Three Rivers
COMMUNITY COLLEGE

CONNECTICUT STATE COLLEGES & UNIVERSITIES

THREE RIVERS COMMUNITY COLLEGE
MASTER PLAN UPDATE

AUGUST 2018







PERKINS+WILL

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COMMUNITY COLLEGE

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ACKNOWLEDGEMENTS

CONNECTICUT STATE COLLEGES AND UNIVERSITIES

Mark E. Ojakian	President
Jane Gates	Provost / Senior VP for Academic & Student Affairs
Erika Steiner	Chief Financial Officer
Keith Epstein	Vice President for Facilities, Real Estate and Infrastructure Planning
Armen Beermann	Facilities Management Associate

THREE RIVERS COMMUNITY COLLEGE

Mary Ellen Jukoski, Ed.D	President

COLLEGE MASTER PLAN ADVISORY COMMITTEE

Mary Ellen Jukoski, Ed.D	President
Stephen Goetchius	Dean of Administrative Services
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Steve Finton	Acting Dean of Student Services, Enrollment Mngt., & Workforce Dev.
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Patrick Keller	Assistant Registrar
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Kem Barfield	Associate Dean and Director of Educational Technology
Heather Dyer	Student
Zachary Truelson	Student
Louise Summa	Director of Strategic Partnerships and Special Projects
Mark Vesligaj	Professor of Engineering Science
Kacey McCathy-Zaremba	Assistant to the Academic Dean
Keith Epstein	CSCU, Vice President for Facilities, Real Estate and Infrastructure
Armen Beerman	CSCU, Facilities Management Associate

PROJECT MANAGEMENT TEAM

Stephen Goetchius	Dean of Administrative Services / IT / HRD
Arne DeLaRosa	Director of Facilities
Keith Epstein	Vice President for Facilities, Real Estate and Infrastructure
Armen Beerman	Facilities Management Associate

MASTER PLANNING TEAM

Perkins+Will	Master Planner / Architects
Scott Blackwell Page	Academic Space Programming
AKF Group	MEP / FP Consultant
VJ Associates	Cost Estimating



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Three Rivers
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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

The Master Plan for Three Rivers Community College reflects a collaborative, interdisciplinary effort that engaged leadership and stakeholders from across the College and CSCU for seven months. A core goal for the Plan is to optimize the use of existing facilities and identify the most important projects needed for renewed and expanded buildings. Promoting sustainability in land use, buildings, operations, energy and resource use was also fundamental.

EXISTING CONDITIONS

The Master Plan Team comprehensively assessed TRCC's existing campus – its context, access, land use, buildings, circulation, landscape and infrastructure. Several parallel studies and renovation initiatives were under way while the Master Plan was being prepared. The work was coordinated with these plans, to reflect their recommendations and in some cases to inform those projects. These included the Phase 2 Library Renovation, a pending renovation of Student Services and a facility study for a significant workforce training program for Electric Boat. The team also assessed the existing and projected 10-year enrollment figures and the range of academic and other programs. This work served as a foundation for understanding current constraints and for framing capital projects in the Master Plan to meet the College's high priority needs in the next 10-year period.

Three Rivers' campus at 46 acres is the relatively ample in size, however much of this land is natural area including floodplains, removed from the academic core. The College's buildings are generally in good condition, with most dating to 2010, and older wings having undergone comprehensive renovations.

Key Facts

- Campus: 46 Acres
- Fall 2017 Enrollment: 2,446 Credit Student FTE, 4,222 Credit Headcount
- Projected 2027 Enrollment: 2,605 Credit Student FTE, 4,515 Credit Headcount
- College: 7 Buildings/Wings; 282,583 GSF
- TRCC hosts the Three Rivers Middle College Magnet High School
- Parking: 1,159 Spaces



- Public Transit: Southeast Area Transit runs a Three Rivers Community College Express bus to the campus.

Key Findings: Existing Conditions

- TRCC's space per student is 71 ASF/FTE (excluding Middle College)
- The campus has a clearly organized layout and is well connected
- The campus and buildings are attractive, functional and well-maintained
- There is one significant remaining development site in the campus core
- Campus access and vehicle circulation works well, with congestion only at peaks
- No additional parking is needed

ENROLLMENT

As a foundation for the Master Plan update, the College developed 10-year enrollment projections, from Fall 2017 to Fall 2027. These included projections by department and program for Credit students. In the next 10-years, the College predicts a modest increase in Credit enrollment, from 4,239 to 4,515 students. The programmatic increases are assumed in Nursing & Allied Health, Mathematics & Sciences, and Humanities & Social Sciences. While the Technologies are expected to grow, specifically Manufacturing, this growth will occur on the Non-credit side of the College. The proposed Manufacturing programs are also likely to take place off campus, closer to the region's principal employer, Electric Boat.

	CURRENT FALL 2017	PROJECTED FALL 2022	PROJECTED FALL 2027
Student Credit FTEs	2,446	2,479	2,605
Student Credit Headcount	4,239	4,296	4,515

TABLE 01.1 Campus Core Today

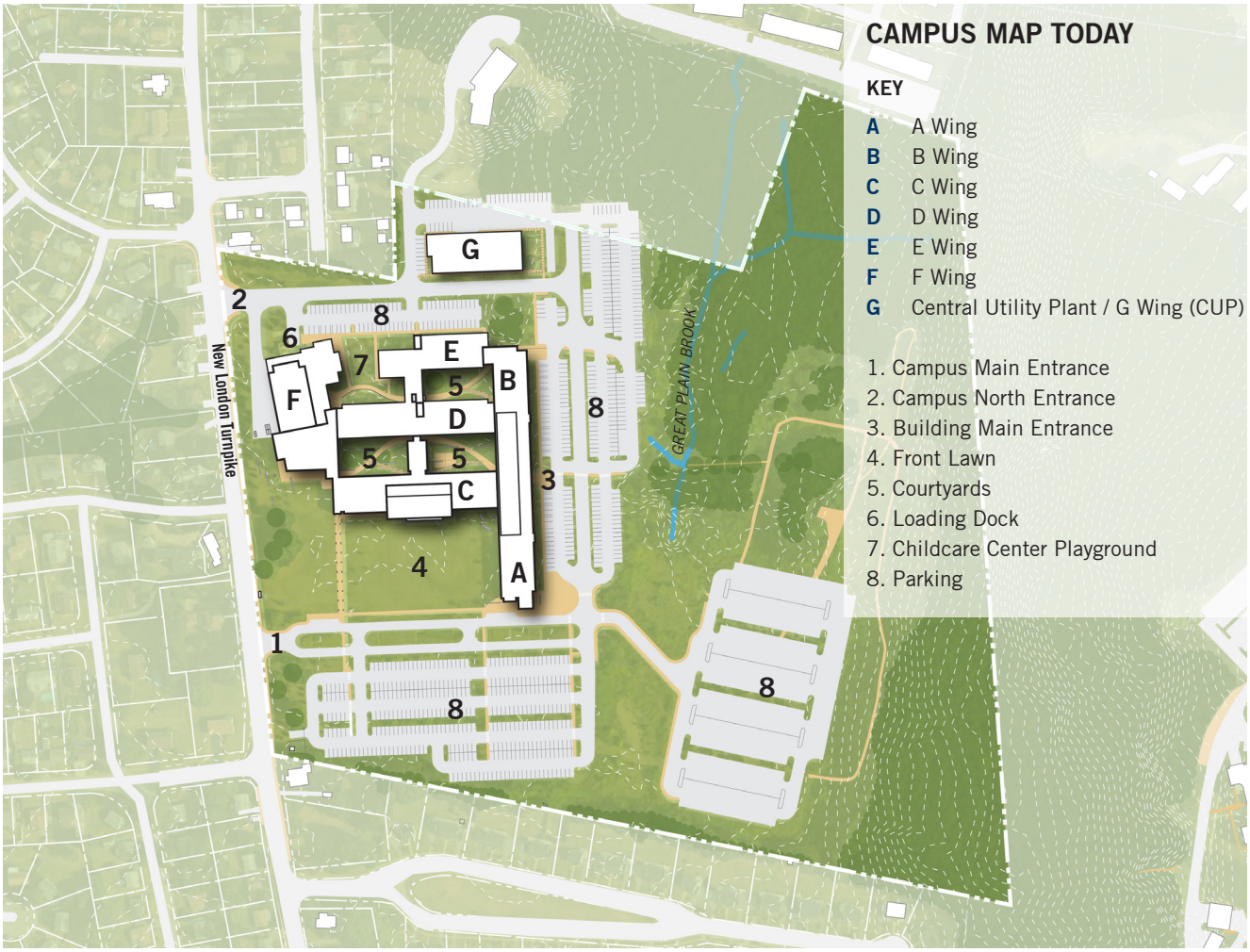


FIGURE 01.1 The Campus Today

SPACE NEEDS

As a relatively new, consolidated campus, Three Rivers has the fifth lowest assignable square feet per student FTE in the system. When compared to its closest peers in enrollment, Housatonic, and Tunxis, Three Rivers has 9 ASF less per student FTE. Nevertheless, given the current constraints for capital, the assessment is granular, providing a detailed analysis of enrollment and space per department and program, enabling a strategy for addressing the high-priority academic and support needs.

The assessed need, based on the modest enrollment growth outlined above, results in a total need of 72.5 ASF per student FTE. This number excludes the existing Middle College and the potential for an on-campus presence by one of the four Connecticut state universities. Based on a projected enrollment of 2,605 student FTEs, the College will require an additional 21,824 ASF, resulting in a need for an additional 38,000 GSF. This expansion represents a 13% expansion to the existing campus. This expansion is primarily justified based on current student FTEs, and not dependent on the anticipated student enrollment growth. The critical point is that the current deficit drives the majority of the College's need. Resolving that deficit is an essential element in addressing current program bottlenecks and student retention, especially in the sciences and allied health-related facilities.

PARKING

The campus today has ample parking in multiple parking lots. At peak times, people must park more remotely in the east lot, leading to an impression by some that there is not sufficient proximate parking. Given the modest projected enrollment increase, there is no need for additional parking.

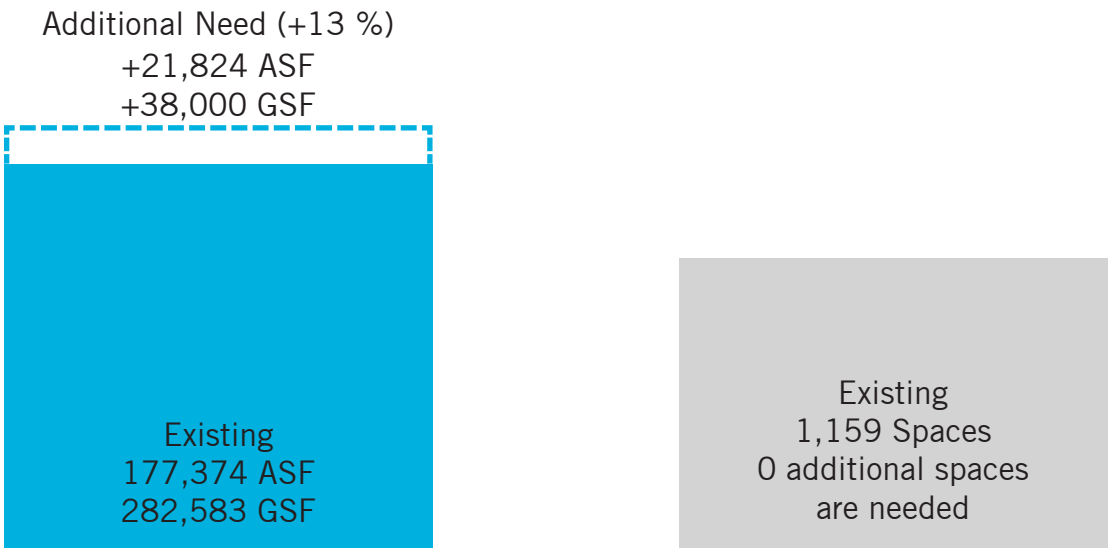


FIGURE 01.2 Space Needs Summary

MASTER PLAN RECOMMENDATIONS

Strategy
The Master Plan strategy is three-part: first identifying high-priority renovation projects, then eventual modest expansion to meet growth needs for a number of departments across the College. The final strategy after expansion is transformative backfill renovations to optimize use of vacated space.

Site and Circulation
The main entry, access drives, rear drive and parking work well for the College in location, configuration and capacity. Significant changes are not required. The Master Plan does recommend a new drop-off which can be used to access the existing Multipurpose Space, a main space used by the community.

Open Space and Landscape
TRCC's overall land use and open space organization provide a strong framework. Significant changes are not required in this regard either. The Master Plan does recommend incremental improvements to site lighting at the east lot, an upgraded Childcare Center playground, and a reconfigured dining terrace.

Buildings
The Plan identifies a series of renovation projects that could be implemented independently, as the College elects when funding is available. A key project is a renovation of two science labs to relieve curriculum bottlenecks. The Plan recommends further detailed study of the Technologies and the Nursing in order to frame the most appropriate program and renovation for these programs. Expanding the dining room is also a near term need. Detailed study is recommended for the Nursing Program and the Technologies Program to better understand space needs and associated renovation requirements. The Plan recommends proceeding with the 2015 Phase 2 Library renovation, with a minor revision to one area.

To meet incremental expansion need in multiple departments, the Plan recommends a modest expansion in a new wing eventually. This 2-story wing, together with the dining room addition, totals 38,000 GSF. The new wing would complete the composition of the College, framing the Main Lawn and providing a new entrance and drop off near the main campus entrance. Once this addition is completed and select functions relocated to the new construction, there is significant opportunity to backfill vacated space in a series of renovation projects to meet needs for other departments.

An off-site facility will be used to meet the needs of the EB Pipeline Program. The expanded Ella Grasso Technical High School in Groton, due to open in 2019, is the planned approach. This initiative is an independent initiative from the TRCC Master Plan, so not included in the cost estimate.

Infrastructure
In general, TRCC's infrastructure is in good condition. One exception is addressing Temperature and Humidity issues in the D and E Wings, as documented in a separate, recent study. Other MEP scope includes work to support the high-priority renovations and the eventual expansion and associated backfill renovations when these are funded. The system-wide Energy Master Plan documented that Three Rivers energy use intensity was average. Since then, the College has installed high-efficiency boilers and LED lighting, further improving energy performance.

Phasing and Implementation
The team prepared a cost estimate for all of the recommended projects. Rather than framing a Phase 1 project scope, the Master Plan defines several, high-priority renovation projects that can be done in the near-term separately or grouped, once funded. The new academic wing to address the overall space deficit and associated backfill renovations are is likely to be a longer term project given the current capital funding climate.



KEY

- **A** Detailed Study for Technologies Program
- **B** Science Lab Renovations
- **C** Detailed Study and Renovations for Nursing
- **D** D and E Wing Temperature and Humidity Upgrades
- **E** Dining Expansion and Reconfigured Terrace
- **F** Playground Upgrades
- **G** New Academic Wing (G Wing)
- **H** Lot 4 Lighting Upgrade



FIGURE 01.3 Master Plan



FIGURE 01.4 Illustrative Rendering, Campus Aerial View



A Wing



C Wing



FIGURE 01.5 Illustrative Rendering, Drop off and Entry at New Wing


Three Rivers
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1 INTRODUCTION

CSCU SYSTEM CONTEXT

The Master Plan for Three Rivers Community College responds to the vision and mission of the Connecticut State Colleges & Universities (CSCU) Board of Regents, as well as TRCC's Mission Statement. As one of the twelve community colleges, Quinebaug Valley was the seventh to prepare its plan.

OUR VISION FOR CSCU

The Connecticut State Colleges & Universities will continually increase the number of students completing personally and professionally rewarding academic programs.

CSCU'S MISSION STATEMENT

The Connecticut State Colleges & Universities contribute to the creation of knowledge and the economic growth of the state of Connecticut by providing affordable, innovative, and rigorous programs. Our learning environments transform students and facilitate an ever increasing number of individuals to achieve their personal and career goals.

CONNECTICUT COMMUNITY COLLEGES MISSION STATEMENT

As part of the CSCU system, the twelve Connecticut Community Colleges share a mission to make excellent higher education and lifelong learning affordable and accessible. Through unique and comprehensive degree and certificate programs, non-credit life-long learning opportunities and job skills training programs, they advance student aspirations to earn career-oriented degrees and certificates and to pursue their further education. The Colleges nurture student learning and success to transform students and equip them to contribute to the economic, intellectual, civic, cultural and social well-being of their communities. In doing so, the Colleges support the state, its businesses and other enterprises and its citizens with a skilled, well-trained and educated workforce.

THREE RIVERS COMMUNITY COLLEGE MISSION

Three Rivers is an accessible, affordable, and culturally diverse community college that meets varied educational needs by creating an environment that stimulates learning.



FIGURE 01.6 Location Map: Three Rivers Community College

To accomplish its mission, Three Rivers Community College:

- Offers post-secondary educational opportunities;
- Encourages life-long learning;
- Provides a well-rounded and rewarding educational experience with an emphasis on critical thinking, effective communication, and the College's institutional values;
- Fosters an appreciation of the natural and social sciences, humanities, technology and the arts;
- Helps students achieve their goals;
- Serves as a community resource for people and institutions within its service area;
- Delivers its services efficiently and measurably; and
- Contributes to economic development of this region and the state.

VISION STATEMENT

The Vision Statement: Three Rivers Community College will be a college of choice with a reputation for innovation, quality, and accessibility, serving a dynamic student population.

TRCC Values Statement

Three Rivers Community College values:

- Teaching and Learning
- Integrity and Service
- Community and Diversity

TRCC's Values in Action

Teaching and Learning – Instruction that stresses close consideration, critical analysis, and careful design; collaborative, nurturing, learning communities that foster student success; active, innovative teaching strategies, including a commitment to learning through service; learning for lifelong achievement, growth, development and satisfaction;

Integrity and Service – Responsibility to oneself, one's peers, one's colleagues and one's community; trust and confidence in our academic programs; an atmosphere of collegiality across the academy;

Community and Diversity – Access for all regardless of age, race, ethnicity, culture, gender, orientation, or disability; civic engagement within and outside the college; academic, social and technical resources for citizens within our service area.

THE THREE RIVERS COMMUNITY COLLEGE STRATEGIC PLAN: 2017-2020

Goal 1. Student Success

Provide excellent educational experiences to advancement to four-year institutions or for career readiness / enhancement.

Goal 2. Image

College of choice; promote the value and recognition of Three Rivers Community College and the CSCU as excellent venues to achieve educational goals.

Goal 3. Stewardship

Cost effective and efficient; improve the fiscal stability through increased enrollment, alternate sources of revenue and effective management of resources.

Goal 4. Partnerships

Leverage and strengthen collaboration, partnerships, and responsiveness to students, employers, and communities.



GOALS AND OBJECTIVES

GOALS

Through a collaborative effort between university and college stakeholders, CSCU and the consultant team, the Master Plan Update will integrate a system-wide Strategic Plan and college mission into a comprehensive vision that promotes the advancement of higher education through state-of-the-art planning projections over a 10-year period. Concepts will reinforce and institute current and new long-term strategies that guide college decision making for capital investment.



OBJECTIVES

The following objectives will guide the Connecticut State Colleges and Universities Master Plan Updates at each CSCU institution of higher education.

- The Master Plan will respond to the institution's mission, demographics and projected future enrollment.
- Program space needs will reflect best practice standards and address emerging higher education goals.
- Land planning will balance guidance and flexibility, long-term development capacity and stewardship.
- The Master Plan will optimize the use of existing facilities in the utilization of space, the location of functions, and the renewal of buildings to meet future needs.
- Proposed new buildings will reflect realistic program need and will be used to the greatest extent feasible to enable needed renovations to maximize investment benefit.
- Site access and circulation will be addressed in a comprehensive manner to support a safe, efficient and welcoming campus.
- Future development will strengthen the architectural and landscape character of the campus to foster a cohesive, attractive setting.
- The Master Plan will integrate sustainability throughout and identify strategies for energy conservation.
- Major campus infrastructure needs will be addressed to support college operations.
- The resulting Master Plan Update will be a comprehensive vision comprised a series of capital projects, with associated institutional priorities and phasing strategies.

PLANNING PROCESS

PROJECT TIMELINE

The Master Plan Update was organized in three main tasks.

Task 1. Initiation	December 2017 to February 2018
Task 2. Assessment	February to May 2018
Task 3. Recommendations	May to July 2018

PROJECT OBJECTIVES

Task 1. Initiation

- Establish the Advisory Committee, confirm project objectives and communications protocol.
- Collect data on the College today.
- Establish the project schedule and milestones.

Task 2. Assessment

- Understand the history, mission and academic objectives of the university.
- Analyze buildings and grounds to understand space use, physical conditions, constraints and opportunities for campus development.
- Undertake a needs analysis and project 10-year space needs based on CSCU approved enrollment projections, benchmarking, and academic goals.

Task 3. Recommendations

- Develop guiding design principles strategy.
- Assess pros and cons of potential development alternatives and assist the Advisory Committee in selecting the preferred approach.
- Refine the master plan elements for buildings, landscape and infrastructure.
- Prepare cost and phasing information.
- Document and present final recommendations to the College.

CAMPUS ENGAGEMENT

The Master Plan was a collaborative process, informed and guided by significant input from College stakeholders.

COLLEGE MASTER PLAN ADVISORY COMMITTEE

The consultant team met three times with the CMPAC, a group which included President Jukoski, other senior administrators, faculty, staff and students. As a broad cross section of the College, the Committee provided invaluable insights into programmatic, functional and aesthetic aspects of the Plan. The Planning Team also conferred with other architects conducting concurrent studies with were integrated into the overall Master Plan.

PROJECT MANAGEMENT TEAM

The consultant team conferred regularly with Stephen Goetchius, Dean of Administration, Arnie DeLaRosa, Director of Facilities, and Keith Epstein and Ahmed Beerman of CSCU to review the progress of the work and provide timely input to advance the work and maintain the project schedule.

PROGRAM INTERVIEWS

The consultant team conducted 16 program interviews with a broad range of college stakeholders, including students, faculty, staff, industry partners and senior administration. The team also conducted follow up interviews with faculty from Nursing, Technologies and the Sciences and with the Registrar. The input informed the space need projections and the functional needs assessment.

STUDENT ENGAGEMENT

The Planning Team conducted an online survey to inform the Master Plan. There were 213 participants. Of these 74% were students. The input from this survey informed the Master Plan Recommendations.




THREE RIVERS COMMUNITY COLLEGE


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2 EXISTING CONDITIONS

THE INSTITUTION

- ACADEMIC PROFILE
- HISTORY OF THE PHYSICAL CAMPUS

THE CAMPUS

- PLANNING CONTEXT
- CAMPUS MAP TODAY
- CONTEXT
- CAMPUS SCALE, ORGANIZATION, AND LAND USE
- LANDSCAPE AND OPEN SPACE
- FLOODPLAINS AND WETLANDS
- ACCESS AND CIRCULATION
- PARKING
- PUBLIC TRANSPORTATION

BUILDINGS

- FACILITY SUMMARY
- PROGRAM DISTRIBUTION
- ENTRIES, INTERIOR CIRCULATION, WAYFINDING
- ARCHITECTURAL CHARACTER
- BUILDING CONDITION
- CLASSROOM INVENTORY AND UTILIZATION

ENERGY AND INFRASTRUCTURE

- HVAC STEMS OVERVIEW
- PLUMBING SYSTEMS OVERVIEW
- ELECTRICAL SYSTEMS OVERVIEW
- FIRE PROTECTION
- KEY CONSIDERATIONS

STUDENT ENGAGEMENT

OPPORTUNITY SITE

THE INSTITUTION

ACADEMIC PROFILE

The College is organized in five Academic Departments as well as Workforce and Community Education. It offers offers 78 different Degree and Certificate Programs.

Business & Technology

Mathematics & Science

English& Communications

Nursing & Allied Health

Humanities & Social Sciences

Workforce & Community Education



HISTORY OF THE PHYSICAL CAMPUS

In May of 1992, Thames Valley State Technical College and Mohegan Community College officialy merge to form a consolidated community college serving the southeastern regions of the state of Connecticut. In November of that same year, the college is named Three Rivers Community College after the region's three primary rivers - the Shetucket, the Yantic and the Thames.

Between 1995 and 2005, multiple Master Plan studies were conducted to assess the feasibility of the two existing campuses for future needs while exploring options for consolidating the college at a new single site.

Based on the recommendations of the Master Plan conducted in 2005, the College vacates the Mohegan Campus and consolidates to the Thames Valley Campus. The Norwich Regional Vocational Technical School at the Thames Valley Campus relocates to the Mohegan campus and the existing buidling is demolished.



Aerial view of the Campus and its Context

1980'S

Thames Valley State Technical College is found in 1988 at the current location of the college, southwest of downtown Norwich.



1990'S

In 1992, Thames Valley State Technical College and Mohegan Community College merge to become Three Rivers Community College. The college had facilities on two locations: the Mohegan Campus two miles north of downton Norwich and the Thames Valley Campus, the current location.

The College completes its first Master Plan in 1995.

2000'S

In 2005, Mitchell / Giurgola Architects and Fletcher-Thompson, Inc. completes a Master Plan to develop a plan for the consolidation of the College at the Thames Valley Campus.



The Central Utility Plant (CUP) is constructed in 2007 on the north side of the campus.

2010'S

In 2010, the college expands the Thames Valley Campus approximately 170,000 GSF, adding the A & B Wings which included Student Services, classrooms and science labs, the C Wing which included the library and finally an expanced F wing which includes a cafeteria, multi-purpose room and fitness area.

Parking is expanded on the vacated site.



FIGURE 02.1 Historic Timeline

THE CAMPUS

PLANNING CONTEXT

Regional Context

Three Rivers Community College was built on its Norwich campus as the result of comprehensive planning studies and implementation of the 2005 Master Plan.

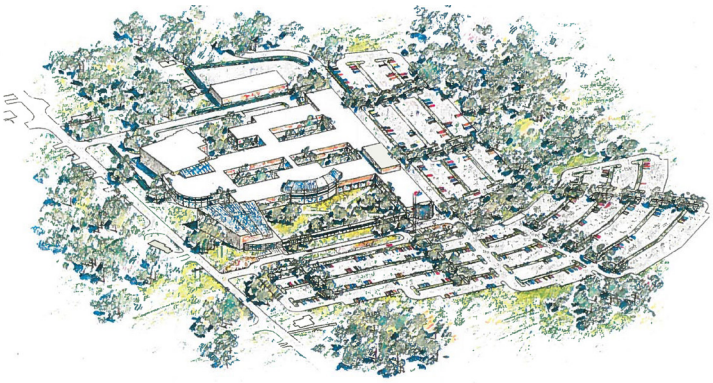
The 2018 Master Plan was informed by several recent and parallel physical planning studies. These included:

Current Projects

- Student Services, A Wing Level 1 Renovation
- Science Lab Renovations (A-211, A-219)

Pending Projects

- Library Phase 2 Renovation
- Off-site Facility for EB Pipeline Program



2005 Master Plan Illustration

Student Services A Wing Level 1 Renovation

This project, by Christopher Williams Architects (CWA), reconfigures the A Wing to optimize the available space for Student Services. The most notable change is the creation of a

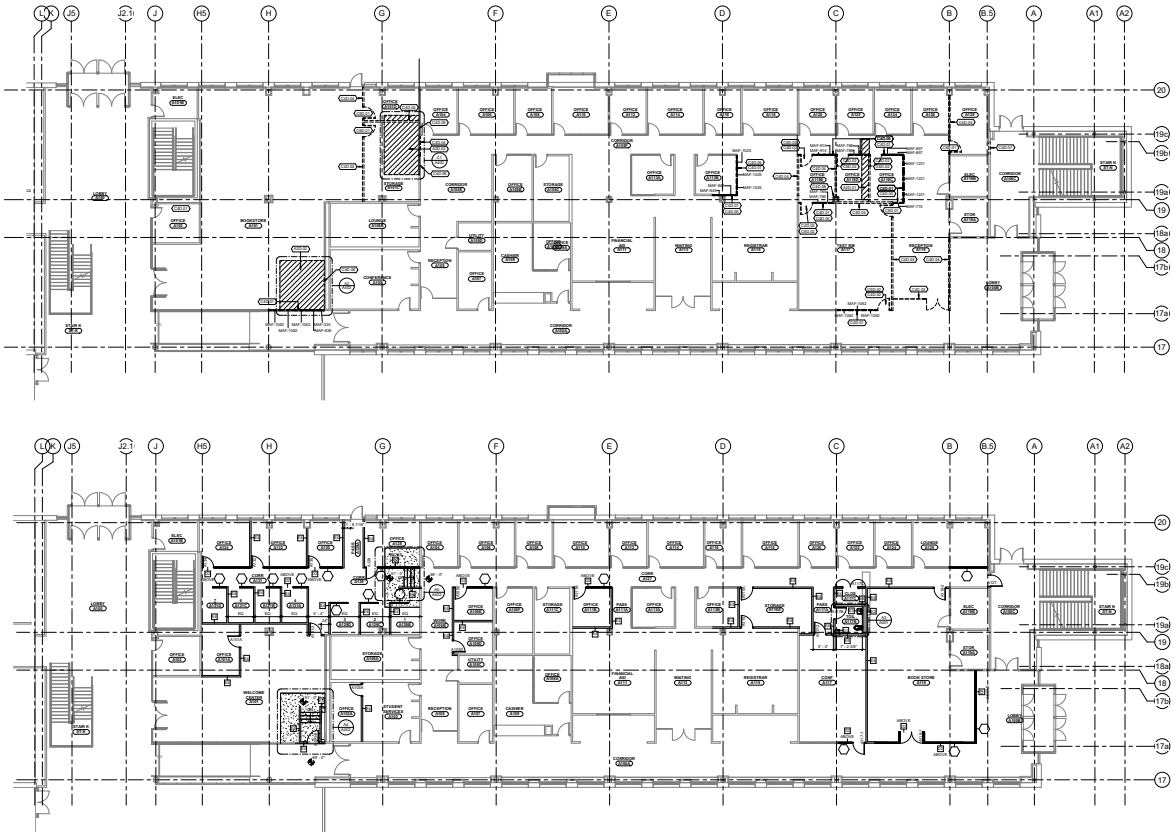


FIGURE 02.2 Student Services A Wing Level 1 Existing (top) and Renovation (bottom)

Welcome Center next to the Main Entrance lobby by relocating the Bookstore to the south end of the A wing. The project was in schematic design in while the Master Plan recommendations were in development in May 2018.

For the purposes of the Master Plan, the current configuration (prior to the pending renovation) was used in the existing floor plans and the existing space inventory. The proposed floor plans were used in the Recommendations. The cost for the renovation is not included in the Master Plan projects, however, since the project budget has already been defined and funding identified.

Science Lab Renovations

The College is renovating two science labs on the second floor of the A wing, starting in May to be completed for the beginning of the fall semester. The A-211, the MicroBiology lab, and A-219, an Anatomy and Physiology Lab. Each retains its partitions and gets new equipment, lighting, HVAC, plumbing, IT/AV, casework and furniture. Design is by Friar Architecture, Inc.

Language Lab Renovation

The College recently implemented a renovation of Room D-117 to reutilize this 1,225 ASF space to be a Language Arts Lab, per the recommendation and concept design in the 2015 Feasibility Study by Christopher Williams Architects.

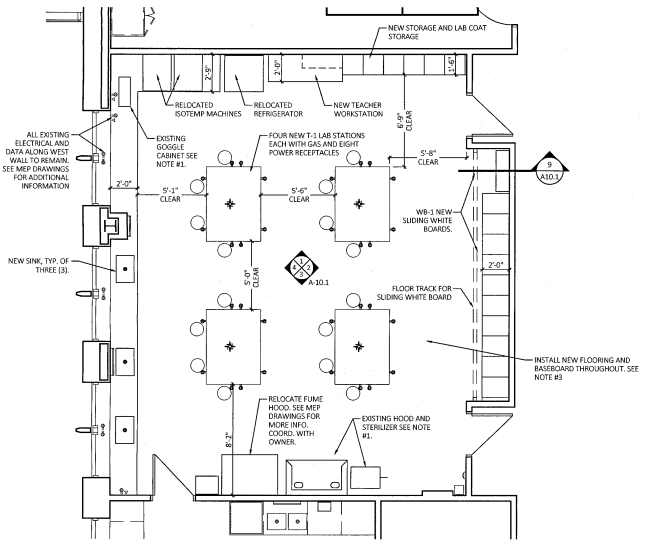
Library Renovations, Phase 2

Christopher Williams Architects prepared a Feasibility Study and Preliminary Design in 2015 which included a concept for renovating the Library. This concept will be starting design summer 2018 and is anticipated to be bid early in 2019.

For the purposes of the Master Plan, the current configuration (prior to the pending renovation) was used in the existing



Library Interior



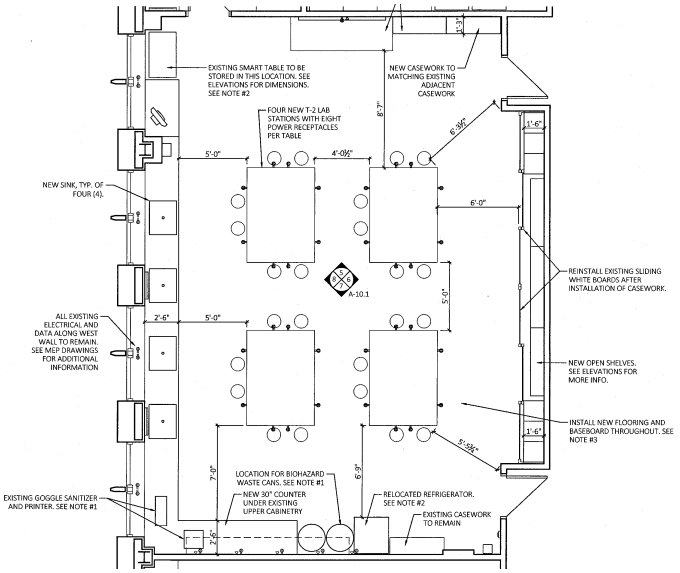


FIGURE 02.3 Science Lab Renovations, Summer 2018

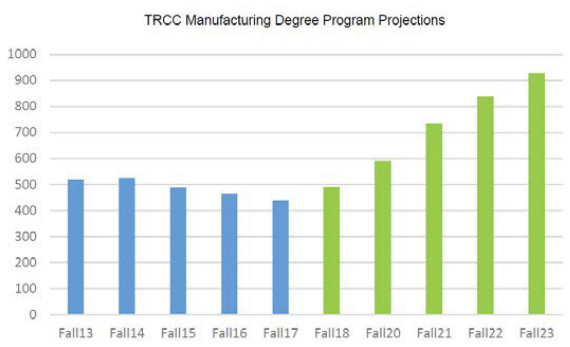
floor plans and the existing space inventory. The proposed floor plans were used in the Recommendations, along with suggestions for select refinements to address needs that have evolved since the study was done in 2015. The cost for the renovation is not included in the Master Plan projects, however, since the project budget has already been defined and funding identified.

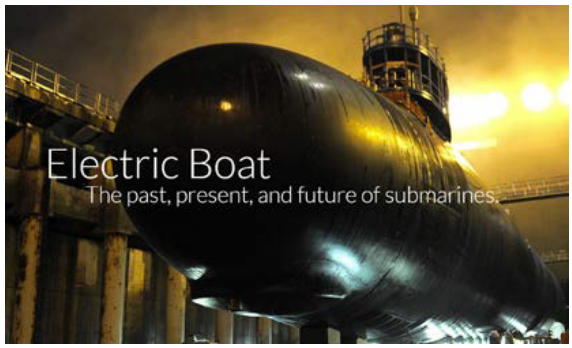
Off-site Facilities for EB Pipeline Program

A major non-credit initiative for Three Rivers was being developed by the firm Id3A as a parallel study during the Master Plan update. This initiative was for the Electric Boat Pipeline Program. As context, the U.S. Department of Labor, through its Trade Adjustment Assistance Community College and Career Training program (TAACCCT) awarded $15,000,000 to a Consortium of Connecticut educational institutions. Of this, $1,283,000 is allocated to Three Rivers Community College. In coordination with the Eastern Connecticut Workforce Investment Board, Electric Boat (EB) has been coordinating directly with TRCC to address high priority workforce training needs for welding and other advanced manufacturing skills to support the manufacture of submarines at their facility in Groton. The iD3A study assessed the space needed for this training and potential locations on and off-site. The results and recommendations of this separate study to address the EB Pipeline Initiative are summarized in Chapter 4, Recommendations.









from TRCC Demand & Projections Report: Manufacturing Programs, April 9, 2018

CAMPUS MAP TODAY

KEY

A A Wing
B B Wing
C C Wing
D D Wing
E E Wing
F F Wing
G Central Utility Plant / G Wing (CUP)

1. Campus Main Entrance
2. Campus North Entrance
3. Building Main Entrance
4. Front Lawn
5. Courtyards
6. Loading Dock
7. Childcare Center Playground
8. Parking

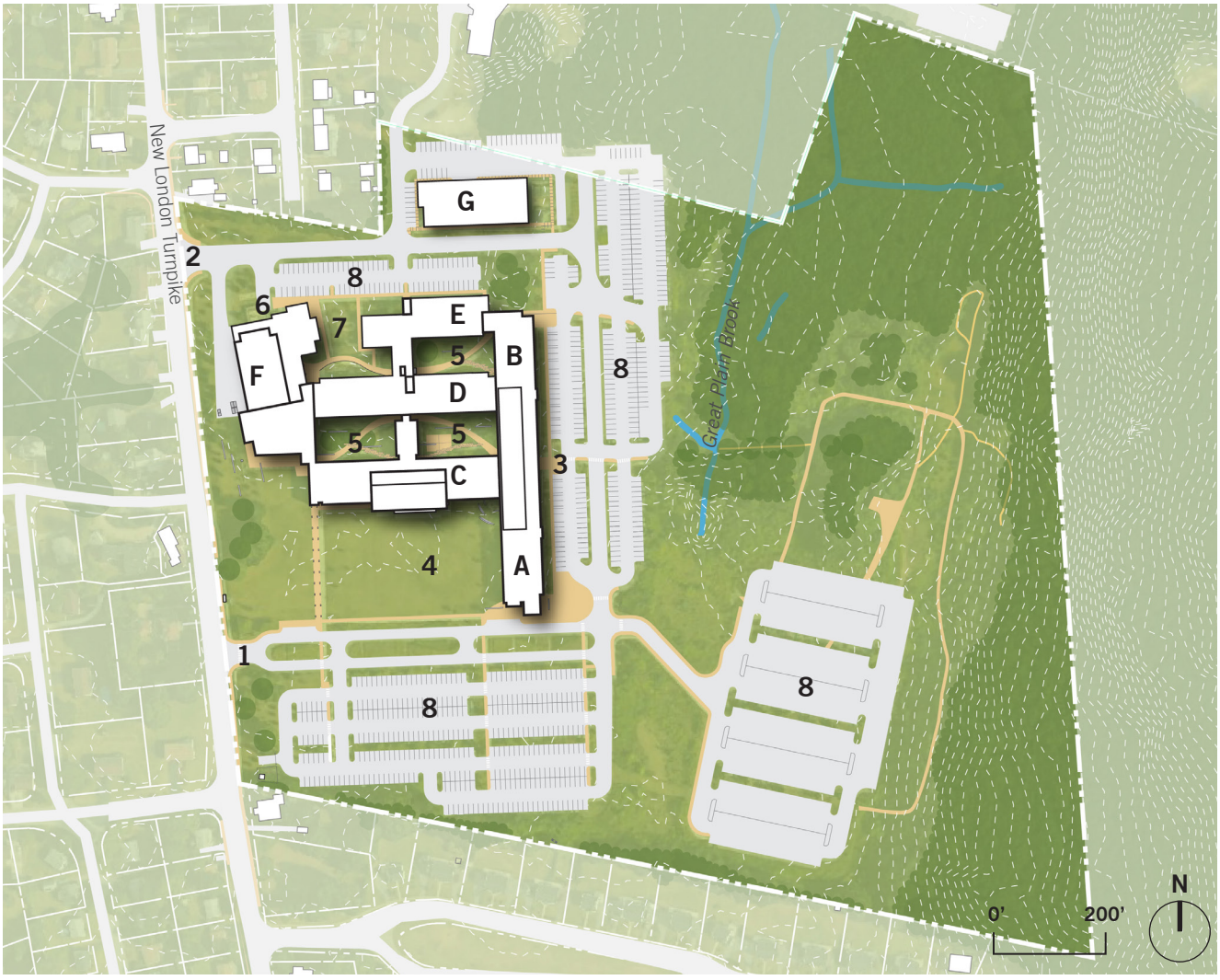


FIGURE 02.4 The Campus Today

CONTEXT

Three Rivers Community College in Norwich serves the eastern region of Connecticut. The town center of Norwich, with its historic green and the Norwichtown Historic District, is 3 miles north of the campus on New London Turnpike. The College is 13 miles from New London and 54 miles to New Haven.



Norwichtown Historic District

Ella Grasso Technical High School

Grasso Tech, through its College Career Pathways program, collaborates with TRCC, offering courses in Bioscience and Environmental Science, Honors Algebra II, Mechanical Design and Engineering Technology and a Partnership program. Grasso Tech is located in nearby Groton and was in the process of building an expanded facility during the TRCC Master Plan process.

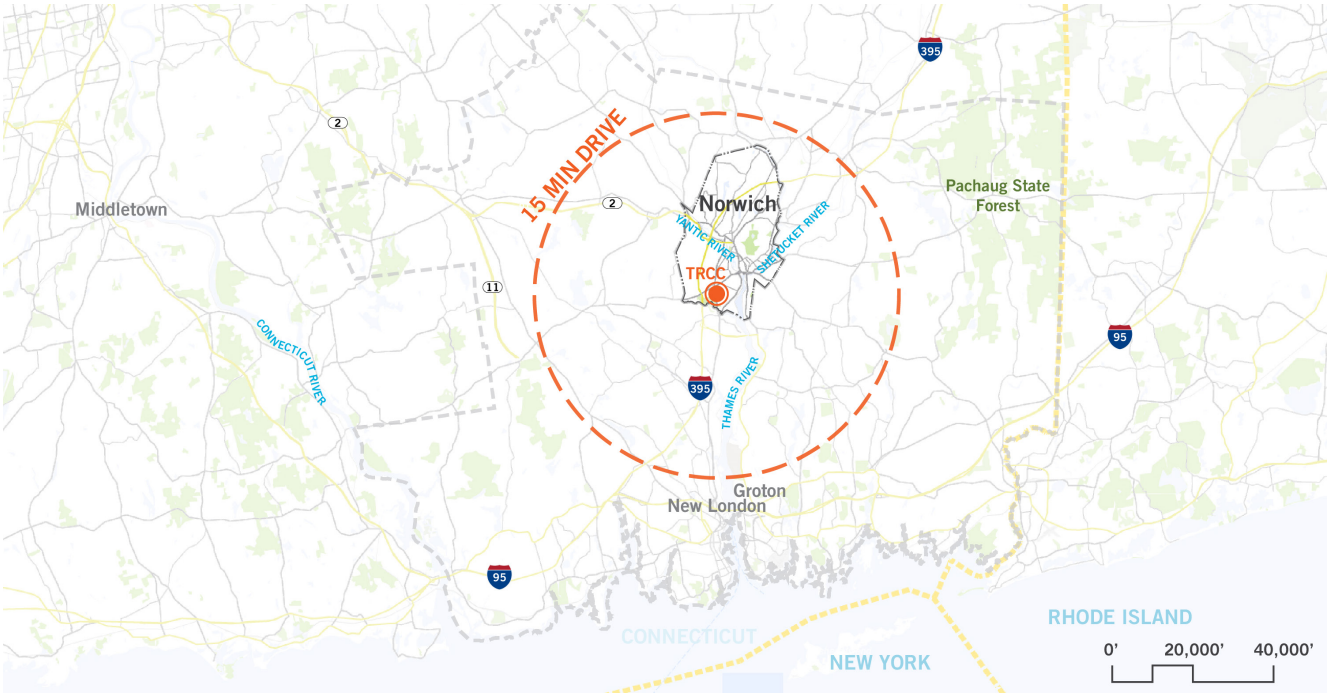


FIGURE 02.5 Regional Context

Area Context

The College has a varied mix of surrounding uses. West of the College on the opposite side of New London Turnpike is a residential neighborhood. South of the College is a residential subdivision. East of the College and buffered by woods, is Uncas on Thames, a state-owned campus. The property was originally developed as a state mental hospital. It is currently managed by the Simon Konover Company and occupied by office, medical and healthcare tenants. A UConn Co-op Extension Campus, residential and commercial uses occupy land north of the campus. Access to the UConn facility is via the TRCC north entrance and campus drive, past the CUP.

Zoning

The College site is zoned PDD on the Town of Norwich Zoning Map, a Planned Development Design District. The purpose of a PPD is to provide a creative approach to development within the city and to promote attractive planned development that complements natural, historic, and other resources. In addition, it is the intent of these regulations to promote uses within the district that encourage balanced economic development. Educational uses are a Special Permit use in this zone. As a state institution, however, the College is exempt from local zoning law.

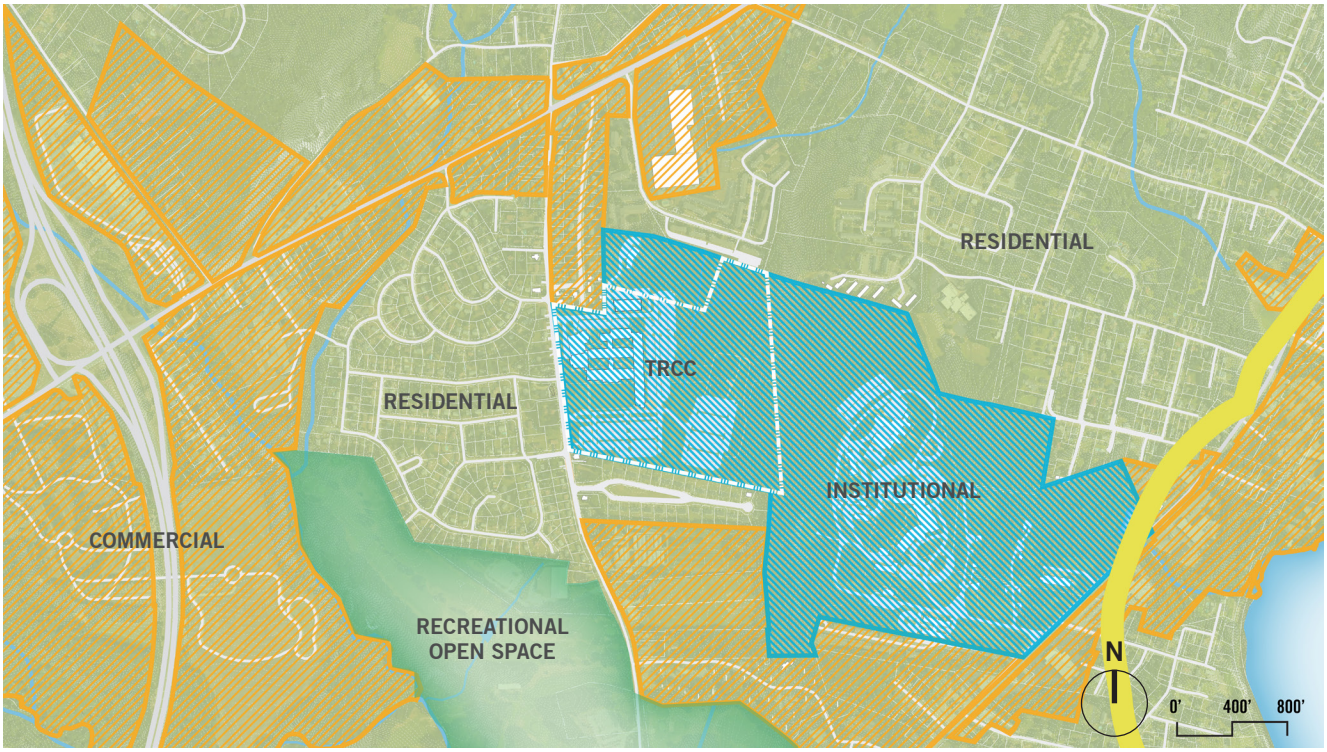


FIGURE 02.7 Land Use

Zoning Districts

Residential

- R-80
- R-40 (Residential)
- R-20
- MF (Multi-Family)
- ROS (Recreation Open Space)

Commerical/Industrial

- CC (Chelsea Central)
- WD (Water Development)
- GC (General Commercial)
- PC (Planned Commercial)
- NC (Neighborhood Commercial)
- BP (Business Park)
- PMR (Production, Manufacturing and Research)
- PDD (Planned Development)

Overlay Districts

- IHOD Incentive Housing Overlay District
- ABOD Agriculture Business Overlay District
- NVD Norwichtown Village Overlay District
- Coastal Area Management Overlay District

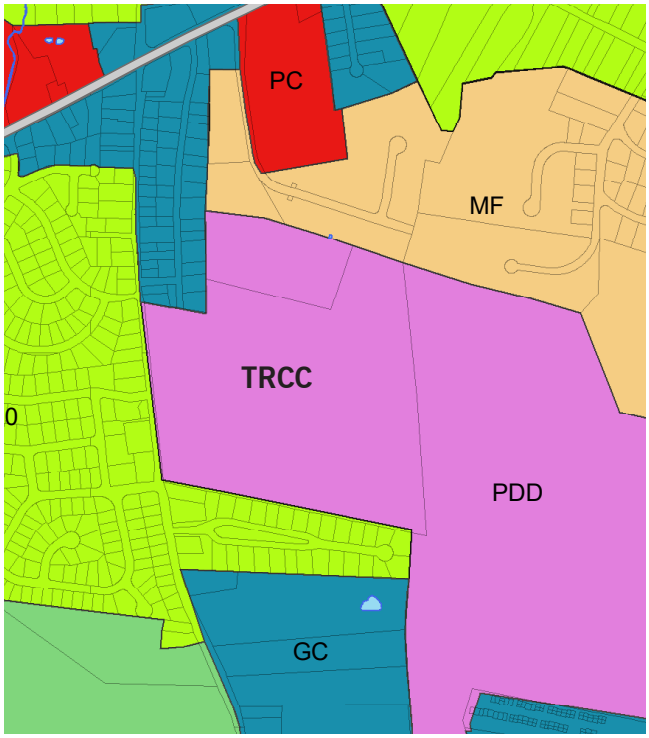


FIGURE 02.8 Zoning

CAMPUS SCALE, ORGANIZATION, AND LAND USE

The overall campus is 46 acres and measures roughly 1,600 feet wide (NS) and 1,575 feet long (EW). The academic core is compact and pedestrian-friendly and occupies the west half of the site, fronting New London Turnpike. The east half of the site is mostly occupied by woodlands and open space, with one parking lot.

The TRCC campus is clearly organized with an academic core of interconnected buildings, a loop road and a main and an ancillary vehicle entrance. The Central Utility Plan is a separate structure in proximity to main complex. The buildings are surrounded by attractive lawns and nearby parking lots. The wooded areas to the east and along some of the north act as a buffer between the College and adjacent uses.

The Campus land use provides a strong, flexible framework for future development.

LANDSCAPE AND OPEN SPACE

TRCC's campus is especially attractive and is a very positive asset for the College. The experience arriving on campus via the main entrance is pleasant and welcoming. TRCC has good visibility and presence along the New London Turnpike frontage and is largely buffered from adjacent uses at the north, east and south.

The campus has several distinct open space types. The areas immediately adjacent to the buildings are the most collegiate setting with pedestrian routes and landscaped areas with furnishing, providing clear sightlines to the rest of campus land. The front lawn, framed by the A and C Wings, makes an impressive foreground to the College and serves for Commencement.

The dining terrace south of the cafeteria is well-used during times when weather permits outdoor use. Likewise with the

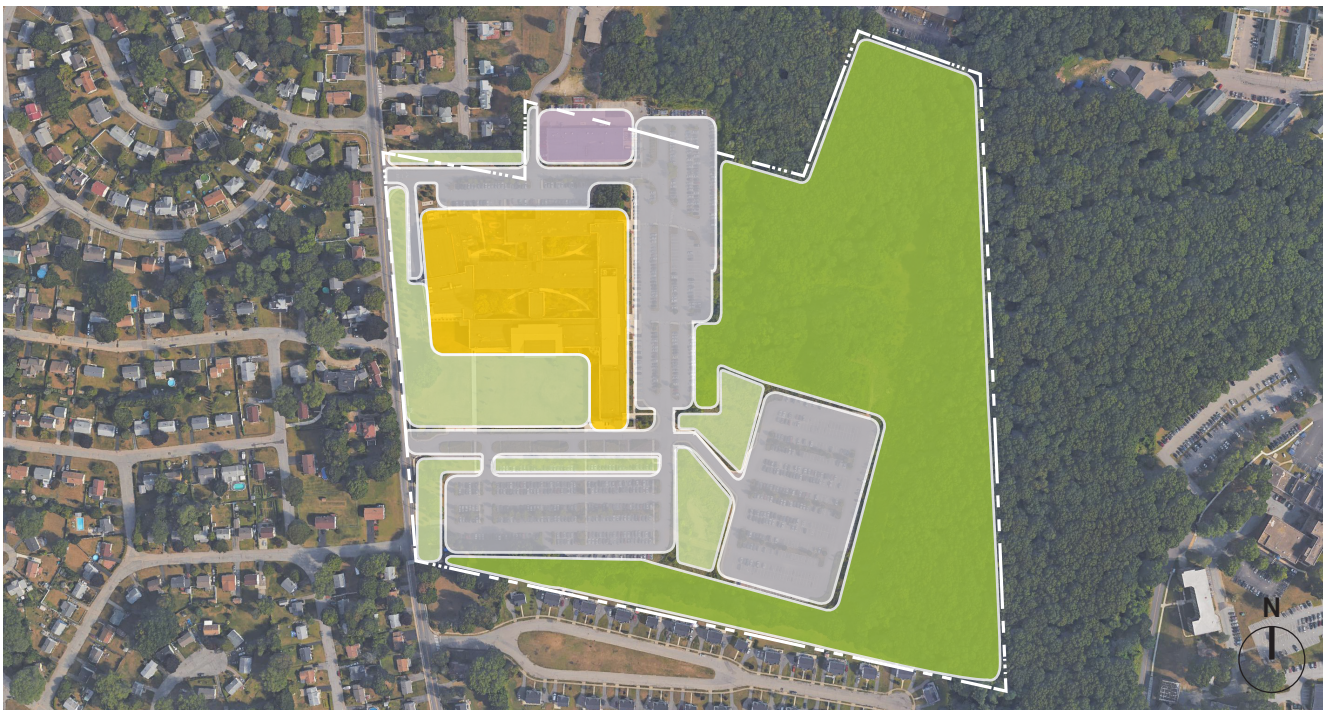


FIGURE 02.9 Existing Campus Land Uses

three landscaped courtyards defined by the C, D and E Wings. Some of these spaces have mature trees, which are nearing the end of their lifespan.

A Playground for the Childcare Center occupies space between the E and F Wings. The facility lacks an appropriate weather-proof surface. The natural grass is worn down to bare earth in places. This is especially problematic when it rains and results in muddy areas. The overall area is enclosed in fencing and subdivided to separate toddlers from older children. Improvements are needed, as described in detail in Chapter 4, Recommendations.

There is an existing nature trail network on campus, east of the academic core, through the woods, which connects to off-campus areas to the north.



Wing A Entrance



Entry Sign



Dining Terrace

FLOODPLAINS AND WETLANDS

A FEMA 100-year floodplain area runs through the low-point of the campus along Great Plain Brook, between the academic core and the east parking area (Lot 4). This is also reportedly a wetland, given findings when the parking lots were constructed.

College facility staff note that this area has only been wet once in the last decade. Flooding is not seen as an issue, even during severe weather events. Given that this area is not close to current or projected buildings, parking or open space used for College functions, there is minimal projected impact. Some of the existing campus nature trails could be impacted.

There are utility easements along the south campus edge and at the north edge along the access drive to the UConn extension facility. There are no easements through the campus.

LEGEND

100-Year Floodplain

Great Plain Brook

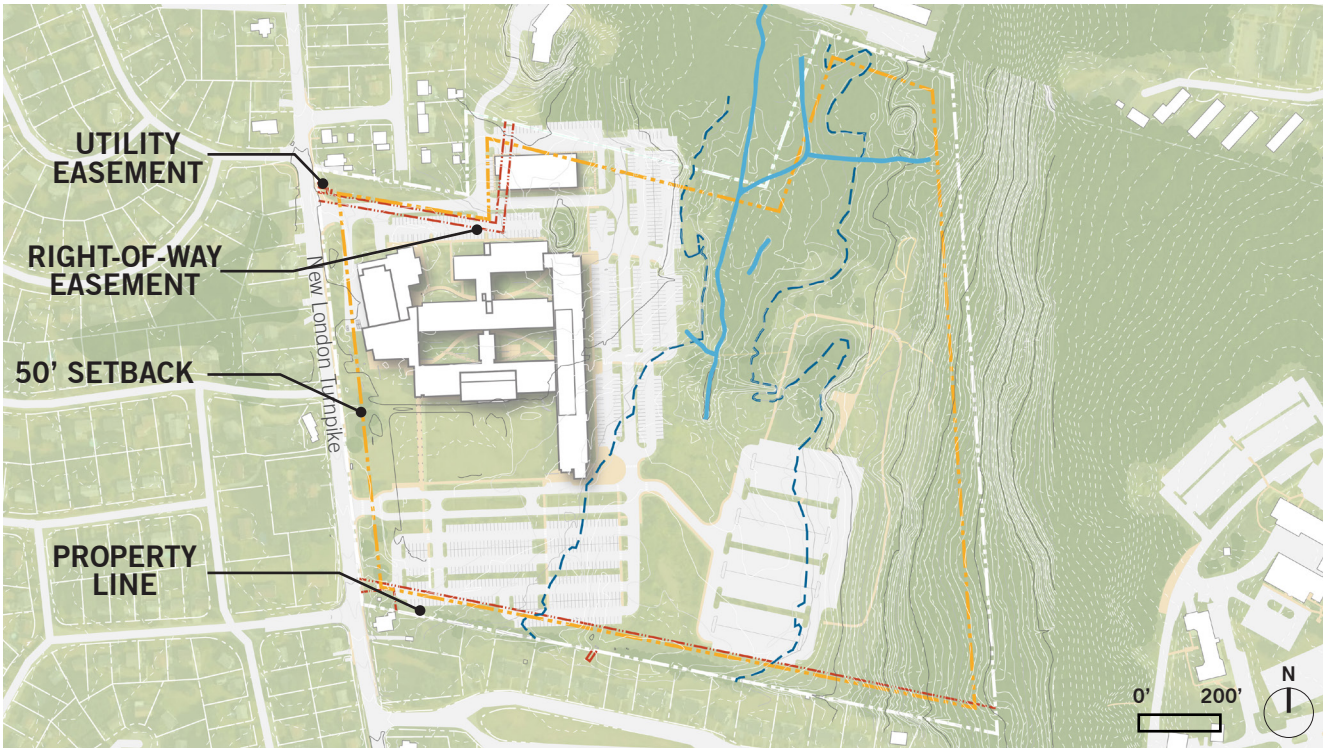


FIGURE 02.10 Open Space and Floodplains

ACCESS AND CIRCULATION

Three Rivers has good access from New London Turnpike. The main entrance is marked by an sign on a low stone wall, with a flagpole and pleasant landscaping. Farther to the north, near the dining facility is an electronic sign. Approaching from the south, the main entrance and college buidings beyond are clearly visible. Coming from the north, as many often do arriving from 395, one first sees the secondary entrance. Some first-time visitors mistakenly turn in there, making arrival experience less clear.

At peak times there is some traffic accessing and leaving the College. Cars coming southbound can stack up waiting for the left turn into the main entrance during morning peaks. There is a left turn lane to allow other cars to pass. Some reportedly use roads in the adjacent residential neighborhood to bypass the congestion on New London Turnpike to access TRCC. This traffic has caused concerns with these residents and resulting in actions to limit this activity. At late afternoon peak periods, congestion can occur on campus at the north entrance from cars waiting to make a left turn to go southbound on New London Turnpike. A separate left turn lane exists to manage this.

On-campus vehicle circulation works well; the drive acts like a loop road, feeding the various parking lots. Some aspects of circulation are counter-intuitive. The main entrance to the College, between the A and B Wings, is at the back – farthest from the New London Turnpike frontage. The service area and loading dock are in the rear relative to the College's main entrance, but face the new London Turnpike frontage. This is not an issue, however, since the loading dock is well screened and away from both vehicle entrances.

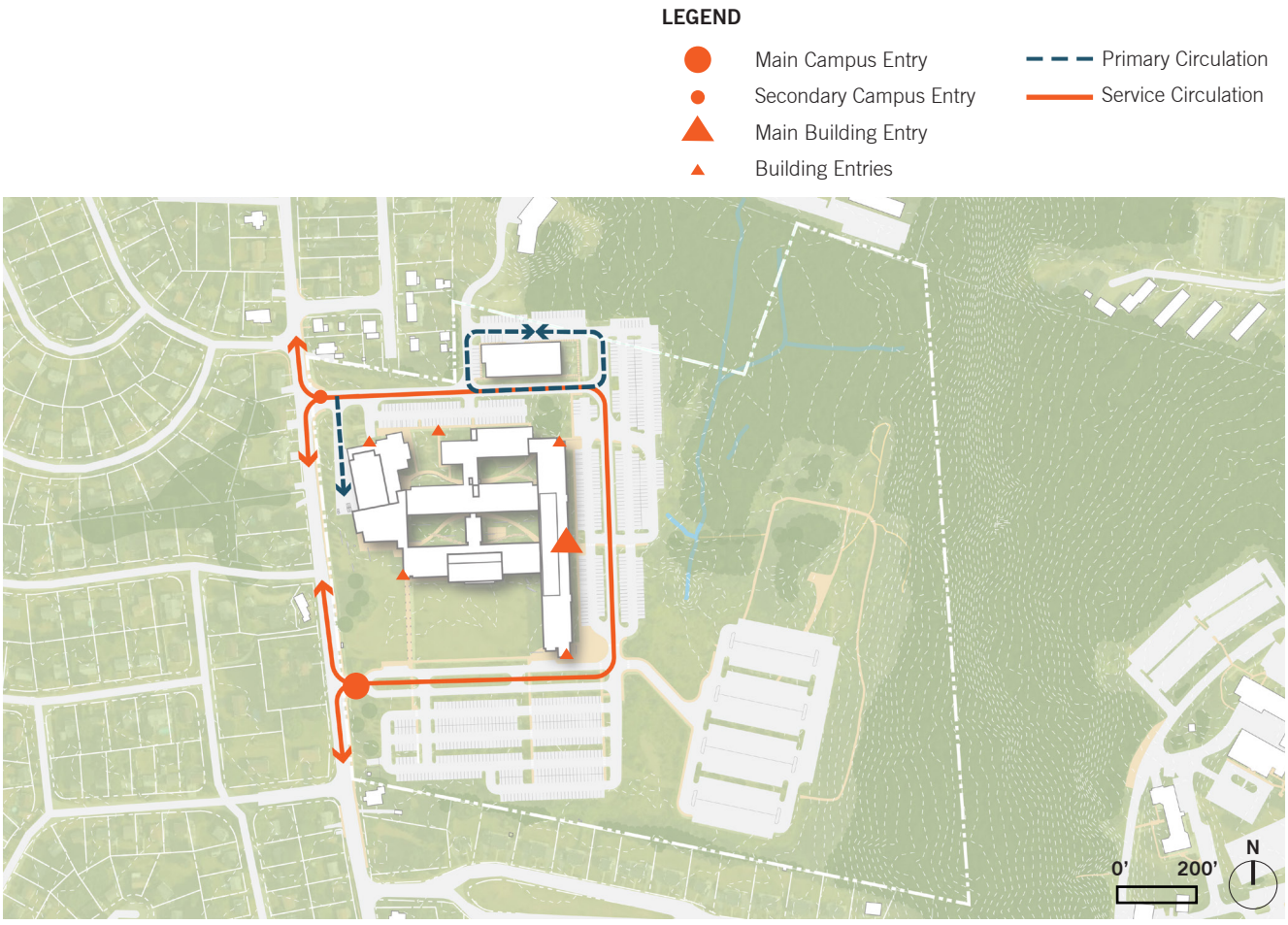


FIGURE 02.11 Arrival and Circulation

PARKING

Parking

Parking location and capacity are crucial to the success of any campus where the majority of visitors arrive via car, as at TRCC. Fortunately, the College has ample parking, with approximately 1,159 total spaces in 12 surface lots. The existing parking supply was reported as sufficient to meet current enrollment for both the College and Middle College. The lots are never full. Some believe, however, there is a parking problem. This is because they prefer not to use Lot 4, which is more remote to the east of the main campus. Low lighting levels in this lot contribute to a perception it is not safe. (This is addressed in the Recommendations.) Lot 4 originally was designed to be closer and more connected to the other parking areas, but the identification of a mapped Wetland required a reconfiguration.

Lot	Count
1-3	339
4	421
5-10	288
11	68
12	43
TOTAL	**1,159**

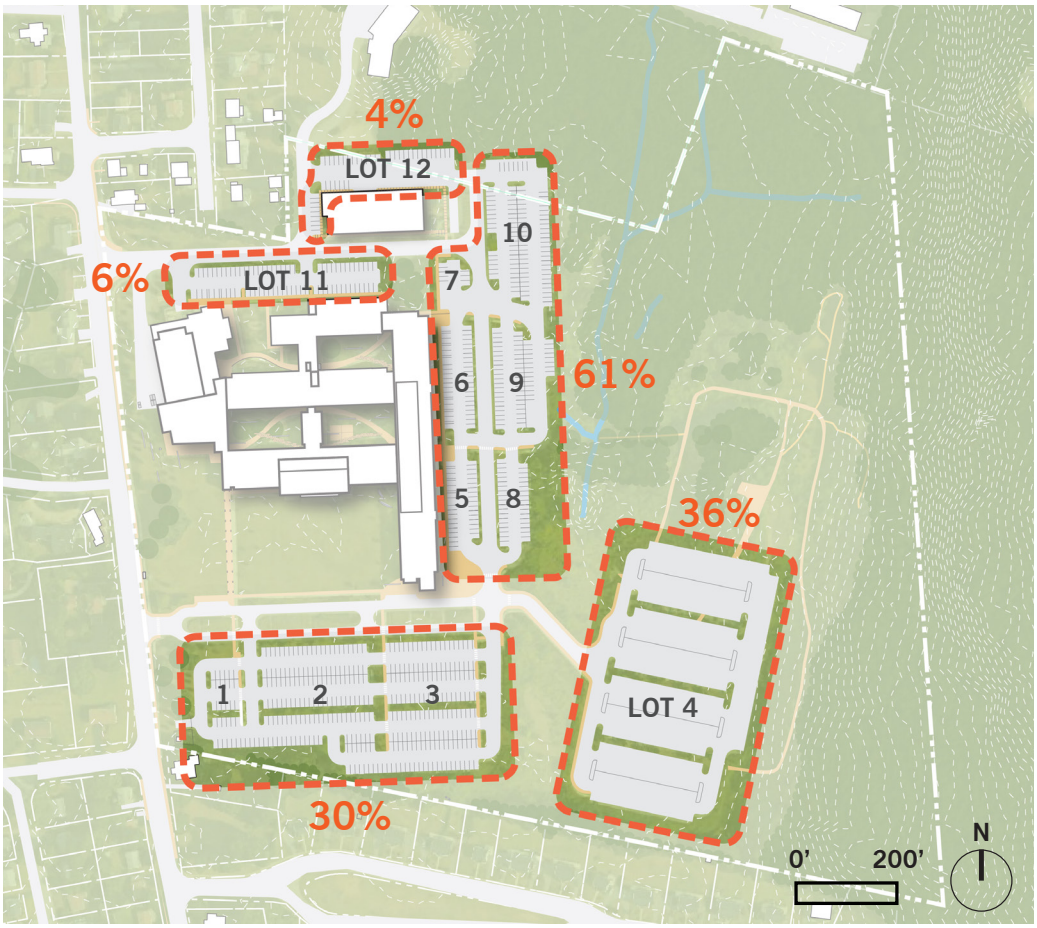


FIGURE 02.12 Existing Parking

PUBLIC TRANSPORTATION

Public Transportation

Southeast Area Transit runs a Three Rivers Community College Express bus to the campus. The stops are on New London Turnpike and at the A Wing. All full- and part-time credit undergraduate students at Three Rivers are eligible to receive a free U-Pass, which covers South East Area Transit. The U-Pass also allows students to travel within the state by rail or bus on:

- CT transit
- CT fastrak
- Shore Line East
- New Haven Line (up to the stateline)



Bus Stop at Campus Entrance on New London Turnpike



SEAT buses

BUILDINGS

FACILITY SUMMARY

Three Rivers Community College is comprised of 6 contiguous wings and one outbuilding. TRCC hosts the Three Rivers Middle College Magnet High School. The high school is located inside the College, rather than occupying its own wing as at Manchester or Quinebaug Valley.

The original TRCC buildings on the site prior to the College's consolidation, comprise the former Thames Building and completed in 1962. These buildings, now renovated, form the D and E Wings and part of the F Wing. The A, B, C Wings and the Cafeteria portion of the F wing were completed in 2010 when TRCC was founded on this site. The Central Utility Plant (CUP) was built in 2007 to provide heating and cooling for the complex, as well as facility offices and storage.

All buildings are two stories, with no basement levels, except the CUP which is a single story. Mechanical penthouses occupy some rooftops, forming a 3rd level.

Together, the TRCC buildings comprise 177,374 Assignable Square Feet and 282,583 Gross Square Feet as detailed in the table below.

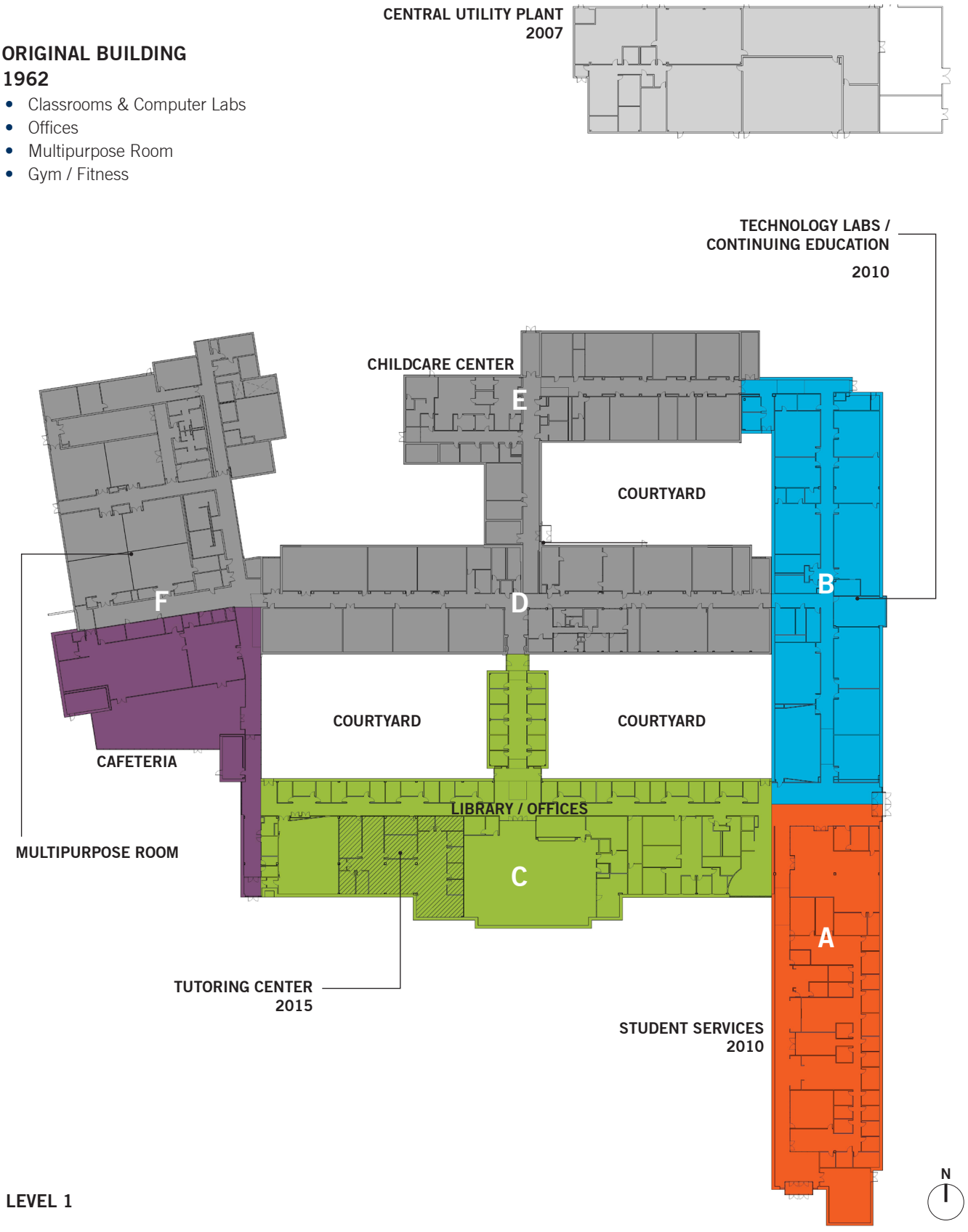
Buildings	ASF	GSF	YEAR BUILT
Main Building			
A Wing	22,658	36,594	2010
B Wing	25,549	39,650	2010
C Wing	43,128	63,545	2010
D Wing	32,443	48,202	1962
E Wing	20,374	33,880	1962
F Wing	25,585	44,758	1962
Subtotal: Main Building	**169,737**	**266,629**	
CUP	7,637	15,954	2007
Total: TRCC	**177,374**	**282,583**	
		63%	



FIGURE 02.13 Existing Buildings

ORIGINAL BUILDING
1962

- Classrooms & Computer Labs
- Offices
- Multipurpose Room
- Gym / Fitness



LEVEL 1

FIGURE 02.14 Existing Building

PROGRAM DISTRIBUTION

The plans opposite illustrate how the functional space program is distributed across the two floors of TRCC. The College's signature spaces include the Library, Cafeteria and the Main Lobby. Instructional spaces are generally at the north and east (A, B, D and E Wings). Specialized spaces like the cafeteria, multipurpose space and gym are mostly in the west side (F Wing), with the Library and Tutoring Center facing the south lawn in the C Wing, along with administrative areas. Student services and campus services are primarily in the first floor of the A Wing, with additional space in the second floor of the F Wing.



Main Lobby



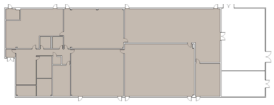
Library Interior



Cafeteria

LEGEND

- Academic: Department Space
- Academic: Classrooms and Lab Space
- Support: Administrative Services
- Support: Student / Campus Services
- Assembly
- Library
- Public Space





LEVEL 1

FIGURE 02.15 Existing Program Distribution, First Floor



LEVEL 2

FIGURE 02.16 Existing Program Distribution, Second Floor

Unlike other community colleges, TRCC's Middle College is embedded and smaller in scale. The plan to the right illustrates dedicated and shared spaces used by the Middle College, which are on the second floor of the D and E Wings.

In general, restrooms are well-distributed across TRCC's facilities. One significant exception, however, is the southeast corner – the East end of the C Wing. From this location, it is a considerable walk to get to toilets, especially on the second floor. Any future renovations or expansions should address this.

Additional detailed information on the existing assignable program space follows in Chapter 3: Space Needs.

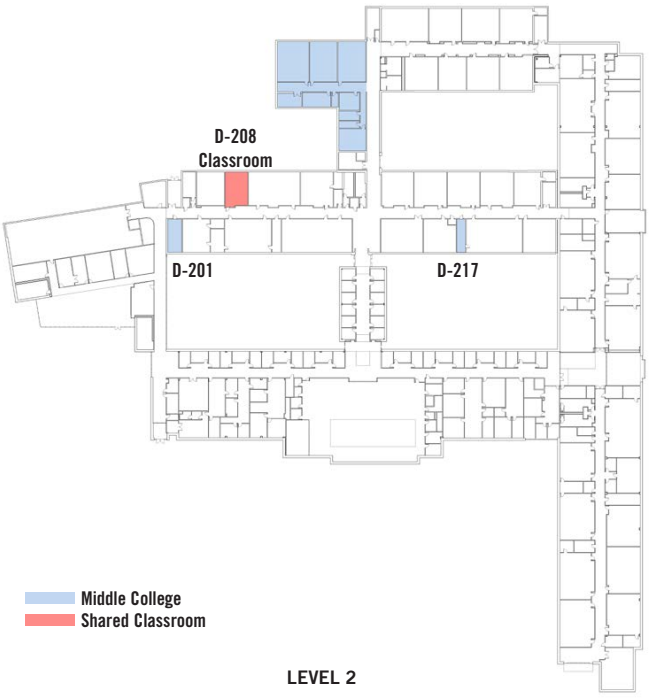


FIGURE 02.17 Middle College and Shared Classrooms



FIGURE 02.18 Existing Locker Rooms and Restrooms

ENTRIES, INTERIOR CIRCULATION, WAYFINDING

Three Rivers has several building entrances. The Main Entrance, between the A and B Wings is centrally located in the complex. It has a welcoming lobby and security/information desk. Soon, following a pending renovation, the Welcome Center will face onto the lobby as well.

For first-time visitors to the College, however, there can be some confusion determining the main entrance. The A Wing Entrance with its impressive tower, visible from the main entrance drive, may seem to some that it is the main entrance.

In fact, the actual main entrance is in the back of the complex, not visible from the London Turnpike frontage. Entering at the A Wing, one sees an un-staffed information desk today and a long hallway lined with student services. After the pending renovation of the A Wing first floor, the bookstore will be next to the entry lobby.

Overall, once students, faculty and staff get familiar with the building, the entries work well and are well-distributed.



Main Entrance



A Wing Entry at right

LEGEND

- Vertical Circulation
- Horizontal Circulation
- Areas with Exterior Views and daylight



LEVEL 1

Once inside the Three Rivers complex, circulation and wayfinding is fairly clear and straightforward. While some halls are long, the general layout is well-organized and intuitive.

One notable exception is wayfinding to access the Multipurpose Room. This is one of the main spaces which TRCC uses to host the community, yet it is one of the hardest for visitors to find since it is far from the main entrance in the F Wing. The Multipurpose Room is near the front of the College's site, but functionally at the back of the building relative to where most people enter.

It is not necessary to move the space to be closer to the main entrance. The consensus is that good signage should be sufficient to correct the issue. In the main lobby, a sign on a stand could be put out during times when the Multipurpose Space is hosting a large event. A pendant sign from the ceiling could also provide good visibility for those seeking to find this assembly space.

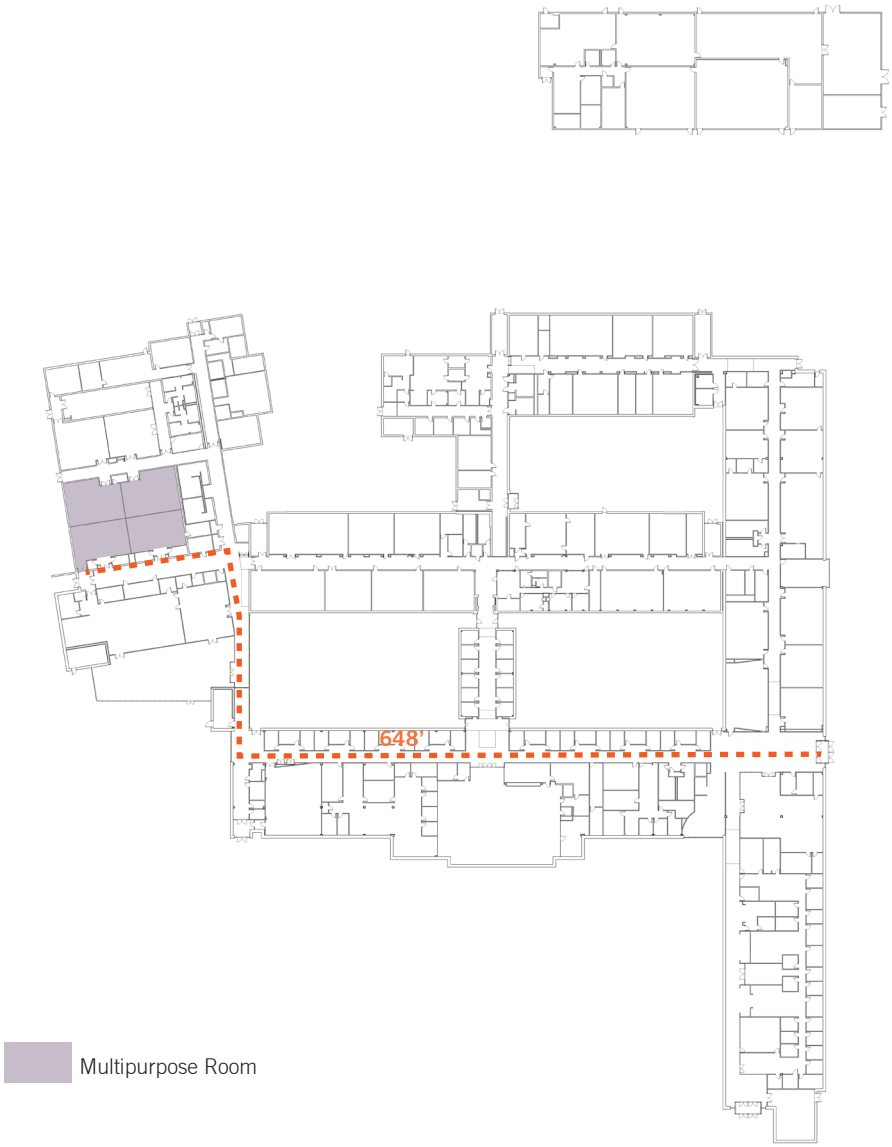


FIGURE 02.19 Route from Main Entry to Multipurpose Room



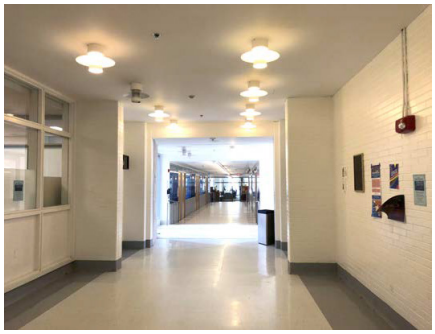
Multipurpose Room

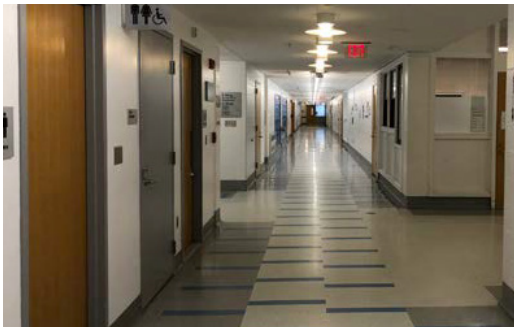












Existing Interior Corridors and Entry

ARCHITECTURAL CHARACTER

Three Rivers has one of the most aesthetically cohesive and attractive set of buildings of all the Connecticut community colleges. The exterior appearance of Three Rivers, buildings is one of the most cohesive and attractive of all the Connecticut Community Colleges. The 2008 expansion picks up on the materiality of the original buildings on the site and creates a consistent language of red brick piers, vertical window openings and articulated mullions. This glazing treatment creates a pleasant sense of scale, adds visual interest and helps manage sunlight. Special areas, like entrance lobbies and cafeteria dining area, have more glass to signify their importance, connect to views and create a hierarchy of expression. The overall effect is one which uses traditional materials – red brick and stacked limestone site walls at key exterior entry areas - in a contemporary manner.

The width and scale of the wings in the 2008 expansion maximize access for occupants to light and air. Double-loaded corridors support uses to either side. There are no deep floorplates with interiors devoid of windows and access to light and views.

The CUP building is clad in corrugated metal, with a red brick base to match that used in the main complex. The color of its metal siding matches that of the rooftop mechanical penthouses of the main complex across the drive.



Typical Elevation



Dining Elevation

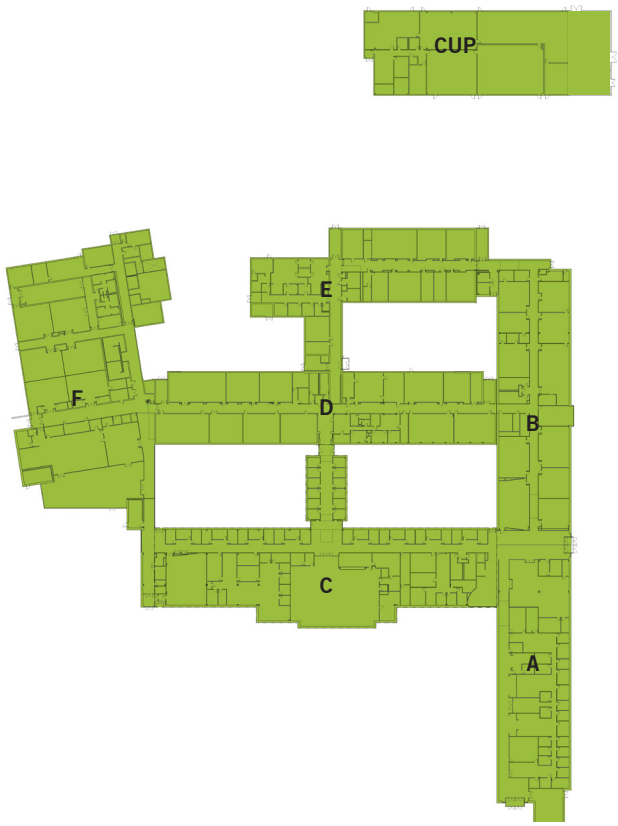


Central Utility Plant

BUILDING CONDITION

Since Three Rivers was developed recently and many of wings were constructed circa 2010, the facility overall is in good condition. Older buildings that pre-date the College have also been substantially renovated. As a result, the College's physical plant scored high in a self-assessment by Campus Facility and Planning staff.

TRCC maintenance staff has kept the College in a very good state of repair. Lighting is the one of the few elements of the facilities rated "fair" on the assessment, and TRCC is in the process of upgrading fixtures to address deficiencies and convert to energy-efficient LED. Exterior doors are also in need of upgrades. Another notable deficiency is the HVAC for D and E wings. This deficiency is noted in the MEP section and addressed in the Recommendations chapter.



LEGEND

- New / Excellent
- Good - Needs Investment in 10+ years
- Fair - Needs Investment in 5-10 years
- Poor - Needs Investment in Near Term

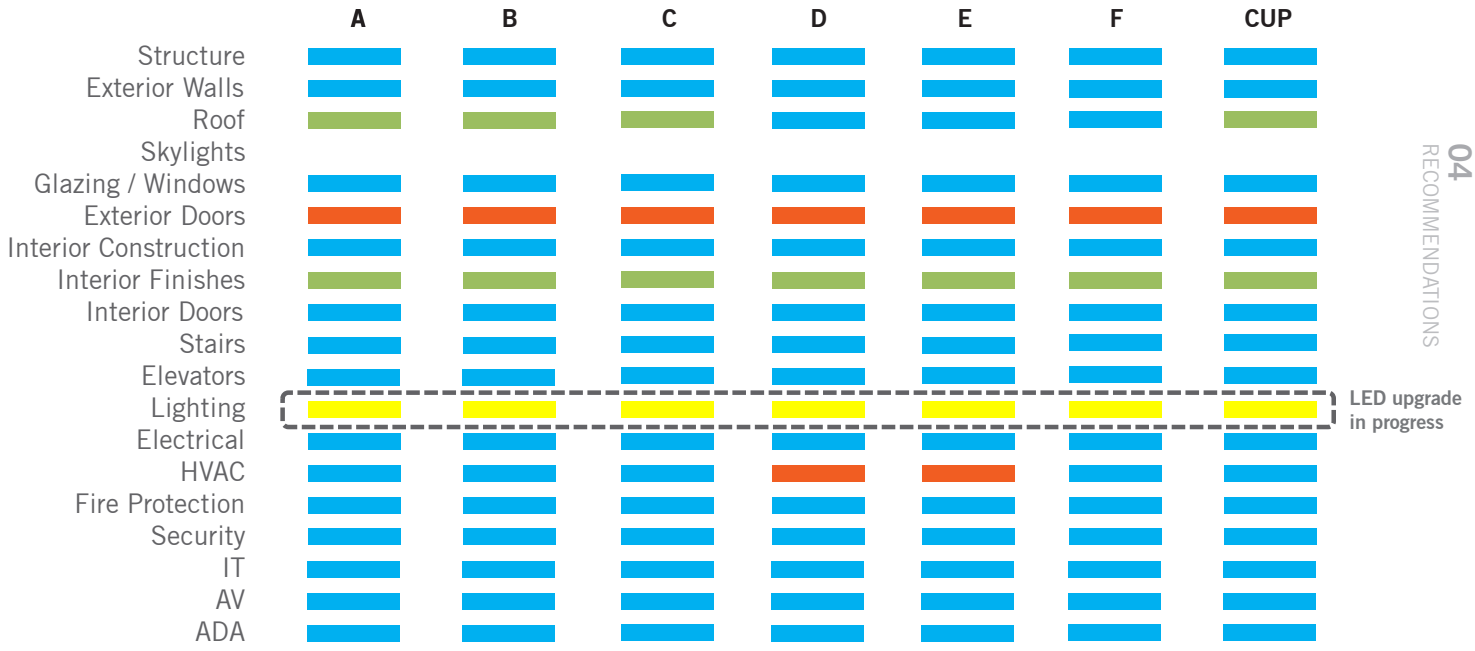


FIGURE 02.20 Building Conditions

CLASSROOM INVENTORY AND UTILIZATION

The Planning Team analyzed TRCC's classroom inventory relative to existing rooms, the Fall 2017 course schedule, and actual enrollments. TRCC has 16 total general purpose classrooms. Most are concentrated in the center of the complex, as shown in the plan below of the first and second floors. One classroom (D-208) is shared with the Middle College.

The College manages its course section information in a different format from other units. Sections with both a classroom and lab component attribute this activity to the classroom space only. Additionally, sections for Nursing and Allied Health are tracked separately from the Banner database.

Total # of Classrooms	36
Total Classroom Seats	1,315
Total Classroom ASF	33,040
Avg/ Classroom Room Seat Capacity	37
Avg. Classroom ASF / Station	28



FIGURE 02.21 Classroom Locations

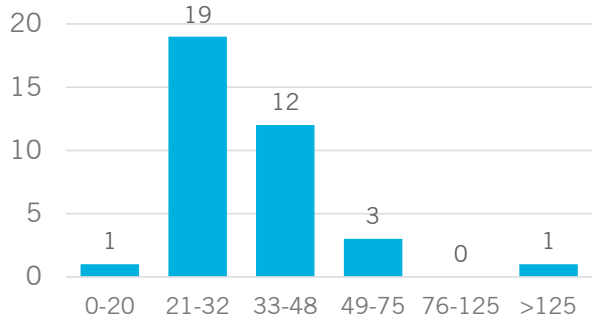


FIGURE 02.24 Number of Classrooms by Size

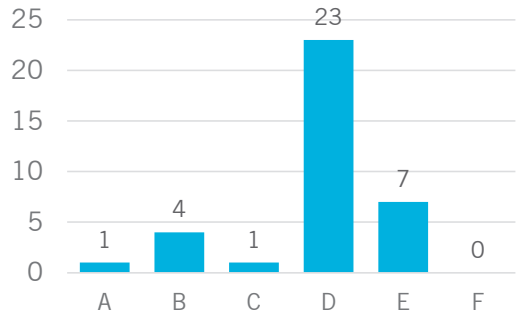


FIGURE 02.25 Number of Classrooms by Wing

Room Size	Number of Classrooms	Total ASF	Total Seats	Average ASF Per Station	Average Seat Capacity per Room
0-20	1	558	20	28	20
21-32	19	15,893	511	32	27
33-48	12	11,359	461	25	38
49-75	3	3,337	187	18	62
>125	1	1,893	136	14	136
Grand Total	**36**	**33,040**	**1,315**	**28**	**37**

FIGURE 02.22 Classroom Utilization: Summary by Room Size

Wing	Number of Classrooms	Total ASF	Total Seats	Average ASF Per Station	Average Seat Capacity per Room
A	1	960	48	20	20
B	4	4,191	212	22	53
C	1	1,893	136	14	136
D	23	20,468	711	30	31
E	7	5,528	208	28	29
F	0	-	-	-	-
Grand Total	**36**	**33,040**	**1,315**	**28**	**37**

FIGURE 02.23 Classroom Utilization: Summary by Wing

ENERGY AND INFRASTRUCTURE

The MEP Engineering Firm AKF Group did a summary assessment of existing MEP/FP systems serving the TRCC campus. This was informed by a review of the prior Energy Master Plan, prepared by Perkins+Will and Woodard & Curran. Following is their summary of existing conditions.

HVAC STEMS OVERVIEW

Six new high-efficiency Heating Hot water boilers, with primary only pumping, & Three Chillers, with primary secondary operation, were installed recently in the Central Utility Plant. These circulate water through the campus.

Condenser water system is currently drained down during the winter.

There are 12 air handling units on campus in various mechanical rooms that distribute air to local zones for cooling and heating.

See Key Issues below for additional information on HVAC.

PLUMBING SYSTEMS OVERVIEW

The campus is provided with high pressure natural gas service from the local utility company.

The buildings domestic water, sanitary and storm drain sewers are served by the local municipality.

Main building Domestic hot water is generated by two 400 gallon gas fired heaters. The Daycare area hot water is generated by an 80 gallon electric hot water heater.

ELECTRICAL SYSTEMS OVERVIEW

The Main Building complex is fed from the main electrical room which has a 277/480V, 3 Phase, 2500 Amp service.

The CUP (Central Utility Plant) building has a 277/480V, Phase, 2000 Amp service.

There are three existing Generac Generators Onsite two of



Boiler Plant



Domestic Gas Fired Hot Water Heaters



Domestic Gas Fired Hot Water Heaters



Fire Service Backflow Preventer

which are rated at 400 KW and the third generator is rated at 250 KW.

All on Campus lighting are Fluorescent/Incandescent. Upgrading to LED lighting is recommended, and is planned.

Building Electrical System need to undergo an NFPA 70E (Short Circuit and Arc Flash) study.

FIRE PROTECTION

All TRCC Buildings have sprinkler protection throughout.

All incoming fire protection water services are equipped with a backflow preventers.

KEY CONSIDERATIONS

Generally, TRCC's MEP systems existing MEP/FP systems are in good condition. The 2016 Energy Master Plan identified that the College's overall energy use is average for a college. Since then, the old boilers were replaced with high-efficiency boilers. Further improvement in energy use could be expected as a result.

There are two issues to be addressed, however – one high priority.

The College has experienced problems with temperature and humidity control in the D and E Wings. This conditions is creating operational problems and must be addressed. TRCC undertook a 2016 Indoor Air Quality HVAC Investigation. This study recommended a series of permanent modifications and interim measures. (See Chapter 4: Recommendations for additional information.)

The second operational issue is the inability to provide cooling when needed on warm winter days. The cooling tower is drained down every winter to prevent freezing but limits the cooling availability. Installation of a plate and frame heat exchanger and basin heaters would allow for winter cooling availability along with additional energy savings.

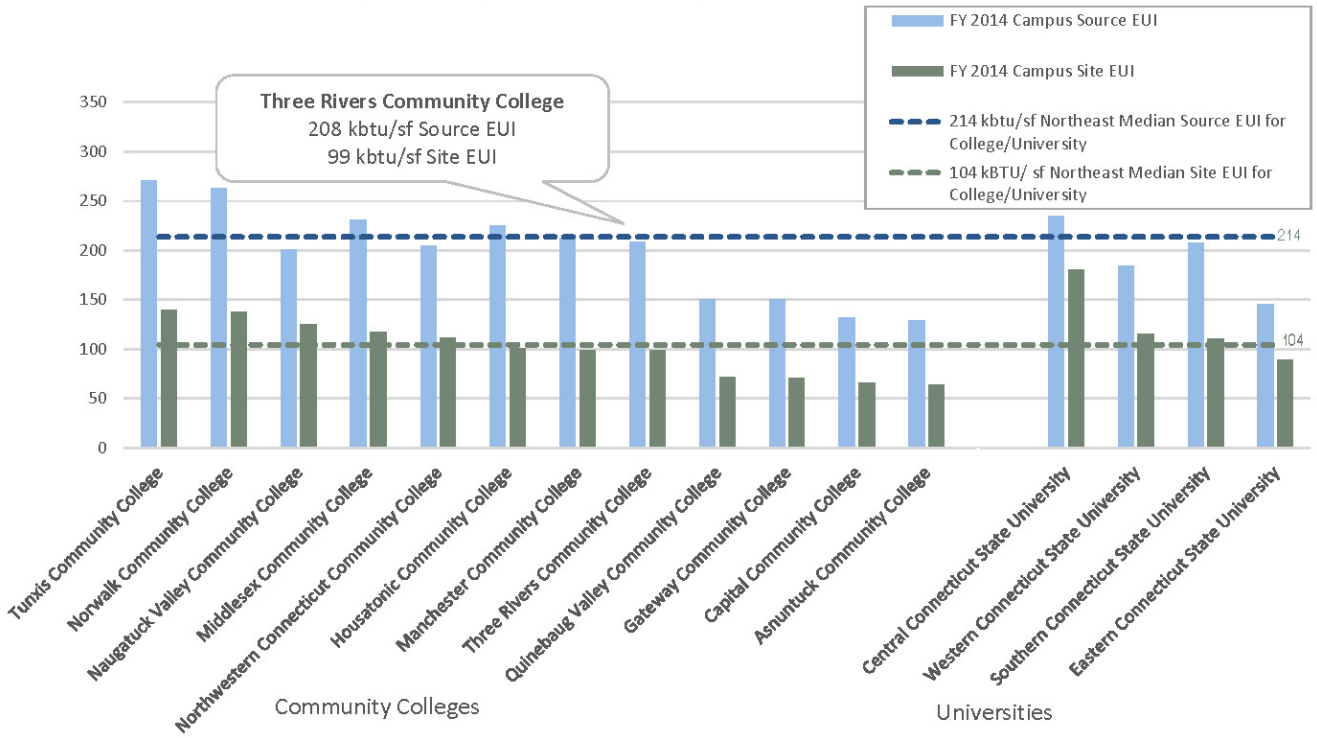
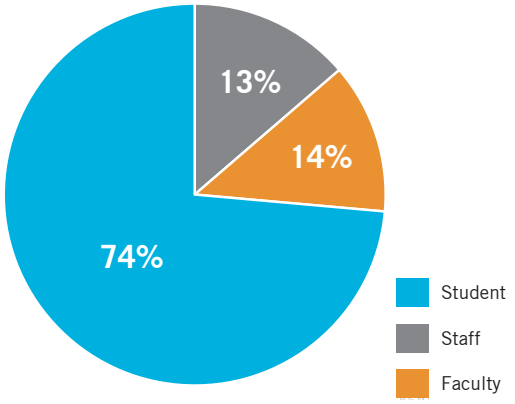


FIGURE 02.26 Site and Source EUI by Campus

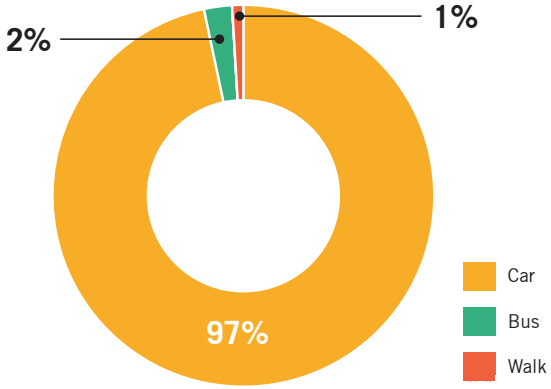
STUDENT ENGAGEMENT

The Planning Team and College conducted an on-line survey in March to inform the Master Plan. There were 213 participants, mostly students, but also faculty and staff. The results largely confirmed the impressions of the members of the College Master Plan Advisory Committee. Remoteness of parking during peak periods was a main concern. Another was the need to expand the cafeteria dining area to meet peak demand.

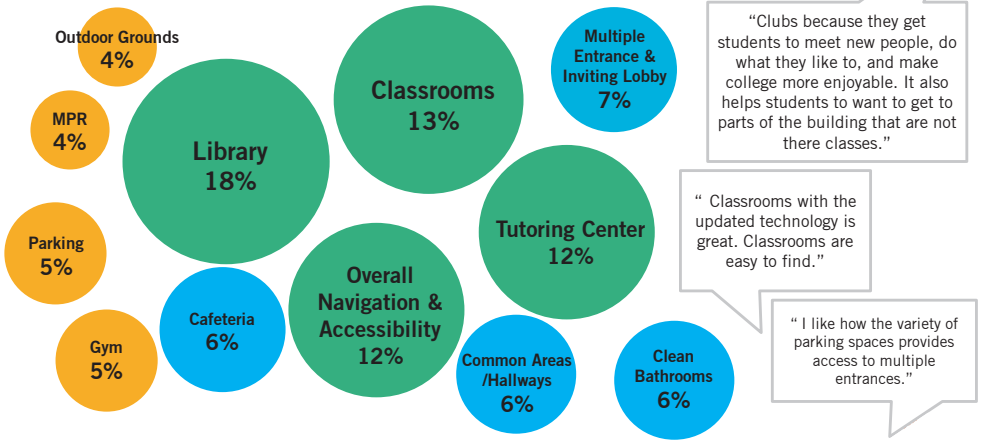
Participation Scan



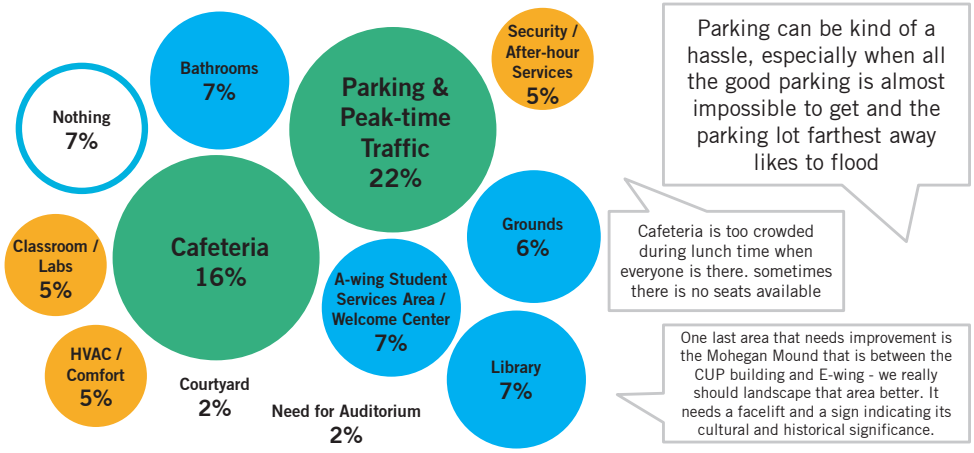
I commute to campus by



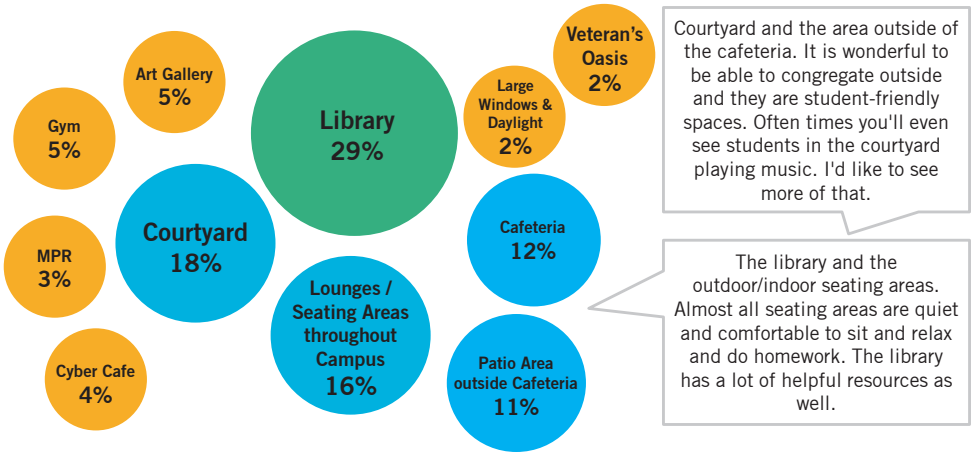
3. What area or aspect of the College facilities do you think works the BEST? Why?



4. What area or aspect of the College facilities do you think most needs improvement? Why?



5. What is your favorite Indoor or Outdoor Space at the College? Why?



7. Additional thoughts regarding the College facilities and grounds.

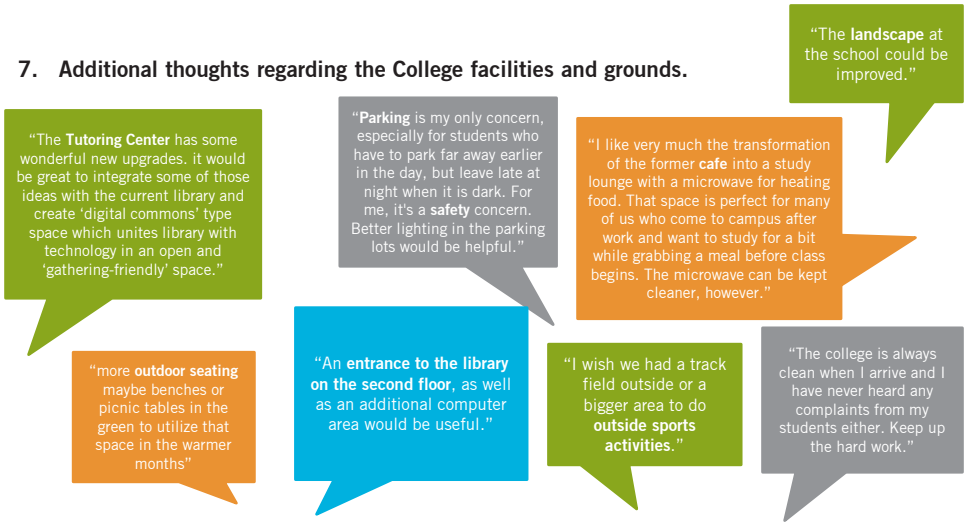


FIGURE 02.27 Survey Results

OPPORTUNITY SITE

The College has considerable land relative to its current development footprint. Much of the campus, however, has topography and wetlands which are not suitable for development and remote from the academic core. The core itself is largely built-out to the perimeter road. The main opportunity site for expansion is the area southwest of the College, as illustrated on the site plan below. This area could be used for a combination of additions and open space enhancement. Sufficient space must be retained between existing wings and new construction to preserve light and air, as was done with the courtyards between the building wings.

In the long-term, decades out, if the College needed significantly more development footprint, portions of Lots 1, 2 or 3 could be a building site. Using parking lots for buildings is a typical strategy in campus design, but one which requires investment in replacement parking. The front lawn should be retained for the foreseeable future.

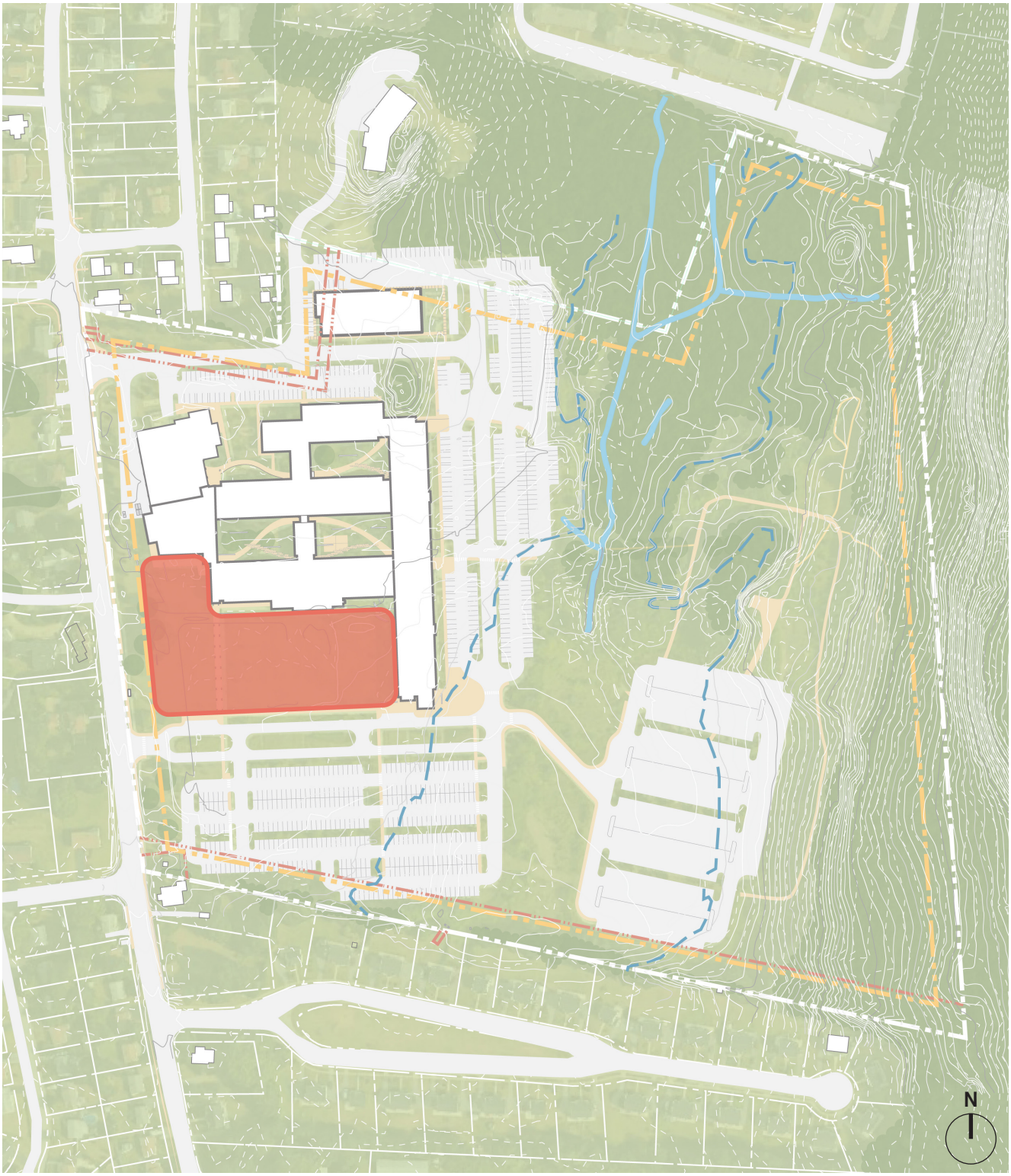


FIGURE 02.28 Opportunity Site

Three Rivers
COMMUNITY COLLEGE





3 SPACE NEEDS

SPACE NEEDS ASSESSMENT
- INTRODUCTION
- SPACE DISTRIBUTION BY COMPONENT

OVERALL ASSESSMENT

DISTRIBUTION OF SPACE BY MAJOR CATEGORY

COLLEGE ENROLLMENT PROJECTIONS
- THE ROLE OF GENERAL STUDIES AND LIBERAL ARTS TRANSFER
- CREDIT AND NON-CREDIT ENROLLMENT PROJECTIONS

ACADEMIC ASSESSMENT
- INSTRUCTIONAL DELIVERY
- CLASSROOMS & COMPUTER LABS
- CLASSROOM SURPLUS
- COMPUTER LAB SURPLUS
- LARGE LECTURE SECTIONS
- LARGE ENROLLMENT COURSES
- BUSINESS & TECHNOLOGIES
- ENGLISH & COMMUNICATION
- HUMANITIES & SOCIAL SCIENCES
- NURSING & ALLIED HEALTH
- MATHEMATICS & SCIENCES

SUPPORT SPACE
- CONTINUING EDUCATION & WORK FORCE DEVELOPMENT
- ACADEMIC SUPPORT
- ADMINISTRATIVE SERVICES
- ASSEMBLY & EXHIBITION
- ATHLETIC & RECREATION
- CAMPUS SERVICES
- CHILDCARE CENTER
- LIBRARY
- STUDENT ACTIVITIES
- STUDENT SERVICES
- TECHNOLOGY

PARKING

CONCLUSIONS

SPACE NEEDS ASSESSMENT

Introduction

This section covers the space need assessment (SNA) for the Three Rivers Community College Master Plan Update. The assessment seeks to determine both the current and projected need of the College, based on enrollment projections for both credit and non-credit enrollment. The assessment is broken into Academic Space and Support Space. The Academic Space includes classrooms, class labs or teaching labs and faculty offices. The Support Space includes the elements necessary to run a functional campus such as student services, technology, and campus services, and elements necessary to create campus ambiance such as student activities and library. The SNA covers all of these elements. Last, the SNA is in assignable square feet –the space that is actually useable or programmable—unless otherwise noted.

Currently, Three Rivers Community College occupies slightly more than 177,000 Assignable Square Feet (ASF), representing approximately 282,000 Gross Square Feet (GSF) across seven buildings or wings. In addition to the College's programs, the campus hosts a Middle College. The square footage for the Middle College, totaling roughly 5,000 ASF, is included in the totals above. The space occupied by the Middle College is identified separately from the detailed space requirements of the College.

Space Distribution by Component

The following chart represents the current distribution of space by type across the campus. The chart moving clockwise begins with the academic space, the classrooms, and computer labs, then the academic departments. The most significant components in the inventory are the Classrooms, the academic department Business & Technologies, the Library and the Student Activities space. At approximately six o'clock is the Middle College. The Role of General Studies and Liberal Arts Transfer

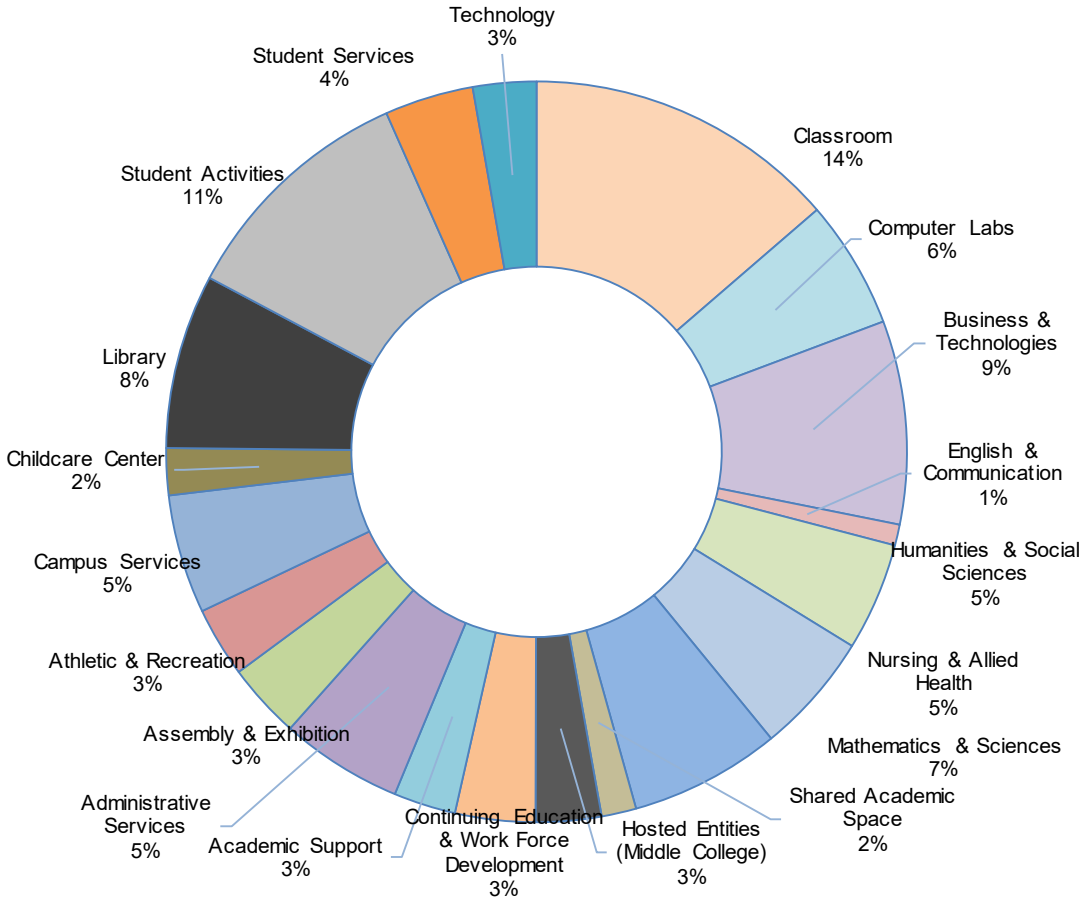


FIGURE 03.1 Space Distribution by Component (Assignable Square Feet), Fall 2017

OVERALL ASSESSMENT

Currently, the College has 71 assignable square feet (ASF) per student FTE. 73 ASF if the Middle College is included. 34 ASF per student FTE is devoted to Academic Space—classrooms, computer labs, teaching labs and faculty offices. The remainder—37 ASF—is devoted to the Support Space on campus, including the Library, Assembly & Exhibition space, and Student Activities. The 71 ASF currently places TRCC at the lowest level for its peer group. Tunxis Community College and Housatonic Community College, the two other community colleges near 2,500 student FTEs, average 80 ASF per Student FTE. The other four larger community colleges within the system though have a median ASF per student FTE of 59. The chart directly below illustrates the assignable square feet per student FTE, including any middle colleges, across the Connecticut community colleges.

Three Rivers Community College with roughly 2,500 student FTEs fall into the midrange of the Connecticut community colleges. In general, smaller community colleges –based on their enrollment—require more space per student FTE. Several

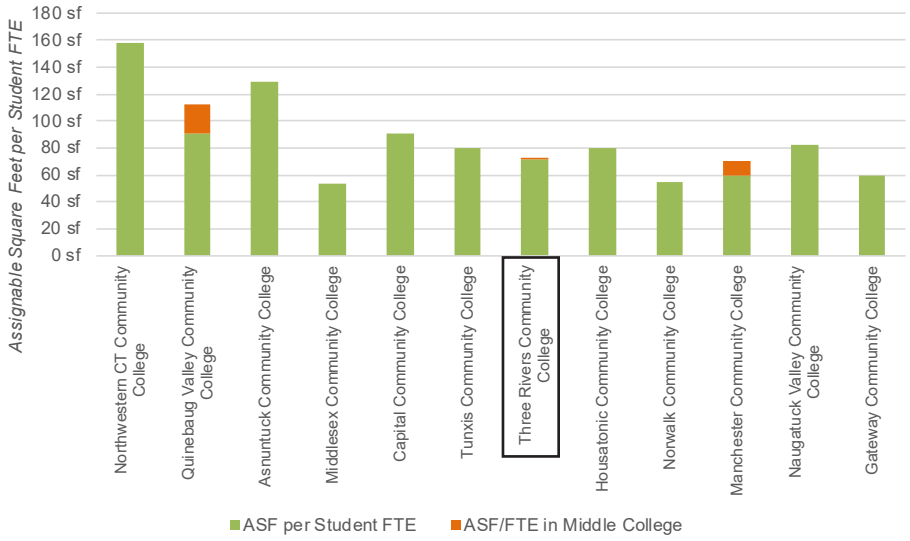


FIGURE 03.2 Benchmarking Across the Connecticut System

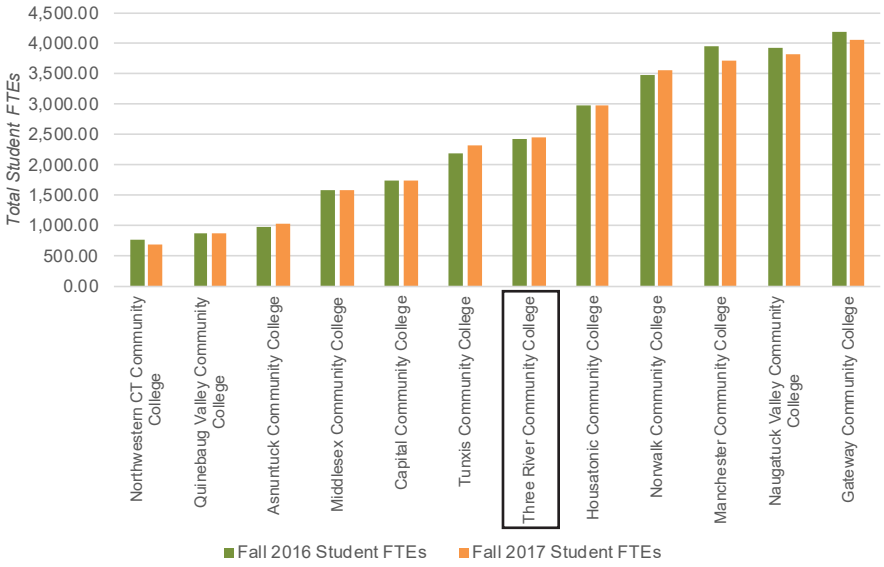


FIGURE 03.3 Fall Over Fall Credit Student FTEs

DISTRIBUTION OF SPACE BY MAJOR CATEGORY

elements of any community college are appropriate for both 1,000 student FTEs as well as 4,000 FTEs. As a result, TRCC's space allocation should be higher than Gateway Community College's, though less than Quinebaug's. The chart at the bottom of page 64 shows the Fall 2016 and Fall 2017 student credit enrollment across the twelve community colleges.

Distribution of Space across the Two Major Categories: Academic & Support

The following chart represents six of the twelve community colleges. These are the community college whose facility inventories have been updated as part of the ongoing master plan process. Both TRCC and MCC have a similar amount of space per student FTE, though substantially less than the remaining four community colleges. Both colleges' inventories are also roughly equally between Academic Space and Support Space. This split typically does not happen at most small community colleges. The Support Space because of the modest total enrollment and less efficiency typically tends to be much higher than the Academic Space. While there are several pressing issues in the Academic Space –literal bottlenecks that hamper both student recruitment and retention—the largest deficit for space at TRCC is in the Support Space. The chart represents the split between Academic Space and Support Space for the six community colleges.

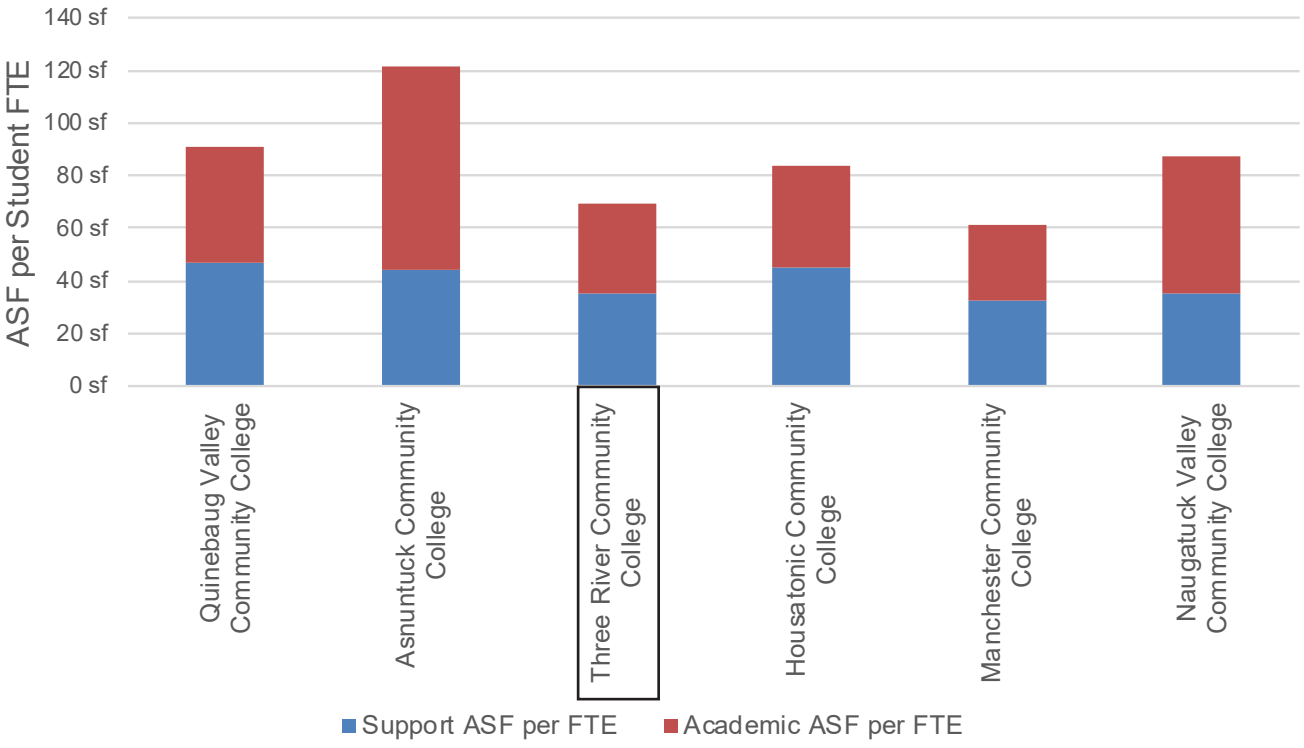


FIGURE 03.4 Distribution of Space by Major Category

COLLEGE ENROLLMENT PROJECTIONS

The College provided the System with credit enrollment projections through Fall 2027. Those projections, provided in student FTEs, were supplied by program. The following directly below represents those student FTE projections. With a recent high in Fall 2012 of 2,846 Student FTEs, the College expects its enrollment to bottom in Fall 2018 and Fall 2019 at roughly 2,400 student FTEs. By Fall 2027, Three Rivers Community College expects to slightly exceed 2,600 student FTEs.

The Role of General Studies and Liberal Arts Transfer

Three Rivers Community College, until recently, highly reliant on the General Studies and Liberal Arts Transfer, with 55% of all majors in 2010. The projections assume a stabilization of those majors at roughly 45% of the total College enrollment. All other majors were projected at a constant 8% growth rate. The chart at the bottom illustrates the projected student FTEs in conjunction with the credit student headcount.

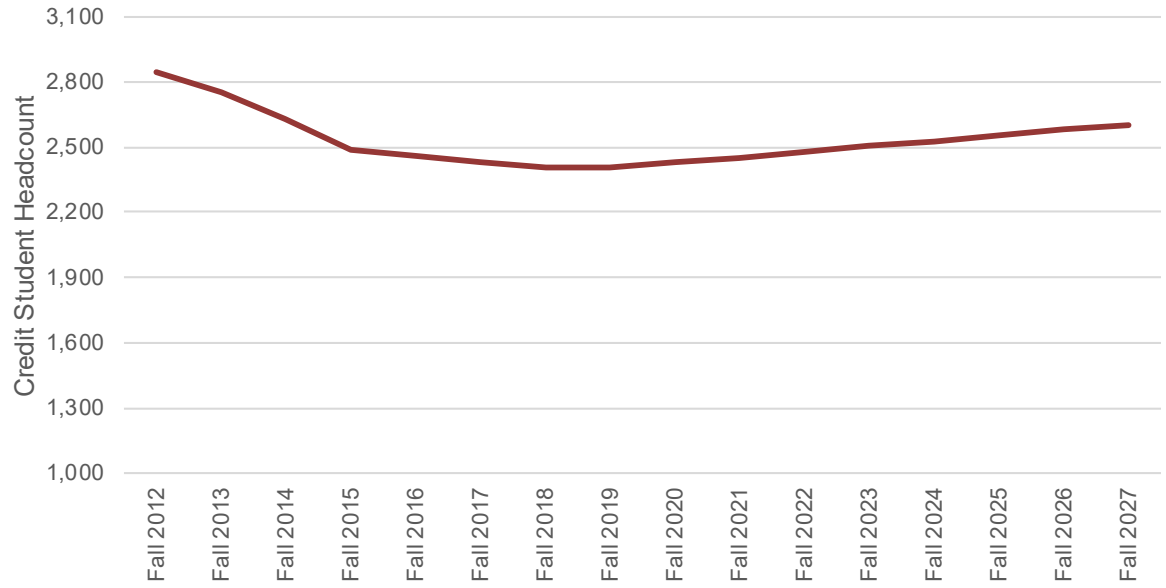


FIGURE 03.5 Credit Headcount Enrollment

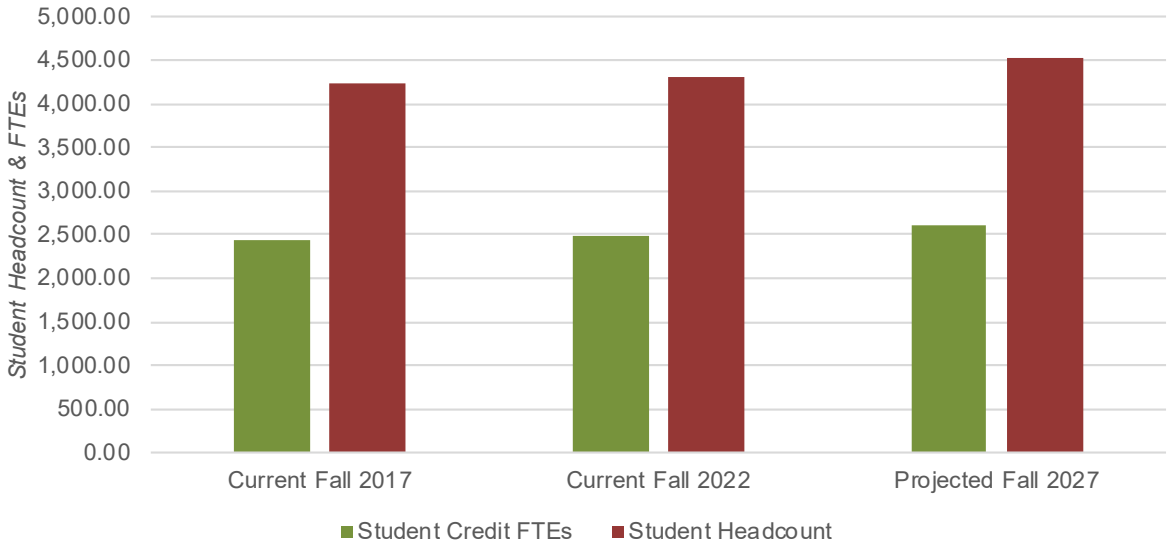


FIGURE 03.6 Student Credit Headcount & FTE Projections

Credit & Non-Credit Enrollment Projections

The Master Plan Team also provided student headcount projections for the Non-Credit components of the College. The following chart illustrates the proposed non-credit enrollment along with the credit projections. Because non-credit may not occur on campus or represent only a single session or meeting, the chart does inflate the relative importance of the non-credit. Typically, when measured in weekly student contact hours, non-credit or workforce development headcounts typically generates approximately 5 to 6% of the activity of the credit student. So, while the chart illustrates that the non-credit headcount is modest, the actual impact on facilities is even less.

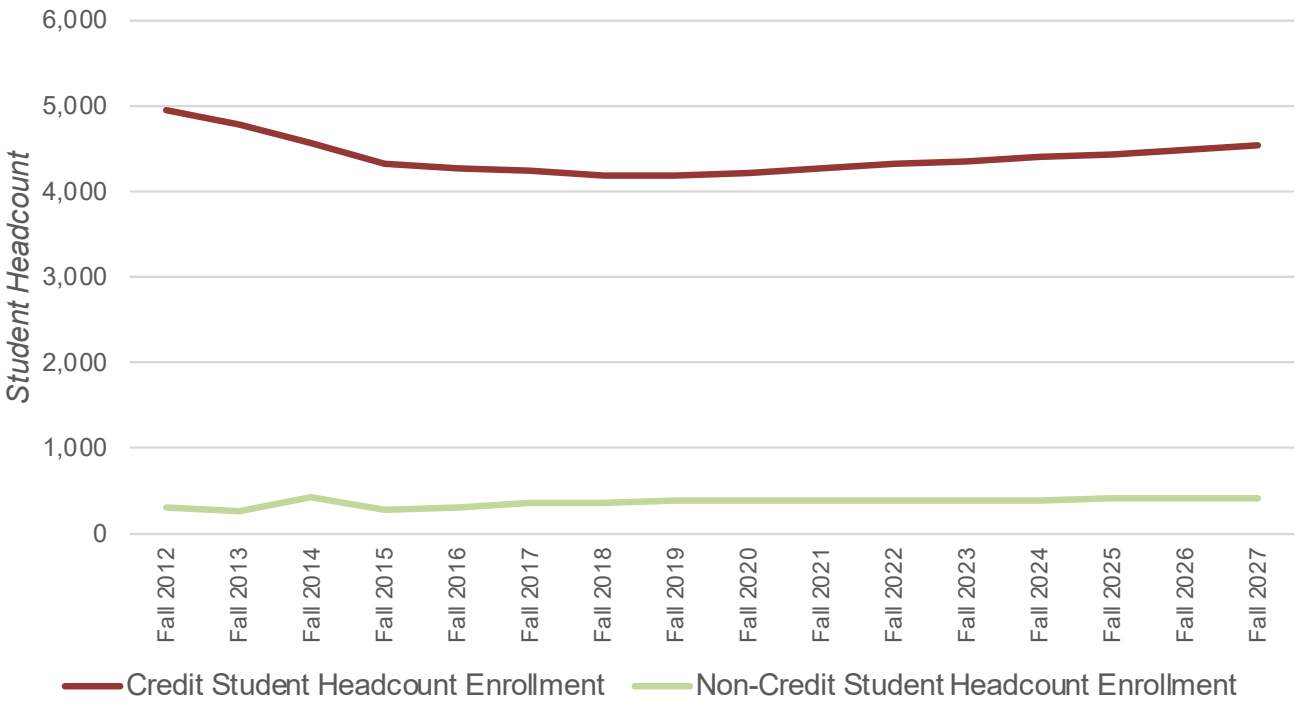


FIGURE 03.7 Credit & Non-Credit Student Headcount Projections

ACADEMIC ASSESSMENT

The following chart shows the assessment for Academic Space at Three Rivers Community College. Almost all departments and components require additional space with the notable exception of the Classroom and Computer Lab space. For this component, the shared element of the academic space, the College has a surplus. This surplus is not simple to understand. The surplus can be in underutilization with the resulting too many rooms or the surplus can be in space within a room or rooms which never utilized. The classroom space surplus is more a result of the latter, while the computer lab surplus is related to the former problem. This will be discussed further within this section.

Instructional Delivery

Critical to the Academic Assessment is the instructional delivery –where students take instruction and in what type of space. The following chart represents the Fall 2017 student weekly contact hours (WSCH) by location. While there are eight categories, the Lecture WSCH dominate the chart, with approximately 67% of the total WSCH, determining the need for classroom space. The second largest is the Computer Lab WSCH. This amount, representing the 15% of all WSCH, is possibly the highest percentage of the Connecticut community colleges. The driver of this high percentage is the extensive use of computer labs by the Communication & English Department, particularly for composition courses.

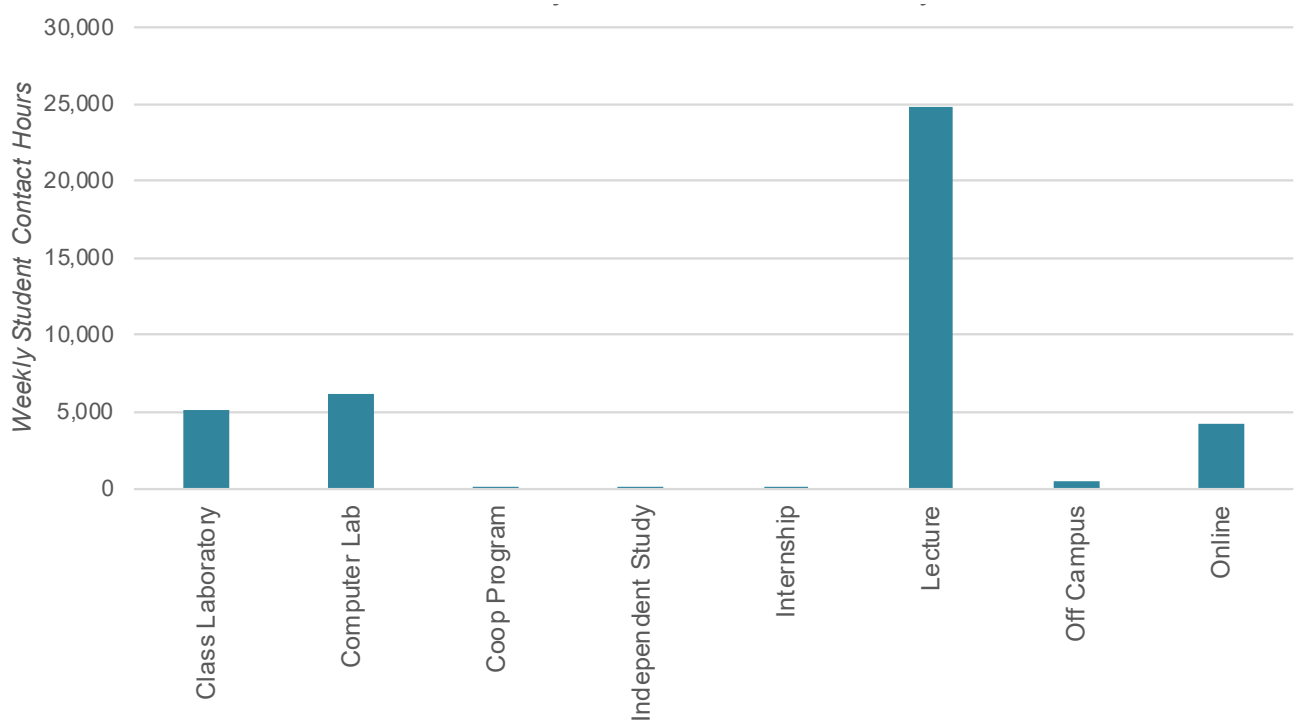


FIGURE 03.8 Fall 2017 Weekly Student Contact Hours by Location

Classrooms & Computer Labs

The following chart shows the assessment for Academic Space at Three Rivers Community College. Almost all departments and components require additional space with the notable exception of the Classrooms and Computer Labs.



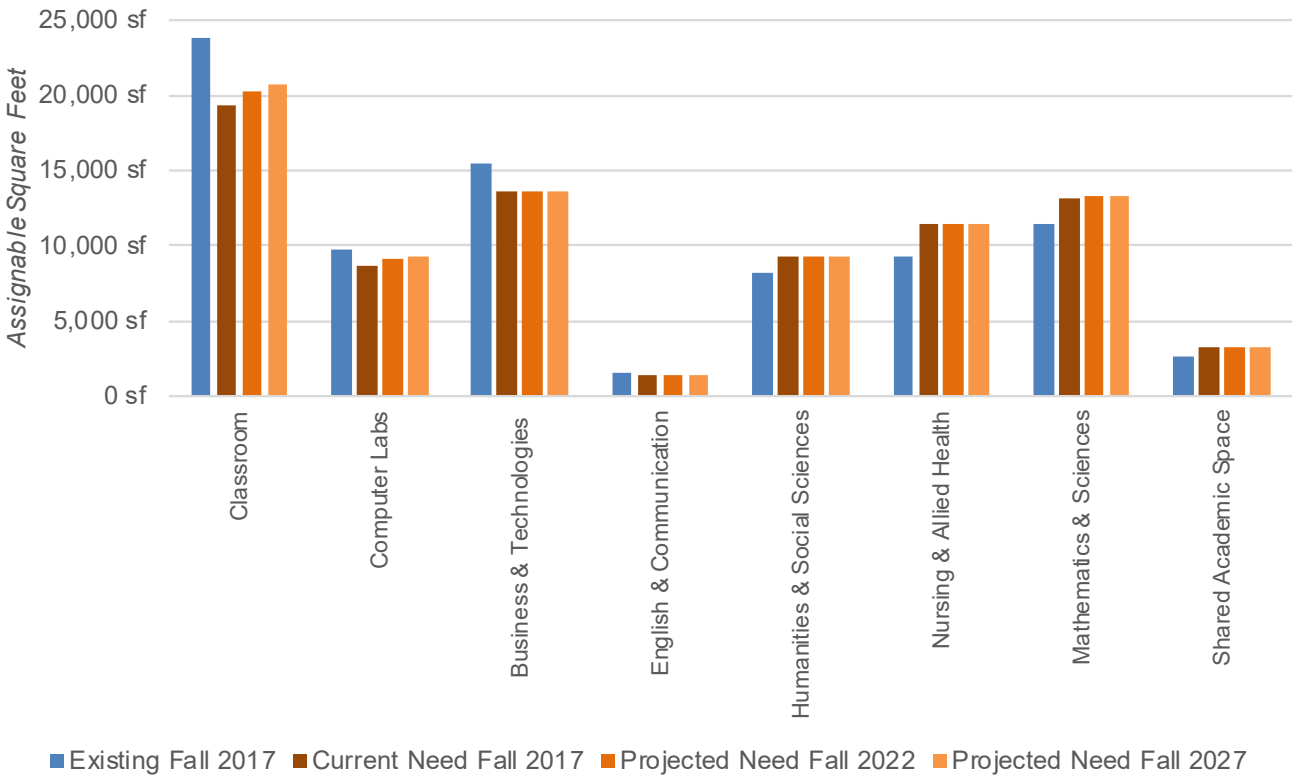


FIGURE 03.9 Academic Space - Current and Projected

Classroom Surplus

The classroom surplus is a result of several large classrooms on campus that are simply not scheduled to their full seat capacity. Two examples are C101 and D228. The following chart represents the usage of C101 across four recent semesters. The top of the orange bars represents the room capacity of 136 seats. The number of orange bars represents how many sections should be scheduled during a semester. The green bars represent the actual number of sections in a semester along with how many students are in each section. Within a given semester, these sections are sort low to high based on their enrollment. While in some semesters C101 is scheduled as often as would be warranted by best practices, the primary reason for the classroom surplus is the low number of students relative to the room within each section.

Computer Lab Surplus

For the computer labs, because they are typically closer matched to the actual section enrollment, the primary reason is the distribution of sections across the five days of the week. A larger majority of computer lab sections are scheduled during prime time –Monday through Thursday and between 10 AM and 2 PM—than required by best practice. The computer lab utilization, provide with this section of the report, assumes a 40-hour work week, with an individual room target of 30 hours.

Large Lecture Sections

In the course of the study, the topic of increasing lecture sections was raised. While the analysis of C101 suggests that this is possible, a community college, unlike a comprehensive college, is fairly constrained in the sections where enrollment



FIGURE 03.10 Room C101 Utilization over Four Semesters

can be increased. The chart directly below represents the current distribution of lecture section for Fall 2017. The x axis represents the student enrollment in each section and the y axis represents the number of sections at that student enrollment.

The chart at the bottom represents same distribution of section sizes identifying the five academic departments plus the modest portion of the College's offering that's interdisciplinary. The high peak for section enrollment, at 23.5 students, is driven by the enrollment in English and Mathematics courses.

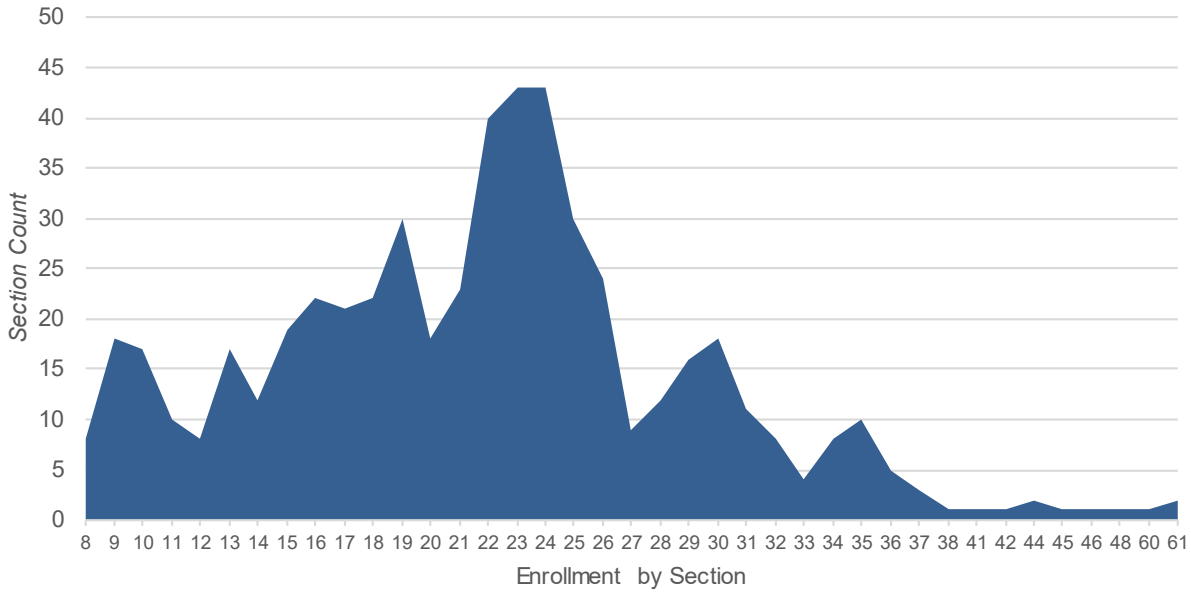


FIGURE 03.11 Room Lecture Sections by Enrollment

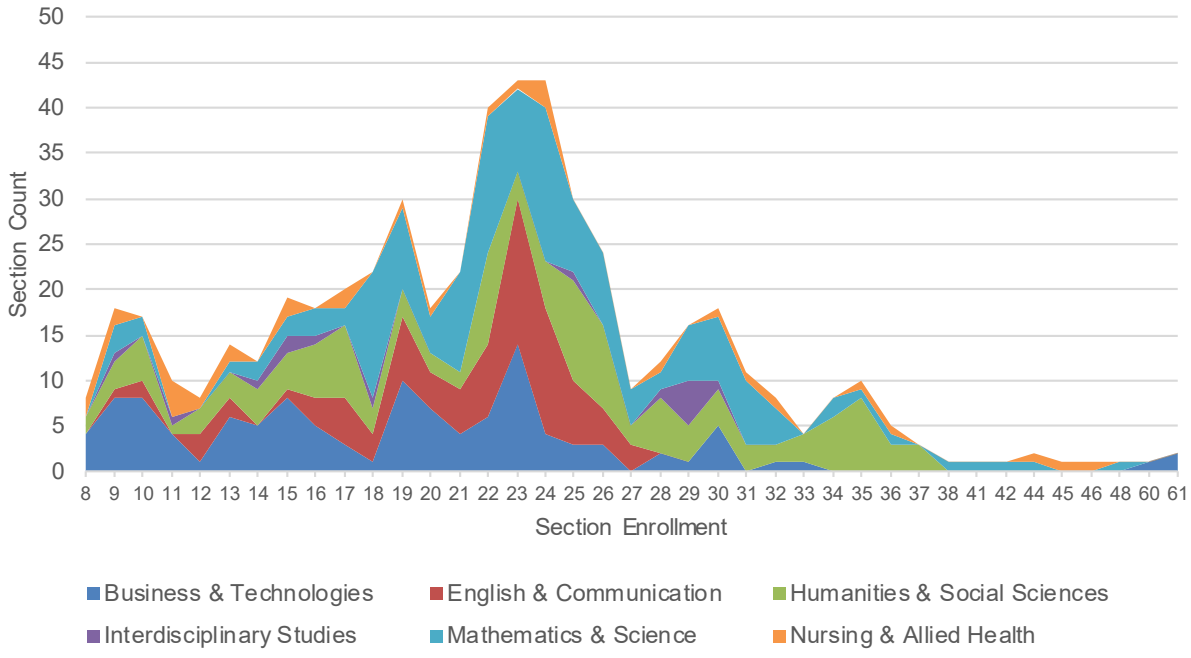


FIGURE 03.12 Lecture Sections by Enrollment & Department

Large Enrollment Courses

In Fall 2017, the Colleges ran 245 courses representing over 500 sections. The vast majority of these courses ran as a single section, which means the College has a limited ability to increase those section enrollments. As a result, there is only a limited number of courses that are even candidates for larger enrollment. The chart to the right represents the 245 courses offered and enrolled in Fall 2017. Each course is listed once with the total enrollment in that course identified by the y axis.

While the previous chart suggests, though not 245 courses, that the potential candidates for increasing section enrollment might be extensive, the actual candidates are really only about twelve.

The chart to the bottom right represents those twelve courses. The different colors within each bar are the actual sections that ran. In the end, not all of these may be viable. The purpose of outlining this issue in the SNA is that the College in the next decade, as a consequence of soft enrollment driven by weak underlying demographics, will need to address frequently the reallocation of both operational and capital resources to enhance student recruitment and retention. While this particular issue will require further analysis and discussion, the College has, in classrooms such as C101, the ability to accommodate larger lecture sections without requiring additional capital from the System.



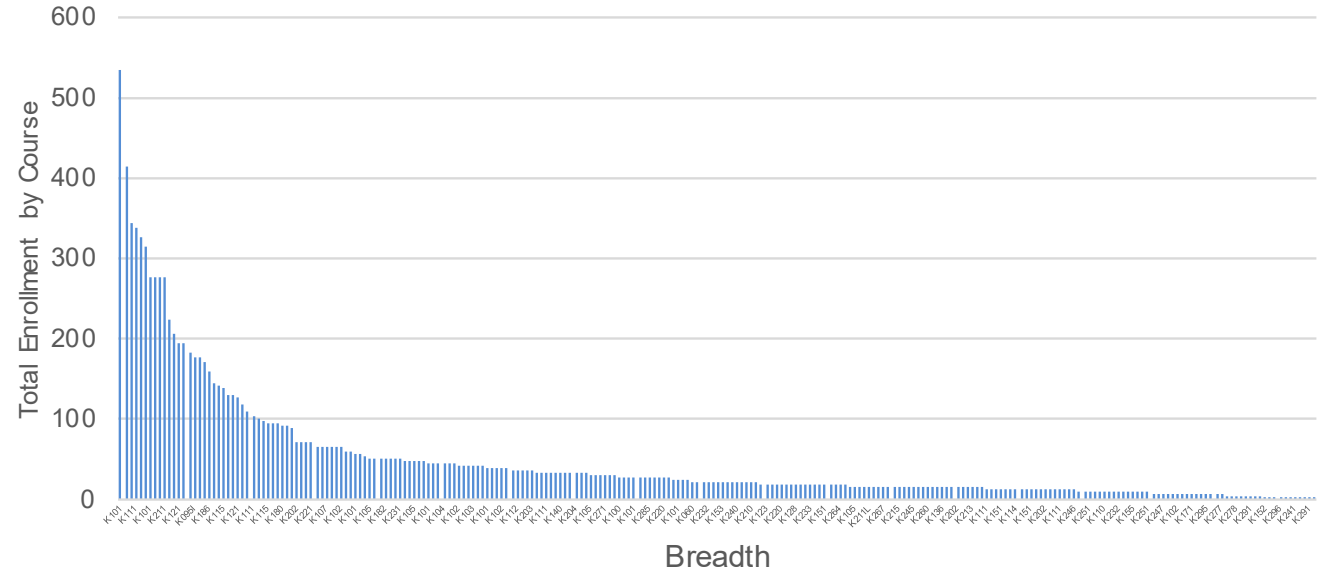


FIGURE 03.13 Fall 2017 Enrollment by Course (245 Total)

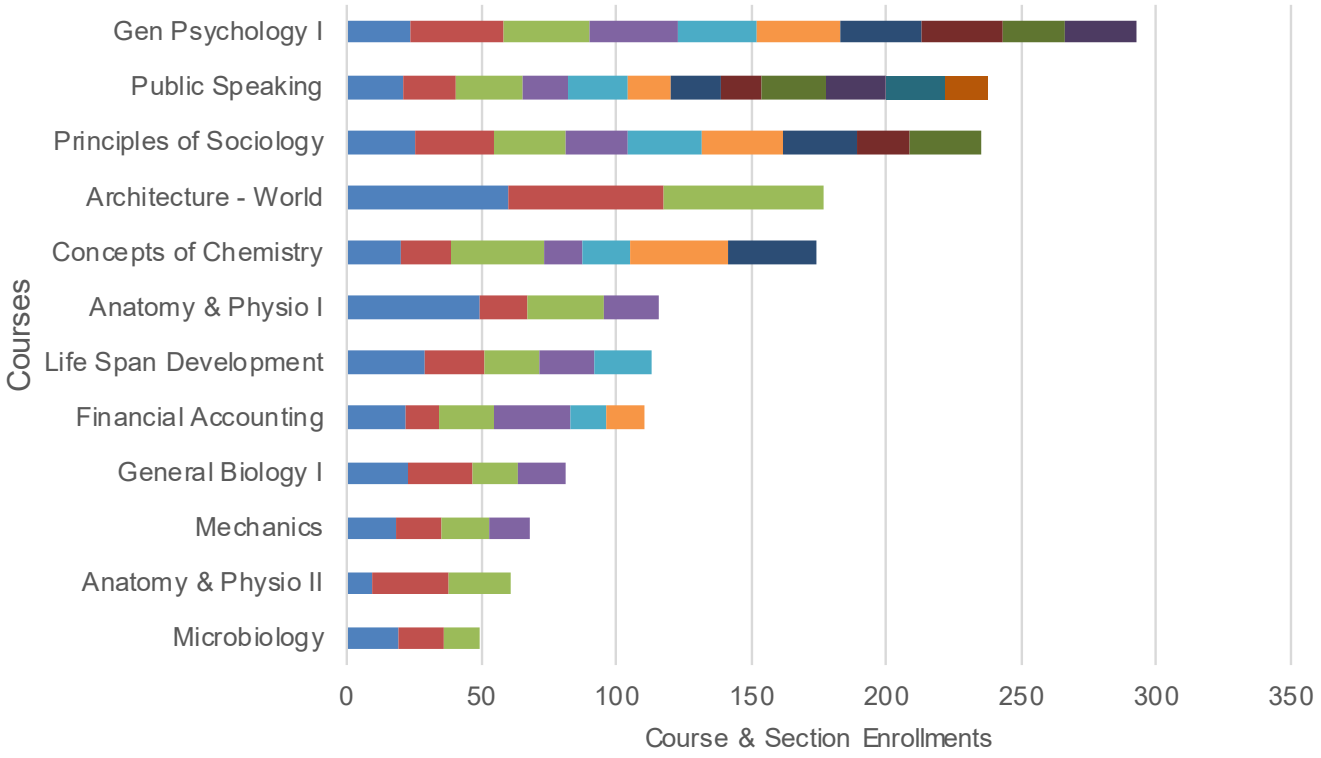


FIGURE 03.14 Potential Courses Where Section Could be Increased

Business & Technologies

Similar to the other four academic departments, Business & Technologies has both a lecture based component –Business— and a lab based component –Technologies. Business is the simpler element, with a modest need for office space. The sub-department is a major contribution to the overall classroom need. The Technologies are greatly more complex. Currently, the College is reviewing and responding to technology program opportunities both on campus and off. The FMP Update suggests that a detailed study should be implemented for the Technologies.

The following chart represents the teaching lab utilization for Fall 2017 for the Technologies Sub-Department within The Business & Technologies. Similar to the previous classroom chart, green represents actual lab usage while the orange represents the capacity not utilized. There is a substantive amount of capacity, especially in the B Wing, which can either be utilized for new initiatives within the Technologies or be utilized for new initiatives within the other four academic departments. Again, in a period of soft enrollment, the College will continually need to repurpose available resources to their most effective usage.

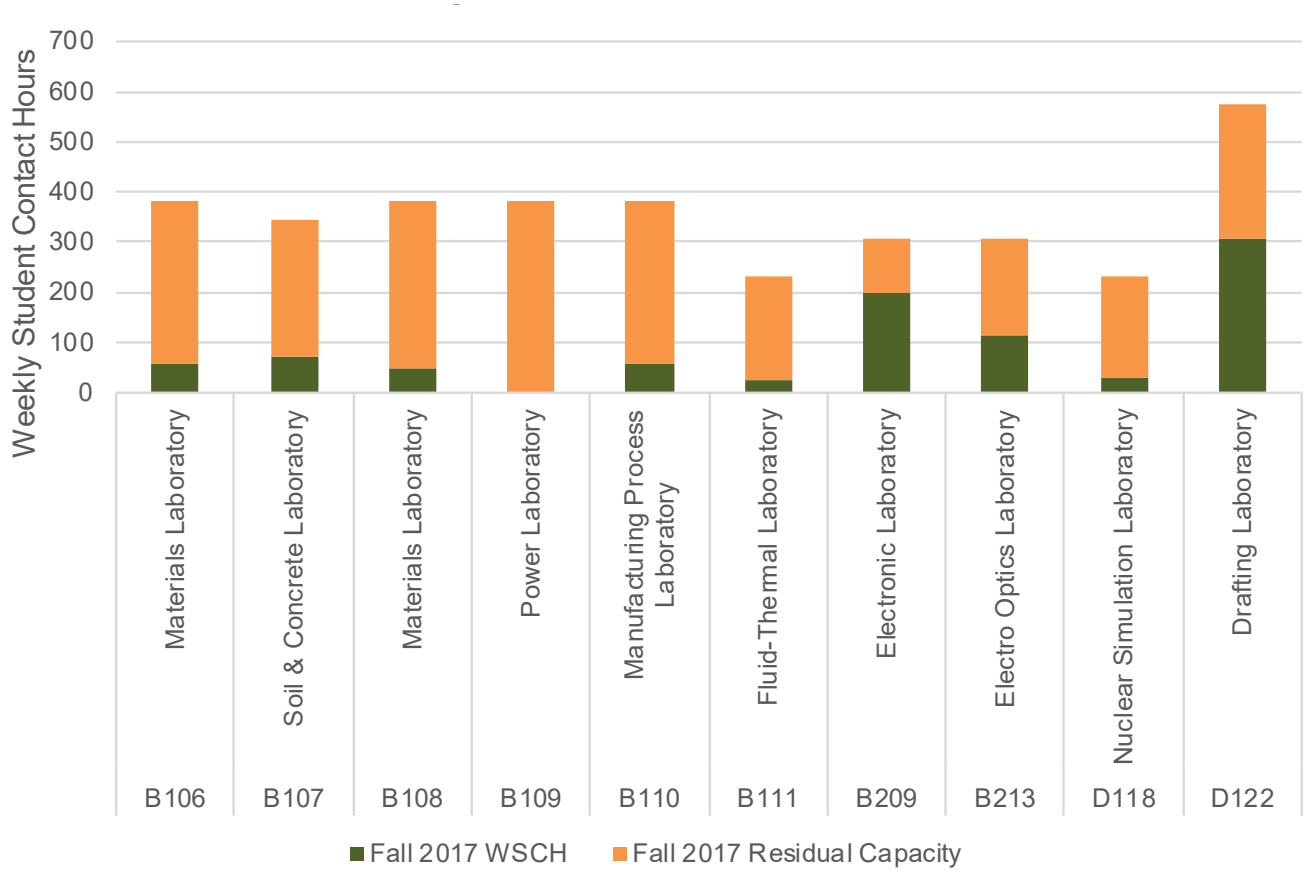


FIGURE 03.15 Technologies Laboratories Utilization Fall 2017

English & Communication

English & Communication is dominated by the English offering. Representing 88% of the student FTEs generated by the department, English has 77% of its offering in entry level or remedial writing. As the most intensive campus user of computer labs for delivering writing, whether this usage is perpetuated or substituted plays a significant role in the demand for computer labs. Currently, some English faculty are utilizing Chromebooks in the classroom as an alternative to computer labs.

Humanities & Social Sciences

While principally classroom-based, the Humanities & Social Sciences Department does have some teaching lab requirements. Specifically, the Arts offering within the Humanities needs to be expanded to adequately accommodate the current offering. Currently occupying less than 4,000 ASF, the Art studio space needs to be expanded to approximately 6,500 ASF.

Nursing & Allied Health

Nursing & Allied Health represents two different problems. The College needs to expand the Allied Health space, both credit and non-credit, to accommodate community demand and provide alternative pathways for aspirational nursing candidates who have not gained admittance to that program.

Nursing is a different problem, a problem of design. Originally designed by the architect for the A Wing as a centralized teaching lab flanked on either side with a classroom. The problem is that is not how the space is utilized. The Nursing Program needs to aggregate each Nursing cohort into a single lecture section –roughly 50 students—into one classroom. Neither of the two classrooms is adequate for this task. The program also utilizes the second classroom as a teaching lab. The facilities need to be redesigned to adequately address the expanded use of simulation, the increased use of teaching labs for scheduled and walk-in activities, and the need for an adequate classroom/lecture hall to support lecture sections.

Mathematics & Sciences

Similar to Business & Technologies, Mathematics & Sciences has a classroom-based component and a lab-based component. Unlike English, Mathematics is primarily classroom-based, with only a modest amount of computer lab usage. The Sciences though are highly space dependent. The following chart represents current and projected weekly student contact hours by sub-discipline.

Based on this analysis the College currently needs more capacity for both Anatomy & Physiology and General Chemistry. The A&P capacity can only be obtain by creating a second A&P lab. The General Chemistry capacity can be acquired by renovating an advanced Chemistry, currently design for only 16 students. The College, over the last four semesters, has only used the lab when absolutely needed for General Chemistry. Both labs, A&P and Chemistry need to be designed to accommodate 24 stations.

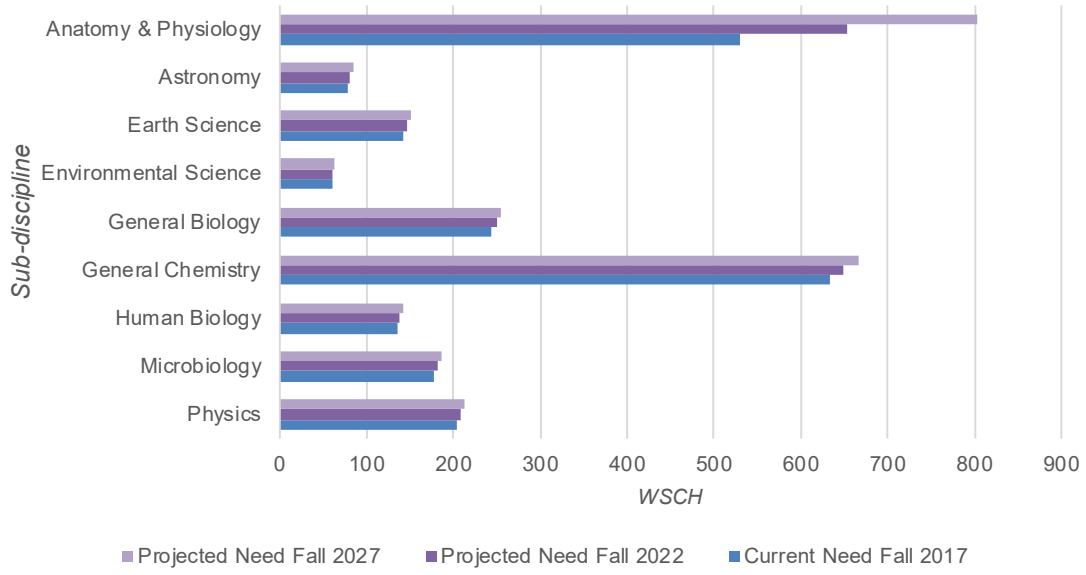


FIGURE 03.16 Weekly Student Contact Hours Fall 2017 to Fall 2027

SUPPORT SPACE

The Support Space is divided into twelve sub-categories: Continuing Education & Workforce Development, Grant Academic Support, Administrative Services, Assembly & Exhibition, Athletics & Recreation, Campus Services, Child Care, Library, Student Activities, Student Services, and Technology. The following chart represents the current and long-term space requirements by each sub-category.

Continuing Education & Work Force Development

Continuing Education & Workforce Development includes expansion of more on-campus instruction including a lab expansion for the non-credit Allied Health Programs.

Academic Support

The Learning Center was recently expanded adjacent to the Library on the first floor of C Wing. The Center is appropriately sized for the current and projected enrollment, and does not require further expansion.

Administrative Services

In aggregate, only a modest amount of additional space is required across administrative services.

Assembly & Exhibition

The College has a large multipurpose space in the F Wing and a gallery in the A Wing. Both facilities have ancillary space for storage. While the College has studied the potential for a large 500 fixed seat auditorium, that facility is not proposed in this master plan update.

Athletic & Recreation

The Athletic & Recreation Space is currently provided in the F Wing. The facilities consist of a series of fitness rooms with ancillary facilities including female and male locker rooms. No expansion is proposed.

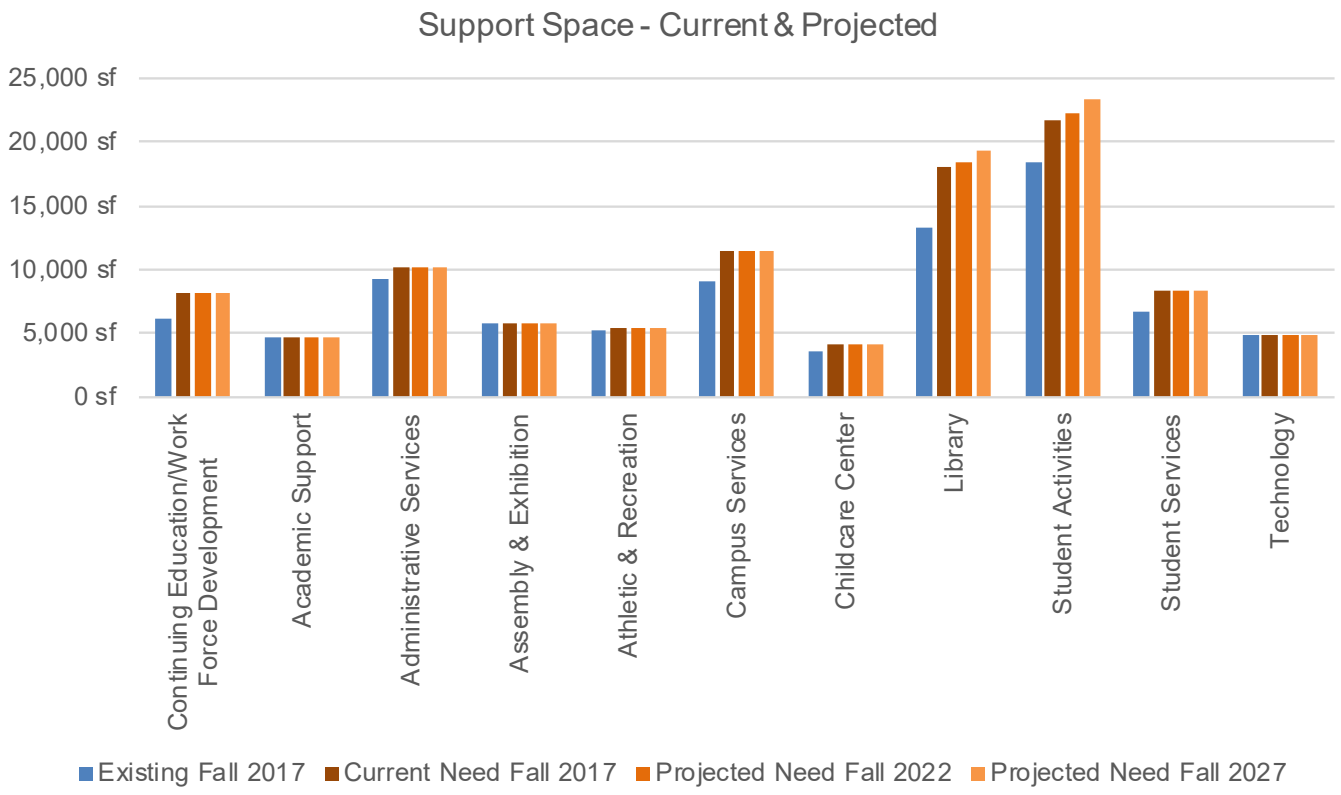


FIGURE 03.17 Support Space - Current & Projected

Campus Services
Campus Service is currently distributed across two buildings, the F Wing and the CUP Building or G Wing. The goal is to substantially expand the current facilities, addressing the shortfalls in grounds, maintenance and custodial services. The Campus Service expansion is one of the more substantive increases based on percentage.

Childcare Center
The Child Care Center, located in the E Wing, is undersized with approximately a 20% expansion required. The adjacent playground also require investment.

Library
Currently, the Library occupies over 13,000 ASF. That makes the TRCC Library smaller than the Library at Quinebaug Community College. Part of the reason is that the College expanded the Learning Center into the Library. The consultant team agrees with that expansion, but a long-term strategy needs to be developed to address the space shortfall. In the interim, the Library needs to be renovated to maximize the Library's current space.

Student Activities
The Student Activities Space at the College is principally located in the F Wing, including food services and student clubs. Lounges are distributed around the campus at many of the wing intersections. The Bookstore is located in the A Wing. The goal is to continue to expand programmable space along student lounges. The new lounge space should not be integrated with the teaching spaces. The current placements limit the student usage

Student Services
The Student Services are fairly consolidated on the campus with the majority of the services located in the A Wing on the first floor. The College currently has a project to resolve congestion within Student Services. But long-term, with the potential of new construction, an additional 25% is needed to fully resolve the space shortfall.

Technology
The Information Technology Services, which has gone through a period of system centralization, still need expanded space on campus to address the delivery and cycling of hardware to and within the College.



PARKING

The existing supply of 1,152 spaces is sufficient to meet current and projected 10-year demand for the College and Middle College. Additional parking spaces are not required.

CONCLUSIONS

Raising TRCC to parity with many of the larger Connecticut community colleges will require a modest increase of space at the College. Total new construction space required is 21,800 ASF or 37,700 GSF. The following chart illustrates both the current and proposed Three Rivers Community College benchmarked against the system.

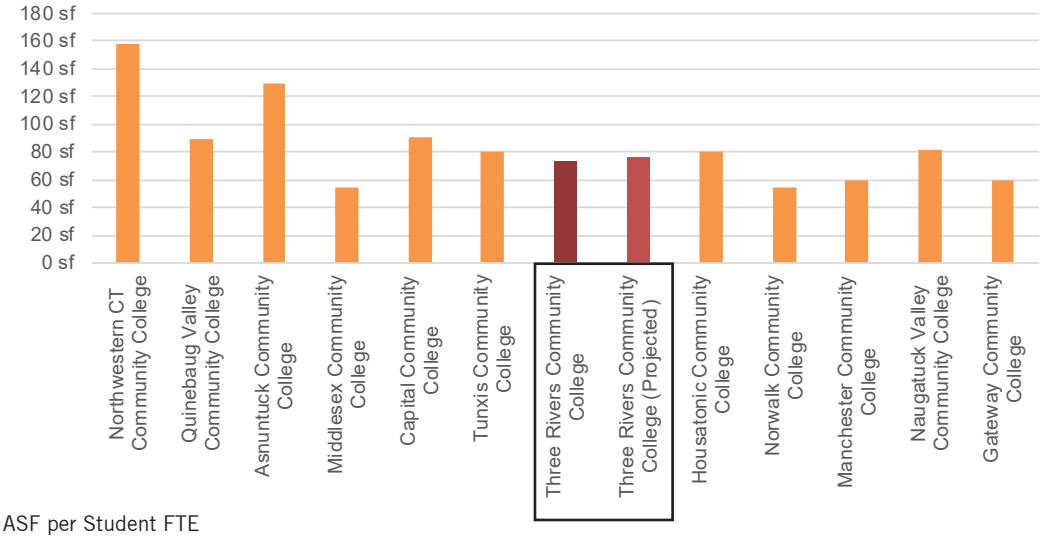


FIGURE 03.18 ASF per Student FTE

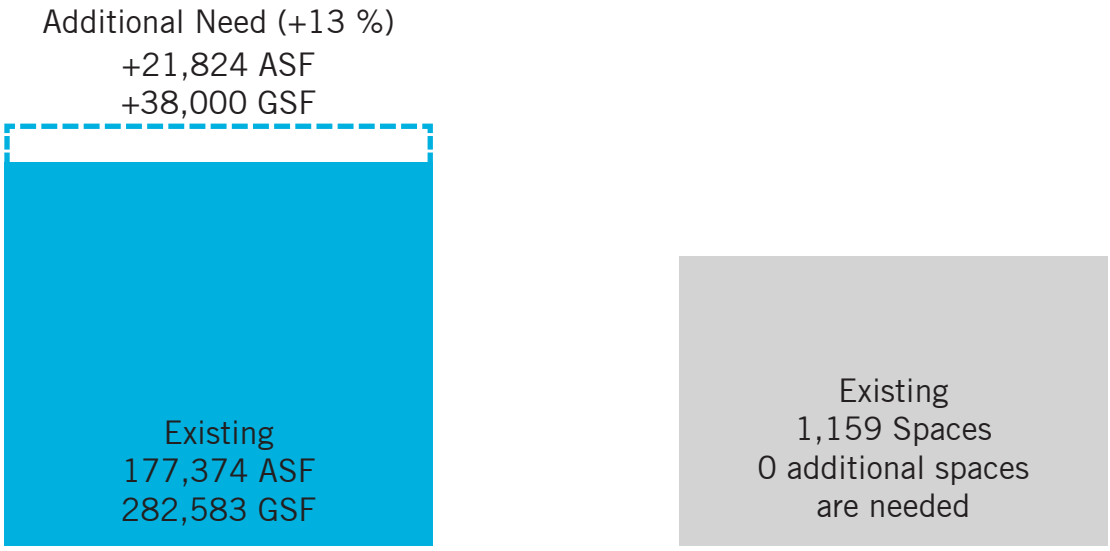


FIGURE 03.19 Space Needs Summary

Three Rivers Community College

SPACE NEEDS ASSESSMENT

Academic Space	Existing / 2017	Need / 2027	Difference	% Change
Classrooms	23,749	20,773	-2,976	-13%
Computer Labs	9,746	9,241	-505	-5%
Business & Technologies	15,417	13,545	-1,872	-12%
English & Communications	1,586	1,325	-261	-16%
Humanities & Social Sciences	8,190	9,242	1,052	13%
Nursing & Allied Health	9,215	12,349	3,134	34%
Mathematics & Sciences	11,442	13,295	1,853	16%
Shared Academic Space	2,632	3,300	668	25%
Subtotal / Academic	**81,977**	**83,070**	**1,093**	**1%**
Hosted Entities				
Central CT State Univ. (RN to BSN Program)	0	3,600	3,600	NA
Middle College	4,971	4,971	0	0%
Subtotal / Hosted Entities	**4,971**	**8,571**	**3,600**	**72%**
Support	**Existing / 2017**	**Need / 2027**	**Difference**	**% Change**
Continuing Education & Workforce Development	6,075	8,122	2,047	34%
Academic Support	4,704	4,704	0	0%
Administrative Services	9,269	10,234	965	10%
Assembly and Exhibition	5,711	5,711	0	0%
Athletics and Recreation	5,309	5,400	91	2%
Campus Services	9,021	11,450	2,429	0%
Childcare Center	3,554	4,235	681	19%
Library	13,235	19,355	6,120	46%
Student Activities	18,373	23,315	4,942	27%
Student Services	6,736	8,342	1,606	24%
Technology	4,802	4,802	0	0%
Subtotal / Support	**86,789**	**105,670**	**18,881**	**22%**
Vacant Space	1,749	0	-1,749	N/A
TOTAL ASF	**175,487**	**197,311**	**21,824**	**12%**
TOTAL GSF	**282,583**	**316,925**	**37,628**	**13%**
	Est. Ratio of ASF to GSF		0.58	


Three Rivers
COMMUNITY COLLEGE



4 RECOMMENDATIONS

INTRODUCTION
- ACCESS
- LAND USE

PLANNING PRINCIPLES

MASTER PLAN SUMMARY
- MASTER PLAN SUMMARY
- MASTER PLAN RECOMMENDATIONS

BUILDING PROJECTS
- **S**TRATEGY
- CURRENT AND PENDING PROJECTS
- SCIENCE LAB RENOVATIONS
- D AND E WING UPGRADES
- TECHNOLOGIES PROGRAM
- NURSING
- DINING SPACE EXPANSION
- DEPARTMENT CHAIR OFFICES
- WAYFINDING
- ACADEMIC EXPANSION / NEW WING
- BACKFILL RENOVATIONS

OPEN SPACE AND LANDSCAPE

PARKING, ROADS, SERVICE AREA
- ROADS
- DROP OFF AT NEW ACADEMIC WING
- PARKING CAPACITY
- SERVICE AREA

ENERGY AND INFRASTRUCTURE PROJECTS
- ENERGY MASTER PLAN
- MEP RECOMMENDATIONS TO SUPPORT MASTER PLAN PROJECTS

GUIDELINES
- ARCHITECTURAL CHARACTER

SUSTAINABILITY

PROJECT PRIORITIES

IMPLEMENTATION AND COST
- PHASING
- COST ESTIMATE

CONCLUSION

MASTER PLAN TEAM

INTRODUCTION

ACCESS

Three Rivers' campus has good access with a well-defined main entrance and a secondary entrance on New London Turnpike. The entry drive provides an impressive view of the main lawn and the A Wing Tower. The campus drive works well, serving the various parking lots and acting as a loop road. While there is some congestion entering and exiting the campus at peak times, it is not severe, and dedicated turn lanes have already been provided to mitigate delays. As a result, the Master Plan Significant does not recommend improvements for campus access.

LAND USE

Three Rivers Community College has ample land to meet its needs for the next 10 years and for decades to come.

The Master Plan is able to accommodate TRCC's 10-year needs by maintaining overall land use organization and expanding the academic core by an addition at the southwest corner. The campus retains its compact development and a connected complex of facilities. The overall pattern is characterized by green open space at the campus frontage and periphery, and a developed campus core, partially surrounded by parking, with service in the rear.

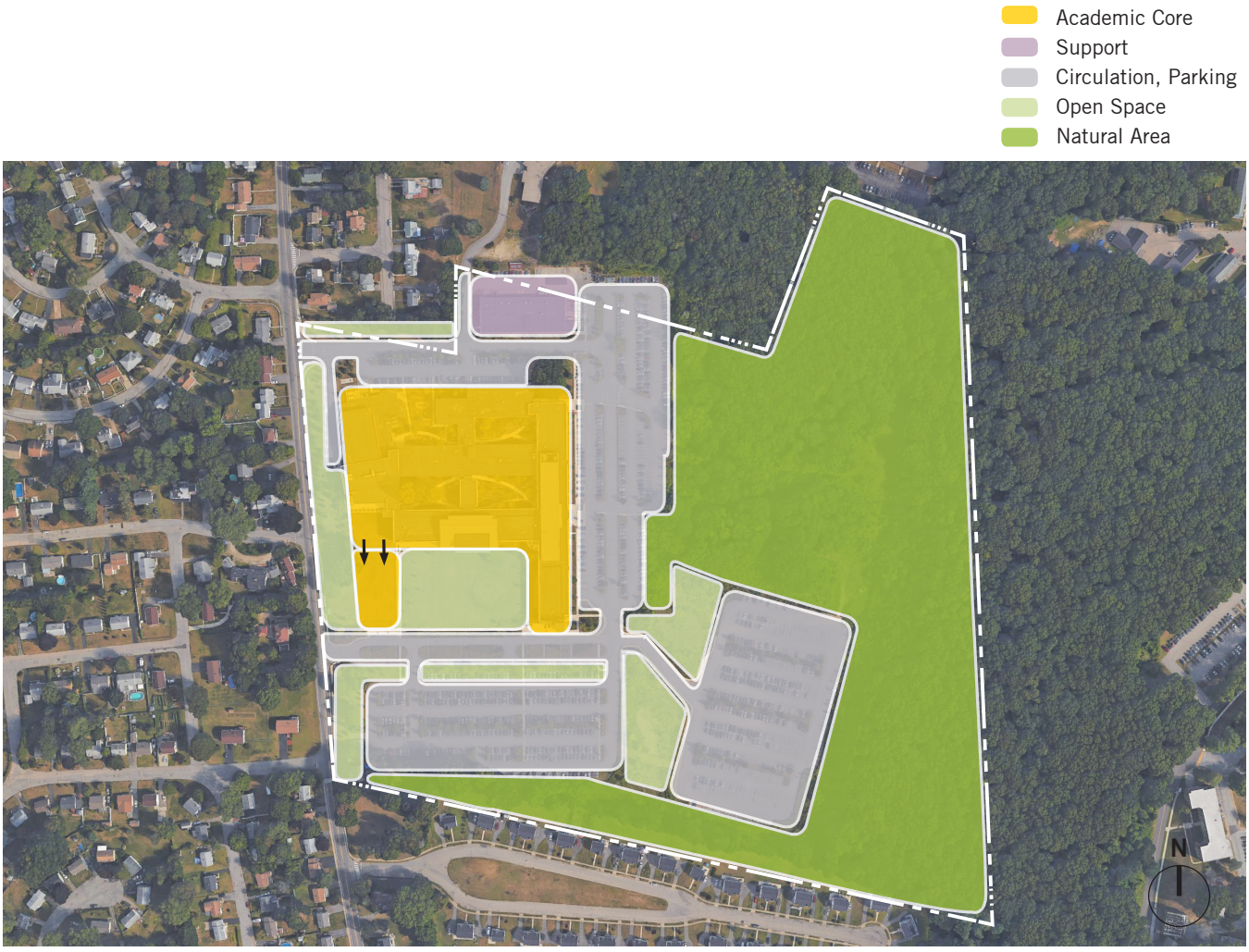


FIGURE 04.1 Proposed Land Uses

PLANNING PRINCIPLES

PLANNING PRINCIPLES

- EXPAND AND MODERNIZE SCIENCES, ALLIED HEALTH, NURSING,
- OPTIMIZE FACILITY USE TO MEET OVERALL SPACE NEEDS
- SUPPORT STUDENT SUCCESS AND COMMUNITY ENGAGEMENT
- ADDRESS KEY NON-CREDIT PROGRAM NEEDS WITH OFF-SITE SOLUTION
- ENHANCE SUSTAINABILITY AND ENVIRONMENTAL QUALITY INSIDE AND OUTSIDE
- PROVIDE FLEXIBILITY IN IMPLEMENTATION



XXXX

MASTER PLAN SUMMARY

MASTER PLAN SUMMARY

The site plan below summarizes the proposed Master Plan recommendations, with building projects color-coded to show existing, renovated and new construction. The scope of these and all other projects is described in more detail in the following sections on buildings, open space and landscape and MEP infrastructure. Project priorities, phasing and cost estimates follow.

MASTER PLAN RECOMMENDATIONS

KEY

- **A** Detailed Study for Technologies Program
- **B** Science Lab Renovations
- **C** Detailed Study and Renovations for Nursing
- **D** D and E Wing Temperature and Humidity Upgrades
- **E** Dining Expansion and Reconfigured Terrace
- **F** Playground Upgrades
- **G** New Academic Wing (G Wing)
- **H** Lot 4 Lighting Upgrade



FIGURE 04.2 Master Plan Recommendations

BUILDING PROJECTS

STRATEGY

Three Rivers existing academic facilities work well as an integrated, connected complex. The Master Plan strategy is three-part, responding both to the physical and financial context.

1. High-Priority Renovations

To address the highest priority needs, focused renovations are recommended in the near term. Where additional detailed programmatic information is needed before a renovation scope can be defined, the Master Plan identifies additional studies to be undertaken.

2. Compact Development

To meet the 10-year space need, the Master Plan recommends expansion that is compatible and integrated with the existing complex in its circulation, scale, site context and architectural expression. The proposed location and massing make the best use of available land, in a way which harmonizes with the current buildings.

3. Backfilling and Repurposing

After the expansion can be realized and functions selected to relocate into the new wing, the opportunity to repurpose vacated space and re-organize existing areas will be significant. This can provide additional needed incremental growth in a wide variety of areas.

As priorities will change in coming years, the Master Plan does not specify which departments must go where in later years when the new wing can be built and backfilling can be accomplished. Rather the strategy is to provide specific guidance for near-term renovations and more flexibility for mid and long-term projects.

A Master Plan by its nature should be conceptual. The floor plans on the following pages are proposed ideas in pre-schematic form, not specific final designs. Additional study, program and plan refinement are recommended prior to implementation.



CURRENT AND PENDING PROJECTS

These projects are already in design and will be funded separately from the Master Plan. For this reason, they are not Master Plan projects, per se, and not included in the Cost Estimate. They are summarized here to provide a comprehensive scan of the overall physical planning context for Three Rivers.

Library Phase 2 Renovation

The 2015 Christopher Williams Associates Study includes a concept for a optimizing the space in the Library. While the Space Needs Assessment of the 2018 Master Plan identifies a long-term need to expand the Library by 46% to be more in line with peer institutions of TRCC's size in enrollment, it is important to proceed with this project to provide needed improvements in the near-term. Construction is planned for early 2019 at this time. Later expansion can be compatible with this renovation and build on this investment.

After reviewing the 2015 Concept with the Master Plan Advisory Committee, the Planning Team has two recommendations for amendments to the second floor, which the College affirmed. There were no comments on the first floor concept.

1. Convert proposed 32-seat Computer Classroom to Computer Study Area on the second floor. There was consensus that a dedicated classroom is not needed inside the Library for instruction in Library technology. This instruction can happen in another Computer Classroom elsewhere inside TRCC, thereby allowing this space to be used to provide computers for students needing access for study or on-line access and research.

2. Address the second floor Library frontage off the corridor. The current floor-to-ceiling glass on the second floor facing into the Library suggests there is an entrance. In fact, the only entrance is on the lower level. The exit doors also have ad hoc signage noting access is not allowed from the second floor. The Master Plan recommends this confusing condition be addressed in one of two possible ways. The first would be to assess the feasibility of adding a second entrance to



	ASF
Existing Library Space	13,235
CWA 2015 Library Plan, Phase 2	13,235
10-Year Library Space Recommendation	19,355
	+6,120 (+46%)

the Library on the second floor, using technology to address inventory control and recognizing that a second staffed entrance is not financially feasible. If this were not possible, the recommendation is to reconfigure the floor-to-ceiling glass to eliminate the impression that this is an entrance. A library display case across this area is one example of how it could be treated to maintain views, convey the activities and mission of the Library while avoiding ambiguous architectural clues.

The Planning Team prepared a memo to with these recommendations in coordination with TRCC and CSCU and forwarded to CWA to convey this recommendation.

In the long term, Library spaces would expand to provide more group study space. This could be achieved potentially by having satellite spaces, similar to group study spaces recently done in the renovated Tutoring Center that are separate from the Library.

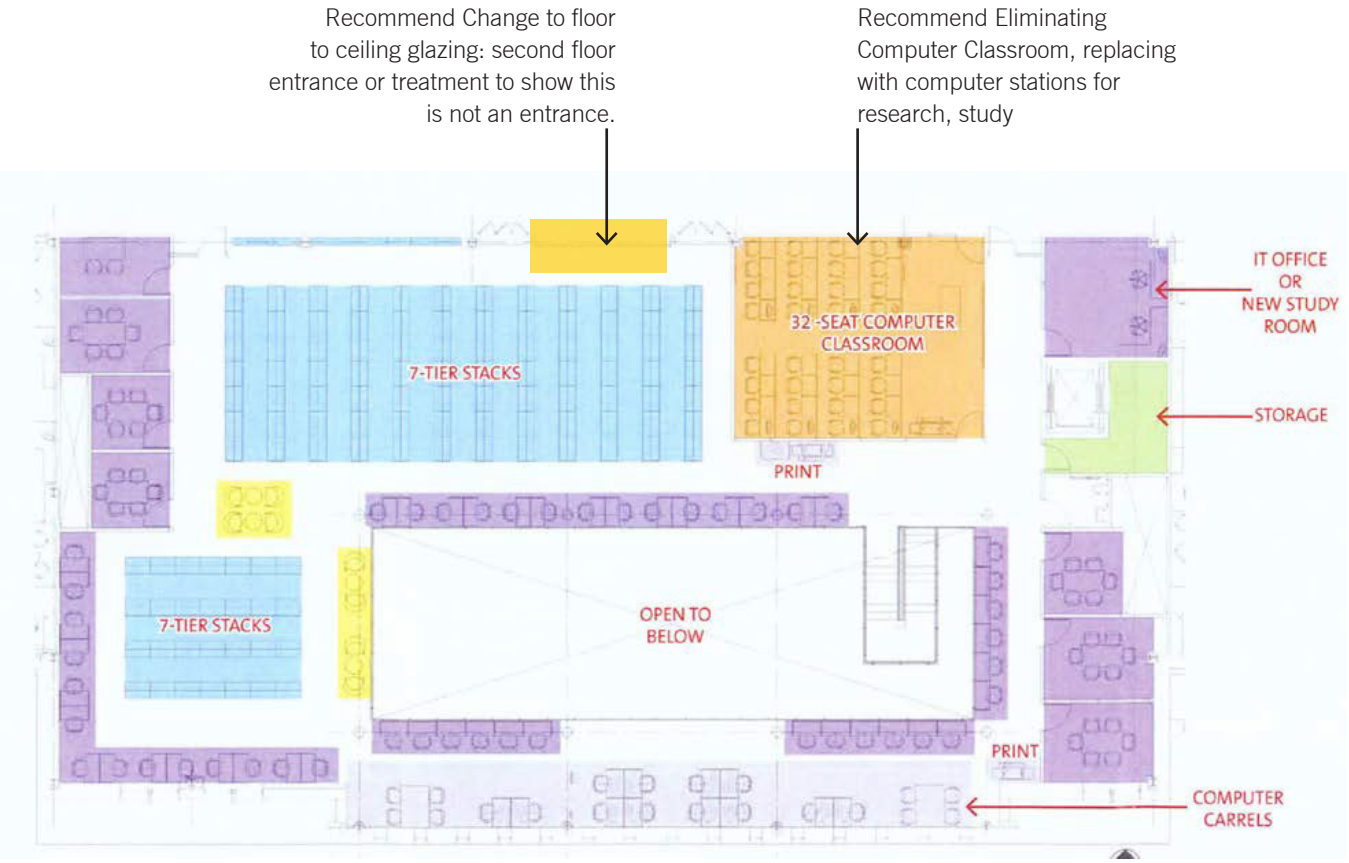


FIGURE 04.3 Library Proposed Second Floor Renovation, Christoper Williams Architects 2015. (Recommended changes included)

EB Pipeline Program

The Id3A study posited that the Electric Boat Pipeline Program would need approximately 8,500 ASF of dedicated space for this non-credit, workforce training program. Id3A, concurrent with and independently from the Master Plan, developed several options for accommodating this space on the TRCC campus, including in the Central Utility Plant, in the B Wing, in a combination of these spaces, and in an off-site facility. The Study did not recommend a preferred option.

While the Id3A Study was in development, Electric Boat expressed a preference for having this training program in Groton, closer to their facility. A major expansion of the Ella Grasso Technical High School is currently in construction. CSCU and EGTHS are in negotiations for TRCC to use part of this space for the EB Pipeline Training Program for welding and other manufacturing training programs. This is the preferred approach at this time, rather than on-site. The TRCC Technologies programs will remain on site. Recommendations for that program follow below.



TRAINING PROGRAM	APPROXIMATE SF
Introduction to Manufacturing **Outside Machinist**	2,500
Welding	4,200
Design Engineering	1,800
Total	8,500

FIGURE 04.4 Preliminary Space Program for EB Piplline Program, by Id3A

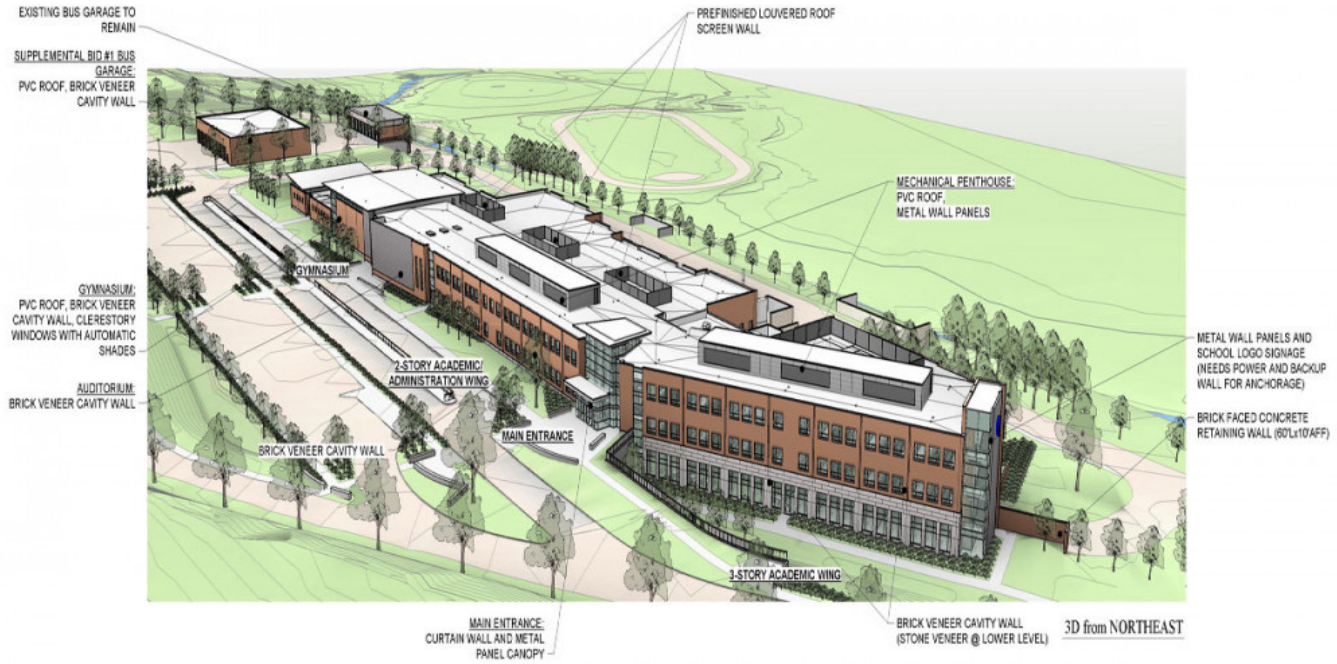


FIGURE 04.5 Ella Grass Technical High School Expansion (Moser Pilon Nelson Architects)

SCIENCE LAB RENOVATIONS

In order to eliminate a bottleneck in the Science curriculum, the Master Plan recommends renovating two spaces to add new labs. Computer Lab B-227 would be converted to serve as a second, much-needed Anatomy and Physiology Lab. The size is sufficient without changing the current walls. TRCC has a modest surplus in Computer Labs, so this reduction is acceptable.

TRCC has a significant need for more General Chemistry Lab capacity – a second lab to supplement the current one. The Advanced Chemistry Lab, B-222 has little use. The Master Plan recommends renovating B-222 to convert it to be a General Chemistry Lab. Changes to the walls are not needed; the room has ample size. The existing fume hoods can remain and be reused. The furniture and equipment layout would be reconfigured, along with some reworking of the adjacent storage area.

Like the science lab renovations done over the summer of 2018, these projects are modest in scope, but would be significant in their impact.



A. Convert Computer Classroom B-227 to an Anatomy & Physiology Lab



B. Convert Advanced Chemistry Lab B-222 to General Chemistry Lab

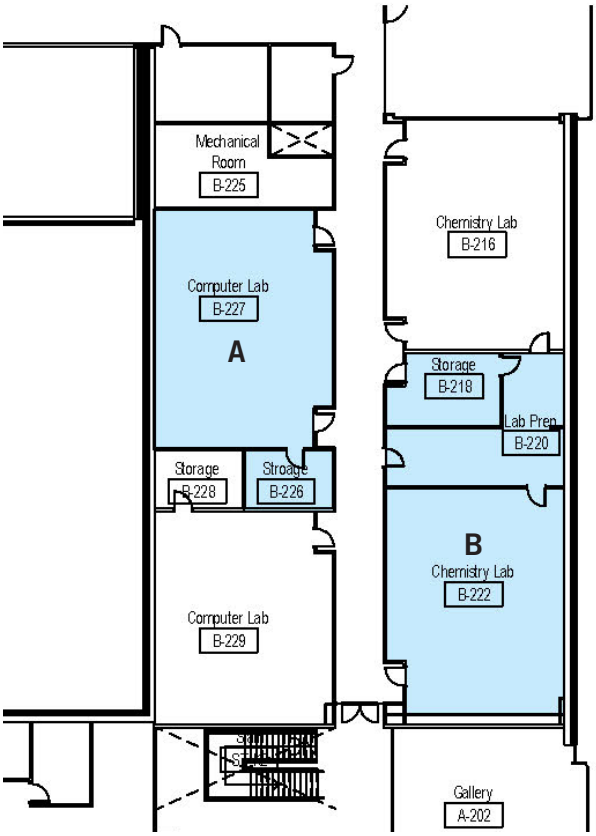


FIGURE 04.6 Additional Biology Lab

D AND E WING UPGRADES

Optimal use of the D and E Wings is compromised by issues with temperature and humidity control. A separate study in 2016 by Van Zelm Engineers was commissioned to assess the problem and identify a solution. While the scope is primarily HVAC, some architecture finish coordination will be needed to access ductwork in ceilings and potentially mitigate water-damaged materials. See Energy and Infrastructure Projects for additional information in the following section.

TECHNOLOGIES PROGRAM

The Master Plan recommends a detailed follow-up study of the TRCC Technologies Program. These programs now include:

- Computer Science Technology
- Construction Technology
- Electrical, Laser, and Robotics Engineering Technology
- General Engineering Technology
- Manufacturing Engineering Technology
- Mechanical Engineering Technology
- Nuclear Engineering Technology
- Technology Studies

The purpose of the study is to understand current and projected curriculum, detailed facility and equipment needs to support the academic and workforce training goals and an approach to optimizing the use of existing spaces. The current utilization of Technologies labs is quite low. Making better use of this space to align it with the curriculum would provide greater benefits to the College.

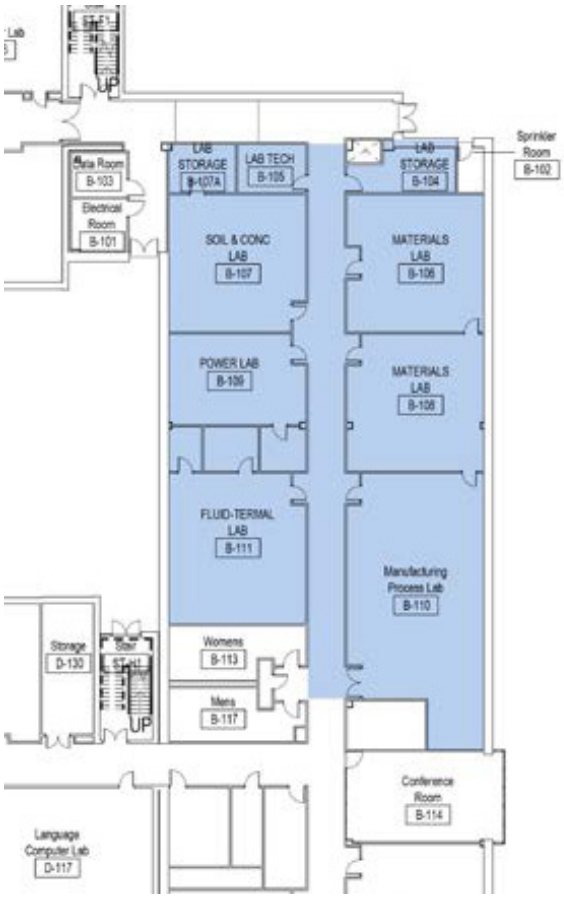


FIGURE 04.7 TRCC Technologies Areas in B Wing First Floor





Existing Technologies Labs

NURSING

Similarly, the Master Plan recommends a detailed follow-up study of the TRCC Nursing Program. This will provide a better understanding of current and projected curriculum goals, and detailed facility needs. The outcome would be a concept plan for renovating current spaces to optimize their effectiveness to support current programs, pending expansion when this can be funded in coming years.

One strategy for the suite of Nursing spaces could be to take class instruction activity which is currently provided in lab space and shifting this to shared classroom space nearby. The lab could then be renovated to be more effective. For example, it may be possible to providing more simulation space by removing areas now used for lecture instruction.



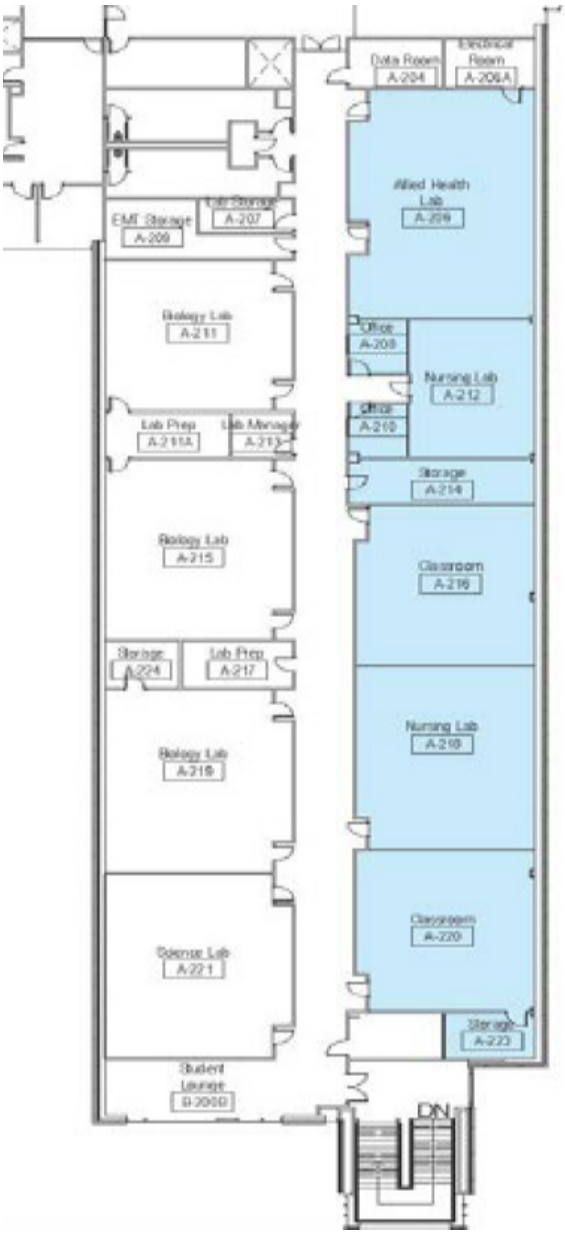


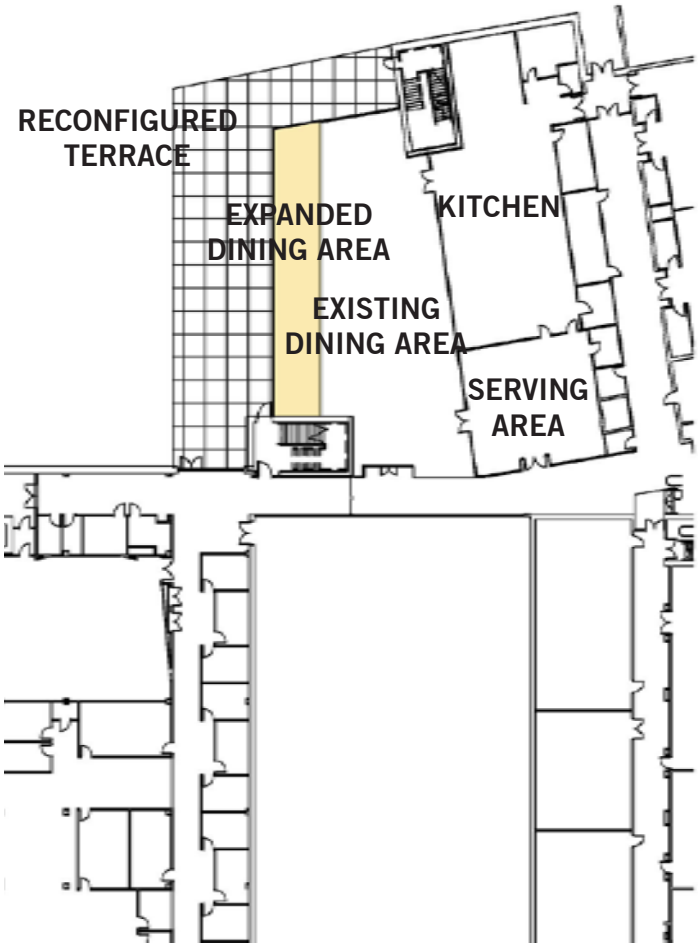
FIGURE 04.8 Existing Nursing and Allied Health Spaces, A Wing Second Floor

DINING SPACE EXPANSION

At peak times, the dining area in the cafeteria is full to capacity, requiring some students, faculty and staff to go elsewhere after purchasing their lunch in the serving area. To address this problem, the College would like to extend the dining space into the area now covered by the exterior canopy. This would provide about 2,600 SF in additional space. The addition would be glazed to be in keeping with the existing dining window wall. It would be one story in height, extending out from the existing south window wall which is double-height volume. Supplemental HVAC will be needed to provide sufficient heating and cooling. To accomplish this addition, the existing dining terrace would be removed and replaced (see Open Space and Landscape Projects, in the following section).



Existing Indoor Dining Area





Site of expansion: existing terrace

FIGURE 04.9 Dining Space Expansion

DEPARTMENT CHAIR OFFICES

Providing easy access for students to department chairs is important for academic success when students needs approvals and guidance. Today, department chairs at TRCC are located with their respective departments, distributed across the College. This makes finding department chairs challenging.

The College Master Plan Advisory Committee discussed two models to address this issue. The first would be to maintain the current location of department chairs, within their departments, to provide cohesion. A directory would be placed in the main lobby with the location of all department chairs clearly illustrated for student use. This directory would be kept current to act as a useful wayfinding tool. The second model would be to co-locate all the department chairs in one area, for ready access by students.



Main Lobby

WAYFINDING

In general, students, faculty and staff find getting around TRCC to be straightforward and signage to be sufficient.

One notable exception is the need to improve wayfinding for visitors to the Multipurpose Space. Located at the west side of the building in the F Wing, far from the main entry between the A and B wings, this major space is often accessed by the community. The problem is not severe enough to merit the cost of relocating the space. A suitable solution rather is to provide dedicated signage to direct visitors at the main entry lobby to the Multipurpose Space. This signage could be suspended from the ceiling, to be more visible and distinct from the signs with multiple other destinations.

When the new academic wing (described below) is added eventually, the route from its entry to the Multipurpose Space will be more direct. It may be beneficial to direct visitors to enter there to get to this assembly space.









Existing exterior and interior directional signage, and Multipurpose Space (upper right)

ACADEMIC EXPANSION / NEW WING

Given the overall incremental need for more space in a number of areas to support the College's mission, current and projected enrollment and curriculum goals, expansion will be needed eventually when funding permits. The Space Needs Assessment identified expansion of approxmately 38,000 GSF. This does not include off-site space needed to serve the EB Pipeline Program which is being funded separately.

The Planning Team studied locations to provide this expansion. The most logical place was the southwest corner of the complex. The 2005 Master Plan had shown a wing in this location to serve as the College's auditorium. This Master Plan recommends an addition, the H Wing that would have a mix of academic and support functions in a 2-story structure.

Program

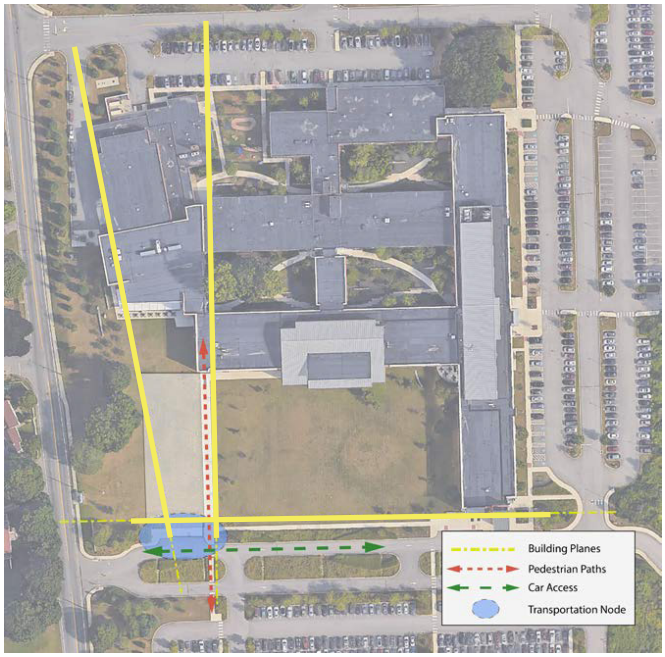
The recommended program for this new construction could include either Science labs or Nursing Labs. In concept, either of these functions would relocate to the new space. The facilities for the remaining program would then be expanded and renovated in place, utilizing vacated space for "internal expansion". The College Master Plan Advisory Committee recommended that decision on the location of academic programs be deferred until closer to implementation of this project.

A key program element is adding restrooms in this part of the complex to address the lack of toilets in the southwest corner of the College today. While restrooms are an unassigned space, in order to address quality of life, it would be very beneficial to locate these near the connection of the H Wing and the C Wing (rather than at the south end of the new H Wing).

Another key program need is additional student lounge space. The joint between the new H Wing and the C wing could be an opportunity to create a signature space for students to gather, socialize and study, as shown in the concept plan to the right. This space could face the dining terrace and frame a pleasant open space.

Footprint and Massing

The proposed 2-story massing matches the height of the rest of the buildings. As such it would appear as a seamless and integrated element in the overall College architecture.



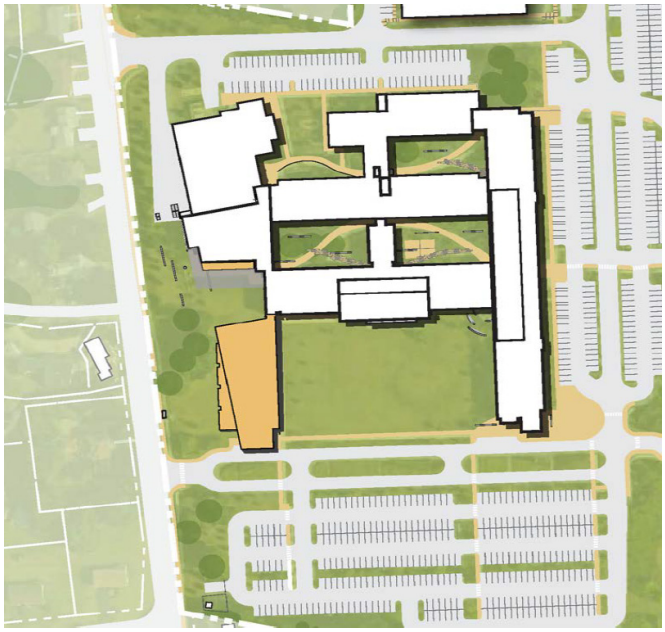


FIGURE 04.10 Expansion Location, New H Wing

The proposed location and footprint of the new wing responds to the context of the site, as shown in the diagram to the left. The south end would align with the south end of the A Wing, completing the overall composition. Creating a cantilevered condition over the entrance to this new wing would provide shelter and create a strong visible presence. The horizontality of the cantilever would complement the vertical tower of the A Wing. The east side of the new wing is located to connect to the existing building entry and avoid lapping over the C Wing and blocking windows there.

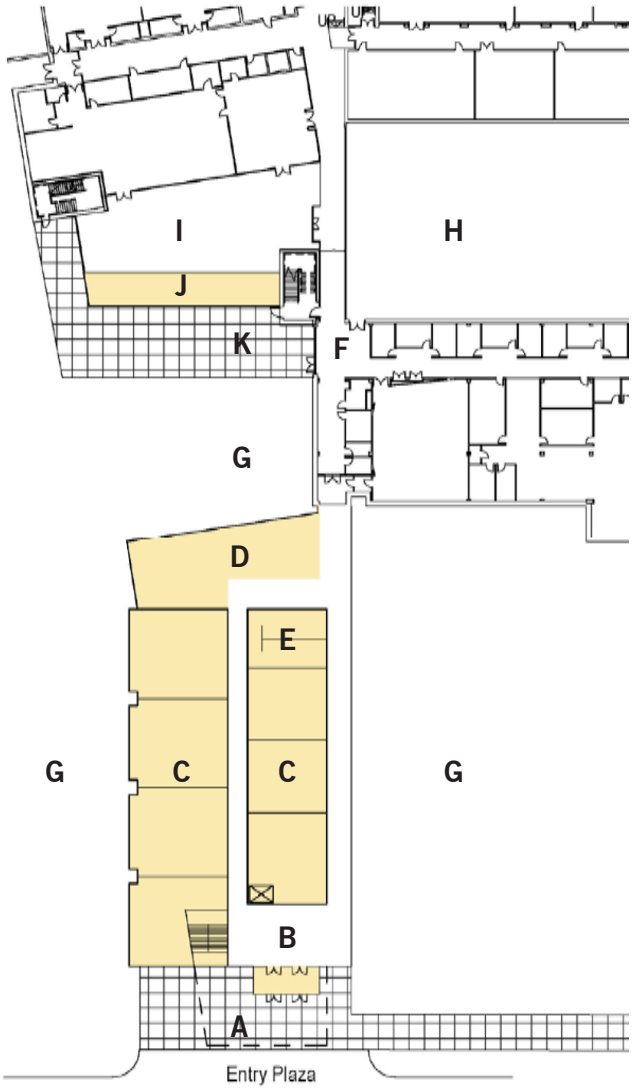
The west side of the addition on the first floor responds to the angled existing geometry of the F Wing and the New London Turnpike frontage. The concept for the second floor of the addition is that it would align with the predominant geometry of the rest of the College, at a right angle to the C Wing. The suggested splayed geometry at the north side responds to framing the exterior space between the wing and the expanded dining area.

Connections

The new wing connects directly to the north/south corridor extending from the C Wing up to the F Wing. This direct extension of this circulation spine will provide a "user-friendly" experience, especially for accessing the Multipurpose Space for events and programs open to visitors and the surrounding community. At the second floor, the wing connects in a similar manner.

Potential Layout

The Master Plan includes a conceptual layouts for the first and second floor of the new H Wing to study the potential circulation, organization and program organization. The first floor plan concept to the right illustrates a new building entry at the south, sheltered by an overhang. This leads to a double-height entry lobby, with a communicating stair to the left and an elevator. New academic space could occupy the majority of this floor. The depth of the floorplate suggests two corridors – one to pass along the east elevation with views to the main lawn and direct connection to the main building, and a second corridor serving interior spaces. A lounge could face the open space between the wing and the dining area.



A	Entry Plaza	**G**	Lawn / Exterior
B	Lobby	**H**	Existing Courtyard
C	New Academic Space	**I**	Existing Dining
D	Lounge	**J**	Expanded Dining
E	Restrooms	**K**	Reconfigured Terrace
F	Connection to C Wing		

FIGURE 04.11 New Wing, First Floor Plan Concept

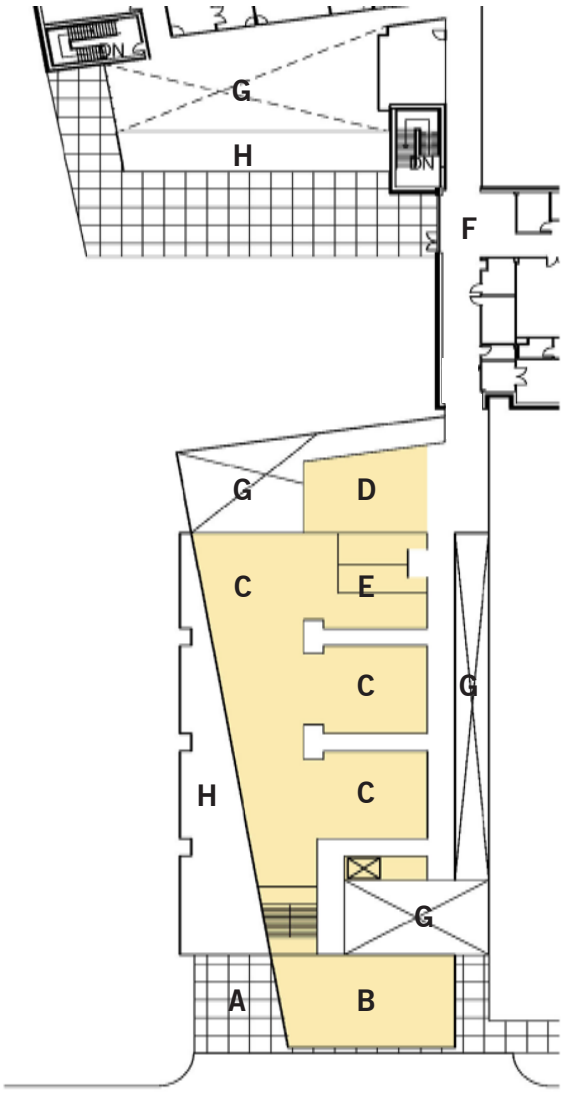
The second floor circulation could be organized in two ways. One concept locates a corridor overlooking the ground floor corridor. This off-set section can have a dynamic effect and serve to visually connect the two levels and promote more sense of unity in the building. The precedent photo below shows a similar space the UAlbany School of Business. This layout requires halls to extend perpendicularly into the floor to serve interior areas.

A second concept for second floor circulation is studying a double-loaded corridor system. As the footprint is wider than the typical TRCC Wing, this will require further detailed study at a later date. Strategies for access may be similar to the First floor of the A Wing, where some interior departmental circulation is needed.

Either second floor concept presents a wonderful opportunity to create a signature space at the south end, in the cantilevered space over the entrance. This could serve as a large instructional space, another multipurpose space or another function.

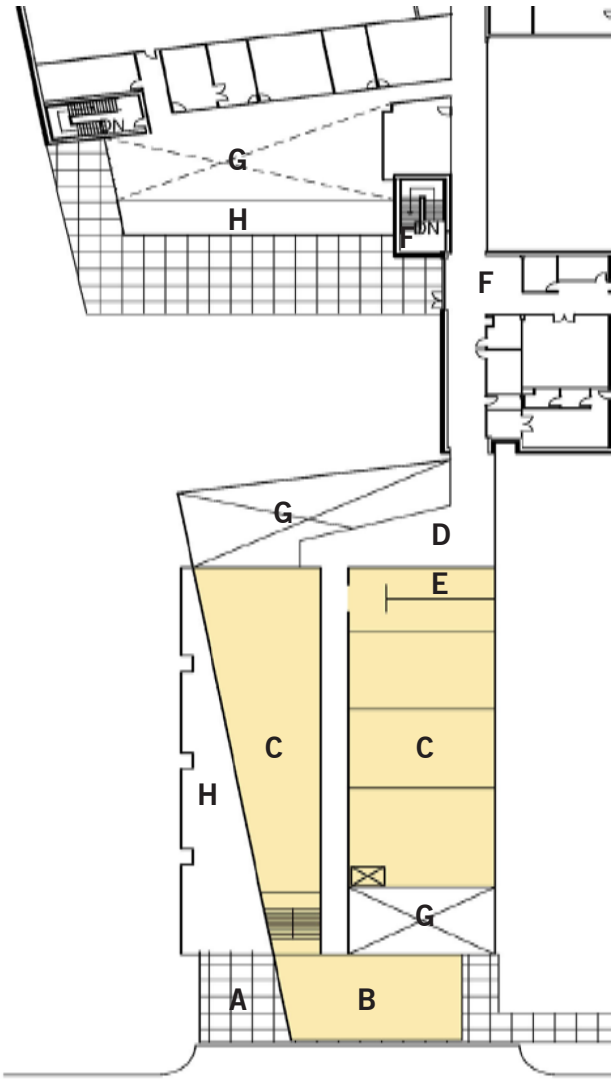


Concept 1 Precedent image: An upper corridor overlooking a lower corridor, UAlbany Business School



A Entry Plaza Below
B Multipurpose Room
C Academic / Support Space TBD
D Lounge
E Restrooms
F Connection to C Wing
G Open to Below
H Roof

FIGURE 04.12 New Wing, Second Floor Concept 1



A Entry Plaza Below
B Multipurpose Room
C Academic / Support Space TBD
D Lounge
E Restrooms
F Connection to C Wing
G Open to Below
H Roof

FIGURE 04.13 New Wing, Second Floor Concept 2

Architectural Character

The exterior expression of the new H Wing should be harmonious with the strong established language of the existing architecture. The new construction would use brick to match the existing. The east elevation should repeat the masonry openings, fenestration, cornice and detailing of the C and A Wing elevations which also front the main lawn, as shown on the aerial concept rendering.

The north end of the wing, facing the dining area, can have a similar amount of glazing, to signify the importance of these interior gathering spaces and to harmonize with the adjacent existing building. The south end of the expansion would likewise have generous glazing to mark this as another main entry point and to signify the main gathering space in the cantilever above the entrance. The west elevation, facing New London Turnpike, would pick up on the brick, the angle, and the more solid character of the existing F Wing, perhaps creating a rhythm of solid and void related to bays created for instructional spaces.

BACKFILL RENOVATIONS

Once the new academic expansion is realized, and selected functions relocate to this new wing, there will be ample opportunity for a series of renovations to address the needs of programs and functions remaining in the existing building. These backfill renovations will allow needed expansion. They may require relocation of some functions to keep units intact. The College Master Plan Advisory Committee decided that it was not necessary or possible at this time to outline which specific departments would be addressed in these renovations, since the decision will not be made on which departments go in the new wing until closer to the date the project is implemented. The cost estimate assumes 60% of the equivalent area of the new construction (36,000 GSF) would be fully renovated in the main building, as a related, follow-on series of projects.



Master Plan Concept: Aerial View





Master Plan Concept: H Wing Expansion with New Entry



OPEN SPACE AND LANDSCAPE

The Master Plan Update includes several recommendations to enhance the College setting and coordinate with expanded and renovated buildings.

In general, Three River's setting is very pleasant and verdant. The east side of the campus is wooded and well screened from adjacent uses. Much open space is characterized by expansive parking areas that are required for a commuter campus. The Plan includes select projects to enhance TRCC's wonderful setting and landscape.

Reconfigured Dining Terrace

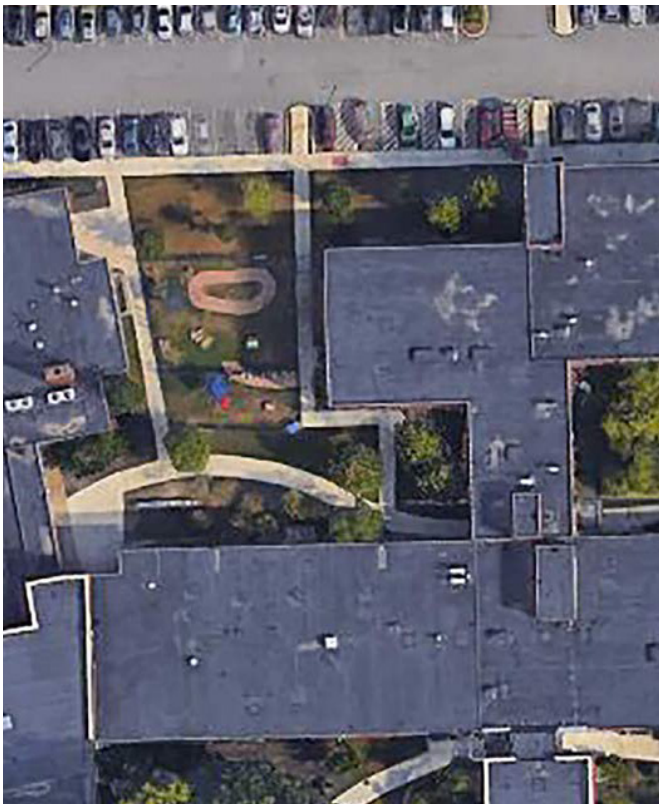
In order to expand the dining area, the current dining terrace is removed and replaced with enclosed space. A new dining terrace is created further to the south, adjacent to a lawn. The existing fixed tables and chairs appear to be in good condition. An effort should be made to repurpose these if possible.

Childcare Center Playground Upgrades

The Master Plan recommends upgrades to the existing playground based on input from Sheila Skahan, TRCC Early Childhood Education Program Coordinator, to accomplish the following:

Modest Expansion: Extend the south and north boundaries of the playground into the courtyard to expand the play area. Maintain east and west boundaries. The additional area to the south is now used only for through-circulation. The existing curved sidewalk can be replaced with a straight one. The north edge can be extended to the sidewalk and include shade trees. Expansion will provide an additional infant/toddler play area.

Fencing: The existing fencing at the north, east and west can be retained and could be repainted black. Additional fencing to match would be needed for the expansion.









Childcare Center Playground: Existing Conditions and Sample Image of Potential New Equipment

New Play Surface and Drainage: Provide a new artificial surface to meet standards to replace the sod with its bare patches that turn to mud after rain. Remove the existing sprinkler system that does not work. Reconfigure paths to be more logical and functional.

Landscaping and Shade Structures: Remove blue shade apparatus. Plant real shade trees.

Play Equipment: Furnish and install Preschool Climbing structures, infant and toddler structures and building systems. (See KompanPlaygrounds -https://www.kompan.us/ For Building Systems see Community Playthings)

Front Lawn

The Master Plan does not recommend changes to the Front Lawn, south of the C Wing. The Planning Team did study its capacity for hosting commencement after the new Academic Addition / G Wing is built. The lawn is still large enough to host the 2,200 students and guests required, as shown in the diagram below, assuming 36-inch rows, 21 inches from seat center to seat center, and aisles as illustrated.

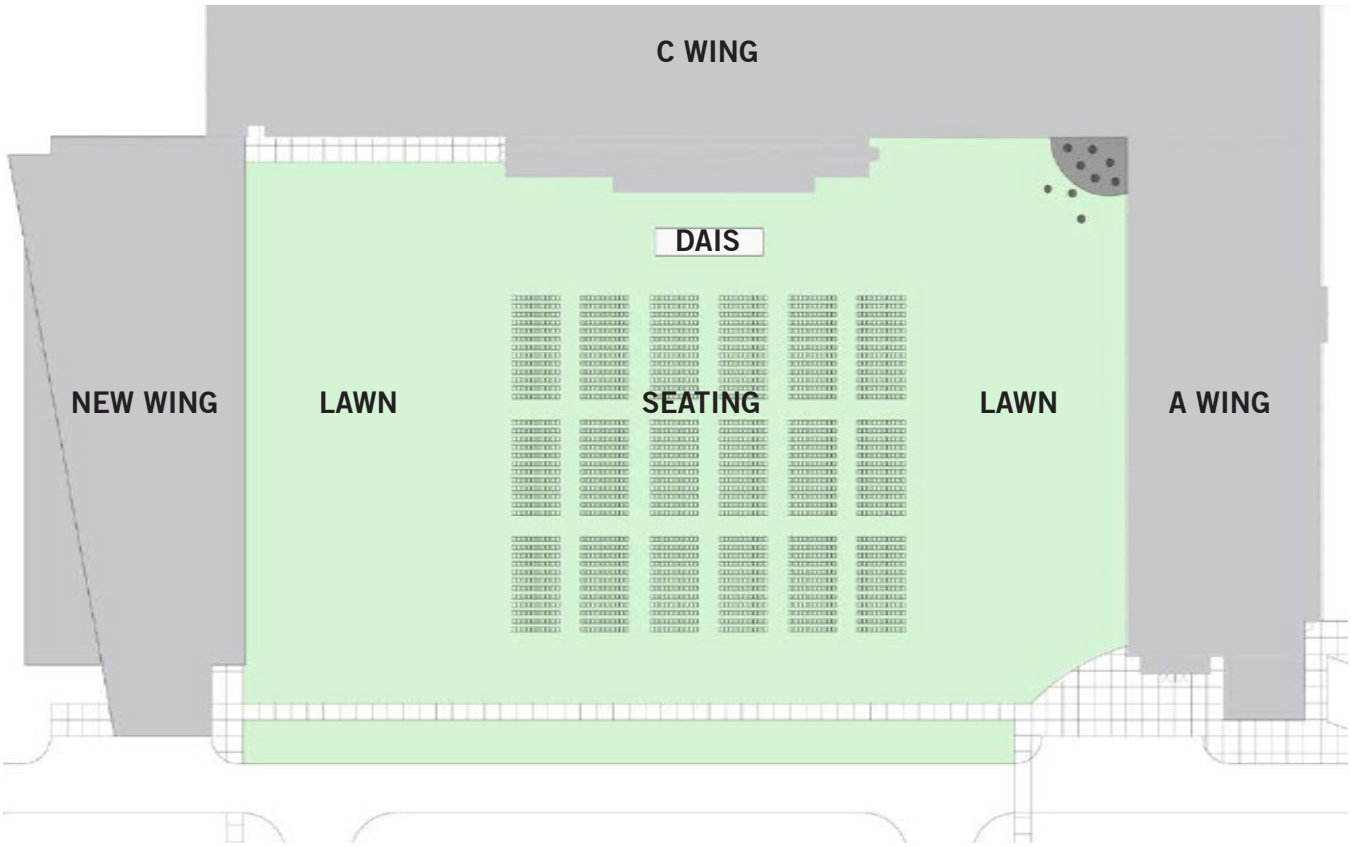


FIGURE 04.14 Front Lawn, Commencement Seating Study for 2,200 chairs

Courtyards

The three existing courtyards framed by the C, D and E wings are wonderful amenities within the College. The mix of landscape and hardscape generally works well. In some courtyards, however, the trees are reaching the end of their lifespan. The College is concerned about potential damage to roofs, windows and walls if limbs or an entire tree fell onto the building. Arborists have inspected the trees and advised that there is not much more which can be done. They recommend removing the trees. The College could then provide replacement trees, potentially a type which would not grow as large as the present ones.

This project may be possible as part of annual maintenance budget. As a result, it is not included in the cost estimate as a capital project.

Site Lighting / Parking Lot 4

Currently the eastern-most parking lot (#4) has minimal exterior lighting. Since students have raised concerns about the adequacy of safety, the Master Plan recommends supplementing the exterior lighting, with two additional poles between the 3 existing poles at each row and at the perimeter. Some additional lighting along the path from Lot 4 to the main entry is also included in the scope of this project.





Existing Courtyards





Existing Parking: Lot 5 above; Lot 4 below

PARKING, ROADS, SERVICE AREA

ROADS

The Plan maintains the existing internal campus road network since this works well and meets current and anticipated demand. Left turn lanes have already been added at both campus exits and on New London Turnpike for southbound traffic to turn into the TRCC main entrance.

DROP OFF AT NEW ACADEMIC WING (H WING)

The addition creates a welcoming new entrance for people coming to the College from Lots 1 and 2. Today, one must walk down a sidewalk to get to the corner of the C Wing. In poor weather, this is a long walk without shelter. The vehicle drop off can be used by visitors coming to the Multipurpose Space in the F Wing. Study will be needed to make sure that cars waiting to drop off visitors do not stack up too much and block traffic. This can be achieved by having cars do a loop down to Lot 3 and then come back up the access drive to the drop off.

PARKING CAPACITY

The Plan maintains the existing parking capacity since it meets current and anticipated demand. Adding lighting to Lot 4, the East Lot, aims to change the perception that this parking is less desirable.

SERVICE AREA

The existing loading dock works well and is well screened from New London Turnpike. Changes are not needed.



Existing Parking Lots



Existing Loading Dock

ENERGY AND INFRASTRUCTURE PROJECTS

ENERGY MASTER PLAN

An Energy Master Plan for TRCC was conducted by Perkins+Will and Woodard & Curran prior to this Master Plan update. The detailed findings and recommendations are referenced in the Technical Appendix. Two years ago when the Energy Master Plan was done, QVCC had average energy use intensity for a typical college. Since then, the installation of new high-efficiency boilers in the CUP should improve energy use. Further installation of LED lighting will also increase performance.

MEP RECOMMENDATIONS TO SUPPORT MASTER PLAN PROJECTS

Temperature and Humidity Issues in Wings D&E

This issue was addressed in the 2016 "Indoor Air Quality HVAC Investigation for D & E Wings" by VanZelm Engineers. A summary follows, which was used to define the scope for cost estimating purposes.

Mechanical:

- Provide four (4) new 100% outside air roof top units sized for 3500 CFM each, installed on the roof, provide with chilled water cooling coils, hot water pre-heat and reheat coils, energy recovery, direct drive supply and exhaust fans, and new supplemental steel.
- Provide supply and return ductwork as required for distribution to the individual classrooms. New soffits should be included to conceal the ductwork distribution.
- Block up existing unit ventilator louvers and remove all above ceiling transfer ducts.
- As an alternate, provide (4) new 25,000 CFM roof top units and remove the existing unit ventilators. Units should be provided with chilled water cooling coils, hot water pre-heat coils, energy recovery, direct drive supply and exhaust fans. Provide new terminal units for above 60 zones with hot water reheat coils with new supply and return ductwork distribution, and new supplemental steel.
- Provide all controls required to integrate with the campus Alerton system.

Academic Expansion / New Wing

The Central Utility Plant is sized sufficiently to provide chilled water and hot water to serve this 36,000 GSF addition.

Mechanical:

- Provide two (2) 27,000 CFM air handling unit with chilled water cooling coils, hot water pre-heat coils, energy recovery, and direct drive supply and exhaust fans to be installed within the building.
- Provide new ductwork distribution as required.
- Provide new 4" chilled water and 3" hot water piping from the existing building distribution.
- Provide VAV's with hot water reheat coils for each zone (approx. 30-35).
- Provide a new exhaust fan for general exhaust sized for 2000 CFM at 1.0" SP.
- Provide all controls required to integrate with the campus Alerton system.

Electrical:

- Provide new circuiting and new sub-panels.
- Provide new power source for the Mechanical equipment.
- Install LED lighting and controls.
- Provide additional addressable fire alarm zones in the existing fire alarm control panel.
- The existing on site generator will need to increase in capacity to accommodate the additional square footage. Assume a new 300 KW generator for the purpose of pricing.

Plumbing:

- New 6 inch sanitary and two 8 inch storm services will be required for the new addition.
- Provide new 10 roof drains and overflow drains
- Modify and extend existing hot, cold and hot return from existing mains in wing 4.
- Modify and extend existing gas to serve new science labs.

Fire Protection:

- New wing addition will require sprinkler service from existing site fire main, new backflow preventer, sprinkler alarm valve, new branch piping distribution and sprinkler heads.

GUIDELINES

ARCHITECTURAL CHARACTER

Renovations and new construction at Three Rivers should draw from the existing architectural language of the College. On the interior, this relates to matching existing finishes or providing complimentary finishes when new and old are both visible. The exterior character of the new academic wing should use similar brick to the existing complex and similar window patterns and mullions. Accent areas, such as entrances, lounges or connectors between wings can utilize more glass to signify the importance of these elements and convey a hierarchy of expression. Any rooftop elements should be a similar color metal panel as the existing other rooftop structures.

The concept renderings, shown previously, illustrate how the addition could both draw from and compliment the architectural character of the existing complex, and also create a distinctive new wing for Three Rivers that can welcome the community.







SUSTAINABILITY

The graphic below summarizes the integrated approach to sustainability in the Master Plan. By optimizing the use of existing facilities, the Recommendations embody a sustainable approach to development and operations.

New construction is required to comply with the High Performance Building Standards of the State of Connecticut. These relate approximately to the U.S. Green Building Council LEED Certified rating. The Planning Team encourages TRCC to strive for the highest level of sustainability practicable in building design and energy use, within the project budget. Passive strategies should be prioritized over features with complex operational requirements that may not align with current operations capacity and training levels. Enhancing sustainability will pay on-going dividends in reduced operating costs.

The Plan recommends new construction and renovations utilize a durable, high-performance building envelop, energy-efficient LED lighting, low-flow plumbing fixtures, recycled materials, and high-efficiency heating and cooling systems. The design should also consider such strategies as rainwater and gray water reuse for irrigation and PV arrays on rooftops and possibly PV canopies on parking lots if cost effective.

TRCC has already made great strides forward on sustainability – with the installation of more energy-efficient plant equipment, conversion to LED lighting and no-mow, wildflower plantings in some areas. The Master Plan recommendations will build on this success.



Building:
Required - CT High Performance Building Standards.
Reuse existing building
Increase natural light.



Land:
Minimize Additional Development Footprint.



Stormwater:
Retain / Treat / Infiltrate.



Landscape:
Minimize added impervious area.
Continue use of native plantings and integration of stormwater treatment as a design feature.



Transportation:
Improve pedestrian connections.
Maintain bus service.



Energy:
Continue to implement Energy Master Plan recommendations.
Solar rooftop arrays at new construction.
Utilize high-efficiency systems.

PROJECT PRIORITIES

Guided by input from the College Master Plan Advisory Committee, the Planning Team framed priorities for the Master Plan projects in two priority categories. Priority 1 projects are the most needed in the near-term. Priority 2 projects have a less acute need. The listed order within each category is not intended as a ranking.

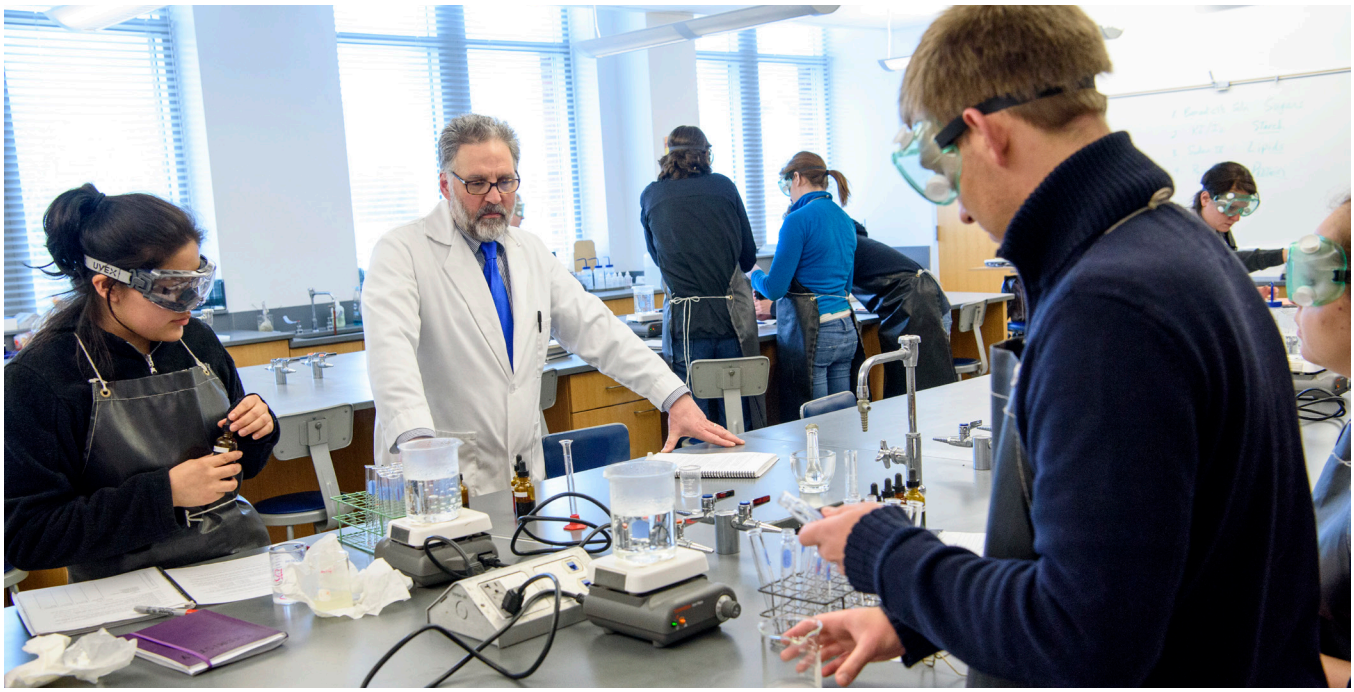
The EB Pipeline Program Facility at Ella Grasso Tech, the A Wing Student Services Renovation and the Phase 2 Library Renovations are scoped and funded separately from the Master Plan Recommendations, and therefore are not included in the priority list.

Priority 1 Projects

- Temperature and Humidity Control Upgrades in D and E Wings
- Science Lab Renovations (to create one additional A&P and General Chemistry Labs each)
- Expand Allied Health to accommodate new Medical Assistant Program
- Expand Sciences
- Expand Nursing
- Expand Technologies
- Expand Dining

Priority 2 Projects

- Playground Upgrades
- Cooling Tower upgrade
- Courtyard enhancements, tree removal
- Lighting in East Parking Lot



IMPLEMENTATION AND COST

PHASING

The Master Plan for TRCC does not frame a "Phase 1 Project", but rather provides several individual projects which could each be done independently when funding comes available. The decision on timing and sequence of implementation will depend on the relative priority of each and on funding.

The Temperature and Humidity Improvements in the D and E Wings is a project which President Jukoski would like to be implemented as soon as possible. Similarly, renovating two existing spaces to provide an added Biology A&P Lab and an added General Chemistry Lab would be very beneficial.

Detailed programming study will be needed for Nursing and for the Technologies program to determine if optimizing the use of the current space could provide similar benefits to expansion. The Planning Team recognizes that the expansion in the new academic wing is more on the 10-year time horizon.

COST ESTIMATE

The Planning Team prepared order-of-magnitude cost estimates for the Master Plan recommended projects. The estimates were based on the space program and the conceptual site and building projects noted above. The basis of the estimate reflects the assumptions noted below. Given the broad, preliminary scope of the Master Plan projects, and the fact that needs, conditions and priorities can change over time, it will be important to review and refine the program in more detail and confirm budget assumptions prior to implementation.

The table on the following page reflects the overall recommended Master Plan projects. Projects currently in design or planning, including the EB Pipeline program at Ella Grasso Technical High School, the A Wing Student Services Renovation and the Library Phase 2 Renovation are separate from the Master Plan scope, so not included in the estimate.

The extent of backfill renovations to coordinate with the 10-year expansion was estimated to be 60% of the floor area of the expansion area.

Assumptions

- Project Cost reflects the following markup on construction cost per CSCU guidelines:
  - 45% / new construction and renovations
  - 30% / roads, parking, open space, infrastructure
- Labor costs included at local union rates
- Long lead items can be purchased to meet schedule requirements
- Figures reflect 2018 bid date
- Once project bid date is known, budget figures to be escalated to reflect inflation

Other Markups

• General conditions, general requirements, insurance & bond, permits	15% (in construction cost)
• Construction manager fee	4% (in construction cost)
• Construction contingency	Excluded
• Escalation	Excluded
• FFE, Technology, Equipment	5-15% (included in project cost markup)

FIGURE 04.15 Cost Estimate Assumptions and Other Markups

NEAR-TERM PROJECTS	SF	Construction Cost	Construction Cost/ SF	Project Cost
Renovation / Second Floor A & B Wings for Science and Nursing	9,909	$2,734,884	$276	$3,965,582
Renovations / D and E Wings for temperature and humidity control	NA	$419,432	NA	$608,176
Parking Lot Supplemental Lighting	NA	$383,703	NA	$498,814
Expanded Dining Area and Terrace	4,000	$1,440,000	$360	$2,088,000
Childcare Center Playground Upgrade	3,967	$158,680	$40	$206,284
Subtotal	13,876	$5,136,699		$7,366,856
10-YEAR PROJECTS				
Southwest Wing / New Construction	35,000	$21,000,000	$600	$30,450,000
Backfill Renovations Allowance	21,000	$7,413,000	$353	$10,748,850
Subtotal	60,000	$28,413,000		$41,198,850
Total		**$33,549,699**		**$48,565,706**

FIGURE 04.16 Near-Term and 10-Year Projects Cost Estimate

CONCLUSION

The Master Plan update for Three Rivers defines the capital needs to address the College's highest priority strategic goals. These include facility near and longer-term improvements to maintain enrollment in key programs where demand exceeds physical capacity, and investment in facilities which promote student success and community engagement. The Recommendations coordinates with parallel studies and projects, as well as the EB Pipeline Study, to address the current space deficit in a multi-faceted approach – on and off-site and, with a focus on areas which will support recruitment and retention. The Plan optimizes the use of existing buildings and will align the College's physical assets with its enrollment, programs and goals for the next 10-year period. In this manner, TRCC will continue to be a vital resource for its community and the Eastern Connecticut region.







MASTER PLAN TEAM

PERKINS+WILL
Master Planner / Architect

Bill MacIntosh
Yanel de Angel
Mike Aziz
Lois S. K. Suh
Brad Rogers
Brian Harris
Michael Austin

SCOTT BLACKWELL PAGE
Academic Space Programming

Scott B. Page

AKF GROUP
MEP / Energy Infrastructure

John Rice
Thomas Ruggiero

VJ ASSOCIATES
Cost Estimating

Clive Tysoe
Kevin Putney
Stephen Moore