Master Planning for State and Community Colleges

MASSACHUSETTS COLLEGE OF ART AND DESIGN

June 2008

CHAN KRIEGER SIENIEWICZ

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MASSACHUSETTS COLLEGE OF ART AND DESIGN

Prepared for:

DIVISION OF CAPITAL ASSET MANAGEMENT
and
DEPARTMENT OF HIGHER EDUCATION

Prepared by:

CHAN KRIEGER SIENIEWICZ, Inc.

June 2008


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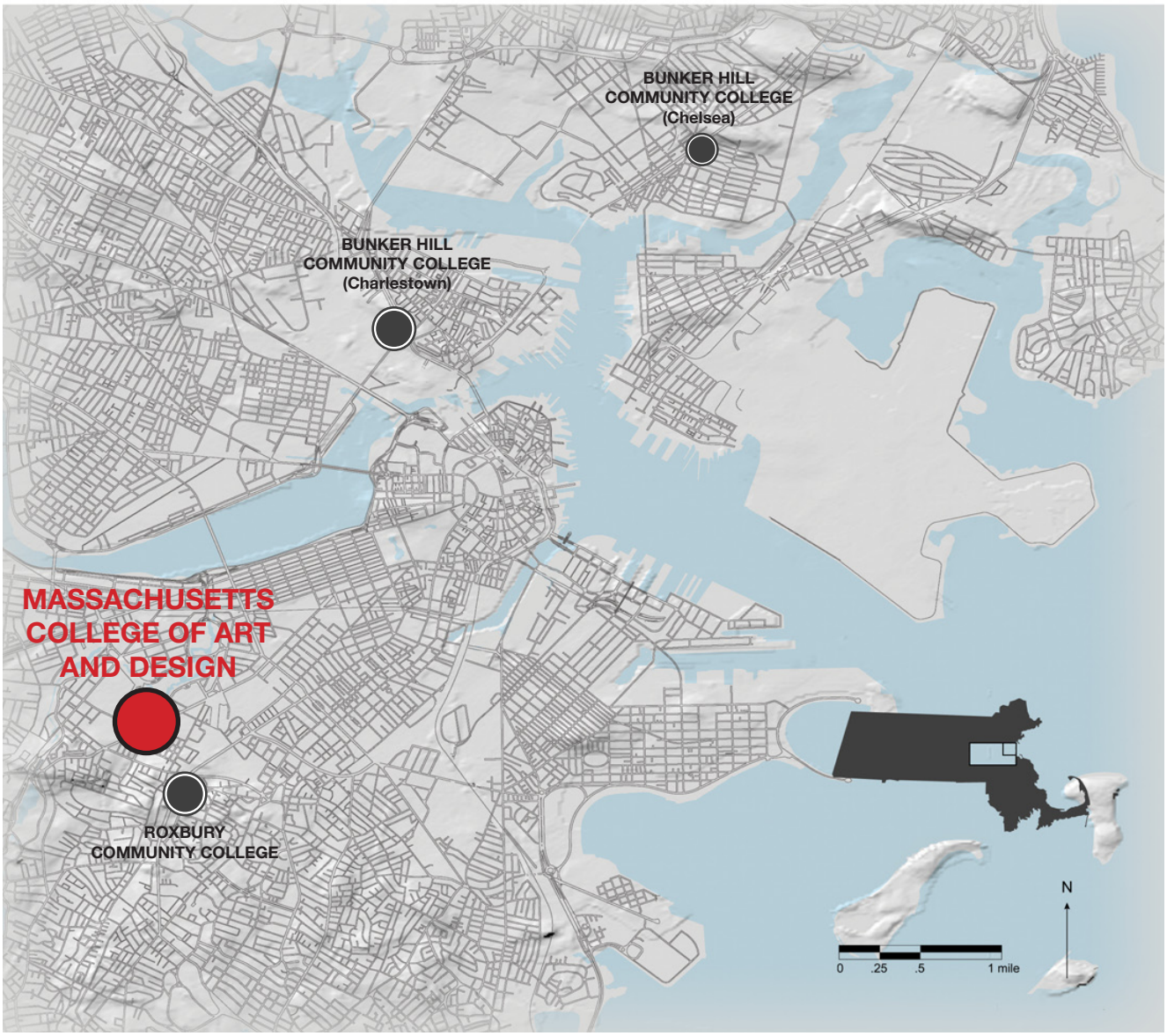
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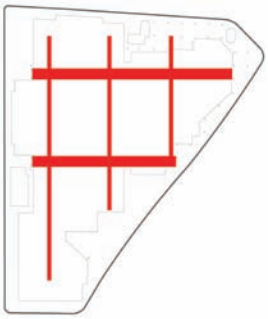
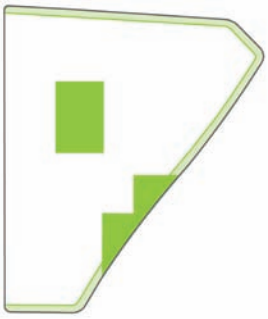
Executive Summary

Clarifying Internal Circulation

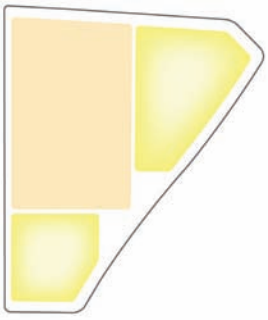


Common Space Nodes

Landscape & Streetscape



Two Campus Poles



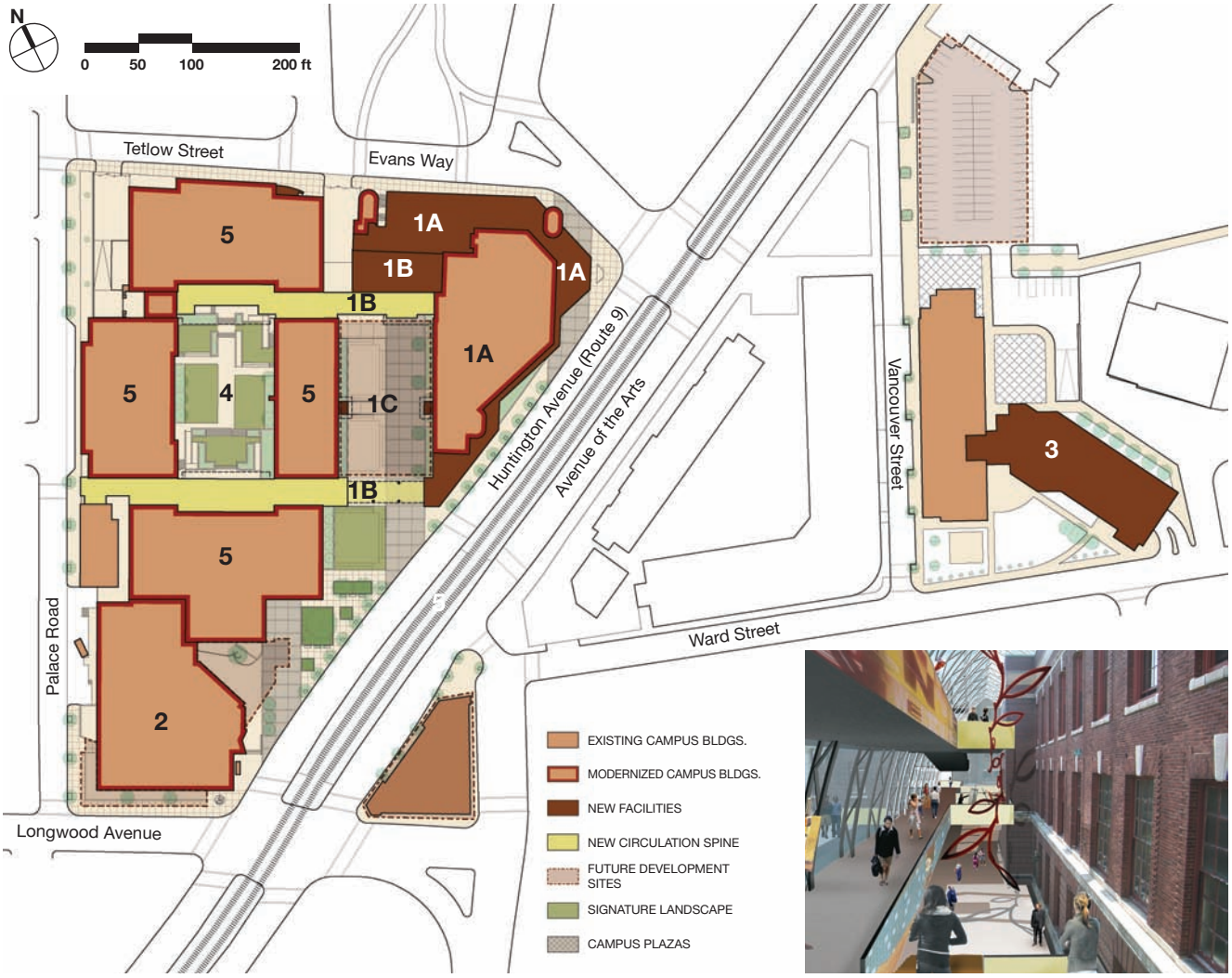
The campus of Massachusetts College of Art and Design (MassArt) is distinctly urban, which has both positive and negative consequences. The College is able to participate in a number of significant "urban narratives" in Boston and offer an exciting experience to students, but it also resides in a tightly-constrained, inherited campus with a lengthy history of haphazard, accretive growth. The proposed framework for MassArt uses internal circulation improvement, modernized and new facilities, and enhancements to the College's image in the public realm to address the campus's problems and enrich its existing positive characteristics to strengthen an identifiable sense of place.

Four major conceptual moves are employed by the Campus Framework Plan to enhance the densely-built campus as a home for specialized art education and a setting for vibrant urban experiences. First, facility modernization and new development facilitate the clarifying of internal circulation throughout the "megastructure" of campus buildings. Second, new common space nodes arrayed throughout the campus provide much-needed informal activity and exhibition space. Third, the exterior campus environment is improved by focusing long-term landscape investment in the central courtyard and Huntington Avenue open spaces, with streetscape enhancements strengthening the unique character of the block in the public realm. Finally, two campus activity "poles" emerge at either end of the block, one anchored by the new Center for Design and Media, the other by an enhanced Kennedy Student Life Center *(capital project names are working titles only)*.

Several capital projects contribute significantly to the realization of this campus vision, described briefly below:

1 Center for Design and Media (CDM, a three-stage project): Stage 1 development will focus on infilling 42,000 GSF of the underused exterior Tower portico and Auditorium with new design and media studios, a large lecture hall, and more efficient circulation space while interior upgrades to the lower floors of the Tower will improve spaces, systems, and the high-exposure façade at the corner of Evans Way and Huntington Avenue (**1A**). After the demolition of the old Gymnasium, Stage 2 of CDM will include a new 12,900 GSF building addition adjacent to the Tower that will house expanded space for campus services as well as studio and office space. New linear circulation atria will also branch out from the CDM at the Tower's base to connect it to the older campus buildings and capture usable common spaces in activity nodes (**1B**). Stage 3, which can happen in the more distant future, will replace an interim courtyard space on the site of the old Gymnasium with as much as 150,000 GSF of new academic and support space when the need arises (**1C**).

2 Kennedy Student Life Center: improvements to the lower three floors of the Kennedy Building will offer additional dining service space, better student activity and gallery spaces, enhanced systems and infrastructure to support these activities, and improved interior connections to the South Building. Potential exists to expand the envelope of the Student Life Center to increase retail offerings and common space, either in the short term or beyond the framework plan horizon.



Massachusetts College of Art and Design Framework Plan

A new internal campus circulation atrium

3 New Residence Hall: a new 300-bed residence hall next to the existing Artists' Residence will strengthen the College's on-campus residential community. The new residence hall will be constructed over sub-grade parking similar to its neighboring facility, freeing up the ground plane for usable open space.

4 Central Courtyard Landscape Enhancements: terraces of seating and art installation areas will bring campus activity down into the original central courtyard, creating a 14,600 SF outdoor amphitheatric landscape that can be used for informal passive recreation or planned events and performances. The courtyard is also an opportunity to invest resources in sustainable technology with a new stormwater storage system to offset the long-term increase in impermeable surfaces on the site.

5 Original Campus Modernization: systems and interior upgrades to each of the original campus buildings will improve their utility for arts education and provide better connections into a new system of linear circulation and common space atria.

The new CDM at the base of the Tower

INTRODUCTION

The 2003 report by Eva Klein & Associates, *Matching Facilities to Missions: Strategic Capital Program,* provides an amazingly strong and comprehensive foundation for capital planning at the Commonwealth's 24 state and community colleges. Through the report, each college has a thorough, prioritized list of capital projects and their estimated cost, and that list is a *living document*—it still serves as the basis for continual updates and reprioritization as some projects are completed and others are added to the list.

What the 2003 *Strategic Capital Program* does not do, nor could it have been expected to do for such an expansive and diverse group of institutions, was give each list of capital projects a conceptual *vision* and a physical *framework* for determining how each individual project could participate in an overall campus narrative. The 2003 *Strategic Capital Program* identified the elements or ingredients that could be drawn on to create each campus's future. The task of this study, and the subject of this report, is to determine how those ingredients can be organized and strategically deployed towards the creation of a better campus environment with a clear and unique identity.

The report is broken into three principal sections that roughly parallel the sequence of exploration in the study. The first section, "Understanding the Existing Campus," discusses analysis of existing campus conditions and relates those conditions back to core themes, challenges, opportunities, and needs. "Strategies for Campus Planning," the second section, folds into the discussion conceptually-driven planning scenarios that use capital projects and their development to "tell a story" about the future of campus. In the third section, "A New Campus Framework," a preferred framework for the campus emerges and is described in greater detail. Technical appendices are included at the end of the report to provide greater analytic detail about landscape, mechanical, plumbing, and electrical systems on the existing campus.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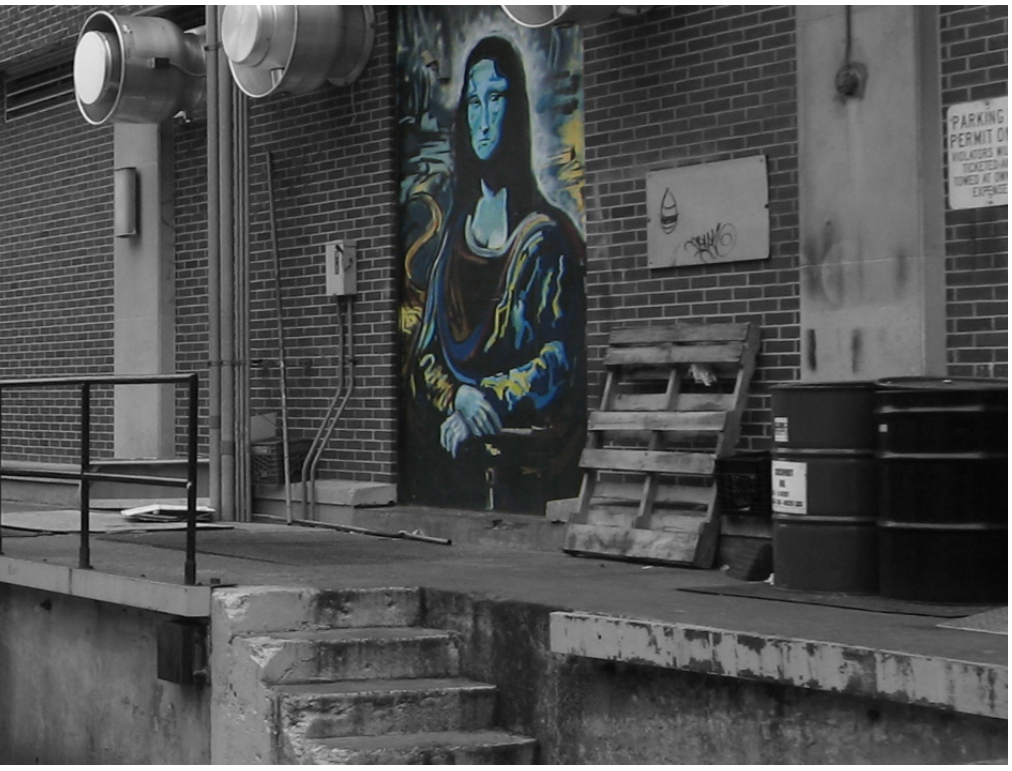
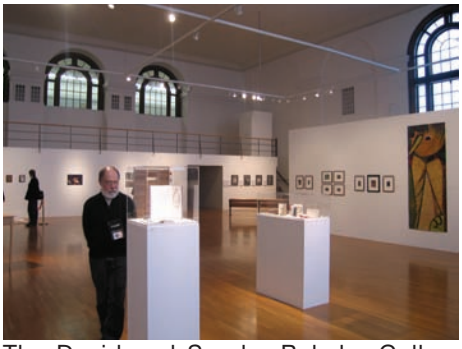
I. Understanding the Existing Campus: Conditions, Needs & Plans



Crafting an effective framework for Massachusetts College of Art and Design's future requires a broad understanding of not only the conditions on the ground today, but also the needs expressed by college constituencies and the plans already underway to serve those needs. The following chapter provides a "snapshot" of the campus and the college leadership's ambitions for the future.



The David and Sandra Bakalar Gallery (above) and the Stephen D. Paine Gallery (below) are the two major public art galleries at MassArt

The Campus at a Glance

The following is a list of "fast facts" regarding Massachusetts College of Art and Design (MassArt) and its campus[1]:

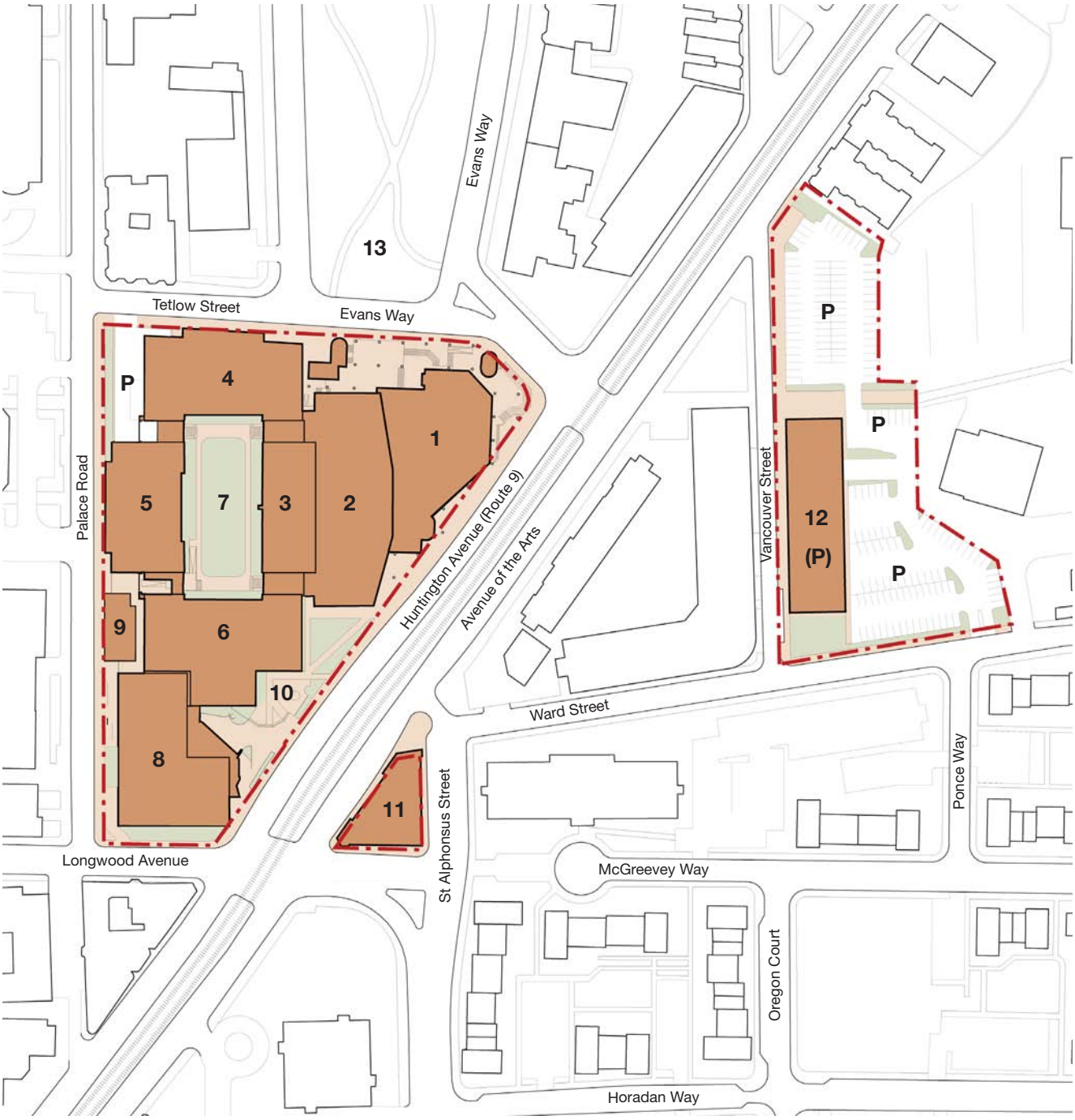
- Established in 1873, Massachusetts College of Art and Design was the first and remains the only freestanding public college of art and design in the US.
- In fall 2006, the college had a total unduplicated headcount of 2,286 and a full time equivalent of 1,768 students.
- For the fall semester, 2007, in-state full-time tuition and fees were $3,725 and non-resident full-time tuition and fees were $10,950.
- MassArt employs 74 full-time and 124 part-time faculty in addition to 258 staff.
- The college has nine art exhibition galleries on campus, including the David and Sandra Bakalar Gallery and Stephen D. Paine Gallery, which host several major public exhibitions each year as well as the graduate thesis exhibitions and the annual Senior Show. The college's Exhibitions Program mounts four to six professional exhibitions each year.
- MassArt grants a Bachelor of Fine Arts degree with twenty-two concentrations offered by nine academic departments, as well as graduate programs in art education, master of fine arts and master of architecture degrees, and certificate programs.
- The land area of the MassArt campus is approximately 6.41 acres on three discontiguous blocks split by Huntington Avenue.
- There are 133 surface parking spaces and 33 basement-level garage spaces on campus: 138 for faculty and staff use, 25 for students, and 3 for visitors.
- There are 386,770 square feet of assignable space[2] and 849,235 square feet of gross building area at the MassArt campus.[3]

The view of Boston's skyline down the Avenue of the Arts from the campus's Tower

1 The first five facts are taken from http://www.massart.edu

2 *Massachusetts College of Art and Design Space Utilization Analysis*, December 2007, Rickes Associates, Inc.

3 Figure provided by Massachusetts Department of Higher Education



1	Tower	8	Kennedy Building
2	Gymnasium	9	Hot Shop
3	East Building	10	Transitional Open Space
4	North Building	11	Smith Hall
5	Collins Building	12	Artists' Residence
6	South Building	13	Evans Way Park
7	Campus Courtyard	P	Parking

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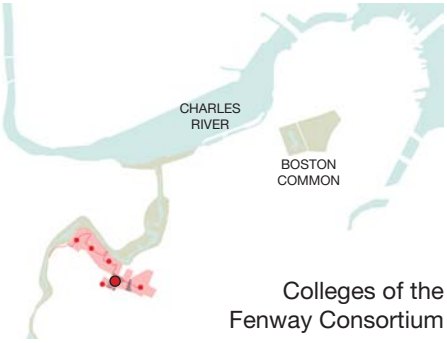
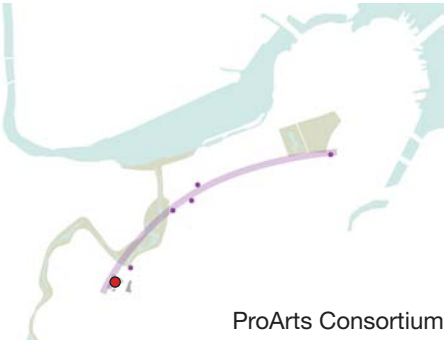


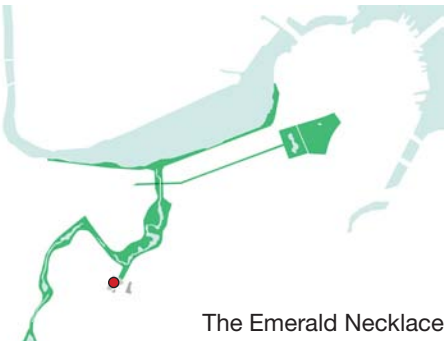
Colleges of the Fenway Consortium



ProArts Consortium

MASCO

Avenue of the Arts



The Emerald Necklace

Regional and Historical Situation

Summary

- MassArt participates in a number of "urban narratives" at its site in the Longwood Medical Area
- The campus has a rich history of hosting educational institutions dating back to the 1890's
- The college and its campus are distinctly urban

Massachusetts College of Art and Design (MassArt) is located in Boston's Longwood Medical Area, a highly-concentrated district of medical and educational institutions adjacent to the Fenway and Mission Hill neighborhoods. The campus straddles Huntington Avenue, a major urban boulevard also known as the Avenue of the Arts. Due to both the college's institutional identity and unique geographic position, it sits at the confluence of many "urban narratives" in the City of Boston, including: the Colleges of the Fenway Consortium, the ProArts Consortium, MASCO Inc. (Medical Academic and Scientific Community Organization), Avenue of the Arts, and the Emerald Necklace. That all these identifying relationships come together at one site suggests the latent potential of any change on the campus to have a profound impact on its surroundings and the identity of the institution within the city.

Such a charged site must have a rich history, and the MassArt campus does not disappoint. The site began its long run as a center of education humbly in the 1890's when a bicycle school was located at the corner of Longwood and Huntington Avenues. Recognizable pieces of the current campus didn't appear until 1907, however, when the Boston Normal School and Girls' Latin School developed a joint campus with the construction of the buildings now know as North and South Buildings (the Model School, or Collins Building today, and East Building were built immediately thereafter). The Normal School expanded and displaced the Girls' Latin School to become the Teacher's College and subsequently Boston State College in the 1960's, remaining on the site until it was merged with University of Massachusetts Boston in 1982. Immediately thereafter, the site and its facilities were once again occupied by a higher education institution—Roxbury Community College, as it awaited its own dedicated campus. Finally, in 1985 Massachusetts College of Art—an institution with its own nomadic history—moved from its former location at Brookline and Longwood Avenues to take over the campus.[1]

The fact that MassArt, as an institution and as a place, participates in so many narratives and has such a history of change over time may seem unusual, and to be sure, it *is* remarkable, but it attests to the fact that the college and its campus are distinctly urban—complexity and change are hallmarks of urbanism. The legacy of this urban identity, however, is an inherited campus full of provisional solutions to momentary problems that may not function ideally for an art institution. Future planning on the site must recognize the unique characteristics of the campus and retain its vitality while allowing the college to properly adapt the vestiges of past development and make its own identifying mark.

1 Resources for historical information include: http://www.massart.edu, http://en.wikipedia.org, http://search.boston.com/local/Historic.do, http://www.lib.umb.edu/archives, and http://sanborn.umi.com)

Massachusetts College of Art and Design Regional Context

MassArt's signature courtyard is completely enclosed by the original Georgian brick campus buildings

Elements of Campus Identity

Summary

- The campus's physical identity is best understood through the interplay of its central courtyard and surrounding older buildings
- Though unattractive and unappreciated, the Tower is a major presence on Huntington Avenue
- MassArt uses artistic details and public artworks to identify its main campus block

A number of factors contribute to the physical character, identity, and sense of place of the campus. As briefly noted earlier, the site's location and history play a part in that identity. As an urban artifact, the college's physical facilities lend much to the identity of the campus, as do the outdoor spaces they shape and define. The identity of the institution as a college of art also shows through in many quirky, artistic campus details.

The Courtyard and Original Campus Buildings:
On their own, the original brick buildings of the Boston Normal School and Girls' Latin School are impressive works with refined Georgian detailing. Taken together as a composition around a central courtyard, however, they are all the more powerful as a balance of solid mass and green void. The formal strength of the rectangular figure of solid and void has preserved it through decades of campus additions that pushed up against Huntington Avenue rather than infill the space. Though the courtyard is often unused and the brick facades of the older buildings show their age, the physical identity of the campus is best understood by observing their interplay of mass and space.

The Tower on Huntington Avenue:
For better or worse, the dark glass Tower at the corner of Huntington Avenue and Evans Way is a local landmark. Its height, unusual stepped massing, dark and empty portico, spalling and stained concrete frame, and tinted glass façade make it a unique building in the skyline and an unappreciated architectural specimen up close. It takes much study of the peculiarities of its tiny, limited triangular site to appreciate the Tower as a design solution, and space reconfigurations since its construction in 1977 have further compromised its unique circulation and interior space features. What it lacks in attractiveness, however, it makes up for in presence and visibility—features that need to be harnessed to better represent MassArt in the surrounding urban environment.

The MassArt Tower is an imposing presence on Huntington Avenue but also the campus's most visible landmark

The Block of Art:
Few colleges can boast of a density and compactness similar to MassArt's main campus block—few may desire to do so. MassArt has found an advantage in its limited land area, however, because the college controls its entire city block and is therefore able to assert its institutional identity openly. Because the newer facilities along Huntington Avenue have done little to represent the college in a positive way, MassArt has successfully turned to art to define its identity in the public realm. A number of outdoor artworks appear at various locations along the bounding sidewalks of the main campus block. Conventional details, such as the gates of the service driveway on Tetlow Street, or the bicycle storage area in the Tower portico, have been replaced with artistic alternatives. As neighboring institutions, most notably Wentworth Institute, become more aggressive in branding their own campus areas, MassArt's college leadership has expressed a desire to continue using "quirky" and artistic details and signage to set MassArt's campus block apart as a unique environment amidst the Colleges of the Fenway and Longwood Medical Area.

Public artwork is injected into the everyday world at MassArt, as shown at the campus bicycle rack and in front of Kennedy Hall

The carefully crafted ornamental ironwork gate for the college's otherwise utilitarian service area

Smith Hall, one of two MassArt residential properties outside the main campus block

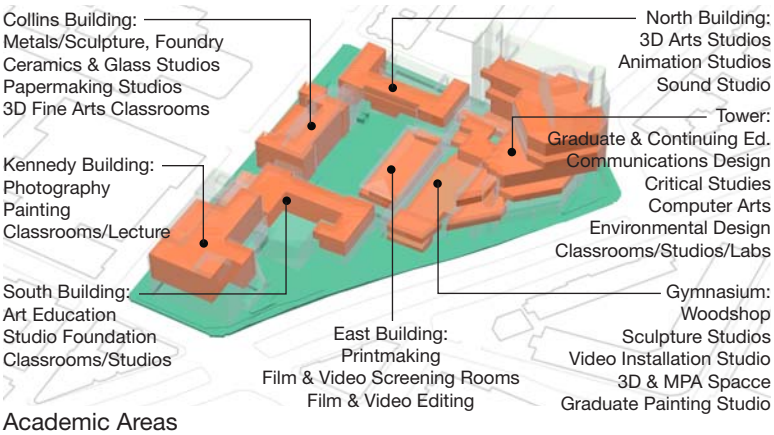
Land Use

Summary

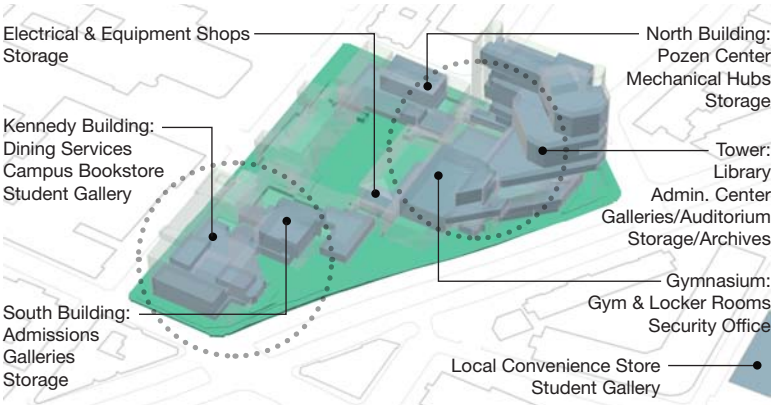
- MassArt occupies 6.41 acres in three discontiguous pieces
- College buildings and their immediate landscapes occupy 60% of campus land
- MassArt's campus is the densest in the DHE system with a 3.0 FAR

MassArt occupies two complete triangular city blocks and the narrow edge of a much larger superblock. The main campus block is approximately 4.48 acres, the Smith Hall block is approximately 0.15 acre, and the land fronting Vancouver Street is approximately 1.78 acres, for a total of 6.41 acres. In addition, MassArt parking facilities lie across 0.16 acre of adjacent Wentworth Institute of Technology property. Of the 6.41 acres of campus, buildings and their immediate landscape edges cover approximately 3.85 acres, or 60% of the entire campus. Usable open spaces and land dedicated to vehicles split the remaining campus area nearly identically at 1.30 acres apiece. Based on DHE square foot area figures, the MassArt campus has a 3.0 FAR (floor area ratio) average density, making it the densest campus in the DHE system.

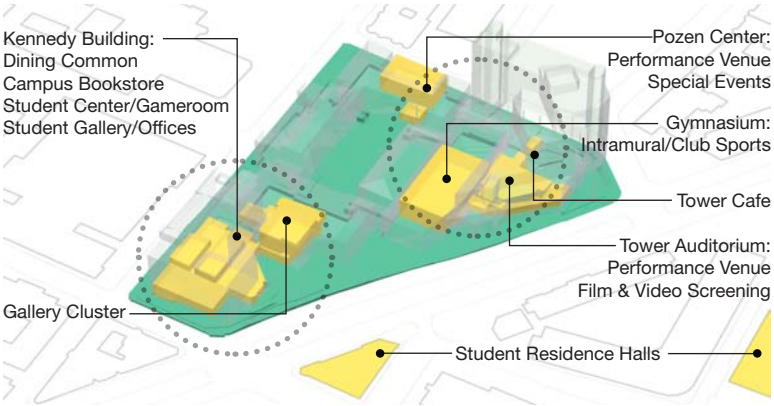
Campus Land Use - Ground Level



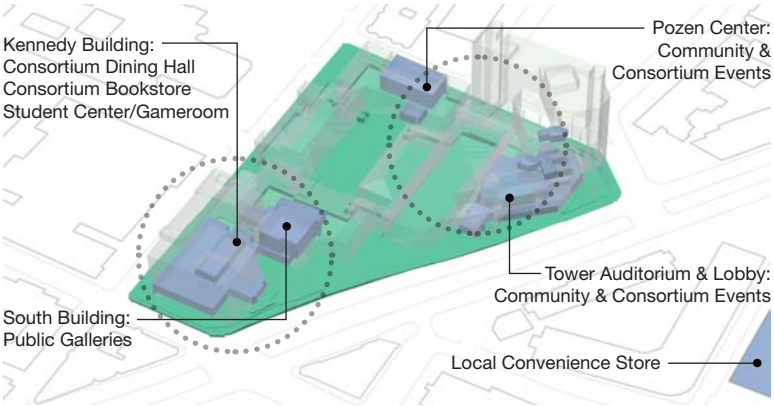
Academic Areas



Campus Support Zones



Student Life Zones



Community Use Zones

Programmatic Zones

Summary

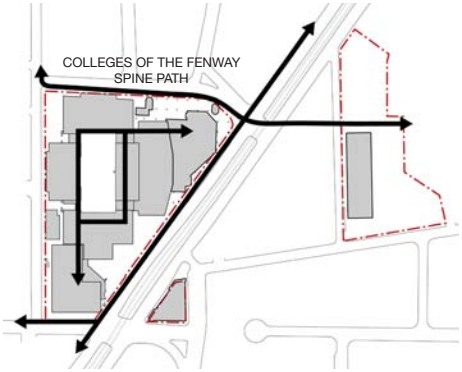
- Academic programs are distributed throughout the campus megastructure
- Campus support, student life, and community use tend to cluster in “poles” around Kennedy Hall and the Tower

Academic Areas:
Academic programs on campus are not concentrated but are rather distributed almost evenly throughout the multi-building megastructure. The diversity of instructional space types amongst the buildings draws programs with specific needs to specialized spaces but also separates some disciplines within the same department.

Campus Support Zones:
Support uses tend to cluster at the two densest “poles” of the campus megastructure, with the South Building galleries and Kennedy Building dining and student services at one pole and the Pozen Center, Gymnasium, and Tower offices and facilities spaces at the other.

Student Life Zones:
Student Life uses on the main campus block follow a similar polar pattern as the support uses, with the Kennedy Building student center, bookstore, and dining facilities as a southwestern anchor and the recreation and entertainment venues of the Gym, Pozen Center, and Tower Auditorium anchoring the northeast corner of the campus. All student residences are located across Huntington Avenue from the main campus block.

Community Use Zones:
Community use of the campus is focused on the Bakalar and Paine Galleries and Arnheim Gallery in South Building and the Pozen Center and Tower Auditorium in North Building and the Tower, respectively, again following this two-pole pattern of space use. Colleges of the Fenway Consortium students also have access to the Kennedy Building dining facility and student center.



Principal Pedestrian Pathways

Exterior Pedestrian Circulation

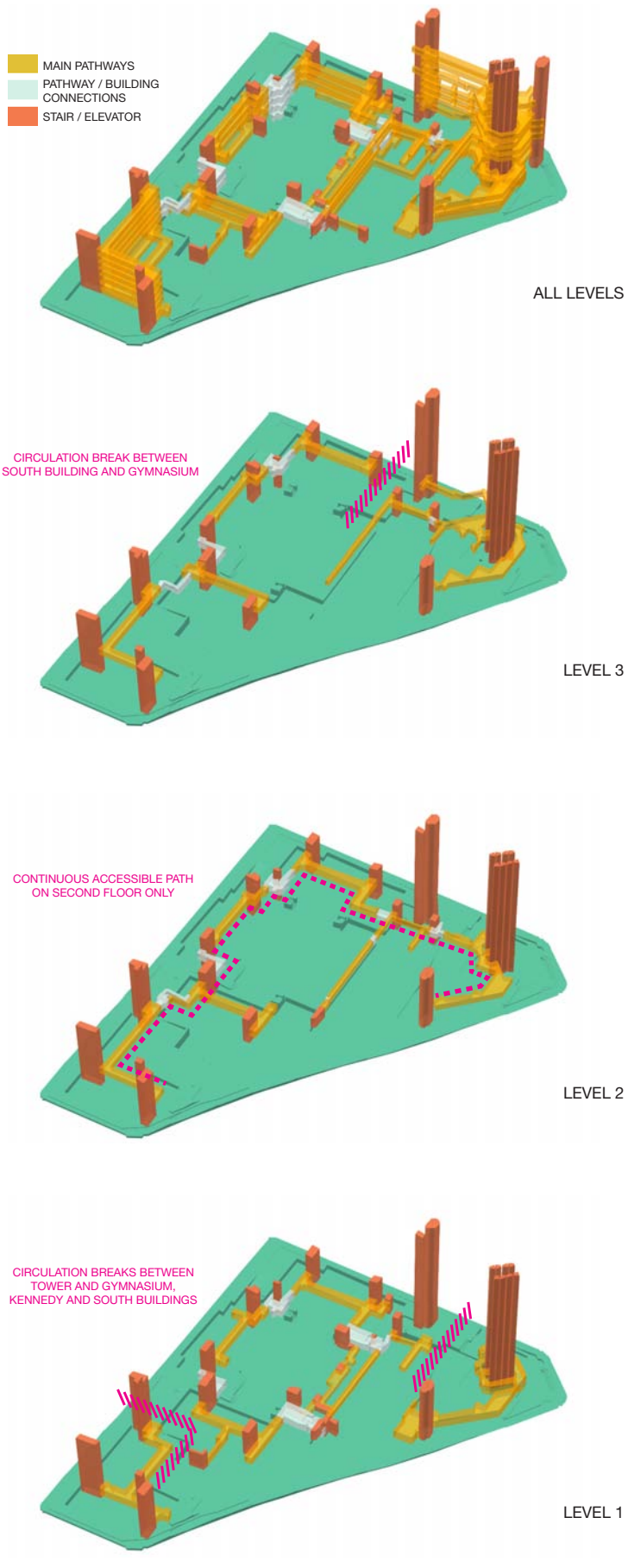
Summary

- MassArt's main exterior paths largely follow sidewalks and crosswalks
- The MBTA stop is a source of much pedestrian activity near MassArt
- The Colleges of the Fenway spine is now a popular crossing of Huntington Avenue
- There are many points of access to the campus, but none act as the campus's "front door"

As MassArt occupies a dense urban campus, its main exterior pedestrian paths largely follow sidewalks and crosswalks. Of these paths, the sidewalks of Huntington and Longwood Avenues are the most traversed due to the presence of the MBTA Green Line stop at that corner. A relatively recent development is the growing volume of pedestrians along the Colleges of the Fenway (COF) spine, a path marked by that institutional consortium from Wentworth Institute in the east to Wheelock College in the west. Both the Huntington Avenue and Evans Way frontages of the MassArt campus are included in the COF spine, though the most notable impact of the path is the popularity of crossing Huntington Avenue to the Artists' Residence at Evans Way, below the Tower, rather than at Longwood Avenue.

The campus's exterior pedestrian network leads to a number of campus access points, the majority of which are controlled egress and service doors. With five major public entrances and another four secondary entrances on the main campus block, it is difficult for visitors to understand their appropriate point of entry—the campus's "front door."

Campus Pedestrian Circulation Network and Access Points



Internal Circulation Network

Interior Pedestrian Circulation

Summary

- MassArt's internal circulation network is complex, labyrinthine, unpredictable, and discontinuous
- A continuous, accessible internal path is only found on the second floor level
- A number of couplings connect the circulation spaces of different buildings with varying degrees of success

Due to the interconnection of several buildings developed at different times, MassArt's internal circulation network is complex, labyrinthine, unpredictable from one floor to the next, and suffers from a number of breaks in continuity. In fact, although all the individual buildings of the campus megastructure are interconnected at some point, it is only on the second floor level that a pedestrian can walk a continuous accessible path from the Tower in the northeast to Kennedy Building in the southwest.

MassArt's internal circulation network relies on a number of building connectors or couplings that exhibit varying degrees of success in facilitating movement through the megastructure. The "Crackertoria" —single-level connections between the original campus buildings of North, South, and East Buildings—are the earliest attempts at multi-building circulation connection, but the coupling between North and Collins Buildings is most successful in mediating two facilities while also providing vertical circulation on all floors.

The nearest MBTA Green Line station is just steps from the campus

Transit and Shuttle Network

Summary

- MassArt has excellent public transit connectivity on both rapid transit and bus lines
- The MassArt community is served by, but largely does not utilize, MASCO shuttle buses

Transit:

MassArt has excellent public transit connectivity, with the Longwood Medical Area Station of the MBTA's Green Line E just steps from the campus. In addition, the MBTA's CT2 and #39 bus routes both stop immediately adjacent to the Green Line station.

Shuttle:

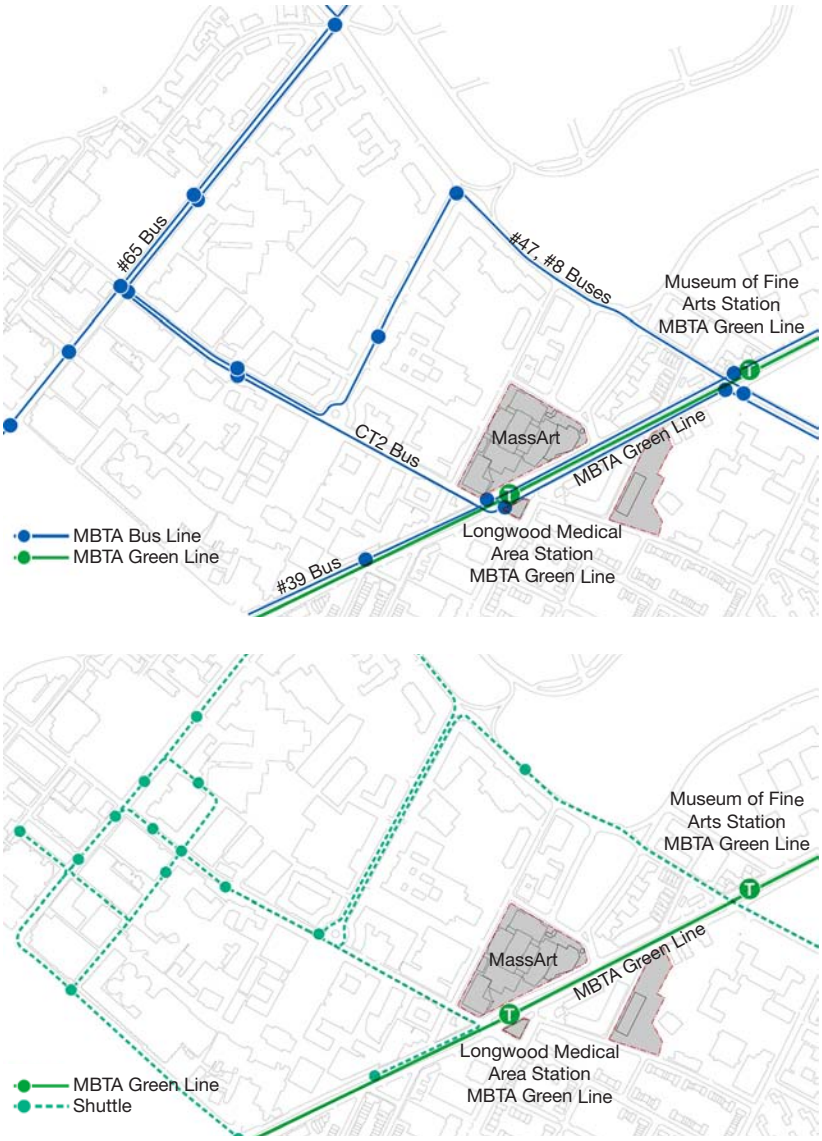
MassArt is a member of MASCO, a consortium of educational and medical institutions in the Longwood Medical Area that offers as one of its services a local shuttle bus network. No designated stops are proximate to the college, however, and interviews of the college community suggest a lack of awareness of the shuttle network or an inability to use the service conveniently.

MBTA GREEN LINE - E BRANCH:
5-15 minute headways
Operates 5:00AM to 12:30PM

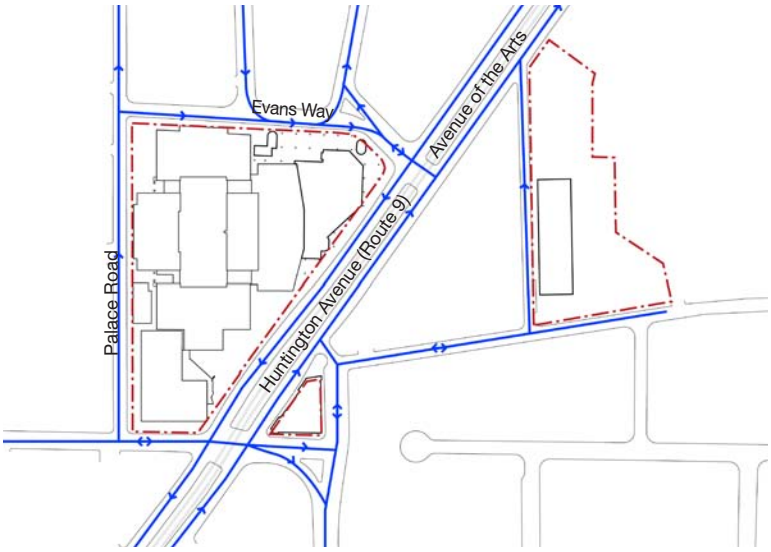
MBTA CROSSTOWN BUS #CT2:
20 minute headway
Operates 6:00AM to 7:30PM, no weekend service

MBTA LOCAL BUS #39:
8-15 minute headways
Operates 5:15AM to 1:15AM

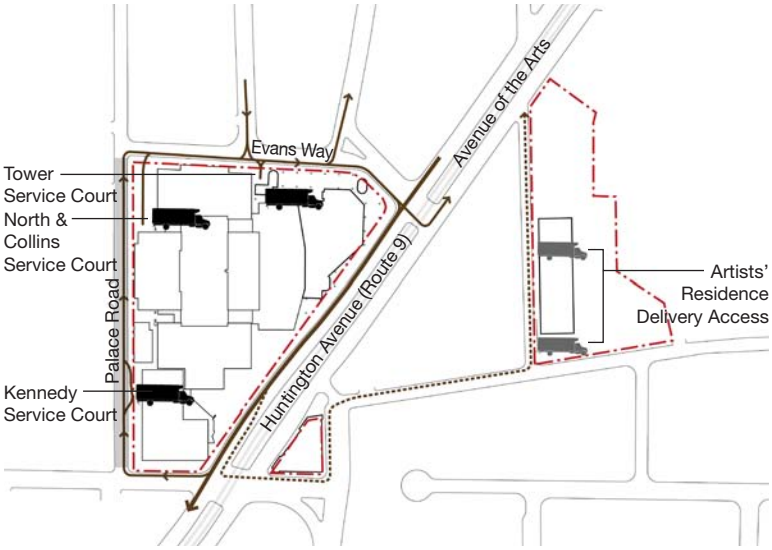
MASCO SHUTTLES:
8 Routes
10-15 minuted headways
Most routes operate 5:30AM - 9:30PM



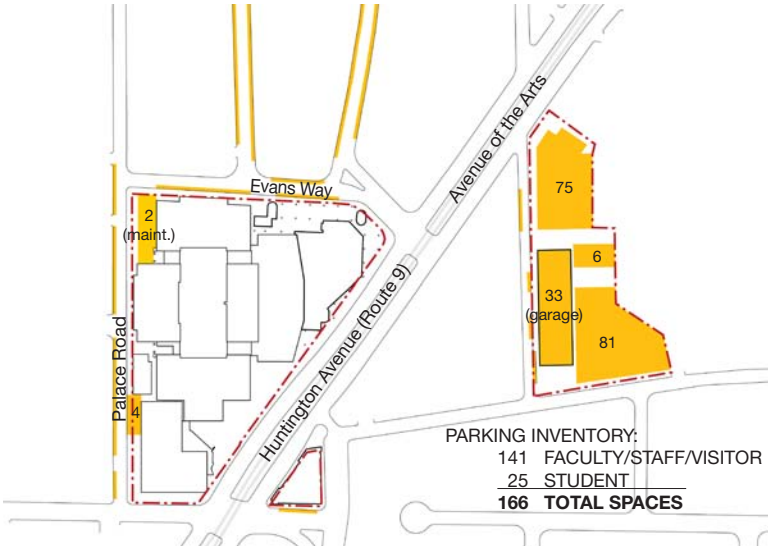
Local Transit and MASCO Shuttle Network



Vehicular Traffic



Service Traffic



Parking

Traffic, Services, and Parking

Summary

- The Avenue of the Arts is a major urban boulevard that cuts through the campus
- Service access is largely confined to Palace Road, Tetlow Street, and Evans Way
- Parking is scarce at MassArt with only 166 off-street spaces

Vehicular Traffic:
MassArt is the southern anchor of the Avenue of the Arts, a stretch of major urban boulevard also known as Huntington Avenue. Though recently beautified and re-streetscaped, the Avenue still serves major traffic volumes in addition to a trolley line, effectively cutting the main campus block off from MassArt's student residences. One-way streets and unusual intersection configurations edging the campus are standard for this urban Boston environment.

Service Traffic:
The MassArt campus has three principal service access points, one on Palace Road that serves the Kennedy Building, one on Tetlow Street serving North and Collins Buildings, and one on Evans Way that serves the Tower and campus core. Palace Road acts as a service corridor, with materials often distributed between the three service areas and nearby storage cages via forklift.

Parking:
Parking is a scarce resource at this urban campus. MassArt has only 166 off-street parking spaces, with 33 of those spaces as basement-level parking underneath the Artists' Residence. On-street parking is available on nearby streets in the Longwood Medical Area including Palace Road, Tetlow Street, and Evans Way, but demand in the area is heavy and competition for on-street spaces is heated.

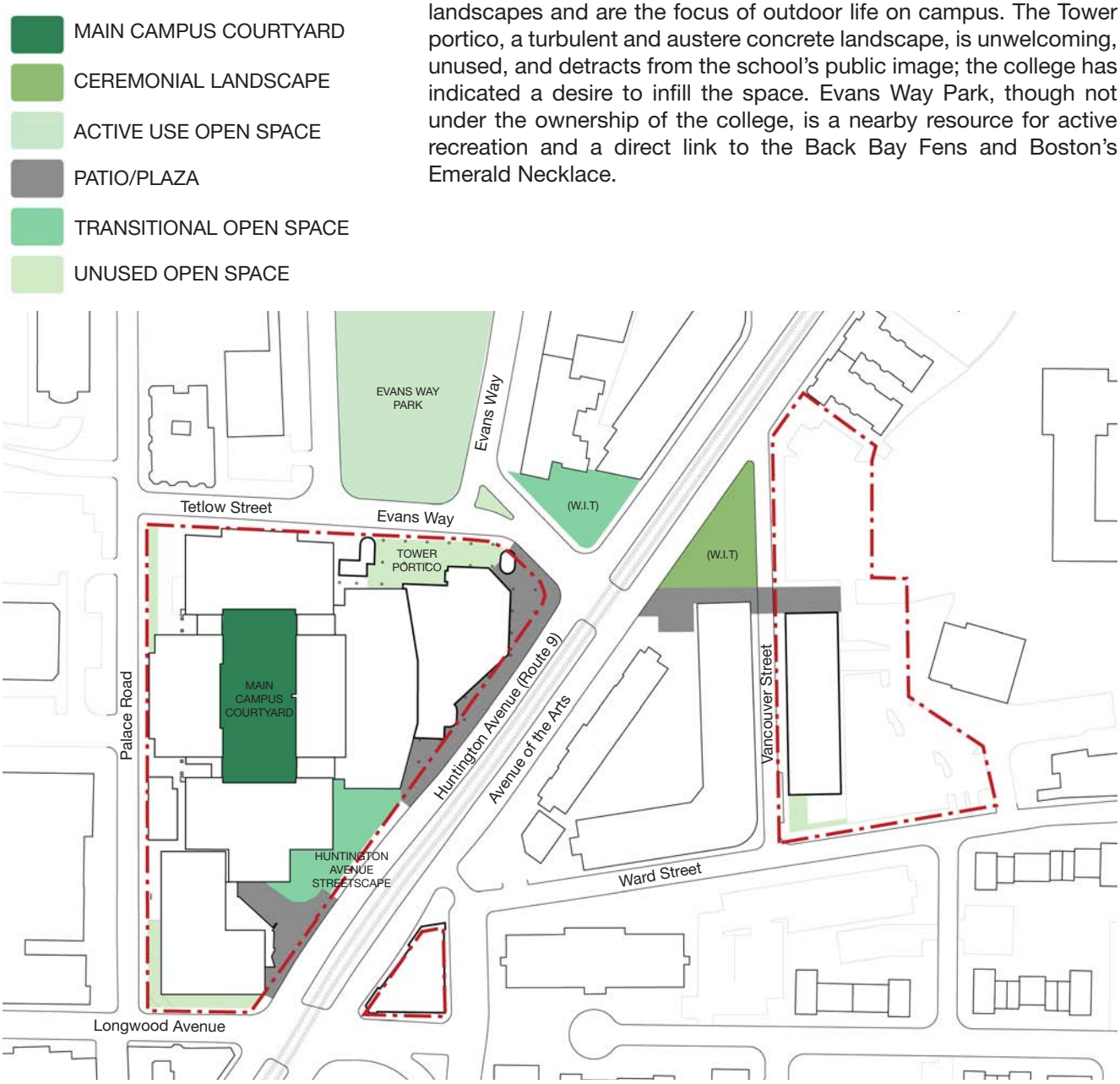
The odd patchwork of plazas, green swatches, and sidewalks that comprises MassArt's Huntington Avenue streetscape

Campus Landscape

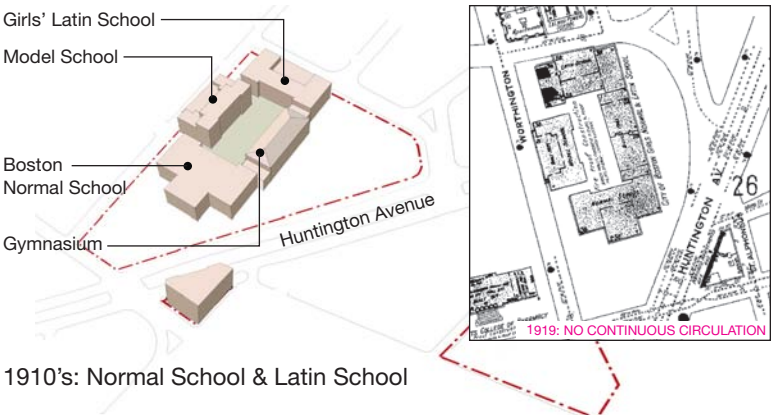
Summary

- MassArt's central courtyard is the campus nucleus and perhaps its strongest formal organizer
- The school's Huntington Avenue streetscape is active and public but lacks cohesion
- Together, these two spaces are the focus of outdoor life on campus

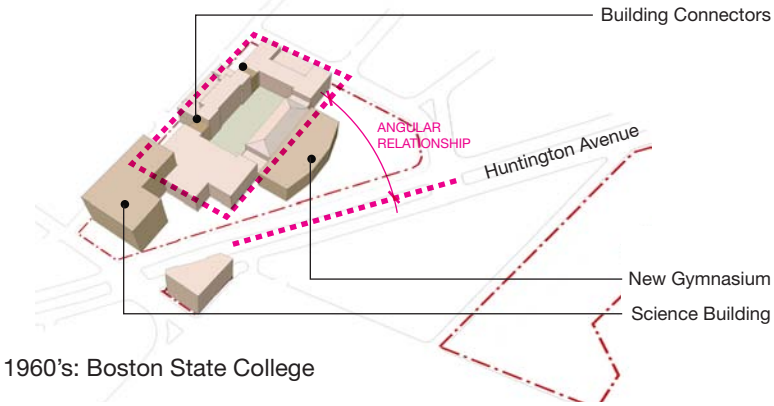
Only 20% of campus land area is dedicated to open space, but what little exists has a great influence on the character of the campus. The central courtyard—closed off entirely from the city outside—is the campus nucleus and perhaps its strongest formal organizer, yet it goes largely unappreciated because it lacks amenities and attraction. The Huntington Avenue streetscape, with its odd patchwork of plazas, green swatches, and sidewalks, is more active and public but lacks a formal cohesion. These two spaces are the college's principal landscapes and are the focus of outdoor life on campus. The Tower portico, a turbulent and austere concrete landscape, is unwelcoming, unused, and detracts from the school's public image; the college has indicated a desire to infill the space. Evans Way Park, though not under the ownership of the college, is a nearby resource for active recreation and a direct link to the Back Bay Fens and Boston's Emerald Necklace.



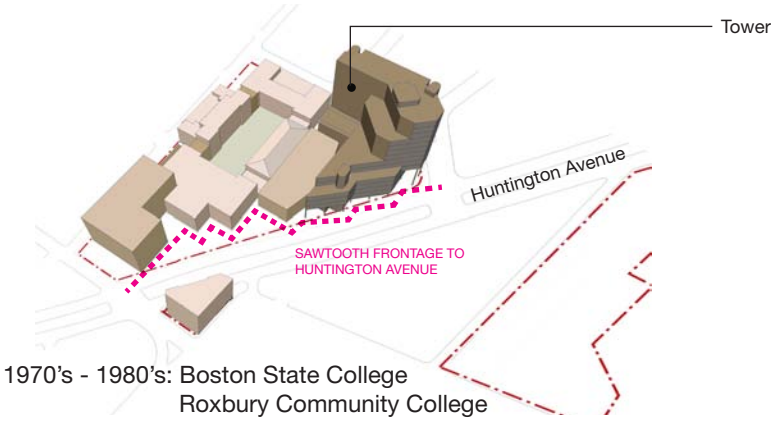
Campus Landscape



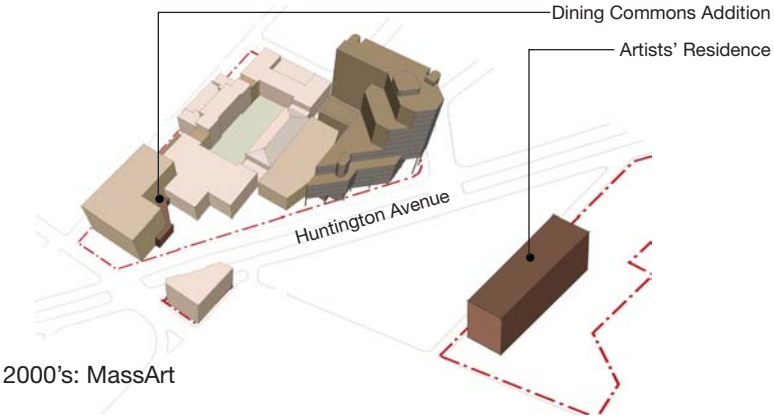
1910's: Normal School & Latin School



1960's: Boston State College



1970's - 1980's: Boston State College
Roxbury Community College



2000's: MassArt

Campus Histogram

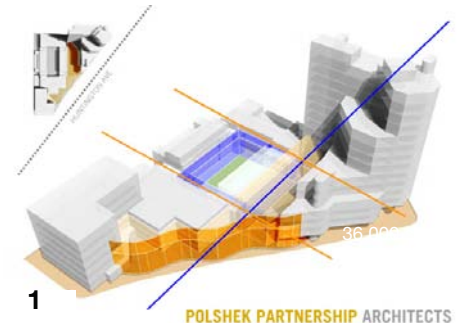
Campus Form

Summary

- A loop of internal circulation was never the intent of the original campus design
- Development in the 60's and 70's further complicated internal circulation
- The relationship of Huntington Avenue to the original campus has resulted in a sawtooth street edge and uncoordinated public appearance

When the campus was first developed as the Boston Normal and Girls' Latin Schools a century ago, the central courtyard was its defining formal scheme, but there was never the intent to allow a full loop of internal circulation around it—one reason that internal circulation on campus today is haphazard and confusing. Attempts at plugging each new facility on campus into the already provisional internal circulation network further complicated internal movement in the growing megastructure.

The unfortunate geometric relationship between the original campus buildings and Huntington Avenue became problematic when expansion was necessary for it to serve as Boston State College in the 1960's and 70's. Development pushed out towards open land south along Longwood Avenue and east into the parkland along Evans Way, but because of the angle of Huntington Avenue, those sites were triangular. This resulted in the sawtooth open spaces along Huntington Avenue and the unusual triangular massing of the Tower. In cutting at this angle, the Avenue also exposes the many stages of disparate campus development in a single street frontage, making it difficult for MassArt to have a unified or even coordinated public appearance.



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Campus Needs and Plans

Interviews with college leadership and campus observations resulted in the following list of campus needs and current proposed solutions to accommodate those needs. These needs and plans may be refinements and elaborations on capital projects already called out in the 2003 *Capital Program*, or may be completely new based on issues that have arisen since 2003. The following list is not necessarily ranked or prioritized.

1 New Center for Design Innovation *(working title at time of analysis)*:
The college is moving forward on a proposed new multi-disciplinary academic facility to be designed by Polshek Partnership. The facility is expected to serve and integrate a number of programs, provide a bold new main entrance to campus, and improve the campus's internal circulation. The size and scope of the facility is still being studied.

2 Clarify internal circulation:
The development of the campus facilities over the decades has resulted in haphazard internal circulation spaces that are often confusing and not universally accessible. Improvements to wayfinding and circulation are needed throughout the campus megastructure.

3 Modernization and refitting of spaces in the Tower:
Campus interviews have suggested that the Tower has been difficult to adapt for contemporary art instruction and many spaces are either obsolete, unusable, or not functional. The Tower Auditorium, wasted exterior porticos, loading dock, and library require particular attention in this regard. The Tower's aesthetic presence is also considered deleterious to the college's image.

4 Modernization and expansion of Kennedy Building:
Several proposals for the future of Kennedy Building have been made in recent years, even including partial conversion to student housing. Currently, MassArt plans to modernize and expand the building's student center and dining services amenities and add additional retail frontage to Longwood Avenue. The firm of Miller Dyer Spears has been contracted for the Kennedy Hall building study.

5 Increase campus housing supply:
MassArt is working with MSCBA and Kyu Sung Woo Architects to develop a new 300-bed or larger residence facility to meet student housing demands. Current design studies are focusing on a new facility immediately adjacent or connected to the Artists' Residence on Vancouver Street.

6 Modernization of original campus buildings:
The original campus buildings—North, South, East and Collins Buildings—are a century old and though they have been modernized in sections over the past decades, more work needs to be done. Many improvements called out in the 2003 Eva Klein study are yet to be completed.

7 Campus landscape improvements:
Interviews with the college community indicate that the central campus courtyard is the signature open space of campus, yet it suffers from a lack of amenities that would make it usable. Similarly, the patchwork of plazas, sidewalks, and green spaces

along Huntington Avenue is seen as having great potential for both passive enjoyment and artful institutional presence, but lacks benches, appropriate signage, and clear design intent.

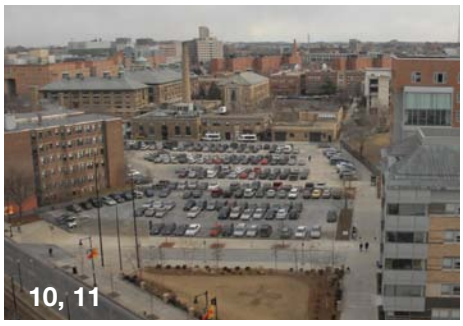
8 Secure campus access points:
The perimeter of the campus megastructure has an abundance of entrances but no design cues to direct visitors and the college community to the ones appropriate to them. Securing the campus perimeter is important, as is emphasizing principal entrances through improved design.

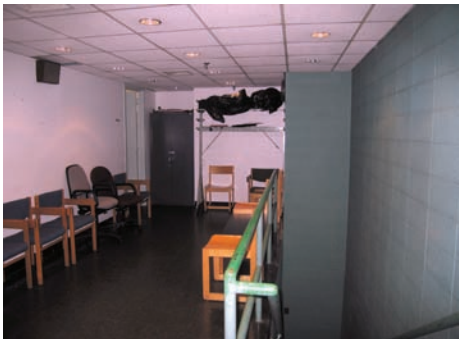
9 Instructional and support space needs:
Interviews with college faculty have revealed a number of space needs on campus, including additional meeting rooms, common spaces, galleries, storage, studio lounges, and "invisible use" spaces—those spaces without a defined program but can be used for spontaneous events. A lack of adequate electrical service was also indicated as a limitation on campus spaces.

10 Parking capacity increase:
MassArt, due to its dense urban condition and scarcity of developable sites, currently has fewer than 200 parking spaces dedicated to the college community. The college estimates an additional 200 spaces would be ideal, and proposals discussed by the college include potentially developing a parking structure in conjunction with Wentworth Institute.

11 Development opportunities:
Recent studies by MassArt have looked into the possibility of densely developing or redeveloping their few available sites to better take advantage of high real estate value in the Longwood Medical Area. Options studied or discussed have included redevelopment of the Gymansium, the Tower, Kennedy Building, Smith Hall, or the current parking lots on Vancouver and Ward Streets.

Plan Identifying Campus Needs





Many of the Tower's interior spaces are either not utilized to their potential, such as the fourth floor storage area (top image), or do not function appropriately for their designated use, such as the Auditorium and its ancillary spaces (green room, bottom image)

As the most visible landmark of the campus, improvements to the Tower can have a profound impact on institutional identity

Tower Building Use

Summary

- Further analysis of space use in the Tower Building was conducted
- The existing gym and auditorium volumes compromise efficient space use in the base levels of the Tower
- Poor layout and inappropriate uses result in inefficiency throughout the lower five levels

Focus on the Tower Building during the planning process required further detailed analysis of space use in the building and the adjacent Gymnasium. In anticipation of a new Center for Design and Media* (CDM, formerly Center for Design Innovation, or CDI), careful attention was paid to existing Tower spaces and how they could be adapted to play a role in the new CDM.

The Tower Basement, Ground Level, and Second Level are poorly and inefficiently utilized, in large part as a result of the large-volume gymnasium and auditorium spaces. Poor layout on this tight corner site of the MassArt campus block has made spaces ancillary to these functions inadequate for consistent, comfortable use and has required inefficient circumferential routing of internal circulation. The architectural massing of the Tower's base—with grand overhangs and multiple levels of access—has further prevented the efficient utilization of space for assignable program on these levels; nearly 12,000 square feet of space at the Basement and Ground Levels is outside the building envelope but still within the building's general site footprint.

Efficient use of space is also a problem in the Tower's Third and Fourth Levels. Similar to the base levels of the Tower, the parceling of spaces in the Third Level results in inefficient circulation patterns that consume floor space and isolate usable area at the interior of the floor plate rather than the edges. A tenuous hallway connection between the Tower and Gymnasium on this level as well as a redundant stairway contribute to this level's inefficiency. The Fourth Level plan is arranged more regularly than those below it, but it serves largely as a storage depot for the campus—a use that should be located in space less useful for critical college activities.

Despite its unusual stepped geometry and massing, the upper levels of the Tower have a more regular layout with less obvious utilization inefficiencies. The separation of studio spaces in the upper levels from important resources at lower levels—most notably the Wood Shop in the Gymnasium basement—should be addressed, however.

** capital project names are working titles only*

Basement Level

Tower (18,280 floorplate) :
Theatre : 2,500
Theatre Support : 2,200
Total : 4,700

Gym (19,600 floorplate) :
Studio (Video/Sculpture) : 3,000
Office/Admin : 300
Woodshop/3D : 5,700
Total : 9,000

Level 1

Tower (18,280 floorplate) :
Theatre : 2,500
Total : 2,500

Gym (19,600 floorplate) :
Security Offices : 1,200
Total : 1,200

Level 2

Tower (23,941 floorplate) :
Office/Admin : 4,000
Theatre Balcony : 2,400
Gallery : 1,700
Total : 8,100

Gym (7,900 floorplate) :
Studio (Grad. Painting) : 2,400
Support : 3,000
Total : 5,400

Level 3

Tower (29,300 floorplate) :
Classroom : 2,185
Computer Lab : 3,155
Studio (graduate) : 2,592
Office/Admin : 4,654
Storage : 2,948
Total : 15,534

Gym (5,500 floorplate) :
Studio (Film/Video) : 2,200
Support : 500
Total : 2,700

Level 4

Tower (27,030 floorplate) :
Studio (Graduate) : 5,117
Storage : 11,525
Total : 16,642

Level 5

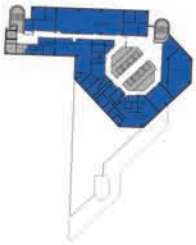
Tower (26,020 floorplate) :
Classroom : 9,703
Office/Admin : 6,000
Total : 15,703

Level 6

Tower (26,020 floorplate) :
Classroom : 6,720
Computer Lab : 744
Studio (Fashion) : 2,400
Office/Admin : 5,113
Total : 14,977

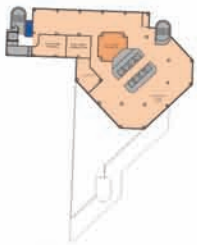
Level 7

Tower (19,585 floorplate) :
Classroom : 400
Computer Lab : 4,137
Studio (Video) : 4,176
Office/Admin : 1,950
Total : 10,663



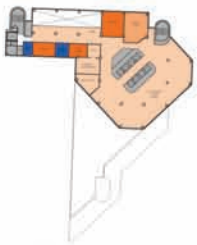
Level 8

Tower (19,585 floorplate) :
Office/Admin : 11,600
Total : 11,600



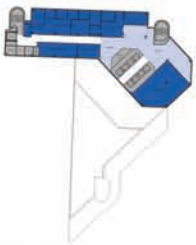
Level 9

Tower (19,585 floorplate) :
Computer Lab : 925
Studio (Communication) : 14,800
Office/Admin : 150
Total : 15,875



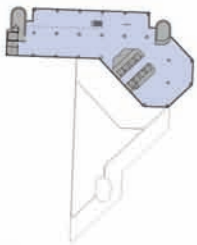
Level 10

Tower (17,105 floorplate) :
Classroom : 1,524
Computer Lab : 980
Studio (Architecture) : 10,000
Office/Admin : 429
Total : 12,933



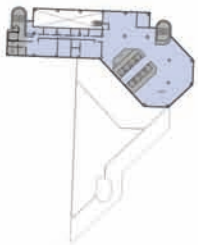
Level 11

Tower (15,450 floorplate) :
Office/Admin: 7,160
Gallery : 3,200
Total : 10,360



Level 12

Tower (15,450 floorplate) :
Library : 11,740
Total : 11,740



Level 13

Tower (12,970 floorplate) :
Library : 9,258
Total : 9,258

Tower Building Space Use Analysis

II. Strategies for Campus Planning

The campus framework is built not only on an understanding of how the campus operates, but also on a conceptual vision that can bind seemingly unrelated planning moves into a single narrative. The following chapter summarizes the process of creating and evaluating several possible planning strategies and begins to lay out the narrative that best fits the future of Massachusetts College of Art and Design.

Jury-rigged ramps provide provisional connections within and between campus buildings

Planning Process - Phase I

The framework plan initiative and concurrent space utilization analysis for all Massachusetts State and Community Colleges began in late June 2005 with a kickoff meeting at Worcester State College. After the first round of college framework plans and space utilization reports had been completed in late 2006, each school in the Metro Region was asked to assemble a broad array of data on both the physical aspects of its campus as well as the planned administrative and pedagogical initiatives of the college. In February 2007, project managers from the Division of Capital Asset Management (DCAM) and the Department of Higher Education (DHE) then introduced the planning consultant team, headed by Chan Krieger Sieniewicz (CKS), to administrative officials, faculty and staff representatives, and students of Massachusetts College of Art and Design at a day-long workshop. The workshop and subsequent tour of campus provided the consultant team with an understanding of how the campus operates, how it needs to improve, what facilities are lacking, and how future development moves could contribute to a better environment for higher education.

CKS, DCAM, and DHE returned to Massachusetts College of Art and Design (MassArt) in April 2007 to lead a framework planning workshop with college officials, with the goal of condensing abstract notions of campus needs into the foundation of a physical plan for future campus development. During the course of the introductory presentation, the consultant team presented their analysis of existing conditions and discussed the 2003 *Strategic Capital Program*, by Eva Klein Associates, as a basis for a fine-tuned list of capital projects reflecting a more up-to-date understanding of MassArt's needs. The consultant team pointed out several issues that needed to be addressed through the planning effort, including internal circulation, campus permeability, and landscape spaces. A selection of issues and opportunities, as presented at the April 2007 workshop, is listed on the following page.

Many doors that were once important campus entrances are now locked egress doors, further confusing public access

During the workshop, CKS presented three alternate visions, or scenarios, for the future of MassArt. These scenarios, described in detail on the following pages, were an effort to solve the major challenges of MassArt's campus while transforming or enhancing the campus's identity. All three scenarios attempt to leverage features or qualities of the existing campus in conjunction with new development and landscape enhancements to create a new conceptual framework for MassArt. The consultant team noted during the presentation that none of the three scenarios were intended as exclusive choices from which the college had to pick, but acted rather as a way of channeling comments and suggestions for the final campus framework based on visions and narratives that seemed to characterize the college's goals.

Issues and Opportunities

Internal Circulation Network

Issue: Connections within and between campus buildings are confusing, labyrinthine, and sometimes not universally accessible; circulation patterns are not always repeated from floor to floor.

Issue: Differences in floor elevations between campus buildings make connections difficult and space-consumptive.

Opportunity: The original campus planners designed spaces for building couplings—sites exist for better architectural connections.

Opportunity: The greatest circulation "tangle" exists between the Tower and the original campus, which is also one of the best locations for new campus redevelopment that can reknit these connections.

Public Access and Permeability

Issue: There is a desire for public permeability into the campus but security is also a major concern.

Issue: There is no easily understandable hierarchy of doorways that convey to the public, through design, which doors are for the public and which are restricted.

Issue: Even with restricted-access doors, the internal circulation network does not direct public access to certain areas while defining others as "off limits."

Opportunity: Open spaces and unused patios along Huntington Avenue and Evans Way hold potential for development of new entranceways that can consolidate doorways and indicate public spaces and restricted campus spaces.

Opportunity: The vertical development of campus can allow the zoning of "public" and "private" based on vertical circulation access.

Campus Reorganization & Expansion

Issue: Development sites are scarce in the Longwood Medical Area.

Issue: MassArt's curricula require large "fixed assets" like kilns, furnaces, and other relatively immobile equipment.

Opportunity: The Gymnasium occupies a large volume on the campus block but requires only some replacement swing space for academic programs—**the Gym site is the "softest" site for development on campus**.

Opportunity: The Colleges of the Fenway consortium is an available resource for either temporarily or permanently relocating certain campus support functions off the campus block.

Opportunity: MassArt's "fixed assets" tend to be located along Palace Road, the campus's primary service corridor, and therefore do not create a campus zoning issue.

Campus Landscape

Issue: MassArt occupies a very small and densely-developed city block with little open space, the quality and utility of which is limited.

Opportunity: MassArt's Huntington Avenue frontage is highly visible, engages directly with the pedestrian public, and is located on the sunnier southern edge of the block—improvements to this space can have a profound impact on the character of campus.

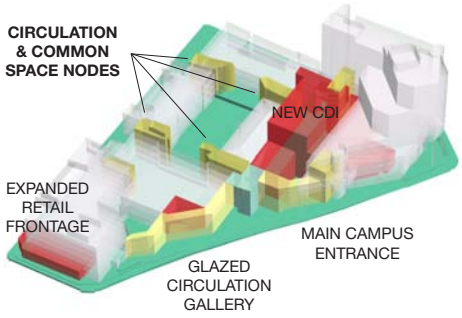
Opportunity: The campus courtyard is unique in that it is completely secured from public misuse or appropriation by the surrounding campus buildings; improvements to the courtyard can cast it as an outdoor Great Room removed from the busy city.

Opportunity: MassArt has initiated a green roof pilot program—potential exists for roof decks, given appropriate security measures.

The Gymnasium, with its huge, largely unused volume of space and ineffective internal circulation, is a fitting site for redevelopment

Though full of potential, MassArt's landscape spaces are few and small, and not equipped for active use

Punctuating activity nodes along MassArt's internal pathways (montage of Quinsigamond Community College's Harrington Learning Center on MassArt's Crackertorium)



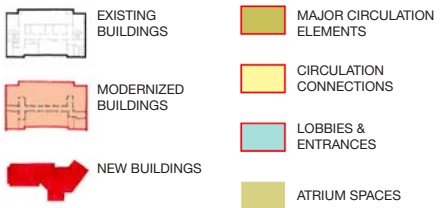
3-D computer model depicting changes to the main campus block in the Nodes & Pathways Scenario

Scenario 1: Nodes and Pathways

The experience of movement in MassArt's campus is one of corridors, stairways, and elevators often cut off from views of the outdoors. MassArt's internal circulation network has too few points of activity that enliven this experience with exhibits, views to the courtyard or city, and visual connections between floors. Such nodes—often rendered in glass and featuring active common spaces—are both functionally and aesthetically important to the campus experience. In the "Nodes and Pathways" scenario, the campus's internal circulation network is punctuated by new active common space nodes.

Renovations to the Tower and redevelopment of the Gymnasium site as a new Center for Design Innovation* (CDI) become important first steps in clarifying circulation and introducing activity nodes. The nodes serve as connection points between the varying floor levels and corridor paths of the Tower and the original campus buildings. The CDI also emphasizes two main campus entrances, one at the midblock along Huntington Avenue, and the second at the southern edge of Evans Way Park. Landscape improvements and a new linear glazed gallery create a cohesive visual identity for the college along Huntington Avenue, and courtyard enhancements make MassArt's "interior" landscape more attractive and usable.

Advantages of the "Nodes and Pathways" scenario are the even distribution of common spaces throughout the campus block, the coordinated new façade edge along Huntington Avenue, and the retention of the entire campus courtyard as a large open landscape space. The principal disadvantage of the scenario is its reliance on the confusing corridors of the older campus buildings to serve as connections between the new nodes.



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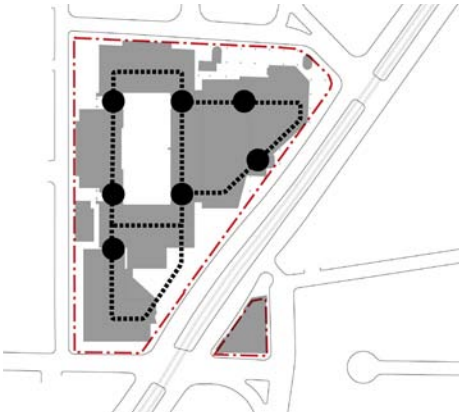
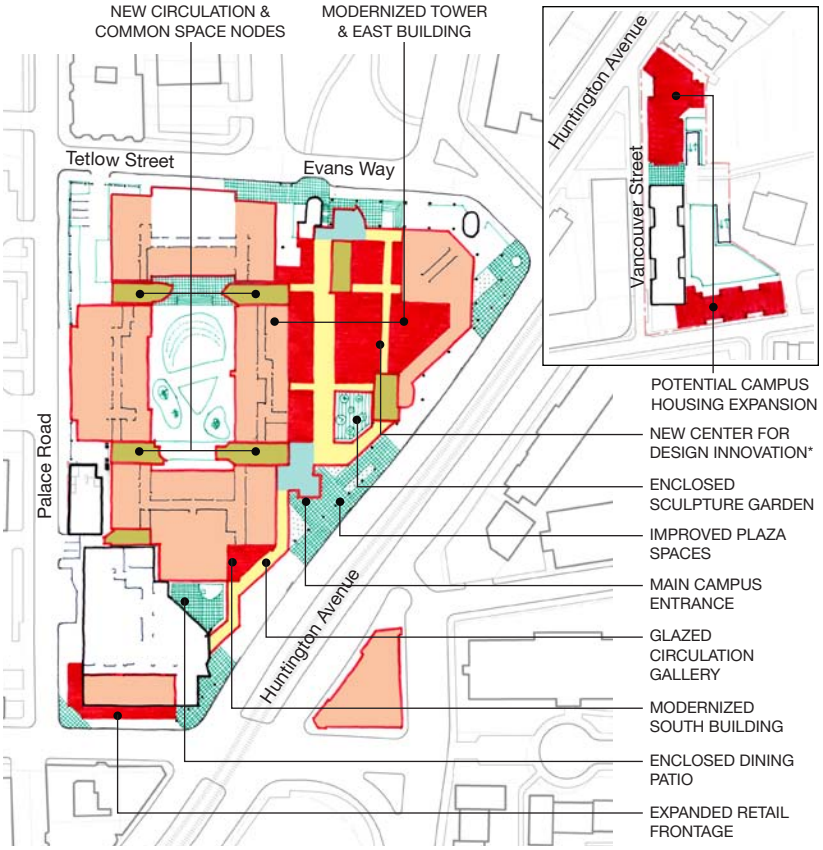


Nodes & Pathways Pedestrian Circulation



The Nodes & Pathways Scenario Plan

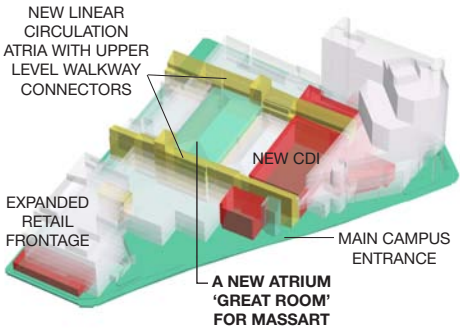
Scenario 2: The Atrium

Wintergardens and enclosed courtyard atria are common features of art institutions, as they promote clear circulation, use natural daylighting, and can host a wide range of events and exhibitions. In “The Atrium” scenario, MassArt’s currently underutilized courtyard is re-cast as an interior atrium space with airy circulation seams that branch out to clarify pedestrian movement and bind together MassArt’s disjunct facilities.

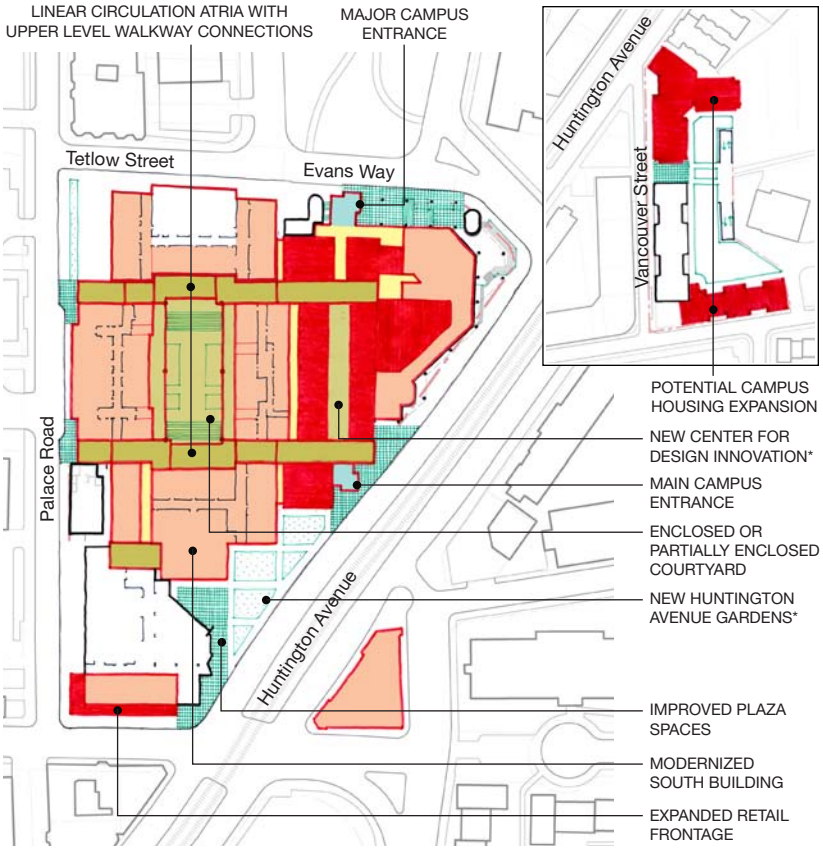
Enclosing the courtyard with a glass roof, redesigning the courtyard ground plane, and replacing the existing building connectors is the first step in reshaping the campus. The development of the Center for Design Innovation* (CDI) at the existing Gymnasium site and modernizations of East Building and the Tower continue linear atria seams from the courtyard atrium out to Huntington Avenue. The CDI features its own linear atrium that links new campus entrances on Huntington Avenue and Evans Way. The relocation of the college library to South Building is combined with the creation of new landscape gardens immediately outside, redefining the edge of Huntington Avenue. Modernizations of Kennedy, North, and Collins Buildings address specific space use and maintenance issues while tying those facilities into the new atrium circulation network.

Advantages of this scenario include simplifying the campus circulation system, converting the underused courtyard into a circulation and event space, and an improved landscape setting on Huntington Avenue. The primary disadvantages of the scenario are its reliance on costly architecture moves devoted mainly to circulation and the persisting isolation of Kennedy Building from the remainder of campus.

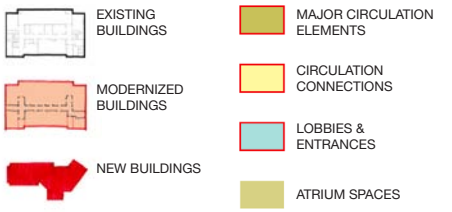
Using airy yet enclosed atria to improve MassArt’s confusing internal circulation (from http://www.architectsalliance.com)



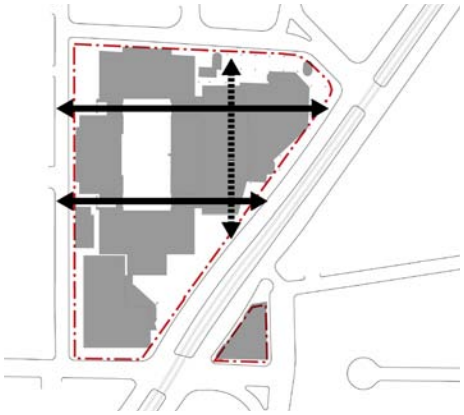
3-D computer model depicting changes to the main campus block in the Atrium Scenario



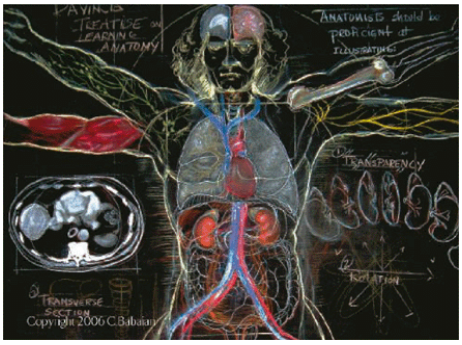
The Atrium Scenario Plan



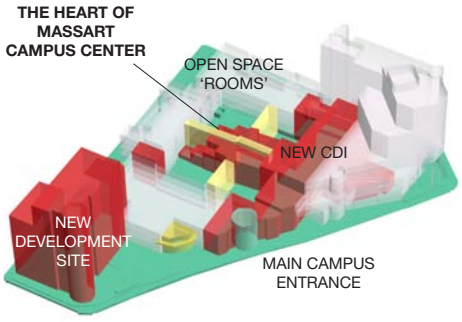
** capital project names are working titles only*



The Atrium Pedestrian Circulation



Creating a new heart in the physical center of MassArt's campus block (from http://www.neatorama.com)



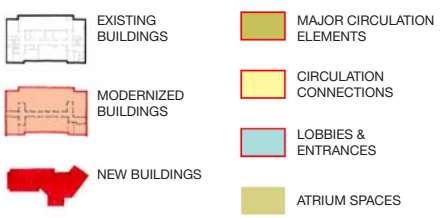
3-D computer model depicting changes to the main campus block in the Heart of MassArt Scenario

Scenario 3: The Heart of MassArt

The MassArt campus has a number of "centers" that accommodate different core activities, whether it is student life in Kennedy Building, major art exhibitions in South Building, or research endeavors in the Tower library. Yet there is not an actual "campus center" that attempts to combine a number of core activities in a location close to the true center of the campus. "The Heart of MassArt" scenario proposes a fundamental shift in the physical framework of the campus to create an iconic architectural "heart" for the school.

A new Center for Design Innovation* (CDI), developed on the site of the current Gymnasium, becomes the first major project, the development of which prepares the campus for the eventual demolition of East Building and the deployment of an orthogonal lattice of internal circulation. A new bold main campus entrance addition and forecourt is developed at South Building. With the removal of East Building, a new iconic Campus Center is developed with student life space, new dining services, and a new Learning Resource Center. The facility splits the existing courtyard into four unique, usable outdoor rooms. With functions once housed in Kennedy Building now redistributed elsewhere on campus, the desirable corner site on Longwood and Huntington Avenues is available for redevelopment as a mixed-use project.

"The Heart of MassArt," while quite different from the status quo, has many advantages including rationalizing internal circulation, re-centering and pooling college activity, and capitalizing on the development potential of the Kennedy Building site. As with any radical reworking of a campus, the scenario illustrates an expensive, development-heavy strategy that also compromises the benefit of having a large contiguous courtyard space.



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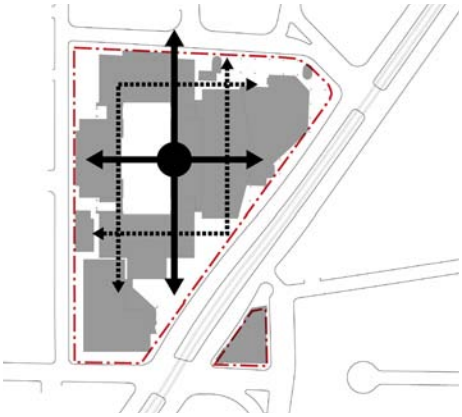
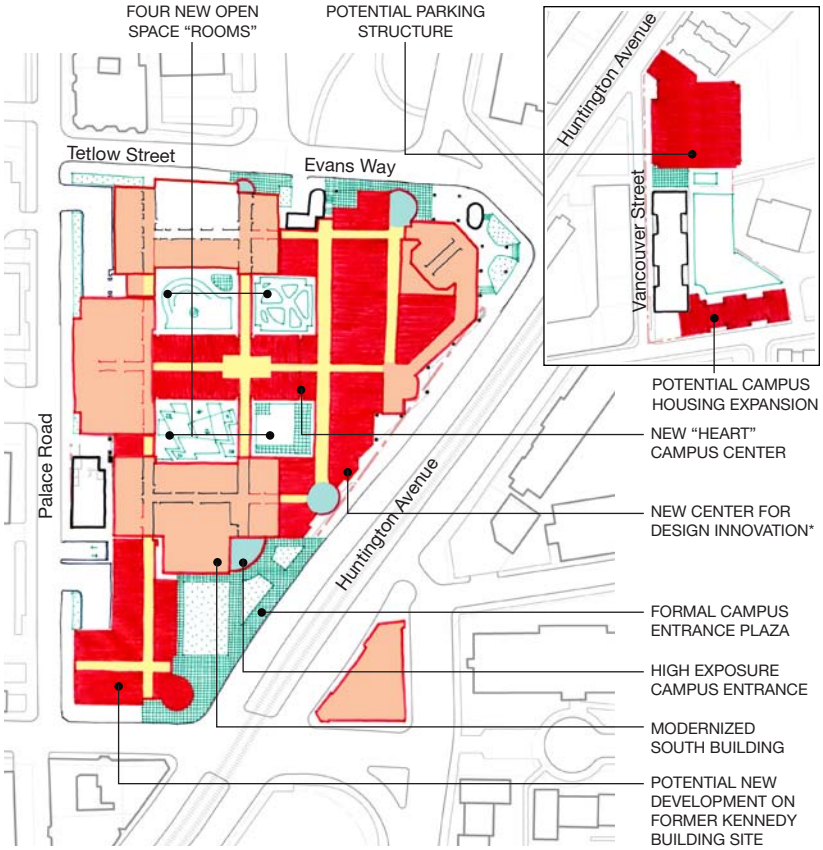


The Heart of MassArt Pedestrian Circulation



The Heart of MassArt Scenario Plan

Campus Workshop Conclusions

An important component of the discussion at the April 2007 workshop was acknowledging the similarities of all three presented scenarios, which included the following:

- Emphasis on internal circulation as a transformative issue
- Significant investment in both the courtyard and Huntington Avenue landscapes
- Seeing the Gymnasium site as the "softest" site for development on the campus block
- Clarification of new main campus entrances

Below is a summary of paraphrased key comments made at the workshop that influenced the direction of framework planning for MassArt:

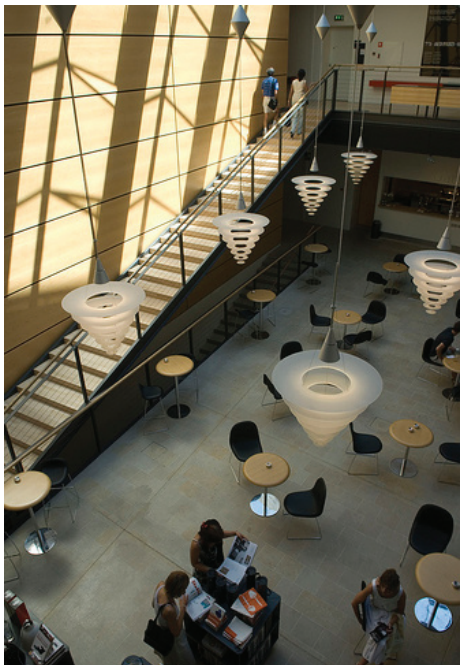
- The Tower Building feels removed from the rest of campus and more needs to be done to address its façade and entrance, which gives a negative, dark image to the campus
- The library should not be so isolated from the rest of campus—don't separate the resources of research and the resources of creating
- The illusion or perception of public permeability is more important to the college than the actual state of permeability—security issues must take priority
- Nodes of common space would be a great resource to serve the smaller communities within the school, and can be linked to larger common spaces
- A courtyard atrium as a central place of orientation and year-round programmed use would be great and would promote easier circulation; the atrium becomes a campus center in itself
- The notion of a campus center at the physical center is good

As indicated by the comments above, all three presented scenarios had features that were seen by the college leadership as beneficial, though aspects of "The Atrium" were most popular. Specifically, the ability to retain the entire rectangle of the original courtyard as an open space but recharacterize it both as a place of simplified circulation and year-round use was a solution embraced by the college. It was acknowledged by the college leadership and consultant team that a fully enclosed courtyard atrium may be infeasible given the limited resources available currently, but a hybrid of the scenarios that retains "The Atrium" scenario's signature linear atria, improves the usability of the open-air courtyard, emphasizes nodes of activity, and clarifies internal circulation could achieve the same goals with less aggressive development.

Following the April 2007 workshop, the consultant team began preparing a "synthesis plan" that pooled the benefits of all three campus development scenarios in anticipation of a June 2007 presentation.

A new main campus entrance will consolidate MassArt's confusing points of access (from http://www.aiabalt.com)

One advantage of a redesigned courtyard—enclosed or not—is the ability to use the space for events, performance, and art exhibitions (from http://www7a.biglobe.ne.jp)



Open, distributed nodes of common space are a goal of the preferred plan (from http://www.flickr.com/photos/amc)

Planning Process - Phase II

The planning work leading up to the creation of a synthesis plan indicated to all participants that a clear definition of the Center for Design Innovation* (hereafter referred to by its current name, Center for Design and Media, or CDM) would be critical in order to continue the planning process. The CDM was likely to be the most intensive capital project on the campus within the Framework Plan horizon, yet also one of the first expected to come to fruition. A more thorough understanding of the scope of the project was necessary to ensure that it would fit well within a comprehensive plan of campus improvements.

A period of additional analysis and strategizing followed the consultant team's creation of a synthesis plan from feedback at the April 2007 meeting. Specific analysis included a more current assessment of campus space utilization, a greater level of investigation into potential Tower renovations, and an ongoing programming study for the CDM facility by The Polshek Partnership. In March of 2008, MassArt leadership clarified the following key points for the continuation of planning work:

- The identity of the CDM on Huntington Avenue is important
- While matters of accessibility and circulation are important, the CDM is still the top priority for President Sloan
- Efforts to reconfigure programs within the Tower Building should complement the effort to plan and build the new CDM. Current interior relationships and connections between uses in the Tower Building are inefficient and redundant, such as multiple woodshops to reduce vertical student traffic to and from studios.
- The CDM program has been estimated to be as large as 210,000 ASF (336,000 GSF), of which 150,000 ASF (240,000 GSF) may be established/defined in existing campus facilities; therefore, in order to accommodate the entire CDM program, an additional 60,000 ASF (96,000 GSF) of new facilities will need to be built.
- Growth of the CDM program may be phased over time, where 25,000 ASF (40,000 GSF) may be built as Phase 1.
- The existing Gym is an underutilized facility that is a logical location to build a replacement new facility. Approx. 20,000 GSF of existing uses in the Gym will require swing space before the Gym is demolished.
- The existing 400-seat, 3-story Auditorium, a little-used academic space available for community use, is in need of renovation. A 100-seat lecture hall is more useful and needed to serve academic needs.

Responding to these key points and the more detailed level of analysis available, the consultant team continued to develop its synthesis plan with three alternative strategies of implementation, described on the following pages. In brief, the three strategies maintained the high priority of the CDM project with an eye towards the longer-term future of development on the main campus block.

** capital project names are working titles only*

Implementation Strategy 1

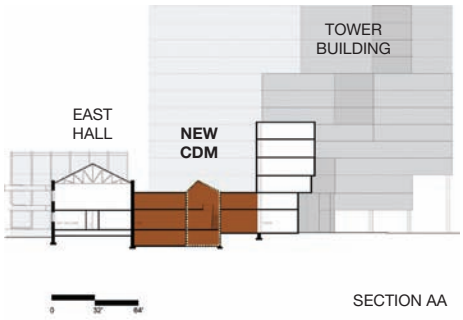
Implementation Strategy 1 is based largely on the synthesis plan that emerged in response to feedback from the April 2007 workshop. Central to this strategy is the development of the Center for Design and Media* (CDM) as a new facility to fully replace the existing Gymnasium in a single development phase. Based on estimated space needs for the campus, the facility would stand only two stories tall in the area vacated by the Gymnasium. CDM would cover the entire site except for adjacent plaza areas, so future development on the main campus block would be unlikely.

Strategy 1 has several advantages. First, the CDM would be a stand-alone capital project, having its own architectural identity and not being contingent on other campus projects moving ahead along with it. The new facility would have great exposure on Huntington Avenue, allowing it to serve as the new public face of the institution. Also, as a single large capital project, the CDM can address internal campus circulation problems comprehensively.

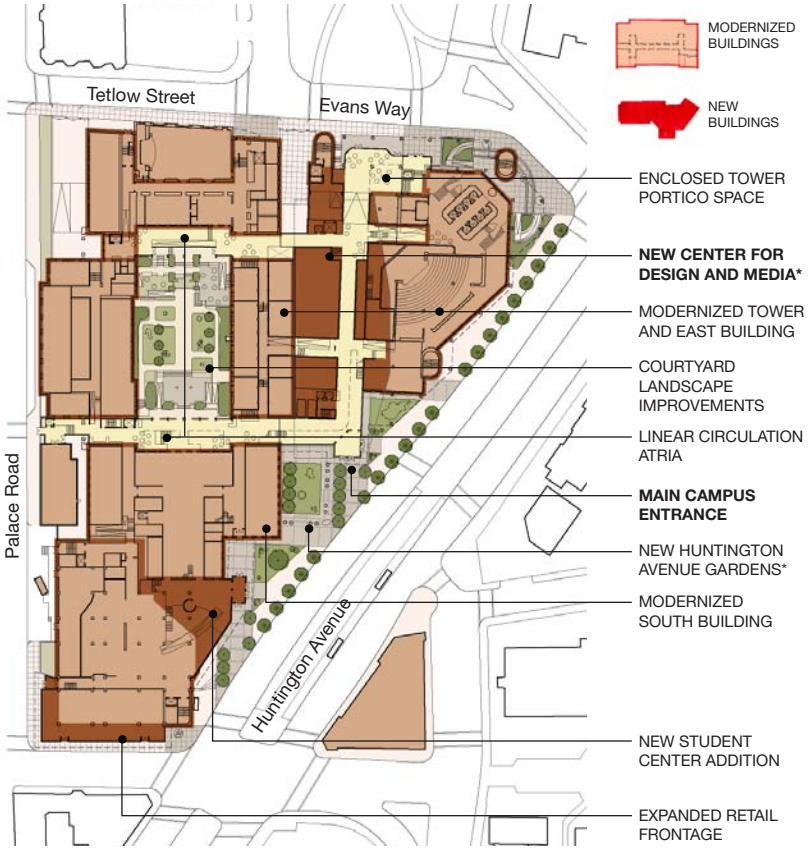
The primary disadvantage of this strategy is that development of the low-rise CDM would prevent future growth on the main campus block. Even after displacing the storage space in the Fourth Level of the Tower, 7,000 square feet of additional swing space would be required to accommodate for the demolished Gymnasium. Finally, as a relatively short building, the CDM would only be able to link internally to non-academic floors of the Tower.

** capital project names are working titles only*

Strategy 1 redevelops the entire Gymnasium site with a new Center for Design and Media* of two stories and a basement



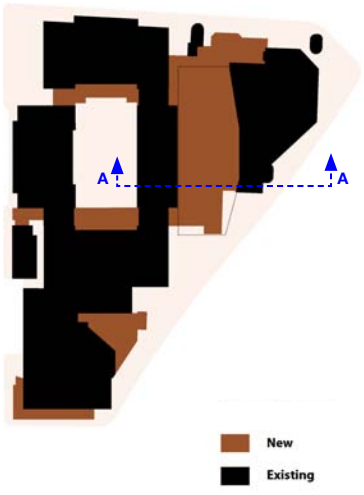
Section depicting a new Center for Design and Media* (CDM) in comparison to adjacent East Building and Tower



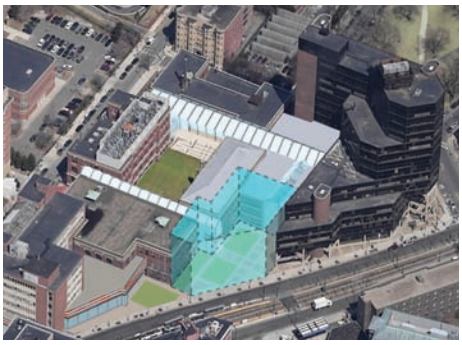
Strategy 1 Plan

Strategy 1 Development Summary

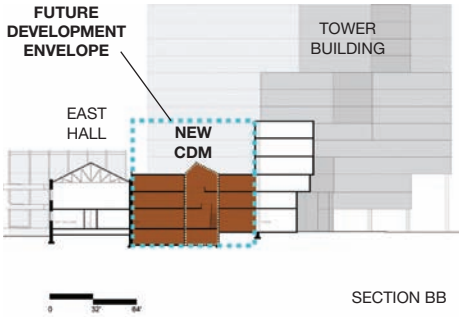
Strategy 1 NEW Construction :	43,600 ASF
Strategy 1 Basement :	20,000 ASF
Strategy 1 RENOVATED Tower :	3,800 ASF
displaced Gym Program :	-18,300 ASF
Sub-total :	49,100 ASF
+ Reclaimed storage space (4th flr) :	+11,525 ASF
Total Added :	**60,625 ASF**
Land Available for Future Growth :	0
Potential Capacity for Future Growth:	0



Strategy 1 Diagram



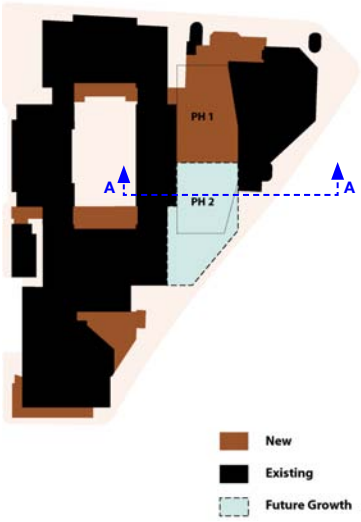
Strategy 2 develops a new Center for Design and Media* of three stories and a basement but reserves half of the Gymnasium site for future denser development



Section depicting new Center for Design and Media* (CDM) in comparison to adjacent East Building and Tower; note future development envelope (dotted line) for site to south

Strategy 2 Development Summary

Strategy 2 NEW Construction :	39,400 ASF
Strategy 2 Basement :	13,000 ASF
Strategy 2 RENOVATED Tower :	3,800 ASF
displaced Gym Program :	-18,300 ASF
Sub-total :	37,900 ASF
+ Reclaimed storage space (4th flr) :	+11,525 ASF
Total Added :	**49,425 ASF**
Land Available for Future Growth :	15,000 SF
Potential Capacity for Future Growth:	105,000 SF



Strategy 2 Diagram

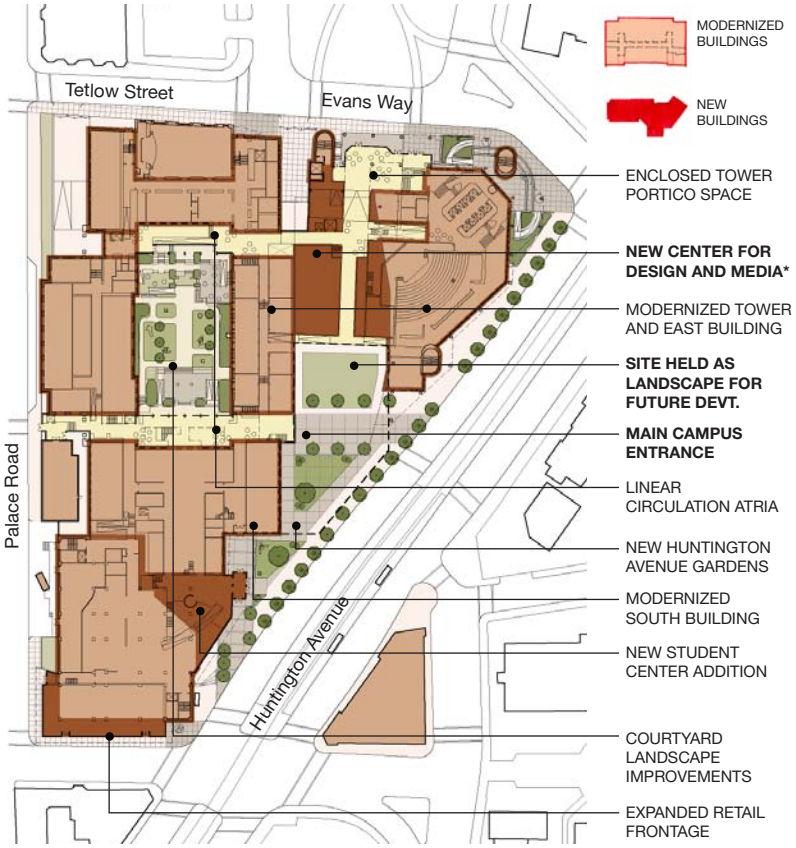
Implementation Strategy 2

Implementation Strategy 2 is a modification of the synthesis plan introduced in Strategy 1, but with an eye towards future campus growth. Strategy 2 would accomplish most of the important goals of the synthesis plan, including improved campus circulation, but would break the CDM project into two phases. The first phase would provide for immediate campus needs, while the second phase would be a denser development at a more appropriate time in the college's future.

The principal advantage of Strategy 2 is the opportunity for future development on the main campus block. A denser massing for the first phase of the CDM also allows links to more levels of the adjacent Tower and East Hall. The CDM remains as a stand-alone capital project with its own discrete identity that presides over a generous 15,000 square foot public entry plaza until the second phase commences.

Unlike Strategy 1, the CDM project in Strategy 2 does not have immediate frontage on Huntington Avenue and is therefore less prominent along the street in its initial phase. It is also less able to make important internal corridor connections until the second phase is complete. Similar to Strategy 1, finding swing space for displaced Gymnasium programs is necessary.

** capital project names are working titles only*



Strategy 2 Plan

Implementation Strategy 3

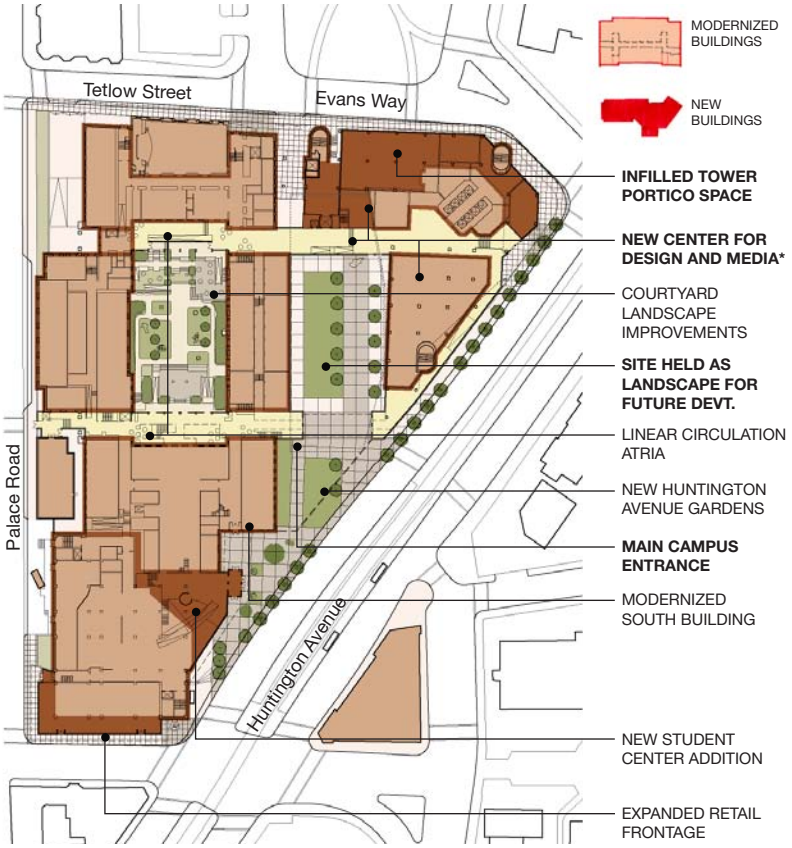
Implementation Strategy 3 departs from the first two strategies in several ways. Rather than developing a brand new facility on the Gymnasium site, Strategy 3 maximizes the currently underused potential of the Tower and renovates it as the new Center of Design and Media*. With the removal of the Gymnasium, this sets up additional development potential on the main campus block in the future.

Advantages of the third strategy are many. Housing CDM in the renovated Tower gives the new Center unrivaled presence on Huntington Avenue—twice as much street frontage as Strategy 1's solution—while at the same time addressing the aesthetic flaws that currently make the Tower underappreciated. Focusing on the lower levels of the Tower allows improved circulation connections through the building and out to the other campus facilities with multi-level links. Renovating the Tower would be less costly than new construction, and would require no additional swing space, as the Gymnasium could remain during renovation. This strategy allows for maximum future growth of the College on the main campus block, and adds an additional 1/3-acre of open space to the campus in the interim. One minor disadvantage of the strategy is the need to move the storage facilities in the Fourth Level of the Tower off site.

Given the preponderance of advantages to Strategy 3 and its sustainable approach to maintaining existing campus facilities, reaction by stakeholders in the planning process was positive. The Framework Plan, described in detail in the next section of the report, pairs up the successful conceptual components of the earlier planning scenarios with this successful implementation strategy to provide a solid road map for MassArt's future.

Strategy 3 redevelops and expands the base levels of the Tower as a new Center for Design and Media* (CDM) while reserving the entire Gymnasium site for future development

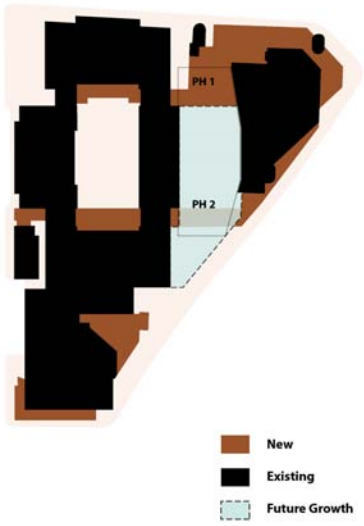
** capital project names are working titles only*



Strategy 3 Plan

Strategy 3 Development Summary

Strategy 3 NEW & INFILL Construction:	42,800 ASF
Strategy 3 Basement :	5,400 ASF
Strategy 3 RENOVATED Tower :	28,600 ASF
displaced Gym Program :	-18,300 ASF
displaced Theatre & support spaces:	-7,200 ASF
Sub-total :	51,300 ASF
+ Reclaimed storage space (4th flr) :	+11,525 ASF
Total Added :	**62,825 ASF**
Land Available for Future Growth :	22,000 SF
Potential Max Capacity for Growth:	204,000 SF



Strategy 3 Diagram

III. A New Campus Framework

The preferred strategy for campus planning was refined and elaborated to become a road map for the college's future. The following chapter introduces the new campus framework for Massachusetts College of Art and Design and describes both its component projects and overarching narrative.

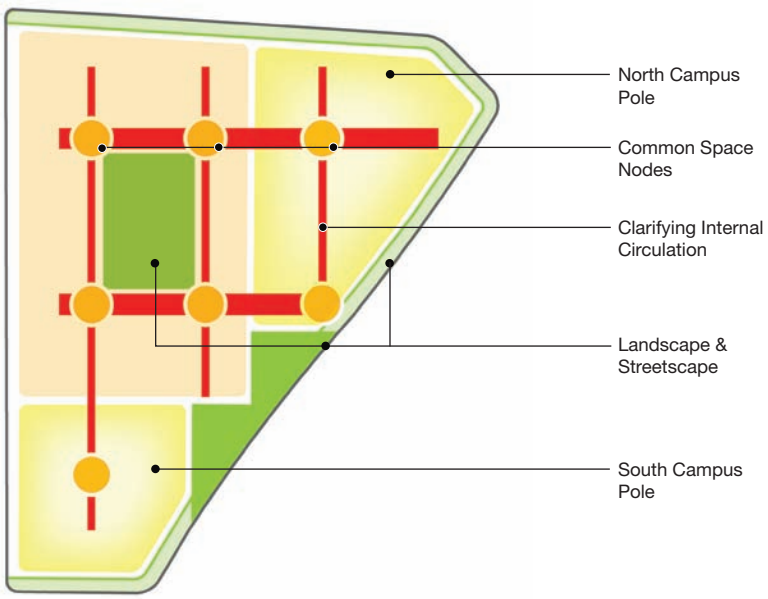
The central courtyard will once again become a major focus of the MassArt campus

Campus Framework Plan

The campus of Massachusetts College of Art and Design (MassArt) has a lengthy history of piecemeal—and at times haphazard—growth on a constrained urban block. Four major conceptual moves are employed by the Campus Framework Plan to enhance the densely-built campus as a home for specialized art education and a setting for vibrant urban experiences. First, facility modernizations and new development facilitate the clarifying of internal circulation throughout the "megastructure" of campus buildings. Second, new common space nodes arrayed throughout the campus provide much-needed informal activity and exhibition space. Third, the exterior campus environment is improved by focusing long-term landscape investment in the central courtyard and Huntington Avenue open spaces, with streetscape enhancements strengthening the unique character of the block in the public realm. Finally, two campus activity "poles" emerge at either end of the block, one anchored by a new Center for Design and Media, the other by an enhanced Kennedy Student Life Center *(capital project names are working titles only)*. Taken together, these four conceptual moves provide the underlying structure for the new Campus Framework Plan.

Tailoring MassArt's inherited campus to specialized art and design education is a major goal of the Campus Framework, so the first significant capital project is creating a home for the new Center for Design and Media (CDM). The project is framed to not only create new, cutting-edge education space, but also to begin reconfiguring the existing Tower to better serve the contemporary needs of the College and also sew the seeds of a clear, universal system of internal circulation and common space on the campus. Improvements to the Kennedy Student Life Center will herald an increase in the residential student population, which will be housed in a new residence hall on the College's Ward Street block. The original, historic campus facilities and courtyard will also get much-needed improvements to better customize them to MassArt's needs.

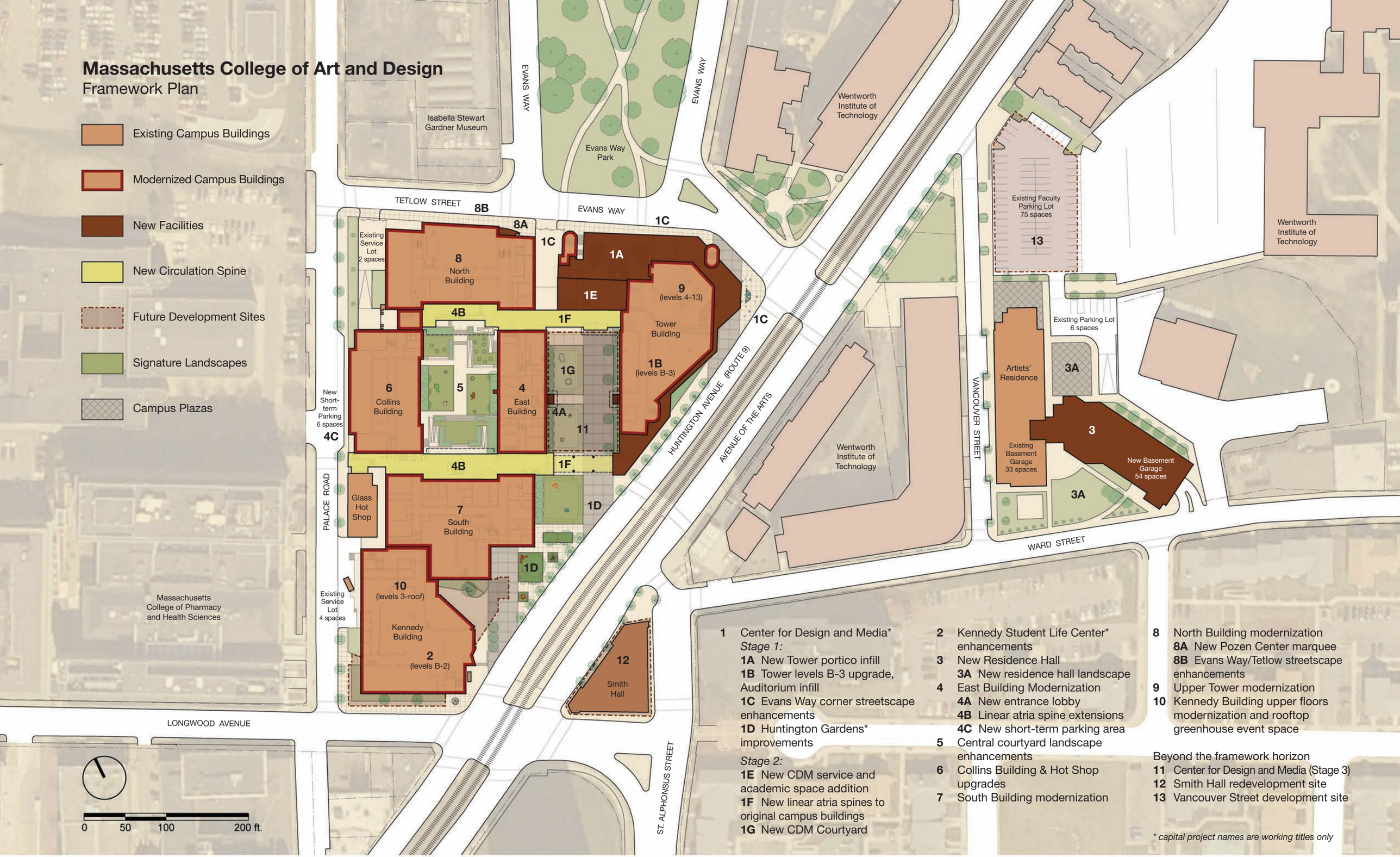
On the following pages, the framework plan is explained in greater detail by breaking out the plan's component elements: new and modernized facilities, improvements to the campus landscape and pedestrian network, and enhancements to roadway and parking systems.



Campus Framework Concept Diagram

Massachusetts College of Art and Design
Framework Plan

- Existing Campus Buildings
- Modernized Campus Buildings
- New Facilities
- New Circulation Spine
- Future Development Sites
- Signature Landscapes
- Campus Plazas



1 Center for Design and Media*
Stage 1:
1A New Tower portico infill
1B Tower levels B-3 upgrade, Auditorium infill
1C Evans Way corner streetscape enhancements
1D Huntington Gardens* improvements
Stage 2:
1E New CDM service and academic space addition
1F New linear atria spines to original campus buildings
1G New CDM Courtyard

2 Kennedy Student Life Center* enhancements
3 New Residence Hall
3A New residence hall landscape
4 East Building Modernization
4A New entrance lobby
4B Linear atria spine extensions
4C New short-term parking area
5 Central courtyard landscape enhancements
6 Collins Building & Hot Shop upgrades
7 South Building modernization

8 North Building modernization
8A New Pozen Center marquee
8B Evans Way/Tetlow streetscape enhancements
9 Upper Tower modernization
10 Kennedy Building upper floors modernization and rooftop greenhouse event space

Beyond the framework horizon
11 Center for Design and Media (Stage 3)
12 Smith Hall redevelopment site
13 Vancouver Street development site

** capital project names are working titles only*

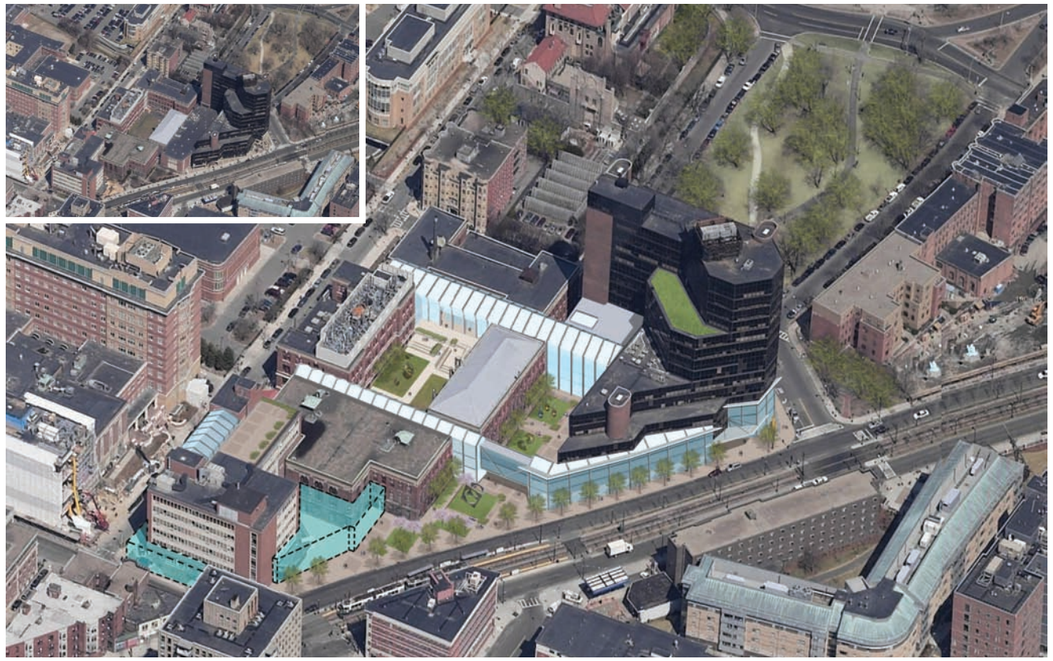
Stage 1 of MassArt's new Center for Design and Media* will have a prominent face on the Avenue of the Arts, with a portion of the Center occupying the unused space of the Tower portico and lending the building a fresh, new aesthetic

New Facilities and Building Modernization

1 Center for Design and Media*, Stage 1: new development will focus on infilling 33,000 GSF of the underused Tower portico from the Basement to the Fourth Level for a range of academic and support uses. A new glazed lecture and performance hall built into the portico space will overlook Evans Way Park and replace the poorly configured Tower Auditorium. The former Auditorium space can then be infilled with new studios and more efficient circulation. Interior upgrades to the lower floors of the Tower will improve spaces and systems, while a redesigned façade will create a powerful new aesthetic for the Tower at the corner of Huntington Avenue and Evans Way. The Tower lobby will be redesigned to accommodate universal access, clear circulation, and a new major campus entrance. The existing Tower loading dock will be temporarily relocated to facilitate better construction access and will move to a new dedicated facility in the next stage of development.

2 Center for Design and Media*, Stage 2: after the expansion of space in the Tower portico, programs can be relocated to allow the removal of the space-consuming Gymnasium. In its place, new linear circulation atria will branch out from the Tower's base to connect it to the older campus buildings and frame a new courtyard space. The atria spines will capture usable common spaces in activity nodes arrayed throughout the campus. A new 12,900 GSF building addition adjacent to the Tower will house space for campus services and loading as well as studio and office space on upper floors. Improvements to the Tower façade will capture light and views and facilitate access to the new CDM Courtyard.

3 Kennedy Student Life Center*: already a hub of student activity for the Colleges of the Fenway community, improvements to the lower three



Aerial montage depicting new campus improvements

** capital project names are working titles only*

floors of the Kennedy Building will offer additional dining space, better student activity and gallery spaces, enhanced systems and infrastructure, and improved connections to the South Building. Potential exists to expand the envelope of the Student Life Center, either in the short term or beyond the framework plan horizon.

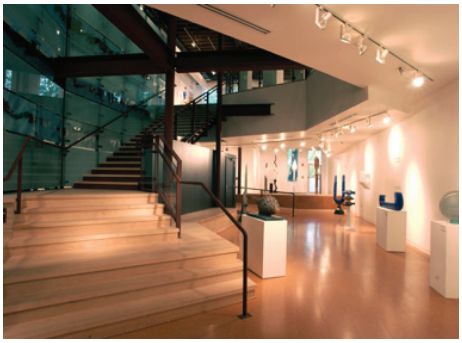
4 New Residence Hall: a new 300-bed residence hall will "plug in" to the existing Artists' Residence, strengthening the on-campus residential community. The new residence hall will be constructed over basement parking similar to its neighboring facility, freeing up the ground plane for usable open space.

5 East Building Modernization: interior upgrades to this older facility will improve its utility for arts education, while a small addition will create a lobby on the new CDM courtyard. Included in this project will be the continuation of the CDM's linear atria through the original campus buildings, facilitating clear, universal access.

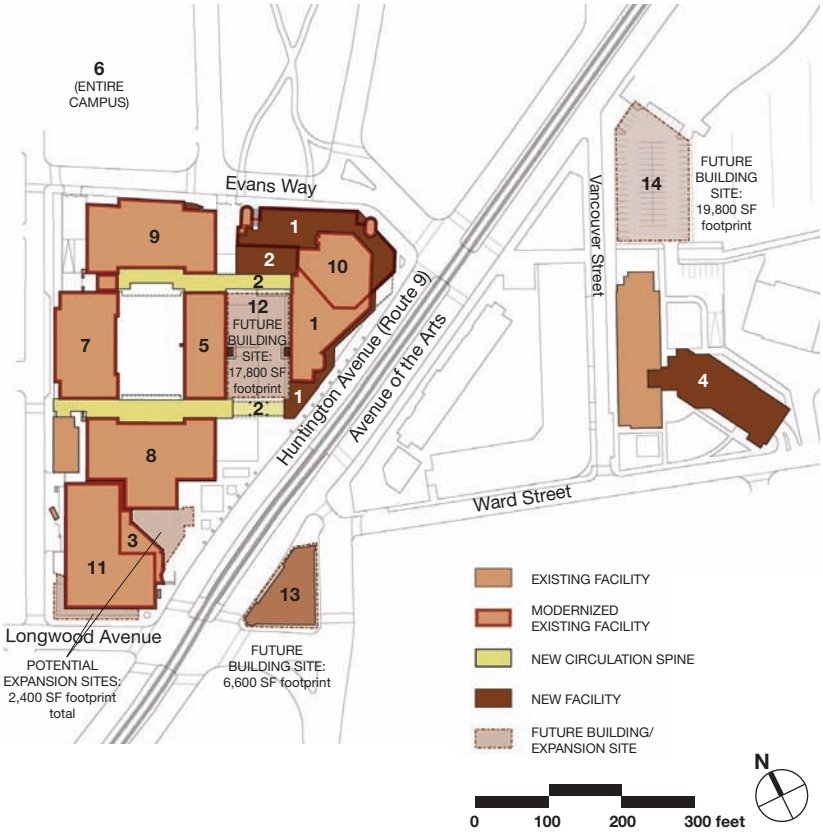
6 Systems, Infrastructure, and Security Projects: with the completion of new connections throughout the campus, improvements to campus-wide systems, infrastructure, and security initiatives will help it operate as an integrated megastructure. Included are improvements and maintenance to steam distribution, datacom links, and the campus security network.

7 Collins Building Upgrades: in addition to systems and infrastructure repairs to both the Collins Building and adjacent Hot Shop, minor modifications to interior circulation will help the building better connect to new circulation paths in the linear atria spines.

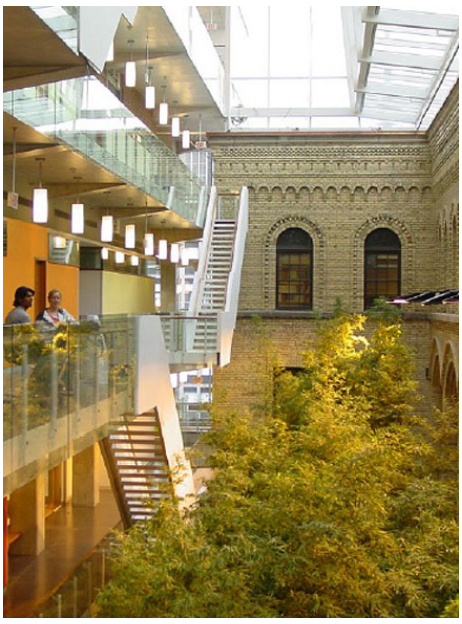
8 South Building Modernization: interior upgrades and systems enhancements will improve academic and support spaces and outfit the large public galleries with much-needed climate control.



Infilling the unused Tower portico will provide a large new lecture and performance hall overlooking Evans Way Park similar to the top image, while new openings between levels will knit together the lower Tower floors like the bottom image (from http://www.artec-use.com, http://www.kentuckyarts.org



New Facilities and Modernization Key Plan



Linear atria seams connecting new and old facilities, like in this image from the Terrence Donnelly Centre at University of Toronto, will be used to clarify internal campus circulation but also provide new common spaces for informal and planned gatherings (from http://www.architectsalliance.com)

Redesigned facades, similar to these examples from Melbourne's NewQuay area, will continue to the upper floors of the Tower from the new CDM at its base in a later project phase (from http://www.flickr.com/photos/displace, http://www.flickr.com/photos/wellingtondany)

9 North Building Modernization and new Pozen Center Marquee: spaces not upgraded by the Pozen Center modernization will now be improved. In addition, a bold new marquee for the Pozen Center will prominently mark this important venue along Evans Way.

10 Upper Tower Modernization: interior and façade upgrades to the upper floors of the Tower will improve the building's usability, sustainability, and aesthetic. It will be important to re-evaluate the College's space needs before the project, as the Tower's upper floors are marketable to outside tenants and can provide the institution with a steady revenue stream.

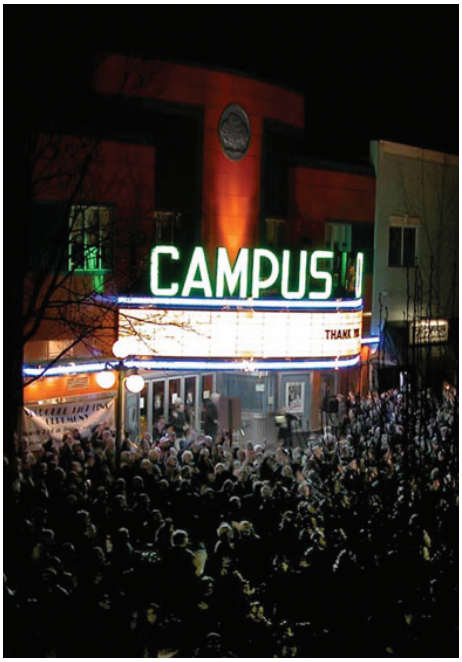
11 Kennedy Building Upper Floors Modernization: in addition to upgrading the upper levels of the Kennedy Building for academic and support uses, this project will rehabilitate the rooftop greenhouse as an event space. Similar to the upper floors of the Tower, these spaces could be marketable to outside tenants, therefore space utilization should be reconsidered before this project begins.

Beyond the Framework Horizon:

12 Center for Design and Media*, Stage 3: the new CDM courtyard "holds" a future 17,800 GSF development site. An additional 150,000 GSF of academic and support space could fit into this site given an efficient design.

13 Smith Hall Redevelopment: Smith Hall's 6,600 GSF footprint is well-suited to residential development, but taller redevelopment with a mix of uses at its base could maximize the capacity of the site.

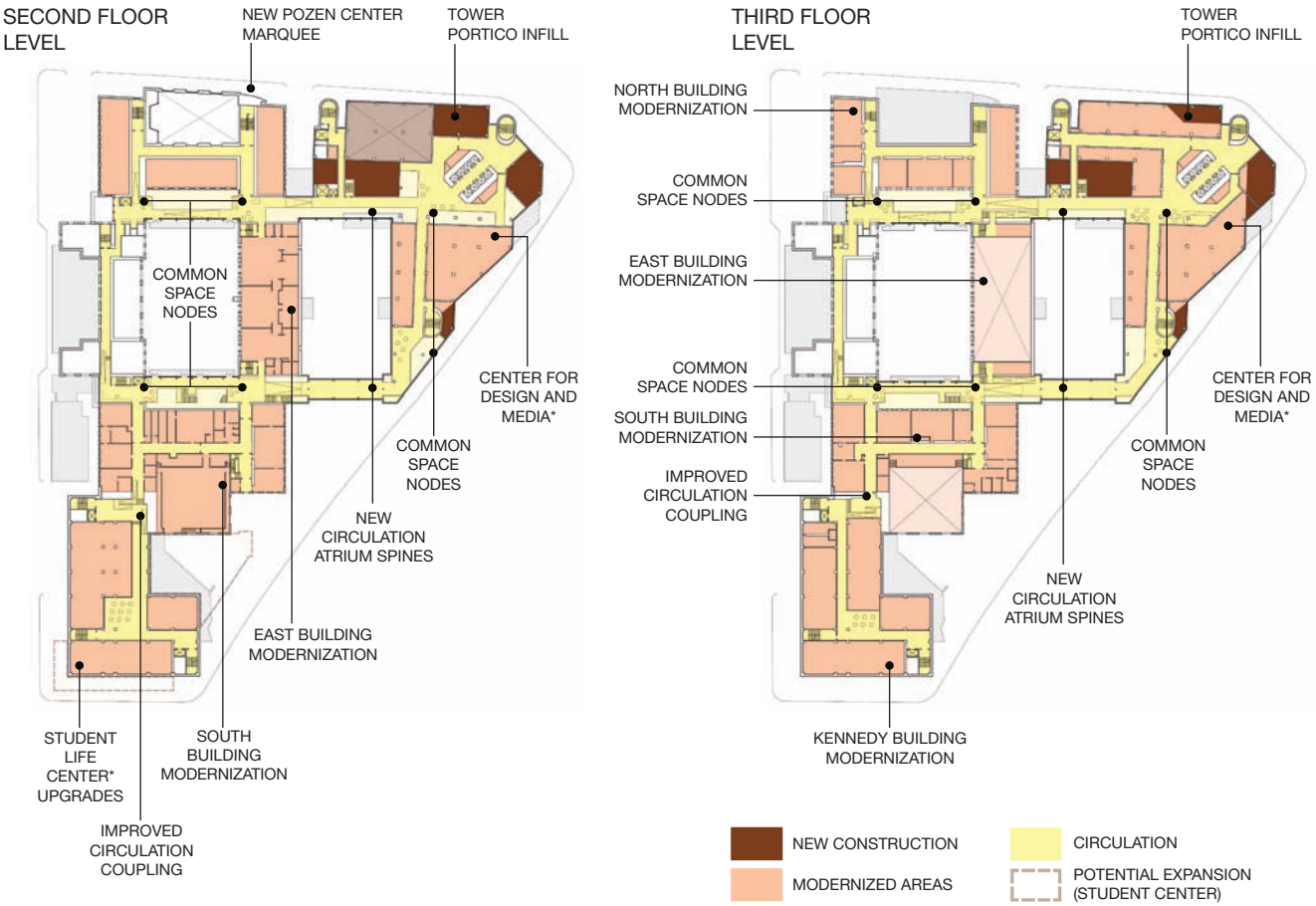
14 Vancouver Street Development: the 19,800 GSF footprint of the existing faculty parking lot is suited for intense development, especially if the site can be enlarged through a partnership with Wentworth Institute. An existing major utility easement below the site suggests that any development on the site needs to be dense and carefully designed to accommodate sub-grade conditions economically.

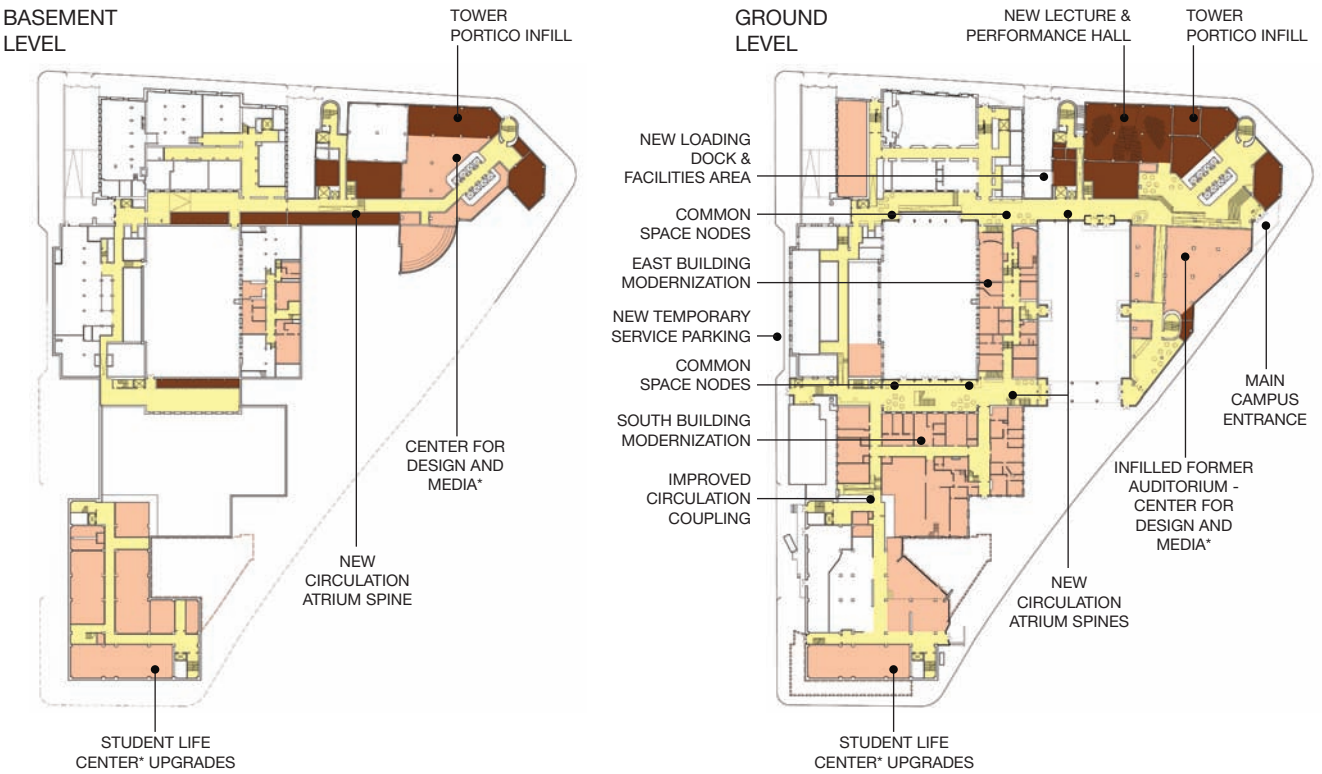


A new theater marquee for the Pozen Performance Center in North Hall should be bold and brightly-lit, similar to the Campus Theater in Lewisburg, Pennsylvania (from http://www.campustheatre.org)

Perspective montage showing a new linear circulation atrium next to South Hall

** capital project names are working titles only*





** capital project names are working titles only*

Potential Megastructure Floor Plans

The redesigned Huntington Avenue streetscape and Gardens will be a mix of artful paving, planting areas, benches, unique lighting, and outdoor public art (from http://world.std.com/~jwpowell, courtesy of BSLA)

Landscape and Pedestrian Improvements

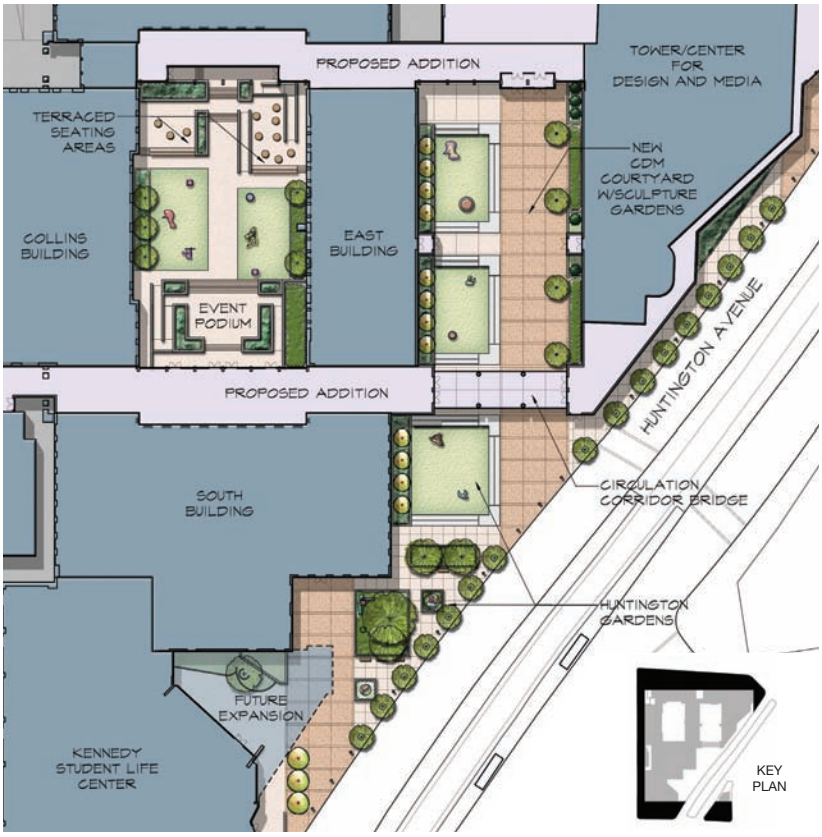
1 Evans Way Corner Streetscape Improvements: the development of the Center for Design and Media* (CDM) at the base of the Tower will prompt a complete aesthetic reconceptualization of the corner of Evans Way and Huntington Avenue, as the existing open portico and its small terraced plaza will be enclosed with new development. New streetscape design on the corner will emphasize a prominent new campus entrance, improve the appearance of the Tower's loading dock area, contain artful lighting and streetscape features, and provide a prominent 4,000 SF corner plaza ideal for electronic media art installations that will mark MassArt's campus as a highlight along the Colleges of the Fenway pedestrian path.

2 New Huntington Gardens*: the campus's open space along Huntington Avenue is the College's greatest place of interface with the larger urban community. Investment in the existing 12,400 SF space will recast it as a series of verdant recessed sculpture gardens surrounded by new vibrant plaza spaces and wide sidewalks.

3 New CDM Courtyard: the demolition of the obsolete Gymnasium will convert an unattractive liability into a new usable 1/3-acre open space to complement the equally-sized existing campus courtyard. The new courtyard will take its design cues from the adjacent Huntington Gardens, with simple, recessed sculpture gardens and a broad pathway leading to the new CDM. While the central campus courtyard will continue to serve as the campus's private internal open space, the CDM Courtyard will invite the public in through its bold, bridged gateway on Huntington Avenue.

The prominent corner of Evans Way and Huntington Avenue provides an opportunity for high-exposure media art installations as well as uniquely-designed sidewalk furniture adjacent to MassArt's future Center for Design and Media* (from http://www.flickr.com/photos/wallyg)

** capital project names are working titles only*



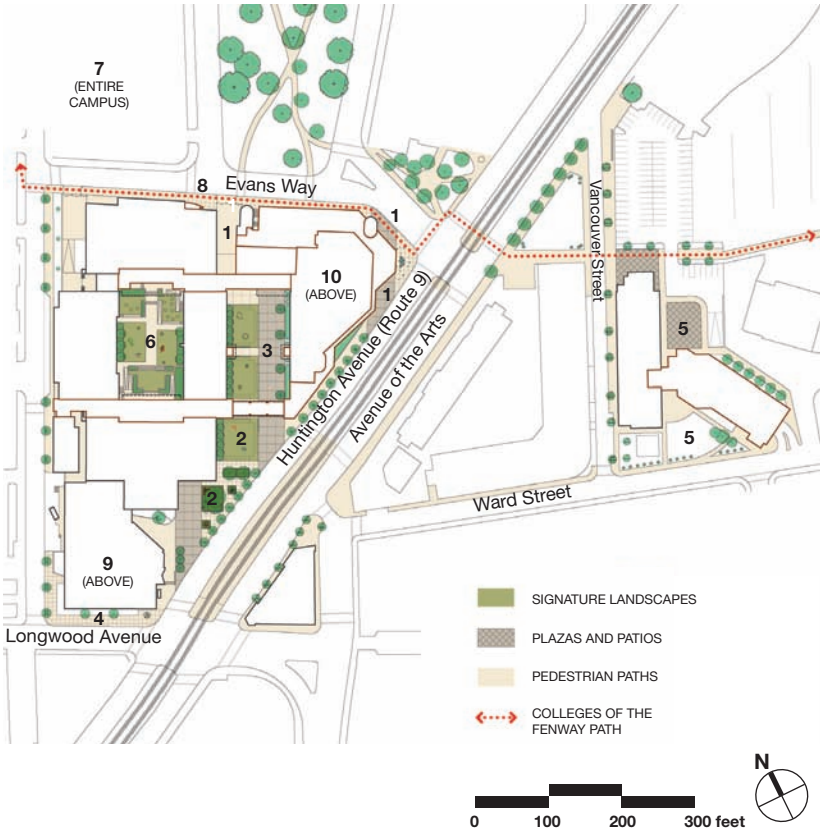
Conceptual Landscape Plan for the Courtyard and Huntington Gardens*

4 Longwood Avenue Corner Streetscape Improvements: one element of the Kennedy Student Life Center* project should be a redesign of the currently narrow Longwood Avenue sidewalk and cramped loading dock area on Palace Road. Sidewalk widths should be no less than 10 feet in this area, which sees heavy pedestrian traffic from the nearby MBTA Green Line stop. Design elements for the streetscape should coordinate with improvements to the Huntington Avenue and Evans Way streetscapes.

5 Residence Hall Landscape: relocating surface parking below grade as part of the new residence hall project will free up the ground plane for usable landscape space. A new 3,000 SF patio and 6,000 SF open lawn area will provide flexible space for many uses, both formal and informal.

6 Central Campus Courtyard Landscape Enhancements: the campus's new linear circulation atria will create active edges of movement to the currently underused existing central courtyard. Terraces of seating and art installation areas will bring that activity down into the courtyard, creating a 14,600 SF outdoor amphitheatric landscape that can be used for informal passive recreation or planned events and performances. Designed in conjunction with the courtyard, the linear atria will use balconies, overhangs, and changing floor levels to blend the transition between indoor and outdoor spaces seamlessly. As the MassArt campus falls within the City of Boston's Groundwater Conservation Overlay District, it is reasonable for the institution to invest resources in a stormwater

Both the redesigned central campus courtyard and the new CDM courtyard replacing the Gymnasium will serve as event spaces, patios, sculpture gardens, and places of passive recreation (courtesy of BSLA, *Landscape Architecture* May 2005)



Landscape and Pedestrian Improvements Key Plan

Cascading terraces of patios and lawn with accessible ramps will link the main level of the campus megastructure with the lower courtyard grade level (from http://homepage.biglobe.ne.jp/)

Open space around the new residence hall will be reserved for plantings and student recreation (from http://flickr.com/photos/duncanleong, http://community.webshots.com/user/eighnjel)

storage system to offset the expected long-term increase in impermeable surfaces on the site; the Central Campus Courtyard is an ideal location for a subterranean storage system as the prospect of infill development in the space is unlikely and not encouraged by this Framework Plan.

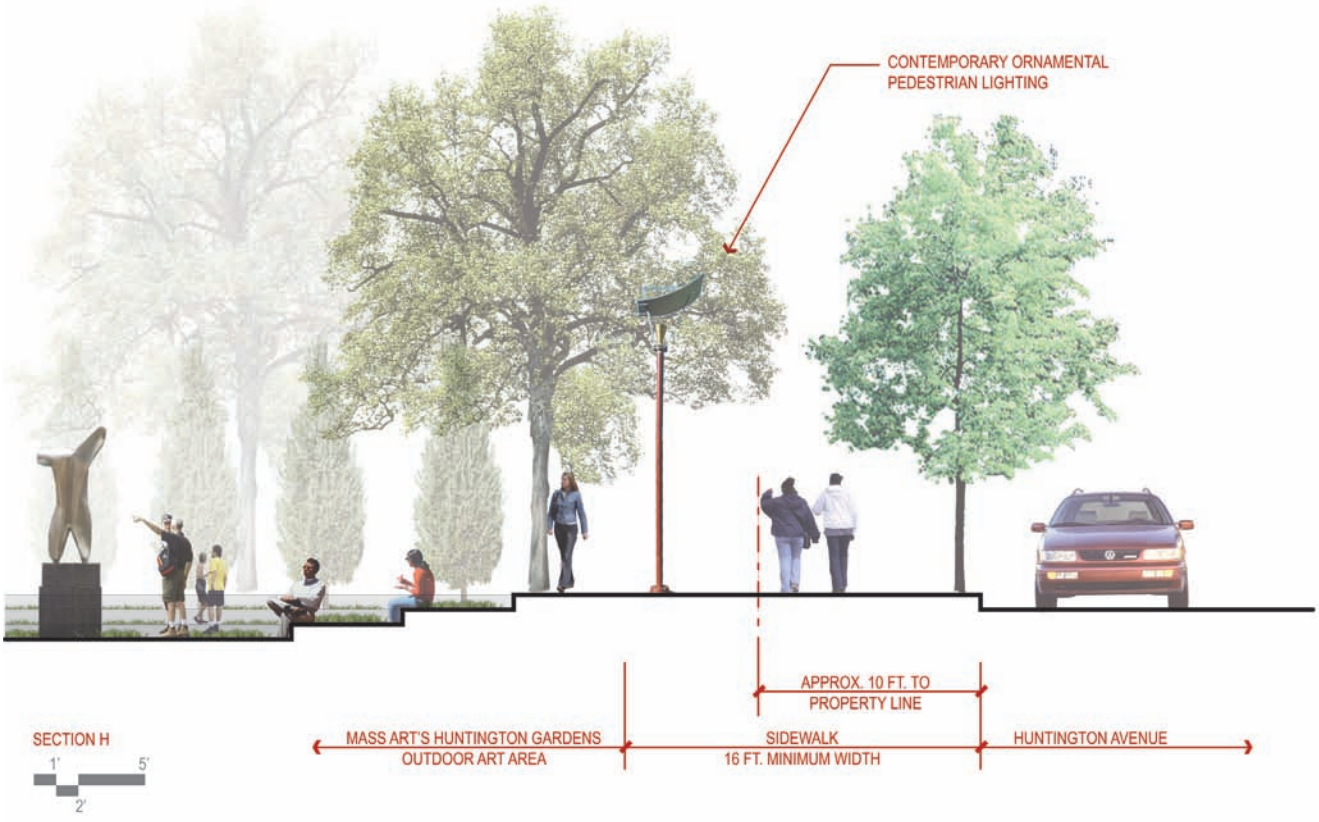
7 Wayfinding Signage Program: the completion of the new CDM and linear circulation atria through campus marks an ideal moment for the launch of an integrated interior and exterior wayfinding signage program.

8 Pozen Center Marquee and Sidewalk Improvements: simultaneous to the development of a prominent new marquee for the Pozen Center in the North Building, complementary streetscape improvements to the adjacent Evans Way sidewalk will feature artful lighting and streetscape features to complete improvements to MassArt's segment of the Colleges of the Fenway pathway.

9 Kennedy Building Greenhouse Event Space: the building's unusable and deteriorating rooftop greenhouse will be rehabilitated as a 4,900 SF bright, glazed event and exhibition space that mixes artwork and interior planting.

Beyond the framework horizon

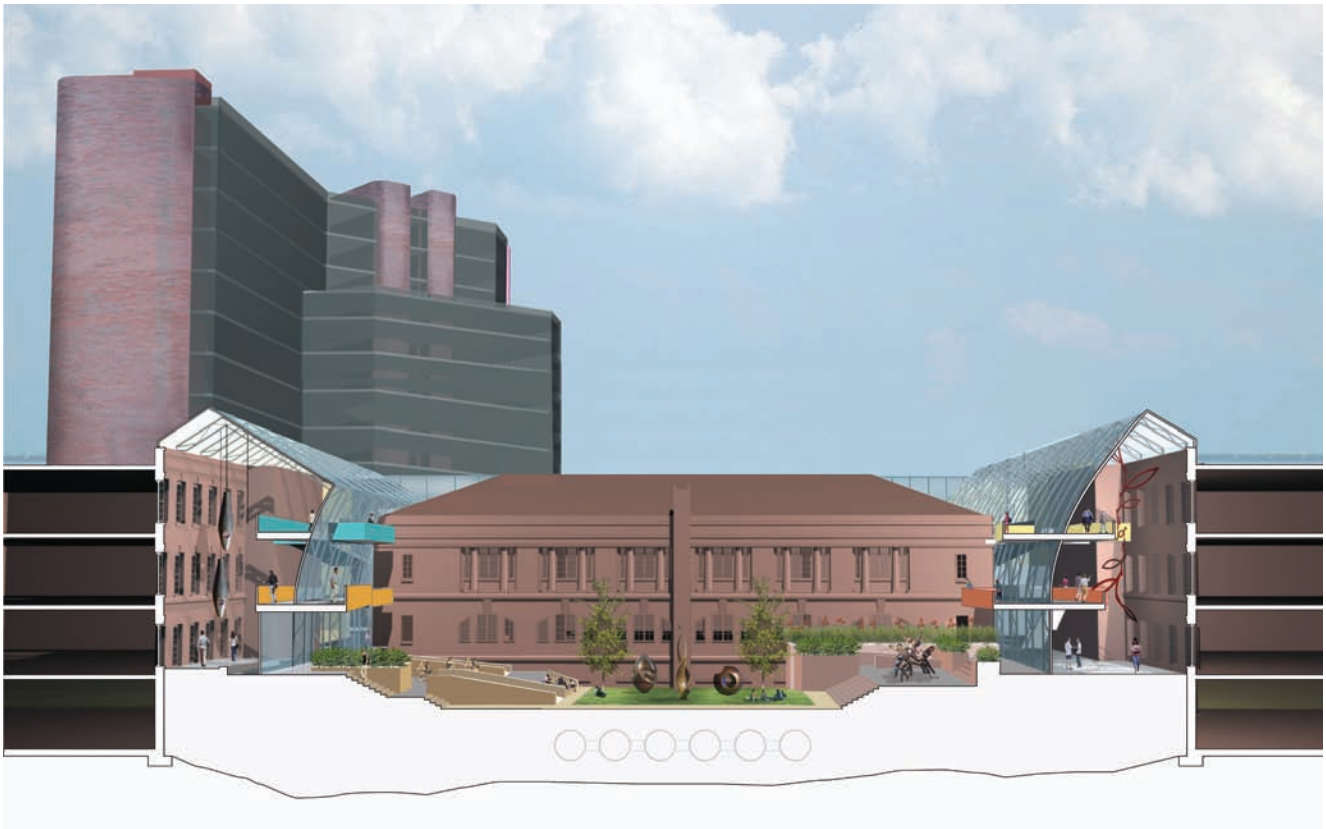
10 Tower Roof Terraces: future efforts at creating unique open spaces on campus should focus on expanding the Tower's green roof pilot program to create usable roof terraces and gardens on the building's stepped profile.



Section of the Huntington Avenue streetscape showing the recessed "Huntington Gardens"

Boston's Groundwater Conservation Overlay District, which requires private development in the designated area to include means to promote rainwater infiltration based on certain criteria; inset shows Cultec Recharger V8 System, a stormwater storage system for such applications (inset from http://www.cultec.com, map from Boston Redevelopment Authority)

The stepped profile of the Tower's roofs can be usable outdoor spaces like the roof garden, above, or sustainable design elements, like the green roof, below (from *Landscape Architecture* April 2005, http://i.treehugger.com)



Perspective section of the courtyard landscape, bracketed by two new linear circulation atria

Structured or below-grade parking can be integrated with residence hall development and used as a base for usable open space, as at Northeastern University's West Village (from http://www.pressleyinc.com)

Roadway and Parking Improvements

1 Relocation of Tower Loading Dock: the existing Tower Loading Dock is situated too close to Evans Way, creating not only a visual blight but also impeding the movement of pedestrians and motorists. New construction adjacent to the Tower will allow the relocation of loading facilities farther back from the street in a new 2,800 SF service court with ornamental gates and paving.

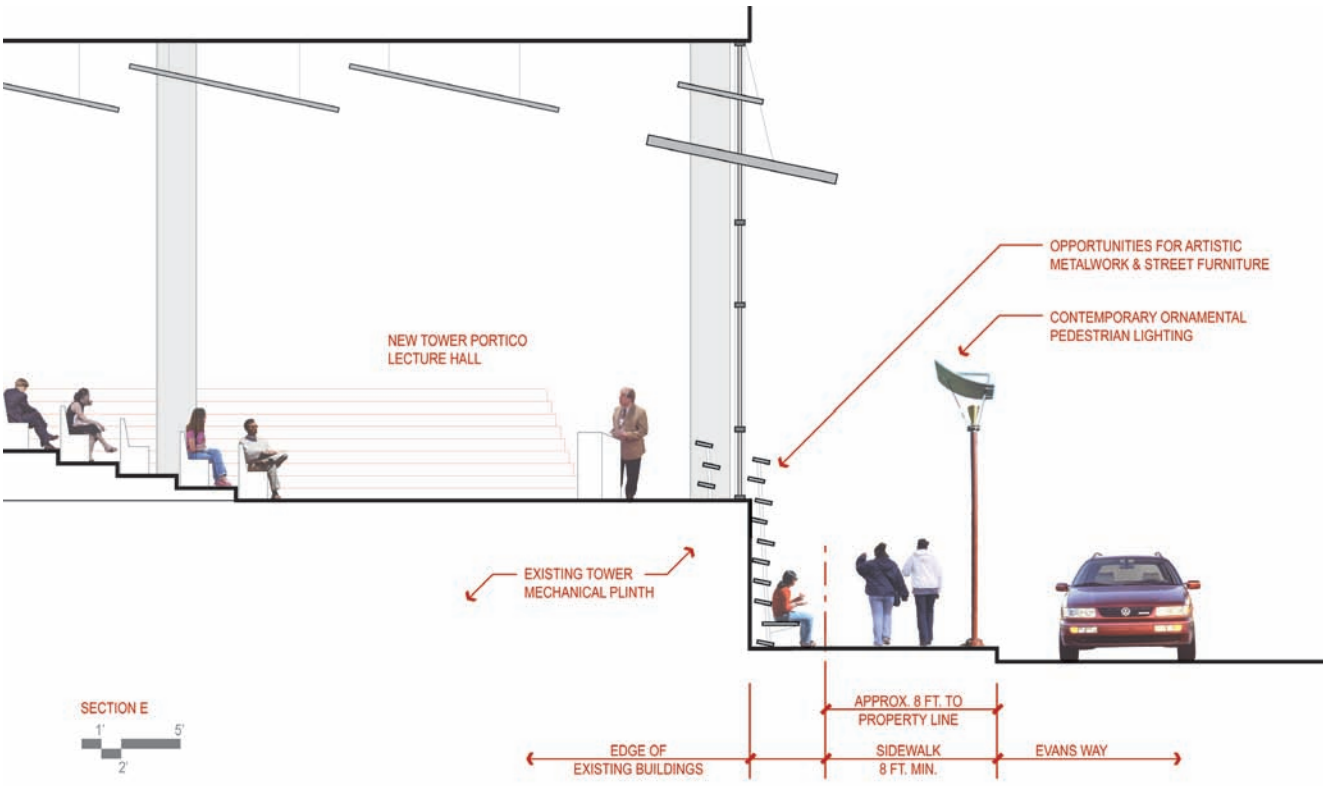
2 Evans Way Sidewalk: plans for the routing of the Urban Ring transit line could affect the design of the Evans Way and Tetlow Street sidewalks adjacent to the campus. MassArt should partner with the MBTA and the City of Boston in preserving a sidewalk of appropriate width and amenity along this important Colleges of the Fenway corridor.

3 Residence Hall Basement Parking Garage: using the existing Artists' Residence as a model, a new residence hall should also include basement-level parking. Structured plaza and garden decks around the building's footprint will allow over fifty parking spaces below grade while supporting usable open space above.

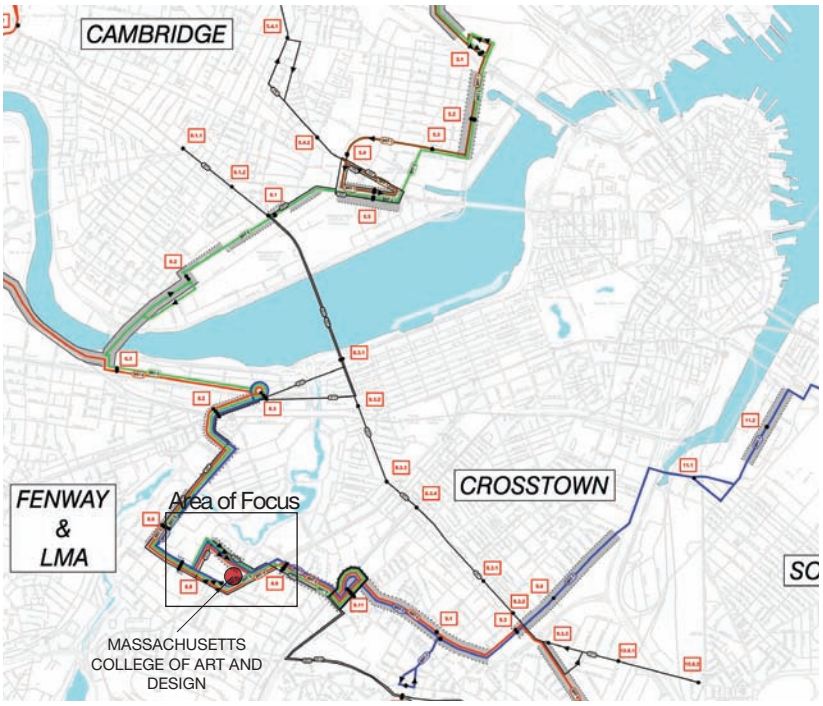
4 New Short-term Service Parking Area: a new strip of six on-street spaces for short-term loading on Palace Road will feed directly into improved through-campus linear atrium circulation and diminish the unauthorized use of service driveways and street shoulders.

Beyond the Framework Horizon:

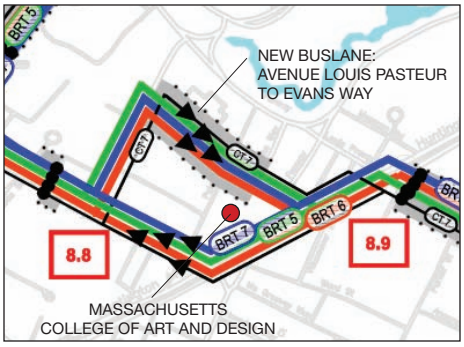
5 Vancouver Street Development: a great opportunity exists to partner with Colleges of the Fenway or MASCO consortium members to develop MassArt's faculty parking lot with structured parking above street-level commercial uses. A greater density of development will make spanning the existing sub-grade utility easement economical.



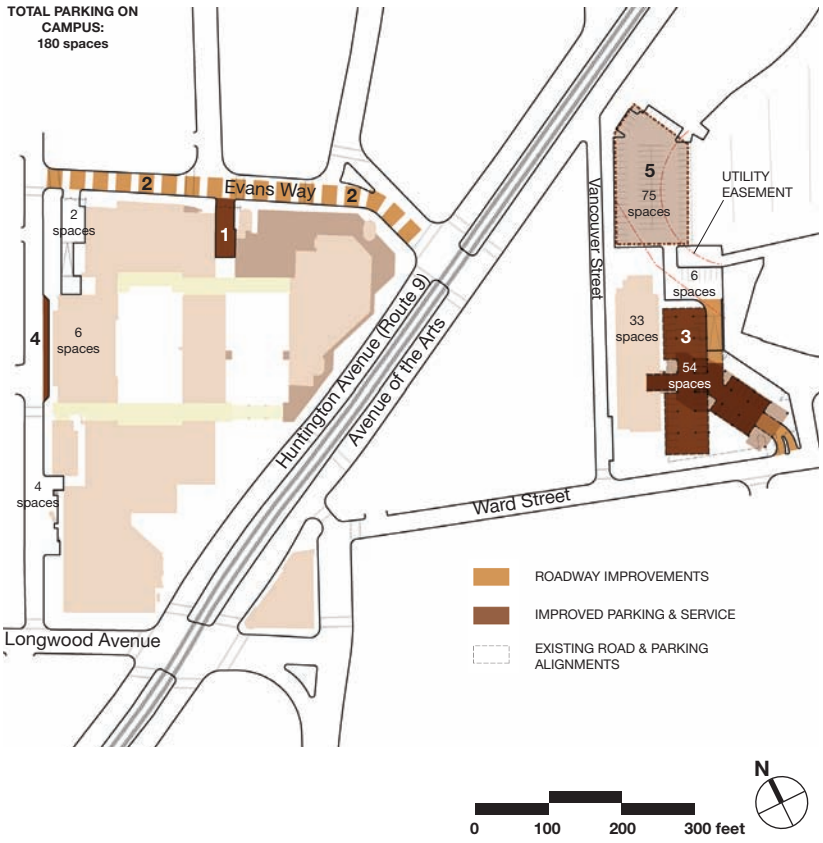
Section of Evans Way streetscape and the Tower's portico infill



A current alternate plan being studied by the Massachusetts Executive Office of Transportation for the Urban Ring Circumferential Bus Rapid Transit System suggests a new bus lane along Tetlow Street, which could affect the Evans Way sidewalk edge of the campus (from http://www.theurbanring.com/)



The Urban Ring Bus Rapid Transit will be similar to the MBTA's Silver Line, but it is likely that the nearest stop will be over a block away from MassArt (from http://www.fta.dot.gov)



Roadways and Parking Key Plan

Potential redevelopment of MassArt parcels could include structured parking with an active retail street edge similar to the Hamilton Square Market at University of Pennsylvania (from http://www.facilities.upenn.edu)

Phasing the Framework

First Stage:

1 Demolish and temporarily replace the existing **Tower Loading Dock** to improve construction access and staging areas for Center for Design and Media* (CDM) development.

2 Construct infill academic space in the Tower portico and auditorium to house **CDM** programming and a **new lecture hall**. Reconfigure the existing lobby to become a new **major campus entrance**.

3 Using newly constructed space as swing space, **upgrade** the interiors, systems, and façade of the **lower four levels of the Tower** to house the CDM.

4 As part of the CDM project, improve the **Evans Way corner streetscape** to create a new media art plaza and enhanced campus entrance area. Redesign the Huntington Avenue streetscape and open space areas as **Huntington Gardens***—an area of planters, seating, and recessed sculpture gardens.

Second Stage:

6 Demolish the **Gymnasium** after relocating key programs.

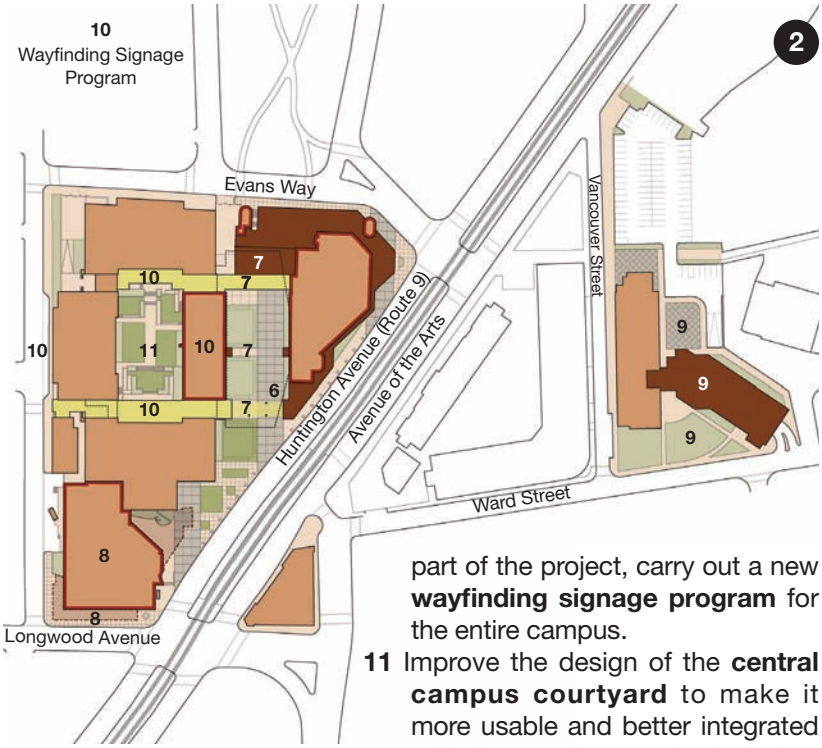
7 Develop a **new addition** to house service space and new academic space. Create new **linear atria spines** between the CDM and East Building to replace circulation lost in the Gymnasium. As part of the project, create a **new landscaped courtyard** in the area vacated by the Gymnasium.

8 Improve the lower floors of the Kennedy Building to offer **additional student dining, activity, and gallery spaces** in preparation for a growing resident student population. Improve the **Longwood Avenue streetscape** and Palace Road loading dock.

9 Construct a new **300-bed residence hall** with a **parking garage** below grade and **new landscape** at ground level.

10 Continue the **linear atria spines** west through the campus and create a new **short-term parking area** on Palace Road. Upgrade interiors and systems of the **East Building**. As part of the project, carry out a new **wayfinding signage program** for the entire campus.

11 Improve the design of the **central campus courtyard** to make it more usable and better integrated with the new linear atria. Include a **stormwater storage system** under the courtyard to help conserve groundwater.



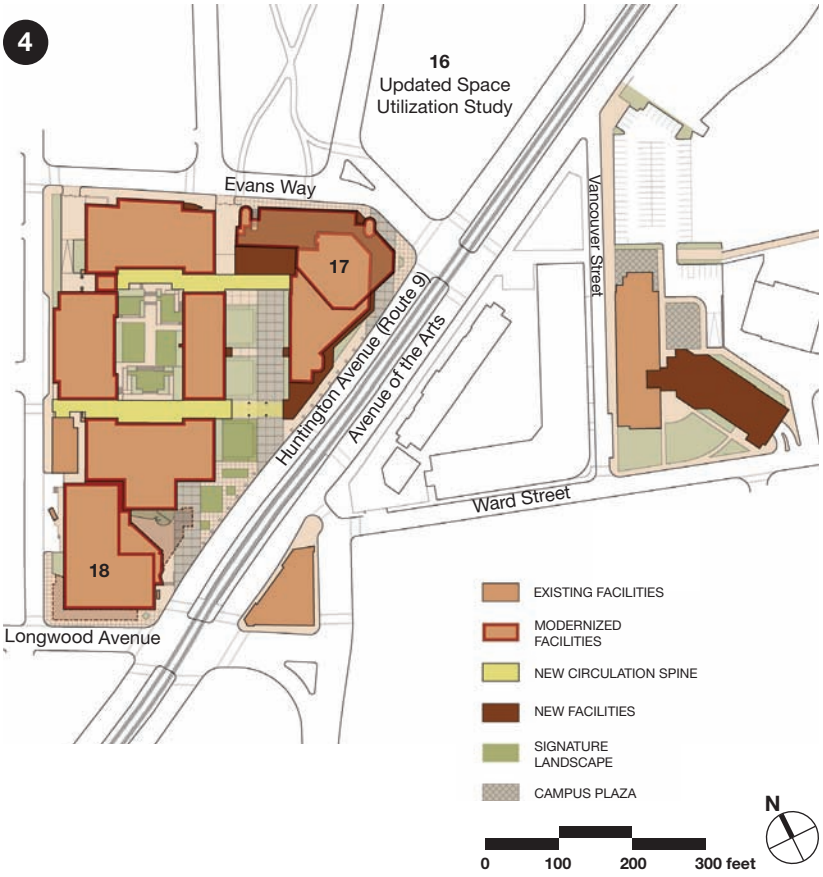
Third Stage:

12 Execute a number of recommended **systems, infrastructure, and security projects** throughout the campus.

13 Upgrade systems and infrastructure in the **Collins Building** and improve its circulation connections to the new linear atria.

14 Modernize the entire **South Building** and provide a new climate-control system for the large public galleries.

15 Modernize spaces in the **North Building** not recently addressed by the Pozen Center project. Construct a **new marquee sign for the Pozen Center** to anchor **streetscape improvements** along the western length of Evans Way and Tetlow Street.



Fourth Stage:

16 Conduct an updated, **detailed study of current space utilization** on campus in anticipation of extensive upgrades to the upper floors of both the Tower and Kennedy Building, factoring in the benefit of **leasing out space** on these upper stories.

17 Upgrade the interiors, systems, and facades of the **upper floors of the Tower** to improve the building's usability, sustainable performance, and aesthetic. Begin leasing space in the Tower to outside tenants as opportunities arise given current campus space utilization.

18 Upgrade the interiors and systems of the **upper floors of the Kennedy Building** to improve the building's functionality. Rehabilitate the unusable and deteriorating **rooftop greenhouse** as a glazed event and exhibition space.

** capital project names are working titles only*

A Current Take on the *Strategic Capital Program* of 2003

As noted in the report introduction, the current campus framework planning initiative takes the Eva Klein Associates 2003 *Strategic Capital Program* as its basis for recommending capital projects. The revised capital projects list on the following page updates the 2003 list based on the needs, initiatives, and framework concepts described throughout this report.

The revised capital projects list prioritizes campus projects within the framework horizon, with future and alternatively-funded projects under consideration listed separately. Project budgets have been updated to reflect 2006 dollars as well as changes in project scope, where applicable.

The projects represented in the revised list are grouped and prioritized based on the college's immediate needs balanced with long-term goals, as well as an understanding of what steps in the process of campus building will have the greatest effect in reaching the conceptual vision illustrated earlier in the report. MassArt's new Center for Design and Media* (CDM) will represent the College's most significant investment in tailoring its campus to specialized art and design education since inheriting the site in the mid 1980's. The potential of the CDM to transform the College functionally and aesthetically makes it a clear choice for the top priority project.

PLEASE NOTE:

The Capital Project Summary that follows may have been revised after the report was completed and is current as of the date indicated. Any differences between it and the Campus Framework Plan on pp. 42-55 represent changes in college or DHE priorities and/or resources since the report was completed. Further revisions of the Capital Project Summary may be anticipated and will be appended to the report as necessary.

Issues raised by any of these changes in the context of the Campus Framework Plan narrative in the report will be identified and resolved by individual building studies when specific projects have been approved for funding.

** capital project names are working titles only*

Massachusetts College of Art and Design

Capital Projects Summary

11 June 2008

Capital Project			Space Type										2006 Costs					
	CAMIS # (where available)	General Purpose Classroom	Specialized Instructional Space - Labs	Specialized Instructional Space - Studios	Library	Office	Student Support	Auxiliary Services	Other	Total Units	Unit	Unit Cost	Size or Inflation Adjustment Factor	Location Adjustment Factor	Estimated Construction Cost (ECC)	Total Project Cost (TPC)	Escalated Total Project Cost 2010 TPC
Existing Campus Surplus/(Deficit) *1*																51.96%	27.44%
Priority ***Project***																	
1 Center for Design and Media *(working title)* - Stage 1	551MCA5767																
Demolition: Tower Loading Dock, mechanical space, floor plate areas						(2,560)			(3,940)	6,500	GSF	$8	1	1.15	$59,800	$90,872	$115,807
Building Addition: Tower Infill - Lecture Hall, Studios, Offices, Facilities & Operations *2*		4,800	10,000			4,500		7,000	6,700	33,000	GSF	$230	1	1.15	$8,728,500	$13,263,829	$16,903,423
Building Addition: temporary loading dock facilities									800	800	GSF	$175	1.15	1.15	$185,150	$281,354	$358,557
Comprehensive Modernization: Tower Auditorium - Studios *2*			12,950						(8,700)	12,950	GSF	$220	1	1.15	$3,276,350	$4,978,741	$6,344,908
Comprehensive Modernization: Tower façades, Huntington Ave. & Evans Way (floors 2, 3)										4,625	GSF	$105	1.1	1.15	$614,316	$933,514	$1,189,670
Interior Upgrade: Tower floors B - 3 (excl. Auditorium) *2*					10,000	(3,500)			(6,500)	47,000	GSF	$110	1	1.15	$5,945,500	$9,034,782	$11,513,926
Landscaping, Paving and Walks: Evans Way Corner Streetscape										6,810	GSF	$6	1	1.15	$43,073	$65,454	$83,415
Landscaping, Paving and Walks: Huntington Avenue Streetscape & Gardens										12,400	GSF	$6	1	1.15	$78,430	$119,182	$151,886
Street trees, Pedestrian Lighting, Benches: Huntington Avenue & Evans Way										840	LF	$185	1	1.15	$178,710	$271,568	$346,086
stage 1 subtotal															*$19,109,829*	*$29,039,296*	*$37,007,679*
Center for Design and Media *(working title)* - Stage 2																	
Demolition: Gymnasium	551MCA5740		(15,500)			(1,300)	(10,300)	(4,000)	(25,400)	72,250	GSF	$8	1	1.15	$664,700	$1,010,078	$1,287,244
Demolition: Tower - peripheral floor plate area adjacent to Gymnasium						(1,200)			(2,000)	3,200	GSF	$8	1	1.15	$29,440	$44,737	$57,013
Building Addition: Studios, Offices, Facilities & Operations (loading dock) *2*			3,000			4,200			5,700	12,900	GSF	$230	1	1.15	$3,412,050	$5,184,951	$6,607,702
Building Addition: Corridor Connections to East and North Buildings *2, 3*							6,000		13,290	19,290	GSF	$230	1	1.15	$5,102,205	$7,753,311	$9,880,819
Comprehensive Modernization: Tower façades, on new CDM Courtyard (floors 1 - 3)										5,500	GSF	$105	1.1	1.15	$730,538	$1,110,125	$1,414,743
Landscaping, Paving and Walks: New CDM Courtyard										16,175	GSF	$6	1	1.15	$102,307	$155,466	$198,125
Wayfinding signage program *3*													1.274		$159,250	$241,996	$308,400
stage 2 subtotal															*$10,200,489*	*$15,500,664*	*$19,754,046*
															$29,310,318	**$44,539,960**	**$56,761,725**
2 Kennedy Student Life Center *(working title)*	551MCA5733																
Systems & Infrastructure Projects (façade, HVAC) *4*													1.274		$6,811,161	$10,350,240	$13,190,346
subtotal															$6,811,161	**$10,350,240**	**$13,190,346**
3 East Building Modernization	551MCA5720																
Building Addition: Linear Atria circulation spines *2, 3*							5,000		18,850	23,850	GSF	$230	1	1.15	$6,308,325	$9,586,131	$12,216,565
Building Addition: Entry Lobby *3*									400	400	GSF	$230	1.15	1.15	$121,670	$184,890	$235,623
Interior Upgrade: Fine Arts Studios										25,750	GSF	$110	1	1.15	$3,257,375	$4,949,907	$6,308,162
Mechanical, Plumbing, and Electrical Systems Upgrades (incl. sprinklers) *5*															$1,299,000	$1,973,960	$2,515,615
Surface Parking: Palace Road Short-term Service Parking Area										6	spaces	$5,000	1	1.15	$34,500	$52,426	$66,812
subtotal															$11,020,870	**$16,747,314**	**$21,342,777**
4 Courtyard Landscape Enhancements																	
Site Prep/Grading, Landscaping, Paving and Walks										14,600	GSF	$9	1	1.15	$142,715	$216,870	$276,379
Electrical Systems Upgrades (lighting) *5*															$80,000	$121,568	$154,926
15,000 cubic foot stormwater storage system *6*										5,500	GSF				$75,000	$113,970	$145,243
subtotal															$297,715	**$452,408**	**$576,548**
5 Systems, Infrastructure, and Security Projects *4*																	
Security camera system replacement													1.274		$191,100	$290,396	$370,080
Entry door security													1.274		$95,550	$145,198	$185,040
Datacom link enhancement													1.274		$127,400	$193,597	$246,720
Steam Distribution maintenance													1.274		$286,650	$435,593	$555,120
subtotal															$700,700	**$1,064,784**	**$1,356,960**
6 Collins Building Upgrades	551MCA5700																
Infrastructure Repair & Window Replacement *4*													1.274		$459,226	$697,840	$889,327
Interior Upgrade: stair core conversion to ramps										1,410	GSF	$110	1.05	1.15	$187,283	$284,596	$362,689
Mechanical, Plumbing, and Electrical Systems Upgrades (incl. Glass Hot Shop) *5*															$837,000	$1,271,905	$1,620,916
subtotal															$1,483,509	**$2,254,341**	**$2,872,932**
7 South Building Modernization	551MCA5690																
Interior Upgrade: Classrooms, Fine Arts Studios (excl. basement)										50,700	GSF	$110	1	1.15	$6,413,550	$9,746,031	$12,420,341
Mechanical, Plumbing, and Electrical Systems Upgrades (incl. sprinklers) *5*															$5,420,000	$8,236,232	$10,496,254
subtotal															$11,833,550	**$17,982,263**	**$22,916,595**
8 North Building Modernization	551MCA5710																
Building Addition: new Pozen Center marquee sign										165	GSF	$230	1.15	1.15	$50,189	$76,267	$97,195
Interior Upgrade: remaining building areas (excl. Pozen Center, basement)										35,870	GSF	$110	1	1.15	$4,537,555	$6,895,269	$8,787,330
Exterior Repair & Window Replacement *4*													1.274		$1,279,657	$1,944,566	$2,478,155
Mechanical, Plumbing, and Electrical Systems Upgrades (incl. additional sprinklers) *5*															$4,250,000	$6,458,300	$8,230,458
Landscaping, Paving and Walks: Evans Way Streetscape										3,240	GSF	$6	1	1.15	$20,493	$31,141	$39,686
Pedestrian Lighting: Evans Way Streetscape										220	LF	$100	1	1.15	$25,300	$38,446	$48,995
subtotal															$10,163,193	**$15,443,989**	**$19,681,819**
9 Upper Tower Modernization	551MCA5767																
Interior Upgrade: Tower floors 4 - 13										199,000	GSF	$100	1	1.15	$22,885,000	$34,776,046	$44,318,593
Comprehensive Modernization: Tower façade (floors 4 - 13)										91,850	GSF	$105	1	1.15	$11,090,888	$16,853,713	$21,478,371
Mechanical, Plumbing, and Electrical Systems Upgrades *5*															$13,600,000	$20,666,560	$26,337,464
subtotal															$47,575,888	**$72,296,319**	**$92,134,428**
10 Kennedy Building Upper Floors Modernization	551MCA5733																
Interior Upgrade: Classrooms, Offices (floors 3 - 6)										71,400	GSF	$100	1	1.15	$8,211,000	$12,477,436	$15,901,244
Comprehensive Modernization: rooftop greenhouse event space								4,900		4,900	GSF	$210	1.1	1.15	$1,301,685	$1,978,041	$2,520,815
Electrical Systems Upgrades *5*															$2,000,000	$3,039,200	$3,873,156
subtotal															$11,512,685	**$17,494,676**	**$22,295,215**
Total															**$130,709,589**	**$198,626,292**	**$253,129,346**
Future Program Surplus/(Deficit)		4,800	10,450		10,000	140	700	7,900	(800)	33,190	GSF						

Notes

1 Existing Campus Surplus/(Deficit) assumes no current space surplus or deficit in any space type per Appendix-C memo by MassArt

2 Programs identified are place-holders - final programs to be determined

3 Student Center unit costs used for estimating purposes, but may overstate the cost of constructing circulation-intensive building additions

4 Cost figure based on 2003 Eva Klein Strategic Capital Program allottment escalated to 2006 dollars

5 Estimates provided by VAV International, mechanical engineering consultant, and Thompson Engineering Co., electrical engineering consultant

6 Based on assumption of Cultec V-8 storage chambers, estimate provided by Geller De Vellis, Inc., civil engineering consultant

Recommended projects not included in cost estimation:

- Kennedy Student Life Center *(working title)*: including retail, dining, and student activities expansion (MSCBA Project)
- New Residence Hall (approx. 300 beds), basement-level parking (approx. 54 spaces), and adjacent landscape development (MSCBA project)
- Center for Design and Media *(working title)*, Stage 3 (est. 150,000 GSF academic devt., future project)
- Smith Hall Redevelopment (future project)
- Vancouver Street Development - parking expansion and mixed-use opportunity (future project)

Acknowledgements

The preparation of this Framework Plan has benefitted from the involvement of many individuals and groups in the initial analysis, the discussion of issues, the development of plan recommendations, the drafting of the final document, and the review of that final draft.

Below are listed the key individuals and organizations that participated in the planning process. Any omission or errors are unintentional.

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Altaf Mulla, *Senior Project Manager*
Charlie Deknatel, *Senior Project Manager*
Scott Calisti
Elayne Campos
Paul Hession

Department of Higher Education

Haley Glover, *Senior Planning and Policy Analyst*
Dale Hamel, *Interim Associate Vice Chancellor*
Sue Wolfe, *Associate Vice Chancellor*

Massachusetts State College Building Authority

Janet Chrisos, *Director of Capital Projects*

Cameron Roberts Advisors, LLC

Cameron Roberts

Miller Dyer Spears

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Rickes Associates Inc.
Higher Education Planning

Persis Rickes
Monica Meyerhoff

VAV International, Inc.
Mechanical and Plumbing Engineering

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Thompson Engineering Company
Electrical Engineering

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Jill Caturano
Lauren Cyr
Andrew DeVecchio
Mary Dolan
Karen Fegley
Robin Glazer
Merideth Iszlai
Jon Koppell
Anna Kriger
Shayla MacDonald
Travis Neel
Monica Nydan
Nicole Ray
Hannah Sanders
Caryn Silverman
Jamie Spear
Whitney Wagner

TECHNICAL APPENDICES

Contents:

a. GIS Analysis and Civil Infrastructure Map, Geller DeVellis Inc.

b. Space Utilization Analysis, Rickes Associates Inc.
December 2007 Final Report, Executive Summary only

c. Review and Comments on Space Utilization Draft Report dated September 2007, Kurt Steinberg and Michèle Furst, Massachusetts College of Art and Design

d. Sustainable Development, Chan Krieger Sieniewicz, Inc.

e. Mechanical and Plumbing Systems, VAV International, Inc.

f. Electrical Systems, Thompson Engineering Company

Appendix A

GIS ANALYSIS AND CIVIL INFRASTRUCTURE MAP

Prepared by:

GELLER DEVELLIS, Inc.

Massachusetts College of Art
Boston, Massachusetts

USGS Topographic Map
October 15, 2007

Created by: MRS
Filename: J:\PROMOTIONAL\Mass College of Art\8X11_usgs.mxd

Data Source: "Office of Geographic and Environmental Information (MASSGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs"

Geller DeVellis Inc.
Landscape Architecture. Civil Engineering. Site Planning
70 Walnut Street
Wellesley, MA 02481

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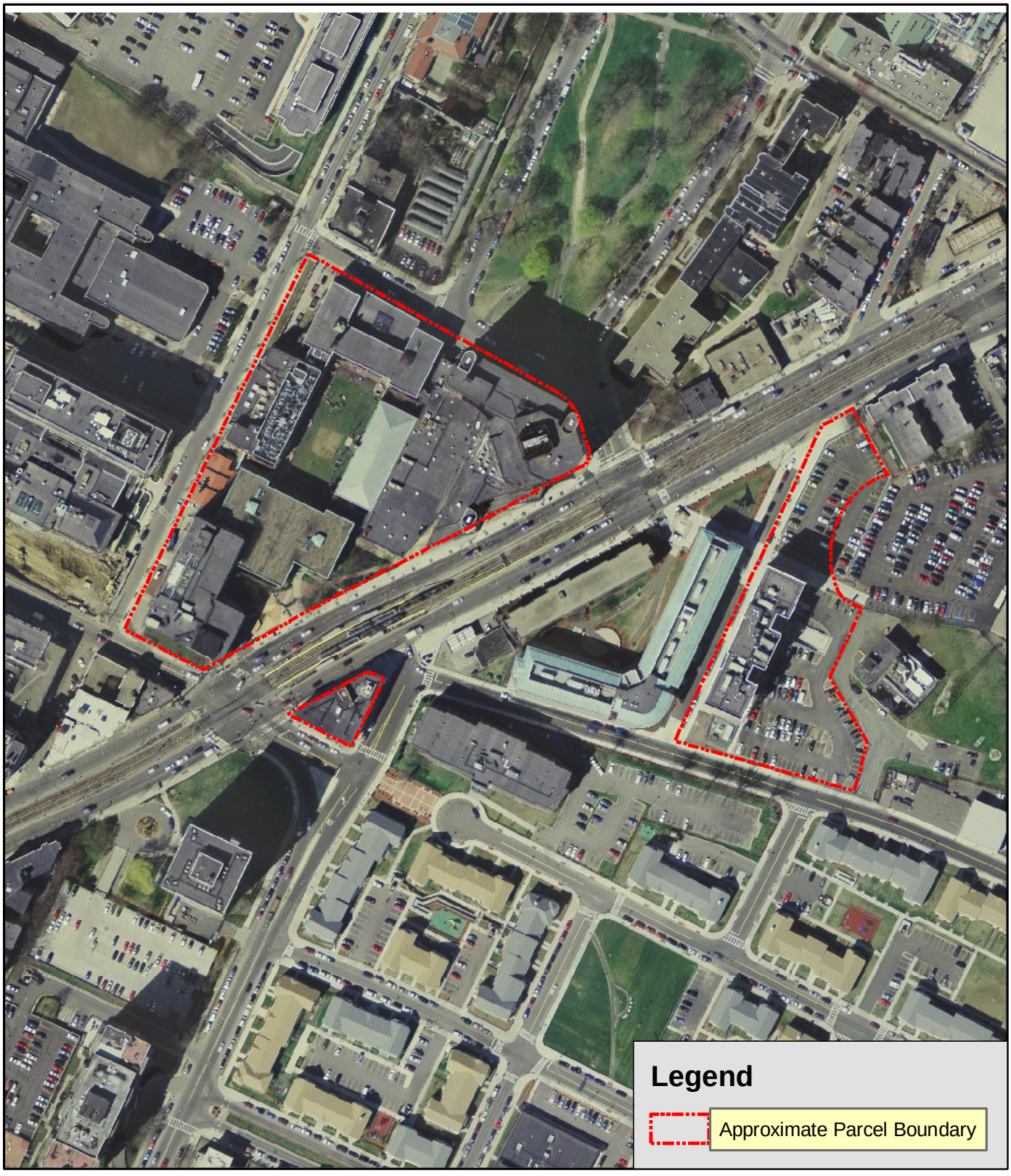

Massachusetts College of Art
Boston, Massachusetts

Aerial Photo

October 15, 2007

Created by: MRS
Filename: J:\PROMOTIONAL\Mass College of Art\8X11_locus.mxd

Data Source: "Office of Geographic and Environmental Information (MASSGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs" and photo from 2005

Geller DeVellis Inc.
Landscape Architecture. Civil Engineering. Site Planning
70 Walnut Street
Wellesley, MA 02481

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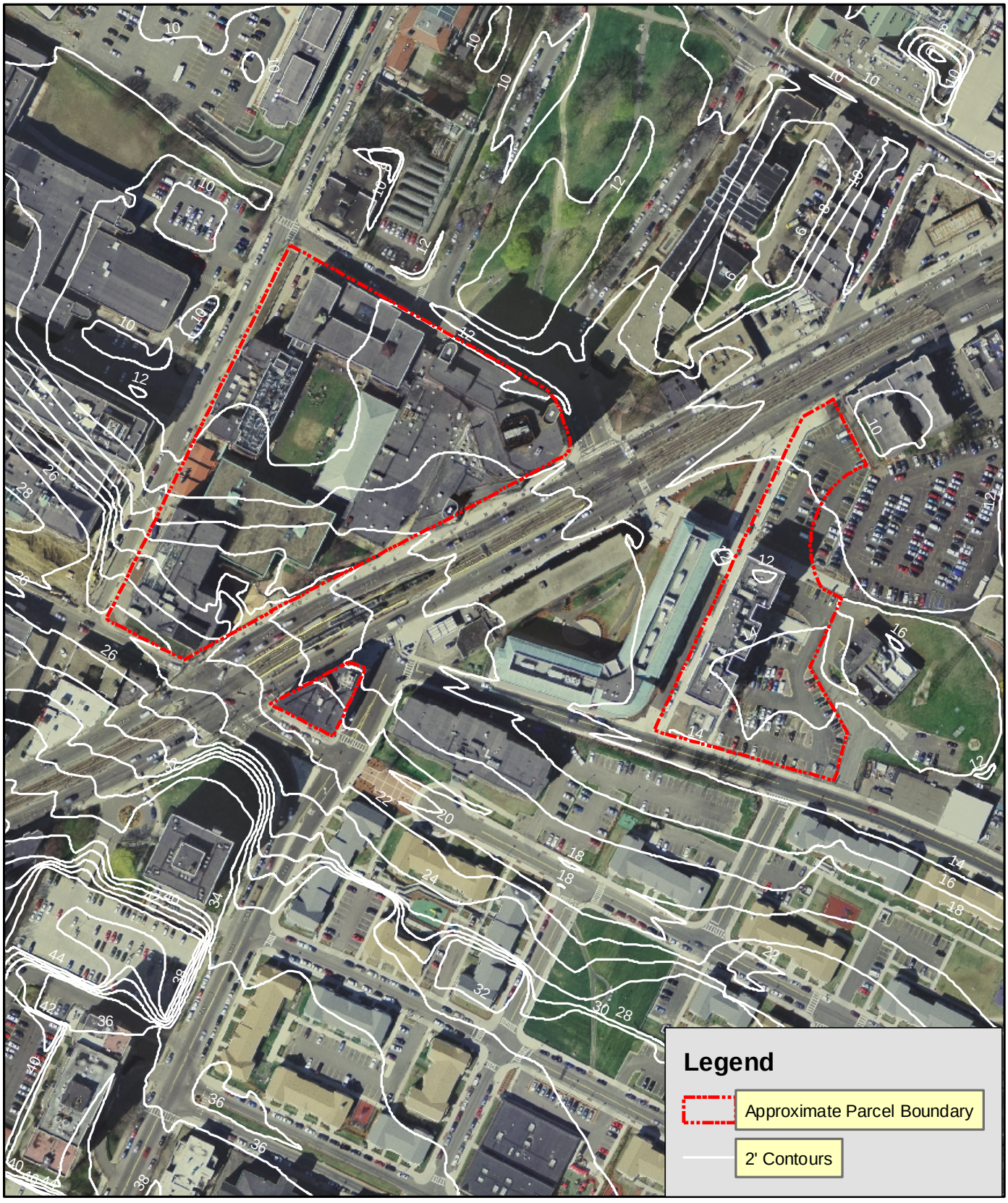

Massachusetts College of Art
Boston, Massachusetts

Created by: MRS

Topography Map

October 15, 2007

Data Source: "Office of Geographic and Environmental Information (MASSGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs" and photo from 2005

Geller DeVellis Inc.
Landscape Architecture. Civil Engineering. Site Planning
70 Walnut Street
Wellesley, MA 02481

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Massachusetts College of Art
Boston, Massachusetts

Hydrology Map

October 15, 2007

Created by: MRS
Filename: J:\PROMOTIONAL\Mass College of Art\8x11_hydrology.mxd

Data Source: "Office of Geographic and Environmental Information (MASSGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs" and photo from 2005

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Wellesley, MA 02481

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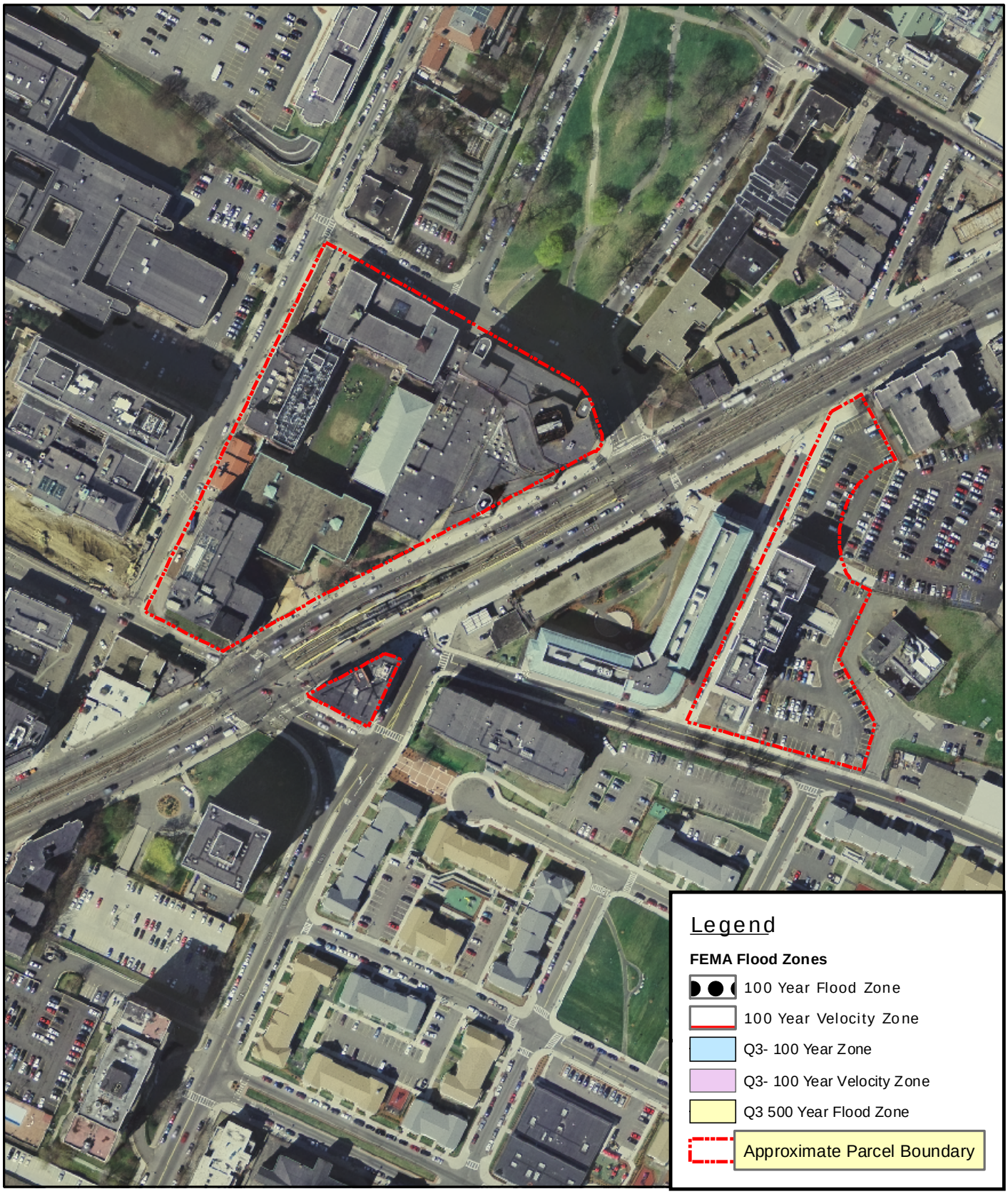

Massachusetts College of Art
Boston, Massachusetts

Flood Zones Map

October 15, 2007

Created by: MRS
Filename: J:\PROMOTIONAL\Mass College of Art\8X11_Floodplain.mxd

Data Source: "Office of Geographic and Environmental Information (MASSGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs" and photo from 2005

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Wellesley, MA 02481

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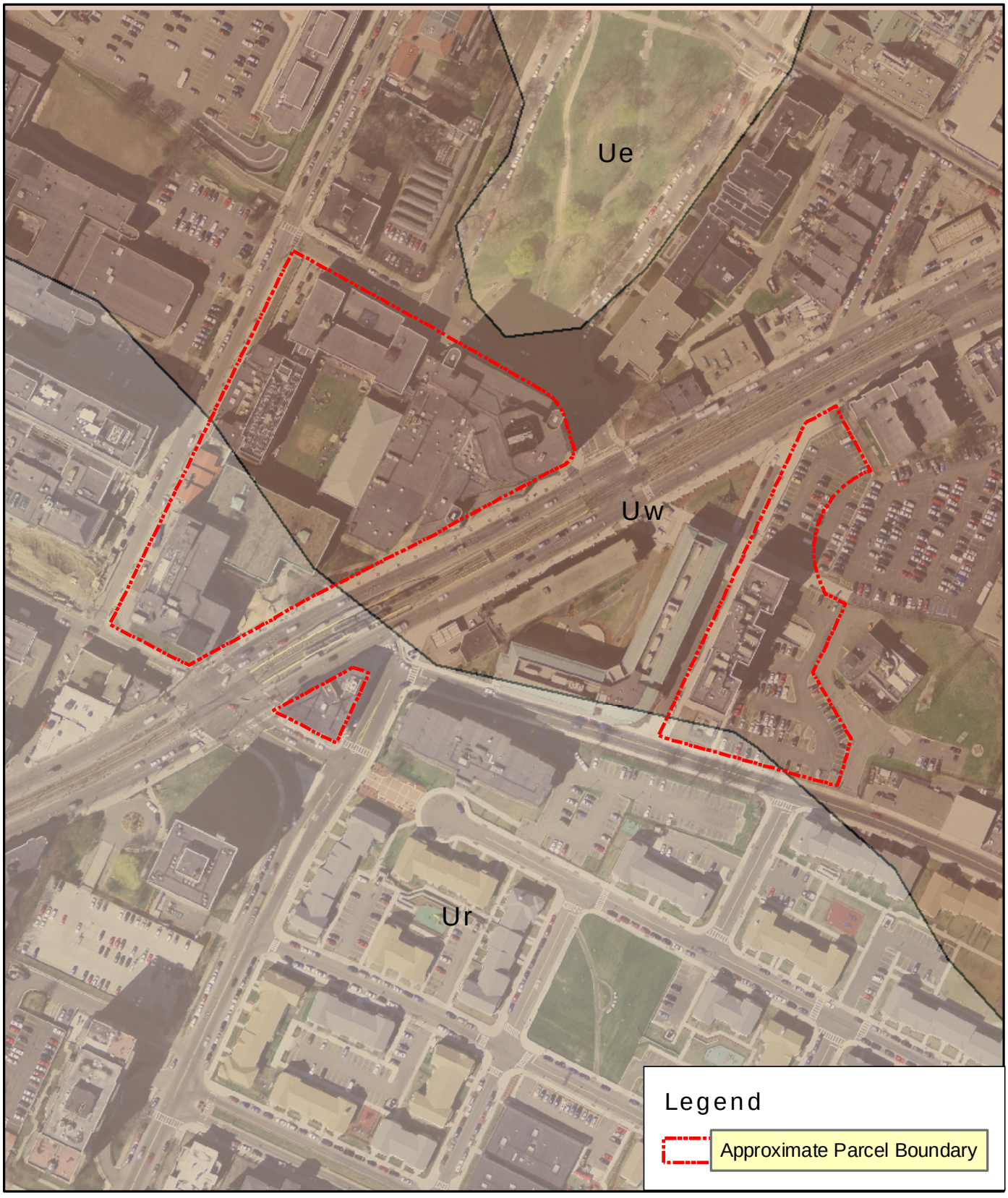

Massachusetts College of Art
Boston, Massachusetts

Soils Map
October 15, 2007

Created by: MRS
Filename: J:\PROMOTIONAL\Mass College of Art\8X11_soils.mxd

Data Source: "Office of Geographic and Environmental Information (MASSGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs" and photo from 2005

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Wellesley, MA 02481

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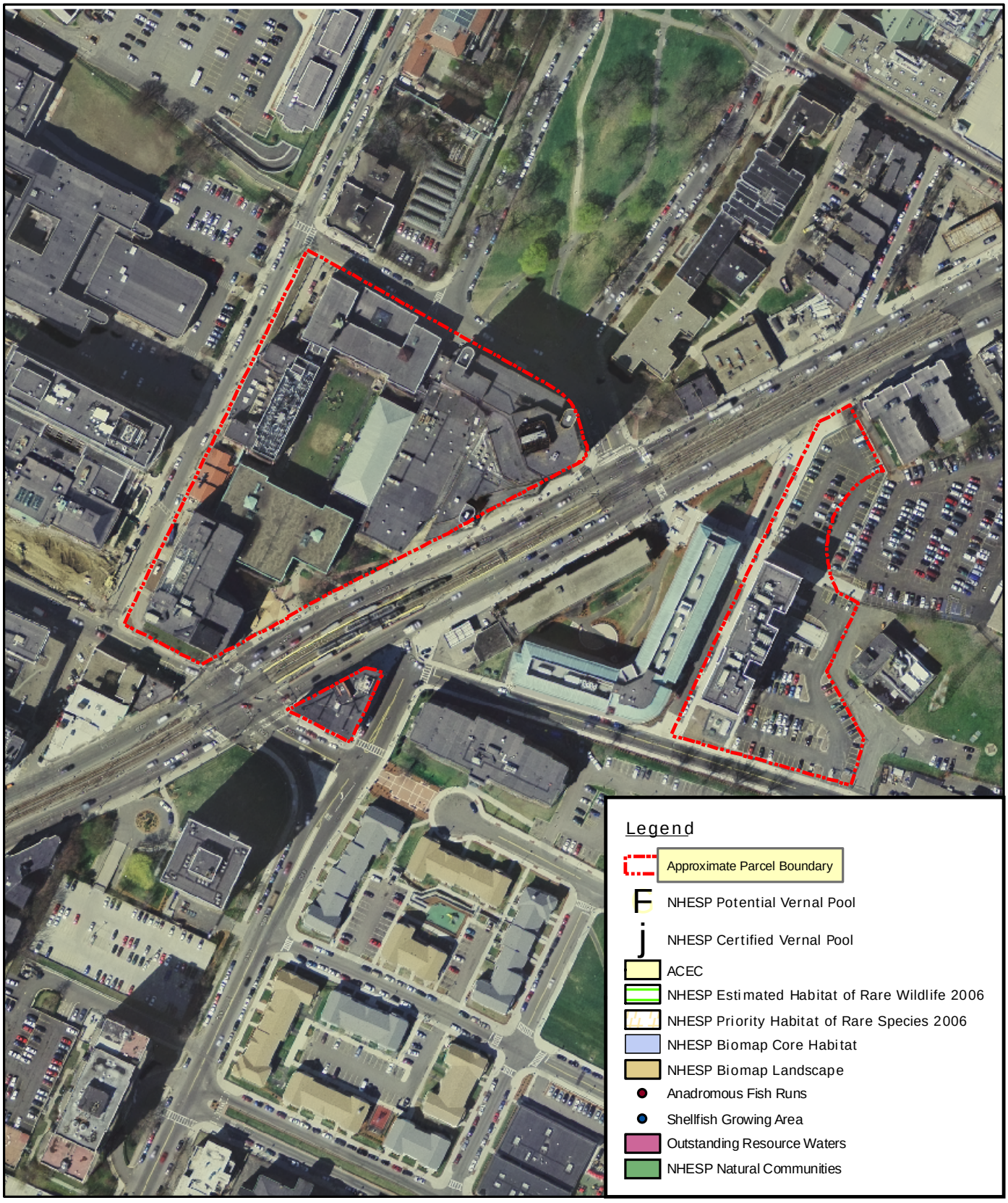

Massachusetts College of Art
Boston, Massachusetts

Protected Areas Map

October 15, 2007

Created by: MRS

Filename: J:\PROMOTIONAL\Mass College of Art\8x11_protectedareas.mxd

Data Source: "Office of Geographic and Environmental Information (MASSGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs" and photo from 2005

Geller DeVellis Inc.
Landscape Architecture. Civil Engineering. Site Planning
70 Walnut Street
Wellesley, MA 02481

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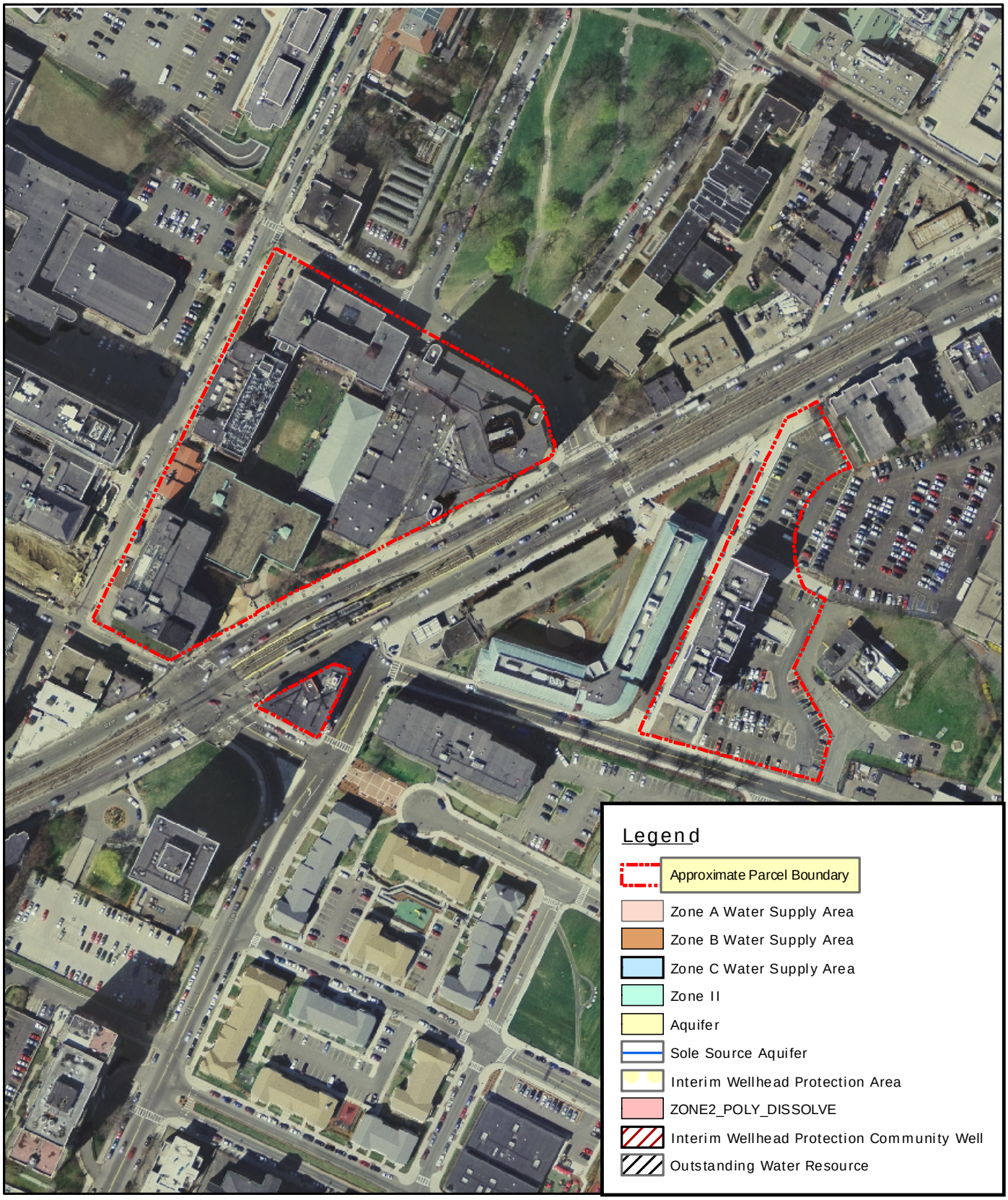

Massachusetts College of Art
Boston, Massachusetts

Water Supply Map

October 15, 2007

Created by: MRS
Filename: J:\PROMOTIONAL\Mass College of Art\8X11_Water Supply.mxd

Data Source: "Office of Geographic and Environmental Information (MASSGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs" and photo from 2005

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Landscape Architecture. Civil Engineering. Site Planning
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Wellesley, MA 02481

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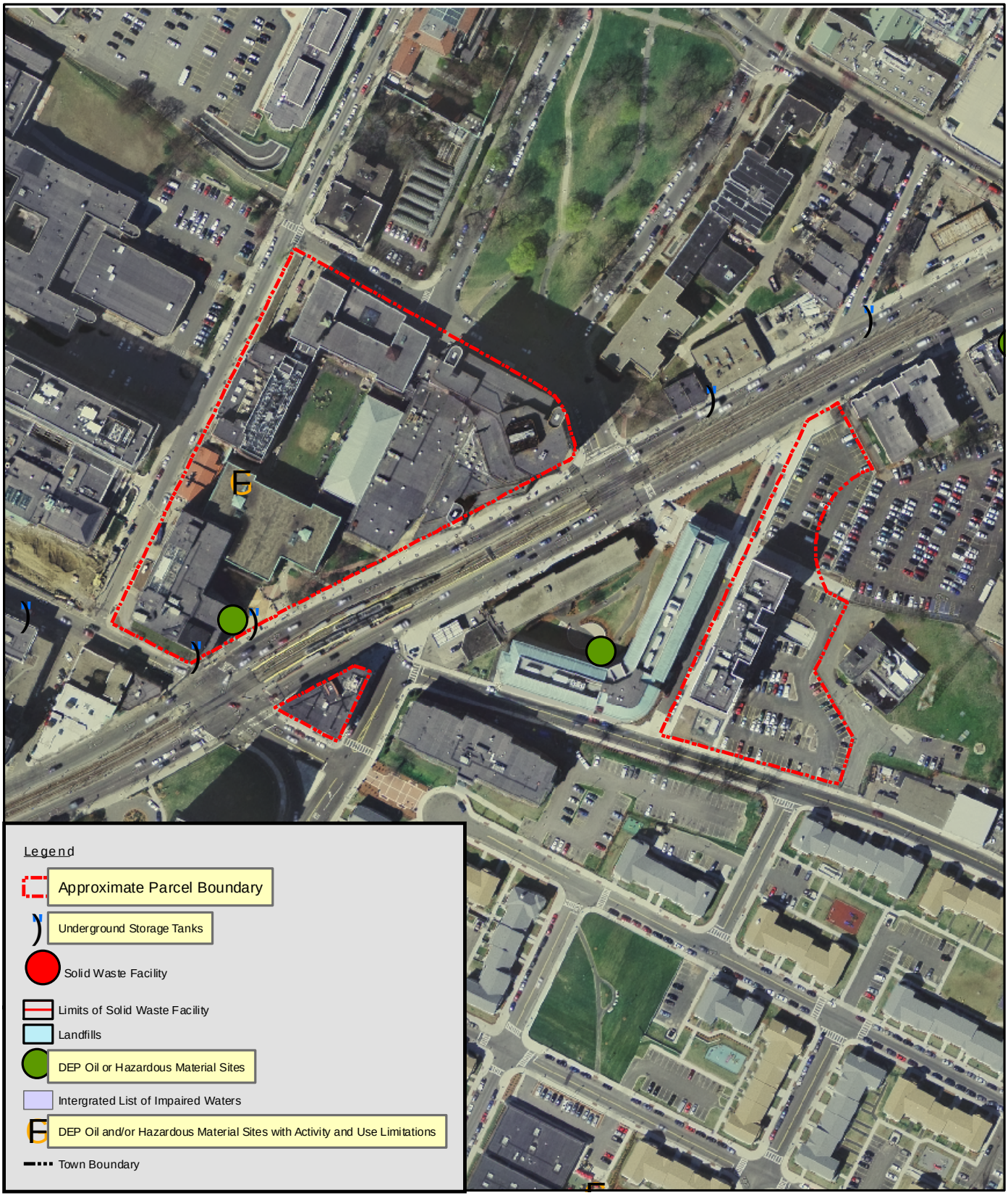

Massachusetts College of Art
Boston, Massachusetts

Solid Waste/Hazardous Materials Map

October 15, 2007

Created by: MRS

Filename: J:\PROMOTIONAL\Mass College of Art\8X11_solidwaste_map.mxd

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Landscape Architecture. Civil Engineering. Site Planning
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Wellesley, MA 02481

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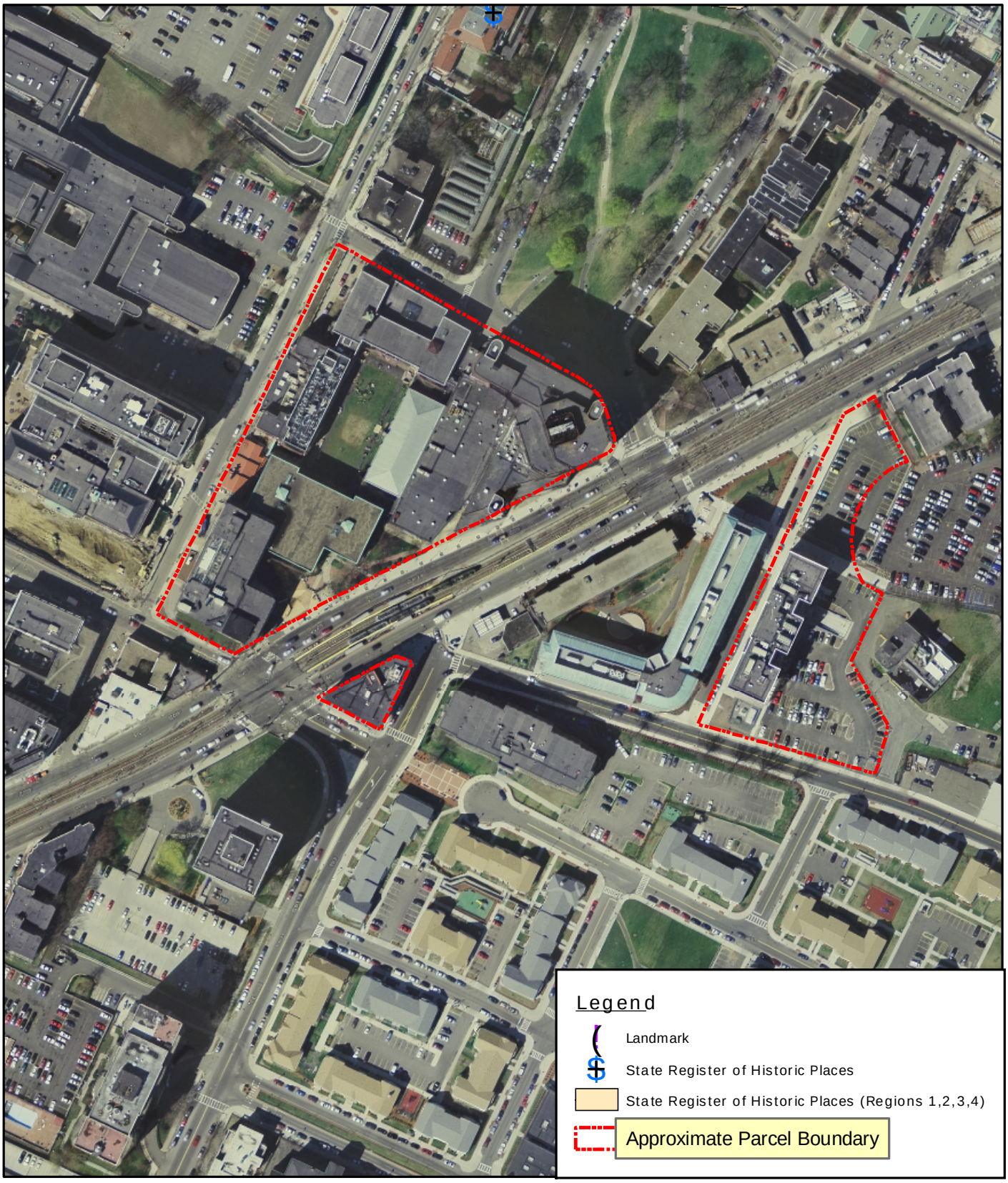

Massachusetts College of Art
Boston, MA

Historic Places Map
October 15, 2007

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Data Source: "Office of Geographic and Environmental Information (MASSGIS), Commonwealth of Massachusetts Executive Office of Environmental Affairs" and photo from 2005

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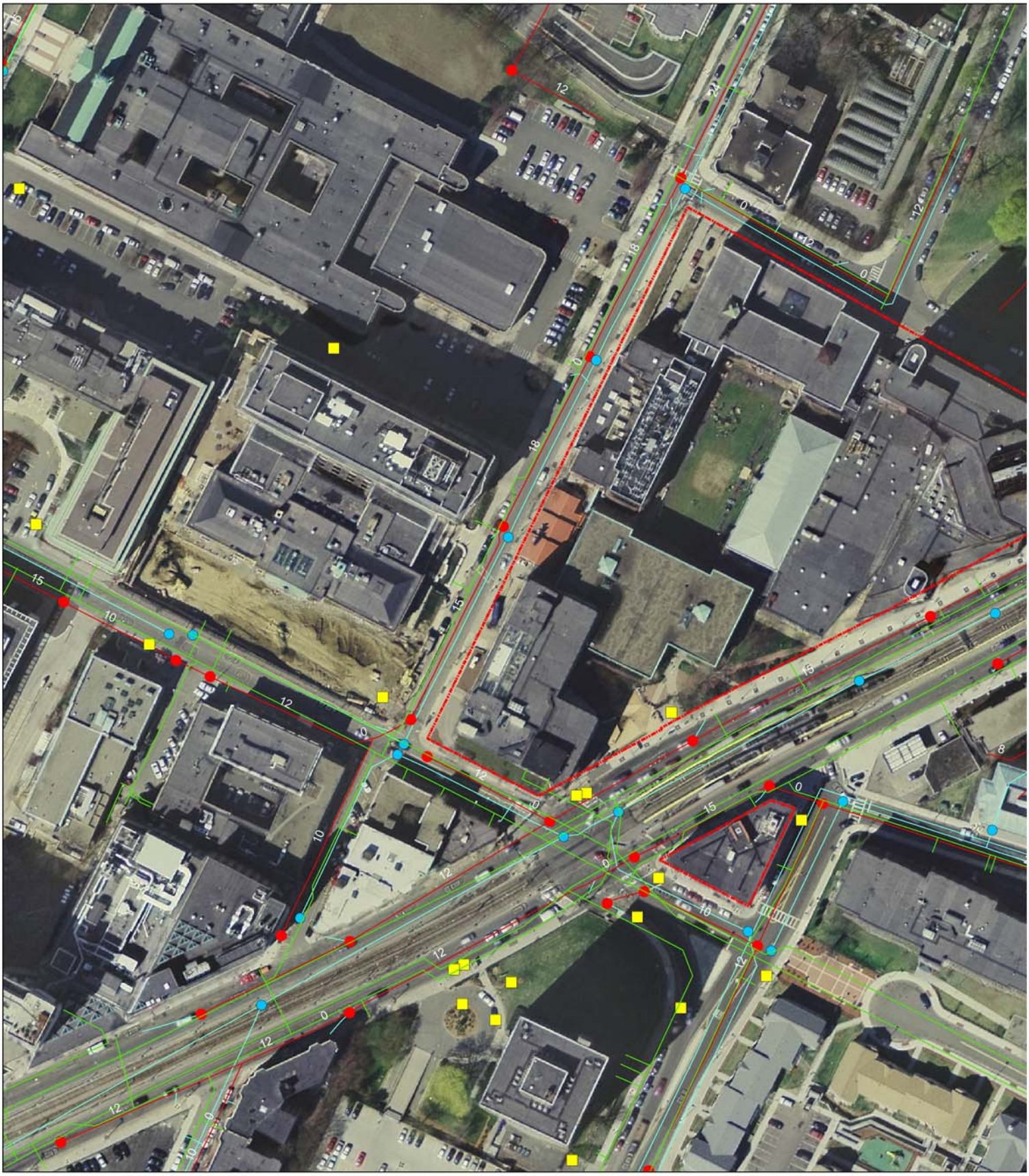

Mass College of Art
Boston, MA

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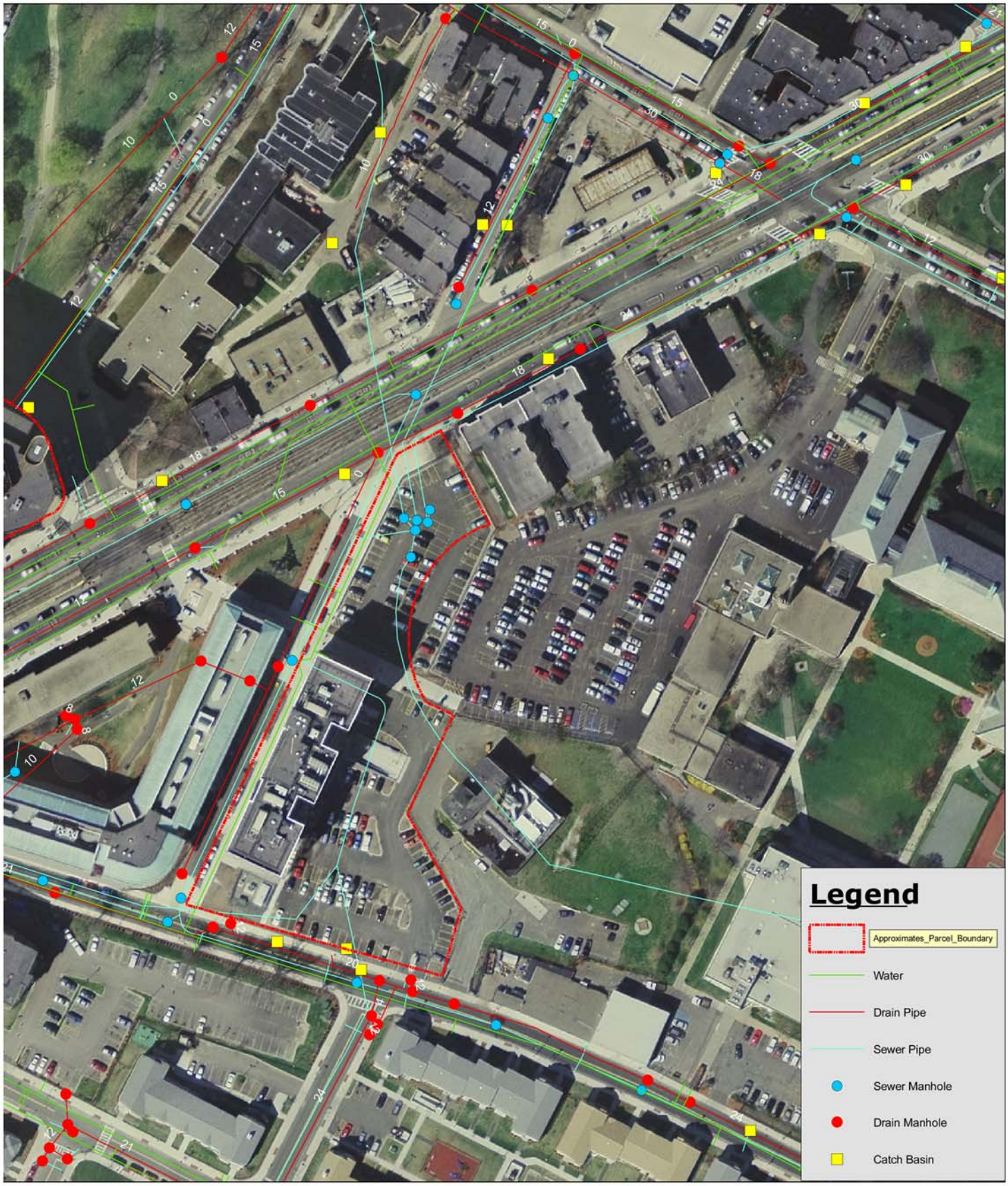
Geller DeVellis Inc.
Landscape Architecture.Civil Engineering.Site Planning
70 Walnut Street
Wellesley, MA 02481



Aerial Photo

Date: 6.25.07

Data Source: Boston Water and Sewer Commission

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0 30 60 120 Feet

Appendix B

SPACE UTILIZATION ANALYSIS

EXECUTIVE SUMMARY

Prepared by:

RICKES ASSOCIATES, Inc.

Executive Summary:

Overview

The recommendations in this study are based on Fall 2005 data and provide for a snapshot in time; they do not reflect enrollment growth, programmatic changes, or any modifications made subsequently to the campus. Rickes Associates, Inc. has included in the Appendix changes and considerations submitted by the institution at the draft review session. These issues should be considered as the master plan goes forward.

Enrollment

- In Fall 2005, Massachusetts College of Art + Design (MassArt) had a full-time enrollment of 1,459, a part-time enrollment of 668, and an FTE of 1,627.
- Between Fall 2000 and Fall 2005, MassArt experienced an unduplicated headcount enrollment decrease of 8.5%, but an increase in FTE production of 2.6% for the same period. While part-time enrollment declined, full-time enrollment increased at a faster rate over the same period.

Utilization Findings: General-Purpose Classrooms

- There are 30 general-purpose classrooms covering 23,960 asf of space which represents 6% of the 386,770 assignable square feet of space (excluding residential, on campus).
- There are 905 student stations; station size ranges from 11.3 to 72.0 asf per station; mean station size across all 30 classrooms is 26.5 asf.
- Classroom capacity ranges from 15 to 100 seats; mean capacity is 30 seats; modal capacity is 18 seats.
- Course enrollment ranges from 1 to 54 students; mean enrollment is 18 and modal enrollment is 13 students.
- An average of 57% of the classroom seats are occupied when a classroom is in use, which is below the target rate of 67%. The average seat occupancy rate in individual rooms ranges from 26% to 112%.
- On average, 48% of classroom time is in use during the day (ranging from 8% to 75%), based on the 40 weekly daytime hours available; this is below the target rate of 67%.

Utilization Findings: Specialized Instructional Spaces

- There are 61 specialized instructional spaces covering 78,602 asf of space which represents 20% of the 386,770 assignable square feet of space (excluding residential, on campus).
- There are 1,202 student stations; station size ranges from 13.3 to 277.8 asf per station; mean station size across all 61 specialized instructional spaces is 65.4 asf.

- Room capacity ranges from 12 to 60 seats; mean capacity is 20 seats; modal capacities are 18 and 19 seats.
- Course enrollment ranges from 1 to 59 students; mean enrollment is 14 students; modal enrollment is 15 students.
- An average of 66% of the seats in specialized instructional spaces are occupied when a room is in use; this is below the 80% target. The average seat occupancy rate in individual rooms ranges from 23% to 176%.
- On average, 41% of specialized instructional space time is in use during the day (ranging from 8% to 109%), based on the 40 weekly daytime hours available. This average is less than the target rate of 50% and suggests that additional instructional capacity exists, although this may be tempered by the pedagogical requirements associated with individual disciplines.

Recommendations and Caveats

General Caveats:

- Need projections assume that the current scheduling window, course sizes, and enrollment all remain constant; it also assumes courses are placed in appropriately sized rooms.
- The identified courses that are scheduled in open laboratory specialized instructional spaces will need to be addressed.

General Recommendations:

- Right-sizing, or ensuring adequate square footage per station, should be completed where appropriate.
- A near-term recommendation for general-purpose classrooms is to review those spaces with high use, both in terms of hours and/or seats. This will help identify immediate pressure points.
- For specialized instructional space, a similar recommendation is suggested, e.g. to review those specialized instructional spaces with extremely high station occupancy and to discover the reason.
- Furniture style and use should be examined, and comfortable, padded, seating considered to accommodate courses that meet for long periods of time and/or once a week.
- As spaces are renovated/created, room conditions and space quality should be updated to promote better usability, such as larger writing surfaces as well as electrical and wireless support of laptop usage in classrooms.
- Soundproofing between spaces and adequate blackboard/whiteboard space should also be addressed.

Current Instructional Space Needs:

- To meet present scheduling practices, current course offerings could be accommodated in 21 appropriately sized classrooms, in contrast to the 30 that now exist. This represents a base need for 14,102 asf, or a net *decrease* of 9,858 asf. Both fewer classrooms and less square footage are required.
- The current need is for 62,980 asf of specialized instructional spaces. This is a net *decrease* of 15,622 asf over existing square footage when station sizes are theoretically "right-sized" across all specialized instructional spaces.

Non-Capital Recommendations:

General-Purpose Classrooms

- A detailed room-by-room review should be conducted using provided data to identify and address either current pressure points, such as Tower 513 and 535, scheduled at or above 70% of the available hours, or spaces in which opportunities are available due to low use, such as Tower 312 or Kennedy 625.
- Review and determine the reason Kennedy 617 and North 175 are not scheduled for day courses.
- Review those rooms such as Kennedy 615 and 616 with more than 100% station occupancy, overall. In addition, individual courses within these rooms as well as others have high fill rates.

Specialized Instructional Spaces

- For specialized instructional space, a similar recommendation is suggested. An analysis indicates that while 15 rooms are scheduled at or over 60% of the available hours. Of these, five are scheduled over 100% of the scheduling window.
- In some instances, it is the seat occupancy rate that is the pressure point. For example, seven of the rooms have a seat occupancy rate 100% or higher. This may indicate a need for larger space and/or additional spaces so that more sections can be offered. Alternatively, the high occupancy rate may be a consequence of initial room assignment, after which students disperse to adjacent instructional areas.
- Review and determine the reason five spaces are not scheduled for day courses.

Capital Recommendations:

General-Purpose Classrooms

- Current analysis suggests that there are "excess" classrooms. Given the adequate number of rooms to accommodate current courses, MassArt may have the ability to review spaces in detail to determine which rooms may come off-line for renovation. It is suggested that poorly used rooms should be considered for removal or revitalization into new space. Overall, MassArt will require instructional space to meet the need for different capacity rooms compared to those that currently exist.

Specialized Instructional Spaces

- While there is no additional space recommended for specialized instructional spaces at the macro level — based upon current course offerings and pedagogy — this is likely to change as the space needs associated with individual disciplines are reviewed and future needs projected for the campus as a whole. For example, this recommendation does not address the low room use rate or the fact that instruction occurs in what are technically open use specialized instructional spaces.

Appendix C

REVIEW AND COMMENTS ON SPACE UTILIZATION DRAFT REPORT DATED SEPTEMBER 2007

Prepared by:

MASSACHUSETTS COLLEGE OF ART AND DESIGN
Kurt Steinberg and Michèle Furst

MASSACHUSETTS COLLEGE of ART and DESIGN
621 Huntington Avenue · Boston, Massachusetts 02115

MEMORANDUM

TO: Altaf Mulla – Division of Capital Asset Management (DCAM)

FR: Kurt Steinberg, Michèle Furst; MassArt

RE: Massachusetts College of Art and Design
Rickes Associates - Space Utilization Analysis
Review and Comments on Draft Report dated September 2007

DT: December 19, 2007

The following memorandum constitutes a review and commentary on the above mentioned report by Rickes Associates. In general, MassArt concurs with the findings of the report and offers the following comments:

General

The conclusions of the report are consistent with MassArt's understanding of its space utilization, which is that any surplus of space is largely the result of poor space configuration as Massart conducts its mission in a series of inherited buildings designed for different purpose.

Significant Changes Affecting Space Utilization in Fall 2007 and Spring 2008

Since the Fall of 2005 there have been significant increases in the following factors, which have largely absorbed any underutilization of space indicated in the report;

1. Increase in Enrollment

There has been a 9.12 percent increase in enrollment as measured by unduplicated headcount (vis. Figure 1; p. 3.0 – 1 in Rickes report).

Semester	**Fall 2005**	**Fall 2007**	**% Change**
MassArt	**2,127**	**2,321**	**9.12**

2. Increase in Contact Hours

There will be an average 33 percent increase in the number of contact hours taking place in classrooms at MassArt starting in the Spring of 2008 as a result of curricular changes associated with accreditation.

Semester	**Fall 2005**	**Spring 2008**	**% Change**
Studio contact hours	4.5	6.0	33.0
Hybrid Studio/Critique	*	5.0	*
Critique contact hours	3.0	4.0	33.0
Average	**3.75**	**5.00**	**33.0**

* New in 2008

3. Increase in Friday Classes

Since the Fall of 2005 there has been a 96.8 percent increase in the scheduling of Friday classes, making Friday one of the most heavily scheduled days of the week (vis. Figure 5; p. 4.0 – 5 in Rickes report).

Meeting Day	Fall 2005	Fall 2007	% Change
Friday	31	61	96.8

Conclusion

We believe that as a result of the above factors, MassArt's space is now fully utilized. Any further increase in space utilization can come only through an increase in building efficiency made possible through significant building renovation or reconfiguration that would increase the amount of Assignable Square Feet (ASF) available within the fixed amount of Gross Square Feet (GSF) available within the overall campus building complex.

Appendix D

SUSTAINABLE DEVELOPMENT

RECOMMENDATIONS

Prepared by:

CHAN KRIEGER SIENIEWICZ, Inc.

Master Planning for State and Community Colleges

MASSACHUSETTS COLLEGE OF ART AND DESIGN

Sustainable Development

GREEN BUILDING GUIDELINES
for
Campus Development
and
Existing Facilities Improvements

June 2008

CHAN KRIEGER SIENIEWICZ

Sustainable Development

Green Building Guidelines for Campus Development and Existing Facilities Improvements:

The following sustainability guidelines for new buildings are based upon the US Green Building Council's LEED-NC version 2.2 for new construction. The goals summarized below follow the recommended design credits as established by the LEED (Leadership in Energy and Environmental Design) rating system.

The point system defined by LEED is broken down into the following categories:

- Sustainable Sites
- Water Efficiency
- Energy & Atmosphere
- Materials & Resources
- Indoor Environmental Quality
- Innovation in Design

Sustainable Sites:

Since development and construction practices are inherently destructive to the environment and local ecology, it is important to choose and develop a building site to minimize the adverse effects of new construction.

Erosion and Sedimentation Control
Site clearing and earth moving in preparation for construction can result in serious erosion problems causing degradation of property and pollution of local water bodies. An erosion control plan should be implemented prior to construction, which will minimize site erosion during and after construction, resulting in less pollution of the local environment.

Site Selection
Future site selection for growth, as outlined in the growth recommendations section of the master plan, should adhere to the following guidelines:

- Select sites that minimize wetland impact and increase impervious surfaces
- Select sites that avoid the development of land whose elevation is lower than 5' above the 100-year flood plain
- Select sites that encourage and enable pedestrian circulation and reduce the need for vehicular traffic
- Select sites that enable the improvement and reuse of existing facilities
- Select sites that maintain and preserve existing campus open space and tree coverage

As Massachusetts College of Art and Design (MassArt) has a constrained urban campus, any opportunity to accommodate expanded College programs in existing buildings or within its existing city block are preferable to developing new sites. The Campus Framework Plan's recommendation to house the new Center for Design and Media (CDM, working title) within space reclaimed from the underused Tower

portico and Auditorium while holding the site of the Gymnasium for future denser development is consistent with these sustainability principles.

Development Density and Community Connectivity
Construct or renovate buildings on previously developed sites that reinforce connections to existing communities with a minimum density of 60,000 sf per acre net, or on previously developed sites within ½-mile radius of a residential zone or neighborhood with an average density of 10 units per acre.

Brownfield Redevelopment
Develop on a site documented as contaminated (by means of an ASTM E1903-97 Phase II Environmental Site Assessment) or on a site defined as a brownfield by a local, state or federal agency.

Alternative Transportation – Public Transportation
All future planning endeavors should encourage expanded public transportation service both on the main campus and to-and-from off-campus sites. The USGBC recommendations suggest locating development within ½-mile of an existing commuter rail, light rail or subway station, or within a ¼-mile radius of one or more stops for two or more public or campus bus lines. A detailed transportation study is recommended to better understand traffic conditions and identify opportunities and recommendations to address deficiencies and make improvements for current and future campus needs.

MassArt is well served by local bus and subway lines, with stops for both in the immediate vicinity of campus. Improved coordination with local consortia, including Colleges of the Fenway and MASCO, could aid in routing local shuttle bus routes to better serve the MassArt population and further reduce automobile use.

Alternative Transportation – Bicycle Storage and Changing Rooms
In an effort to reduce pollution by encouraging less dependence on vehicular transportation, proper bicycle storage facilities should be provided. Complementary changing facilities should be provided within reasonable distance of the bicycle storage.

Improvements to the Kennedy Student Life Center and the development of service and support space in the new CDM should accommodate bicycle storage and changing facilities *(capital project names are working titles only)*.

Alternative Transportation – Low Emission & Fuel Efficient Vehicles
In an effort to reduce pollution and land development impacts from automobile use, the LEED guidelines recommend providing low-emitting and fuel-efficient vehicles for 3% of FTE occupants and preferred parking for those vehicles. Another alternative is to provide preferred parking for such vehicles for 5% of the total parking capacity.

Alternative Transportation – Parking Capacity
In an effort to reduce pollution and land development impacts from single occupancy automobile use, the LEED guidelines recommend sizing parking capacity to meet but not exceed minimum local zoning requirements and preferred parking for van pools or carpools for 5% of the total parking spaces. A detailed transportation study will help understand how to balance these goals with the needs of the demographic commuters.

As MassArt is located in a very dense urban district with several public transportation mode options, parking supply should be carefully regulated to meet needs, not provide motorist convenience. When new parking capacity is developed, it should be in structured facilities that maximize parking density, or underground to preserve buildable sites or offer landscape opportunities.

Reduced Site Disturbance
Construction disturbance should be limited to the immediate vicinity of the new building and should be decreased to the extent possible in order to help conserve the natural environment adjacent to the building. In addition, the footprint of new buildings and surrounding paving should be reduced beyond the local zoning requirements for the site.

Stormwater Management
Disturbance of natural water flows should be limited to the extent possible. This can be achieved by decreasing the rate of stormwater runoff from existing to developed conditions. At the very least, there should be no net increase in the rate and quantity of stormwater runoff in developed conditions. To help alleviate local water supply contamination, treatment systems can be implemented to filter stormwater runoff prior to it leaving the site.

The MassArt campus lies in the City of Boston's Groundwater Conservation district. It is recommended that stormwater on the site be directed into a storage facility under the central courtyard to aid in recharging the groundwater, consistent with the intent of the zoning overlay.

Reduction of Heat Islands – Non-Roof
Temperature differences between developed areas and their undeveloped surroundings should be reduced to minimize impact on human and wildlife habitats. There are various ways to reduce heat islands in the landscape. Light-colored paving materials, which reflect radiant heat, should be used wherever possible. Shade can be used to reduce heat islands on paved areas that cannot be light-colored. Vehicular access to buildings and large areas of parking may be located underground to shield them from the effects of the sun's radiant heating.

Reduction of Heat Islands – Roof
Roofing materials should be lightly colored, of high reflectance, and of high emissivity products that will reduce temperature fluctuations between developed and undeveloped portions of the site. Another method for reducing roof heat islands is to develop vegetated, or green, roofs, which reduce heat absorption on roof surfaces.

A green roof pilot program has already begun on the campus on one section of the Tower roof. A more ambitious program to create green roofs, terraces, and gardens on the stepped levels of the Tower is recommended by the Campus Framework Plan. A similar initiative would create a usable, highly-reflective roof terrace on the Kennedy Building.

Light Pollution Reduction
Every effort should be made to keep exterior and interior light from leaving the immediate vicinity of the building and the site. While safety

should not be compromised, exterior light levels should not exceed standard requirements. In addition, interior and exterior lighting should be designed to keep direct-beam illumination from leaving the immediate site.

Streetscape and open space improvement projects recommended by the Campus Framework Plan provide an opportunity to select a new site lighting fixture for campus-wide use that will minimize light pollution.

Water Efficiency:

Using large volumes of water increases building operation and maintenance costs and also increases municipal delivery and treatment costs. In addition, fresh water supply, such as aquifers, rivers, and lakes can become depleted if more water is taken from them than is returned to them. Water efficiency can help to reduce costs to building owners and to the environment.

Water Efficient Landscaping
Use of potable water for landscape irrigation should be reduced or eliminated on a building site. This can be accomplished through the use of high-efficiency irrigation equipment or by using captured rainwater for irrigation.

Innovative Wastewater Technologies
Traditional wastewater systems require large amounts of potable water to function correctly, which places a burden on the fresh water supply. Greywater from fixtures and collected rainwater from the roof can be used to reduce the amount of potable water that is required to carry waste from the building. In addition, the use of special fixtures can be used to help reduce the amount of sewage and reduce the amount of water required to carry it away.

Water Use Reduction
The selection of fixtures that use lower volumes of water will help maximize water efficiency throughout the building and will help reduce municipal water costs. Water efficiency should be increased beyond the standards established in the Energy Policy Act of 1992.

Energy and Atmosphere:

Energy production and fuel consumption are generally very destructive to the environment. Many of the fuels used for energy, such as gas and coal are nonrenewable sources of energy that we must conserve for future use. There are various measures that can be taken to reduce energy use and ensure efficient use of the energy that is used within buildings.

Fundamental Building Systems Commissioning
System commissioning ensures that a building's energy systems are operating efficiently, which reduces operating and maintenance costs as well as provides a more comfortable environment for building occupants. A building system commissioning plan should be created during the design process and executed upon building completion to ensure that all building systems are functioning as they were designed. Ideally, a third-party engineer, who is not responsible for the design

of the building and its systems, should complete the commissioning plan and report.

Minimum Energy Performance
Energy efficiency reduces the burden on the environment from the extraction of fuels. Since buildings consume large quantities of energy, it is imperative to design with a strategy that will minimize overall energy use. All buildings should be design to meet minimum ASHRAE standards for energy-efficient building design.

CFC Reduction in HVAC Equipment
Ozone-depleting substances such as CFCs are widely used in Heating, Ventilating, and Air Conditioning equipment and are slowly being replaced by non-depleting substitutes. During the design phase of new buildings, equipment that does not contain CFCs or any ozone-depleting substance should be selected. In building renovation projects, a phase-out plan should be implemented, which will ensure that all CFC-based refrigerants will be removed from the building prior to the end of construction. In addition to the removal of CFCs, every attempt should be made to select HVAC equipment that does not use HCFCs as a substitute to CFCs, since HCFCs are also ozone-depleting substances.

Optimize Energy Performance
Energy saving measures should be incorporated into the design of new buildings to reduce the design energy cost beyond the baseline requirements of ASHRAE regulated components. Optimizing the building systems, including HVAC systems, the building envelope, hot water systems, and lighting systems, will reduce energy costs and preserve natural resources.

In addition to mechanical, plumbing, and electrical systems in most buildings on campus, the Framework Plan recommends replacing the entire facade of the Tower for both aesthetic and sustainability reasons. A new, energy-savvy facade design on such a large building envelope could reduce energy costs substantially.

Renewable Energy
Wherever possible, the building should use on-site renewable sources of energy to help alleviate the use of non-renewable resources. Such sources include wind, water, solar, and geothermal energy sources, all of which can reduce the total energy cost to the building owner. Since on-site renewable sources will not generally handle the energy load of a building, purchased power may also be from renewable sources.

Enhanced Commissioning
In addition to fundamental building commissioning that is described as a pre-requisite for LEED certification, the USGBC also recommends additional commissioning, by an independent agent, to be performed during the design phase of a project. This is a quality control process that involves the design team, the owner, the maintenance staff, the occupant, the contractor and the mechanical, electrical and plumbing sub-contractors, and includes the review of submittals by the Commission Agent.

Measurement and Verification
While initial building commissioning will ensure that all systems are operating efficiently and as designed, over long periods of time

the system efficiency may be reduced. Providing for long-term measurement and verification of systems in the design plan will ensure that all systems are operating as designed into the future.

Materials and Resources:

The process of manufacturing building materials is detrimental to the natural environment. Everything from extraction, processing, and transportation has an effect on the environment. Assigned architects should be made aware of this issue and should incorporate materials that have a reduced effect on the environment.

Storage and Collection of Recyclable Waste
Recycling has become an integral part of American culture over the past few years, however most people are more apt to recycle when the facilities are convenient. Since recycling reduces the waste sent to landfills, it saves landfill cost and helps improve the environment. Recycling locations should be incorporated into all buildings and should be located so they are easily accessible.

The issue of recycling is especially important at art and design schools, where the use (and often waste) of recyclable materials is exceptionally high. The creation of several nodes of common space throughout the campus provides an excellent vehicle by which to deploy convenient recycling stations close to the studios where materials are being used.

Building Reuse
Reusing building components alleviates the negative impact on the environment and reduces the cost of new materials. When renovating buildings, the reuse of existing components should be maximized.

Construction Waste Management
The construction process is extremely wasteful by nature and sends large quantities of material to landfills. A Construction Waste Management plan should be developed and implemented to recycle or salvage as much construction, demolition, and land-clearing debris as possible.

Resource Reuse
In addition to sending construction debris to salvage yards, salvaged or refurbished materials should be considered during the design phase to help reduce the amount of waste sent to landfills.

Recycled Content
Many construction materials contain recycled content and companies are continuously introducing new materials made from recycled content. During the design phase of any new or renovated building, such materials should be considered whenever possible.

Local and Regional Materials
Reduce the negative effects of transportation on the environment by specifying materials that are extracted and manufactured locally. Choosing local materials reduces the stress on the environment and improves the local economy.

Rapidly Renewable Materials
Choosing materials that renew themselves in less than 10 years helps reduce the adverse effects that harvesting slow-renewing building materials has on the environment and helps reduce the loss of materials that take longer to renew themselves. Whenever possible, select products that renew rapidly.

Certified Wood
Forests are an important part of global environmental health. Many forest-extracting practices are detrimental to the sustenance of forests and reduce the quality of the World's air and water supply. The Forest Stewardship Council provides guidelines for the proper harvesting are renewal of forests. FSC-certified wood products should be considered during the design phase of new construction and renovations of existing buildings.

Indoor Environment Quality:

Americans spend a majority of their time indoors and, as a result, the quality of the indoor environment has a significant impact on health, productivity, and quality of life. There are a number of things that can be done to help improve the quality of the indoor environment.

Minimum Air Quality Performance
Proper ventilation is an important part of maintaining air quality within buildings. All buildings should adhere to the minimum requirements of ASHRAE's Ventilation for Acceptable Indoor Air Quality. Increasing the ventilation effectiveness (E) as much as possible will help ensure proper airflow.

Environmental Tobacco Smoke Control
Every effort should be made to minimize exposure of building occupants, indoor surfaces, and ventilation air distribution systems to Environmental Tobacco Smoke. The most effective way to achieve this is to prohibit smoking in all buildings, and to locate designated smoking areas at least 25 feet away from entries, outdoor air intakes and operable windows.

Outdoor Air Delivery Monitoring
Permanent monitoring systems that provide feedback on ventilation system performance should be installed to ensure that systems maintain design minimum ventilation requirements. This monitoring system will help sustain occupant comfort and well-being. These systems will monitor Carbon Dioxide concentrations within all densely occupies spaces as well as the ability to provide a direct outdoor airflow measurement device capable of measuring a minimum outdoor airflow rate.

Carbon Monoxide Monitoring
Some building systems produce carbon monoxide as a waste product, which is harmful to building occupants. A permanent carbon monoxide monitoring system should be installed to reduce the potential for illness within the building.

Increased Ventilation
The goal of this particular recommendation is to provide additional outdoor air ventilation to improve air quality for improved occupant comfort, well-being and productivity. The guideline recommends

providing outdoor air ventilation rates to all occupied spaces by at least 30% above the minimum rates required by ASHRAE standards for mechanically ventilated spaces. For naturally-ventilated spaces, the recommendation is to design natural ventilation systems that meet the standards set forth in the “Carbon Trust Good Practice Guide 237.

Construction IAQ Management Plan
Air quality not only affects a building’s end users, but it also affects users during the construction process. A Construction Air Quality Management Plan should be implemented to maintain minimum air quality levels through the use of filtering and ventilation. In addition, a two-week “flush-out” period after the end of construction allows for air contaminants to be reduced and will allow high-emitting products to off-gas prior to occupancy.

Low-Emitting Materials
Many building materials contain compounds that have a negative effect on air quality and can cause illness in building occupants. Whenever possible, low-emitting materials should be selected to reduce the negative effects of these products. Examples of materials that can be purchased in low-emitting versions include adhesives, paints, carpets, and composite wood products.

Indoor Chemical and Pollutant Source Control
Buildings should be designed to reduce cross-contamination of regularly occupied spaces with chemical pollutants, such as janitor closets and copy rooms. Such spaces should be closed off from other occupied spaces. Permanent entry systems should be installed to capture dirt and other pollutants. Finally, special basins and drains should be provided for disposal of liquid waste in areas where chemicals are used. These strategies help reduce the contamination of spaces occupied by humans and improve of the quality of life for building occupants.

Art and design schools use a diversity of potentially hazardous chemical substances including paints, solvents, film development chemicals, ceramic glazes, and dyes, therefore pollutant monitoring and coordination is an especially important sustainability concern.

Controllability of Systems
Occupant productivity and comfort is related to their ability to control the systems to meet their health and comfort needs. To the extent possible, personal controls for thermal comfort, ventilation, and lighting systems should be provided to accommodate varying occupant needs.

Thermal Comfort
Systems should be designed to maintain a thermally-comfortable environment to improve occupant productivity and overall health. While some specialized building types require different conditions, ASHRAE provides standards for humidity and temperature control for human occupied spaces.

Daylight and Views
Spaces that have significant levels of natural light create a more comfortable and productive environment for building occupants. In addition, daylight reduces the energy costs associated with heating and lighting. Daylight and views provide occupants with a connection

to their environment creating a more unified neighborhood and a more productive environment. Every attempt should be made to incorporate daylight and views into each space regularly used by building occupants.

Some types of programs in an art and design institution work best in locations that are isolated from daylight like computer labs, screening rooms, and black box performance spaces, while others require a balanced source of natural light like painting studios. It is important to array programs throughout the campus in spaces best suited to the levels of necessary natural light.

A significant element of the Campus Framework Plan is the extraction of internal circulation from windowless corridors to wide, glazed atria along principal campus open spaces, providing improved views and facilitating a better sense of orientation.

Innovation and Design Process:

LEED Accredited Professionals
It is recommended that in order to ensure the design and execution of the sustainable goals identified above, as described within the USGBC LEED-NC reference guide, a LEED-accredited professional should be involved in the design of new construction and renovation projects. It is also recommended that the construction team also have a LEED-accredited professional involved in the process to ensure the implementation of the recommended practices and the proper documentation of the various sustainable components.

Innovation in Design
In addition to the specific LEED credits summarized above, the USGBC also encourages innovation in design and encourages creative approaches to augmenting or exceeding the goals established in the LEED rating system. These can include design innovations, construction innovations, decisions made by an owner or the team collectively. This component of the rating system also recognizes design and performance that greatly exceeds the standards established by the USGBC in the LEED rating system.

All of the goals and recommendations described above are described in greater detail, along with the USGBC requirements for documentation, in the LEED-NC V.2.2 Reference Guide, published in October of 2005 by the US Green Building Council.

Appendix E

MECHANICAL AND PLUMBING SYSTEMS

FINAL REPORT

A. COLLINS BUILDING

B. EAST BUILDING

C. GLASS HOT SHOP

D. GYMNASIUM BUILDING

E. KENNEDY BUILDING

F. NORTH BUILDING

G. SOUTH BUILDING

H. TOWER BUILDING

Prepared by:

VAV INTERNATIONAL, Inc.

A. Collins Building:

1. Existing Conditions Survey, General:

a. General Photos:



This building was totally renovated in 1990. Note the tremendous number of exhaust fans on roof.

b. CAMIS Summary Data:

- Gross Floor Area- 62,335 GSF.
- Total Replacement Value- $14.9 million.
- Construction Type- Steel frame w/ Infill Masonry Shear walls.
- Year Constructed- 1910.
- Number of Floors- 3 + Basement.
- Mech. System Condition- Good.

2. Existing Conditions Survey, Mechanical:

a. Photo Essay:


L&R- roof is filled with exhaust fans, with just a few H&V make-up air units.


L- most direct gas fired make-up air units are located on lower roof; these units are nearly 100% efficient but produces extremely high level of Carbon Dioxide; when they are working perfectly only a trace amount of Carbon Monoxide and Formaldehyde gas, but under less than ideal conditions, the rate can increase.

b. Summary Assessment:

- The entire building is heated and ventilated only, without any air conditioning. The system was installed in 1990, making it about 17 years old, therefore, in general terms the system can last another 8 years. It is our opinion that direct gas fired make-up air units may not be the best application for this type of academic building. For general occupied educational spaces, desired Carbon Dioxide concentration is at or below 1000 ppm. Since this type of direct fired equipment at 70F temperature rise during winter can produce Carbon Dioxide at around 3,000 ppm, we do not consider them to be appropriate means to assure a reasonable indoor air quality. Indoor air quality should be monitored and the unit should be replaced with indirect type or steam heated type: **Priority is HIGH/Medium; rough estimate is $0.3 million to $0.6 million**.
- With such a high rate of exhaust, a heat recovery system should be considered to meet the State mandated 20% energy reduction by year 2012. A coil run around type is the only viable method since locations of exhaust fans and make-up air units are quite far apart; but congested roof area may make this option quite difficult. **Priority is Medium; rough estimate is unknown at this time**.

3. Existing Conditions Survey, Plumbing & Fire Protection:

a. Plumbing:

- Fixtures have been maintained and are in good working order.
- No known water piping or waste & vent line problem has been indicated.
- Emergency eye wash and showers are not ANSI/Code compliant tempered type should be installed for safety. **Priority is HIGH; rough estimate is $0.1 million.**
- Lab waste neutralization system- NA.
- Photo Essay:

Jewelry shop's gas piping was recently completed with modern flame arresters for the welding torches and with safety shut off controls; engineer of record being VAV International, and all work being done with in-house staff.

b. Fire Protection:

- Building is fully sprinklered complete with stand pipes.
- Photo Essay:

4. COLLINS BUILDING UPGRADES:

a. Summary study identifies window replacement and only a minor infrastructure upgrade with a total construction cost estimate of $0.6 million.

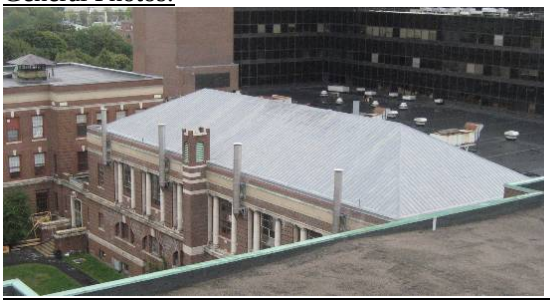
b. Majority of the spaces are not air conditioned and this study assumes that it will remain so. But minimum amount of $0.7 million of additional funding would be required to add emergency eye wash system and to replace the direct gas fired units, as discussed hereinbefore.

c. Additional funding would be required in order to meet the State mandated 20% energy reduction by year 2012.

B. East Building:

1. General:

a. General Photos:




L- Viewed from South Building roof, with Tower in the background. R- Viewed from Collins Building; note the four exhaust stacks.

b. CAMIS Summary Data:

- Gross Floor Area- 39,450 GSF.
- Total Replacement Value- $8.9 million.
- Construction Type- Steel frame w/ Infill Masonry Shear walls.
- Year Constructed- 1910.
- Number of Floors- 3 + Basement.
- Mech. System Condition- Poor.

2. Mechanical:

a. Photo Essay:


Entire upper level is the Print Making Room. L- Note the heated and ventilated supply ductwork along the right wall; note the source capture exhaust hoods over printing devices

utilizing potentially harmful chemicals, note the vertical ductwork and in-line exhaust fan. R- Note other exhaust fans along perimeter walls. The ventilation system is very rarely used due to its extremely high noise level. At the time of visit, we observed only a mild solvent odor.


L- Lower level serves the Film Department. R- Film editing class room served by inadequate air conditioning equipment; with the class in session and equipment running, the space is completely unbearable; adjacent space is the film storage space which has similar condition and is posing the risk of damaging the valuable films.


Lower level mechanical room showed two 4-ton Trane split AC units serving the Film Department. L- One unit was functional. Second unit has been out of service for a while with a bad fan motor; waiting for electrician to replace the motor.

b. Summary Assessment:

- The Print Making Shop H&V system is in good working order but its high noise level makes it incompatible with classroom environment. The system should be retrofitted with VFDs so that the system can be run at low speed continuously to provide the minimum ventilation rate. Add low elevation exhaust grilles to exhaust heavier than air volatile organic compound (VOC) used in this class. **Priority is HIGH; absolute minimum rough estimate is $40,000 to $60,000.** But if the State mandated 20% energy reduction by year 2012 is to be met, energy recovery system needs to be integrated, with a rough estimated cost of **$0.3 million**.
- Film Department AC unit needs to be repaired immediately, and interior zone system needs to be added with Code mandated ventilation. **Priority is HIGH; rough estimate is $10,000 to $15,000.**

3. Plumbing & Fire Protection:

a. Plumbing:

- Fixtures have been maintained and are in working order.
- No known water piping or waste & vent line problem has been indicated.

- Emergency eye wash and showers were not observed. (Not the ANSI tempered type, and should be upgraded for safety. **Priority is High; rough estimate is $0.1 million.**)
- Lab waste neutralization system- NA. No-dump policy is in place and enforced to prevent dumping of chemicals into sanitary system.

b. Fire Protection:
- Building is not sprinklered.
- A full NFPA 13 wet sprinkler system should be added; **Priority is Medium; rough estimate is $0.4 million.**
- Photo Essay: NA

4. EAST BUILDING MODERNIZATION:

a. New addition of 24,250 SF is slated circulation spine, with estimated construction cost of $6.4 million. M/P/FP portion of this addition would be around $1.3 million.

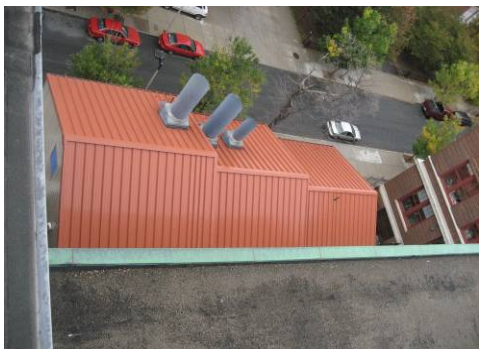
b. Fine Arts Studio upgrade is identified as being 25,750 SF with construction budget of $3.3 million. M/P/FP portion of this work would be around $0.7 million.

c. Existing building is not currently sprinklered and needs a new system added. Print Shop needs ventilation upgrade with sound treatment and heat recovery. Remaining area is not fully conditioned and we are assuming that this will remain this way. M/P/FP portion of this work would be around $0.8 million.

C. Glass Hot Shop Building:

1. Existing Conditions Survey, General:

a. General Photos:

Roof view of the Glass Hot Shop. Note the 3 exhaust fan stacks. This project was one of the earlier DCAM design-build project, using pre-engineered metal building. Mechanical Engineer of record was VAV Int'l.

b. CAMIS Summary Data:
- Gross Floor Area- 2,500 GSF.
- Total Replacement Value- $0.7 million.
- Construction Type- Light steel frame pre-engineered metal building.
- Year Constructed- 1991.
- Number of Floors- 1, No Basement.
- Mech. System Condition- Fair.

2. Existing Conditions Survey, Mechanical:

a. Photo Essay:

Note the heat capture hoods above glass shop's Glory Hole ovens connecting to three 2-speed exhaust fans, and adjustable supply grilles directed toward users to provide industrial foundry style spot cooling; this unit is inoperable. Air handling units have return air capability so that during winter, exhaust rates can be reduced and return air utilized to temper outside make-up air. The original DCAM RFP dictated exhaust rate was found to be too high, so the rates were dramatically reduced about 10 years ago. Supplementary heating is provided by steam unit heaters.

b. Summary Assessment:

- The system is in fair shape but number of upgrades need to be made including repair to the air handling systems, air balancing, and DDC controls. **Priority is Medium; rough cost estimate is $0.1 million.**

3. Existing Conditions Survey, Plumbing & Fire Protection:

a. Plumbing:

- Limited system has been maintained and is in working order.
- No known water piping or waste & vent line problem has been indicated.
- Emergency eye wash and showers- Is not the ANSI tempered type, and should be upgraded for safety. **Priority is HIGH rough estimate is $30,000.**
- Photo Essay: NA.

b. Fire Protection:

- Building is not sprinklered, and none required by Code.

D. Gymnasium Building:

1. Existing Conditions Survey, General:

a. General Photos:

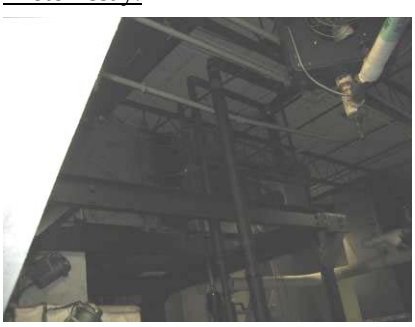
Roof viewed from South Building roof. The building is situated between black Tower Building beyond and East Building's sloped roof in the foreground. Note numerous exhaust fans, and very old and rusty mechanical equipments on its flat rubber membrane roof.

b. CAMIS Summary Data:

- Gross Floor Area- 72, 250 GSF.
- Total Replacement Value- $16.4 million.
- Construction Type- Steel frame w/ Infill Masonry Shear walls.
- Year Constructed- 1967.
- Number of Floors- 3 + Basement.
- Mech. System Condition- Good.

2. Existing Conditions Survey, Mechanical:

a. Photo Essay:



L- Unit heaters are not operational. R- Heat exchangers are not operational and are abandoned in place.

L- Abandoned hot water pumps. C- Operable windows are the only means of ventilation. R- Abandoned pneumatic control compressor.


L&R- only 1 of 3 H&V unit (nearly 50 years old!) is working… it is shaking violently and making horrific grinding noise.

b. Summary Assessment:
- Nothing is working; no heat. **Rough estimate is NA since this building is recommended to be torn down.**

3. Existing Conditions Survey, Plumbing & Fire Protection:

a. Plumbing:
- Most fixtures are working.

- Domestic hot water tanks are abandoned.
- **Rough estimate is NA since this building is recommended to be torn down.**

b. Fire Protection:
- Building is not sprinklered.
- **Rough estimate is NA since this building is recommended to be torn down.**

E. Kennedy Building:

1. Existing Conditions Survey, General:

a. General Photos:

b. CAMIS Summary Data:

- Gross Floor Area- 156,000 GSF.
- Total Replacement Value- $37 million.
- Construction Type- Steel frame w/ Infill Masonry Shear walls.
- Year Constructed- 1965.
- Number of Floors- 6 + Basement.
- Mech. System Condition- Good. (MCA actually rated "Poor")

2. Existing Conditions Survey, Mechanical:

a. Photo Essay:

Two 30-ton air cooled condensing units serving the Dining Area's 60-ton capacity VAV AHU was added about 5 years ago, but is undersized and cannot provide adequate cooling when outside temperature rises above 85F. VAV terminals have hot water reheat coils. Kitchen is served by a separate 10-ton split DX system. A plan is in place to renovate the ground floor area including the Dining and the Bookstore.



L- Abandoned greenhouse on roof. C- A new 7-1/2 ton gas/electric Trane rooftop unit serves the Digital Lab. R- Trane RAJCC-806 air cooled condensing unit in foreground with a rooftop air handling unit beyond.

b. Summary Assessment:

- Central plant steam is converted to hot water for the reheats, air handling unit heating coils, and perimeter fin tube radiation. Existing system is now 42 years old and is way past its expected useful life. Ventilation system comprised of H&V units but is no longer operational. Window AC units have been added in some spaces.
- There are limited number of split type DX cooling units on 6th floor, but the remainder of this building is not air conditioned, and does not have Code required ventilation in interior spaces.
- A small expansion plan of the current Bookstore with modifications to the Dining area is being planned.
- Replace the entire HVAC system, with exception of the Dining Room. Augment the Dining Room system: **Priority is HIGH/Medium/ Low; rough estimate is $3.5 million to $5 million.**

3. Existing Conditions Survey, Plumbing & Fire Protection:

a. Plumbing:
- Fixtures have been maintained and are in good working order.
- No known water piping or waste & vent line problem has been indicated.
- Photo Essay: NA.

b. Fire Protection:
- Building is fully sprinklered.
- Photo Essay: NA.

4. KENNEDY STUDENT LIFE CENTER (working title for project)**:**

a. This project's construction cost estimate has been identified as $6.8 million.

b. Totally new M & P system is envisioned, with minor modifications to the FP system.

c. M/P/FP system construction cost is estimated to be around $1.5 million.

5. KENNEDY BUILDING UPPER FLOORS MODERNIZATION:

a. This project's floor area is identified as being 76,300 SF with construction cost estimate as being $9.5 million.

b. Mostly new M system is envisioned, with only a limited existing system remaining. P system upgrade would be defined after programming has been defined. A minor modifications to the FP system is envisioned in this otherwise fully sprinklered building.

c. M/P/FP system construction cost is estimated to be around $2.5-$3.0 million.

F. North Building:

1. Existing Conditions Survey, General:

a. General Photos:

b. CAMIS Summary Data:
- Gross Floor Area- 79,300 GSF.
- Total Replacement Value- $18.9 million.
- Construction Type- Steel frame w/ Infill Masonry Shear walls.
- Year Constructed- 1906.
- Number of Floors- 3 + Basement.
- Mech. System Condition- Adequate.

2. Existing Conditions Survey, Mechanical:

a. Photo Essay:



L&C- Steam boilers were replaced Cleaver Brooks dual fuel (gas/#2 oil) type in 1996. Two CB1200 500 15 is rated for 20,411,600 BTUH input; one CB1200 350 15 is rated for 14,288,100 BTUH input. Boilers are operated on gas mostly. R- Boilers were opened up for inspection prior to coming heating season.



L&C shows boiler room combustion air and ventilation systems; uninsulated deck is acting as a radiant floor whenever boilers are operating and results in space above to be overheated all the time; better ventilation and floor insulation may be required. R- Roof shot of the building from the Tower low roof, showing a total absence of any mechanical equipment, except for the boiler stack.



L- Auditorium is used for performing arts, was renovated recently with VAV Int'l being the mechanical engineer of record. C&L- shows HVAC system located in basement, with fresh air intake through areaway facing the courtyard, chilled water from Tower Building chiller plant; over sized chilled water line was brought over for future. Plant steam was utilized to converted to hot water with 40% PG for freeze protected heating.



L- This beautiful Studio across from the Auditorium was finished at the same time as the Auditorium, but sadly due to budget constraints no mechanical system upgrade was made; the space is often used as reception space for the events in Auditorium, and even with a moderate crowd, the condition becomes unbearable quickly. C- Showing the space with steam radiator and operable windows, which is typical for all the spaces in this building? R- Corridor between the Auditorium and the Studio; again remained without any ventilation being added due to budget constraints.

b. Summary Assessment:
- The entire building mechanical system, with exception of the Auditorium space and some failed parts which have been replaced, is the original.
- Although there are no records, we suspect that the current system may have replaced the original at or around 1940 to 1950s. At best, this system is nearing 60 years of age, a several times past its useful service life by any standards. **Priority is HIGH; rough estimate is $1.8 million to $2.5 million.**

3. Existing Conditions Survey, Plumbing & Fire Protection:

a. Plumbing:
- Fixtures have been maintained and are in working order but would need replacement.
- No known water piping or waste & vent line problem has been indicated. Potable water and hot water lines are undersized and do not deliver adequate flow.
- Original water feed from the street had to be capped off this year. With City permission, potable water is now back fed from the East (Old Gym) Building with a 2" line. Decision on the East Building's future will impact this building's city water supply.
- System: **Priority is Medium; rough estimate is $0.3 million to $0.8 million.**

b. Fire Protection:
- Building is only partially sprinklered.
- System: **Priority is Medium; rough estimate is $0.3 million to $0.5 million.**

4. NORTH BUILDING MODERNIZATION :

a. Total modernization construction cost is listed as $5.9 million.

b. With exception of the Auditorium, the entire mechanical system is the original and needs replacement. At least all the plumbing fixtures need to be replaced with low flow types. Building is only partially sprinklered so a full coverage would be required.

c. M/P/FP system upgrade cost is estimated to be around $3.1 million.

d. Boiler plant is large enough to serve the entire campus, but the steam piping distribution need to be replaced soon.

G. South Building:

1. Existing Conditions Survey, General:

a. General Photos:

b. CAMIS Summary Data:
- Gross Floor Area- 98,000 GSF.
- Total Replacement Value- $23.6 million.
- Construction Type- Steel frame w/ Infill Masonry Shear walls.
- Year Constructed- 1906.
- Number of Floors- 3 + Basement.
- Mech. System Condition- Adequate (MCA rates "None").

2. Existing Conditions Survey, Mechanical:

a. Photo Essay: NA.

b. Summary Assessment:
- Original steam radiators for heat and operable windows for ventilation. Aside from the above renovated spaces, the entire mechanical system needs replacement: **Priority is HIGH; rough estimate is $2 million to $3 million.**

3. Existing Conditions Survey, Plumbing & Fire Protection:

a. Plumbing:
- Fixtures have been maintained and are in working order. But they are all original vintage and the entire system needs to be replaced. **Priority is Medium; rough estimate is $1.0 million to $1.5 million.**

b. Fire Protection:
- Building is not sprinklered.
- System: **Priority is Medium; rough estimate is $0.4 million to $0.6 million.**

4. SOUTH BUILDING MODERNIZATION:

a. The master plan study identifies 50,700 SF of space requiring modernization (not including basement), with estimated construction budget of $6.4 million.

b. Aside from small portion of the building, total replacement of mechanical system would be required. Plumbing fixtures need to be replaced. This building is not sprinklered and must have wet system added.

c. Mechanical construction cost estimate is around $2 million, Plumbing construction cost estimate is around $1.3 million, and FP construction cost estimate is around $0.5 million, for a total M/P/FP estimate of around $3.8 million.

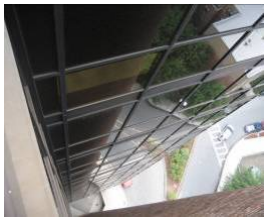
H. Tower Building:

1. Existing Conditions Survey, General:

a. General Photos:

L (Left Photo)- Signature school logo. R (Right Photo)- Viewed from Palace Road side.






L&CL (Left & Center Left Photos)- Many of the exterior louvers are ornamental. CR (Center Right Photo)- uninsulated curtain wall with single pane glass. R- Mechanical room glasses are painted and insulating board added but is falling apart.




L- Many parts of building have ceiling tiles in very poor shape. CL- unit ventilators are not sealed against its louvers… most often there's ½" gap with huge rate of outside air infiltration. CR- one of many evidence of frozen pipes in wall spaces caused by negative pressure induced cold air infiltration. R- Basement bottom stairs is badly corroded from water flooding in through areaway air intake virtually every time it rains.

b. CAMIS Tower Building Summary Data:

- Gross Floor Area- 303,000 GSF.
- Total Replacement Value- $72 million.
- Construction Type- Steel moment frame.
- Year Constructed- 1977.
- Number of Floors- 14 + Basement.
- Mech. System Condition- Good.

2. Existing Conditions Survey, Mechanical:

a. Photo Essay:

L- Typical 4-pipe unit ventilator (UV). CL- UV with front panel removed showed that it is in a remarkable shape, testament to extraordinary maintenance. CR- 2W pneumatic ACV with E-P transducer to interface to DDC system, Belimo electric actuator for dampers, and bus to DDC network; note that valves and pipes are unisulated and does not have auxiliary pan to catch the condensate drips. R- Automated Logic DDC board.

L- UV piping floor penetrations are not fire-stopped and sealed, resulting in a very high rate of cold outside air flow. CL- UV back panel showed daylight through unsecured outside intake louvers and uninsulated wall panels. CR &R- most UVs are not ducted and sealed to outside louvers, often with gap as wide as ½" with a huge rate of outside air infiltration; condition which caused severe freeze ups the first several years. R- Showing Sheetmetal angle (removed) which is used to reduce the infiltration rate.

L, C & R- Penthouse MER showing the 30 year old constant volume air handling units AC-11 and AC-12 in poor shape. AC-11 serves the South Pod from 8th through 13th floors while AC-12 serves the North Pod on floors 8 through 10. These interior parts of the building are served by antiquated and energy wasting constant volume reheat system.

L&CL- new elevator machine room 25-ton Carrier split DX AC system. CR- two steam to hot water converters; one for perimeter and one for reheat.

L- 3 hot water pumps; one for perimeter unit ventilators, one for reheat, and one for spare. CL- an A-B VFD for one of the HW pump. CR- one of two ventilation fan. R- Showing piping insulation in a very poor condition and showing condensation drips.

L&CL- 3 cell Evapco LSTA10-364 (s/n 952303; 3 x 60-HP fan motors) nominal 1,000-ton capacity (needs to be confirmed) forced draft cooling tower was installed 10 years ago within the existing structure to replace the old tower. One fan motor was just replaced. Condenser water piping is the original and are showing numerous leakages.

L- Trane 420-ton electric centrifugal chiller. C- TecoChill gas fired engine driven chiller; it is a twin set of two GM V8 based automotive engine each driving a screw compressor; had very troublesome record for first few years but now is fixed and operational but requires very high maintenance. Both chillers were installed 10 years ago to replace the original two 500-ton steam absorption chillers; only one needs to run on a partial load to meet Tower Building and North Building Auditorium cooling demands. R- 6 pumps; 3 chilled water pumps each at 50-HP; 3 condenser water pumps each at 60-HP.

L- Showing opened up wall cavity necessitated to repair numerous freeze-up problems. C- Lobby unit AHU is located in basement; this shows an outside intake plenum connected to an areaway… street water comes in overloads the drain and readily pours into the mechanical room. R- Shows severe corroded state of basement stairs just outside the mechanical room, an evidence of years of flooding problem virtually during every heavy rain.



L&C state of Lobby AHU which is way beyond repair with its floor pan totally collapsed, and should not be operated at all and is in need of IMMEDIATE replacement. R- Corrosion is evident even on supply main ducts.

b. Summary Assessment:

- The entire system is now 30 years old and beyond the ASHRAE median service life. Most of existing duct mains and hot water mains can be reused, but all the AHUs need to be replaced with VAV units having higher percentage of outside air capacity so that Unit Ventilator's outside air intakes can be sealed off. Unit Ventilators are also 30 years old; albeit being in remarkably good shape for its age, we recommend that they be replaced with fan coil units and all outside air be brought in through AHUs. The Unit ventilators need to be removed first to blank off the louvers and to correctly add insulation to the curtain walls. Because this amount of work is required, putting back the 30 year old unit ventilators just does not make any sense. Steam piping is in poor shape and parts probably have to be replaced. Numerous interior work has been done over the past 30 years without respective mechanical modifications, resulting in many spaces to be uncomfortable and without proper Code required ventilation; in-house personnel has done their best to address many of the worst cases by making some duct changes. A major upgrade is necessary not only to make the comfort level reasonable but to dramatically reduce the energy waste and to meet the State mandated 20% energy reduction by year 2012. **Priority is HIGH; rough estimate is $6 million to $8 million.**

3. Existing Conditions Survey, Plumbing & Fire Protection:

a. Plumbing:

- Fixtures have been maintained and are in working order.
- No known water piping or waste & vent line problem has been indicated. Domestic hot water system has been found to be inadequate, thus a new gas fired heater had to be installed on the second floor.
- Emergency eye wash and showers- Not investigated.
- Lab waste neutralization system- NA.
- Photo Essay:



L- Water pressure booster system. C- 6" water service is reduced down to a very small water meter, suggesting that water demand for this building is quite low. R- Gas pressure booster system serves the Teco-Chill gas engine driven chiller.



L- steam fired domestic hot water heater has been unreliable and insufficient to meet the demand and its control system is quite erratic; a gas fired heater was added on second floor and this tank is now used as a storage. C- Drain system associated with basement outside air intake for the Lobby system backs up during moderately heavy rains.

b. Fire Protection:
- Building is fully sprinklered and has a fire pump.
- Photo Essay:


Building is fully sprinklered with NFPA13 wet system, and with a fire pump.

4. Existing Conditions Survey, Other Items Noted- refer to electrical engineer's report for details.


L- Basement air intake flooding resulted in severe corrosion of building main electrical service conduits… appears to be an issue requiring an URGENT attention. R- an OSHA required breathing apparatus is located outside the chiller room.

5. CENTER FOR DESIGN AND MEDIA (working title for project)**:**

a. Phase-I & II are listed to have construction cost estimate of $29.2 million, which includes new addition being built after Gym building has been demolished.

b. Due to extensive reconfiguring of spaces, all of the existing mechanical (M) system is assumed to require total replacement. A significant modification to the existing portion of the building Plumbing & Fire Protection (P/FP) system is expected.

c. M/P/FP system construction cost is estimated to be around $6 million.

d. A consideration must be given on whether to increase the current 820-ton chiller plant capacity to serve the entire campus.

6. UPPER TOWER MODERNIZATION:

a. Floors 4 though 13 are identified as having construction cost estimate of $34 million.

b. All of the air handling units (AHUs) needs to be replaced with new variable air volume (VAV) types, and VAV terminals need to be installed with hot water reheat coils. Perimeter unit ventilators need to be replaced with four pipe fan coil units after all of the wall louvers have been blanked off. New cooling tower is required, and condenser piping needs to be replaced. Completion of total completion to DDC controls is required. FP head relocations and minor modifications would be required. Plumbing work is limited to replacement of fixtures.

c. M/P/FP system construction cost is estimated to be around $8-$10 million.

Appendix F

ELECTRICAL SYSTEMS

FINAL REPORT

Prepared by:

THOMPSON ENGINEERING COMPANY

Thompson Engineering Company performed several walk-through inspections of the electrical systems for the campus in July and August 2007. The following are TEC's observations of the current state of the campus electrical systems.

Existing Conditions Evaluations:

There are seven building within the campus academic complex. The buildings are between 40 and 100 years old. The majority of the equipment has reached or exceeded its life expectancy of 35 to 40 years. Collins Building was renovated in 1991.

Campus/Site

Electrical Service

The two incoming underground electric services are provided by Nstar at 13.8 KV 3P3W, feeding two full height indoor metal enclosed switchgear line-up of manually operated fused switches. The 15 KV switch gear units are located in the basement electric room of the Tower Building and the other service is located in the Kennedy/South Building.

In the Tower Building electric room, the Nstar switchgear serves three switchboards.

1. Switchboard #1 - Tower Building and East Building.
2. Switchboard #2 - Collins and Gym Buildings
3. Switchboard #3 is abandoned in place.

Switchboard #1 serves the Tower Building, and East Building. The Tower switchboard is a double ended unit with two 15 KV switches, two 1500 KVA transformers, two 277/480-volt distribution section and one tie break section and the unit was manufactured by Federal Pacific. The intent of the system was to have the building served by two 13.8 KV primary circuits from the utility company to provide redundancy. One main circuit breaker has failed and has been removed, therefore only one half of the switchboard is operational. This switchboard is in very poor condition. A testing company should be engaged to determine if the switchboard including circuit breakers is functioning properly and determine if repair work is required. The live bussing in several areas of the switchboard is protected by cardboard, this is a code violation and a very serious safety hazzard.

Switchboard #2 serves the Collins and Gym Buildings. The switchboard consists of a 15 KV primary switch, 500 KVA transformer, and 277/480-volt distribution section and the unit was manufactured by General Electric. This switchboard appears to be in poor condition. A testing company should be engaged to determine if the switchboard including circuit breakers is functioning properly and determine if repair work is required.

All electrical equipment and associated feeders except the incoming Nstar feeder listed is owned and maintained by the owner. All 15KV substations, transformers, switchboards, and feeders are approximately 30 to 45 years old, it is difficult to determine the age of some equipment.

In addition, some of the 15 KV switchgear and 277/480-volt switchboard was manufactured by Federal Pacific. Federal Pacific has been out of the switchgear and switchboard business for over twenty years. Federal Pacific equipment is notorious for very poor quality and high failure rates.

One issue with Federal Pacific 15 KV switchgear is the failure of the switch to open or close. If the 15 KV switch gear was to fail, the entire campus would be shutdown for a minimum of one to two weeks for replacement.

Since a major power failure could shutdown the campus for several days, it is recommended that the College make an aggressive effort to initiate a program to replace all primary cables, 15 KV switchgear and all three 480-volt switchboards.

The emergency power for the complex is derived from two emergency generators. One generator is located outside adjacent to the Kennedy Building and serves the Kennedy and South Building. A second generator is located on the roof of the Tower Building and it is our understanding that the generator serves the rest of the campus. We were unable to find this generator, but we were informed by the owner that it does exist. It is our understanding that the emergency generators only provide emergency lighting for the buildings and emergency power to limited equipment.

Site Lighting

The site lighting system consists of wall mounted wall packs. The large majority of fixtures appear to be fairly old. It is our understanding that all campus lighting is connected to the main building electric system and the site lighting is controlled by a combination of photocells and timeclocks. TEC did not observe the lighting at night and we are unable to verify that the site lighting meets all required lighting and security code requirements.

Communication System

The campus is served by one campus wide telephone system. The telephone system is a Avaya PBX system. The campus is served by a fiber optic data network. All buildings are connected to the network and the head end servers are located in Tower.

Tower Building

Electric Services

Refer to the description under Campus Electrical Services.

Electrical Distribution

The existing electrical distribution consist of three bus duct risers that serve various floors of the building. The bus duct is existing and appears to be in poor condition. A testing company should be engaged to determine if the bust duct is functioning properly and to determine if repair work is required.

During one walk-through of the building it appeared to us that the majority of the existing panelboards and associated feeders have not been upgraded or replaced. In some selected areas of the building, we noticed that as electrical equipment was added and lighting systems were upgraded, new panelboards were installed to serve only the areas being upgraded or renovated. We observed that a new electric room was constructed approximately 5 to 10 years ago on the fourth floor to provide additional electrical capacity on several floors. Overall the panels are extremely old and inadequate, the panels do not proved any spare capacity. During a renovation project, the building will require a complete new electric service distribution system.

Emergency Light and Power System

The emergency power for the building is derived from an emergency generator located on the roof of the Tower Building. A new generator, panels and distribution was installed in 2001

The automatic transfer switch, and emergency electric panels are located on the fourteenth floor. It appears that the generator serves emergency lighting, the elevators and selected equipment.

Some existing panels were reused and most of the existing emergency lighting was reused. Per the Massachusetts Electrical Code (MEC) Article 700, the emergency life safety equipment and feeders must be installed in a 2-hour rated room isolated from the normal electric service. The existing panels do not meet this requirement.

We noticed some emergency-only lights installed in the building. In several areas of the building, the emergency-only lamps are installed inside the normal lighting fixture. Due to the emergency lamps being installed inside normal lighting fixtures, we were unable to determine if the emergency lighting system is code compliant. Based on past experience, it is doubtful that all areas are covered by emergency lighting as required by code. In addition, some areas of the building are served by self contained emergency battery lights, it is unknown if these battery lighting have been maintained properly.

Lighting and Receptacle Systems

It appears that lighting fixtures in classrooms, corridors, and offices are 2' x 2' and 2' x 4' lens troffers. Library lighting consists of 1'x4' pendent mounted fixtures. Some corridors are served by 1'x4' surface mounted strip fixtures. Some offices are served by 2'x2' parabolic fixtures. The lamps are a mix of T8 and T12 lamps. We did not find any occupancy sensors in any rooms. In all rooms including corridors, lighting fixtures are controlled by local switches. In addition, fluorescent lamps with self contained ballasts were installed in all incandescent downlights. Incandescent track lighting has been installed in some lobbies and corridors.

When areas of the building are renovated, we recommend that a new lighting system be installed consisting of lighting fixtures, switches, and occupancy sensors that meet the requirements of the State Energy Code.

There is a very limited number of receptacles in all classrooms and offices. The quantity of receptacles is insufficient for classroom and office requirements. Power strips are used to provide receptacle power in many areas. This is an extremely dangerous practice and could lead to overheating and fire incidents. As rooms have been renovated, surface metal raceways have been installed to add receptacles. A complete new receptacle branch circuit system is required in the building.

Auditorium Lighting and Sound Systems

The Auditorium lighting system consists of a Strand dimming system. The system appears to have been installed fairly recently. The dimmer rack is located on the stage with the controls located in the control booth.

The house lights consist of recessed incandescent down lights. The theatrical lighting system consists of connector strips and outlet boxes on the light pipes on catwalks. TEC did not observe the system

in operation or speak to the theater staff, but it is our understanding that the system does not meet the needs of the theater program.

The lecture hall sound system equipment appears to have been replaced at one time. There are two speakers in the auditorium, one at each side of the front of the proscenium. The system does not have a center cluster speaker which would be used for spoken word sound. The system does not appear to have an assisted listening system as required by ADA. TEC did not observe the system in operation or speak to the theater staff, but it is our understanding that the system does not meet the needs of the theater program.

Master Clock System

The building has an abandoned master clock system. The system was abandoned in place.

Fire Alarm System

The building is served by an Edwards fire alarm control panel. The fire alarm devices are a combination of Simplex and Edwards devices. The fire alarm system consists of a control panel, annunciator, manual pull stations, heat detectors, smoke detectors and horn light notification devices. The existing system does not meet the requirements of present day high rise buildings. There appears to be no fire alarm devices in the auditorium.

Per code the system should be a voice evacuation system using selected evacuation.

It appears that some of the existing fire alarm devices are either still active or abandoned in place. There are no A/V notification devices in the classrooms and minimal units in the corridors. All alarm, supervisory and trouble signals are transmitted to the campus security office. In addition, it appears that the mounting heights of some fire alarm system devices do not meet the requirements of NFPA 72 and MAAB.

During a renovation project, a new voice evacuation high rise building fire alarm system shall be installed.

Exit Signs

There are exit signs located in all paths of egress. Most of the exit signs appear to be original incandescent units.

Communications

The building is served by Avaya PBX telephone system, with telephones at all work stations.

There is typically one data outlet per classroom and one data outlet per workstation. In some of the classrooms, there is a LCD projector and associated teacher's podium. Podium includes connection for lap top computer. The data network consists of Cat 5 wiring and there is at least one IDF closet per floor. IDF closets are connected to the MDF room with multi-strand fiber optic cable. There appears to be a wireless data network in most areas of the building.

There are some PA speakers in the corridors and lobbies, however the system does not function.

Security Systems

There are security cameras in various sections of the building and the cameras appear to be monitored at the security desk. There appears to be some security intrusion alarm equipment, however it does not appear to be functioning.

Some rooms are protected by a card access system.

Gym Building and East Building

Electric Services

The building electric services emanate from the Tower Building substation. Refer to the description under Campus Electrical Services.

Electrical Distribution

During one walk-through of the building it appeared to us that the majority of the existing panelboards and associated feeders have not been upgraded or replaced. Overall the panels are extremely old and inadequate, and the panels do not provide any spare capacity. During a renovation project, the building will require a complete new electric service distribution system.

Emergency Light and Power System

The emergency power for the building is derived from an emergency generator located on roof of the Tower Building.

We noticed some emergency battery lights installed in the gym building. The units do not have wire guards and are broken. Based on past experience, it is doubtful that all areas are covered by emergency lighting as required by code. It is unknown if these battery lighting have been maintained properly.

Lighting and Receptacle Systems

The lighting fixtures in gym consist of HID pendent mounted hi-bay fixtures. The corridors, and locker rooms are served by 1'x4' surface mounted strip fixtures. Offices are served by 2'x2' lens fixtures. The lamps are a mix of T8 and T12 lamps. We did not find any occupancy sensors in any rooms. In all rooms including corridors, lighting fixtures are controlled by local switches.

When areas of the building are renovated, we recommend that a new lighting system be installed consisting of lighting fixtures, switches, and occupancy sensors that meet the requirements of the State Energy Code.

There is a very limited number of receptacles in the building and the quantity of receptacles is insufficient. As rooms have been renovated, surface metal raceways have been installed to add receptacles. A complete new receptacle branch circuit system is required in the building.

Sound System

The gym sound system equipment appears to be old and very limited in features and operation. The speakers are trumpet type speakers and probably do not provide adequate sound coverage. The

system does not appear to have an assisted listening system as required by ADA. A new sound system shall be installed when the building is renovated.

Master Clock System

The building has an abandoned master clock system. The system was abandoned in place.

Fire Alarm System

The building is served by the Edwards fire alarm control panel. The fire alarm system consists of manual pull stations, heat detectors, smoke detectors and horn/light notification devices. The building fire alarm system provide minimal protection and does not meet the requirements for ADA.

A new fire alarm system is required in the building.

Exit Signs

There are exit signs located in all paths of egress. Most of the exit signs appear to be original incandescent units.

Communications

The building is served by Avaya PBX telephone system, with telephones at all work stations.

There is typically one data outlet per workstation. It is unknown if a wireless network is located in the building.

Security Systems

There appears to be some security intrusion alarm equipment, however it does not appear to be functioning.

North Building

Electric Services

Refer to the description under Campus Electrical Services. Section of the basement and first floor were renovated in 2004

Electrical Distribution

During one walk-through of the building it appeared to us that the majority of the existing panelboards and associated feeders have not been upgraded or replaced. In some areas (basement and first floor) of the building, we noticed that as electrical equipment was added and lighting systems were upgraded, new panelboards were installed to serve only the areas being upgraded or renovated. Overall the panels are extremely old and inadequate,and the panels do not provide any spare capacity. During a renovation project, the building will require a complete new electric service distribution system.

Emergency Light and Power System

The emergency power for the building is derived from an emergency generator located outside the Collins Building.

We noticed some emergency-only lights installed in the building. In several areas of the building, the emergency-only lamps are installed inside the normal lighting fixture. Due to the emergency lamps being installed inside normal lighting fixtures, we were unable to determine if the emergency lighting system is code compliant. Based on past experience, it is doubtful that all areas are covered by emergency lighting as required by code. In addition, some areas of the building are served by self contained emergency battery lights, it is unknown if these battery lighting have been maintained properly.

Based on the condition of the existing emergency generator and emergency distribution system, a new emergency generator and new lighting and power emergency distribution systems should be installed.

Lighting and Receptacle Systems

It appears that lighting fixtures in classrooms, corridors, and offices are 1'x4' strips, 2' x 2' and 2' x 4' lens troffers. Renovated spaces are served by 2'x2' parabolic fixtures. The lamps are a mix of T8 and T12 lamps. We did not find any occupancy sensors in any rooms. In all rooms including corridors, lighting fixtures are controlled by local switches. Renovated galleries have incandescent track lighting.

When areas of the building are renovated, we recommend that a new lighting system be installed consisting of lighting fixtures, switches, and occupancy sensors that meet the requirements of the State Energy Code.

There is a very limited number of receptacles in all classrooms and offices. The quantity of receptacles is insufficient for classroom and office requirements. As rooms have been renovated, surface metal raceways have been installed to add receptacles. A complete new receptacle branch circuit system is required in the building. Receptacle coverage in the renovated spaces appears to be adequate.

Auditorium Lighting and Sound Systems

The Auditorium lighting system is an old system. The dimmer rack is located on the stage with the controls located in the control booth.

The house lights consist of recessed incandescent down lights. The theatrical lighting system consists of connector strips and outlet boxes on the light pipes on catwalks. TEC did not observe the system in operation or speak to the theater staff, but it is our understanding that the system does not meet the needs of the theater program.

The lecture hall sound system equipment appears to be an old system. There are two speakers in the auditorium, one at each side of the front of the proscenium. The system does not appear to have an assisted listening system as required by ADA. TEC did not observe the system in operation or speak to the theater staff, but it is our understanding that the system does not meet the needs of the theater program.

Master Clock System

The building has a simplex master clock system with clocks in many rooms. The system appears to be abandoned in place.

Fire Alarm System

The fire alarm system appears to have been renovated approximately four years ago. The system appears to meet the requirements of NFPA 72. The system was manufactured by Edwards EST3.

Exit Signs

There are exit signs located in all paths of egress. Some of the exit signs appear to be original incandescent units. LED exit signs are located in the areas that were recently renovated.

Communications

The building is served by Avaya PBX telephone system, with telephones at all work stations.

There is typically one data outlet per classroom and one data outlet per workstation. In some of the classrooms, there is a LCD projector and associated teacher's podium. Podium includes connection for lap top computer. The data network consists of Cat 5 wiring and there is at least one IDF closet per floor. IDF closets are connected to the MDF room with multi-strand fiber optic cable. There appears to be a wireless data network in most areas of the building.

Security Systems

There are security cameras in various sections of the building and the cameras appear to be monitored at the security desk.

Collins Building

Electric Services

Refer to the description under Campus Electrical Services.

Electrical Distribution

During one walk-through of the building it appeared to us that the majority of the existing panelboards and associated feeders were installed in 1991. Overall the panels are inadequate, and the panels do not provide any spare capacity. During a renovation project, the building will require a complete new electric service distribution system.

Emergency Light and Power System

The emergency power for the building is derived from an emergency generator located on the Tower Building roof.

The automatic transfer switch, and emergency electric panels are located in the Building normal electrical room. In addition, all emergency panels in the building are located in the same closet as the normal panels. Per the Massachusetts Electrical Code (MEC) Article 700, the emergency life safety equipment and feeders must be installed in a 2-hour rated room isolated from the normal electric service.

We noticed some emergency-only lights installed in the building. In several areas of the building, the emergency-only lamps are installed inside the normal lighting fixture. Due to the emergency lamps being installed inside normal lighting fixtures, we were unable to determine if the emergency lighting system is code compliant. Based on past experience, it is doubtful that all areas are covered by emergency lighting as required by code. In addition, some areas of the building are served by self contained emergency battery lights, it is unknown if these battery lighting have been maintained properly.

Based on the condition of the existing emergency generator and emergency distribution system, a new emergency generator and new lighting and power emergency distribution systems should be installed.

Lighting and Receptacle Systems

It appears that lighting fixtures in classrooms, corridors, and offices are 1'x4' strips, 1'x4' and 2' x 4' lens troffers The lamps are T8 lamps. We did not find any occupancy sensors in any rooms. In all rooms including corridors, lighting fixtures are controlled by local switches. Incandescent track lighting has been installed in some lobbies and corridors.

When areas of the building are renovated, we recommend that a new lighting system be installed consisting of lighting fixtures, switches, and occupancy sensors that meet the requirements of the State Energy Code.

There is a very limited number of receptacles in all classrooms and offices. The quantity of receptacles is insufficient for classroom and office requirements. As rooms have been renovated, surface metal raceways have been installed to add receptacles. A complete new receptacle branch circuit system is required in the building.

Master Clock System

There is no master clock system in the building.

Fire Alarm System

The building is served by a combination of Simplex and FCI devices. The fire alarm system consists of a control panel, annunciator, manual pull stations, heat detectors, smoke detectors and horn/light notification devices. There are no A/V notification devices in the classrooms and minimal units in the corridors. All alarm, supervisory and trouble signals are transmitted to the campus security office. In addition, it appears that the mounting heights of some fire alarm system devices do not meet the requirements of NFPA 72 and MAAB.

Exit Signs

There are exit signs located in all paths of egress. Most of the exit signs appear to be original incandescent units.

Communications

The building is served by Avaya PBX telephone system, with telephones at all work stations.

There is typically one data outlet per classroom and one data outlet per workstation. The data network consists of Cat 5 wiring and there is at least one IDF closet per floor. IDF closets are connected to the MDF room with multi-strand fiber optic cable. There appears to be a wireless data network in most areas of the building.

Security Systems

There are security cameras in various sections of the building and the cameras appear to be monitored at the security desk. The building does not have a security intrusion alarm system.

South Building

Electric Services

The building electric services emanate from the Kennedy Building substation. Refer to the description under Campus Electrical Services.

Electrical Distribution

During one walk-through of the building it appeared to us that the majority of the existing panelboards and associated feeders have not been upgraded or replaced. Overall the panels are extremely old and inadequate, and the panels do not provide any spare capacity. During a renovation project, the building will require a complete new electric service distribution system.

Emergency Light and Power System

The emergency power for the building is derived from an emergency generator located outside the Kennedy Building.

We noticed some emergency battery lights installed in the building. There appears to be some lighting fixtures connected to the generator. Based on past experience, it is doubtful that all areas are covered by emergency lighting as required by code. It is unknown if these battery lighting have been maintained properly.

Lighting and Receptacle Systems

It appears that lighting fixtures in galleries, classrooms, corridors, and offices are 1' x 4' strips and 2' x 4' lens troffers. The lamps are T8 lamps. We did not find any occupancy sensors in any rooms, except in some galleries. In all rooms including corridors, lighting fixtures are controlled by local switches. Incandescent track lighting has been installed in galleries and some lobbies and corridors.

When areas of the building are renovated, we recommend that a new lighting system be installed consisting of lighting fixtures, switches, and occupancy sensors that meet the requirements of the State Energy Code.

There is a very limited number of receptacles in the building and the quantity of receptacles is insufficient. As rooms have been renovated, surface metal raceways have been installed to add receptacles. A complete new receptacle branch circuit system is required in the building.

Master Clock System

The building does not have a master clock system.

Fire Alarm System

The building is served by Simplex devices. The fire alarm system consists of a manual pull stations, heat detectors, smoke detectors and horn/light notification devices. The building fire alarm system provides minimal protection and does not meet the requirements for ADA.

A new fire alarm system is required in the building.

Exit Signs

There are exit signs located in all paths of egress. Most of the exit signs appear to be original incandescent units.

Communications

The building is served by Avaya PBX telephone system, with telephones at all work stations.

There is typically one data outlet per workstation. There appears to be a wireless data network is located in the building.

Security Systems

There are security cameras in various sections of the building and the cameras appear to be monitored at the security desk. There appears to be some type of security system in the gallery space, we are unsure if it is operational.

Kennedy Building

Lounge and cafeteria were renovated in 2001 and the electrical systems are adequate.

Electric Services

Refer to the description under Campus Electrical Services.

Electrical Distribution

During one walk-through of the building it appeared to us that the majority of the existing panelboards and associated feeders are the original panels from the 1960's. A few new panels were installed during a 1991 renovation project. Overall the panels are inadequate, and the panels do not provide any spare capacity. During a renovation project, the building will require a complete new electric service distribution system.

Emergency Light and Power System

The emergency power for the building is derived from an emergency generator located outside the Kennedy Building.

The automatic transfer switch, and emergency electric panels are located in the Building normal electrical room. In addition, all emergency panels in the building are located in the same closet as the normal panels. Per the Massachusetts Electrical Code (MEC) Article 700, the emergency life safety equipment and feeders must be installed in a 2-hour rated room isolated from the normal electric service.

We noticed some emergency-only lights installed in the building. In several areas of the building, the emergency-only lamps are installed inside the normal lighting fixture. Due to the emergency lamps being installed inside normal lighting fixtures, we were unable to determine if the emergency lighting system is code compliant. Based on past experience, it is doubtful that all areas are covered by emergency lighting as required by code. In addition, some areas of the building are served by self contained emergency battery lights, it is unknown if these battery lighting have been maintained properly.

Based on the condition of the existing emergency generator and emergency distribution system, a new emergency generator and new lighting and power emergency distribution systems should be installed.

Lighting and Receptacle Systems

It appears that lighting fixtures in classrooms, corridors, and offices are CFL down lights, 1'x4' strips, 1'x4' and 2' x 4' lens and parabloic troffers The lamps are T8 lamps. We did not find any occupancy sensors in any un-renovated rooms, sensors are located in renovated rooms. In all rooms including corridors, lighting fixtures are controlled by local switches. Incandescent track lighting has been installed in some lobbies and corridors. Track lighting in the cafeteria.

When areas of the building are renovated, we recommend that a new lighting system be installed consisting of lighting fixtures, switches, and occupancy sensors that meet the requirements of the State Energy Code.

There is a very limited number of receptacles in all classrooms and offices. The quantity of receptacles is insufficient for classroom and office requirements. As rooms have been renovated, surface metal raceways have been installed to add receptacles. A complete new receptacle branch circuit system is required in the building.

Master Clock System

There is no master clock system in the building.

Fire Alarm System

The building is served by a combination of Harrington devices. The fire alarm system consists of a control panel, annunciator, manual pull stations, heat detectors, smoke detectors and horn/light notification devices. There are no A/V notification devices in the classrooms and minimal units in the corridors. All alarm, supervisory and trouble signals are transmitted to the campus security office. In addition, it appears that the mounting heights of some fire alarm system devices do not meet the requirements of NFPA 72 and MAAB.

Exit Signs

There are exit signs located in all paths of egress. Most of the exit signs appear to be original incandescent units. Led exit signs have been installed in renovated areas.

Communications

The building is served by Avaya PBX telephone system, with telephones at all work stations.

There is typically one data outlet per classroom and one data outlet per workstation. The data network consists of Cat 5 wiring and there is at least one IDF closet per floor. IDF closets are connected to the MDF room with multi-strand fiber optic cable. There appears to be a wireless data network in most areas of the building.

Security Systems

There are security cameras in various sections of the building and the cameras appear to be monitored at the security desk. The building does not have a security intrusion alarm system. Card readers in some areas

Major Renovation and Modernization - Electrical Scope of Work:

Estimated electrical construction cost do not include escalation cost.

Center for Design and Media (working title for project) - Stage 1

Estimated Electrical Construction Cost: $35.00 per square foot

1. Provide the required demolition services. When new electric service is installed, disconnect and remove existing double ended 15 KV switchboard, transformer and 480-volt distribution.

2. Furnish and install new a 15KV load center consisting of two primary switches, 13.8 KV primary-277/480-volt secondary transformer, main circuit breaker cubicle and 480-volt distribution section. Provide metering that is compatible with Owner's energy management system. This 15 KV load center will service phase 1 and phase 2.

3. Furnish and install underground 15 KV primary feeders from the nearest existing manhole to the new 15 KV load center. Provide new conduits as required.

4. Furnish and install the required lighting and power panels, including the associated feeders in conduit and step down transformers. Lighting panels shall be installed in storage rooms and electric closets. Power panels shall be located in electric room and mechanical rooms.

5. Furnish and install new 208-volt and 480-volt bus duct risers.

6. Furnish and install all heating, ventilating, air-conditioning, and plumbing power wiring, magnetic starters and disconnect switches. All power wiring shall be installed in conduit.

7. Furnish and install the power wiring in conduit for the elevator.

8. Furnish and install power wiring in conduit for the sprinkler system fire pump, include a fire pump cubicle in load center (if required).

9. Furnish and install a MEC Article 700 life safety emergency light and power system. The system shall consist of lighting fixtures, exit signs, conduit, wire, transfer switch, supervisory relays, panelboards, and cabinets. Furnish and install a MEC Article 702 non-essential standby power system including automatic transfer switch, panelboards, conduit and wire. The existing switchboard and transfer switches installed in 2001 shall be reused.

10. Furnish and install a lighting and receptacle system in each of the areas within the building including all branch circuit wiring from the respective panelboards. All lighting and receptacle branch circuit wiring installed exposed, concealed in concrete floor slabs, and underground shall be installed in conduit raceways. All wiring in concealed locations shall be type MC cable.

11. Furnish and install energy efficient fluorescent lighting in the building. The lighting design shall meet the requirements of the State Energy Code and LEED Mass Plus. In general, fluorescent-type lighting fixtures shall be installed in all areas throughout the building. Provide track lighting in all art studios.

12. Furnish and install an internally illuminated exit sign system at all paths of egress within the buildings.

13. Furnish and install a master clock system.

14. Furnish and install a security camera system. Recording and monitoring equipment to be located in security office.

15. Furnish and install pole-mounted and wall mounted lighting fixtures for walkways and parking areas.

16. Furnish and install a complete addressable-type high rise fire alarm system throughout the building. The system shall consist of pull stations, smoke detectors, heat detectors, duct detectors, annunciator, standby batteries, and speaker with strobe lights. All fire alarm system wiring shall be installed in conduit raceways.

17. Furnish and install a new sound system in the auditorium. The system shall consist of sound rack, amplifiers, equalizer, auto-mixer, processors, left/right speakers, center cluster speakers, wireless microphones and transmitter, assistive listening system with receivers, sound control boards, conduit, and wire.

18. Furnish and install a complete dimming system in the auditorium. System shall consists of a dimmer rack, wall-mounted control stations, control console, connector strips, outlet boxes, conduit, and wire.

19. Furnish and install a building lighting management system for all corridors, stairwells, common toilets and all other common areas. System shall consists of control panel, time-clock, relays, and low-voltage switches. All wiring to be either MC cable or installed in EMT conduit. The lighting system shall meet the requirements of the state energy code.

20. Furnish and install voice/data/cable TV system throughout the building. The system shall consist of fiber optic cable, rack, patch panels (cat 6 and fiber), cat 6 cables, jacks, device plates, outlet boxes and conduit. Furnish and install audio/visual systems in all classrooms and large lecture rooms.

21. Furnish and install lighting occupancy sensors in all toilets, storage, offices, studios and classrooms, and common rooms. The system shall be furnished with the required passive infrared sensors, ultrasonic sensors, dual technology sensors, power packs, slave packs, conduit, wire, and junction boxes.

Center for Design and Media - Stage 2

Estimated Electrical Construction Cost: $30.00 per square foot

1. Provide the required demolition services.

2. Electric service to emanate from switchboard installed under stage 1.

3. Furnish and install the required lighting and power panels, including the associated feeders in conduit and step down transformers. Lighting panels shall be installed in storage rooms and electric closets. Power panels shall be located in electric room and mechanical rooms.

4. Furnish and install new 208-volt and 480-volt bus duct risers.

5. Furnish and install all heating, ventilating, air-conditioning, and plumbing power wiring, magnetic starters and disconnect switches. All power wiring shall be installed in conduit.

6. Furnish and install the power wiring in conduit for the elevator.

7. Furnish and install power wiring in conduit for the sprinkler system fire pump, include a fire pump cubicle in load center (if required).

8. Furnish and install a MEC Article 700 life safety emergency light and power system including generator and transfer switches. The system shall consist of lighting fixtures, exit signs, conduit, wire, transfer switch, supervisory relays, panelboards, and cabinets. Furnish and install a MEC Article 702 non-essential standby power system including automatic transfer switch, panelboards, conduit and wire.

9. Furnish and install a lighting and receptacle system in each of the areas within the building including all branch circuit wiring from the respective panelboards. All lighting and receptacle branch circuit wiring installed exposed, concealed in concrete floor slabs, and underground shall be installed in conduit raceways. All wiring in concealed locations shall be type MC cable.

10. Furnish and install energy efficient fluorescent lighting in the building. The lighting design shall meet the requirements of the State Energy Code and LEED Mass Plus. In general, fluorescent-type lighting fixtures shall be installed in all areas throughout the building. Provide track lighting in all art studios.

11. Furnish and install an internally illuminated exit sign system at all paths of egress within the buildings.

12. Furnish and install a master clock system.

13. Furnish and install a security camera system. Recording and monitoring equipment to be located in security office.

14. Furnish and install pole-mounted and wall mounted lighting fixtures for walkways and parking areas.

15. Furnish and install a complete addressable-type fire alarm system throughout the building. The system shall consist of pull stations, smoke detectors, heat detectors, duct detectors, annunciator, standby batteries, and speaker with strobe lights. All fire alarm system wiring shall be installed in conduit raceways. Connect to campus fire alarm system. Fire alarm system shall be a high rise system in the Tower Building.

16. Furnish and install a building lighting management system for all corridors, stairwells, common toilets and all other common areas. System shall consists of control panel, time-clock, relays, and low-voltage switches. All wiring to be either MC cable or installed in EMT conduit. The lighting system shall meet the requirements of the state energy code.

17. Furnish and install voice/data/cable TV system throughout the building. The system shall consist of fiber optic cable, rack, patch panels (cat 6 and fiber), cat 6 cables, jacks, device plates, outlet boxes and conduit. Furnish and install audio/visual systems in all classrooms and large lecture rooms.

18. Furnish and install lighting occupancy sensors in all toilets, storage, offices, studios and classrooms, and common rooms. The system shall be furnished with the required passive infrared sensors, ultrasonic sensors, dual technology sensors, power packs, slave packs, conduit, wire, and junction boxes.

Kennedy Student Life Center (working title for project)

Estimated Electrical Construction Cost: $35.00 per square foot

1. Provide the required demolition services.

2. Furnish and install new a 15KV load center consisting of two primary switches, 13.8 KV primary-277/480-volt secondary transformer, main circuit breaker cubicle and 480-volt distribution section. Provide metering that is compatible with Owner's energy management system.

3. Furnish and install underground 15 KV primary feeders from the nearest existing manhole to the new 15 KV load center. Provide new conduits as required.

4. Furnish and install the required lighting and power panels, including the associated feeders in conduit and step down transformers. Lighting panels shall be installed in storage rooms and electric closets. Power panels shall be located in electric room and mechanical rooms.

5. Furnish and install new 208-volt and 480-volt bus duct risers.

6. Furnish and install all heating, ventilating, air-conditioning, and plumbing power wiring, magnetic starters and disconnect switches. All power wiring shall be installed in conduit.

7. Furnish and install the power wiring in conduit for the elevator.

8. Furnish and install power wiring in conduit for the sprinkler system fire pump, include a fire pump cubicle in load center (if required).

9. Furnish and install a MEC Article 700 life safety emergency light and power system including generator and automatic transfer switches. The system shall consist of lighting fixtures, exit signs, conduit, wire, transfer switch, supervisory relays, panelboards, and cabinets. Furnish and install a MEC Article 702 non-essential standby power system including automatic transfer switch, panelboards, conduit and wire.

10. Furnish and install a lighting and receptacle system in each of the areas within the building including all branch circuit wiring from the respective panelboards. All lighting and receptacle branch circuit wiring installed exposed, concealed in concrete floor slabs, and underground shall be installed in conduit raceways. All wiring in concealed locations shall be type MC cable.

11. Furnish and install energy efficient fluorescent lighting in the building. The lighting design shall meet the requirements of the State Energy Code and LEED Mass Plus. In general, fluorescent-type lighting fixtures shall be installed in all areas throughout the building. Provide track lighting in all art studios.

12. Furnish and install an internally illuminated exit sign system at all paths of egress within the buildings.

13. Furnish and install a master clock system.

14. Furnish and install a security camera system. Recording and monitoring equipment to be located in security office.

15. Furnish and install a complete addressable-type high rise fire alarm system throughout the building. The system shall consist of pull stations, smoke detectors, heat detectors, duct detectors, annunciator, standby batteries, and speaker with strobe lights. All fire alarm system wiring shall be installed in conduit raceways. Connect to the campus fire alarm system.

16. Furnish and install a building lighting management system for all corridors, stairwells, common toilets and all other common areas. System shall consists of control panel, time-clock, relays, and low-voltage switches. All wiring to be either MC cable or installed in EMT conduit. The lighting system shall meet the requirements of the state energy code.

17. Furnish and install voice/data/cable TV system throughout the building. The system shall consist of fiber optic cable, rack, patch panels (cat 6 and fiber), cat 6 cables, jacks, device plates, outlet boxes and conduit. Furnish and install audio/visual systems in all classrooms and large lecture rooms.

18. Furnish and install lighting occupancy sensors in all toilets, storage, offices, studios and classrooms, and common rooms. The system shall be furnished with the required passive infrared sensors, ultrasonic sensors, dual technology sensors, power packs, slave packs, conduit, wire, and junction boxes.

East Building Modernization

Estimated Electrical Construction Cost: $32.00 per square foot

1. Provide the required demolition services.

2. Electric service to emanate from 15 KV load center installed in the Tower Building. Furnish and install a new 277/480-volt switchboard with main circuit breaker and distribution section.

3. Furnish and install the required lighting and power panels, including the associated feeders in conduit and step down transformers. Lighting panels shall be installed in storage rooms and electric closets. Power panels shall be located in electric room and mechanical rooms.

4. Furnish and install all heating, ventilating, air-conditioning, and plumbing power wiring, magnetic starters and disconnect switches. All power wiring shall be installed in conduit.

5. Furnish and install the power wiring in conduit for the elevator.

6. Furnish and install power wiring in conduit for the sprinkler system fire pump, include a fire pump cubicle in load center (if required).

7. Furnish and install a MEC Article 700 life safety emergency light and power system including generator and transfer switches. The system shall consist of lighting fixtures, exit signs, conduit, wire, transfer switch, supervisory relays, panelboards, and cabinets. Furnish and install a MEC Article 702 non-essential standby power system including automatic transfer switch, panelboards, conduit and wire.

8. Furnish and install a lighting and receptacle system in each of the areas within the building including all branch circuit wiring from the respective panelboards. All lighting and receptacle branch circuit wiring installed exposed, concealed in concrete floor slabs, and underground shall be installed in conduit raceways. All wiring in concealed locations shall be type MC cable.

9. Furnish and install energy efficient fluorescent lighting in the building. The lighting design shall meet the requirements of the State Energy Code and LEED Mass Plus. In general, fluorescent-type lighting fixtures shall be installed in all areas throughout the building. Provide track lighting in all art studios.

10. Furnish and install an internally illuminated exit sign system at all paths of egress within the buildings.

11. Furnish and install a master clock system.

12. Furnish and install a security camera system. Recording and monitoring equipment to be located in security office.

13. Furnish and install a complete addressable-type fire alarm system throughout the building. The system shall consist of pull stations, smoke detectors, heat detectors, duct detectors, annunciator, standby batteries, and speaker with strobe lights. All fire alarm system wiring shall be installed in conduit raceways. Connect to campus fire alarm system.

14. Furnish and install a building lighting management system for all corridors, stairwells, common toilets and all other common areas. System shall consists of control panel, time-clock, relays, and low-voltage switches. All wiring to be either MC cable or installed in EMT conduit. The lighting system shall meet the requirements of the state energy code.

15. Furnish and install voice/data/cable TV system throughout the building. The system shall consist of fiber optic cable, rack, patch panels (cat 6 and fiber), cat 6 cables, jacks, device plates, outlet boxes and conduit. Furnish and install audio/visual systems in all classrooms and large lecture rooms.

16. Furnish and install lighting occupancy sensors in all toilets, storage, offices, studios and classrooms, and common rooms. The system shall be furnished with the required passive infrared sensors, ultrasonic sensors, dual technology sensors, power packs, slave packs, conduit, wire, and junction boxes.

Courtyard Landscape Enhancements

Estimated Construction Cost: $6,000 to $8,000 per lighting fixture/pole includes installation, trenching, pole base and underground wiring. It is difficult to provide a total cost without the scope of work. .

1. Furnish and install pole mounted lighting fixtures, as required.

2. Furnish and install a lighting management system for new site lighting.

3. Furnish and install new underground site lighting wiring system.

Systems, Infrastructure, and Security Projects

Estimated Electrical Construction Cost: $5.00 per square foot

1. Furnish and install new security system including panels, card readers, motion detectors, glass breaker detectors, electric locks, conduit and wire.

2. Furnish and install new security camera system including IP cameras, DVR server, monitors, conduit and wire.

3. Furnish and install all required power for the security system from emergency power sources. Provide the required lighting and receptacles for the new security office and security equipment rooms.

Collins Building Modernization - Windows, Interior stairs

Estimated Electrical Construction Cost: $5.00 per square foot

1. Furnish and install new electrical systems as required for the stair renovation..

South Building Modernization

Estimated Electrical Construction Cost: $32.00 per square foot

1. Provide the required demolition services.

2. Electric service to emanate from 15 KV load center installed in the Tower Building. Furnish and install a new 277/480-volt switchboard with main circuit breaker and distribution section.

3. Furnish and install the required lighting and power panels, including the associated feeders in conduit and step down transformers. Lighting panels shall be installed in storage rooms and electric closets. Power panels shall be located in electric room and mechanical rooms.

4. Furnish and install all heating, ventilating, air-conditioning, and plumbing power wiring, magnetic starters and disconnect switches. All power wiring shall be installed in conduit.

5. Furnish and install the power wiring in conduit for the elevator.

6. Furnish and install power wiring in conduit for the sprinkler system fire pump, include a fire pump cubicle in load center (if required).

7. Furnish and install a MEC Article 700 life safety emergency light and power system including generator and transfer switches. The system shall consist of lighting fixtures, exit signs, conduit, wire, transfer switch, supervisory relays, panelboards, and cabinets. Furnish and install a MEC Article 702 non-essential standby power system including automatic transfer switch, panelboards, conduit and wire.

8. Furnish and install a lighting and receptacle system in each of the areas within the building including all branch circuit wiring from the respective panelboards. All lighting and receptacle branch circuit wiring installed exposed, concealed in concrete floor slabs, and underground shall be installed in conduit raceways. All wiring in concealed locations shall be type MC cable.

9. Furnish and install energy efficient fluorescent lighting in the building. The lighting design shall meet the requirements of the State Energy Code and LEED Mass Plus. In general, fluorescent-type lighting fixtures shall be installed in all areas throughout the building. Provide track lighting in all art studios.

10. Furnish and install an internally illuminated exit sign system at all paths of egress within the buildings.

11. Furnish and install a master clock system.

12. Furnish and install a security camera system. Recording and monitoring equipment to be located in security office.

13. Furnish and install a complete addressable-type fire alarm system throughout the building. The system shall consist of pull stations, smoke detectors, heat detectors, duct detectors, annunciator, standby batteries, and speaker with strobe lights. All fire alarm system wiring shall be installed in conduit raceways. Connect to campus fire alarm system.

14. Furnish and install a building lighting management system for all corridors, stairwells, common toilets and all other common areas. System shall consists of control panel, time-clock, relays, and low-voltage switches. All wiring to be either MC cable or installed in EMT conduit. The lighting system shall meet the requirements of the state energy code.

15. Furnish and install voice/data/cable TV system throughout the building. The system shall consist of fiber optic cable, rack, patch panels (cat 6 and fiber), cat 6 cables, jacks, device plates, outlet boxes and conduit. Furnish and install audio/visual systems in all classrooms and large lecture rooms.

16. Furnish and install lighting occupancy sensors in all toilets, storage, offices, studios and classrooms, and common rooms. The system shall be furnished with the required passive infrared sensors, ultrasonic sensors, dual technology sensors, power packs, slave packs, conduit, wire, and junction boxes.

North Building Modernization

Estimated Electrical Construction Cost: $32.00 per square foot

1. Provide the required demolition services.

2. Electric service to emanate from 15 KV load center installed in the Tower Building. Furnish and install a new 277/480-volt switchboard with main circuit breaker and distribution section.

3. Furnish and install the required lighting and power panels, including the associated feeders in conduit and step down transformers. Lighting panels shall be installed in storage rooms and electric closets. Power panels shall be located in electric room and mechanical rooms.

4. Furnish and install all heating, ventilating, air-conditioning, and plumbing power wiring, magnetic starters and disconnect switches. All power wiring shall be installed in conduit.

5. Furnish and install the power wiring in conduit for the elevator.

6. Furnish and install power wiring in conduit for the sprinkler system fire pump, include a fire pump cubicle in load center (if required).

7. Furnish and install a MEC Article 700 life safety emergency light and power system including generator and transfer switches. The system shall consist of lighting fixtures, exit signs, conduit, wire, transfer switch, supervisory relays, panelboards, and cabinets. Furnish and install a MEC Article 702 non-essential standby power system including automatic transfer switch, panelboards, conduit and wire.

8. Furnish and install a lighting and receptacle system in each of the areas within the building including all branch circuit wiring from the respective panelboards. All lighting and receptacle branch circuit wiring installed exposed, concealed in concrete floor slabs, and underground shall be installed in conduit raceways. All wiring in concealed locations shall be type MC cable.

9. Furnish and install energy efficient fluorescent lighting in the building. The lighting design shall meet the requirements of the State Energy Code and LEED Mass Plus. In general, fluorescent-type lighting fixtures shall be installed in all areas throughout the building. Provide track lighting in all art studios.

10. Furnish and install an internally illuminated exit sign system at all paths of egress within the buildings.

11. Furnish and install a master clock system.

12. Furnish and install a security camera system. Recording and monitoring equipment to be located in security office.

13. Furnish and install a complete addressable-type fire alarm system throughout the building. The system shall consist of pull stations, smoke detectors, heat detectors, duct detectors, annunciator, standby batteries, and speaker with strobe lights. All fire alarm system wiring shall be installed in conduit raceways. Connect to campus fire alarm system.

14. Furnish and install a building lighting management system for all corridors, stairwells, common toilets and all other common areas. System shall consists of control panel, time-clock, relays, and low-voltage switches. All wiring to be either MC cable or installed in EMT conduit. The lighting system shall meet the requirements of the state energy code.

15. Furnish and install voice/data/cable TV system throughout the building. The system shall consist of fiber optic cable, rack, patch panels (cat 6 and fiber), cat 6 cables, jacks, device plates, outlet boxes and conduit. Furnish and install audio/visual systems in all classrooms and large lecture rooms.

16. Furnish and install lighting occupancy sensors in all toilets, storage, offices, studios and classrooms, and common rooms. The system shall be furnished with the required passive infrared sensors, ultrasonic sensors, dual technology sensors, power packs, slave packs, conduit, wire, and junction boxes.

Upper Tower Modernization

Estimated Electrical Construction Cost: $28.00 per square foot

1. Provide the required demolition services.

2. Electric service to emanate from Tower Building electric service installed under Center for Design and Media project.

3. Furnish and install the required lighting and power panels, including the associated feeders in conduit and step down transformers. Lighting panels shall be installed in storage rooms and electric closets. Power panels shall be located in electric room and mechanical rooms.

4. Furnish and install new 208-volt and 480-volt bus duct risers.

5. Furnish and install all heating, ventilating, air-conditioning, and plumbing power wiring, magnetic starters and disconnect switches. All power wiring shall be installed in conduit.

6. Connect emergency lighting to the existing MEC Article 700 life safety emergency light and power system Connect standby loads to the existing MEC Article 702 non-essential standby power system including automatic transfer switch, panelboards, conduit and wire.

7. Furnish and install a lighting and receptacle system in each of the areas within the building including all branch circuit wiring from the respective panelboards. All lighting and receptacle branch circuit wiring installed exposed, concealed in concrete floor slabs, and underground shall be installed in conduit raceways. All wiring in concealed locations shall be type MC cable.

8. Furnish and install energy efficient fluorescent lighting in the building. The lighting design shall meet the requirements of the State Energy Code and LEED Mass Plus. In general, fluorescent-type lighting fixtures shall be installed in all areas throughout the building. Provide track lighting in all art studios.

9. Furnish and install an internally illuminated exit sign system at all paths of egress within the buildings.

10. Furnish and install a master clock system.

11. Furnish and install a security camera system. Recording and monitoring equipment to be located in security office.

12. Furnish and install a complete addressable-type high rise fire alarm system throughout the renovated areas. The system shall consist of pull stations, smoke detectors, heat detectors, duct detectors, standby batteries, and speaker with strobe lights. All fire alarm system wiring shall be installed in conduit raceways. Connect to Tower Building fire alarm control panel.

13. Furnish and install a building lighting management system for all corridors, stairwells, common toilets and all other common areas. System shall consists of control panel, time-clock, relays, and low-voltage switches. All wiring to be either MC cable or installed in EMT conduit. The lighting system shall meet the requirements of the state energy code.

14. Furnish and install voice/data/cable TV system throughout the building. The system shall consist of fiber optic cable, rack, patch panels (cat 6 and fiber), cat 6 cables, jacks, device plates, outlet boxes and conduit. Furnish and install audio/visual systems in all classrooms and large lecture rooms.

15. Furnish and install lighting occupancy sensors in all toilets, storage, offices, studios and classrooms, and common rooms. The system shall be furnished with the required passive infrared sensors, ultrasonic sensors, dual technology sensors, power packs, slave packs, conduit, wire, and junction boxes.

Kennedy Building Upper Floors Modernization

Estimated Electrical Construction Cost: $28.00 per square foot

1. Provide the required demolition services.

2. Electric service to emanate from Kennedy Building electric service installed under previous project.

3. Furnish and install the required lighting and power panels, including the associated feeders in conduit and step down transformers. Lighting panels shall be installed in storage rooms and electric closets. Power panels shall be located in electric room and mechanical rooms.

4. Furnish and install new 208-volt and 480-volt bus duct risers.

5. Furnish and install all heating, ventilating, air-conditioning, and plumbing power wiring, magnetic starters and disconnect switches. All power wiring shall be installed in conduit.

6. Connect emergency lighting to the existing MEC Article 700 life safety emergency light and power system Connect standby loads to the existing MEC Article 702 non-essential standby power system including automatic transfer switch, panelboards, conduit and wire.

7. Furnish and install a lighting and receptacle system in each of the areas within the building including all branch circuit wiring from the respective panelboards. All lighting and receptacle

branch circuit wiring installed exposed, concealed in concrete floor slabs, and underground shall be installed in conduit raceways. All wiring in concealed locations shall be type MC cable.

8. Furnish and install energy efficient fluorescent lighting in the building. The lighting design shall meet the requirements of the State Energy Code and LEED Mass Plus. In general, fluorescent-type lighting fixtures shall be installed in all areas throughout the building. Provide track lighting in all art studios.

9. Furnish and install an internally illuminated exit sign system at all paths of egress within the buildings.

10. Furnish and install a master clock system.

11. Furnish and install a security camera system. Recording and monitoring equipment to be located in security office.

12. Furnish and install a complete addressable-type high rise fire alarm system throughout the renovated areas. The system shall consist of pull stations, smoke detectors, heat detectors, duct detectors, standby batteries, and speaker with strobe lights. All fire alarm system wiring shall be installed in conduit raceways. Connect to Kennedy Building fire alarm control panel.

13. Furnish and install a building lighting management system for all corridors, stairwells, common toilets and all other common areas. System shall consists of control panel, time-clock, relays, and low-voltage switches. All wiring to be either MC cable or installed in EMT conduit. The lighting system shall meet the requirements of the state energy code.

14. Furnish and install voice/data/cable TV system throughout the building. The system shall consist of fiber optic cable, rack, patch panels (cat 6 and fiber), cat 6 cables, jacks, device plates, outlet boxes and conduit. Furnish and install audio/visual systems in all classrooms and large lecture rooms.

15. Furnish and install lighting occupancy sensors in all toilets, storage, offices, studios and classrooms, and common rooms. The system shall be furnished with the required passive infrared sensors, ultrasonic sensors, dual technology sensors, power packs, slave packs, conduit, wire, and junction boxes.

END OF SECTION