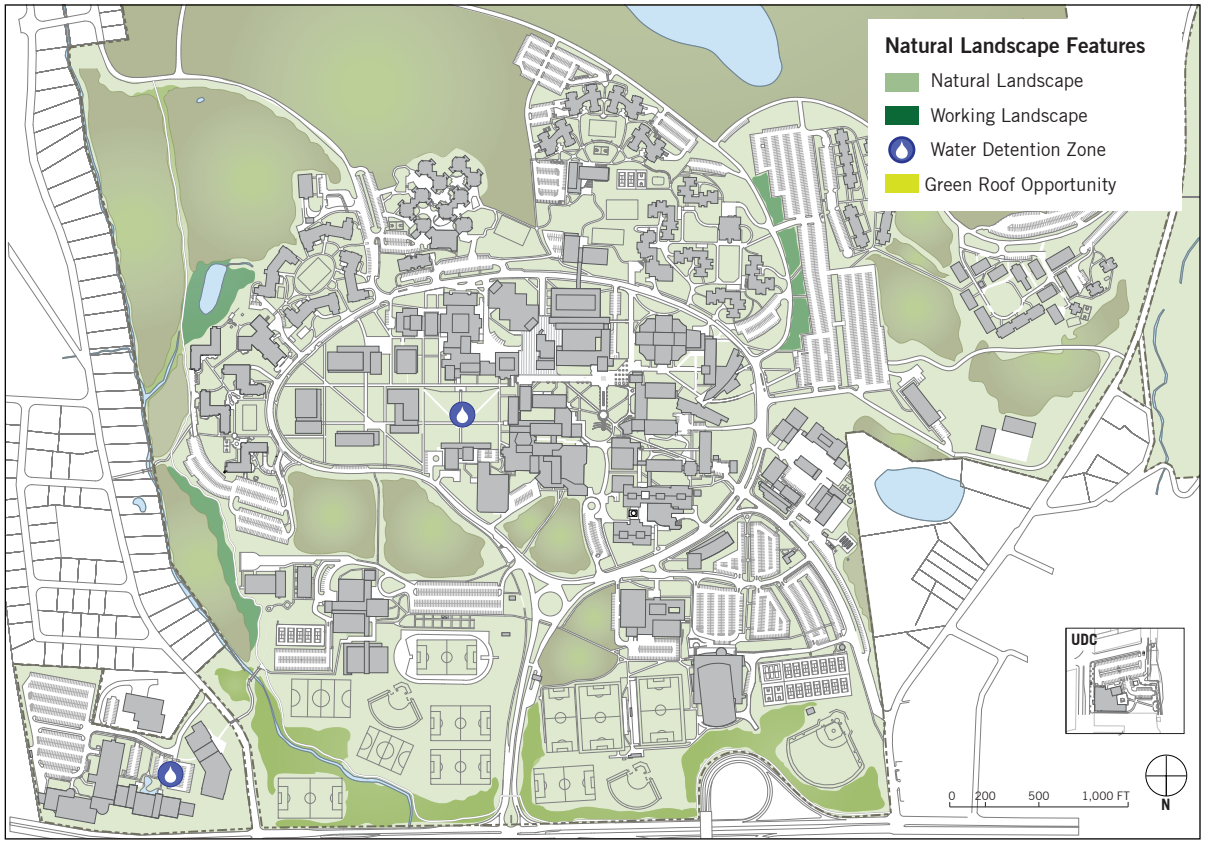


FIGURE 4.6.2B Opportunities for Sustainable Landscape Solutions

4.6.3 DESIGN OF PROTOTYPICAL SPACES

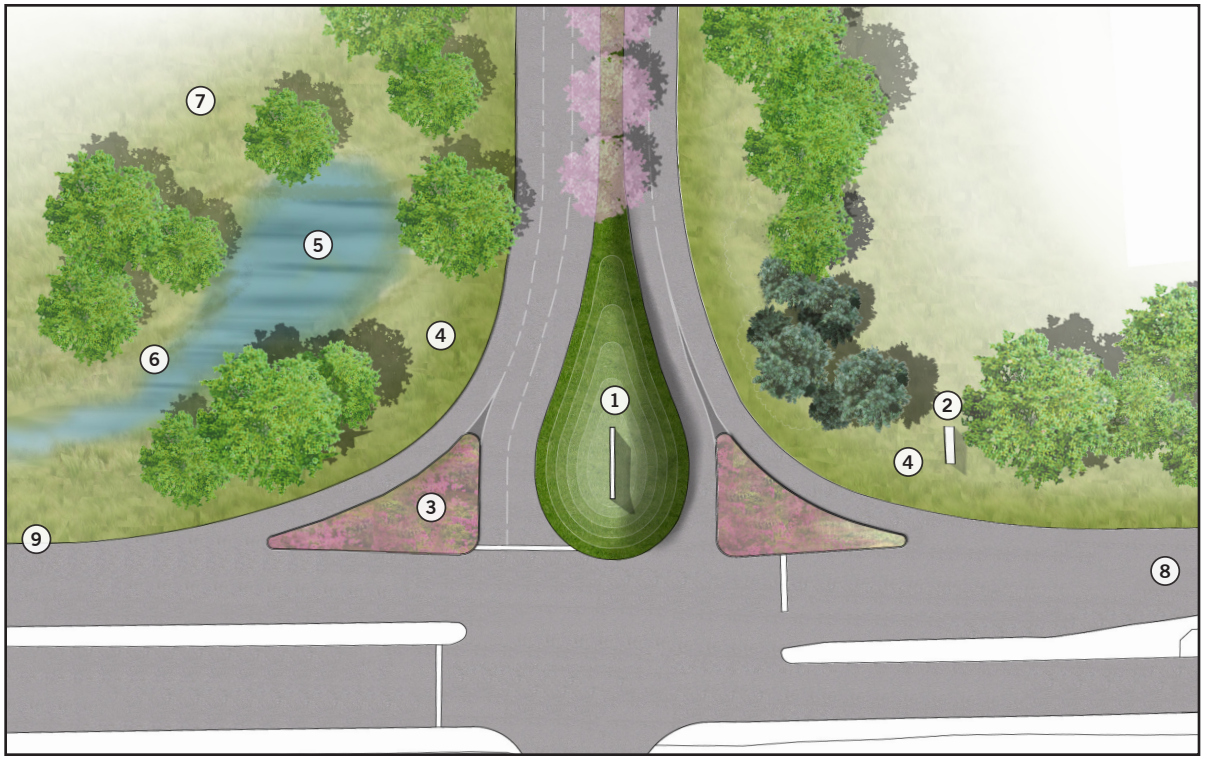
CAMPUS ENTRANCE

The proposal for the main entrance enhancements seek to project the spirit and identity of the University along Vestal Parkway while improving circulation the circulation and primary gateway into the campus.

Rolling down the grade at Glenn G. Bartle Drive to the Vestal Parkway, the median grows out of the ground into a mound that reflects the rolling hills of the region and campus natural areas to the south. A sign rises from mound, prominently identifying the University. The earthscape and signage draws attention to the University from the Parkway and provides a strong sense of separation for those entering and exiting campus.

The existing stands of large evergreens and shade trees provide the backdrop of the view toward the University for those traveling along Vestal Parkway. At the ground level, treatments of natural grasses and retention ponds buffer the recreation fields. Traffic islands planted with seasonal perennials add color and layer to the entrance composition. Together, the natural treatments complement the manicured mound and convey the University's commitment to sustainable practices.

The treatment of natural grasses and retention ponds along Vestal Parkway and at the entrance also aids in campus storm water management, collecting and filter storm water from the entry drive and recreation and athletic fields. This strategy harkens to the campus site's pre-development history as agricultural land and transplants seeds of the ecological preserve from the campus backyard to the front door, while also reducing maintenance and operations costs. Additionally, the strategy enhances the aesthetic quality of the campus' public face and strengthens the presence along Vestal Parkway and within the surrounding community.



Main Entrance Legend

1. Grassed Entrance Mound with Signage
2. Legacy Harpur College Sign
3. Traffic Island with Seasonal Perennial Planting
4. Native Grass Planting
5. Water Retention Pond
6. Gabion Retaining Wall Edge
7. Earth Mound Barrier to Recreation Fields
8. Vestal Parkway
9. Existing Power Lines Run Underground

Main Entrance

MAJOR QUADRANGLES AND PEDESTRIAN SPINES

Major quadrangles are often distinguishing features of university campuses. Binghamton University's main campus currently contains two major quadrangles, the University Commons and the Peace Quad. Future development and academic expansion at the East Campus will create a third major quadrangle bring greater prominence to the Peace Quad as a central campus open space.

Peace Quad

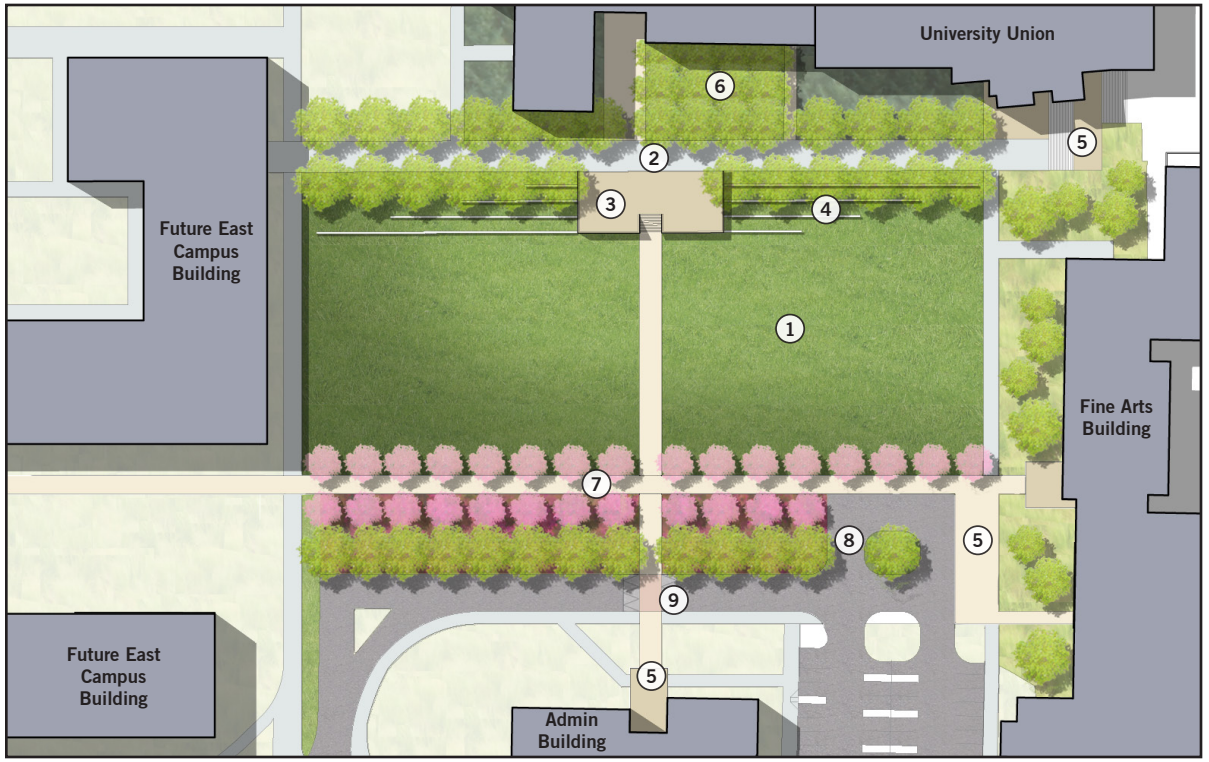
The Peace Quad has a rich history at Binghamton University as a place for the collective voices of campus community. Given its history and adjacency to the University Union and surrounding student precinct, the Peace Quad is established as a civic center for the student body. A large grassed area encourages regular passive use as well as formalized gatherings.

The Peace Quad is a key space along major east-west pedestrian corridors across the Brain. As such, strong walkways are established along the north and south edges of the space. The southern spine extends the Lois B. DeFleur walkway, and bears similarities in scale, function, and treatment. Long seat-walls extend along the spine, capturing grassed planes that step down from the walkway to the Peace Quad lawn. At the center of the walkway, a raised overlook platform supports campus functions and gatherings.

The northern spine extends from a new pedestrian circulation path established through the Fine Arts Building to connect to the East Campus. Both pedestrian spines facilitate transition to the Peace Quad and establish a framework of entry plazas. Secondary pathway connections are proposed to connect to the Administration Building from the University Union, West Campus, and East Campus.

Landscape elements frame and reinforce circulation corridors. The southern walkway is flanked by large shade trees to provide a more formal canopy. The northern spine from Fine Arts is an alley of cherry trees to provide a more intimate sense of scale and enclosure.

Parking is removed from the quadrangle, but an access drive to a drop-off in front of the Fine Arts Building and parking to the west of the Administration Building is maintained.



Peace Quad Legend

1. Peace Quad Lawn
2. Pedestrian Spine Extension
3. Overlook
4. Lawn Steps
5. Lawn Entry Plaza
6. Cafe Bosque
7. Cherry Walk
8. Vehicular Drop-off
9. Crosswalk with Speed Table

Peace Quad

LOCAL QUADRANGLES

A university's main quadrangles are supported by a series of secondary, local quadrangles. The spaces are often smaller and set back from primary pedestrian circulation routes. They serve as opportunities to create unique and more intimate senses of place within the larger landscape framework.

A successful network of local quadrangles are approached with consistent strategies to impart a cohesive quality to the campus. Binghamton University's local quadrangles should organize circulation based on use, introduce native plant material, and capitalize on existing topography and hydrology.

Science Quadrangles

Quadrangles at the Sciences Complex are examples of a local quadrangles at the main campus. The quads are conceived of as softer and more sustainable, and they provide the campus community with spaces for a range of passive of passive activities.

The framework of the quadrangles is functionally drive by patterns of circulation and observed uses. A direct path serving as a primary organizing force is provided from the University Commons to the main entrance of Science II. Additional connections link east-west between the main entrance of the Library and Science II, and from the upper quadrangle north-south the lower quadrangle.

The pathways create a range of spaces within the southern quadrangle. A lawn is enclosed to the south, capturing prime sun, for passive recreation, studying, and lounging. Smaller gathering spaces marked by bosques of trees with movable seating are established at the intersections of main walkways.

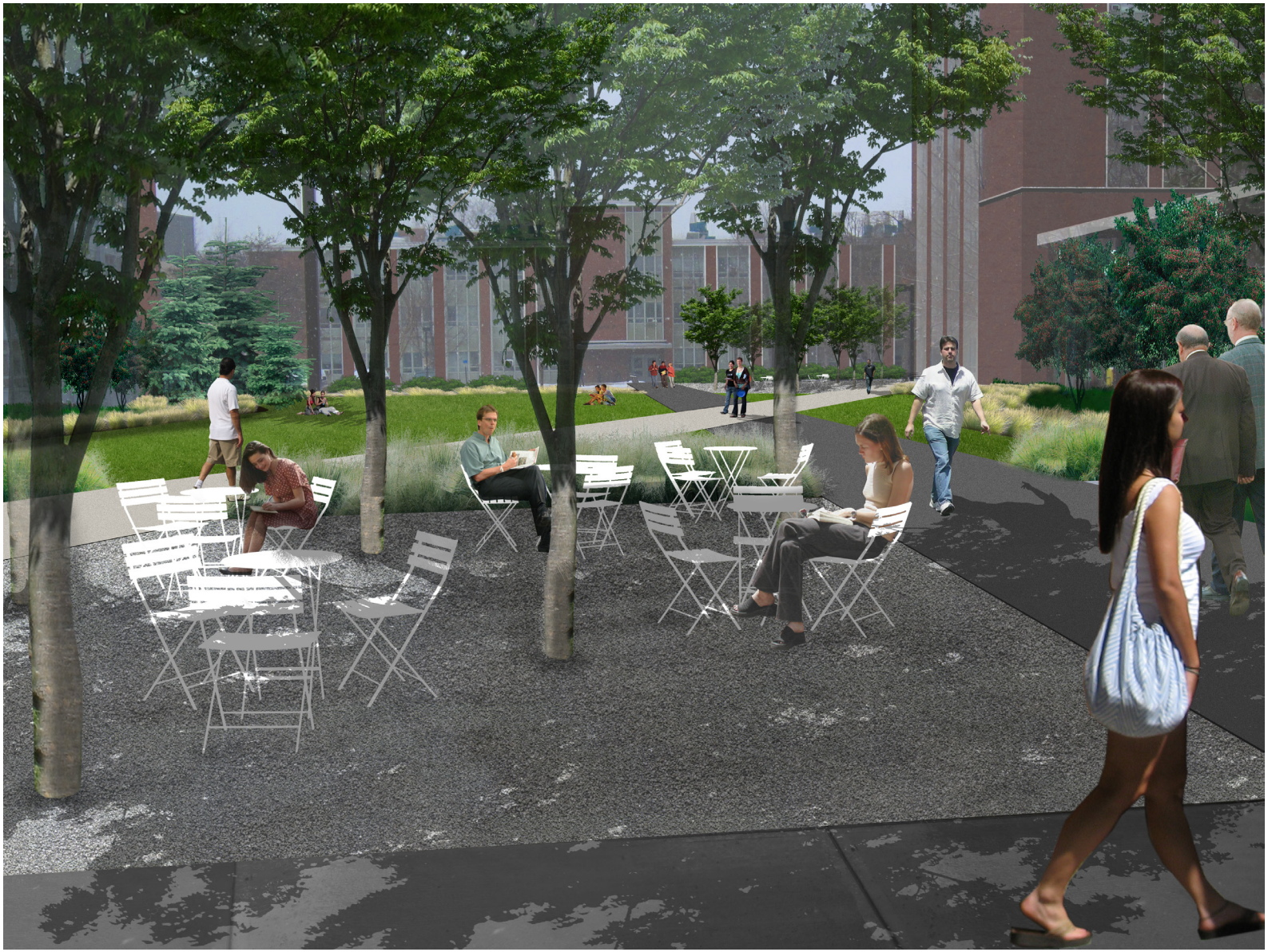
A variety of planting limits the quantity of mowed lawn and introduces native plant species that reference the campus' natural areas. This has the dual benefit of establishing habitat for wildlife and reducing maintenance and water requirements.

The lower courtyard builds upon existing topological and hydraulic conditions by reducing the amount of pavement in a largely circulatory space and encouraging the pooling and infiltration rainwater in situ.

Science Quadrangles Legend

1. Lawn Area
2. Seating Bosque
3. Deciduous Forested Area
4. Native Planting - Shrubs
5. Native Planting - Grasses
6. Evergreen Screen
7. Plaza
8. Access to Main Quad
9. Service Drive
10. Bioswale

Science Quadrangles



HARDSCAPE PLAZAS

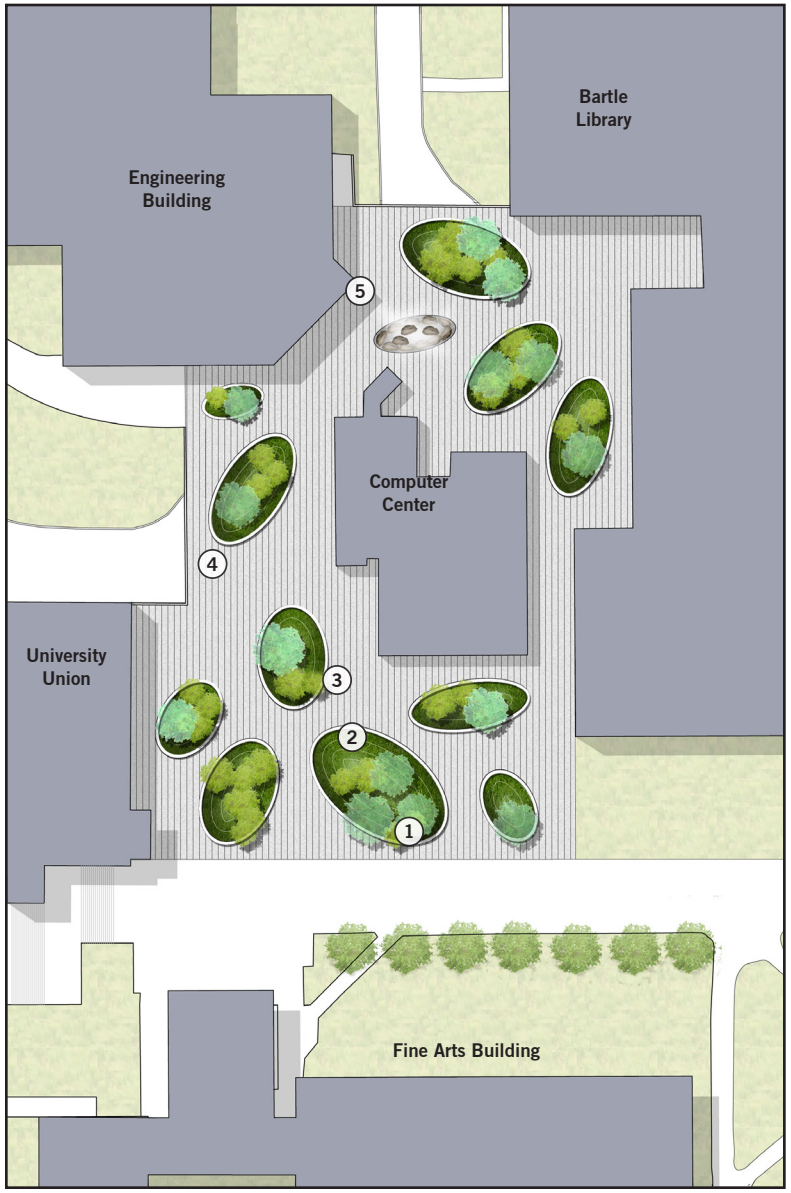
Hardscape plazas facilitate circulation among buildings in densely developed portions of a campus. Plazas evoke zones of more urban environment and provide places for different types of student programming.

Engineering Plaza

The Engineering Plaza is a zone of hardscape located between the Engineering Building, Bartle Library, University Union, and Computer Center, all buildings of concrete and brick. The Plaza is a raised, waterproof slab deck that serves as the roof to a service area beneath. In its current condition it is nearly devoid of greenery.

To evoke a sense of place at the Engineering Plaza and encourage members of campus community to occupy the space, greenery is introduced in a series of freestanding planters. The planters vary in size and planting material, evoking clusters of forest that have been transported to the urbanized court. They are situated to allow for free-flowing traffic through the stands of tall trees, shrubs, and grasses, gently suggesting movement in the plaza.

The surface of the Plaza is paved in a corduroy paving at a right angle to the Lois B. DeFleur Walkway, encouraging movement into the space. Planters adjacent to the walkway are oriented to further draw pedestrians in.



Engineering Plaza Legend

1. Lois B. DeFleur Walkway
2. Earthen Mound Planter
3. Seatwalls
4. Corduroy Paving
5. Fountain

Engineering Plaza

4.7 Technology & Security

4.7.1 TECHNOLOGY SYSTEMS

BACKBONE

The existing technology infrastructure has sufficient physical capacity to support all existing and near-term requirements for the campus. As additional buildings are constructed, new underground pathways must be installed and new fiber optic backbone cable must be pulled in order to connect each to the existing signal duct banks and network. The only limitation is the physical constraints of existing duct bank system; especially inside "The Brain".

The process of upgrading all existing backbone connections to 10 Gbps should continue, in order to accommodate all current and future deployments of high-speed network applications. It is also important to have a high-capacity backbone in-place to support anticipated higher-levels of technology convergence. Security, BMS, and CATV will invariably be traveling over the backbone in one way or another, in spite of the fact that they aren't doing so right now. All backbone connections should be upgraded as soon as possible in preparation for next capital plan cycle and associated construction expansion projects and existing building renovations.

The only observed deficiency is the physical redundancy of fiber optic backbone connections which can be improved in certain areas of the campus (specifically the east side of campus). There may be an opportunity to improve redundancy when the proposed East Campus expansion construction projects commence. Redundancy is not critical to the functionality or speed of the network, but can have a major impact on functionality if an existing backbone link is damaged. Potential network failures are always a possibility without full network redundancy in place.

PATHWAYS

The entire signal duct bank system should be surveyed and analyzed for current capacity and future expansion. Additional duct banks should be added as required and feasible, and should be coupled with other underground infrastructure projects on campus (specifically the proposed East Campus expansion projects).

Cable pathways within existing buildings (both vertical and horizontal) should be improved in anticipation of proposed renovation projects. Re-wiring of buildings is challenging due to concrete masonry construction and ad-hoc locations of Telecom Rooms. New cable trays and/or wiremold pathways should be installed on each floor to properly manage horizontal cable runs. In addition, Telecom Rooms should be relocated so they are vertically stacked within each building, making intra-building backbone cabling runs much easier.

DATA CENTER

The room needs some targeted HVAC ductwork upgrades to strategically deliver cooling to hot spots. In-row cooling systems and/or aisle-containment systems may need to be deployed to alleviate this problem. The total overall HVAC capacity is sufficient for current and near-term future equipment deployments. There is expansion space for more systems, with the limit being the available power and cooling capacity; the space may be needed with any future technology changes such as virtualization of computer PODs.

BACKUP POWER

The campus should continue to install UPS and emergency generator power feeds in all Telecom Rooms and CDF locations, to be ready to support the continuous rollout of POE enabled data switches, VoIP technology, and convergent systems across campus.

WIRELESS SYSTEMS

Benefits of wireless systems for a Campus environment include the following:

+ Revenue - A wireless network presents potential revenue-generating opportunities. For example, universities could charge visitors for wireless Internet access. Also, colleges that may have once charged for long-distance phone services, but have seen such opportunities evaporate in recent years, might consider introducing wireless VoIP services to students.
+ Competitiveness - Today's students are more technologically savvy than ever. Wireless access throughout campus and student living areas helps academic institutions compete for students and faculty.
+ Innovation - By fostering a more collaborative and creative learning environment, wireless technologies enables the university to better support its academic mission and research objectives.

Students and faculty are quick to embrace new technologies for convenience and "just because." While many organizations begin to adopt wireless for basic Internet access, university users want access to advanced applications such as wireless Voice over IP (VOIP), which demands higher levels of quality of service to ensure reliable network performance along with less disruptive handoffs between APs as users move across the campus.

Wireless LAN systems should all be upgraded to 802.11n, the latest WLAN standard, in order to handle increased traffic and high-bandwidth audio and video applications from mobile users.

Cellular system coverage on Campus was deemed to be fairly complete by the IT staff. As the reliance on cellular devices by students and faculty increases, it will be important that the campus provide ubiquitous cellular service within all levels of each building. Distributed antenna systems (DASs) should be installed in areas that require this type of augmentation such examples include

+ Basement floors of buildings containing classrooms or research spaces
+ New buildings with glass exteriors that prevent penetration of cellular signals

CONVERGENCE

Make recommendations on Sec, FA, BMS riding on network backbone. (i.e. redundancy and parallel networks).

FUTURE TECHNOLOGIES

A technology that may be implemented on campus sometime down the road is desktop PC virtualization. This technology separates a personal computer desktop environment from a physical machine using a client–server model of computing.

The resulting "virtualized" desktop is stored on a remote central server, instead of on the local storage of a remote client; thus, when users work from their remote desktop client, all of the programs, applications, processes, and data used are kept and run centrally. This scenario allows users to access their desktops on any capable device, such as a traditional personal computer, notebook computer, smartphone, or thin client.

Advantages of desktop virtualization include

+ Improvement of the data integrity of user information since all data is maintained and backed-up in the data center.
+ Simpler provisioning of new desktops
+ Reduced downtime in the event of server or client hardware-failures
+ Lower cost of deploying new applications
+ Desktop image-management capabilities
+ Longer refresh cycle for client desktop infrastructure
+ Secure remote access to an enterprise desktop environment

The major impact of this technology is that it will occupy additional space in the Data Center, which means it will need additional power, cooling, and network cabling within that room. As stated before, there is expansion space in the Data Center for new systems deployment, which may be necessary if this technology is eventually implemented on campus.

BACKUP SITES

Currently, the main Data Center is not backed up by a disaster recovery data center (although some servers on Campus are mirrored to other locations). The IT group mentioned that a backup Data Center is to be fit out within the Innovation Technology Complex's research data center. This room should be properly fit out with the correct amount of HVAC and EM power to act as successful DR site for the main Data Center. Otherwise, the IT group should research off-site opportunities such as a co-location facility, for backup and disaster recovery.

Other recommendations to improve existing systems are as follows:

+ The existing buried signal conduit and manhole system should be cleaned out of all legacy and unused copper cables to provide capacity for future cable installations around campus.
+ All existing inter-building and intra-building 62.5 µm multimode fiber optic cable should be replaced with 50 µm laser optimized multimode cable (OM3 rated) which will support 10 Gbps network speeds up to a distance of 300 meters (almost 1,000 feet) with relatively low-cost emitters. If longer distances are required then OM4 rated fiber optic cable should be installed (for links up to 550 meters).
+ Existing Telecom Rooms located in hazardous locations should be protected in the best possible ways, such as constructing drywall partitions, moving equipment into locked cabinets, etc.

4.7.2 AUDIO / VISUAL SYSTEMS

Recommendations listed in this section are based on information gathered from the SUNY Binghamton Information Technology Services (ITS) and the Audio Visual services support sub-group, as well as from their support website.

TECHNOLOGY ADMINISTRATION

The campus has a dedicated Audio Visual support staff in place to assist and maintain the audio visual classroom systems. The group has extensive documentation of the specific systems and contents of classrooms and lecture halls posted on their website, known as the 'Educational Communications Center'. The dedicated Audio Visual support website is easy to use and informative. We would suggest that there be careful maintenance of the site, to keep it up-to-date and current. Allocations for this effort are solid investments, because they free support staff that would normally be forced to train new users. This will have a positive impact on overall system availability and uptime.

The website is designed as a 'self-help' tool to enable end-users to reserve and identify the required audio visual components of various rooms on the campus. The interface is intuitive and arranged in the form of a FAQ, with the ability to search for a specific room. Additionally, there are extensive system wiring diagrams and images of the installed systems within each room description. This comprehensive approach facilitates self-help for scheduling rooms based on the type of technology required for a specific presentation, and eases the demand on the IT staff for day-to-day operational support. There is also a section within the room equipment lists that shows the date of last renovation for that particular room, which could play an important role in the selection of a room for a specific type of presentation or course. As above, this online documentation needs to be regularly maintained to remain effective.

CLASSROOM AUDIO VISUAL SYSTEMS

The classroom audio visual systems are compartmentalized within each room; the systems that are utilized within the room are generally located within a "Multimedia Podium" that is used to house the associated equipment, and as a surface for the instructor to place materials or equipment on during a lecture.

The school has taken a "tiered" approach to the audio visual systems installed in the classrooms. The tiered approach consists of various levels of installed systems within the classrooms, depending on the location and type of room. Therefore, there are more complex rooms available for larger and more content-rich presentations or lectures when necessary. This approach also tends to slowly transition the staff and students to leverage the installed systems as part of their learning and interacting environment.

The basic tiers are as follows;

Basic Technology Classroom

+ Projection screen, Overhead projector
+ VHS Playback (with video monitor or projector, determined by room size)
+ Black Chalkboard
+ Laptop Ready Classroom
+ Basic Technology equipment plus:
+ Network connection at teaching station
+ Computer display for PC & Mac laptop computers
+ Campus cable television
+ Telephone (restricted to on-campus calls only)
+ Lighting controls, Window treatment
+ Sound system (determined by classroom size)
+ Shelf and wiring (power and remote control) for Slide Projector
+ Projected image and chalkboard can be used

simultaneously

+ Document Camera/Visual Presenter (e.g. Elmo)

Multimedia Classroom

+ Laptop Ready equipment plus:
+ PC & Mac installed
+ DVD player, Slide Projector, Cassette deck (audio)

USER INSTRUCTIONS

Instructions for use of the audio visual systems are clearly defined within a set of 'how-to' videos on the campus website. The instructions are easy to follow for untrained users; the systems are designed to be consistent so that a user can use any room without needing specific instructions or training. There is some disparity in the age of equipment within some of the campus areas, as a technical refresh appears to be due to bring the systems up-to-date. Generally, the age of the systems does not seem to affect the operational requirements of the older rooms- but the reliability is adversely affected. Replacement of failed equipment can also present an operational issue, since there is no assurance of backward compatibility with new replacement equipment. Recommendation: The user instructions must continue to be updated continuously through the life of the systems, to retain relevancy. The dedicated A/V staff should set aside time to maintain this knowledge base.

OVERHEAD PROJECTORS

The overhead projectors currently installed throughout the campus are either SVGA (800x600) or XGA (1024x768) resolution. The units appear to meet the current display requirements and user needs adequately. The ongoing maintenance costs and the supply of spares for the existing projectors will make it desirable to perform an equipment upgrade within a year. Recommendation: The older projectors on campus should be upgraded to a 'standard' brand and appropriate output range. This will meet new 'graphic-intense' presentation needs, as well as reduce the amount and variety of spares needed to support the campus. A current 'spares database' should be kept by the A/V staff to prevent extended downtimes due to equipment failures.

DVD AND VHS PLAYERS

The playback source units, such as the currently-installed DVD and VHS players are somewhat dated and will soon need to be upgraded. The requirement for obsolete technology like VHS format content continues to persist due to the lack of copyrighted instructional content on DVD. As the transition is made to digital media, the need for VHS will diminish. The effort to convert content to digital formats should be well underway already. Recommendation: DVD and BluRay players are an integral part of digital media presentations, and should be made widely available in campus classrooms.

PORTABLE OVERHEAD PROJECTORS

Portable overhead projectors remain a viable method for displaying handwritten notes, marked-up documents, and images that are not digitized. They can be essential for annotation in real-time for printed documents, and continue to be a mainstay for many instructors. The equipment itself will eventually be phased out of the environment by digital capture devices, but the transition will likely not occur for a few years. The equipment available on-campus appears to be a bit dated but serviceable. Recommendation: Overhead projector stock can be retained and upgraded as required by teaching staff, however the campus should plan to transition to digital media types. Smartboards are an example of digital document markup devices.

Audio Cassette Players

The audio cassette players are quite obsolete, and should be transitioned into the digital domain as soon as possible. The degradation of quality from playback and the probability that there will eventually be a complete loss of recorded data via tape failure are important considerations. Digital media storage is inexpensive, just as easy to use, and much simpler to transport. If portable audio recording devices are required they should be digital and hard-memory based. Recommendation: Replace the analog equipment currently installed with digital devices, preferably standardized across the campus.

DISTANCE LEARNING SYSTEMS

There are a few instances on campus where distance learning systems are implemented. The transition to distance learning on the whole depends on numerous factors. The campus network must be designed with the increased demands that a large distance learning infrastructure would require. There would need to be more extensive training and support for the faculty and staff to use the systems effectively. There would also need to be a significant investment in network video storage and retrieval of recorded events and seminars. Similar investments must also be made at the "far end", to fully utilize the systems. There are already systems in place and efforts underway to further the above goals on the campus. No timetable has been given regarding milestones or requirements. Recommendation: Distance learning and lecture recording systems are rapidly becoming vital to the educational environment. They can be utilized as profit centers, marketing tools, learning aids, and for general admissions outreach. The use of teleconferencing equipment by corporations and even individuals has greatly increased reliability and compatibility between systems. This benefits educational institutions through lowering costs of ownership and use, and preventing early obsolescence. The campus should be upgraded to include a number of distance learning-capable classrooms in order to realize the benefits that can be attained through familiarity and connectivity of such systems.

4.7.2 SECURITY SYSTEMS

TRENDS IN SECURITY

The types and levels of threat and risk have placed a greater reliance on accurate and reliable identification and authentication. Security systems and operations must be proactive in determining who/what and if access/passage is allowable. This has created a greater reliance on credential and identification methods. The current movements are towards the creation and implementation of national identity cards and increased usage of biometrics.

Unified systems will increasingly be the norm for security system deployments and operations. By connecting and integrating security with other critical aspects of an organization, the level of protection is increased. This allows other systems and operations to drive security functions and vice-versa. For example, an armed intruder alarm can trigger an operational response of sheltering in place and lock and secure automatic doors. A local computer login from someone who has not entered the building can result in the local intranet from being closed from outside access. This physical/logical convergence can result in unified credentials and simplified administration of systems by streamlining department management of these

systems.

FUTURE TECHNOLOGY

Security systems will further increase their IP functionality resulting in reduced equipment costs and needs. Traditional security systems require server-based architecture and rely on large amounts of equipment all cabled together. Newer, IP-based systems require no more infrastructure than a computer workstation; a single network connection. These PoE (Power over Ethernet) controllers contain all the necessary functionality and intelligence needed to manage the security system. Web-based software allows operational staff to maintain and monitor the system regardless of geographical location.

The unified infrastructure cabling strategies that allow for better ROI and structured management. Manufacturers will continue to push intelligence to the end security devices such as surveillance cameras.

Intelligent video analysis provides the ability for the security system to provide event-based alerts and initiate responses based on actions taking place. As image quality and size increases, these cameras will further be configured to contain on-board storage of video to minimize network traffic and bandwidth impacts.

Improved wireless signal transmission will provide the ability for security devices and systems to be deployed and installed without the typical reliance on hardwired infrastructure. With the intelligence being pushed to the device, security equipment will be able to operate and function autonomously, only needing to transmit data under a pre-configured set of criteria. The will also provide the advantage of better usage of mobile technologies. Mobile devices and connectivity are a way of modern life today but are rarely used in security systems. The wireless, autonomous devices would allow the proper personnel to access data and view images from the devices from handheld smart phones, tablets, etc.

CAMPUS ENTRANCE

By making the Vestal Parkway entrance the primary campus entrance would allow greater control of vehicular traffic entering and exiting the facility. The UP can have an officer to screen the vehicles upon entering. The University may also elect to furnish an electronic gate or barrier which is controlled via the access control system to provide for better flow into the University, whereby a person not authorized to enter the campus will need to stop and speak with an officer. Exiting can be controlled in a similar fashion but allowing vehicles to freely exit.

At present, there are four (4) other entry points to the University. These locations are closed from midnight until 5 a.m., as they are manual gates. Keeping these other gates locked, will allow for the Vestal Parkway entrance to function with the desired results.

Additionally, the University may elect to install another campus entrance with this setup to allow only persons with the proper credential to enter thereby giving another entry point for faculty and students. There are other University campuses that have installed some type of barrier to deter unauthorized entry to the campus grounds.

CCTV SYSTEM

The existing CCTV system consists of individual DVR's (Digital Video Recorder) in a central location in the building, connected to cameras via a coax cable. The current system is using analog cameras. In order to provide the best video coverage and to be able to integrate the CCTV system easily to the access control system, an IP/networked CCTV system needs to be implemented.

A new Video Management Software (VMS) platform, which integrates to the existing Lenel access control system should be considered for ease of use and functionality.

In order to provide for this IP technology, the network infrastructure should be able to handle approximately 2-4Mb/s per IP camera. A server for the system handling approximately 30 to 40 IP cameras would require about 80-100Mb/s of data throughput. The University network would need to be upgraded to handle the additional burden by the IP CCTV system.

ACCESS CONTROL

Card readers can be installed for the entrances to academic buildings and other heavy use and/or restricted locations, such as; staff entrances, receiving areas, IT closets, server room(s), vivariums, lab rooms, chemical storage, etc. Also, note that uncontrolled entrances to buildings present a breach in safety and security.

At many campuses across the US, the trend is to have a "keyless" facility. Card readers will be used in lieu of keyed entries which will help to curb control key-distribution issues.

Panic or duress alarms placed in classrooms can help provide early notification to alert UP of an event taking place. At present, the door locks are manual for a lockdown situation at most campuses. There is a growing trend to have an electrified mortise lockset in the door that would provide locking ability upon a duress/panic button activation.

Strengths of the security system and general:

+ University Police force is adequate in size and with trained personnel
+ Telecommunications group does the majority of the cable installation for the security infrastructure
+ Various means and methods for the mass notification systems to provide information to the student/faculty population
+ The "Blue Light" system, with sixty-five (65) units, has been incorporated in strategic locations throughout the campus and will need to be expanded as the campus develops new buildings

Weaknesses in the security system:

+ The residence halls at the present time do not have CCTV cameras to monitor the main entrance or the entrance points to the exterior of the building

Opportunities/Enhancements for the security system:

+ Integration between the access control and the CCTV systems will enhance security effectiveness
+ Expand cellular coverage to be more effective in using the mass notification systems that are currently implemented
+ Exterior doors to academic buildings can be controlled via the access control system which will eliminate the effort of the UP locking/unlocking doors on a daily basis. This will free up valuable officer time and allow for better monitoring of buildings as well.
+ The University should work in conjunction with the Local law enforcement to acquire the equipment necessary for interoperable communications between the agencies, in the event of a campus situation requiring outside intervention

Threats regarding the security system:

+ Having four (4) additional entry points that allow any vehicle on to the campus grounds.

4.8 Implementation

Consideration of implementation realities translates the vision for development at Binghamton University's physical campus into reality. At the level of the Phase 4 concept alternatives, implementation was approached from a macro-level with emphasis on identifying the opportunities and constraints that will drive both phasing costing. Consideration of these factors contributed to selection of the final concept recommendation that is developed in Phase 5.

4.8.1 IMPLEMENTATION PHASING

To create an effective implementation roadmap for development of BU's physical campus, the initiatives associated with each concept are translated into discrete projects with assigned programmatic and construction objectives, allowing for sequencing of projects on a timeline.

PRIORITIZATION

Binghamton University has a high magnitude of need with respect to development of the physical campus. This need is based on existing deficits and building age and condition related deficiencies, and will be exacerbated with future enrollment growth. Due to the magnitude of need, prioritization of the FMP is of high importance.

The structure of the FMP into two planning horizons builds in an innate layer of prioritization. Projects associated with the Building Capacity Period of the plan reflect existing deficiencies associated with past growth, pedagogy shifts, and condition issues, as well as more moderate growth projections to move the University into the future. Building Capacity projects are of higher priority within the FMP. Projects associated with the Sustained Growth Period of the plan assume a base level of alignment to have been achieved with Building Capacity development, and focus on expansion.

Prioritization also occurs within the two planning horizons. At this level, priorities are determined based on data sets from the FMP assessments, the strategic direction of the University, and sequencing required to implement the plan based on project interdependencies.

FACTORS THAT DRIVE PHASING

At the level of Phase 4 concept development implementation is approached at a more macro level, with emphasis on identifying the driving factors that are required for development of a successful plan. These factors form the basis of detailed phasing drill down for the final recommendation in Phase 5. Driving factors include the following:

Defining BU's strategic objectives. Binghamton University has identified a number of strategic objectives to guide future development of the institution. Due to the magnitude of renovation and new construction associated with the FMP, a unique opportunity exists to reflect strategic objectives in the physical campus environment. Key objectives include:

+ **Interdisciplinary research.** Expansion of state-of-the art research and the introduction of instruction at the ITC Campus, contributing to interdisciplinary discovery and economic development,
+ **Liberal arts education.** Provision of a strong liberal arts education foundation for all BU students,
+ **Global experience.** Emphasis on the international experience for all BU students, both domestic and global, through academic programming as well as student life,
+ **A green future.** Growth of sustainable practices, through both curriculum and research development, as well as campus operations.

Identifying foundational projects. BU's campus faces significant renovation requirements at legacy buildings, particularly at Bartle Library, the Fine Arts Building, and the Sciences complex which require multi-phase renovations. In order to conduct such large scale renovation, existing program must be vacated from the project area to another location, either on a permanent or temporary basis. However, due to the under-built quality of the University, the campus faces an extreme deficiency in available swing space to catalyze early stage renovations.

As such, early projects within the FMP must capitalize on opportunities to vacate contiguous areas of space to initiate first phase renovations. To meet existing needs due to pedagogy and support service delivery shifts, these foundational projects must also achieve programmatic objectives.

Existing projects under the 2008 to 2013 capital plan are critical to future development. These projects include the completion of new facilities at the main campus and ITC campus and renovation projects at the University Union Phase 2, Student Wing, Johnson Hall, and Science IV Phase 1 renovation. Key foundational projects within the 2013 to 2018 capital plan include renovation and addition to the Computer Center and renovation of Dickinson Dining Hall.

Maximizing limited capital and time resources. The magnitude of renovation requirements in the context of limited swing space creates unique implementation challenges at BU. This is of particular concern at Bartle Library, the Fine Arts Building, and the Sciences Complex, which require renovation across multiple phases due to the size of the facilities. To conduct renovation given the limited quantity of existing vacant space would require projects to be implemented in small-scale phases.

This is not a desirable approach to phased renovations, and is particularly problematic for BU. In general, conducting phased renovation projects at a small scale results in a significant increase in the number of phases, which translates to an increase in overall project duration and cost. It also creates less continuity between spaces, as there are more "seams" between project areas that must be stitched together. Additionally, analysis indicates that capital availability and time will serve as the limiting factors with respect to implementation of BU's FMP.

As such, a successful implementation plan seeks to approach phased renovation through larger zones of contiguous space in fewer phases.

Planning in the context of an unknown future. The process of planning for the future is highly complex. Study of the existing context reveals a number of factors that can be assumed as "known," such as development requirements for building condition and pedagogy, general academic program direction, and space requirements to meet existing deficiencies. However, future planning also inherently touches on factors that are unknown and cannot be predicted. Effective planning

considers these factors, and develops overt strategies to account for them.

The FMP identifies the following unknown future factors:

+ **Available funding.** The FMP is conducted during a period of economic downturn that is affecting the availability of funding sources, particularly at the New York State level. Two primary funding streams impact implementation of the FMP: one for renovation projects and another for new construction. Due to structuring of funding at the state level, funding for renovation projects is much more predictable than for new construction.

  To account for this, the implementation plan for the FMP at BU develops a series of independent tracks and alternate routes within each track that address different availability of new construction funding. The plan establishes a series of new construction projects, critical to capacity expansion at BU given existing deficiencies, however also develops a contingency plan to move forward and affect significant change on campus should new construction funding not be available.

+ **Enrollment growth.** As a University Center in the SUNY system, Binghamton University has the opportunity to contribute significantly to higher education and economic development within the Southern Tier and New York State. The University's enrollment projects, which serve as the basis for FMP space needs projects, reflect this growth opportunity.

  Given the University's application and acceptance rates, enrollment growth is anticipated to be possible in the future. However, to ensure its future viability, the FMP must also consider a scenario in which demographic downturn or other factors inhibit growth. To account for this, the FMP is developed in two planning horizons, Building Capacity and Sustained Growth. This strategy allows the plan to achieve a higher level of focus on near-term development associated with existing need and more modest growth, which also ensuring that near-term projects do not inhibit significant future expansion.

ADDITIONAL CONSIDERATIONS

Provision of Swing Space. Due to its under-built status, Binghamton University faces a significant shortage of swing space. Existing projects being conducted under the 2008 to 2013 funding cycle vacate a modest quantity of swing space at Bartle Library, Science IV, and the Student Wing. To initiate the major renovation projects required legacy facilities such as Bartle Library, the Fine Arts Building, and the Sciences Complex, additional swing space is required.

The FMP concept alternatives build on the campus' available of swing space through renovation and new construction. Conversion of two legacy residence halls at the Original Dickinson Community to office space provide critical swing space for low-impact departmental offices. New construction of academic buildings provides further capacity expansion, allowing larger portions of legacy buildings to be vacated.

Due to the nature of facilities requirements, swing space for sciences programs is difficult to achieve in existing facilities. The concept alternatives provide additional space to facilitate renovation at the Sciences Complex at the Science Library and with new construction of either additions or a new ITC Natural Sciences building.

Campus Housing. Prior to construction of the new East Campus Housing, Binghamton University had just under 6,200 beds on campus, a ratio of 40 percent of the total population. Following expansion at the East Campus, this figure increases to 7,400 and 50 percent of the total population.

Given future enrollment growth, the University will reach a point where it will require construction of additional residential beds on campus to maintain its ratio of residential students. Given the projected growth at the main campus of just under 21,300 FTEs, to maintain a 40 percent ratio of on-campus students, the University will need to add 1,100 beds for a total of 8,500. The provision of additional beds is recommended to occur at the existing sites of the Susequehanna and Hillside communities, two legacy communities with aging facilities and populations under the University's target of 1,000 beds. Development in these locations also ensure access to existing infrastructure.

4.8.2 COST ESTIMATE ANALYSIS

A cost estimate analysis was developed for each concept alternative by aggregating associated projects. The chart at the right outlines the cost estimate. A breakdown is provided by planning horizon and to differentiate renovation and sitework projects from new construction projects. All figures include both project hard costs and soft costs. Sustained growth period projects reflect escalation costs to 2018.

Between the three concept alternatives, renovation and sitework cost estimates are within range of each other due to a consistent renovation need. Overall, Concept A has more moderate associated costs, reflecting a less aggressive plan. Concept C has more significant associated costs as it contains the most substantive amount of development.

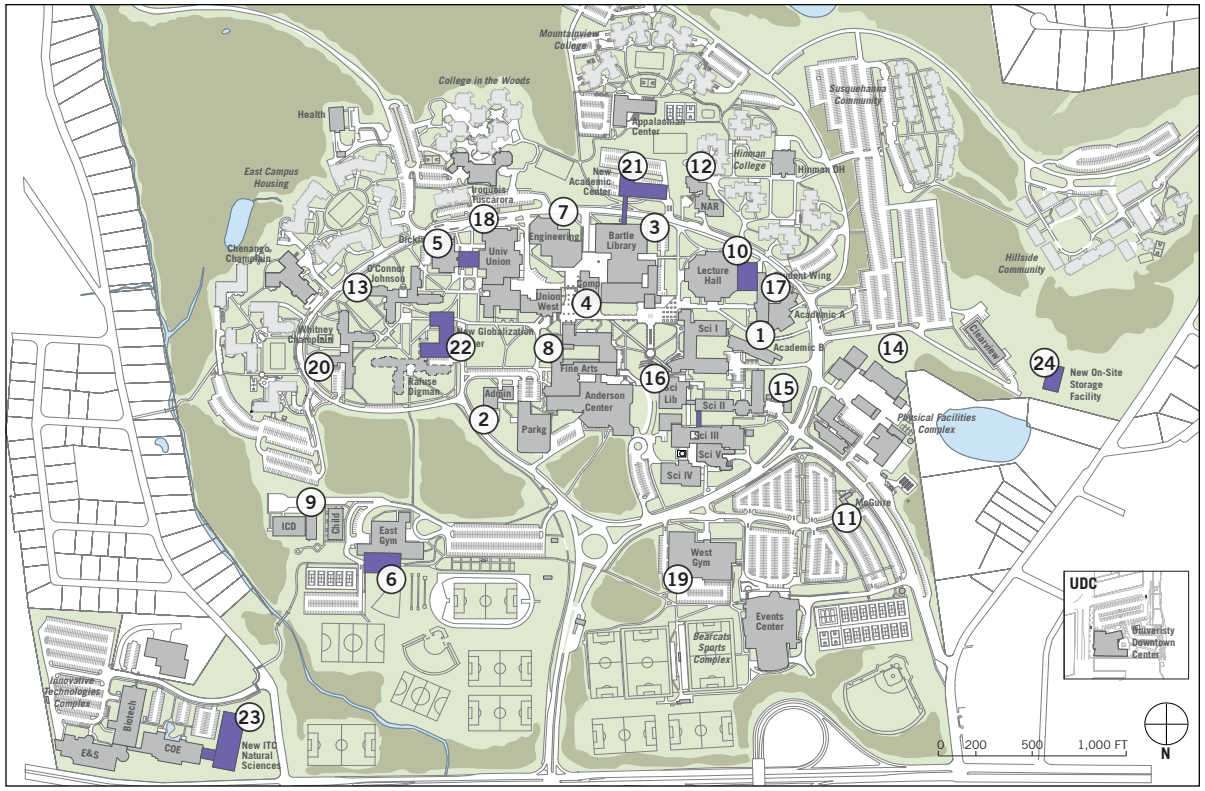
The cost estimate analysis does not include land acquisition costs associated with construction of a new School of Law at an off-campus location. Insufficient detail is known at the time of the development of the FMP to adequately cost this component.

COST ESTIMATE ANALYSIS	COST IN MILLIONS
CONCEPT A	**$1,592**
Building Capacity Period	**$760**
Renovation & Sitework	$569
New Construction	$191
Sustained Growth Period	**$832**
Renovation & Sitework	$184
New Construction	$648
CONCEPT B	**$1,718**
Building Capacity Period	**$911**
Renovation & Sitework	$581
New Construction	$330
Sustained Growth Period	**$807**
Renovation & Sitework	$179
New Construction	$628
CONCEPT C	**$1,747**
Building Capacity Period	**$1,036**
Renovation & Sitework	$604
New Construction	$432
Sustained Growth Period	**$711**
Renovation & Sitework	$165
New Construction	$546

FIGURE 4.8.2A Concept Alternative Cost Estimate Analysis; all figures include soft-costs, sustained growth period figures reflect escalation to 2018.

4.8.3 SELECTION OF FINAL CONCEPT

With consideration of factors related to Binghamton University's strategic vision, academic mission, facilities requirements, and implementation realities, the planning team selected Concept C for development into the final recommendation in Phase 5. The concept features projects that emphasize the University's strategic objectives, such as a new ITC Natural Sciences building for interdisciplinary research and teaching, an Academic Center and Student Success Center to promote a foundation in liberal arts, and a new Globalization Center to showcase the University's commitment to internationalization. Additionally, the plan achieves major renovations required at legacy facilities for conditions and quality improvements.



PLAN COMPONENTS	
1. Academic A & B Program Backfill	13. O'Connor Johnson Renovation
2. Administration Building Program Backfill	14. Physical Facilities Complex Renovations and Addition
3. Bartle Library Renovation	15. Sciences I-IV Renovation
4. Computer Center Renovation & Addition	16. Science Library Renovation
5. Dickinson DH Renovation & Addition	17. Student Wing Renovation
6. East Gym Addition	18. Union Program Backfill
7. Engineering Building Renovation	19. West Gym Renovation
8. Fine Arts Building Renovation & Circulation Additions	20. Whitney Champlain Renovation
9. Institute for Child Development Addition	21. NEW Academic Center
10. Lecture Hall Center Upgrades and Addition	22. NEW Globalization Center
11. McGuire Building Reno	23. NEW ITC Natural Sciences
12. Nelson A. Rockefeller Renovation	24. NEW On-Site Storage Facility at Bunn Hill Road
	25. NEW School of Law (Off-Campus)

FIGURE 4.8.3A Diagram of Final Selected Concept