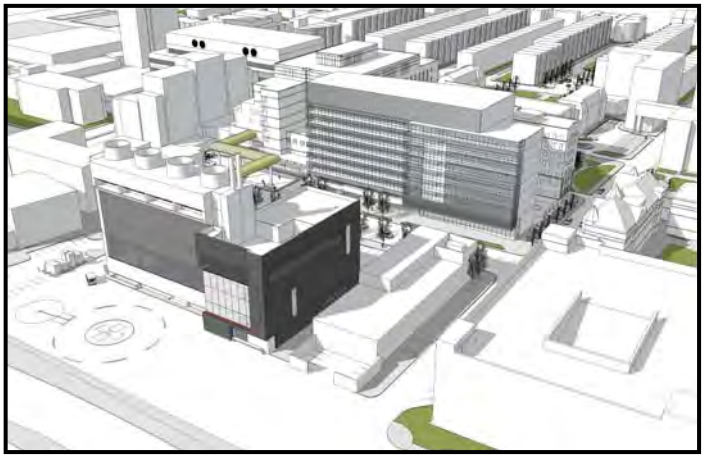
PROJECT NOTIFICATION FORM

BOSTON MEDICAL CENTER
ENERGY FACILITY

SEPTEMBER 25, 2009



SUBMITTED TO:

BOSTON REDEVELOPMENT AUTHORITY
ONE CITY HALL SQUARE
BOSTON, MA 02201

SUBMITTED PURSUANT TO ARTICLE 80 OF THE BOSTON ZONING CODE

SUBMITTED BY:

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ONE BOSTON MEDICAL CENTER PLACE
BOSTON, MA 02118

PREPARED BY:

RFWalsh collaborative partners
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IN ASSOCIATION WITH:

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OAK ENGINEERS
HOWARD/STEIN-HUDSON
RUBIN AND RUDMAN LLP
EPSILON ASSOCIATES, INC.
HALEY AND ALDRICH

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Section 1.0

1.0 SUMMARY & PROJECT DESCRIPTION

1.1 Project Identification

Project Name:	Energy Facility
Address/Location:	The proposed Energy Facility location is adjacent to the existing Boston Medical Center Power Plant building at 750 Albany Street.
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1.2 Introduction

1.2.1 Boston Medical Center

Boston Medical Center ("BMC") is a part of the Boston University Medical Center along with Boston University Medical Campus ("BU Medical Campus"). Boston Medical Center Corporation (the "Proponent") is pleased to submit this Project Notification Form ("PNF") to initiate the Boston Redevelopment Authority ("BRA") Article 80 Large Project Review process for the proposed Energy Facility ("Project"). This is pursuant to Section 80B of the Boston Zoning Code ("Code"). With this submission, the Proponent requests that the BRA issue a Scoping Determination for Large Project Review.

On May 18, 2000, the BRA approved the existing Boston University Medical Center IMP. Since that time, IMP amendments, Notices of Project Change ("NPC") and proposals for small additions have been filed to obtain approval for new construction or rehabilitation projects, or to revise and update uses as previously reported. The most significant of these include: the rehabilitation of the 66,952 s.f. Surgical Building (May 2001 IMP Amendment); the replacement of the approved Medical Services Center with the 133,217 s.f. Moakley Building (July 2003 NPC); and the approximately 245,000 s.f. new Ambulatory Care Building (August 2007 IMP Amendment). Most recently, the BRA approved the IMP Renewal (June 2009) extending the term for 2 years including an Amendment for a minor 845 s.f. expansion to the Emergency Department.

BMC was incorporated as a Massachusetts charitable corporation July 1, 1996 with the merger of Boston City Hospital, Boston Specialty & Rehabilitation Hospital, and the Boston University Medical Center Hospital, referred to as University Hospital. BMC is a private, not-for-profit, 626-licensed bed, academic medical center located in Boston's historic South End. The hospital is the primary teaching affiliate for Boston University School of Medicine. Emphasizing community-based care, BMC, with its mission to provide consistently accessible health services to all, is the largest safety net hospital in New England. BMC

provides a full spectrum of pediatric and adult care services, from primary to family medicine to advanced specialty care. With the largest 24-hour Level 1 trauma center in New England, the Emergency Department had more than 129,169 visits in 2008. With 29,411 admissions and 953,510 patient visits in 2008, BMC provides a comprehensive range of inpatient, clinical and diagnostic services in more than 70 areas of medical specialties and subspecialties. In Fiscal Year 2008, the BMC operating budget was $1 billion.

The mission of BMC is "to provide consistently excellent and accessible health services to all in need of care regardless of status and ability to pay." The objective of BMC is to meet the health needs of the people of Boston and its surrounding communities by providing high quality, comprehensive care to all, particularly mindful of the needs of the vulnerable populations through an integrated delivery system, in an ethically and financially responsible manner. The goals of the integrated system of care are to promote health and well being, meet the medical and public health needs of all served, and educate future physicians and caregivers.

1.2.2 Project Summary

BMC is proposing to build a new combined heat and power energy facility based on three core energy delivery concepts: reliability, efficiency, and reduced environmental impact. The new 48,000 s.f. facility will use state-of-the-art technologies to produce electricity and steam. The Energy Facility will be located adjacent to the BMC Power Plant building located at 750 Albany Street. (BMC's Power Plant supplies chilled water to the campus and is the steam and electric distribution center for the campus and is not a true power plant.)

BMC relies on many utilities and energy infrastructure facilities that are approaching their operating limits. The Energy Facility is intended to meet the majority of the electrical demand and all of the high pressure steam demand required by BMC and the BUMC Campus through cogeneration. (Cogeneration is the simultaneous production of electric power and steam.) See Figures 1.1 – 1.3 for Project location locus maps. See Section 1.5 – Project Description for more information.

1.3 Boston Medical Center Sustainable Initiatives and Infrastructure

1.3.1 The Green Committee

Over the past ten years, BMC has taken steps to decrease its energy demand and improve energy efficiency throughout its campus. BMC established the Green Committee to oversee the direction, development, and implementation of sustainable programs and policies. The Green Committee is comprised of representatives from various Boston Medical Center departments who develop organization-specific environmental initiatives. Representatives from Boston University Medical Campus departments are also on the Green Committee and collaborate with BMC on campus-wide or shared programs.

In order to strengthen its initiatives, the Green Committee tracks the environmental and financial results of improvement programs, continuously reviews and improves existing programs, and identifies new improvement projects. It oversees the environmental strategies to ensure continuous improvement through various trending methods and control activities. Through effective communication, the committee relates Green program status throughout the organization and works with management, staff, and the public to increase awareness and participation in campus environmental programs and initiatives. (See Appendix C for the Green Committee September 2009 programs report.)

Through the leadership of the Green Committee and the Design and Construction Department, BMC has increased significantly the implementation of sustainable design and construction elements in all of its capital projects. The ACB, currently under construction at BMC, is registered with Green Guide for Health Care (GGHC) and is targeting a LEED Silver equivalent. The GGHC is based on the Leadership in Energy and Environmental Design (LEED) point system, the original national model for sustainable building design. Ultimately the Green Committee at BMC is dedicated to the continual development of its sustainable campus. As per the committee's charter, the goal is to promote the health of patients, visitors, employees, local communities, and the global community while operating economically and efficiently.

By creating and managing more sustainable energy systems and reducing its greenhouse gas emissions, BMC align will itself with City of Boston goals for environmental programs and green technologies. The Executive Order of Mayor Thomas M. Menino entitled "An Order Relative to Climate Action in Boston" (April 13, 2007) outlines sustainable practices adopted by the city including reduction of greenhouse gasses and improvement of overall energy efficiency for buildings. According to Climate: Change (the City of Boston's Climate Action Plan - December 2007), "78% of Boston's greenhouse gas emissions are related to buildings" (e.g. heating, cooling, and electricity). Within the report, the City of Boston encourages "all sectors of the community to use energy more efficiently in their facilities and…create environments that are more energy-efficient." The proposed Energy Facility will meet this challenge and reduce greenhouse gas emissions through the process of cogeneration. Cogeneration is considered an Eco-friendly "green" technology recognized by the Massachusetts Green Communities Act and the Massachusetts Technology Collaborative as a cost effective, scalable method of producing electricity and utilizing waste heat to increase efficiency at the host site.

1.3.2 Sustainable Infrastructure

Focused on environmental goals, BMC evaluated its campus infrastructure during the last ten years. Upgrades, replacements, and systems maintenance were performed in a manner that addressed obsolescence and allowed for efficiencies during future initiatives. BMC achieved demand-side energy savings through standardizing the use of energy-efficient lighting fixtures and water-saving plumbing fixtures and installing building automation systems controls to reduce the consumption of energy during off peak periods. Further, BMC implemented new procedures to manage infrastructure systems more efficiently overall.

BMC also centralized mechanical systems, such as chiller plants, and installed equipment that could be fueled by different sources. These measures help control cost and demand and create redundancy. BMC installed pipe and electrical infrastructure to allow for the connection of utilities from separately served ends of the campus. This new infrastructure improves the ability to maintain systems, provides opportunities for redundant energy delivery systems, and creates efficiencies. Having implemented the recommended energy efficiency and infrastructure improvements, BMC now needs to create an independent, efficient, environmental, and redundant energy source with the proposed Energy Facility. The Energy Facility will improve energy reliability and reduce BMC's carbon footprint. It will also eliminate the possibility of service failure or disruption that would be detrimental to the delivery of patient care in a 24/7 environment.

1.0 SUMMARY & PROJECT DESCRIPTION

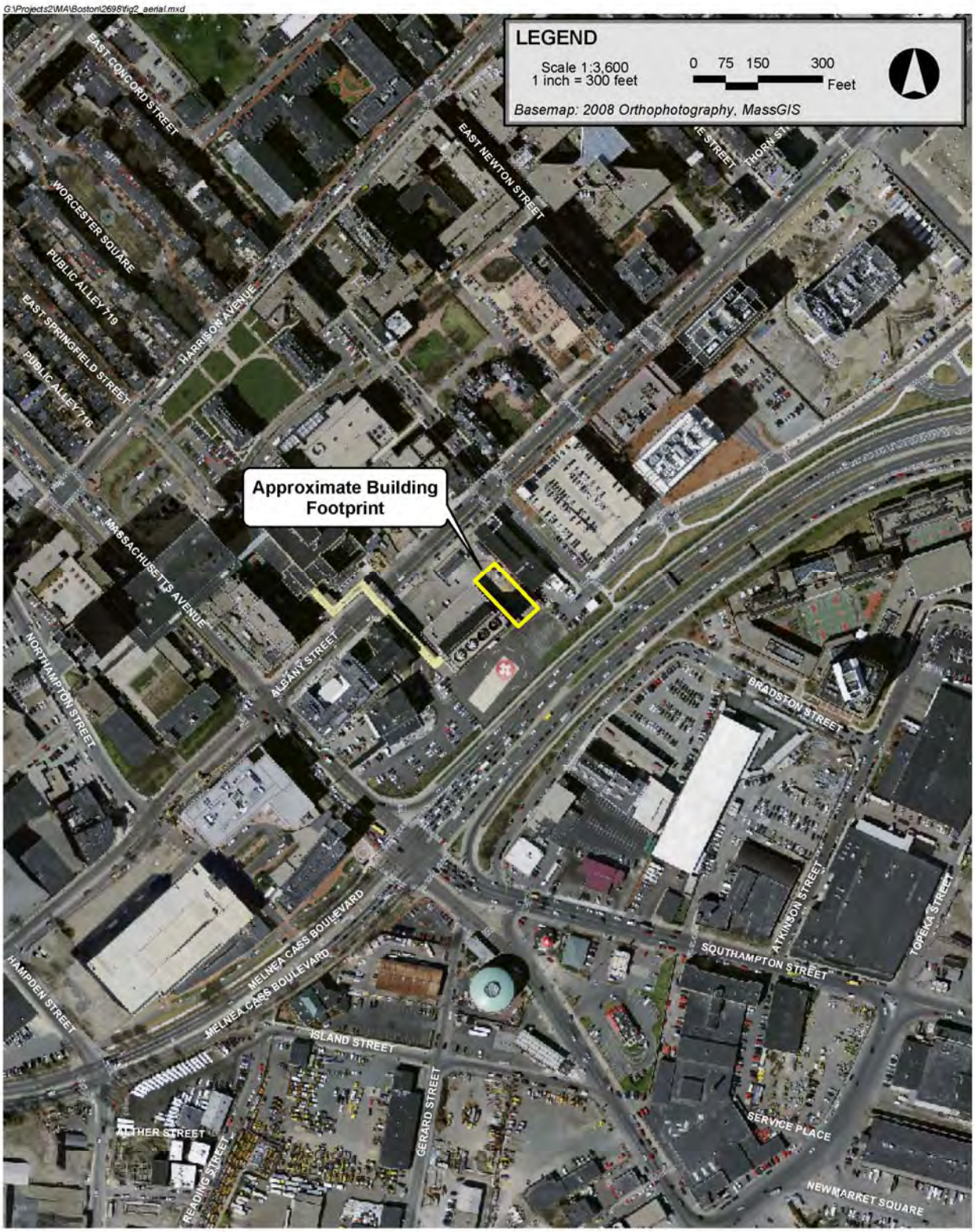
Figure 1-1 Project Location – USGS Locus Map

Boston University Medical Center Boston, Massachusetts

Epsilon ASSOCIATES INC.

Figure 1
USGS Locus Map

Figure 1-2 Project Location – Aerial Locus Map

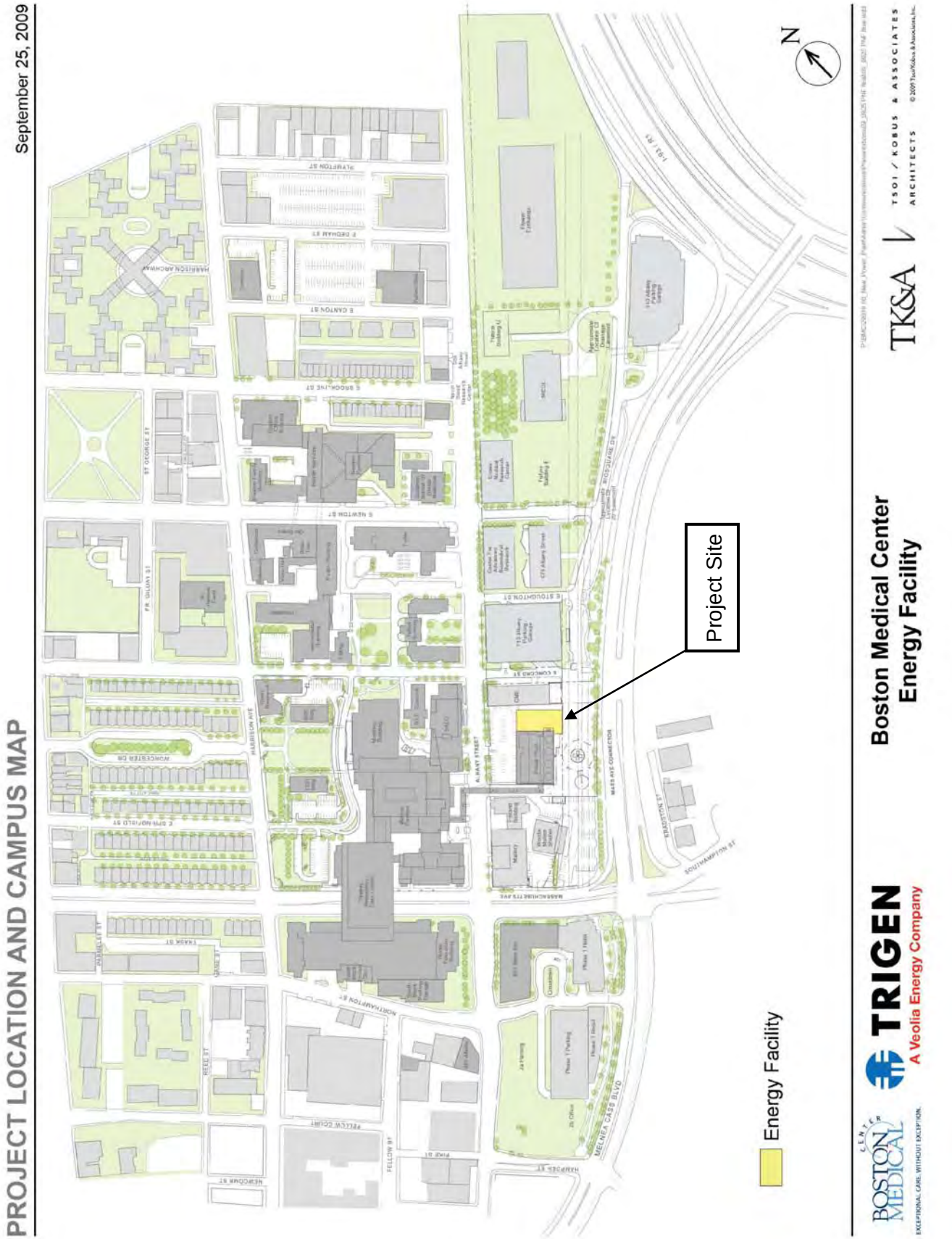


Boston University Medical Center Boston, Massachusetts

Epsilon Associates, Inc.

Aerial Locus Map

Figure 1-3 Project Location – Campus Locus Map



1.4 Project Description

1.4.1 Summary of Project Need

BMC relies on many utilities and energy infrastructure facilities that are approaching their operating limits. BMC infrastructure systems are largely dependent on purchased utilities with significant utilization of electrical power and steam. Currently BMC uses a steam distribution system that is at capacity and an electrical distribution system that is not designed to support future growth. The campus relies to a lesser degree on natural gas and oil. Those fuel sources are primarily for back-up systems within patient care and research buildings and spaces.

BMC currently utilizes electrical power through two power distribution centers on the BUMC campus. These stations (at the Power Plant and the Evans Building) are both over 30 years old and are using out of date technology that is not supported by replacement parts without customization or reliance on refurbished equipment. One of these stations is operating within five percent of its rated capacity. The other is presently operating at 65 percent of its capacity, but services an area of significant anticipated growth. Given the age of these stations and projected energy demand, upgrades and modernization of electrical infrastructure will be required in the very near future.

Given increased reliance on technology and ever increasing minimum standards, BMC's requirements for powering and cooling patient care and research space create new demands that continue to outpace the ability to reduce the amount of utilities used in total.

BMC now faces the challenge of managing the availability and reliability of energy service which is critical to a major medical center. In order to support the campus growth, keep up with advancements in health care technology, and deliver clinical services 24/7, BMC requires a new energy facility to address these issues. The goals of the proposed Energy Facility Project are to reduce demand on existing taxed infrastructure, create energy and system redundancy, increase system efficiency, and reduce overall environmental impact.

1.4.2 Project Site

The proposed Energy Facility site is located adjacent to the BMC Power Plant at 750 Albany Street, just north of the Massachusetts Avenue Connector and west of East Concord Street. It is paved and used for parking. The proposed site area will be approximately 10,000 s.f. The general area is urban in nature. The adjacency to the existing Power Plant is necessary in order to tie in to the existing system and enhance operational efficiency. See Figures 1-1 through 1-3 for Project location locus maps.

1.4.3 Building Program

The proposed Energy Facility is comprised of spaces designated for primary mechanical equipment such as combustion turbine generators (CTGs) and heat recovery steam generators (HRSGs), auxiliary systems and ancillary equipment, and the associated distribution infrastructure. Auxiliary systems include condensate and feed water systems, control system, natural gas, chemical treatment, ammonia, fuel gas piping, gas compressors, plant air systems, HVAC systems, and chilled water. Other programmed spaces include a control room, a break room, and a locker room.

Each CTG will have a heat recovery steam generator to comprise one complete power island. Each power island will be provided with auxiliary systems and ancillary equipment necessary for production of steam and electricity through cogeneration.

As the Energy Facility will be constructed adjacent to the existing Power Plant, minor renovations will be made to the Power Plant to allow circulation between the two buildings. Electrical equipment for the proposed Energy Facility will be located on the second floor of the existing Power Plant building.

The Energy Facility will be approximately 48,000 s.f. and approximately 100 feet tall from grade. Emissions stacks will be approximately 160 feet tall from grade. See Figures 1-4 through 1-13 for plans, sections, and elevations of the proposed Project. See Appendix A for context site photos.

At street level, the primary entrance to the building will be from a service road "interior" to the BMC campus on the south side of the site. The proposed building is bordered to the east and west by existing buildings. The north side of the site is planned to be developed as a future Administration/Clinical Building for BMC. As the proposed Energy Facility will ultimately be bordered by three buildings on three of its elevations and "fronts" to a service area, the proposed building itself will be obscured from the Albany Street view.

1.4.4 Approximate Project Dimensions

Table 1-1 below represents approximate dimensions of the Project.

Table 1-1 Proposed Project Square Footage Table

Energy Facility	**Square Feet**	**Program and Comments**
Level 0 (basement)	10,200	Pumps and Water Storage Tanks
Level 1	10,200	Heat Recovery Steam Generators (Turbines)
Level 2	9,200	Heat Recovery Steam Generators (Boilers). 6204 SF is open to below.
Level 3	9,200	Combustion Air Inlet Filters and Plenum
Penthouse	9,200	Gas Compressors
Total Energy Facility Square Footage	**48,000**	

1.4.5 Project Schedule

Project construction is expected to commence in the 4th Quarter of 2010. Project construction is expected to conclude in the 2nd Quarter of 2012.

Figure 1-4 Site Plan

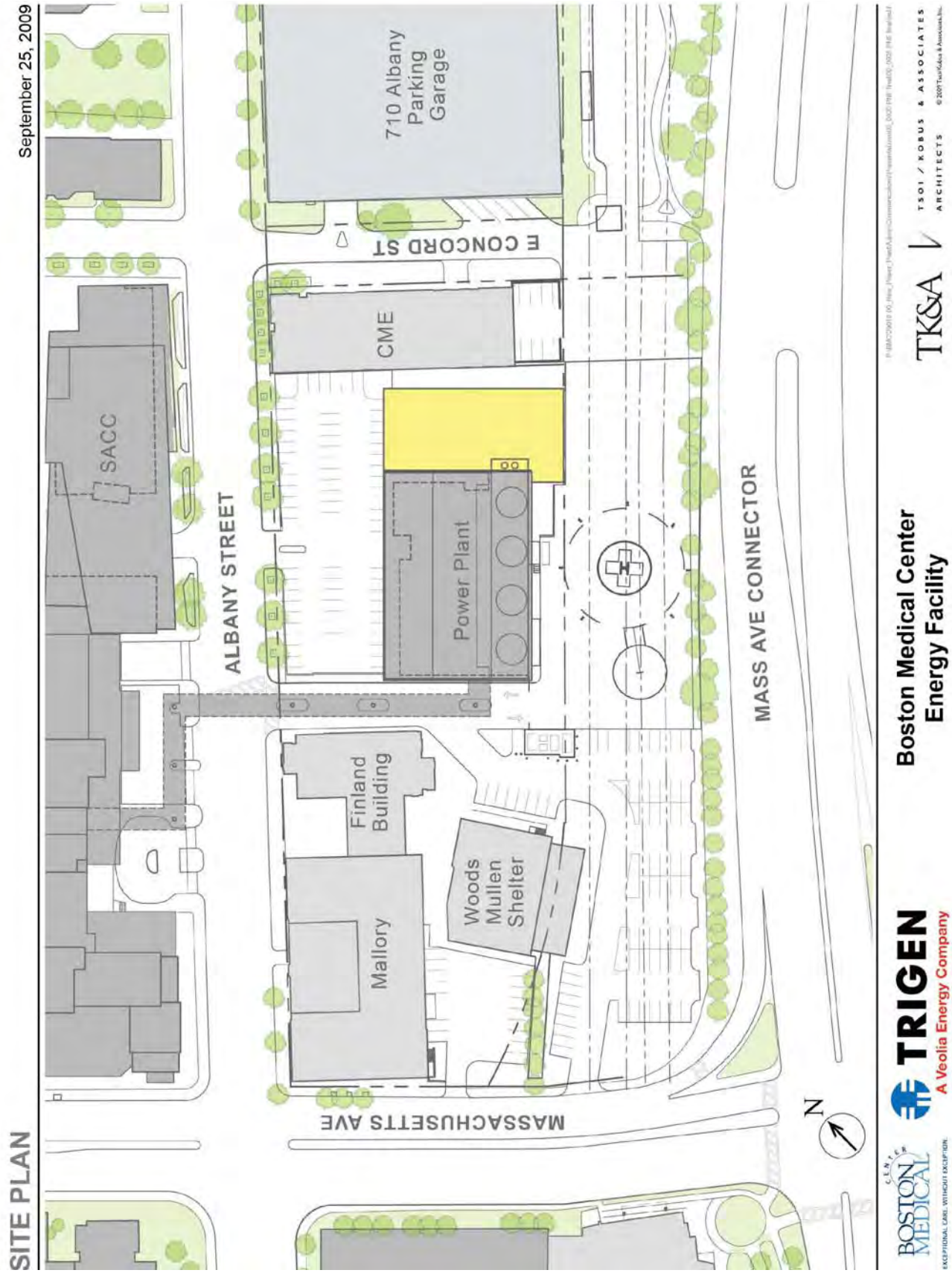


Figure 1-5 Basement Floor Plan

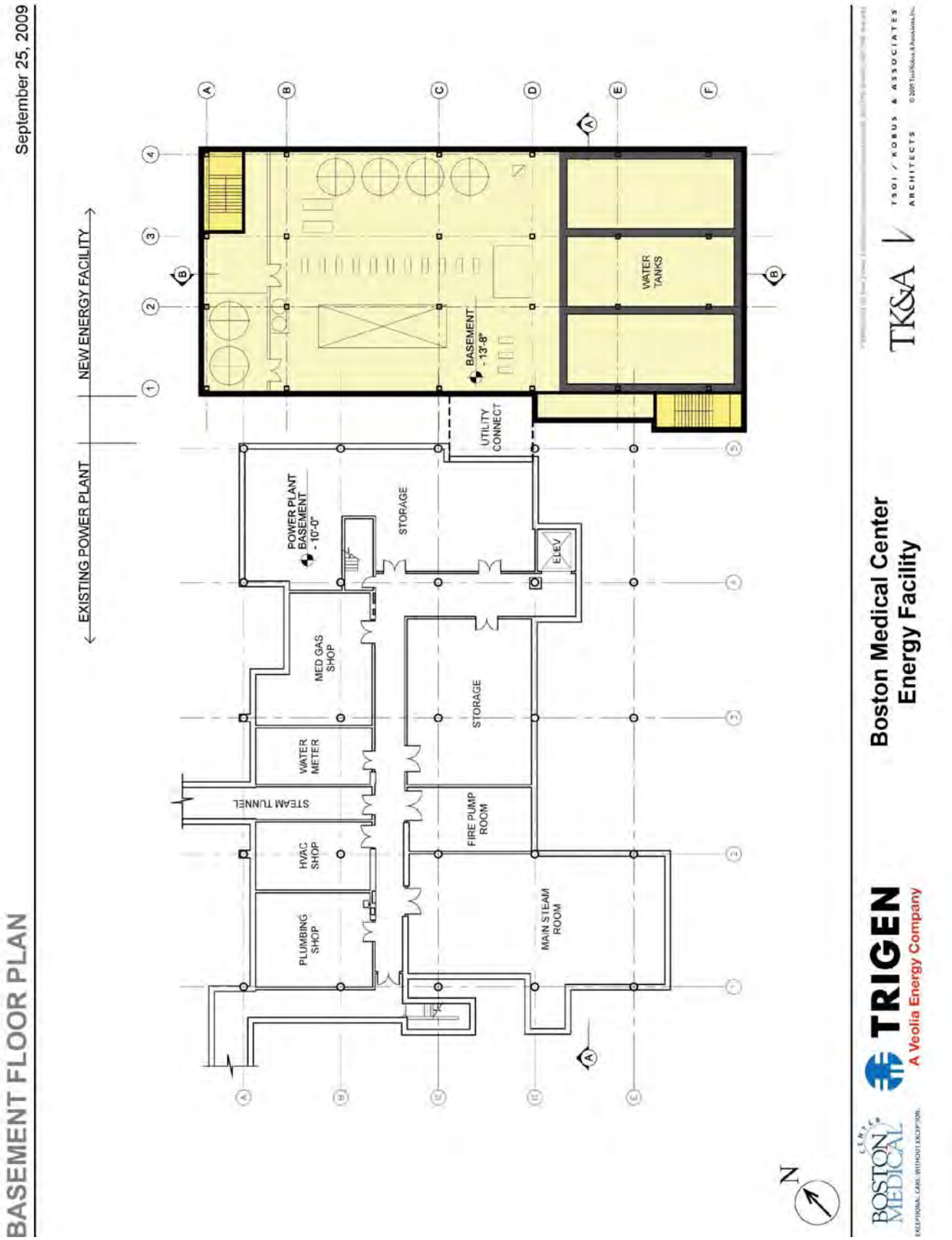


Figure 1-6 Level 1 Floor Plan

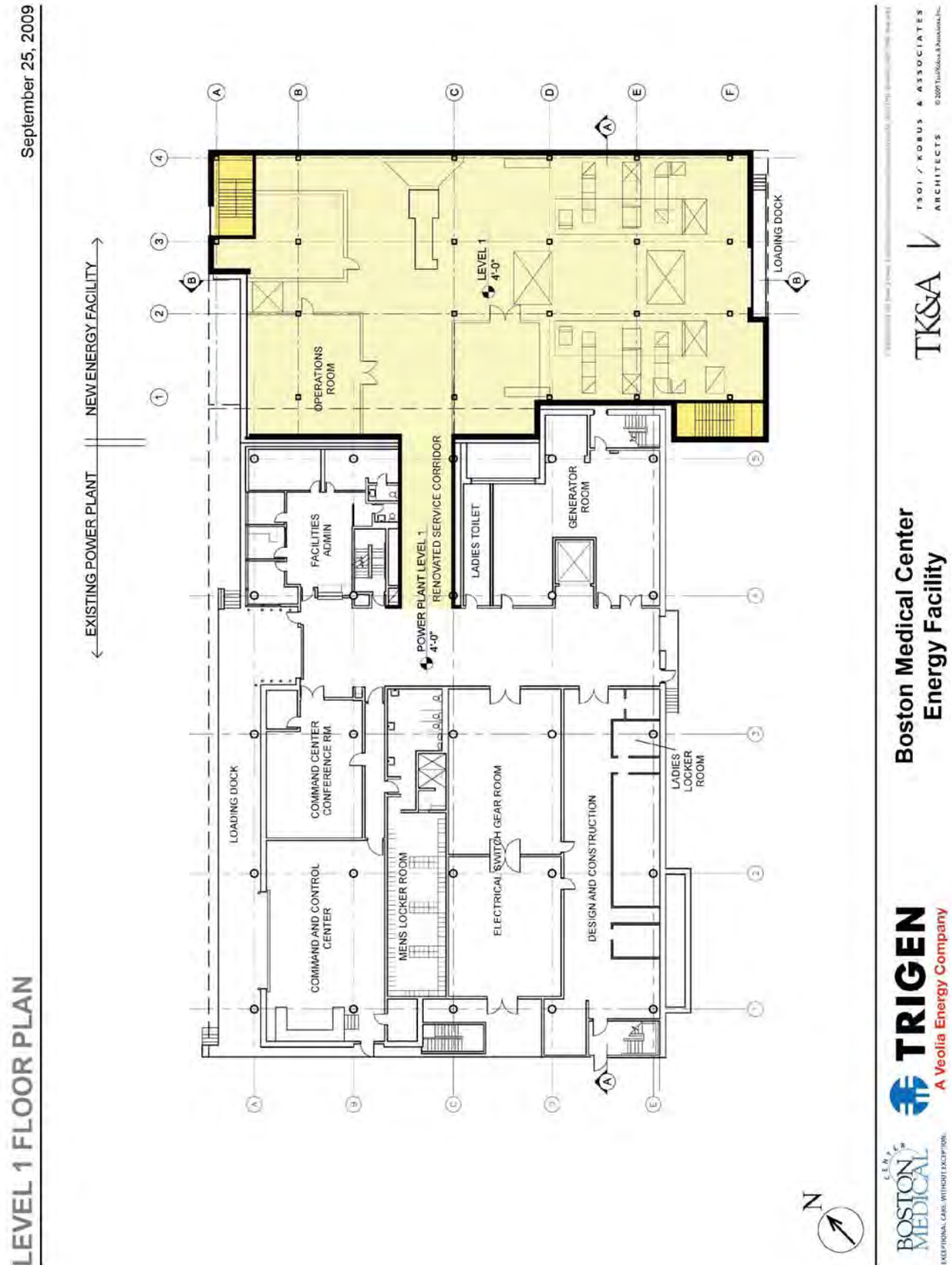


Figure 1-7 Level 2 Floor Plan

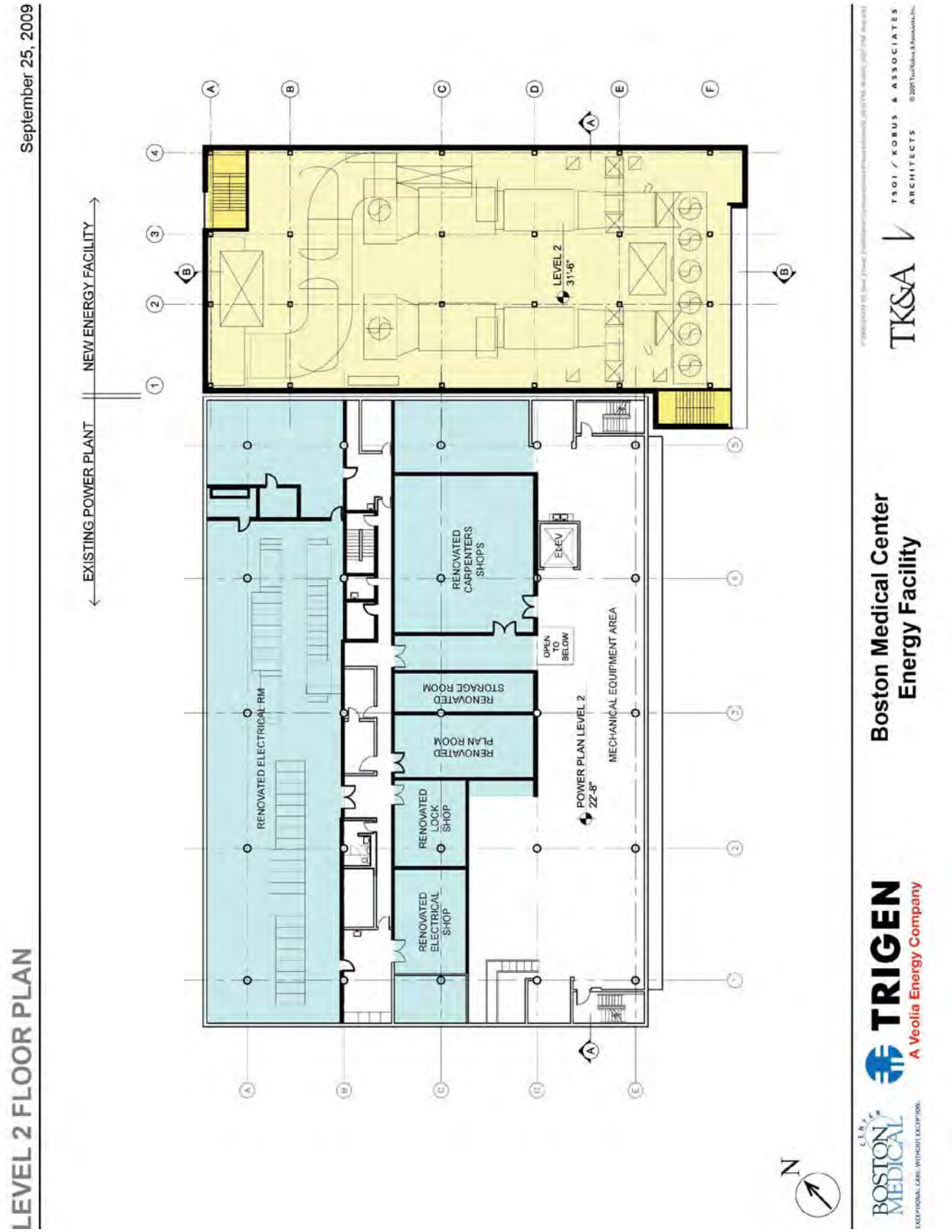


Figure 1-8 Level 3 Floor Plan

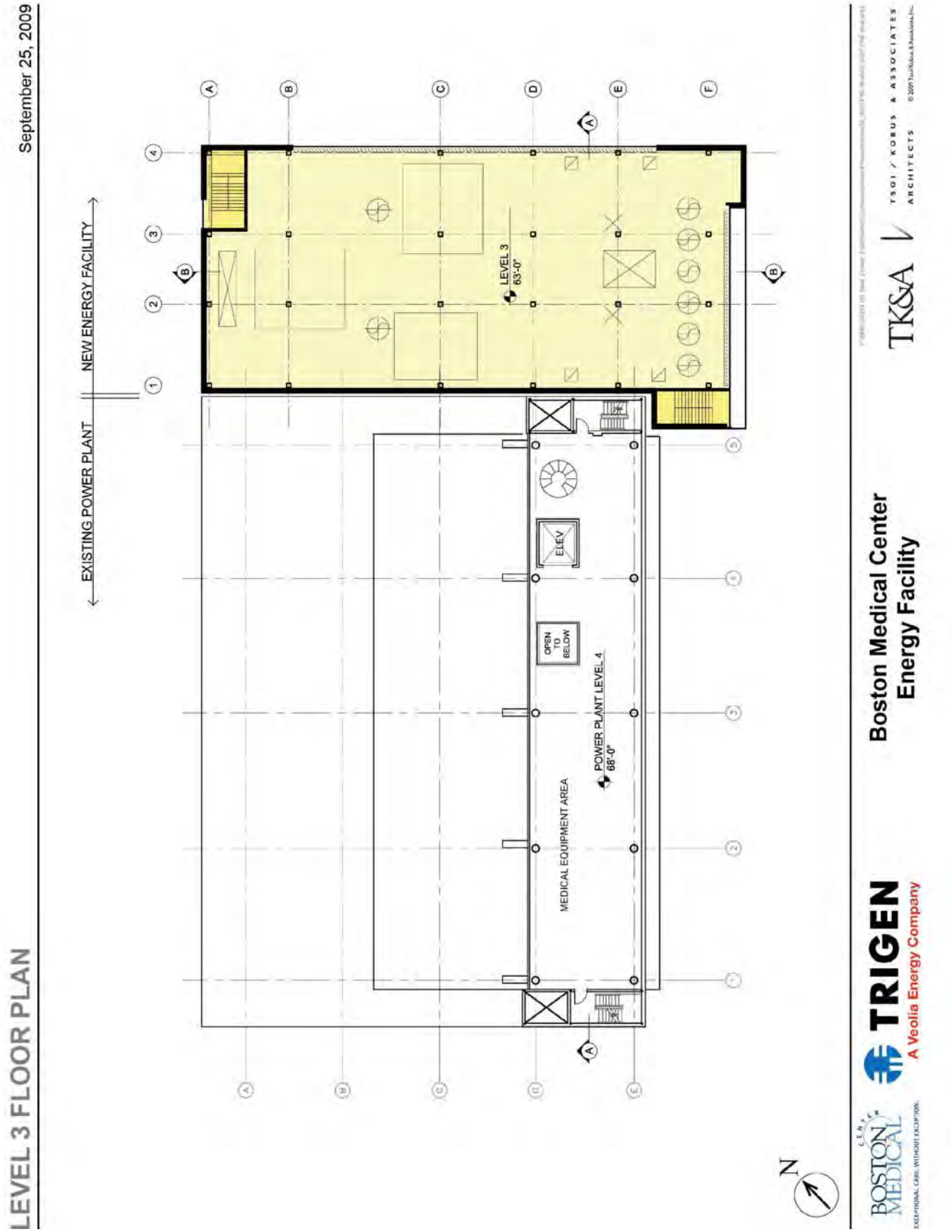


Figure 1-9 Penthouse Floor Plan

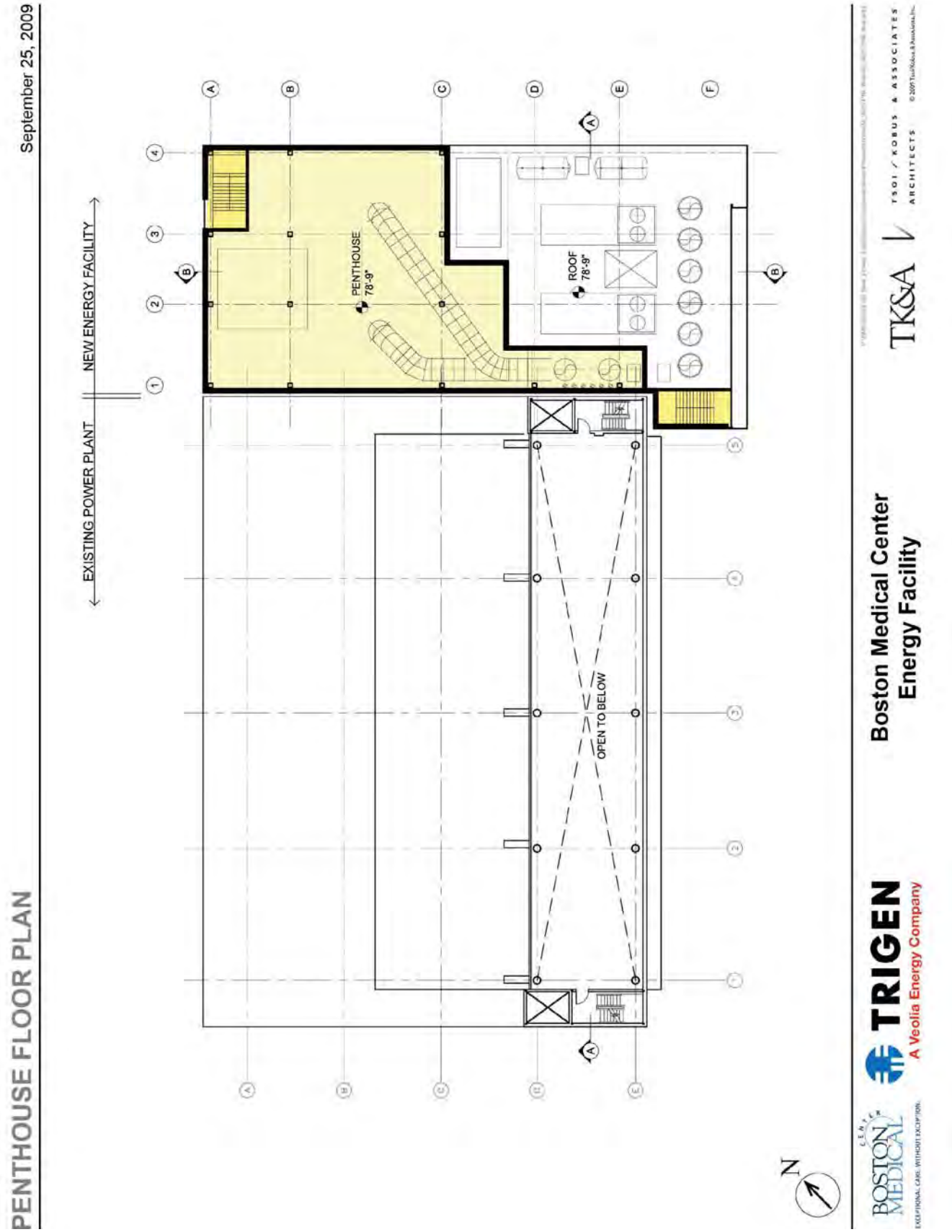


Figure 1-10 Roof Plan

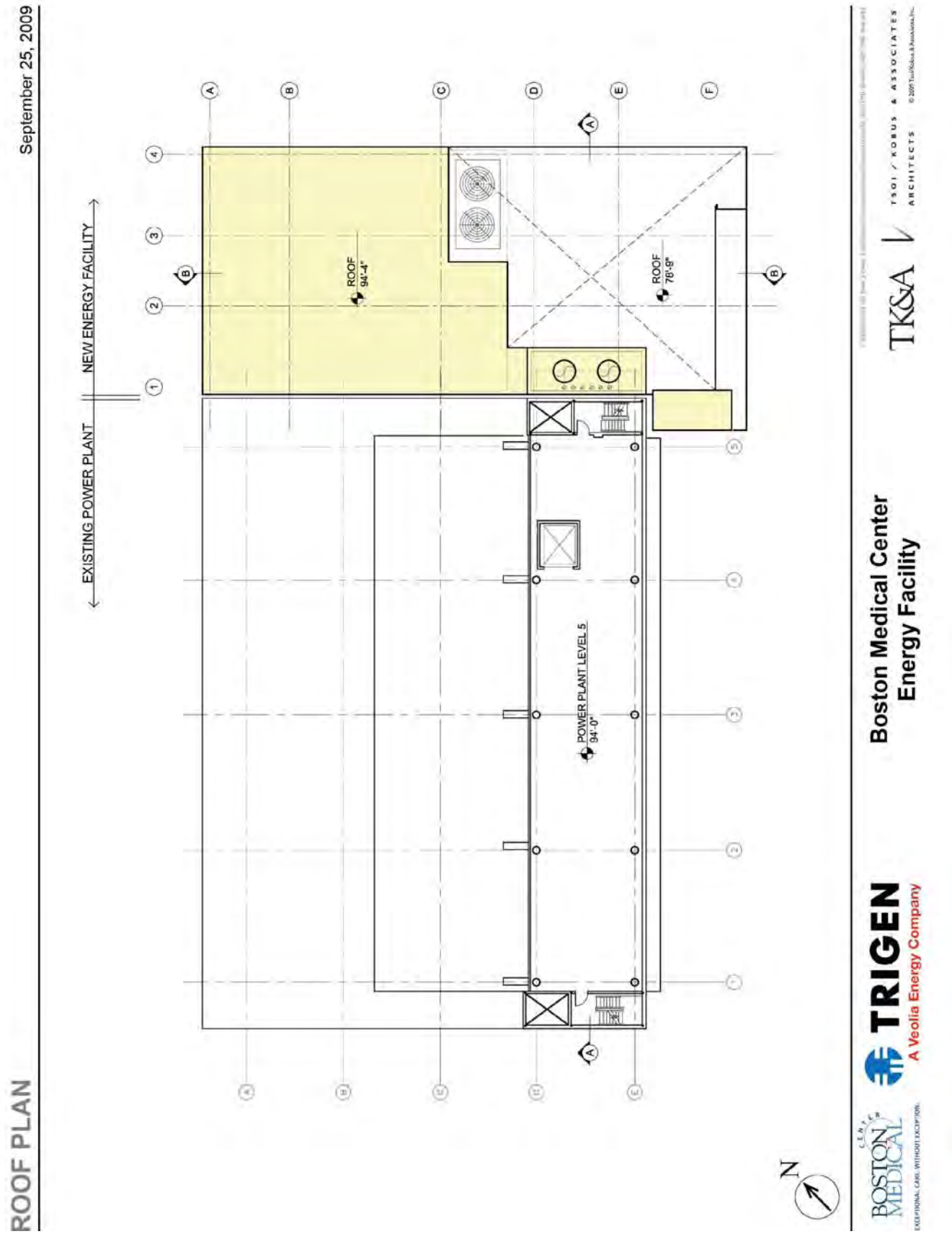


Figure 1-11 North Elevation

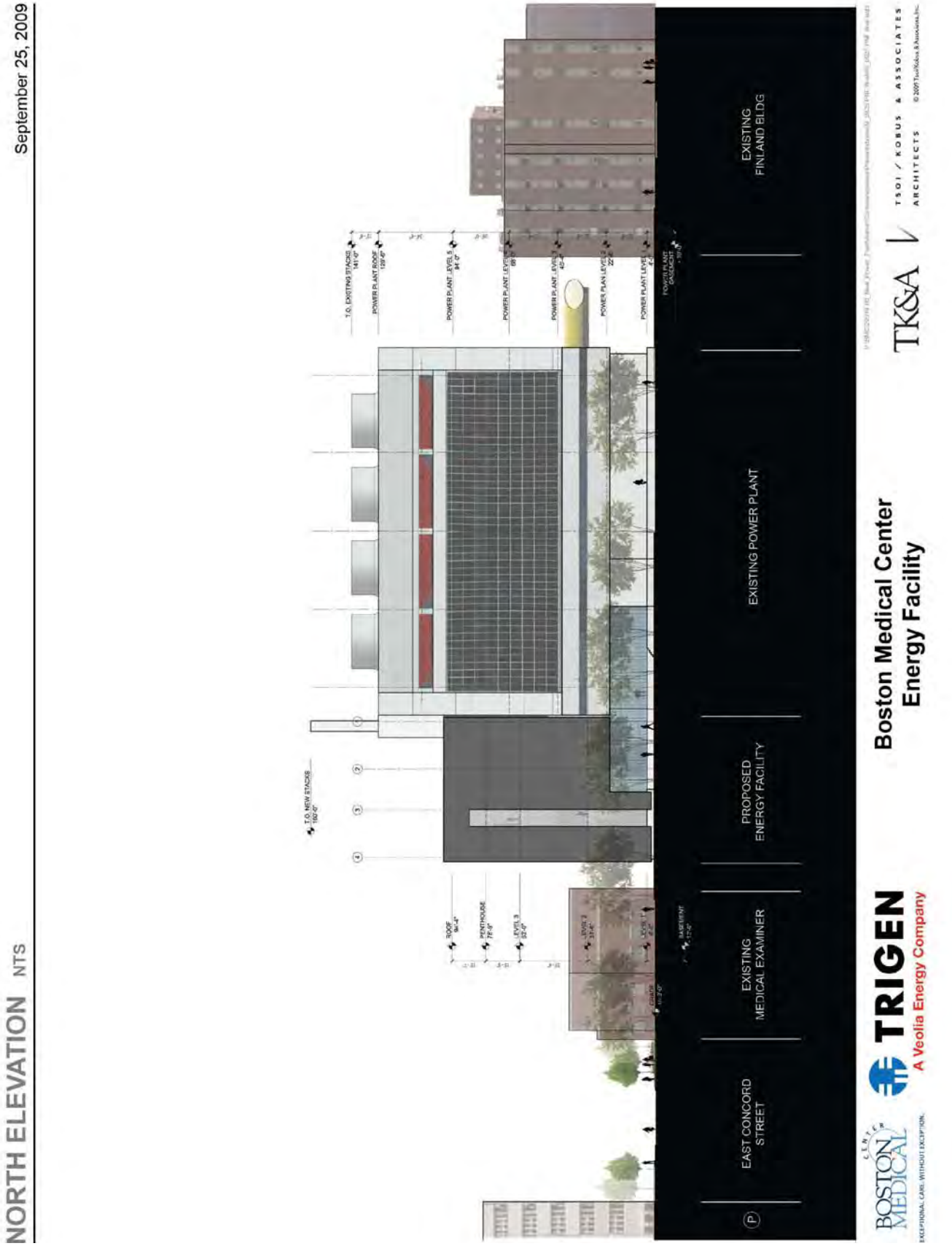


Figure 1-12 South Elevation

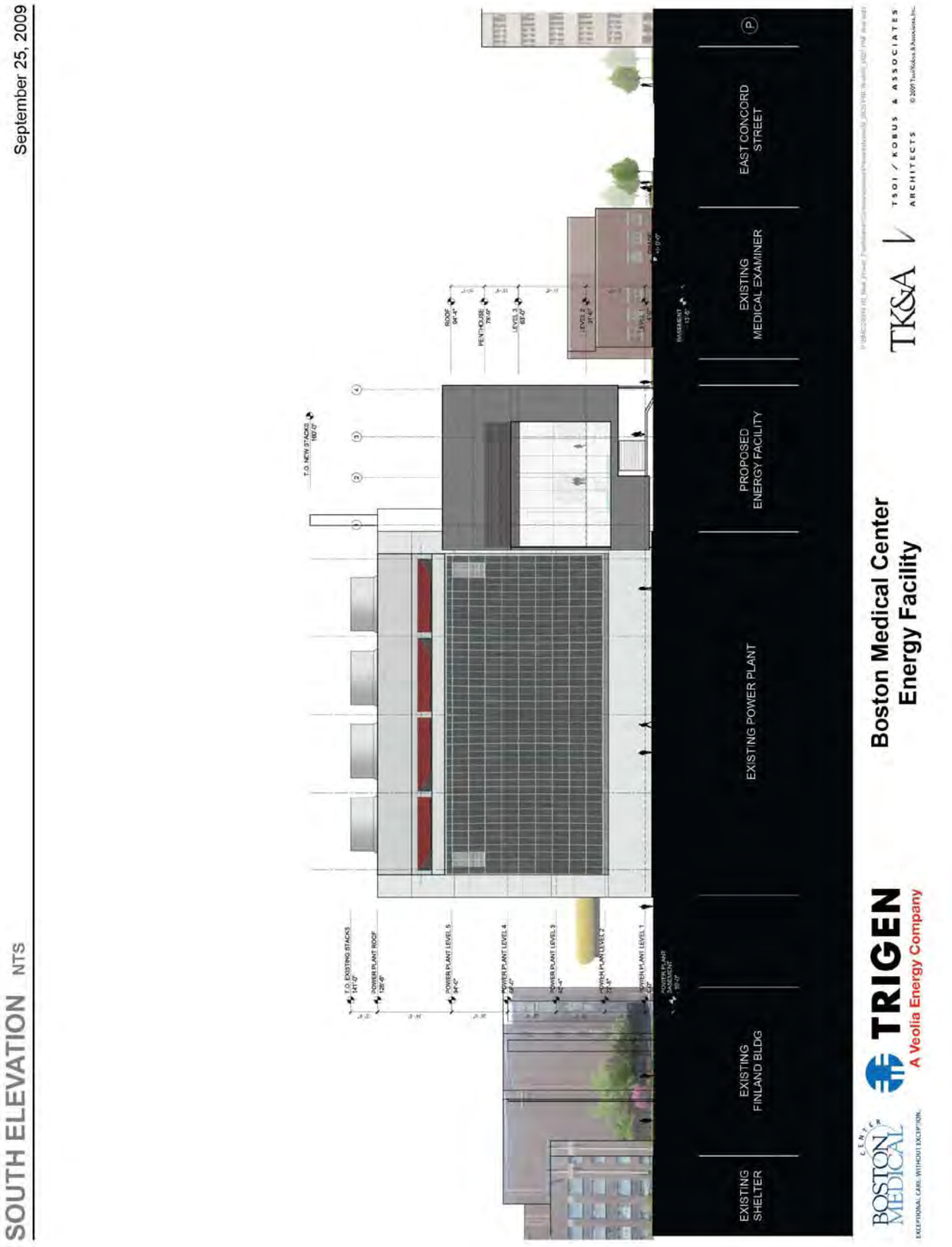
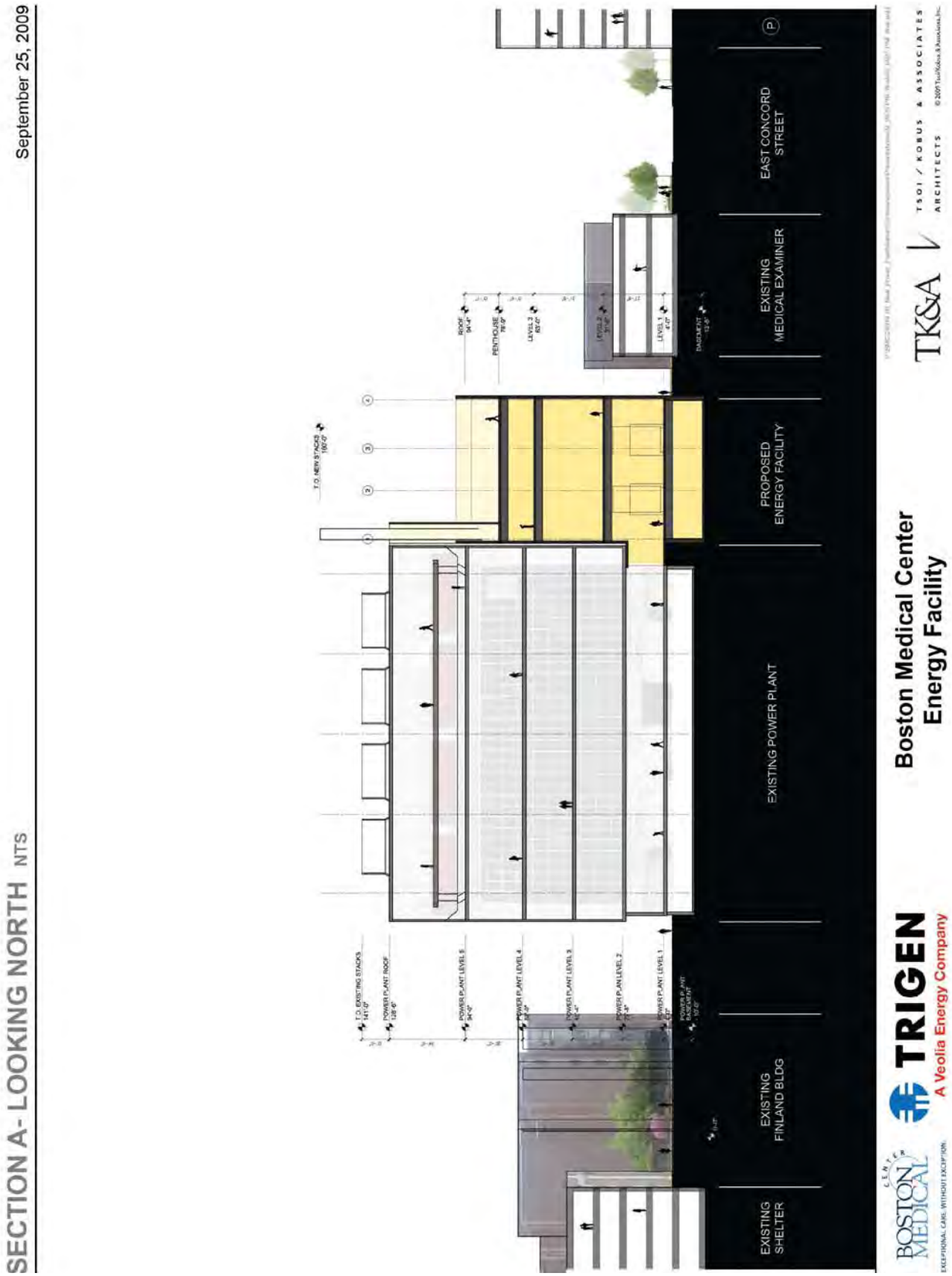


Figure 1-13 Section A – Looking North



1.5 Project Objectives

The following are the primary objectives of this Project:

- Reliability - The Energy Facility will add redundancy to BMC's existing energy supply and ensure a reliable power system – an especially important concept in operating a hospital. Currently, electricity is provided to BMC by NSTAR and Trigen-Boston supplies the steam. BMC will stay connected to these existing suppliers in the event that back-up energy is needed (e.g. during peak periods, scheduled equipment maintenance, or unexpected shutdowns).

- Efficiency - The Energy Facility will be located close to where BMC needs the power – a concept known as distributed generation. Placing a facility close to where the power is used is much more efficient and reliable than sending power farther away. This is based on the premise that with shorter distances for power to travel, there are fewer points for system failures. Further, the efficiency of the proposed system is approximately 72% as compared to a conventional single cycle power plant capable of operating at 33%.

- Reduced Environmental Impact - With the Energy Facility, BMC will be able to make electricity and steam from the same process – a process known as "combined heat and power" (CHP) or also referred to as "cogeneration". In this process, a combustion gas turbine is fueled by natural gas to generate electricity. Waste heat from the combustion turbine is then sent to a Heat Recovery Steam Generator to produce usable steam. BMC uses steam to heat buildings and for medical equipment sterilization. Combining electric and thermal energy generation into a single integrated process reduces fuel consumption and the impact on the carbon footprint dramatically.

  With the new facility, BMC plans to make 75% of its own electricity and 95% of its own steam. Within a year of operating this new facility, it is anticipated that BMC will have reduced its annual greenhouse gas emissions in excess of 18,000 metric tons of carbon dioxide, equal to the absorption potential of approximately 4,000 acres of pine forest.

1.6 Project Benefits

1.6.1 Direct Project Benefits

- Job Creation and Retention - The Energy Facility will create construction jobs in addition to generating highly-skilled long-term operations and maintenance jobs. During the approximately eighteen month construction phase of the Project, thirty-nine construction jobs will be created. Once the Project is complete, the Energy Facility will require seven new long-term operations and maintenance jobs.
- "Green" Job Creation and Training – The new full-time staff of the Energy Facility will receive training specific to the operation and maintenance of the associated state-of-the-art green technologies. Topics include: combustion turbines, heat recovery systems, emissions control equipment, dispatch optimization controls, and ISO New England programs.
- Reduced Environmental Impact – Meeting this Project objective will help BMC to shrink its carbon footprint through lesser greenhouse gas emissions and lower its impact on the local environment. See Section 1.5 for more information.

- Reduced Local Utility Impact – The proposed Energy Facility will enable BMC to generate 75% of its electricity and 95% of its steam. This subsequently decreases BMC's impact on the locally taxed energy infrastructure.
- Reduced Energy Costs – By producing steam and electricity through cogeneration, BMC will decrease its energy costs.

1.6.2 Annual Property Taxes / PILOT

Although much of BMC's property is tax-exempt, BMC contributes annually to the City of Boston's Payment in Lieu of Taxes (PILOT) program.

1.6.3 Linkage

Upon approval of the BUMC IMP in 2000, BUMC entered into a Development Impact Project ("DIP") Agreement with the BRA for its institutional projects which exceeded the threshold requirements of Article 80B of the Code. With the adoption of the new IMP for a new 10 year term commencing in 2010, BUMC and the BRA will enter into a new DIP Agreement which will govern all new projects which exceed the thresholds set forth in Article 80B of the Code. Due to the size of the proposed Energy Facility of approximately 48,000 square feet, such project will not be a Development Impact Project, but the area of such project will be deducted from the 100,000 square foot exclusion provided for in Article 80B, Section 80B-7 of the Code. Future institutional projects which would include the administration/clinical building and a new inpatient building will be subject to linkage payments since such buildings are designed to exceed 100,000 square feet and the remaining exclusion of 52,000 square feet would be applied to the first such project.

1.6.4 Other Economic Benefits

BMC's community goals are to continue to provide effective and accessible services to vulnerable populations in the Boston community and to continue to expand efforts that deepen relationships with the communities they serve. Estimated hospital direct expenses on community benefit programs in fiscal year 2008 totaled $18,434,426. Total community benefits programs expenditures in fiscal year 2008 per the Attorney General's guidelines were $30,204,021. In addition, this expenditure and budget summary does not include the costs associated with numerous other programs and projects of BMC that make valuable contributions to the community.

BMC contributes to the local economy through employment of Boston residents and the purchase of goods and services from Boston businesses. BMC spent $111 million fiscal year 2008 for goods and services provided by Boston suppliers.

1.7 Anticipated Permits, Reviews, and Approvals

Table 1-2 (on the next page) catalogs the permits, reviews, and approvals anticipated throughout the process.

Table 1-2 Anticipated Permits, Reviews, and Approvals

Agency Name	Permit / Review / Approval
Federal	
Federal Aviation Authority	Construction Permit for Temporary Airspace Obstruction
State	
Executive Office of Environmental Affairs, Massachusetts Environmental Policy Act	Secretary's Certificate
Massachusetts Historical Commission	State Register Review
Department of Environmental Protection, Division of Air Quality Control	Non-Major Comprehensive Air Plan Approval Environmental Results Program Certification for Engines and Turbines
Department of Environmental Protection, Division of Water Pollution Control	Groundwater Discharge Permit Clean Water Act - Pre-treatment Standards
Massachusetts Water Resources Authority	Sewer Use Discharge Permit Individual Discharge/Sewer Permit 8M Permit
Local	
Boston Redevelopment Authority	Article 80 Project Review
Boston Landmarks/South End Landmark District Commission	Application for Certificate of Design Approval
Boston Civic Design Commission	Design Review
Boston Groundwater Trust	Groundwater Trust Certification/Conditional Use Permit
Boston Transportation Department	Construction Management Plan Transportation Access Plan Agreement
Boston Air Pollution Control Commission	Air Quality Control Permit
Boston Water and Sewer Commission	Construction Dewatering Permit Sewer/Extension/Connection Permit Stormwater Management Plan Site Plan Approval
Boston Inspectional Services Department	Building and Occupancy Permits
Boston Public Improvement Department	Street and Sidewalk Occupancy Permits
Boston Public Works Department	Street Opening Permit
Boston Fire Department	Plan Review

1.8 Zoning

The proposed Project site is located within the BUMC Institutional Master Plan area and shown on Map 1P of the South End Neighborhood District which was adopted by MAP Amendment No. 273 by the Boston Zoning Commission on June 28, 2000, subsequent to the approval by the BRA on May 18, 2000 of the BUMC IMP. In accordance with the provisions of the Boston Zoning Code and Article 64, the South End Neighborhood District Zoning, projects within the district are subject to the provisions of the approved Institutional Master Plan. The BUMC IMP was approved by the BRA on May 18, 2000 and the Zoning Commission on June 28, 2000, and approved by the Mayor on July 13, 2000. In accordance with provisions of Section 80D-2, institutional projects are required to be consistent with the approved Institutional Master Plan. The Project will be consistent with zoning as approved by the BRA and the Zoning Commission.

1.9 Public Review Process

By filing this PNF, the Proponent formally initiates Large Project Review under Article 80B with the Boston Redevelopment Authority. The Proponent has met with members of the BRA and is committed to an open and inclusive public process. As the PNF progresses, the Proponent will continue to seek input from community representatives, neighbors and stakeholders, as well as public and elected officials.

Section 2.0

2.0 ASSESSMENT OF REVIEW COMPONENTS

2.1 Urban Design

2.1.1 Introduction

From the outset of the merger of Boston City Hospital, Boston Specialty & Rehabilitation Hospital, and University Hospital in 1996, the dominant urban design objective of BMC has been to create a cohesive medical center campus. It has also been a goal to integrate the overall campus with the surrounding neighborhoods through sensitive building, open space planning and site beautification along the periphery of the campus. The combination of these design principles will enhance the physical image of the campus as well as improve patient, staff and student perceptions of BMC.

2.1.2 Urban Design Principles

The Energy Facility is designed in the context of future development proposed for the South of Albany Campus defined in the recently submitted BUMC IMPNF. It is in this context that important urban planning principles become the guidelines for its design. These principles include:

- Transforming the Albany Street campus image;
- Complementing existing context: massing, scale and materials;
- Creating a clear and welcoming sense of arrival;
- Enhancing open space opportunities on the campus, both short and long-term;
- Developing pedestrian-friendly street edges;
- Enabling connectivity to parking and existing buildings;
- Integrating sustainable design principles and operations; and
- Planning for future growth and transformation.

2.1.3 Existing Context and Project Location

The current Albany Street edge is defined by varying building setbacks and urban densities. The buildings have different vintages and styles. As BMC evaluated expansion and renovation opportunities, it began to recognize the Albany Street edge of the campus as a primary arrival zone. BMC thusly decided to transform the Albany Street image through urban planning and various street level improvements, such as plantings and landscaping. The ACB, which is currently under construction, marks the first phase in a long-term objective of transforming the nature and image of the Albany Street edge of the BUMC campus.

The proposed location of the Energy Facility to the east of the existing Power Plant will begin to better define the Albany Street edge, allow for future development of the South of Albany Campus, and align with the previously mentioned urban planning principles. As future phases of the Master Plan are developed, the desired density, enhancement, and definition of Albany Street will be realized.

The Energy Facility will abut the existing Power Plant to the west and will be shorter than that building in overall height. (See Section 2.1.4 and Figures 2-1 through 2-2.) The Project will closely border the Chief Medical Examiner's building to the east. The north side of the site may be developed as a future Administration/Clinical Building for BMC. As the proposed Energy Facility will ultimately be bordered by three buildings on three of its elevations and "fronts" to a service area, the proposed building itself will be obscured from

the Albany Street view and have minimal visual impact on its surroundings. See Appendix A for context site photos.

2.1.4 Height and Massing

The height and massing are primarily dictated by dimensional clearances required for the large pieces of equipment to be housed within the building envelope. The height of the building will be approximately 100 feet to the top of the partially enclosed penthouse level. The north face will align approximately with the north face of the existing Power Plant. The existing staff parking along Albany Street will be maintained until the proposed Administration/Clinical Building is built there. The south side is bound by setbacks associated with the Roxbury Canal.

Two 6'-0" diameter exhaust stacks will be approximately 160 feet above grade. They will be located adjacent to the taller portion of the existing Power Plant to reduce the perceived height. The height (to the top of the roof) of the Energy Facility will be approximately 35'-0" shorter than the height (to the top of the roof) of the Power Plant. The Project's height and massing are consistent and compatible with the institutional scale and density of the existing BioSquare development to the east and Crosstown Development to the west. See Figures 2-1 and 2-2 for aerial views.

2.1.5 Material and Image

Simple massing and a minimal material palette are proposed for the Project in order to reduce its visual impact on the neighborhood. Dark grey metal panels and curtain wall glazing will be featured. A large-scale window opening will provide a vertical accent along Albany Street as a counterpoint to the horizontal expression of the existing Power Plant. Smaller scale vertical openings are proposed along the east façade. These openings help break down the scale of the massing.

Some portions of the metal panel wall system will be perforated and coordinated with window openings to provide varying degrees of translucency. A large expanse of curtain wall and a perforated metal panel screen is proposed along the south side facing the Massachusetts Avenue Connector. This view is more prominent and the design will respond positively to the surrounding context. The design of the Energy Facility will highlight its utilitarian function while conveying BMC's commitment to sustainable design and environmental responsibility.

2.1.6 Vehicular Access and Circulation

Normal staff and service access for the Energy Facility will be via existing Power Plant entrances and loading docks located along the Albany Street side of the existing facility. A loading dock is planned on the south side of the Energy Facility when the north side of the site is developed for a proposed Administration/Clinical Building. At that time, service access for large deliveries and equipment maintenance will occur along the south side. The helipad will be relocated to south of the Finland Building and the ambulance route will be maintained.

2.1.7 Site Improvements

Sidewalk and landscaping improvements along Albany Street will occur as part of the previously approved ACB. Improvements include new scored concrete sidewalks and street trees. The existing staff parking lot in front of the Power Plant will be re-paved and re-striped.

Figure 2-1 Aerial View A – Looking East

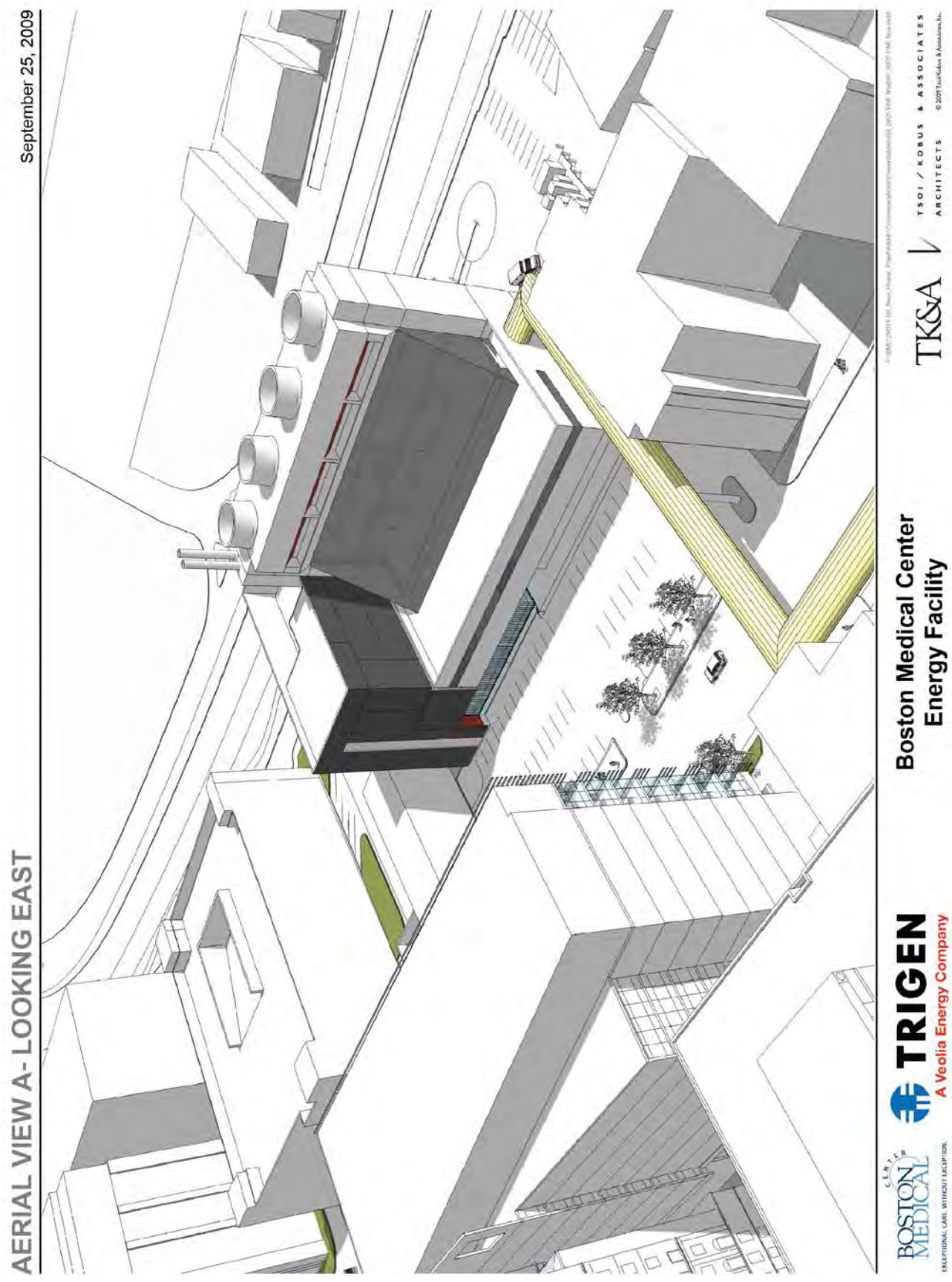
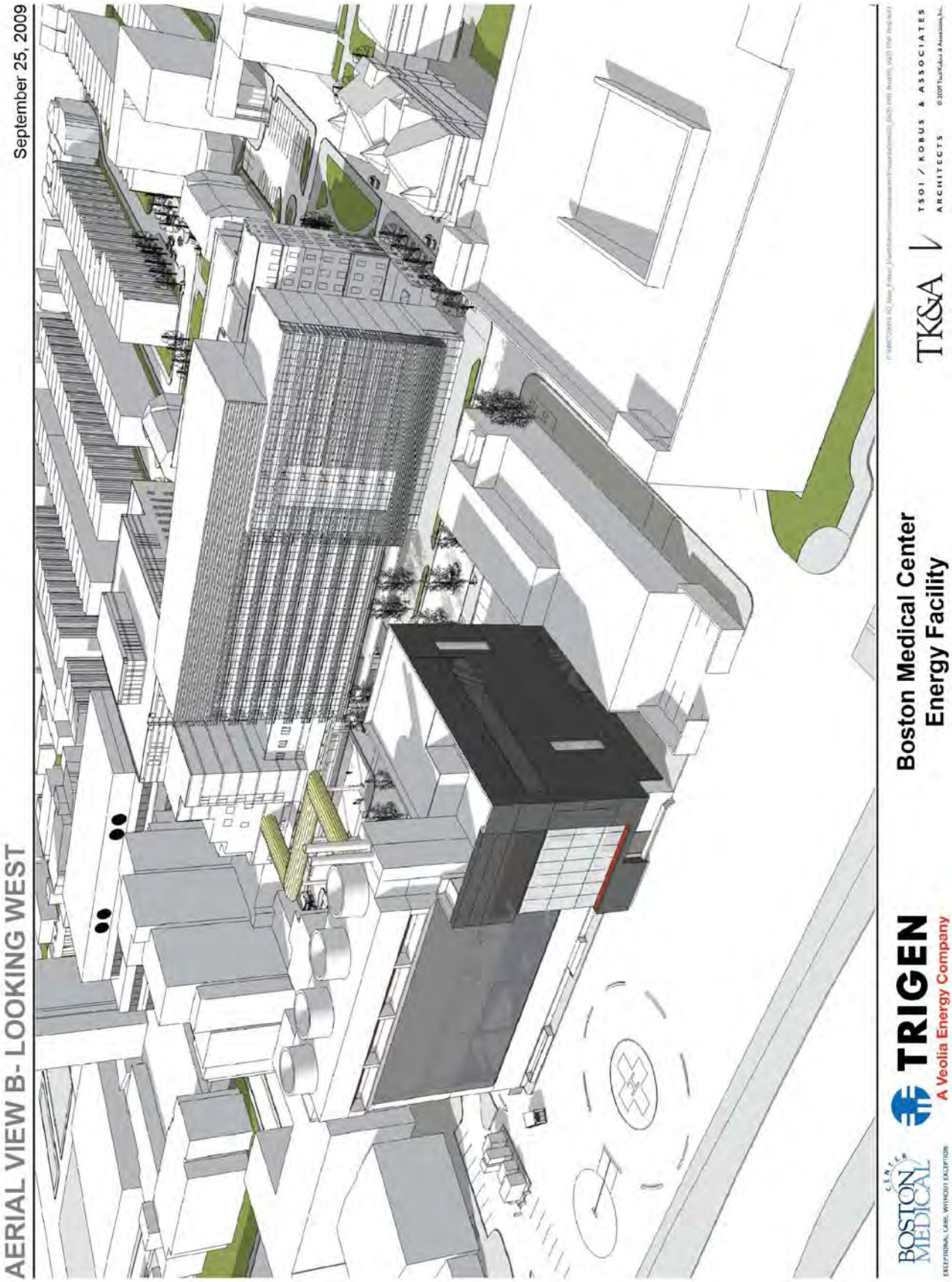


Figure 2-2 Aerial View B – Looking West



2.2 Sustainable Design

2.2.1 Introduction

LEED qualification is something that BMC considers important and relative to the Project. Unfortunately, LEED does not offer a listing category for a Combined Heat and Power (CHP) facility.

CHP is considered an Eco-friendly "green" technology recognized by the Massachusetts Green Communities Act and the Massachusetts Technology Collaborative as a cost effective, scalable method of producing electricity and utilizing waste heat to increase efficiency at the host site.

2.2.2 Energy System Summary

Combined heat and power is the simultaneous production of two useful forms of energy (electricity and thermal) from a single fuel source. The CHP system configured for the BMC Energy Facility is comprised of two (2) 7.5 MW nominal capacity natural gas combustion turbine generators (CTGs) coupled with heat recovery steam generators (HRSGs). The HRSGs utilize the exhaust waste heat from the CTGs to produce steam. The BMC CHP system is expected to have total efficiency of 72%. The overall efficiency of the Project is expected to be higher than the combination of the traditional utility grid power generation and the conventional steam heating plants.

It is estimated that the Energy Facility will average 434,338 MMBTU savings per year in utilizing CHP instead of purchasing utility produced electricity and steam. By utilizing the waste heat to produce steam, the overall efficiency is boosted. Over the course of thirty (30) years, it is estimated that 13,030,141 MMBTU's of energy will be saved through the use of cogeneration at the proposed Energy Facility.

In summary, the proposed CHP for the Energy Facility has the following important benefits:

- Reduces Carbon Footprint – CHP generation reduces carbon emissions by over 20% over electricity purchased from the electrical utility and heat/chilling generated with traditional boilers and chillers.
- Energy Efficiency and Operating Cost Savings – The CHP plant has very high overall cycle efficiency. It is in excess of 70%, which results in large energy operating cost savings.
- Lower Air Emissions – Since the CHP plant operates at a higher overall cycle efficiency, it will have lower air emissions for the total energy produced (electrical plus thermal), as compared to the same total energy generated by the traditional electrical generating stations plus the conventional steam boiler plants.
- Best Available Control Technology - The proposed CHP plant is expected to employ Best Available Control Technology to further reduce the CO and NOx emissions.

2.2.3 Design

The CHP facility building and the cogeneration process will incorporate to the extent practical various sustainable design and energy recovery measures namely:

- Energy Efficient Building Envelope

- Energy Efficient Lighting System
- Process Waste Water Reclamation
- Waste Heat Recovery from Boiler Blow Down
- Waste Heat Recovery with Stack Economizers

2.3 Transportation

2.3.1 Vehicle Traffic

The proposed Energy Facility will require only seven new full time employees and is not expected to have any impact on the surrounding transportation network: Albany Street, Massachusetts Avenue, or any other local or regional roadways. As the number of new employees required for the Energy Facility is minimal, person trips that are generated will be negligible.

2.3.2 Service and Loading

Trucks will need to access the Energy Facility periodically to service the equipment or to deliver new equipment. Trucks will enter the Project site via the existing access from Albany Street. Service and loading activities will occur at the existing loading dock of the Power Plant.

When the north side of the Project site is developed, the loading dock will be relocated to the south side of the Project site. At that time, trucks will access the Energy Facility via the southbound Frontage Road access and BioSquare Drive eliminating this function from Albany Street.

2.3.3 Construction Period Impacts

During construction of the Energy Facility, the impacts to the transportation network and to the community are expected to be minor. The Project will be located several blocks from any residences thusly eliminating any impacts to them. The majority of the work will be staged on BMC property to minimize any effects on pedestrian, bicycle and vehicle operations in the area. See Section 2.4.11 – Construction Management Plan for more information on managing impacts.

Prior to commencing construction, BMC will submit a Construction Management Plan (CMP) to the Boston Transportation Department for review and approval.

2.4 Environmental Protection

2.4.1 Wind

The Energy Facility is designed to be of similar height and massing to buildings in the vicinity of the Project Site. The building itself will be approximately 100 feet above grade and the 6'-0" diameter stacks will be approximately 160 feet above grade.

Vertical deflection of upper winds usually results from buildings of 300 feet or more in height. As the height of the Project is approximately 100 feet above grade, it is not anticipated that the Project will deflect upper level winds. Channeling of airflows and induced turbulence

usually occurs in high-density areas or urban street canyons. The Project does not create a canyon effect and is not expected to result in increased wind speeds.

Based on the height of the Project and its similar massing to surrounding buildings, the Project is not expected to cause significant material impacts to upper level or pedestrian level winds. If required, further wind analysis will be provided in the DPIR.

2.4.2 Daylight

The Project site is located within a dense urban environment surrounded by buildings of similar height and massing as the proposed Project. The Project is set back approximately 90 feet from the sidewalk and Albany Street (to the north). The site is immediately bordered to the east and west by buildings of similar height. Due to the existing configuration of the Project site, minimal impacts to daylight obstruction are anticipated.

2.4.3 Shadow

The proposed Project site is located in a densely urban area. As the proposed Energy Facility will be surrounded by and adjacent to structures of similar height and massing, any shadow impact will be comparable to the neighboring buildings. It is anticipated that the Energy Facility will not create significant new shadow coverage on public ways or open spaces in the area when compared to existing conditions during the time periods studied. See Appendix B for Shadow Study diagrams.

2.4.4 Solar Glare

It is not anticipated that the Project will include the use of reflective glass or other reflective materials on the building facades that would result in adverse impacts from reflected solar glare from the Project.

2.4.5 Noise

The Project site is located proximate to I-93 and the Massachusetts Avenue Connector which are the sources for much of the ambient noise in the area. In addition, the ambient noise levels around the Project site are elevated due to the urban nature of the area. Design of the Project will consider operational noise and will include noise attenuation mitigation as needed to ensure compliance with City of Boston Noise Zoning levels. If required, further noise impact analysis will be provided in the DPIR. See Section 2.4.11.5 for information on noise impacts during construction.

2.4.6 Flood Hazard Zones / Wetlands

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for the site located in the City of Boston - Community Panel Number 250286 0010 C indicates the FEMA Flood Zone Designations for the site area. The map shows that the Project is located in a Zone C, Area of Minimal Flooding. The site does not contain wetlands.

2.4.7 Geotechnical/Groundwater

2.4.7.1 Subsurface Conditions

Generally the site is overlain with approximately 8 to 10 ft of miscellaneous fill. The fill unit is underlain by relatively soft organic silt and peat (15 to 20 ft thick layer). Naturally deposited marine clay is present approximately 25 to 30 ft below grade. These deposits are comparatively thick and underlain by a glaciomarine deposit and glacial till. Bedrock is approximately 125 to 175 ft below the ground surface.

Groundwater level measurements obtained at monitoring wells installed on and in the vicinity of the Project have been reviewed to develop an understanding of groundwater conditions and considerations for below-grade construction design and planning. Groundwater levels vary with season and other local influences, and groundwater levels ranging between three and eight feet below grade (El. 9 to 14) were recorded in the past.

2.4.7.2 Foundation Methodology

The surficial fill and organic soils are not suitable for foundation support. It is anticipated that the proposed foundations would need to extend at least to the naturally deposited, inorganic marine clay or glacial till/bedrock, depending upon the structure loads. For the one basement level design being considered, foundations that are feasible include drilled shafts and piles.

2.4.7.3 Groundwater Impacts

The proposed structure includes one level below grade and will subsequently involve some subsurface excavation. The foundation elements that are required to extend down to competent soils, below the groundwater level, will be solid, discontinuous, discrete elements that will not cause the groundwater to raise, pond or be lowered.

The Project is located within the Groundwater Conservation Overlay District (GCOD). The Project will be required to infiltrate 1” of runoff per square foot of new building footprint. This will likely be accomplished with the design of a subsurface infiltration system. This system may be designed to accept clean roof runoff and infiltrate it to the ground. Infiltration of stormwater is one on the best ways to help replenish the aquifer and maintain groundwater levels. As the existing Project area is entirely impervious and a new subsurface infiltration system will be introduced to the site, any infiltration of stormwater from the proposed Project will have a positive effect on groundwater levels in the area.

The Project design will comply with GCOD and City standards by establishing design and construction methodology which protects groundwater. The Project design will also demonstrate that the Project results in no negative impacts to groundwater levels through engineering evaluations. An engineers’ certification report will be submitted to demonstrate that the standards have been met. Methods to assure these standards will include use of fully waterproofed basement (walls and lowest level floor slabs) for the portion of the structure that extends below groundwater levels which will be designed to resist hydrostatic uplift pressures. Design criteria for the Project will include a provision that no long term groundwater pumping will be allowed.

A dewatering plan will be developed to address affects on groundwater levels and filtering dewatered groundwater prior to discharge. The Proponent will coordinate with the Boston Groundwater Trust (BGwT) in regard to groundwater monitoring prior to and during construction. One groundwater monitoring well will be installed to document existing groundwater levels and hydrogeologic conditions. The well will be installed prior to the start of construction and will be installed in accordance with City and BGwT standards for permanent monitoring wells. The well will be installed at a location where it will be accessible for long term monitoring.

2.4.7.4 Water Quality

The proposed Project will be designed and constructed to protect surface and ground waters from negative impact to water quality both during and post construction. The site of the proposed Project is currently 100% paved and used for parking and as a storage area. Approximately 10,400 s.f. of this pavement area will be removed and replaced with a new building. Runoff from the new building roof, which is not subjected to parking lot pollutants such as sand and salt, will likely be free of sediments and will be able to be infiltrated into the ground. The replacement of paved parking area with building area will decrease the pollutant load in runoff from the site and help to improve water quality within the area.

Stormwater runoff from the site during construction will be controlled through the use of sedimentation barriers, catch basin silt sacks, stabilized construction entrances and other appropriate Best Management Practices (BMP's). These BMP's will serve to protect water quality by preventing sediment laden runoff from leaving the work area and entering the existing stormwater system and ultimately Boston Harbor.

2.4.7.5 Solid and Hazardous Wastes

Solid waste generated by construction will consist of excavated material and debris from demolition. Excavated material will be composed of miscellaneous fill and underlying natural deposits. Debris resulting from the demolition of the existing structures will be recycled and handled in accordance with the DEP requirements for construction debris.

Excavation and off-site disposition will be conducted in accordance with a Soil Management Plan developed for the Project and included as part of the Construction Documents. The Soil Management Plan will describe procedures for identification management and off-site transport of any contaminated soils. Off-site disposition of excavated material will be in accordance with applicable regulations.

2.4.8 Rodent Control

A rodent extermination certificate will be filed with the building permit application to the City. Rodent inspection monitoring and treatment will be carried out before, during, and at the completion of all construction work for the proposed Project, in compliance with the City's requirements. Rodent extermination prior to work start-up will consist of treatment of areas throughout the site. During the construction process, regular service visits will be made.

2.4.9 Wildlife Habitat

The site is within a fully developed urban area and, as such, the proposed Project will not impact wildlife habitats as shown on the National Heritage and Endangered Species Priority Habitats of Rare Species and Estimated Habitats of Rare Wildlife.

2.4.10 Air Quality

The Project will allow BMC to generate 75% of its own electricity and 95% of its own steam. Cogeneration is a highly efficient method to produce steam and power, resulting in one of the lowest fossil fuel emissions and greenhouse gases. The facility, within one year of operation, will reduce BMC's annual greenhouse gas emissions in excess of 18,000 metric tons of carbon dioxide. The cogeneration facility will consist of two Taurus 70 gas turbines and two duct burners to provide supplemental steam to the BMC distribution system. The gas turbines and duct burners will be fueled by natural gas under normal operating conditions. In the event of an emergency, the gas turbines and duct burners will be fueled by the existing fuel oil storage tank in order to support continuous operation.

The facility will be a minor source of air emissions and will need to file an Environmental Results Program form for a Non-Emergency Turbine and a Non Major Comprehensive Air Plans Approval application for its duct burners. The turbine and duct burner will be designed with Selective Catalytic Reduction (Oxides of Nitrogen (NOx) controls) and Oxidation Catalysts (Carbon Monoxide (CO) and Volatile Organic Compounds (VOC) controls) to meet Massachusetts Department of Environmental Protection's (MassDEP) requirements for Best Available Control Technology. The cogeneration facility will also demonstrate compliance with the National Ambient Air Quality Standards. Therefore, the Project will have minimal impacts to air quality.

The Project will not result in material increases in vehicle trip generation and therefore air quality impacts associated with vehicle emissions will be minimal. Please see Section 2.4.11.6 for information on air quality impacts during construction.

2.4.11 Construction Management Plan

A Construction Management Plan (CMP) will be submitted to the Boston Transportation Department (BTD) for review and approval prior to issuance of a building permit. The CMP will define truck routes which will help minimize the impact of trucks on local streets. The construction contractor will be required to comply with the details and conditions of the approved CMP.

Construction methodologies that ensure public safety and protect nearby businesses will be employed. Techniques such as barricades, walkways, painted lines, and signage will be used as necessary. Construction management and scheduling, including plans for construction worker commuting and parking, routing plans and scheduling for trucking and deliveries, protection of existing utilities, maintenance of fire access, and control of noise and dust, will minimize impacts on the surrounding environment.

2.4.11.1 Construction Schedule and Coordination

Construction of the Project is estimated to last approximately 18 months. Initial site work is expected to begin during the 4th Quarter of 2010.

Typical construction hours will be from 7:00 am to 6:00 pm, Monday through Friday, with most shifts ordinarily ending at 3:30 pm. No sound-generating activity will occur before 7:00 am. If longer hours, additional shifts, or Saturday work is required, the Construction Manager will place a work permit request to the Boston Air Pollution Control Commission and BTD in advance. Notification should occur during normal business hours, Monday through Friday. It is noted that some activities such as finishing activities could run beyond 6:00 pm to ensure the structural integrity of the finished product. (Certain components must be completed in a single pour and placement of concrete cannot be interrupted.)

Proper planning with the City, neighborhood and developers of other projects under construction in the area will be essential to the successful construction of the Project. The construction contractor will be responsible for coordinating construction activities during all phases of construction with City of Boston agencies to minimize potential scheduling and construction conflicts with other ongoing construction projects in the area.

2.4.11.2 Construction Staging and Public Safety

Primary staging will be on-site. The proposed construction staging plan will be designed to isolate the construction while providing safe access for pedestrians and vehicles during normal day-to-day activities and emergencies. The staging areas will be secured by chain-link fencing to protect pedestrians from entering these areas.

Although specific construction and staging details have not been finalized, the Proponent and its construction management consultants will work to ensure that staging areas will be located to minimize impacts to pedestrian and vehicular flow. Secure fencing and barricades will be used to isolate construction areas from pedestrian traffic adjacent to the site. In addition, sidewalk areas and walkways near construction activities will be well marked and lighted to protect pedestrians and ensure their safety. If required by BTD and the Boston Police Department, police details will be provided to facilitate traffic flow. Construction procedures will be designed to meet all Occupational Safety and Health Administration (OSHA) safety standards for specific site construction activities.

2.4.11.3 Construction Employment and Worker Transportation

The number of workers required during the construction period will vary, with an estimated average daily work force ranging from approximately 10 to 20. The Proponent will make reasonable good-faith efforts to have at least 50 percent of the total employee work hours be for Boston residents, at least 25 percent of total employee work hours be for minorities and at least 10 percent of the total employee work hours be for women. The Proponent will enter into a construction jobs agreement with the City of Boston.

To reduce vehicle trips to and from the construction site, minimal construction worker parking will be available at the site and all workers will be strongly encouraged to use public transportation and ridesharing options. The Proponent and contractor will work aggressively to ensure that construction workers are well informed of the public transportation options serving the area. Five bus routes currently service the area, and the Project site is

proximate to the Silver Line. Space on-site will be made available for workers' supplies and tools so they do not have to be brought to the site each day.

2.4.11.4 Construction Truck Routes and Deliveries

The construction team will manage deliveries to the site during morning and afternoon peak hours in a manner that minimizes disruption to traffic flow on adjacent streets. The construction team will provide subcontractors and vendors with Construction Vehicle & Delivery Truck Route Brochures in advance of construction activity. "No Idling" signs will be included at the loading, delivery, pick-up and drop-off areas.

Truck traffic will vary throughout the construction period depending on the activity. Construction truck routes to and from the Project site for contractor personnel, supplies, materials, and removal of excavations will be coordinated by the Proponent with the BTD and established in the CMP. These routes will be mandated as a part of subcontractors' contracts for the Project. Traffic logistics and routing are planned to minimize community impacts.

See also Section 2.3.3 for more information.

2.4.11.5 Construction Noise

The Proponent is committed to mitigating noise impacts from the construction of the Project. However, increased community sound levels are an inherent consequence of construction activities. Construction work will comply with the requirements of the City of Boston Noise Ordinance. Every reasonable effort will be made to minimize the noise impact of construction activities.

Mitigation measures are expected to include:

- Instituting a proactive program to ensure compliance with the City of Boston noise limitation policy;
- Using appropriate mufflers on all equipment and ongoing maintenance of intake and exhaust mufflers;
- Muffling enclosures on continuously running equipment, such as air compressors and welding generators;
- Replacing specific construction operations and techniques with less noisy methods where feasible;
- Selecting the quietest alternative items of equipment where feasible;
- Scheduling equipment operations to keep average noise levels low, to synchronize the noisiest operations with times of highest ambient levels, and to maintain relatively uniform noise levels;
- Turning off idling equipment; and
- Locating noisy equipment at locations that protect sensitive locations by shielding or distance.

2.4.11.6 Construction Air Quality

Short-term air quality impacts from fugitive dust may be expected during the early phases of construction and during excavation. Plans for controlling fugitive dust during demolition, construction and excavation include mechanical street sweeping, wetting portions of the site during periods of high wind, and carefully removing debris in covered trucks. The construction contract will provide for multiple strictly enforced measures to be used by contractors to reduce potential emissions and minimize impacts. These measures are expected to include:

- Using wetting agents on areas of exposed soil on a scheduled basis;
- Using covered trucks;
- Minimizing spoils on the construction site;
- Monitoring of actual construction practices to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized;
- Minimizing storage of debris on the site; and
- Periodic street and sidewalk cleaning with water to minimize dust accumulations.

2.4.11.7 Construction Waste

The Proponent will reuse or recycle construction materials to the extent feasible. Construction procedures will allow for the segregation, reuse, and recycling of materials. Materials that cannot be reused or recycled will be transported in covered trucks by a contract hauler to a licensed facility, per the MassDEP regulations for Solid Waste Facilities, 310 CMR 16.00.

2.4.11.8 Protection of Utilities

Existing public and private infrastructure located within the public right-of-way will be protected during construction. The installation of proposed utilities within the public way will be in accordance with the MWRA, BWSC, Boston Public Works Department, the Dig Safe program, and the governing utility company requirements. All necessary permits will be obtained before the commencement of the specific utility installation. Specific methods for constructing proposed utilities where they are near to, or connect with, existing water, sewer and drain facilities will be reviewed by BWSC as part of its Site Plan Review Process.

2.5 Historic and Archaeological Resources

2.5.1 Historic Resources

BMC is located within the South End Protection Area, formed to maintain an architecturally compatible boundary adjacent to the south border of the South End National Register and Landmark Districts.

The proposed Energy Facility site is located adjacent to the existing BMC Power Plant at 750 Albany Street, just north of the Massachusetts Avenue Connector and west of East Concord Street. See Figures 1-1 through 1-3 for Project location and campus map.

The Project Site is located within the South End Harrison/Albany Protection Area ("Protection Area") and is subject to review by the South End Landmarks District Commission ("SELDC"). According to the Standards and Criteria of the SELDC, the

following activities are subject to review: demolition, land coverage, height of structure, topography, and landscaping. The goals of the Protection Area are to protect views of the adjacent Landmark District and to insure that new development is architecturally compatible in massing, setback and height to protect light and air circulation within the Landmark District. The Project will be subject to review by the SELDC in accordance with the procedures for the issuance of a Certificate of Design approval.

Although the height of the new stack slightly exceeds the 150 foot maximum limit allowed by the Protection Area Standards and Criteria, the Standards and Criteria do allow additional height if the structure is not visible from the nearest public way within the Landmark District. The Project team will work with the SELDC to ensure the additional height does not adversely impact the Landmark District. If review by the MHC is required, a Project Notification Form will be submitted. Due to the small scale of the proposed Project, no adverse effects to State Register properties are anticipated.

2.5.2 Archaeological Resources

A review of the National Register and Inventory of Historic and Archaeological Assets of the Commonwealth identified no previously known archaeological resources within the Project site.

2.6 Infrastructure Systems

2.6.1 Introduction

This section evaluates the infrastructure systems that will support BMC's proposed Energy Facility. Based on initial investigations and consultations with the regulating agencies and utility companies, the existing infrastructure systems in the area appear to be able to accommodate the incremental increase in demand associated with the proposed Project.

The design process for the proposed Energy Facility will include the required engineering analyses and will adhere to applicable protocols and design standards, ensuring that the proposed Project is properly supported by and properly uses the City's infrastructure.

The systems discussed below include those owned or managed by the Boston Water and Sewer Commission (BWSC), private utility companies, and on-site infrastructure. There will be close coordination between these entities and the Project team during subsequent reviews and the design process. All improvements and connections to BWSC infrastructure will be reviewed as part of the BWSC site plan review process. This process includes a comprehensive design review of the proposed service connections, assessment of system demands and capacity and establishment of service accounts.

2.6.2 Regulatory Framework

All connections will be designed and constructed in accordance with city, state and federal standards.

- In the City of Boston, BWSC is responsible for all water, sewer and stormwater systems.
- The Boston Fire Department (BFD) will review the proposed Project with respect to fire protection measures such as Siamese connections and standpipes.

- Design of the site access, hydrant locations, and energy systems (gas, steam and electric) will also be coordinated with the respective system owners.
- New utility connections will be authorized by the Boston Public Works Department through the street opening permit process, as required.
- New Steam and Power conduits between campus buildings and within City Streets will require permitting with the Public Improvements Commission.

2.6.3 Wastewater

2.6.3.1 Existing Wastewater

Local sewer service in the City of Boston is provided by the BWSC. Wastewater generated in the proposed Project area will be conveyed to the Massachusetts Water Resources Authority (MWRA) facility on Deer Island via the 60" combined sewer adjacent to the Roxbury Canal.

2.6.3.2 Demand/Use

The proposed Project will generate approximately 31,800 gallons per day of wastewater from the new energy facility. This wastewater will be mostly generated from process water during the steam generation and condensate. It is estimated that the peak wastewater generation from the proposed Project will be approximately 85 gallons per minute.

2.6.3.3 Proposed Connection

The sewer service for the proposed Project will tie directly into the existing sewer services from the Power Plant and Medical Examiner's office which are connected to the 60" service at the rear of the site. No new direct connection to the sewer interceptors in the area is proposed and the construction of new sewer mains will not be required. BMC will coordinate with the BWSC on the design and capacity of the proposed connection to the sewer system. In addition, the proponent will submit a General Service Application and site plan for review as the proposed Project progresses.

2.6.4 Domestic Water and Fire Protection

2.6.4.1 Existing Water Supply System

The proposed Project is located in the South End service area of the BWSC public water supply service areas. Albany Street is served by 12-inch high and low pressure lines.

Domestic water demand will be determined by the rate of steam production. It is estimated that the proposed Project will require approximately 435,000 gallons of water per day with a peak demand of 640 gallons per minute. Hydrant test data provided by the BWSC is presented in Table 2-1 (next page).

Table 2-1 Hydrant Test Data

Date	Location	Static Pressure (psi)	Residual Pressure (psi)	Total Flow (gpm)	Flow (gpm) at 20 psi[1]
3/21/05	12" Low Albany Street	68	62	3,182	1,083
9/26/00	12" High Albany Street	96	88	4,388	1,479

[1] psi = pounds per square inch

The results of the hydrant flow test indicate the actual amount of water (flow) available and the actual pressure (residual) flow provided. These flow metrics are analyzed to establish the quantity of water that will be delivered at 20 psi as a common evaluation point.

2.6.4.2 Proposed Connection

To maintain uninterrupted water services, separate potable water supply, and fire protection services, supply will be provided from the 12-inch mains in Albany Street. Water supply for steam generation will be provided from the 12-inch low main. Fire protection service will be provided from the 12-inch high main in Albany Street.

Water supply service connections required by the proposed Project will meet the applicable city and state codes and standards, including cross-connection backflow prevention.

Compliance with the standards for the domestic water system service connections will be reviewed as part of BWSC's Site Plan Review Process. The review includes but is not limited to sizing of water supply and fire protection services, calculation of meter sizing, backflow prevention design, and location of hydrants and Siamese connections to conform to BWSC and Boston Fire Department requirements.

2.6.5 Stormwater Management

2.6.5.1 Existing Conditions

The BMC campus is serviced by several BWSC drain lines. The Project site is occupied entirely by paved parking and driveways. Runoff from the site appears to flow southerly and is captured by existing catch basins immediately adjacent to the proposed building. These catch basins are piped together and connected directly to the Roxbury Canal Conduit behind the Chief Medical Examiner's office building, which abuts the site to the east.

2.6.5.2 Proposed Conditions

Stormwater from the site will be routed to follow existing infrastructure to the Roxbury Canal Conduit. As per Section 2.4.7.3 – Groundwater Impacts, the project will be required to infiltrate 1" of runoff per square foot of new building footprint. Additional run-off from non-roof areas and storms in excess of 1" of rainfall will discharge to the Roxbury Canal Conduit. Because the Project site is entirely an existing paved surface, the proposed Project will not

change the overall area of impervious surface and will not result in an increase in peak stormwater runoff.

Stormwater management controls will be established in compliance with BWSC standards and the Groundwater Conservation Overlay District. The proposed Project will be designed so as to not introduce increased peak flows, pollutants, or sediments to existing drainage infrastructure. In conjunction with the site plan and the General Service Application, the proponent will submit a stormwater management plan to the BWSC. Compliance with the standards for the final site design will be reviewed as part of the BWSC Site Plan Review Process.

2.6.6 Anticipated Energy Needs

2.6.6.1 Natural Gas Service

Natural gas for the Project will be provided by Northern Utilities from the existing gas mains within Albany Street.

2.6.6.2 Electrical Service

BMC purchases electricity from NSTAR Electric in bulk and redistributes from the existing Power Plant located immediately adjacent to the proposed Project site. The Project will be powered directly from the Power Plant. The Energy Facility will cogenerate electrical power and heat (steam) and is anticipated to generate an average of 314,200 kWh per day. See Section 2.2.2 for more information.

2.6.6.3 Steam

The proposed Project is a new combined heat and power generating facility. Steam and electric energy generated by the proposed Project will be distributed to BMC and BUMC Campus buildings through existing and new infrastructure. It is anticipated that new steam and electric conduits will be constructed from the new facility to the current distribution hub in the Evans Building on East Newton Street.

The Project is anticipated to generate on average 4,124,000 lbs of steam per day. This steam is sufficient to supply BMC's needs and will negate the need for importing steam from offsite sources.

2.6.6.4 Telecommunications

Verizon will provide telephone and telecommunication services to the proposed Project. There are existing fiber optic services located in Albany Street with sufficient capacity to service the site.

Section 3.0

3.0 COORDINATION WITH OTHER GOVERNMENTAL AGENCIES

3.1 Introduction

BMC, the Proponent, will initiate consultation with other governmental agencies as required.

3.1.1 Architectural Access Board Requirements

Any project work for the Energy Facility that requires modifications to the public realm (e.g., sidewalk improvements) will comply with requirements of the Massachusetts Architectural Access Board, and will be designed to comply with the standards of the Americans with Disabilities Act.

3.1.2 Massachusetts Environmental Policy Act

The Proponent will submit the proposed Project for review under the Massachusetts Environmental Policy Act (MEPA).

3.1.3 Massachusetts Historical Commission / South End Landmark District Commission

The proposed Energy Facility Project will require a state permit and will require review by the Massachusetts Historical Commission ("MHC") because it is located within the South End Harrison/Albany Protection Area adjacent to the South End Landmark District. BMC will file with MHC a copy of the ENF filed with MEPA. Pursuant to the regulations and procedures of MHC, BMC will enter into discussions with MHC relative to impacts of the proposed Project on the state register properties if necessary.

3.1.4 Boston Civic Design Commission

This PNF will be submitted to the Boston Civic Design Commission (BCDC) by the BRA in accordance with the provisions of Article 28 of the Boston Zoning Code.

3.1.5 Other Permits and Approvals

Section 1.7 includes a list of anticipated permits and approvals required for the Proposed Project.

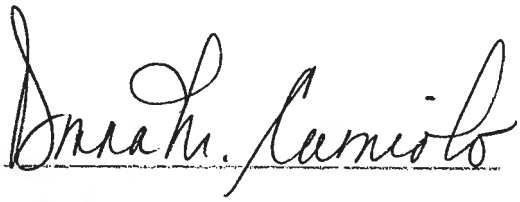
Section 4.0

4.0 PROJECT'S CERTIFICATIONS

This form has been circulated to the Boston Redevelopment Authority as required by the Boston Zoning Code, Article 80.

Signature of Proponent's Representative

Ronald E. Bartlett
Vice President for Finance
and Chief Financial Officer
Boston Medical Center Corporation
One Boston Medical Center Place
Boston, MA 02118
617-638-6909



Signature of Preparer

Donna M. Camiolo
Principal and Chief Financial Officer
RF Walsh collaborative partners
51 Sleeper Street
Boston, MA 02210
617-778-0924

Appendix A

CONTEXT PHOTOGRAPHS

September 25, 2009

Photo 1: View from BMC parking garage looking south.
Existing medflight helipad, chief medical examiner parking foreground, Mass Ave connector beyond.

Photo 2: View from BMC parking garage looking southwest.
East facade of existing power plant, chief medical examiner roof in foreground, Finland building beyond.

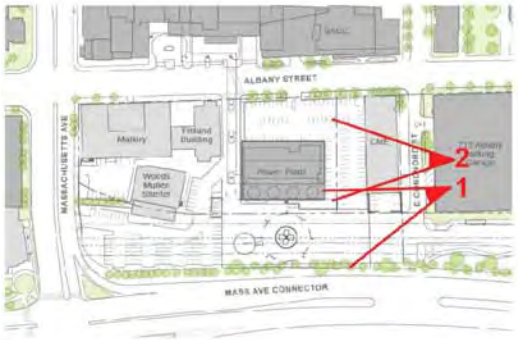
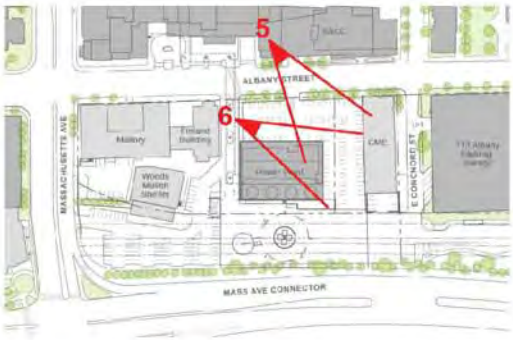


Photo 3: View from existing helipad looking north.
South facade of existing power plant.

Photo 4: View from Albany Street looking south.
East facade of existing power plant.

Photo 5: View from SACC looking east.
North facade of existing power plant (right), west facade of chief medical examiner building (left).

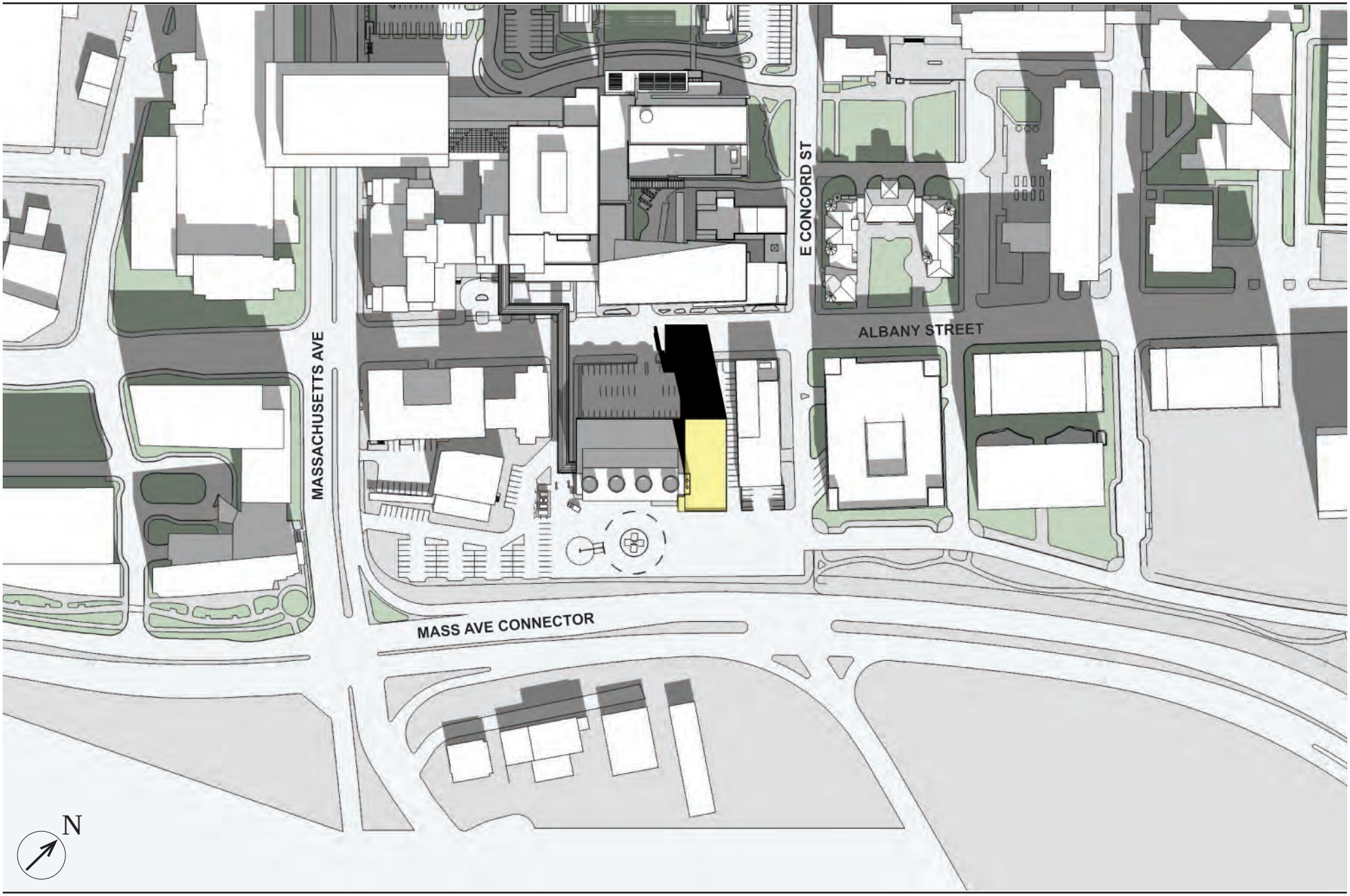
Photo 6: View from helipad access road looking northeast.
Levels 1 and 2 of existing power plant, west facade of chief medical examiner building



Appendix B

SHADOW STUDY MARCH 21, 9:00am

September 25, 2009



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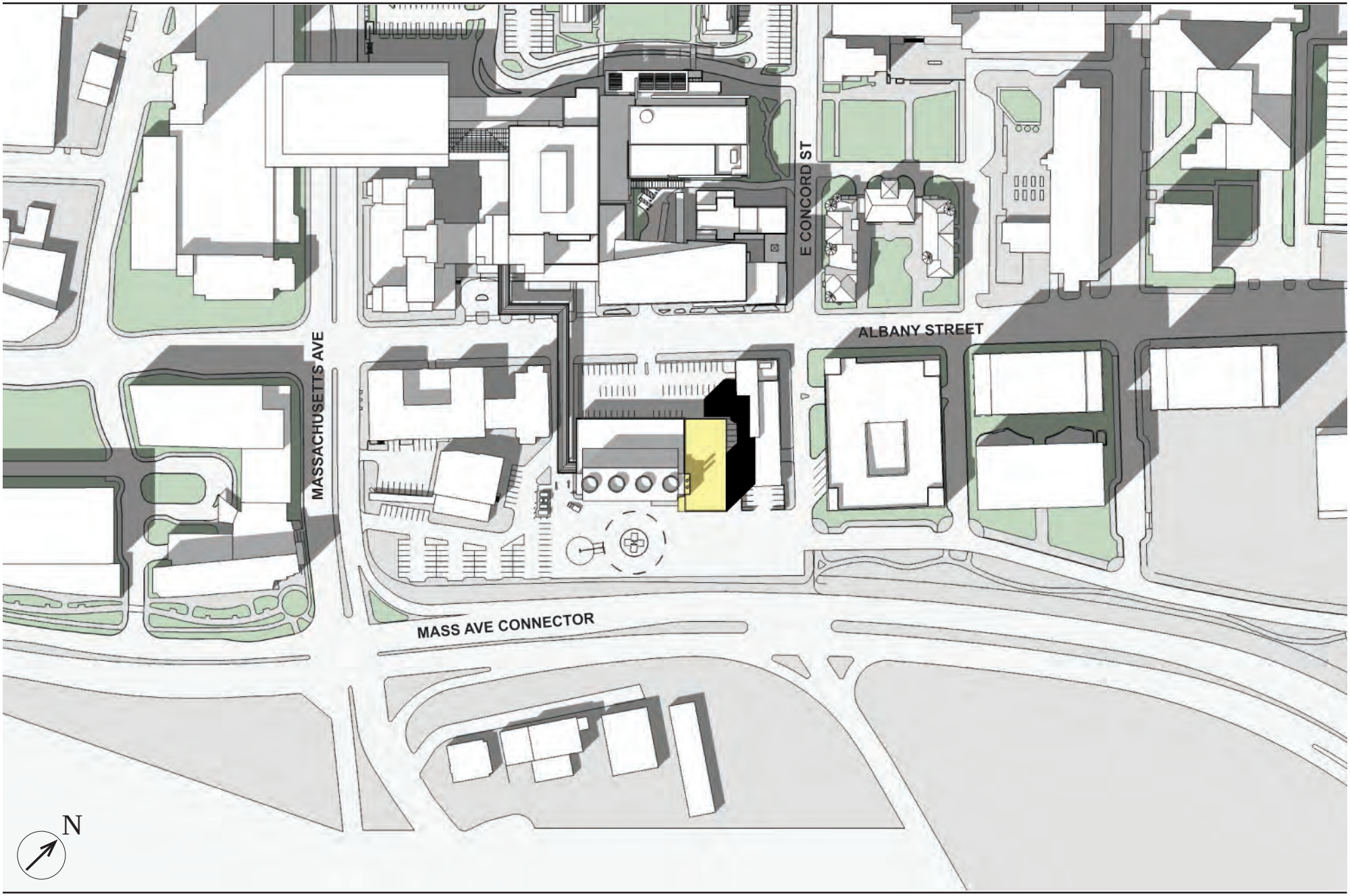
SHADOW STUDY MARCH 21, 12:00pm

September 25, 2009



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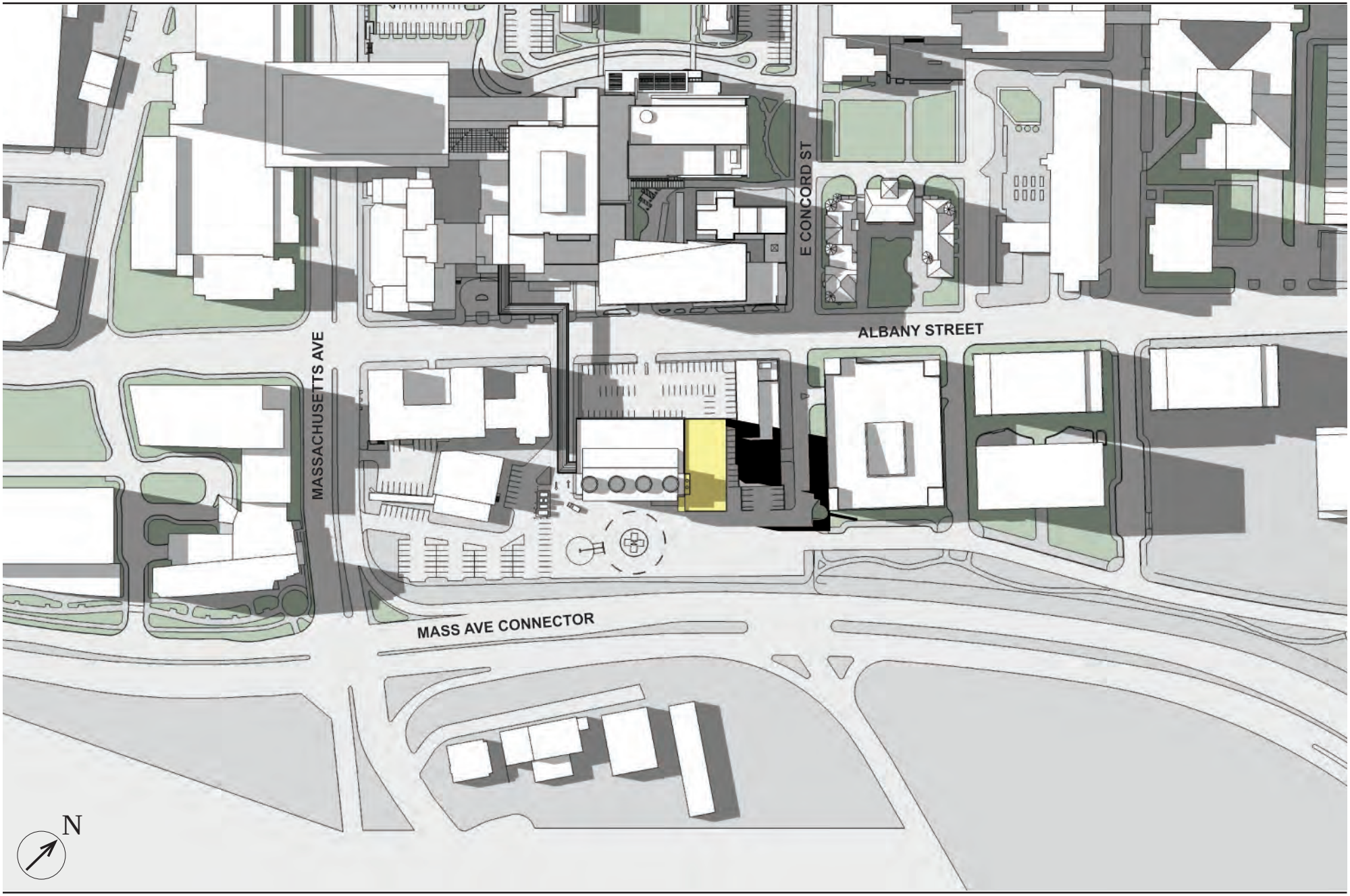
SHADOW STUDY MARCH 21, 3:00pm

September 25, 2009



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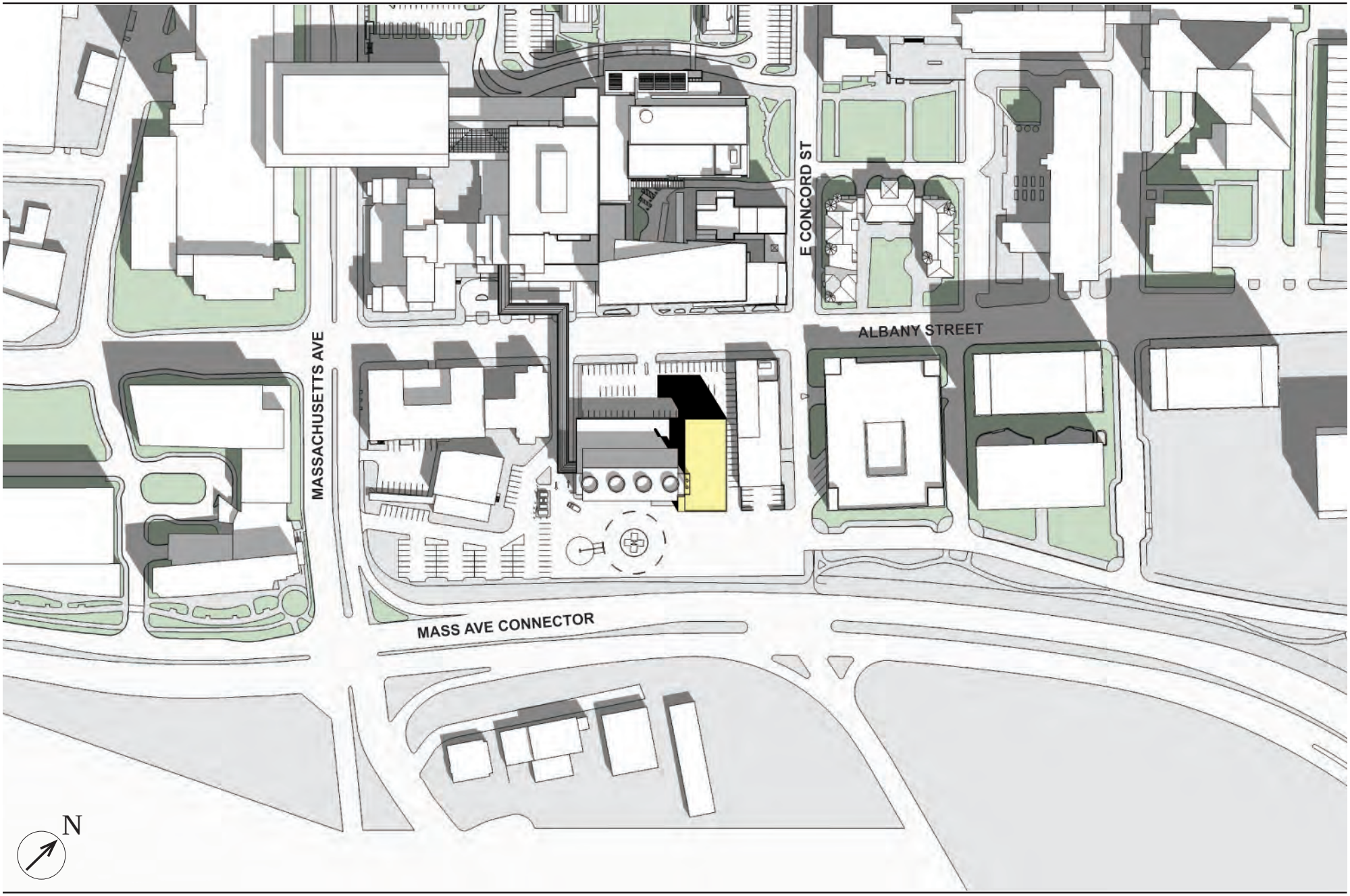
SHADOW STUDY JUNE 21, 9:00am

September 25, 2009



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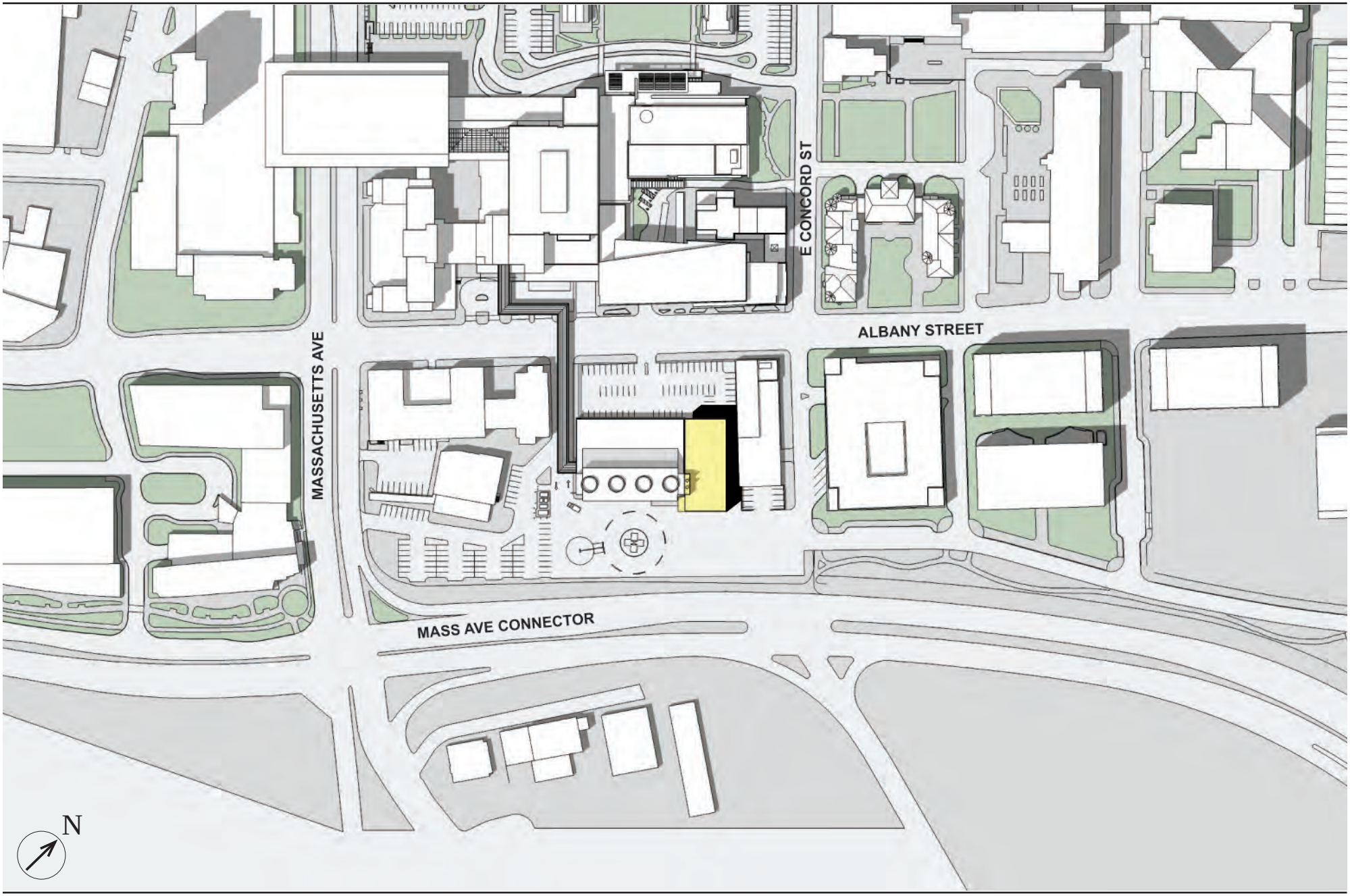

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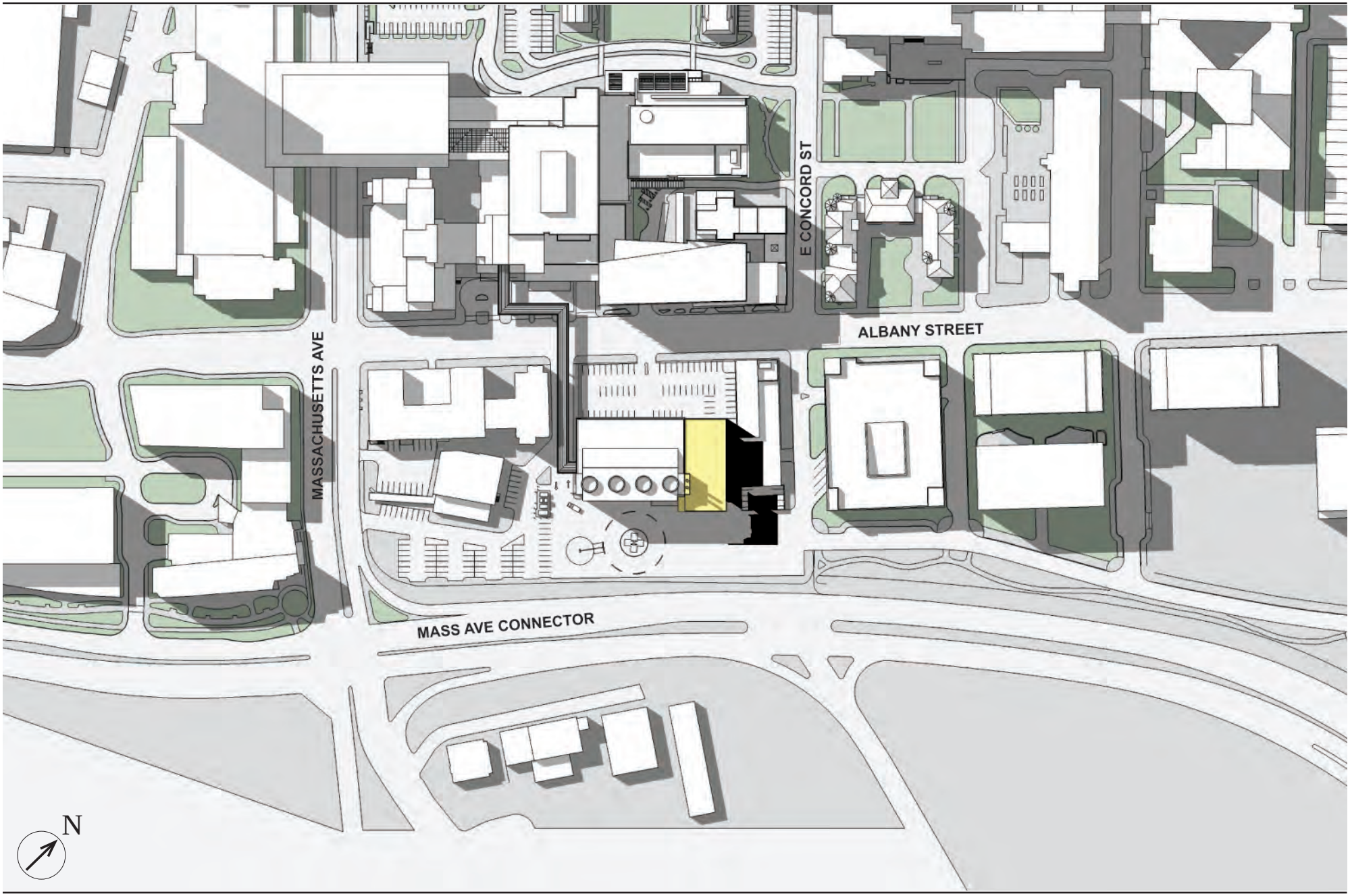

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SHADOW STUDY JUNE 21, 6:00pm

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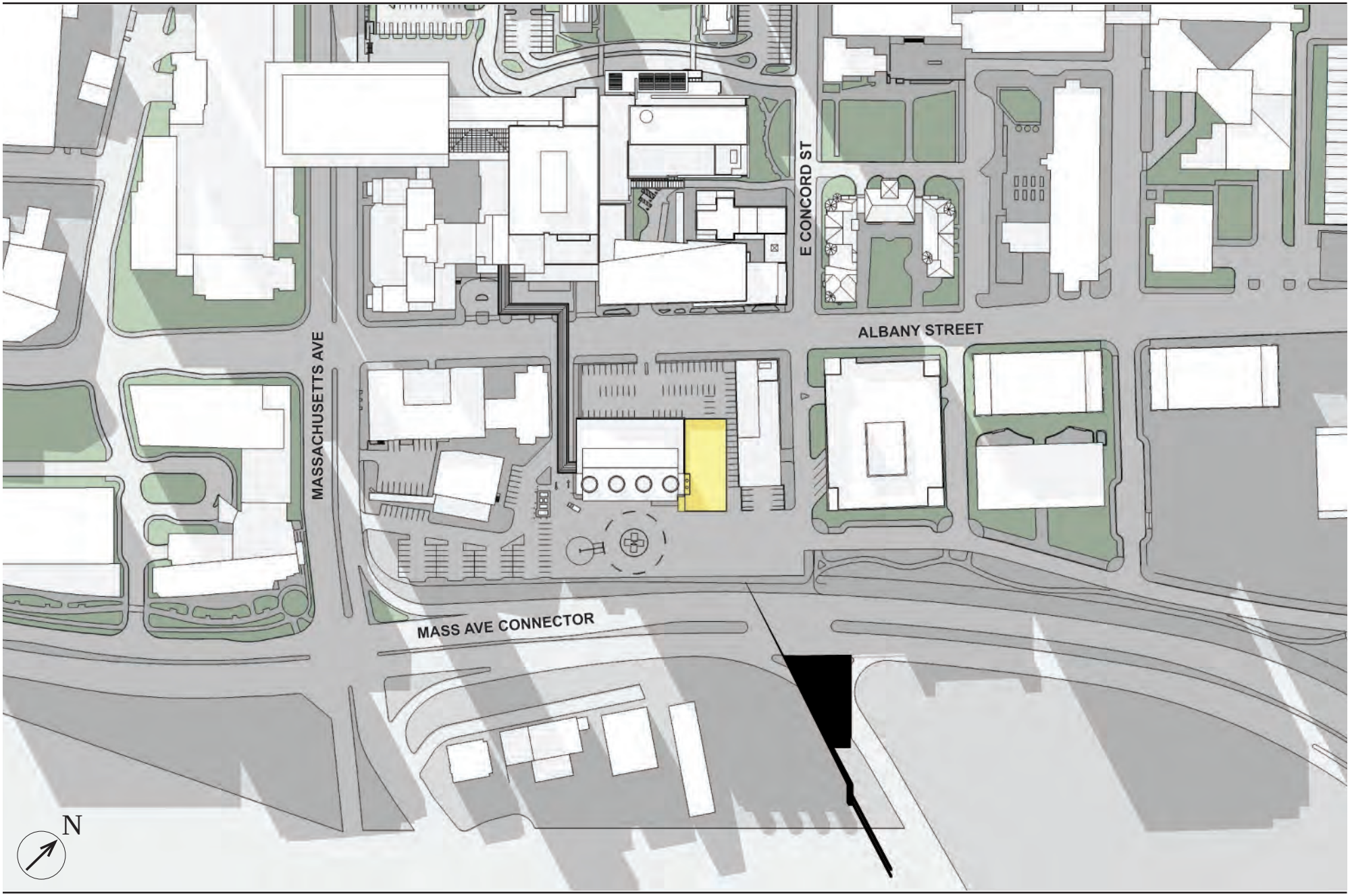

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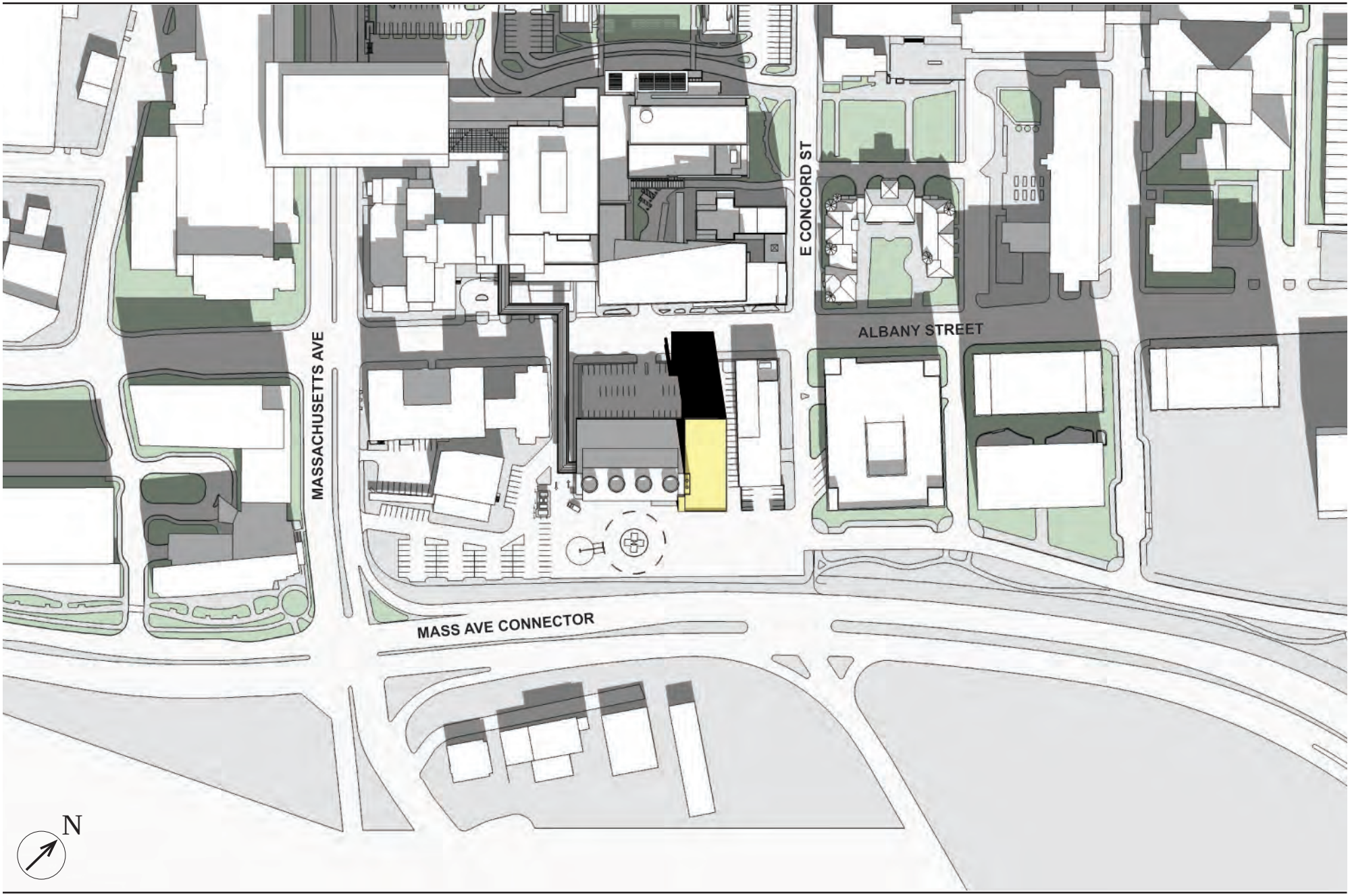
SHADOW STUDY SEPTEMBER 21, 9:00am

September 25, 2009



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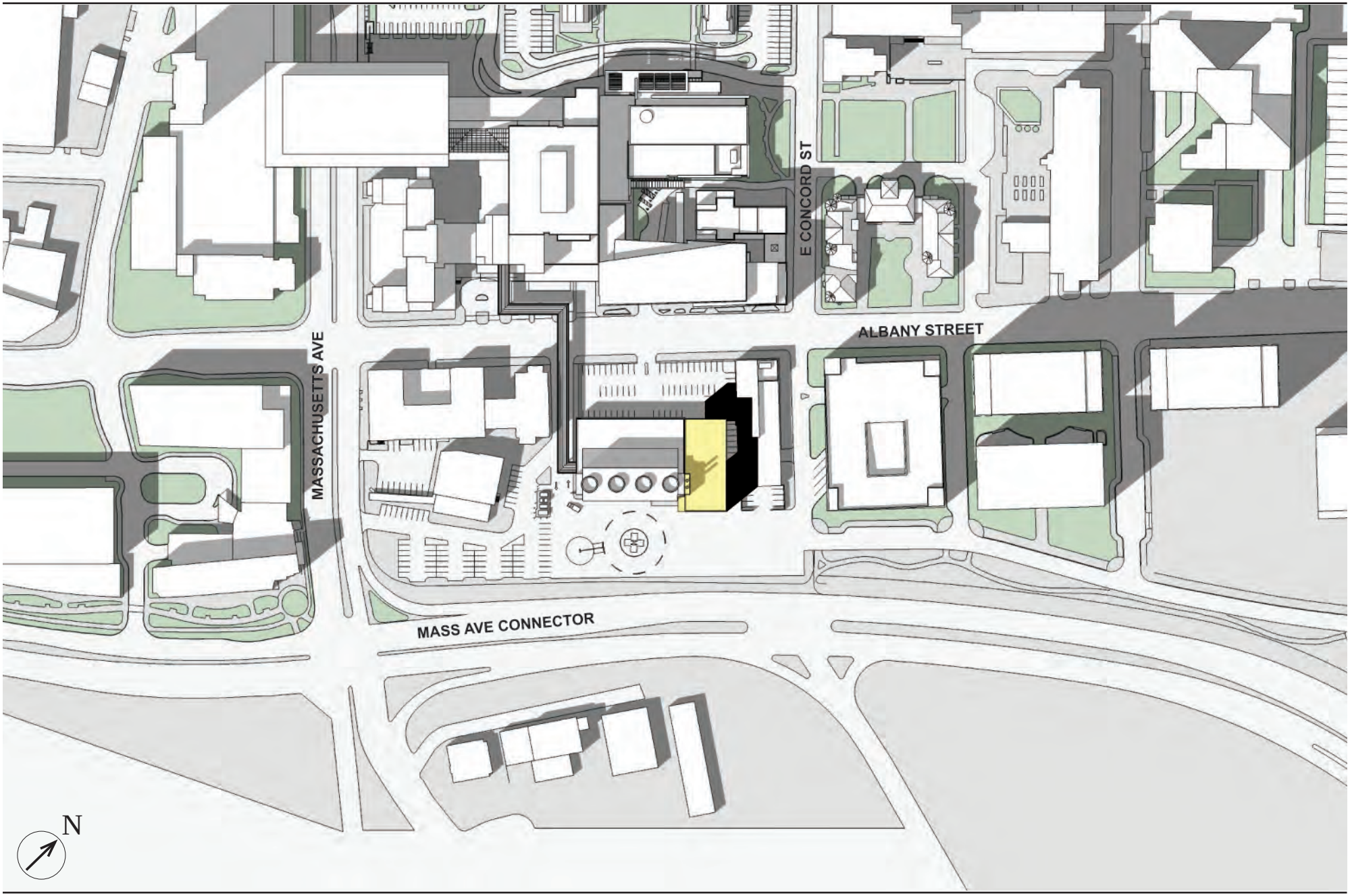
SHADOW STUDY SEPTEMBER 21, 12:00pm

September 25, 2009



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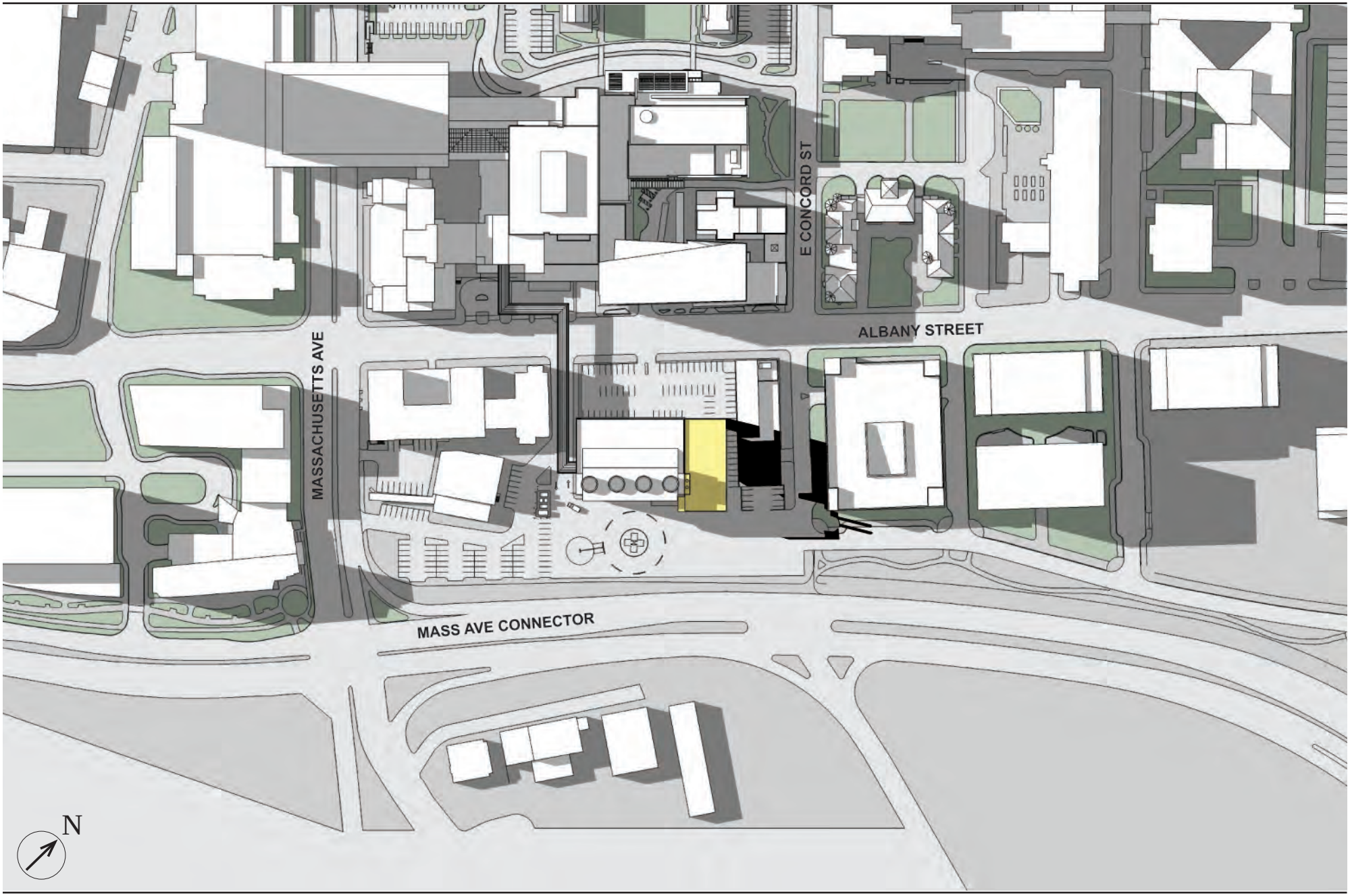
SHADOW STUDY SEPTEMBER 21, 3:00pm

September 25, 2009



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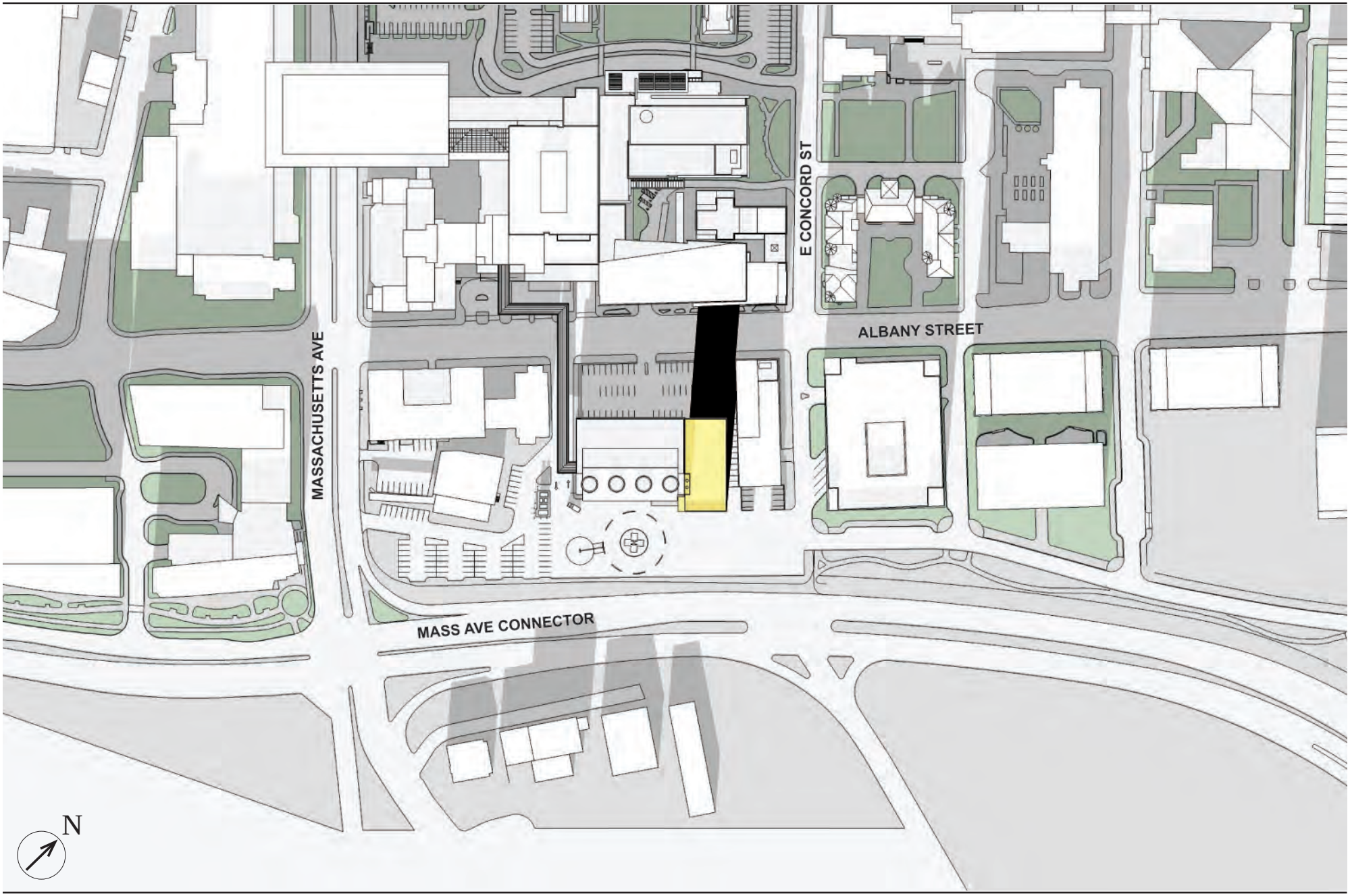
SHADOW STUDY DECEMBER 21, 9:00am

September 25, 2009



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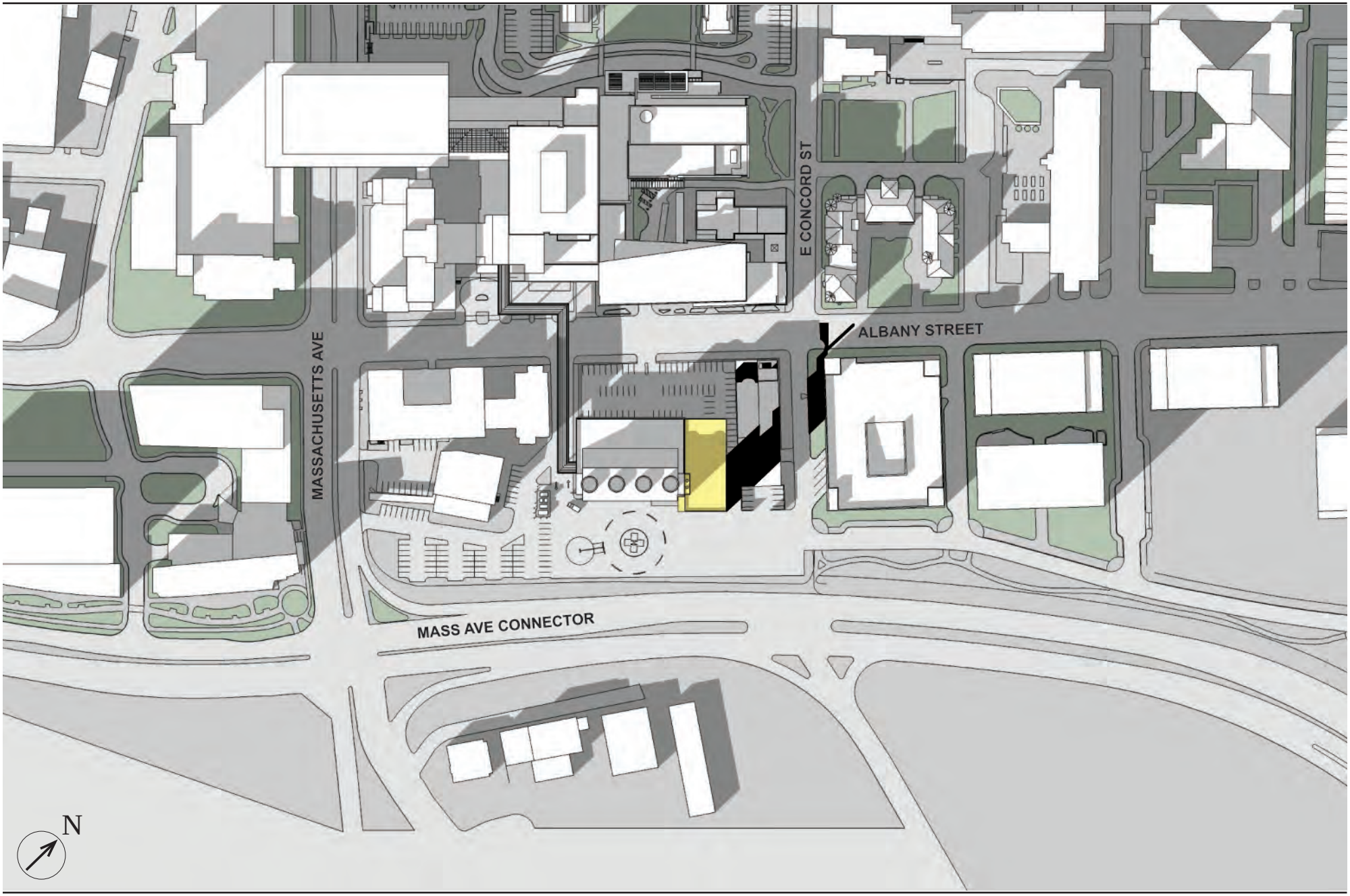

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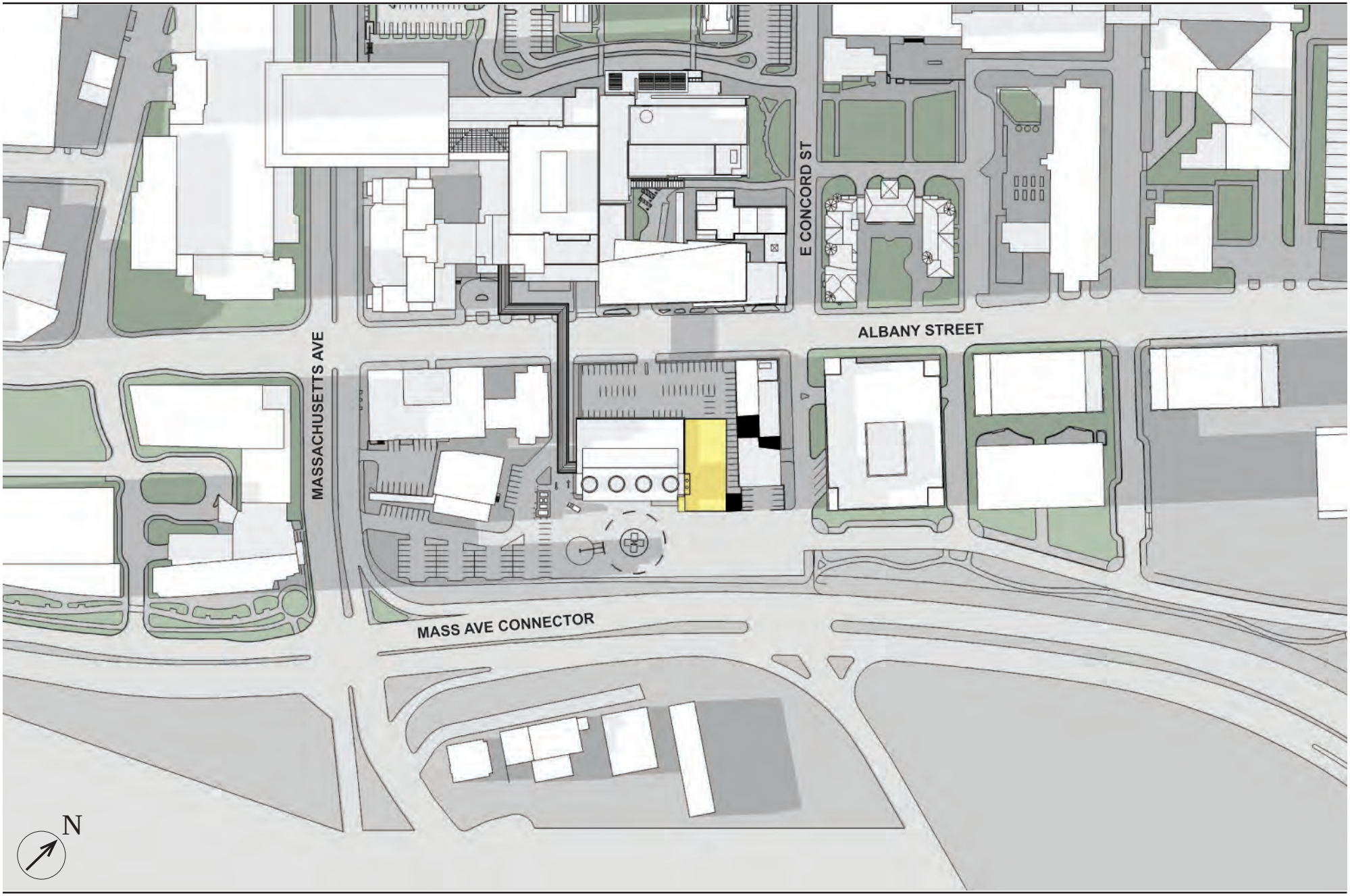

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Appendix C

Green Committee Update

September 2009

New Construction

The Design and Construction department continues to evolve in utilizing green design and construction elements for our projects. Our most significant effort to date is the design and construction of the Shapiro Ambulatory Care Center currently beginning construction. The project is registered with Green Guide for Health Care (GGHC) which is based on the LEED point system (the original national model for sustainable building design). The GGHC system tracks all possible sustainable options utilized within a project. The Shapiro project is aspiring to gain points in optimizing energy performance, recycling and salvage non-hazardous construction and demolition debris, using low-emitting materials for interior paints and flooring systems, striving for occupant thermal comfort to name a few of the many point goals available in the GGHC program.

This project is a true success story in the efforts made by many BMC project team members to create the first official "green" based building on our campus and will be a major contribution to our goal of Patient Satisfaction here at BMC. As we move forward with all our capital projects, we will be incorporating as many green elements as possible in each project for all aspects of planning and construction thus ever widening the circle of contribution to our patients and campus environment.

Green Cleaning

BMC has used Green Seal Certified Chemicals throughout the year. Microfiber mops are coming and the savings in terms of cost and water consumption are impressive. Using 575 beds cleaned per day here are the differences per month

	Mop and Bucket	Microfiber
Cost	$690.	25.88
Water gallons used	767	28.75

Recycling January – August ‘09

	Tons	Gallons
Paper	98.34	
Cardboard	119.52	
Comingled	11.247	
Metal	.2	
Bulbs	1.355	
Solvents		176
Cooking Oil		1,910
Total	**230.66**	**2,086**

All of these materials were removed from our waste stream reducing the cost of hauling and disposing of them.

Food and Nutrition (Focus on the Environment)

Implemented a sustainable seafood policy which protects endangered fish species. This has impacted 7,470 pounds of Cod this year.

Implemented a policy to protect the humane treatment of farm animals. This has resulted in the purchase of cage free eggs which impacts 100,000 eggs at BMC annually.

Transitioned all styrofoam trays from our retail operations which has resulted in removing 20,000 styrofoam trays annually from our waste stream.

We have removed all of our metals, plastics and glass from our kitchen waste stream which has resulted in 5 tons of comingled material recycled.

We have marketed a Reusable Coffee Mug program in our retail operations which has saved 52,000 paper cups, sleeves and lids from being tossed into our waste stream.

We have replaced all of our grab n go Plastic containers with a container which is made from 100% annually renewable resources; this has impacted 19,000 containers this year.

We have removed all of our plastic based lids from our retail operations which remove 156,000 lids from our waste stream annually

We are purchasing our dairy from a vendor which has partnered with local New England farms.

We have replaced all of our catering plastic trays and plastic hinged containers with a cardboard based solution which in turn is recycled and removed from the waste stream.

We recycle 3,600 gallons of cooking oil annually which in turn is transitioned into a fuel solution for vehicles.

Transportation

Transportation Solutions for Commuters, Inc.

TranSComm encourages all forms of alternative transportation to decrease traffic congestion in our neighborhood, to improve air quality and to encourage "green" awareness.
Listed are some of the successful TranSComm programs of alternative transportation:

Carpooling and Hybrid car use:

- Carpool and Hybrid Preferential Parking Program began June 18, 2007 Additional capacity (twice as many) was added October 6, 2008.
- GOOSE NETWORKS introduced an innovative concept of ridesharing via text and cell phones as part of a state grant.
- Discounted ZIPCAR ("wheels when you want them") program continues to be successful
- ZIPCAR now has one HYBRID and one conventional car on campus. (both are well utilized!)

Cycling:

- TWO, SECURE BIKE CAGES are available on campus with active membership of 348 cyclists
- TranSComm organized their FOURTEENTH Annual Bike-To-Work/School Event entitled, "Kick Gas"
    - Online registration, free bike luncheon for registered cyclists
    - TranSComm wins award for "Most Cyclists" in our size category (again!)
    - TWO Bike Safety Check Ups donated by REI and EMS - 70 cyclists served

Walking:

- MEDICAL HISTORY WALKS: this summer/fall we had four guided walks with local historian, Alison Barnet
- FIRE UP YOUR FOOT POWER SUMMER PROGRAM
  (BUMC commuters reported their "foot power" commutes: walking, cycling, jogging, rollerblading, etc.)
  Of the 10 participating TMA (transportation management associations) teams, TranSComm placed FIRST!
  Our 161 participants actively commuted a combined total of 29,399 miles and prevented 23,206 lbs of CO_2 from being emitted into the regional atmosphere.
  And to make it sweeter, four medical center employees won a check for $25.00 that was awarded weekly during the summer.
  Congratulations to all 161 members of our community that chose an active commute last summer.

MBTA Participation:

- Semester Pass Program offered with 11% discount
- BMC offers a 30% discount to employees

- Payroll-deducted, pre-taxed employee pass program delivered with paychecks, downloaded onto Charlie cards each month
- Distribution of MBTA bus schedules, notices, information, etc. at transportation kiosks in all lobbies and front desks
- MBTA mini-events, contests, incentives

Green Awareness:

- FIRST Green Transportation Fair with BMC Green Committee hosted hybrid car owners for informational event
- TranSComm is active in BMC and BU's Green Committees

Personalized Commutes Planned:

- TranSComm plans individual alternative commutes for all members of the medical center seeking assistance.

Memberships

- Association for Commuter Transportation (ACT) • ACT/Patriot Chapter • Mass Bike • **Walk** Boston • Mass Commute • Transit Works

Pharmaceutical Waste Management

Hazardous Pharmaceuticals collection expanded from Pharmacy to clinical areas throughout hospital. This effort included creating and assigning an online training program for nursing staff, locating and distributing collection buckets, creating labeling through pharmacy and Pyxis machines, and signage at each collection location.

Food Pantry

Reduce the use of plastic at the pantry by approximately 50%. In 2007 we used 2 cases of bags per week. We are now using 1-1/2 cases a week with an increase of 51% of the number of people served.

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