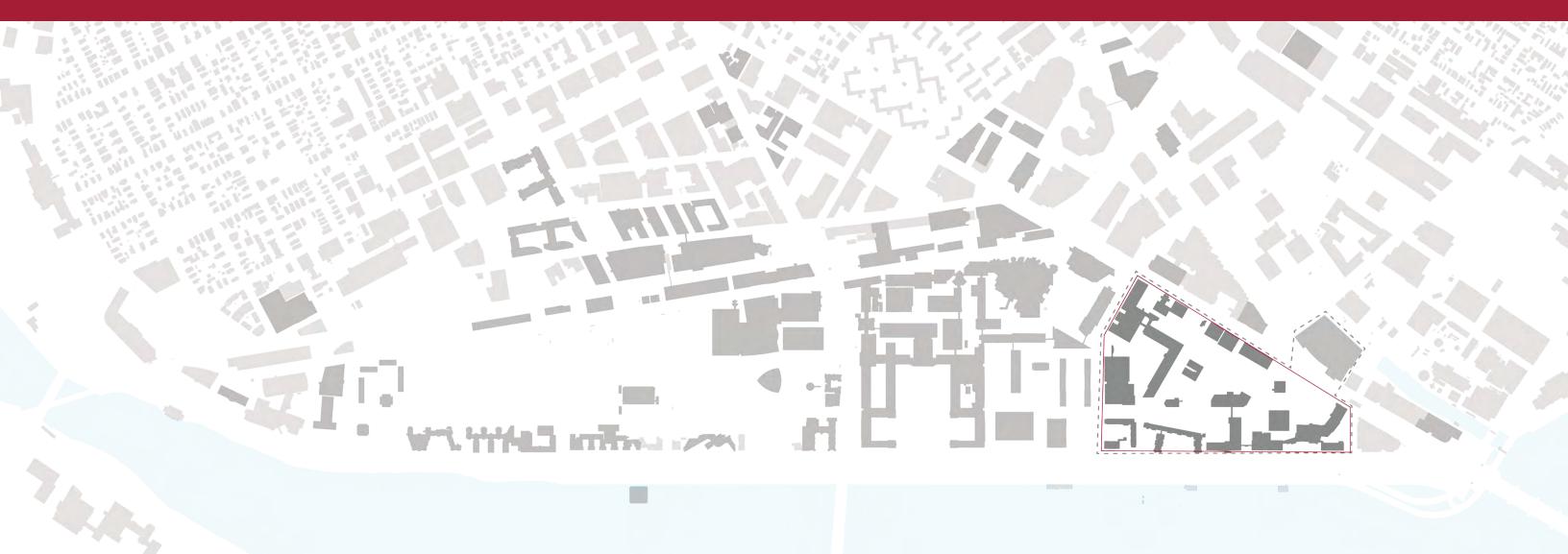
Massachusetts Institute of Technology East Campus Urban Design Study: Final Report

14 March 2014

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Campus / Urban Planning Schemes Introduction

This report, East Campus Urban Design Study: Final Report, follows two previous studies (1) Kendall Square Initiative: Elkus Manfredi Conceptual Plan Urban/ Campus Planning dated, 30 July 2013 and (2) East Campus / MIT gateway: Alternative Approaches generated by the faculty of the MIT School of Architecture + Planning in 2013. The Elkus Manfredi study employs the city grid or block pattern as its planning strategy for the East Campus. The East Campus / MIT gateway: Alternative Approaches study envisions place making that addresses campus-ness and does not depend on the city block as a planning strategy. This study merges the most relevant aspects of both studies, seeking balance between the academic, civic, and commercial realms. Issues of city planning patterns and fabric, historic preservation and commercial interests are weighed against MIT-specific architectural planning characteristics, goals and the desire for a vital public realm that resonates as campus space.

The three campus / urban planning schemes illustrated in this Final Report share many similar aspects, illustrating both the flexibility and the limits of the framework plan. The similarities of Scheme A, B and C are as follows:

- (1) Zone of Integration: An east to west swath along Main Street from Ames Street to One Memorial Drive is a zone of integration, overlap, interface and porosity where the city and the campus merge and their distinctions are blurred.
- (2) Gateway: In all three schemes there are multiple portals and gateways permitting the East Campus to be easily accessed by both the MIT and the Cambridge communities. However, because of the Infinite Corridor termination point at E23 and because of the strategic location of red line T-Stop the primary and most definitive gateway opportunity is east of the Cambridge Trust site and west of or incorporating the E38, MIT Press Building (Suffolk Engraving Co. Building) site. As the primary subway entrance and exit on the MIT campus, this site is privileged by its sheer capacity to bring people to and from MIT.
- (3) Commercial Office / Laboratory Program: The east to west swath of integration and overlap accommodates the commercial office / laboratory buildings and sets the southern limit of commercial presence on the East Campus.
- (4) Retail and Active Use Programs: Retail and active use programs are possible along Main Street from Ames Street to E62. From Carleton Street to One Memorial Drive retail and active use spaces have the capacity to open onto both Main Street to the north and the inner campus to the south.
- (5) Program Capacity: All three Campus / Urban Planning Schemes have the capacity to accommodate the allowable commercial, academic, and parking programs permitted by the new PUD-5 zoning.

- (6) Connectivity: All three schemes may enjoy enhanced connectivity either above grade level or below by making use of the bridge and tunnel opportunities permitted by the CASPAR agreement and the new zoning permitted by the approval of PUD-5. Aggregation and the physical connection of buildings is a MIT characteristic evidenced in the Infinite Corridor and highly desirable at the East Campus.
- (7) Service and Loading: All service and loading access on the East Campus is at grade. See individual schemes for possible traffic patterns and dock locations.
- (8) Parking: With the exception of the retention of existing surface parking in the short term Phase 1: 5 years and Phase 2: 10 years, parking on the East Campus is required to be below grade. This is achieved in total in the Long Term Plan with the realization of the academic build out. Commercial and academic parking is accommodated in all schemes.
- (9) Building Massing: Building massing in all schemes adheres to the requirements set out in the PUD-5 zoning. Massing of commercial structures in the integration swath along Main Street is unique to each scheme. All building massings are sensitive to volumetric porosity from Main Street into the inner block and to views, both short and long range, from the structures.
- (10) Phasing: All schemes realize the commercial program in Phase 1:5 years and Phase 2:10 years, and accommodate the academic program in the long-
- (11) Historic Preservation: All three schemes are studied with and without building E38, the MIT Press Building (Suffolk Engraving Co. Building), See vignettes on pages 30, 31, 36, 37, 42 and 43.
- (12) Academic Site: The immediately developable site, south of E38 and E39, east of E23 and north of 100 Memorial Drive, is reserved for academic use. During development in Phase 1: 5 years and Phase 2: 10 years, this site is used for surface parking and access to below grade parking, with academic build out in the Long Term Plan, surface parking is eliminated.
- (13) Landscape and Architecture: The three landscape approaches are interchangeable and adaptable to any of the Campus / Urban Planning Schemes A. B, or C.
- (14) Place / Campus-making and the Public Realm: The MIT campus is defined by distinguished buildings in definitive publicly accessible landscapes. Schemes A, B and C continue this legacy configured in a different manner. The public realm is celebrated across the East Campus completing the campus at the east-

ern extremity of MIT and creating, north to south, from Main Street to the Charles River a new academic and commercial/public realm.

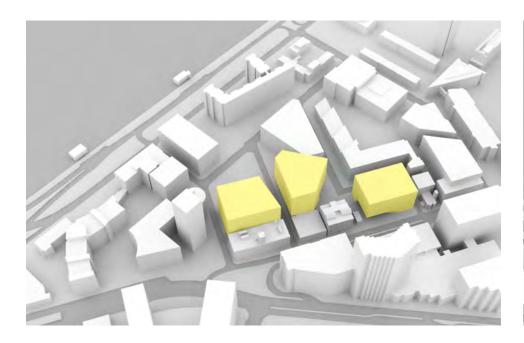
(15) All schemes benefit from the removal of E38 so that (1) MIT has the opportunity for an uncompromised 21st Century presence on Main Street, (2) the orientation and character of the buildings may more effectively act as an entry / passage / gateway into the East Campus block, (3) the T-Stop gateway zone may be energized by a possibly denser population, and (4) active-use and retail spaces may be highly transparent and oriented to Main Street, the T-Stop, and the inner block.

Differences in the three schemes have to do with the exact location of the three Commercial Laboratory / Office Buildings within the zone of integration and overlap along Main Street in Phase 1: 5 years and Phase 2: 10 years. See Schemes A.B. and C.

The underlying assumption within the different options is that the creation of "campus" is the primary goal; that no planning decision made early on would preclude or be detrimental to that goal. The location of commercial buildings in the three schemes also have more or less efficiency in service, loading dock configurations and locations and access routes into and out of the academic campus plan.

The location of the three commercial buildings in the three schemes also has symbolic, identity, and porosity differences. For example, there is a certain symbolic measure in grouping the three commercial buildings in close proximity to the Sloan School of Management, as with the grouping of MIT structures in the vicinity of the main T-Stop gateway. Main Street exposure and address lends commercial buildings maximum identity. The probability of physical and visual porosity in the zone of integration and overlaps along Main Street, both at grade and volumetrically, is greater as large building massings are shifted away from E38 and E39 and/or are sculpted to minimize their impact on Main Street. The economic and intrinsic value of each scheme can now be weighed by the Institute against various options for urban and campus place making.

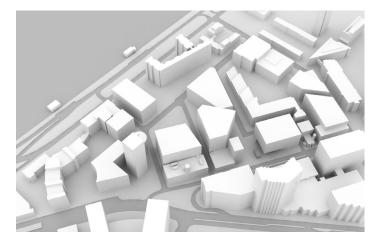
Scheme B Scheme C Scheme A







Scheme A with E38



Scheme A without E38



Scheme A New Commercial Buildings in yellow

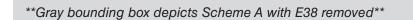
Scheme A Overview

In the placement of the three commercial buildings in the five and ten year phases, Scheme A is the scheme most closely aligned with the Elkus Manfredi Conceptual Plan. One new commercial building is developed on the Cambridge Trust site, one new building south of Building E39, and the third building south of E48, 238 Main Street. Scheme A commercial / laboratory / office buildings extend further south into the inner block than those of Schemes B and C.

In Scheme A, two fo the commercial buildings face on to and have Hayward Street addresses or potentially could be accessed through buildings E39 and E48. The commercial building on the Cambridge Trust site faces on to Main Street with a Main Street address. All three commercial building sites are immediately available for development, requiring minimal demolition of existing structures.

Building massing is of particular importance south of E39 in creating open space adjacent to the T-Stop gateway and in precluding a wall-like condition along Main Street. In Phase 1: Five Years and Phase 2: Ten Years, open space is available south of the commercial building at E39. In the Long Term Plan, with the possible demolition of E40 and the build out of academic programs between Carleton and Wadsworth Streets and at the Sloan School, open space is created south of the commercial building at E48 and through to Memorial Drive and the Charles River. Scheme A benefits more readily than Schemes B and C from the removal of E38 because the massing and footprint of a commercial building south of E48 tends to restrict the space of the important T-Stop gateway. The removal of E38 offers a more gracious public realm. Service to the commercial buildings utilizes Dock Street and Charlotte's Way and Hayward Streets off of Main Street and Wadsworth Street off of both Main and Amherst Streets. All surface parking is eliminated in the Long Term Plan with the realization of the future academic building program.

Scheme A - 5 and 10 Year Phasing Plans







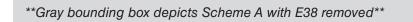
5 Year Phasing

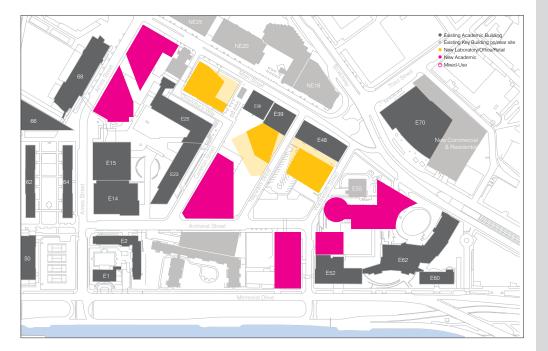


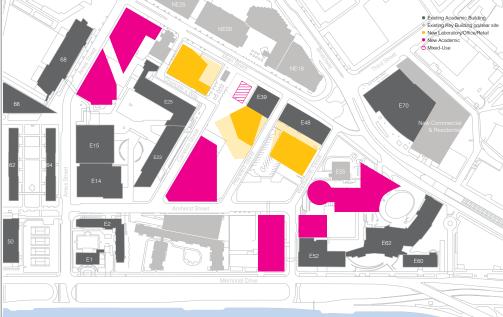


10 Year Phasing

Scheme A - Long Term Phasing Plans / Building Metrics

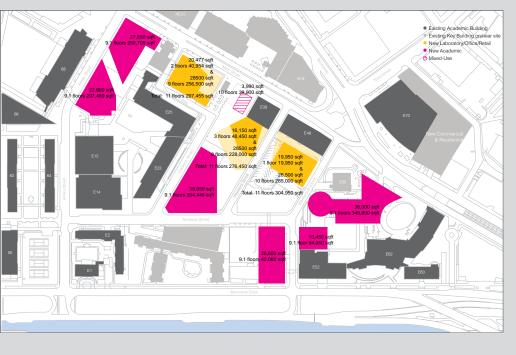




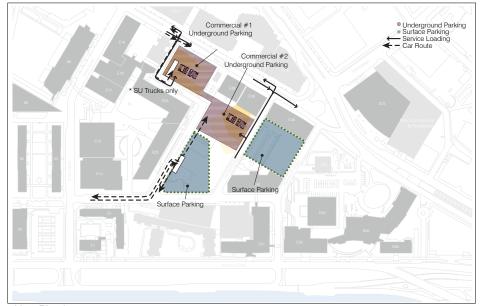


Long Term Phasing

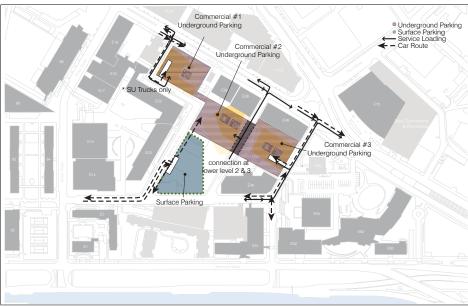




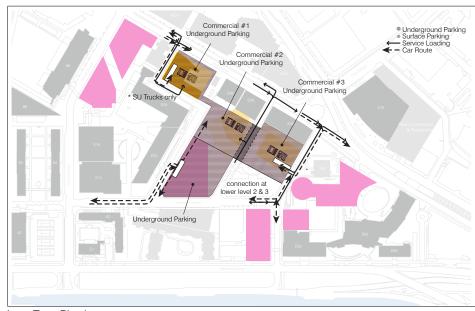
Building Metrics



5 Year Phasing



10 Year Phasing



Long Term Phasing

Scheme A Parking and Loading/Service Summary

5 Year Phasing Plan

For commercial building #1, parking occurs below grade and is accessed via a below grade tunnel connecting to the commercial building #2 parcel at lower level 1. Parking at commercial building #2 is also provided below grade and is accessed via Carleton Street. Existing surface parking between Hayward Street and Wadsworth Street remains in service and surface parking between Hayward Street and Carleton Street also remains in service.

For commercial building #1, surface loading occurs off of Charlotte's Way and can only accommodate a Single Unit truck (SU) due to the right angle of Charlotte's Way/Dock Street. This single unit truck can exit onto Main Street or Carleton Street during this phase.

Commercial building #2 can accommodate surface loading off of Hayward Street and can accommodate truck sizes up to Wheel Base 50 (WB-50). The exit movement can occur via Main Street or Amherst Street.

It is possible to distribute goods to commercial building #1 via a subsurface connection at lower level one within the parking garage facility, with surface loading access off of Hayward Street.

10 Year Phasing Plan

At the 10 year build out, commercial building #3 contains below grade parking spaces which are also connected to the underground parking below commercial buildings #1 and #2 as described in Phase 1 and is accessed via Carleton Street or Wadsworth Street. Due to the location of the proposed commercial building #3, the existing surface parking spaces are taken out of service.

Surface loading for commercial building #3 occurs on

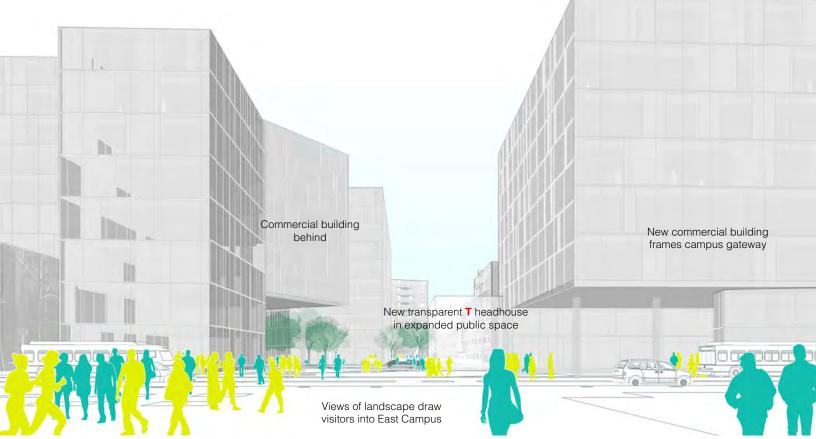
Wadsworth Street and can accommodate a WB-50 truck. The truck can enter and exit Wadsworth Street via Main Street or Amherst Street; however the exit movement will likely need to occur via Amherst Street to allow for any movements other than eastbound on Main Street, as it is one-way at this location.

Long Term Phasing Plan

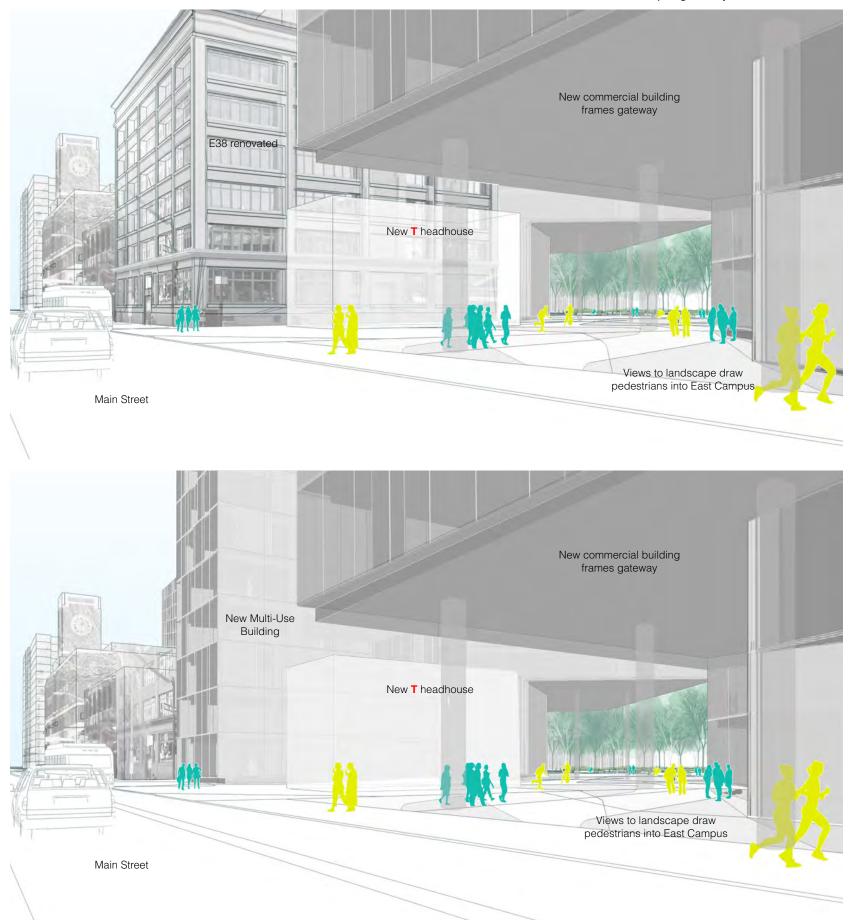
Under the final phase 3, surface parking between Hayward Street and Carleton Street is taken out of service and an additional 204 below grade parking spaces are provided with access via Carleton Street.

Scheme A - Gateway view with and without E38

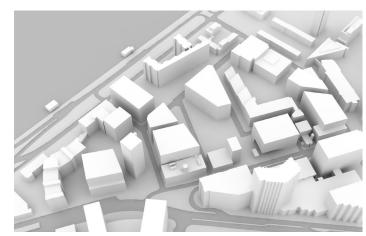




Scheme A - Oblique gateway view with and without E38



Scheme B with E38



Scheme B without E38



Scheme B Commercial Buildings in yellow

Scheme B Overview

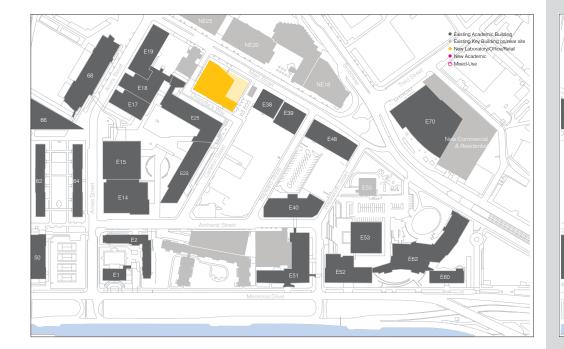
Like Scheme A, Scheme B also places the three commercial buildings in the zone of integration and overlaps along Main Street: one on the Cambridge Trust site, one south of Building E48, 238 Main Street, and the third building east of Building E55, Eastgate, and west of the new MIT Sloan School of Management building facing onto Main Street.

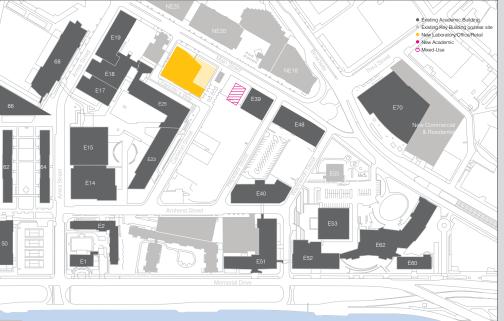
With Scheme B, all three commercial sites are immediately available for development and require minimal demolition of existing structures. In Scheme B, two of the three commercial buildings face onto and have Main Street addresses. The third has a Wadsworth Street address or potentially could be accessed through Building E48. The proposed building massing in Scheme B shows relatively straightforward rectilinear volumes.

The open space south of E38 and E39 is available for a permanent long term landscape intervention during Phase 1: 5 years and Phase 2: 10 years. In the Long Term Plan, open space could extend south to Memorial Drive and the Charles River. The removal of E38 is less critical to the open space sequence south of E38 and E39 but equally critical to the framing of a portal at the T-Stop gateway at the T-Stop than with Scheme A. Service to the commercial buildings would utilize Dock Street and Charlotte's Way off Main Street, and Wadsworth Street off Main Street and secondarily off Amherst Street. All surface parking is eliminated in the Long Term Plan with the realization of the academic development program in the future.

Scheme B - 5 and 10 Year Phasing Plans

Gray bounding box depicts Scheme B with E38 removed





5 Year Phasing





10 Year Phasing

Scheme B - Long Term Phasing Plans / Building Metrics

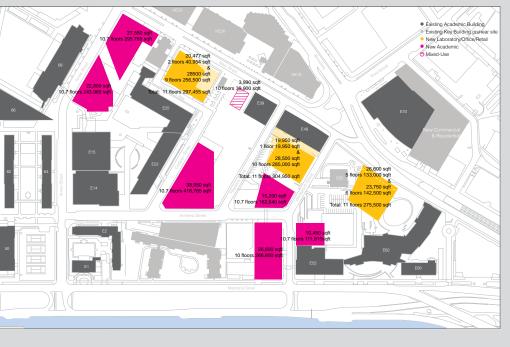
Gray bounding box depicts Scheme B with E38 removed



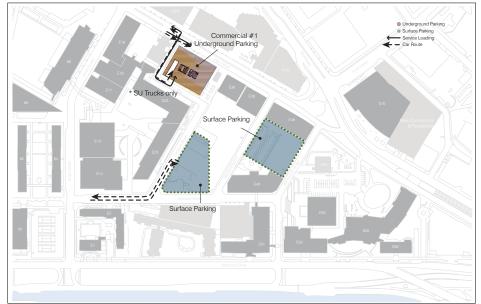


Long Term Phasing

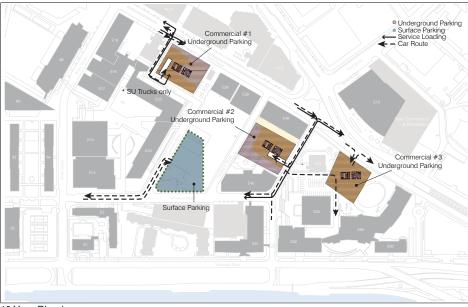




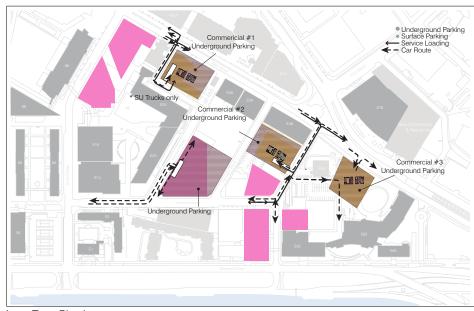
Building Metrics



5 Year Phasing



10 Year Phasing



Long Term Phasing

Scheme B Parking and Loading/Service Summary

5 Year Phasing Plan

For commercial building #1, parking occurs below grade which is accessed via Charlotte's Way. Surface parking between Hayward Street and Wadsworth Street remains in service and surface parking between Hayward Street and Carleton Street also remains in service. Parking for the proposed building north of Broadway is not in the study

For commercial building #1, surface loading occurs off of Charlotte's Way and can only accommodate a Single Unit truck (SU) due to the right angle of Charlotte's Way/Dock Street. This single unit truck can exit via Main Street or Carleton Street during this phase.

10 Year Phasing Plan

Under Phase 2, parking for commercial building #2 is accessed via Wadsworth Street. In order to construct commercial building #2, the existing surface lot is taken out of service. Parking for commercial building #3 is accessed via Broadway and Wadsworth Street.

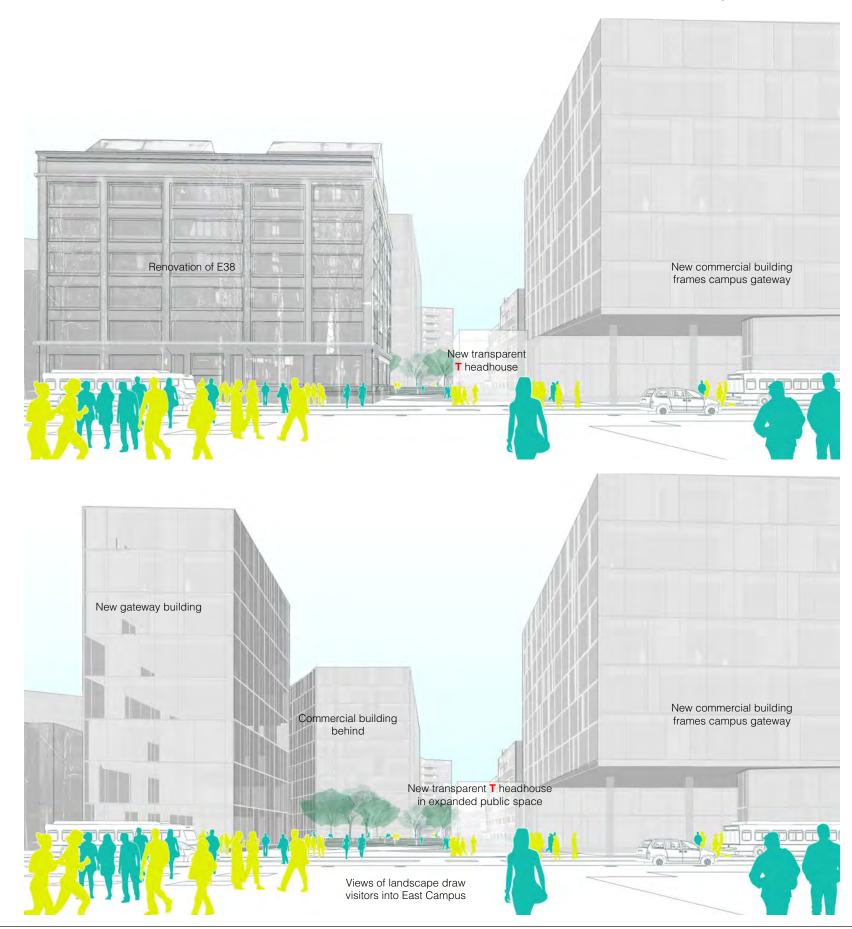
Commercial buildings #2 and #3 can accommodate surface loading off of Wadsworth Street and can accommodate a WB-50 truck. The truck can enter and exit Wadsworth Street via Main Street or Amherst Street; however the exit movement will likely need to occur via Amherst Street to allow for any movements other than eastbound

on Main Street, as it is one-way at this location.

Long Term Phasing Plan

In the final phase, surface parking between Hayward Street and Carleton Street is taken out of service and parking spaces are constructed below grade and accessed from Carleton Street.

Scheme B - Gateway view with and without E38

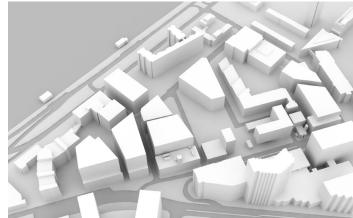


Scheme B - Oblique gateway view with and without E38





Scheme C with E38



Scheme C without E38



Scheme C Commercial Buildings in yellow

Scheme C Overview

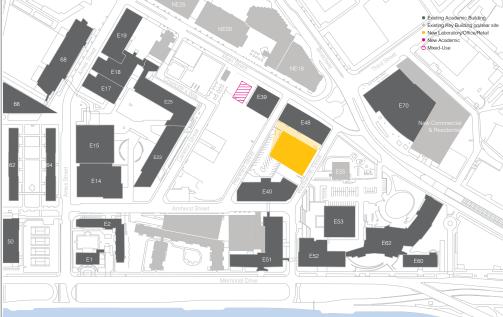
Scheme C places the three commercial buildings in the zone of integration and overlap along Main Street: one south of E48, 238 Main Street, one on the Building E55, Eastgate site, and one east of the E55 site, and west of the new MIT Sloan School of Management building. Scheme C requires the demolition of E55, Eastgate. The latter two face onto Main Street and have Main Street addresses. The third has a Wadsworth Street address or potentially could be accessed through Building E48. The site south of E48 and the site east of E55 are immediately available for development with minimal demolition of existing structures.

In Scheme C, the Cambridge Trust site is made available for academic mixed uses. The removal of E38, the MIT Press Building (Suffolk Engraving Company Building) together with the development of the Cambridge Trust and E38 sites affords enhanced possibilities for the gateway at the T-Stop to be invigorated by a MIT presence on Main Street. In Scheme C the open space south of E39 allows for short term, Phase 1: 5 years and Phase 2: 10 years, development of a permanent landscape intervention. Service to the commercial buildings is off Main and Amherst Streets and is consolidated on Wadsworth Street. As in Schemes A and B all surface parking is eliminated in the Long Term Plan and the open space extends south to Memorial Drive and the Charles River.

Scheme C - 5 and 10 Year Phasing Plans

Gray bounding box depicts Scheme C with E38 removed





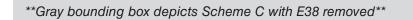
5 Year Phasing



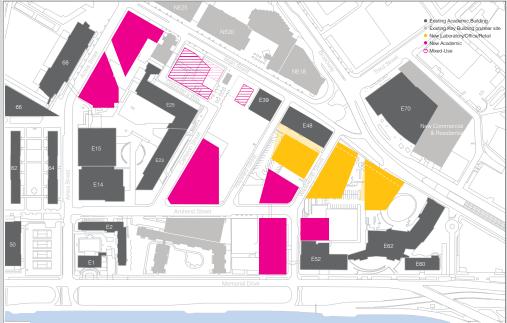


10 Year Phasing

Scheme C - Long Term Phasing Plans / Building Metrics





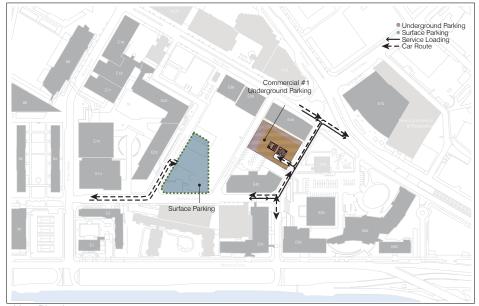


Long Term Phasing

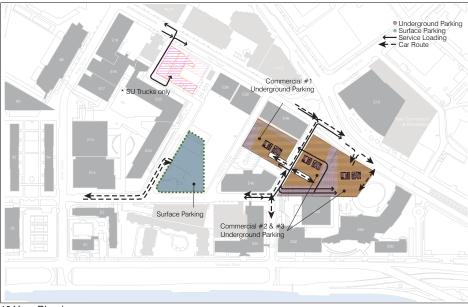




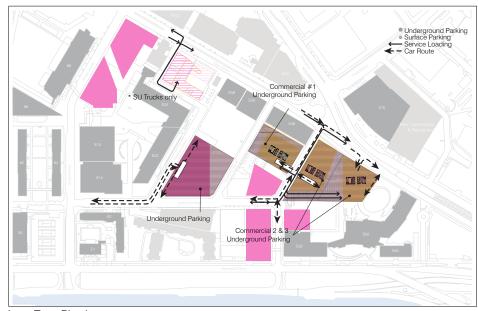
Building Metrics



5 Year Phasing



10 Year Phasing



Long Term Phasing

Scheme C Parking and Loading/Service Summary

5 Year Phasing Plan

For commercial building #1, parking occurs below grade which is accessed via Wadsworth Street. In order to construct commercial building #1, existing surface parking spaces is taken out of service. Surface parking between Hayward Street and Carleton Street remains in service. Parking for the proposed building north of Main St. contains below grade spaces.

For commercial building #1, surface loading occurs off of Wadsworth Street and can accommodate a WB-50 truck. The truck can enter and exit Wadsworth Street via Main Street or Amherst Street; however the exit movement will likely need to occur via Amherst Street to allow for any movements other than eastbound on Main Street, as it is one-way at this location.

10 Year Phasing Plan

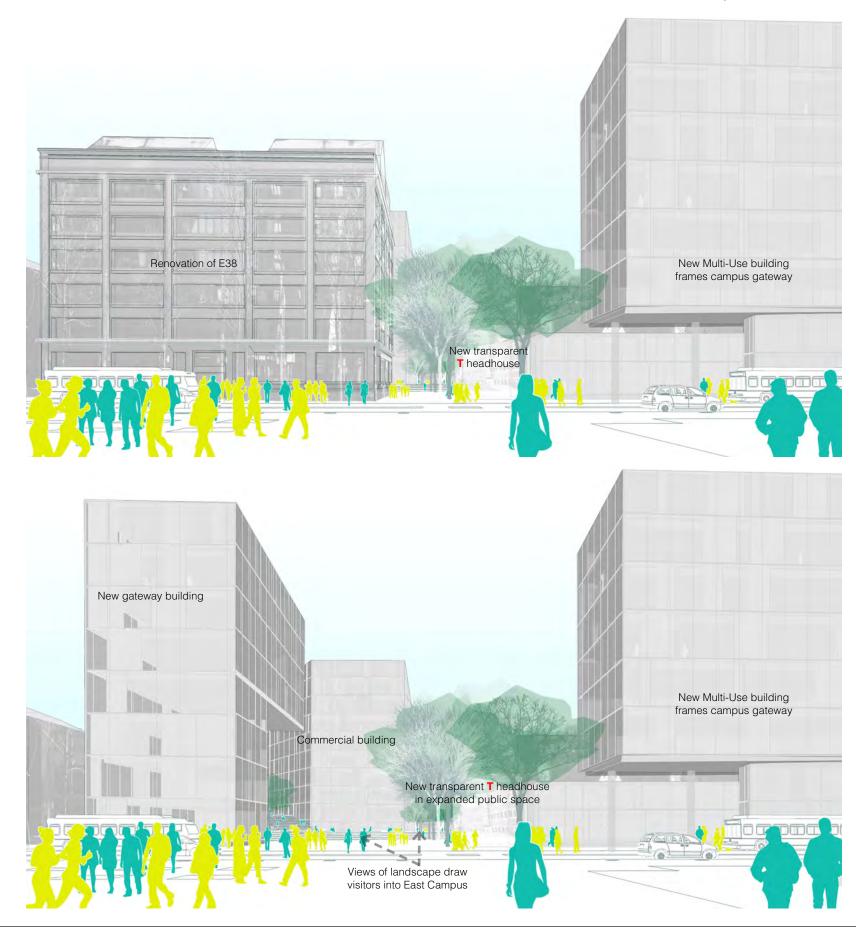
Parking for commercial buildings #2 and #3 is combined and accessed from Wadsworth Street and Broadway. Commercial buildings #2 and #3 can accommodate surface loading off of Wadsworth Street and can accommodate a WB-50 truck. The truck can enter and exit Wadsworth Street via Main Street or Amherst Street; however the exit movement will likely need to occur via Amherst Street to allow for any movements other than eastbound on Main Street, as it is one-way at this location.

Depending on where the surface loading facility is located in commercial building #2, an at-grade cut through the building may be required as indicated in the Phase 2 graphic. If the loading facility for commercial building 2 is located directly off of Wadsworth Street, no cut through is required.

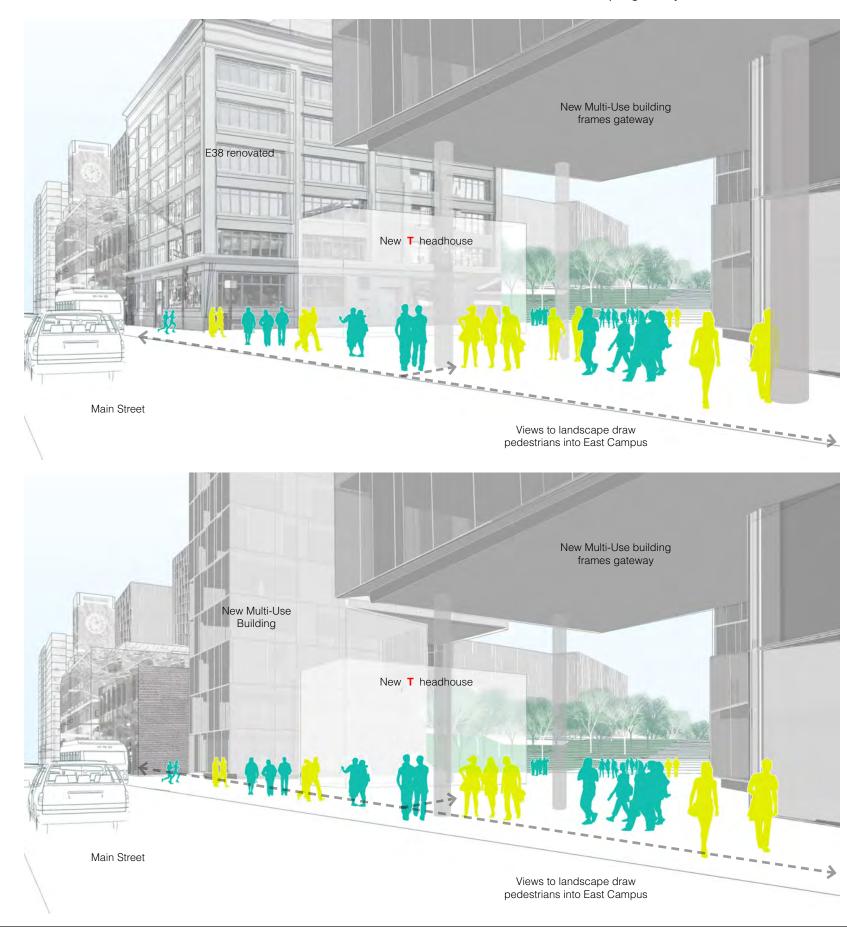
Long Term Phasing Plan

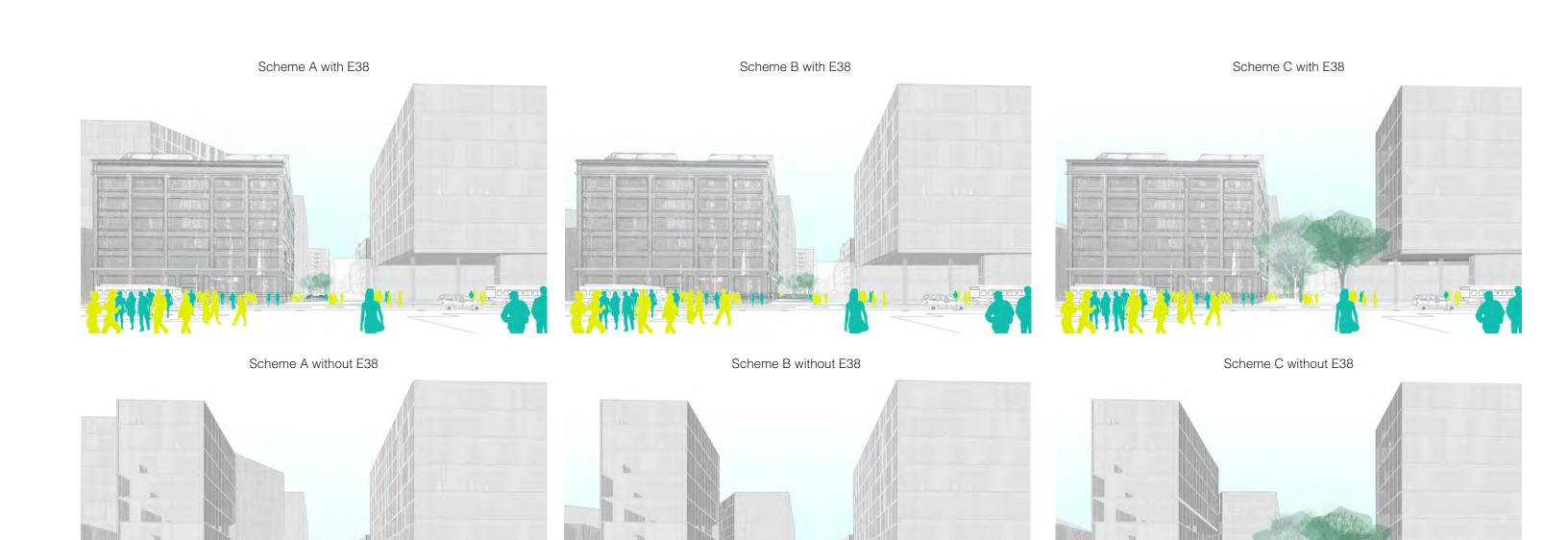
During the final phase, surface parking between Hayward Street and Carleton Street is taken out of service and are constructed below grade and accessed from Carleton

Scheme C - Gateway view with and without E38



Scheme C - Oblique gateway view with and without E38





Scheme A with E38

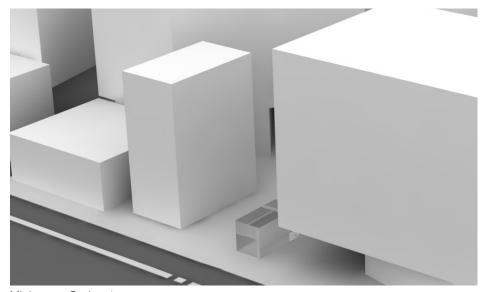
Scheme B with E38



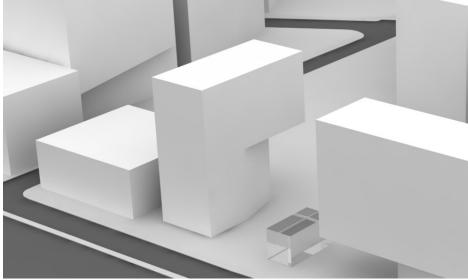




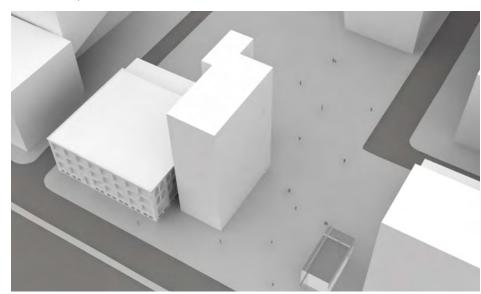




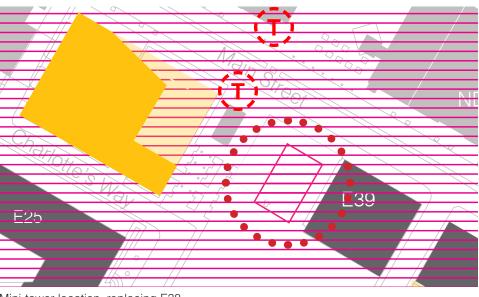
Mini-tower Option 1



Mini-tower Option 2



Mini-tower Option 3



Mini-tower location, replacing E38

Gateway Identity Overview and Mini-tower Options

While there are many portals or gateways into the East Campus, the gateway options presented here focus on the primary portal or gateway which is located off Main Street at the T-Stop and just north of the current termination point of the Infinite Corridor at E23/ E25.

In all three Schemes A,B, and C, the multiple portals and gateways permit the East Campus to be easily accessed by both the MIT and the Cambridge communities. However, because of the termination of the Infinite Corridor at E23/E25 and the strategic location of the red line T-Stop on Main Street in Kendall Square, the primary and most definitive MIT gateway opportunity is east of the Cambridge Trust site and west of or incorporating the E38 MIT Press Building (Suffolk Engraving Building) site. As the primary subway entrance and exit on the MIT campus, this site is privileged by its sheer capacity to bring people to and from MIT.

The main focus of the gateway options is the presence or removal of E38 MIT Press Building (The MIT Suffolk Engraving Building). With the removal of E38, MIT and the Massachusetts Bay Transportation Authority have the opportunity to improve the head house of the T-Stop and to revitalize this important moment on the Main Street and the MIT campus. While other forms of public and MIT transportation serve the campus, the T-Stop at Kendall Square is the only point where the T interfaces with and is practically sitting on the MIT campus. This fact alone ensures that the T-Stop site is the most important portal to the East Campus and one of the most important arrival points for the entire MIT campus.

Building E38 is certainly an asset to the assemblage of the three contiguous historic buildings. While the sentiment to preserve such a well-known building on Main Street is sympathized with, in order for MIT to create a meaningful moment on Main Street that represents contemporary times, and a new gateway into East Campus, the removal of E38 is critical.

Given the opportunity for MIT to celebrate its presence in Kendall Square and to invigorate the Kendall Square experience, a new structure on the E38 site, working in concert with a new structure on the Cambridge Trust site has the potential to signify the relationship between the public and academic realms and to become an iconic gateway to both.

The mini-tower study shown here is an indicator of the scale and configuration that a new building on E38 site might take in order to form a portal and have an architectural dialogue with a building on the Cambridge Trust site. The T head house is shown as a transparent volume (See page 47 for precedents) framed by the two new structures. Another option would be to incorporate the head house into either one of the two new buildings. This would leave the plaza between the new buildings open for consideration and literally bring the public realm into an MIT structure.

Functional use of the two new structures, whether commercial, mixed use, academic or housing, does not preclude the architectural success of a gateway or portal formed by their massing.



Digital Facade Precedent: Nordwesthaus by Baumschlager Eberle





Digital Facade Precedent: Cube by Glas Platz



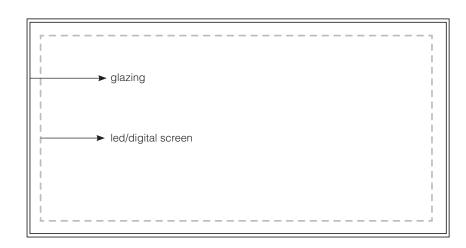
Head House Precedent: Metro Station by Hector Guimard

Gateway T-Stop head house precedents

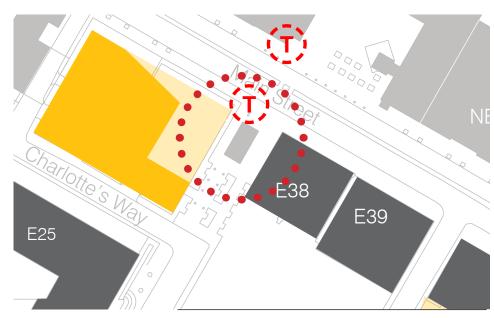
Head houses for transit systems have a long and distinguished history. The Art Nouveau head houses by Hector Guimard in the 1920s Paris readily comes to mind. A more contemporary example is the typical transit stop in Washington DC.

In the T-Stop and head house there is the opportunity for real time demonstrations of informational events, exhibits, experiments etc from the MIT community as well as from the Kendall Square community. There should be no question that you have arrived at MIT when you emerge from the train at Kendall Square. The elevation drawing illustrated opposite shows images from a recent exhibit at the MIT Museum and Compton Gallery and suggest how an inner display surface or the building surface itself may be used as a real time message carrier.









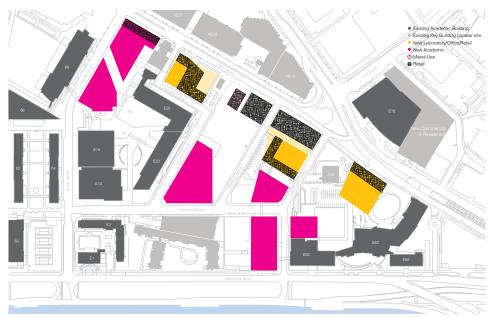
Current T-Stop head house location

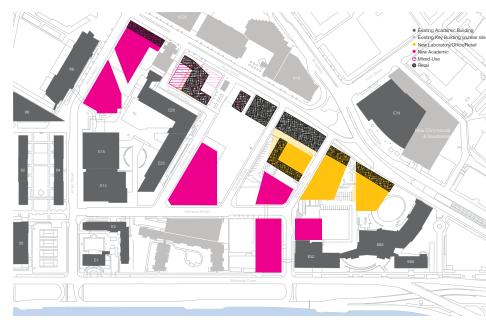
Retail and Active Use Overview

As indicated in the plans, below, retail and active use programs are possible along Main Street from Ames Street to One Memorial Drive. Within that zone, from Carleton Street to Sloan School, retail and active use spaces have the capacity to simultaneously open on to Main Street to the north and onto the inner East Campus to the south. These two-way looking retail and active use spaces set up the potential for physical porosity and visually porous moments that address the desire for a more integrated, interwoven and overlapping academic / commercial realm at Kendall Square. The integration of MIT active use programs with commercial opportunities further blurs the distinction between campus and city, promoting a more energized precinct.

Scheme A Scheme B Scheme C







Massing Options

The allowable academic space program can be configured in many ways as either academic teaching / research space or academic housing space or some combination thereof. The diagram shown here assumes academic teaching / research uses but varies the height and bulk of the buildings in order to demonstrate flexibility in determining constructed form and its relationship to open landscape space. While bulkier forms are indicated, here for teaching / research uses, future studies may parse out these footprints in housing scale forms. Permitted bridging opportunities may allow structures to congregate in ways not shown in this Final Report, potentially producing an East Campus of greater mixed use and integrated programs. Such an outcome would reflect the long standing MIT characteristics of the aggregation of buildings and the seemingly serendipitous overlap of academic programs witnessed along the Infinite Corridor.

Scheme A Scheme B Scheme C





