

**BZA APPLICATION FORM**

**GENERAL INFORMATION**

The undersigned hereby petitions the Board of Zoning Appeal for the following:

Special Permit: \_\_\_\_\_ Variance:   X   Appeal: \_\_\_\_\_

PETITIONER:   Kelley Brown, on behalf of Massachusetts Institute of Technology

PETITIONER'S ADDRESS:   77 Massachusetts Ave, NW23-100, Cambridge MA 02139

LOCATION OF PROPERTY:   38-50 Albany Street

TYPE OF OCCUPANCY:   Institutional ZONING DISTRICT:   Res C-3B

REASON FOR PETITION: Expansion of a non-conforming structure in area and volume by more than 25%.  
  X   Additions

- |  |                                 |
|--|---------------------------------|
| <u>          </u> Change in Use/Occupancy              | <u>          </u> New Structure |
| <u>          </u> Conversion to Addi'l Dwelling Unit's | <u>          </u> Parking       |
| <u>          </u> Dormer                               | <u>          </u> Sign          |
| <u>          </u> Other: _____                         | <u>          </u> Subdivision   |

DESCRIPTION OF PETITIONER'S PROPOSAL:    Improvements and expansion of the volume of MIT's existing Central Utility Plant located at 38-50 Albany St.

**SECTIONS OF ZONING ORDINANCE CITED:**

Article   8   Section   8.22.3

Article \_\_\_\_\_ Section \_\_\_\_\_

Article \_\_\_\_\_ Section \_\_\_\_\_

Applicants for a **Variance** must complete Pages 1-5  
Applicants for a **Special Permit** must complete Pages 1-4 and 6  
Applicants for an **Appeal** to the BZA of a Zoning determination by the Inspectional Services Department must attach a statement concerning the reasons for the appeal

Original Signature(s):   Kelley Brown  
*(Petitioner(s)/Owner)*

  Kelley Brown  
(Print Name)

Address: Office of Campus Planning, MIT, 77  
Massachusetts Ave., Cambridge MA  
02139

Tel. No.: 617-451-2410

Date:   November 10, 2016

E-Mail Address:   kbrown@mit.edu

**BZA APPLICATION FORM - OWNERSHIP INFORMATION**

To be completed by OWNER, signed before a notary and returned to The Secretary of the Board of Zoning Appeals.

I/We \_\_\_\_\_ Massachusetts Institute of Technology \_\_\_\_\_  
(OWNER)

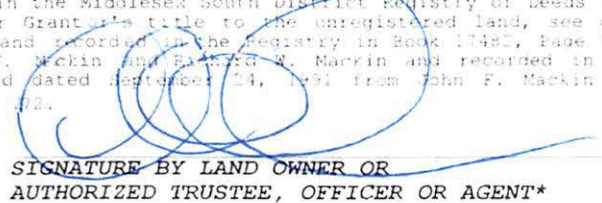
Address: \_\_\_\_\_ 77 Massachusetts Avenue, NW23-10 Q, Cambridge, MA 02139 \_\_\_\_\_

State that I/We own the property located at \_\_\_\_\_ 38450 Albany Street \_\_\_\_\_,  
which is the subject of this zoning application.

The record title of this property is in the name of \_\_\_\_\_ Massachusetts Institute of Technology \_\_\_\_\_

1. Registered Land: Parcels 1, 2 and 3 shown on sheet 1 of Land Court Plan No. 15394B. For Grantor's title to the registered land, see Certificate of Title No. 71662, Certificate of Title No. 129110, and Certificate of Title No. 235771 on file with the Middlesex South Registry District of the Land Court.

2. Unregistered Land: Lots 12, 13, 14, 15, and 16 shown on a plan entitled "Plan of Lands of Frederic E. Ames and Heirs of Samuel P. Allen Cambridge" dated May 1, 1875, Scale 1"=50', by William H. Jackson, Surveyor, and recorded in the Middlesex South District Registry of Deeds (the "Registry") in Plan Book 28, Plan 10. For Grantor's title to the unregistered land, see deed dated October 13, 1986 from Lucille Mackin and recorded in the Registry in Book 17481, Page 571, deed dated September 24, 1991 from John F. Mackin and Elizabeth W. Mackin and recorded in the Registry in Book 21433, Page 169, and deed dated September 24, 1991 from John F. Mackin and recorded in the Registry in Book 21433, Page 172.

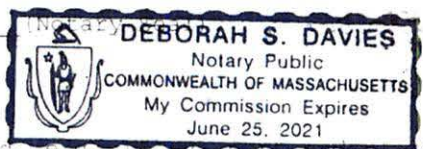
  
SIGNATURE BY LAND OWNER OR  
AUTHORIZED TRUSTEE, OFFICER OR AGENT\*

\*Written evidence of Agent's standing to represent petitioner may be requested.  
\*Pursuant to the deeds and registered Certificates of Title cite above.

The above-named Arne Abranson, on behalf of the Massachusetts Institute of Technology personally appeared before me this \_\_\_\_\_ day of November, 2016 and made oath that the above statement is true.

  
Notary

My commission expires \_\_\_\_\_



• If ownership is not shown in recorded deed, e.g. by court order, recent deed, or inheritance, please include documentation.

**BZA APPLICATION FORM**

**SUPPORTING STATEMENT FOR A VARIANCE**

**EACH OF THE FOLLOWING REQUIREMENTS FOR A VARIANCE MUST BE ESTABLISHED AND SET FORTH IN COMPLETE DETAIL BY THE APPLICANT IN ACCORDANCE WITH MGL 40A, SECTION 10:**

- A) A literal enforcement of the provisions of this ordinance would involve a substantial hardship, financial or otherwise, to the petitioner or appellant for the following reasons:**

The proposed building at 38-50 Albany Street (Building 42C) is planned to connect back to Building 42 on Vassar Street, which in turn is connected to a series of buildings on this block. Building 42 was made non-conforming in 2001, when the City replaced the existing Industrial zone, which had no front yard setback requirement, with the Residence C-3B zone, which has a ten-foot front yard setback. These connections are for functional, regulatory and safety purposes. Disallowing the cogeneration plant would hinder the core educational purposes of the university and cause a substantial hardship for MIT, nullifying its educational use.

- B) The hardship is owing to the following circumstances relating to the soil conditions, shape or topography of such land or structures affecting such land or structures not affecting generally the zoning district in which it is located for the following reasons:**

The Central Utility Plant for MIT is over one hundred years old, serving the campus since MIT moved to Cambridge in 1916. Like almost all of the industrial buildings in the neighborhood at that time, it was built to the lot line and a safe distance from the adjacent rail line which delivered coal to the plant. The contemporary multi-building structure has been re-fashioned internally to provide steam, chilled water and electricity to the campus. Expansions since 2001 have been achieved within City zoning regulations which limit the expansion of non-conforming structures. Achieving resiliency and greenhouse gas emission goals requires an expansion of floor area and volume beyond what is allowed for non-conforming structures. The twin Combustion Turbines, the Heat Recovery Steam Generators and the electrical equipment are all arranged at the closest possible proximities in line with safety standards and maximum efficiencies. In addition, the volume is expanded because resiliency needs require placing the turbine hall at 30 feet above Cambridge datum for sea level (12 feet above grade) to survive a 500-year storm.

- C) DESIRABLE RELIEF MAY BE GRANTED WITHOUT EITHER:**

- 1) Substantial detriment to the public good for the following reasons:**

- To achieve maximum energy efficiency, MIT is pairing cogeneration and high-efficiency equipment with advanced design.
- MIT 's investment in Best Available Control Technology (BACT) ensures that the plant upgrades will meet all state and federal requirements through the use of clean fuels, efficient equipment, and state-of-the-art emissions controls, including two

different catalysts that will reduce the plant's NOx (nitrogen oxides) emissions by 90% compared to the current system.

- The Institute is also investing in new cooling towers with high-efficiency drift eliminators that reduce particulate emissions and conserve water.
- Per common practice, MIT will continue to use a dedicated continuous emissions monitoring system (CEMS) in the plant, reporting the results to MassDEP to ensure ongoing compliance with applicable regulations.
- MIT has finalized a gas supply agreement with Eversource which will enable the cogeneration plant to run entirely on natural gas by 2020 with the exception of emergencies and testing. This will enable MIT to further reduce emissions.
- By 2019, the Institute will eliminate the use of #6 oil on campus. On the rare occasions when fuel oil is required, the CUP equipment will operate using cleaner #2 fuel oil.
- Air quality dispersion modeling for the CUP upgrade project shows ambient air impacts that are below state and national standards for all pollutants.
- The project is making use of an existing facility and existing infrastructure.

**2) Relief may be granted without nullifying or substantially derogating from the intent or purpose of this ordinance for the following reasons:**

The front yard non-conformance is located on Vassar Street. The current project does not expand this non-conformance. The project will continue MIT's long-term intent to set new buildings back to the new setback requirement on Albany Street, similar to the Brain & Cognitive Science Complex.

The intent and purpose of the zoning ordinance with respect to the new front yard is to establish a new and more generous building line to reflect and support the altered overall context, which has shifted from industrial uses and structures to a modern urban mix of institutional, commercial and high density residential uses that now predominate in the neighborhood.

While the small amount of additional gross floor area associated with the current project does not qualify it for an Article 19 Project Review Special Permit, the Citywide Urban Design Objectives (19.30) provide a guide to the broad purposes and intents of the zoning ordinance.

In Section 19.31, the guidance is to be responsive to existing or anticipated patterns of development, in particular with regard to the interaction of new buildings with the streetscape (19.31.2) and the historic context. The proposed project both respects the historic context on Vassar Street, while accommodating a new streetscape that is emerging on Albany Street. In Section 19.35, the objective is to reinforce and enhance the complex urban aspects of Cambridge as it has historically developed, specifically indicated by concentrating institutional uses on the historic campus area (19.35.1), providing for active pedestrian traffic to and from new buildings (19.35.2) and respecting

historic buildings and contexts (19.35.4). The new building fronting on Albany Street is on the historic campus, takes strong steps to open out to the street, providing an attractive environment for pedestrians and, in retaining the original buildings on Vassar Street, preserving historic structures and environments.

**(Attachment B – PAGE 5)**

Effective August 1, 2012

BOARD OF ZONING APPEAL (FEE SCHEDULE)

The fee for a public hearing before the Board of Zoning Appeal shall be determined by the category of relief being sought. The fee per case for each category is as follows:

1. Parking  
\$100.00 per space for which relief is requested.
2. Signs  
\$100.00 per sign plus \$2.00 per square foot of signage requiring relief.
3. Appeal of Building Department Official's Determination  
\$100.00
4. Additions, Structural Alterations, Dimensional Violations, Alteration of Non-Conforming Structure  
\$100.00 plus \$20.00 per 100 square feet of construction requiring relief.
5. Subdivision  
\$500.00 plus \$100.00 per new lot proposed.
6. Conversion to Additional Dwelling Units  
\$300.00 plus \$100.00 per dwelling unit requested.
7. Use Variance, Use Special Permit, Alteration or Enlargement of Non-Conforming Uses  
\$100.00 base fee, subject to an additional fee of \$100.00 per occupied dwelling) unit or its equivalent requiring relief.
8. Cell Antenna  
\$500.00 per application.

Other uses shall be subject to a fee of \$100.00 plus an additional fee of \$.50 per square foot of new construction or conversion requiring relief as follows:

Under the following Sections of the Zoning Ordinance:

Sec. 4.15	<i>Unlisted Uses</i>	Category to be determined by Zoning Specialist.
Sec. 4.32	<i>Transportation, etc.</i>	50 cents per sq. ft.
Sec. 4.33	<i>Institutional</i>	50 cents per sq. ft.
Sec. 4.34	<i>Office and Lab</i>	50 cents per sq. ft.
Sec. 4.35	<i>Retail Business &amp; Consumer Service</i>	50 cents per sq. ft.
Sec. 4.36	<i>Open Air/Drive-In</i>	50 cents per sq. ft.
Sec. 4.37	<i>Light Industry</i>	50 cents per sq. ft.
Sec. 4.38	<i>Heavy Industry</i>	50 cents per sq. ft.

Projects requesting relief in more than one of the above categories shall be required to pay a total of the fees from each applicable category.

**BZA APPLICATION FORM**

**DIMENSIONAL INFORMATION**

**APPLICANT:**     Kelley Brown for MIT     **PRESENT USE/OCCUPANCY:**     Institutional, Education    

**LOCATION:**     38-50 Albany Street     **ZONE:**     Res    

**PHONE:**     617-452-2410     **REQUESTED USE/OCCUPANCY:**     Institutional, Education    

	<u>EXISTING CONDITIONS</u>	<u>REQUESTED CONDITIONS</u>	<u>ORDINANCE REQUIREMENTS<sup>1</sup></u>
<u>TOTAL GROSS FLOOR AREA:</u>	<u>497,513</u>	<u>510,832</u>	<u>                    </u> (max.)
<u>LOT AREA:</u>	<u>409,261</u>		<u>                    </u> (min.)
<u>RATIO OF GROSS FLOOR AREA TO LOT AREA:<sup>2</sup></u>	<u>1.216</u>	<u>2.248</u>	<u>3.0/4.0</u> (max.)
<u>LOT AREA FOR EACH DWELLING UNIT:</u>	<u>NA</u>	<u>NA</u>	<u>NA</u> (min.)
<u>SIZE OF LOT:</u>			
WIDTH	<u>                    </u>	<u>                    </u>	<u>                    </u> (min.)
DEPTH	<u>                    </u>	<u>                    </u>	<u>                    </u> (min.)
<u>Setbacks in Feet:</u>			
FRONT	<u>NA</u>	<u>10'</u>	<u>                    </u> (min.)
REAR	<u>(Nearest Building)</u>	<u>69'</u>	<u>17.5'</u> (min.)
LEFT SIDE	<u>(Nearest Building)</u>	<u>45'</u>	<u>19.5'</u> (min.)
RIGHT SIDE	<u>(Nearest Building)</u>	<u>40'</u>	<u>18.16'</u> (min.)
<u>SIZE OF BLDG.:</u>			
HEIGHT	<u>                    </u>	<u>                    </u>	<u>                    </u> (max.)
LENGTH	<u>                    </u>	<u>                    </u>	
WIDTH	<u>                    </u>	<u>                    </u>	
<u>RATIO OF USABLE OPEN SPACE TO LOT AREA:<sup>3)</sup></u>	<u>NA</u>	<u>NA</u>	<u>NA</u> (min.)
<u>NO. OF DWELLING UNITS:</u>	<u>NA</u>	<u>NA</u>	<u>NA</u> (max.)
<u>NO. OF PARKING SPACES:</u>	<u>90</u>	<u>7 (MIT Inventory) <sup>7</sup></u>	<u>                    </u> (min./max)
<u>NO. OF LOADING AREAS:</u>	<u>NA</u>	<u>1</u>	<u>1</u> (min.)
<u>DISTANCE TO NEAREST BLDG. ON SAME LOT:</u>	<u>NA</u>	<u>See Above</u>	<u>See Above</u> (min.)

Describe where applicable, other occupancies on same lot, the size of adjacent buildings on same lot, and type of construction proposed, e.g.; wood frame, concrete, brick, steel, etc.

Mix of Institutional utility buildings, concrete parking garage, laboratory and office space

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1. SEE CAMBRIDGE ZONING ORDINANCE ARTICLE 5.000, SECTION 5.30 (DISTRICT OF DIMENSIONAL REGULATIONS).  
 2. TOTAL GROSS FLOOR AREA (INCLUDING BASEMENT 7'-0" IN HEIGHT AND ATTIC AREAS GREATER THAN 5') DIVIDED BY LOT AREA.  
 3. OPEN SPACE SHALL NOT INCLUDE PARKING AREAS, WALKWAYS OR DRIVEWAYS AND SHALL HAVE A MINIMUM DIMENSION OF 15'.

**BZA APPLICATION FORM**

**GENERAL INFORMATION**

The undersigned hereby petitions the Board of Zoning Appeal for the following:

2016 NOV 15 PM 2:43

Special Permit: \_\_\_\_\_ Variance:   X   Appeal: \_\_\_\_\_

OFFICE OF THE CITY CLERK  
CAMBRIDGE, MASSACHUSETTS

PETITIONER:   Kelley Brown, on behalf of Massachusetts Institute of Technology  

PETITIONER'S ADDRESS:   77 Massachusetts Ave, NW23-100, Cambridge MA 02139  

LOCATION OF PROPERTY:   38-50 Albany Street  

TYPE OF OCCUPANCY:   Institutional   ZONING DISTRICT:   Res C-3B  

REASON FOR PETITION: Expansion of a non-conforming structure in area and volume by more than 25%.

- |  |                     |
|--|---------------------|
| <u>  X  </u> Additions                     | _____ New Structure |
| _____ Change in Use/Occupancy              | _____ Parking       |
| _____ Conversion to Addi'l Dwelling Unit's | _____ Sign          |
| _____ Dormer                               | _____ Subdivision   |
| _____ Other: _____                         |                     |

DESCRIPTION OF PETITIONER'S PROPOSAL:   — Improvements and expansion of the volume of MIT's existing Central Utility Plant located at 38-50 Albany St.  

**SECTIONS OF ZONING ORDINANCE CITED:**

Article   8   Section   8.22.3  

Article \_\_\_\_\_ Section \_\_\_\_\_

Article \_\_\_\_\_ Section \_\_\_\_\_

Applicants for a **Variance** must complete Pages 1-5  
Applicants for a **Special Permit** must complete Pages 1-4 and 6  
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Original Signature(s):

*Kelley Brown*  
(Petitioner(s)/Owner)

  Kelley Brown    
(Print Name)

Address:

Office of Campus Planning, MIT, 77  
Massachusetts Ave., Cambridge MA  
02139

Tel. No.: 617-451-2410

Date:   November 10, 2016  

  e-Mail Address: kbrown@mit.edu



**BZA APPLICATION FORM**

**CHECK LIST**

PROPERTY LOCATION: 38-50 Albany Street DATE: Nov. 10, 2016

PETITIONER OR REPRESENTATIVE: Kelley Brown, for Massachusetts Institute of  
Technology Office of Campus Planning, 77 Massachusetts Ave, NW23-100,  
ADDRESS & PHONE: Cambridge, MA 02139 617-452-2410

BLOCK: 53 LOT: 12 and 64

**PLEASE CHECK THAT YOU HAVE INCLUDED THE FOLLOWING WITH YOUR APPLICATION. APPLICATIONS WILL NOT BE ACCEPTED FOR PROCESSING & SCHEDULING UNLESS ALL REQUIRED DOCUMENTS ARE PROVIDED.**

**PLEASE INCLUDE THIS CHECKLIST WITH YOUR APPLICATION. ALL DOCUMENTS ARE TO BE TYPED OR WRITTEN LEGIBLY.**

<u>DOCUMENTS</u>	<u>REQUIRED</u>	<u>ENCLOSED</u>
Application Form 3 Forms with Original Signatures	<u>X</u>	<u>X</u>
Supporting Statements - Scanned & 1 set to Zoning	<u>X</u>	<u>X</u>
Application Fee (You will receive invoice online)	<u>X</u>	<u>X</u>
Assessor's GIS "Block Map" (Available on line or At Engineering Dept. - 147 Hampshire Street)	<u>X</u>	<u>X</u>
Dimensional Form - Refer to Cambridge Zoning Ordinance - Scanned & 1 set to Zoning (Subject to further review by Zoning Specialist)	<u>X</u>	<u>X</u>
Ownership Certificate, Notarized - Scanned & 1 set to Zoning	<u>X</u>	<u>X</u>
Floor Plans - Scanned & 1 set to Zoning	<u>X</u>	<u>X</u>
Elevations - Scanned & 1 set to Zoning	<u>X</u>	<u>X</u>
Certified Plot Plan - Scanned & 1 set to Zoning (By Registered Land Surveyor)	<u>X</u>	<u>X</u>
Photographs of Property - Scanned & 1 set to Zoning	<u>X</u>	<u>X</u>
Parking Plan (if relevant to your application) Scanned & 1 set to Zoning	<u>NA</u>	<u>NA</u>

**FOR SUBDIVISION ALSO INCLUDE:** Scanned & 1 set to Zoning

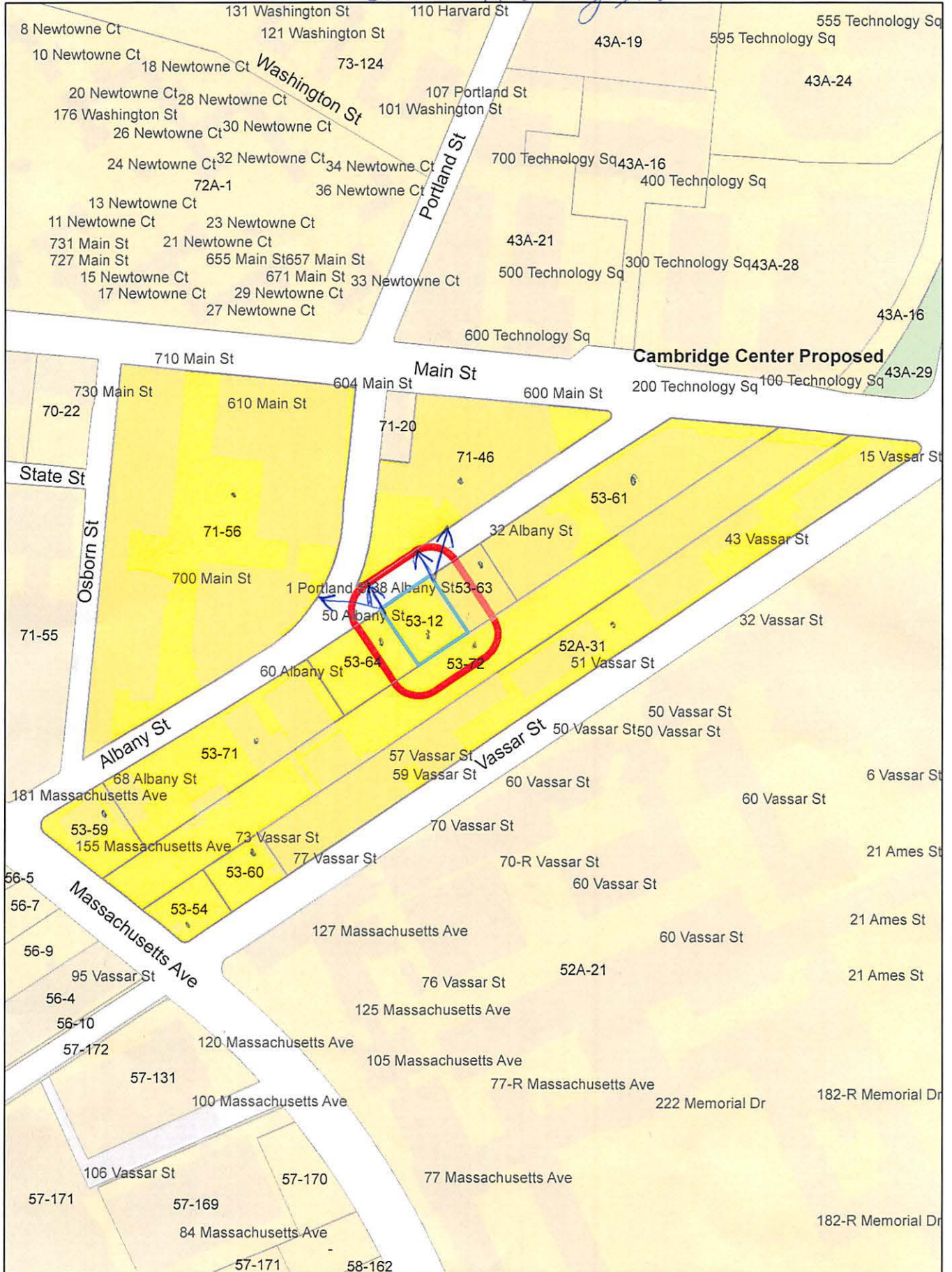
Proposed Deeds	<u>          </u>	<u>          </u>
Evidence of Separate Utilities **	<u>          </u>	<u>          </u>
Proposed Subdivision Plan	<u>          </u>	<u>          </u>

Petitioners are advised to refer to Attachment A (Procedures for applying to the Board of Zoning Appeal) & consult zoning staff for review.  
**It is advisable for the Petitioner to discuss the petition with the abutters as listed in the Zoning BZA Case file.**

\* For Special Permits under Art. 4.32.G.1 (Communication Towers and Antennas), include a photo simulation.

\*\* Can be submitted after subdivision has been approved.

*38-50 Albany St.*



38-50 Albany st.

*Petitioner*

52A-31 / 53-12-54-59-60-61-63-64-72-71-46  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
C/O OFFICE OF THE TREASURER  
238 MAIN ST. SUITE 200  
CAMBRIDGE, MA 02142

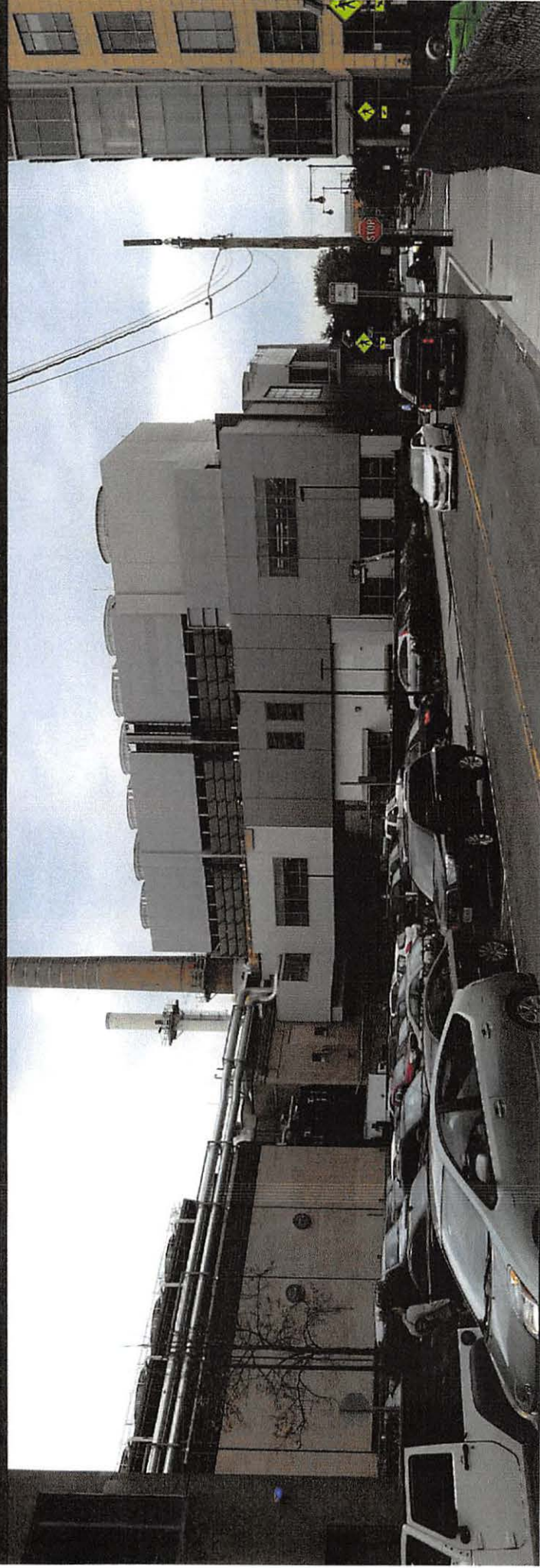
71-56  
MIT 650 MAIN STREET, LLC  
C/O MIT INVESTMENT MANAGEMENT  
238 MAIN ST. SUITE #200  
CAMBRIDGE, MA 02142

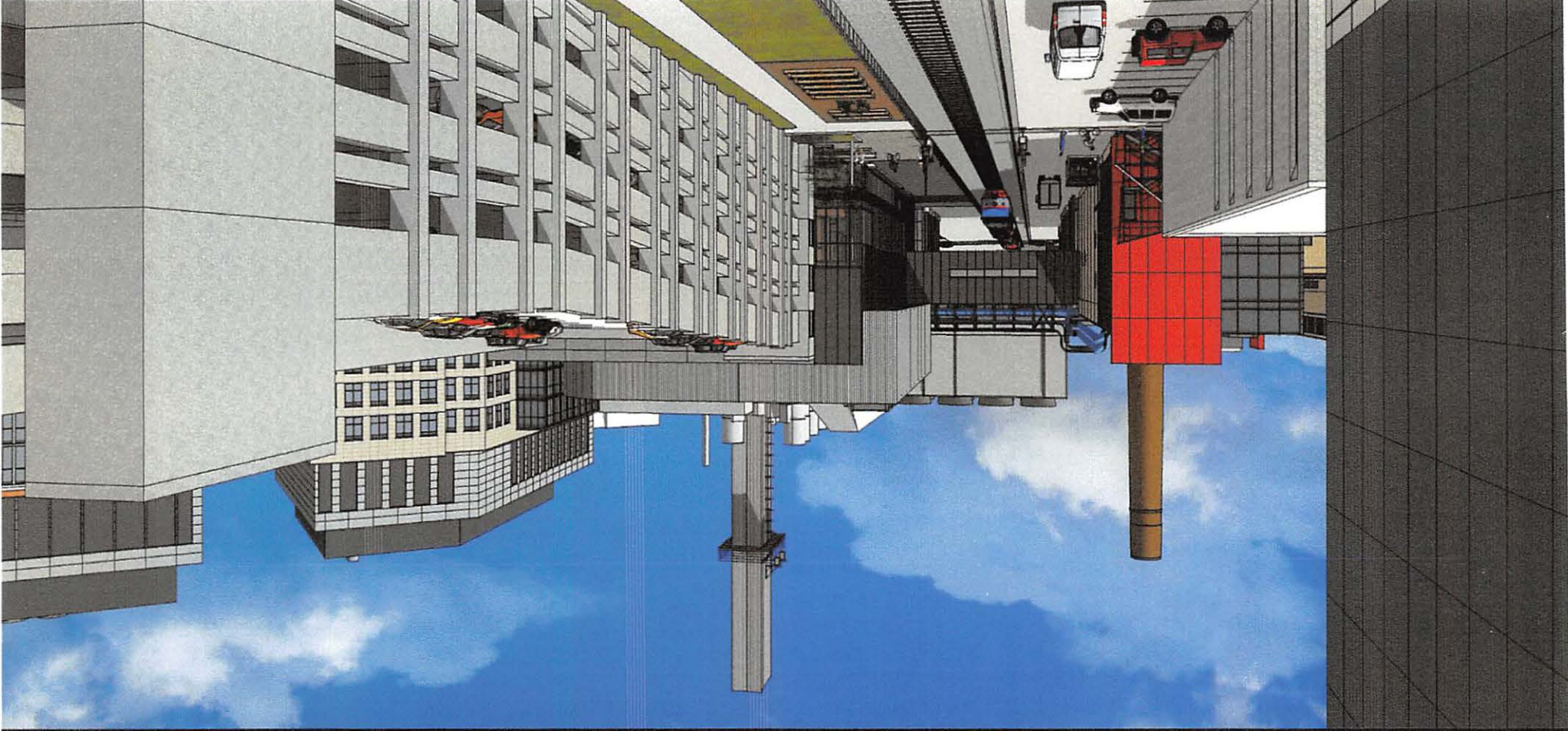
MIT  
C/O KELLEY BROWN  
OFFICE OF CAMPUS PLANNING  
77 MASS AVENUE - NW23-100  
CAMBRIDGE, MA 02139

MIT CUP – Second Century Plant Upgrade  
Cogeneration Plant

Variance Application

04 November 2016





View from Brain & Cognitive Sciences Building - current

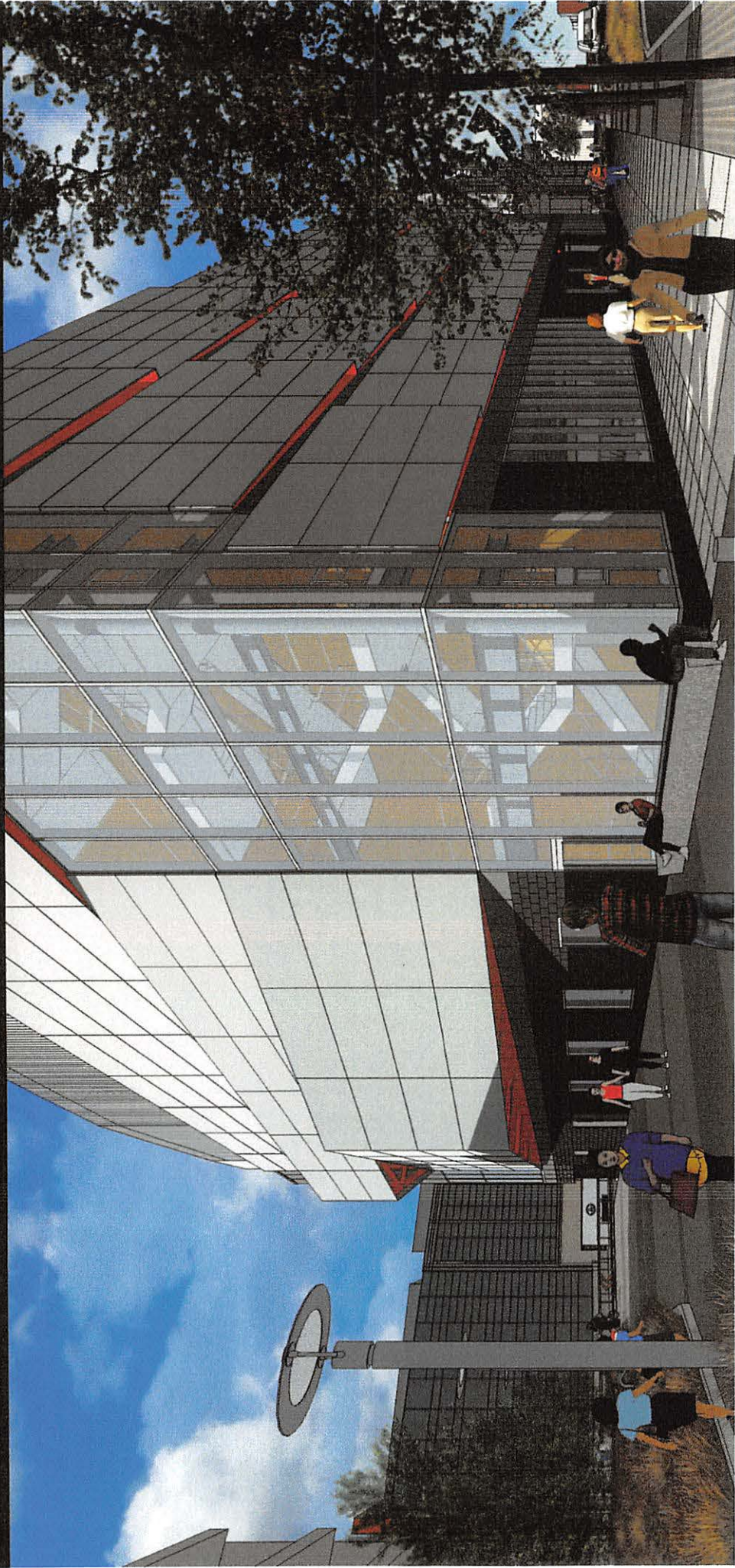
# View from Railroad Crossing



# View across Albany Street from East



# View along Albany Street from East

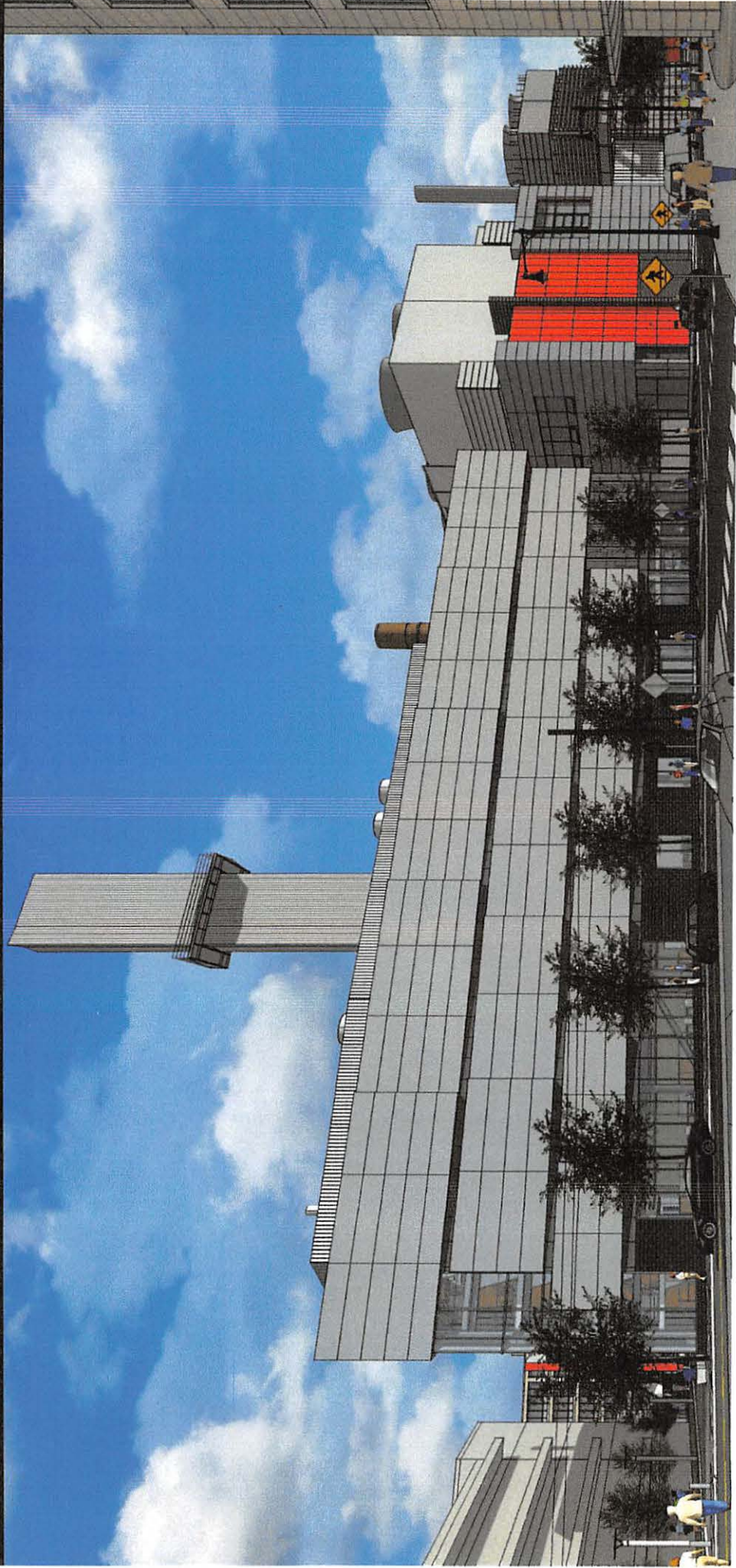




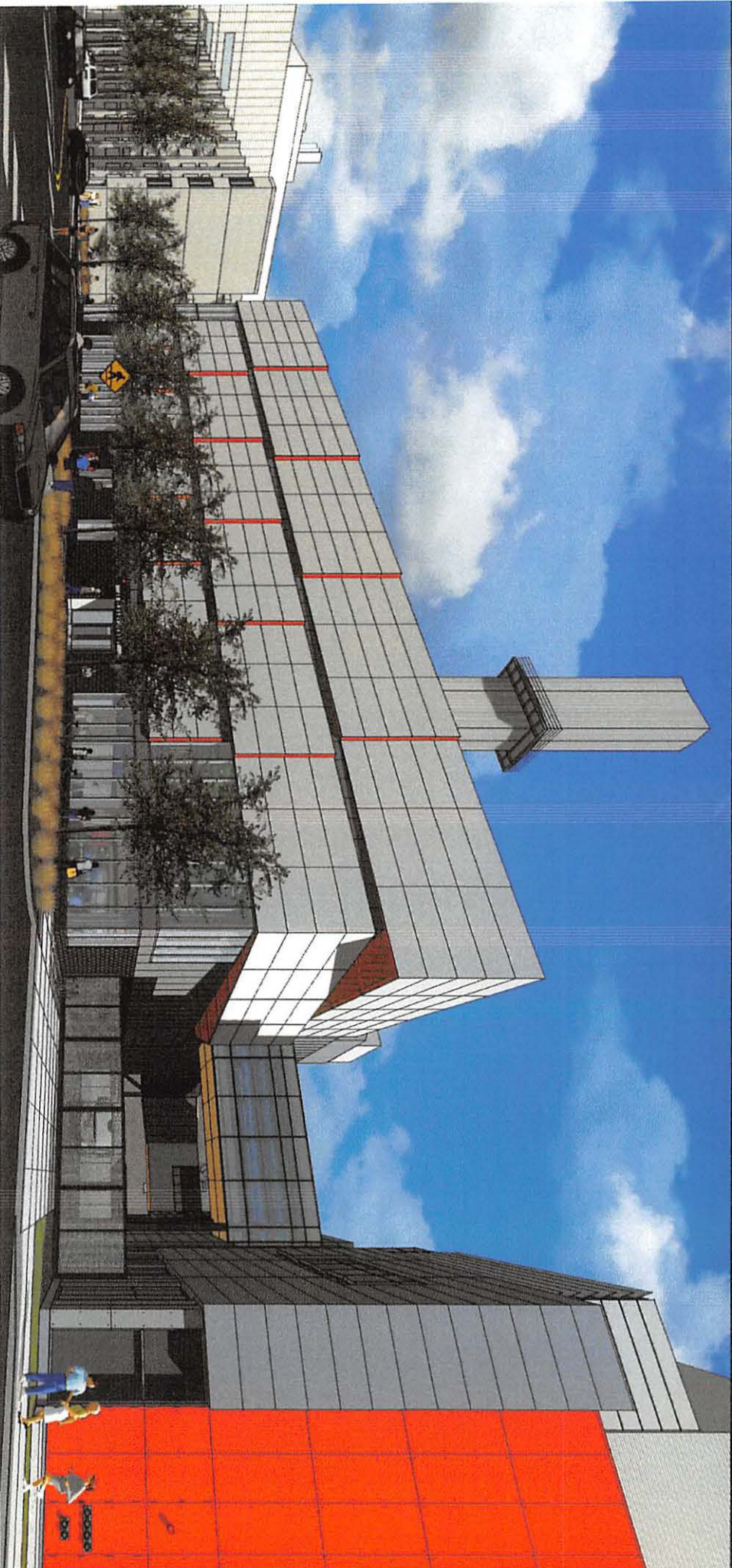
# View along Albany Street from East



# View across Albany Street



View across Albany Street from West



# View East along Albany Street Sidewalk



# View of Presentation Room and Upper Turbine Hall

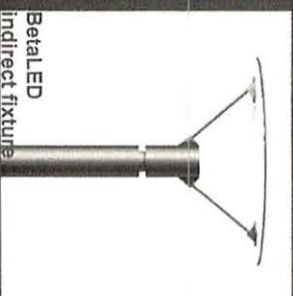
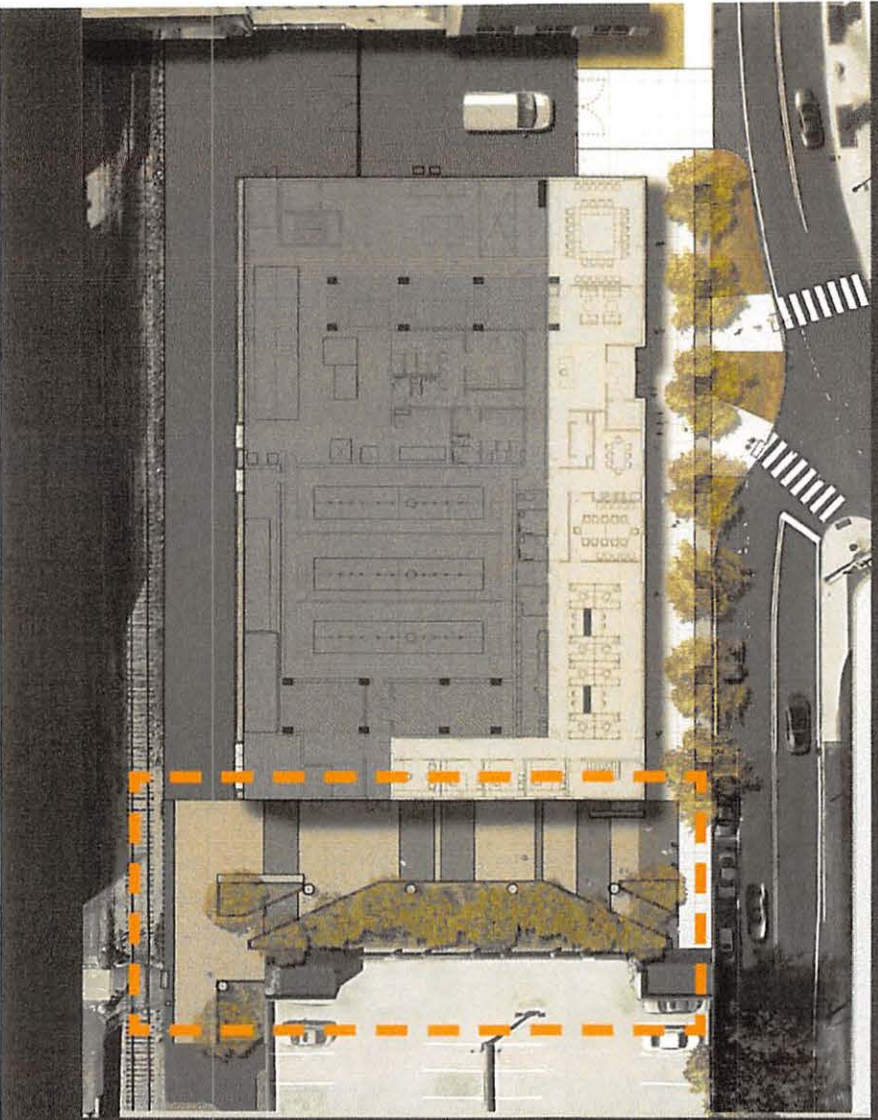


# View along Albany Street from West

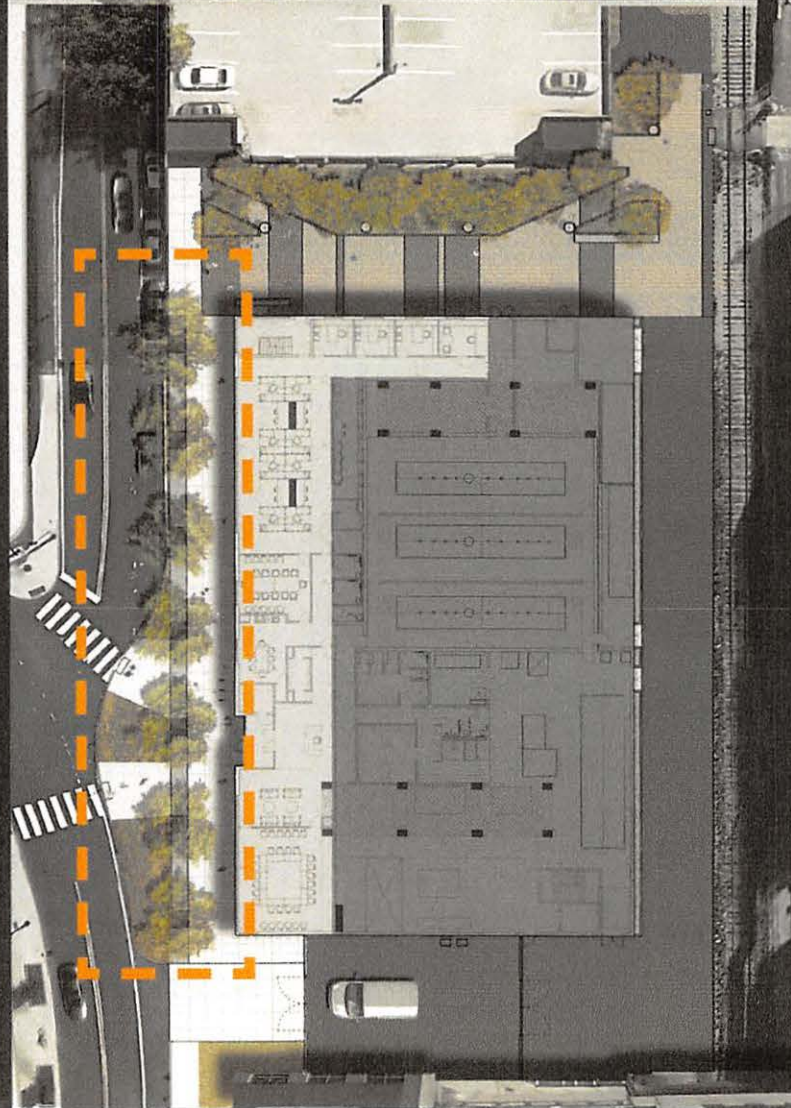
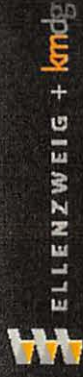


# Site and Building Design

## Pedestrian Connection to Railroad Crossing



# Site and Building Design Albany Street Streetscape

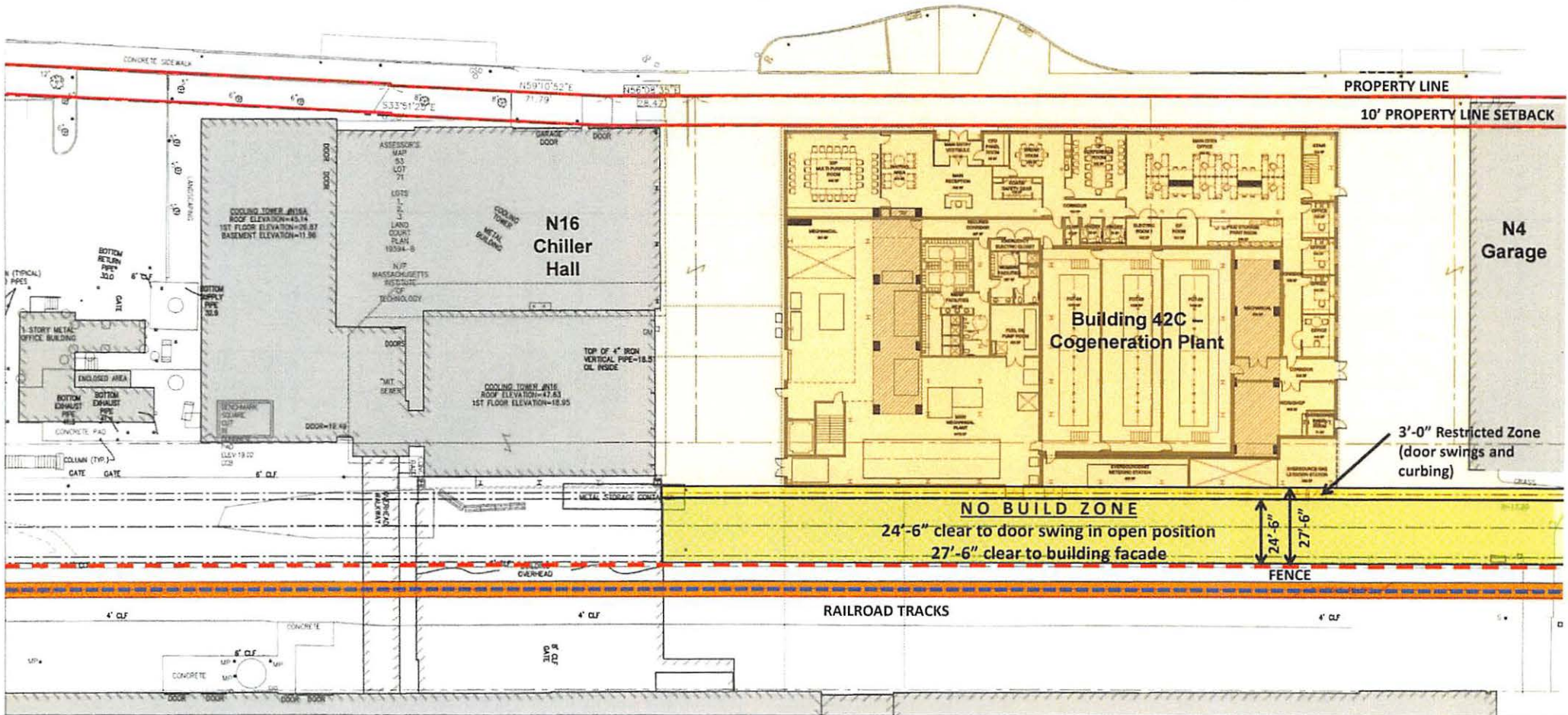




# Site and Building Design

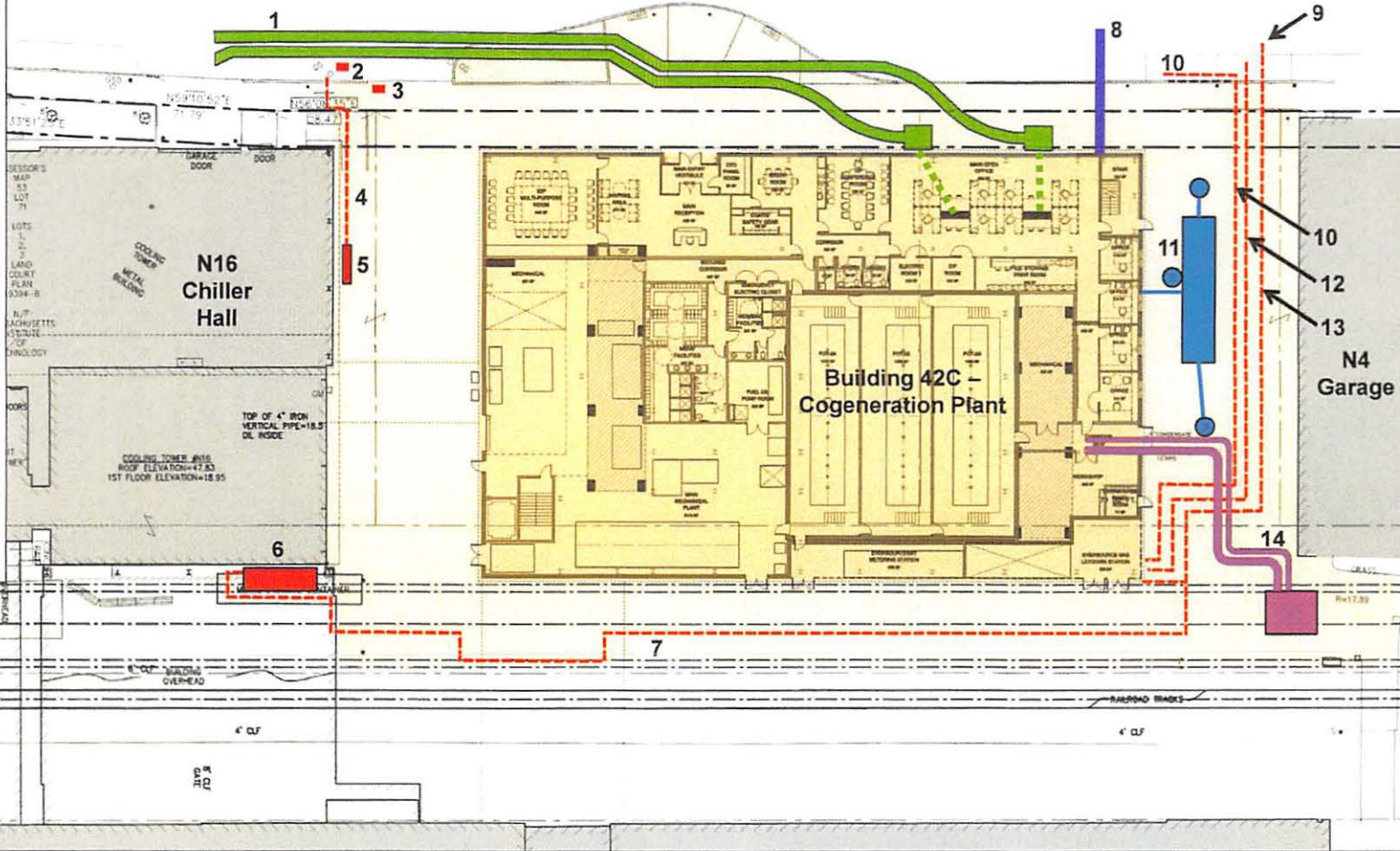
# Grand Junction

## (24') Twenty-four foot No Build Zone

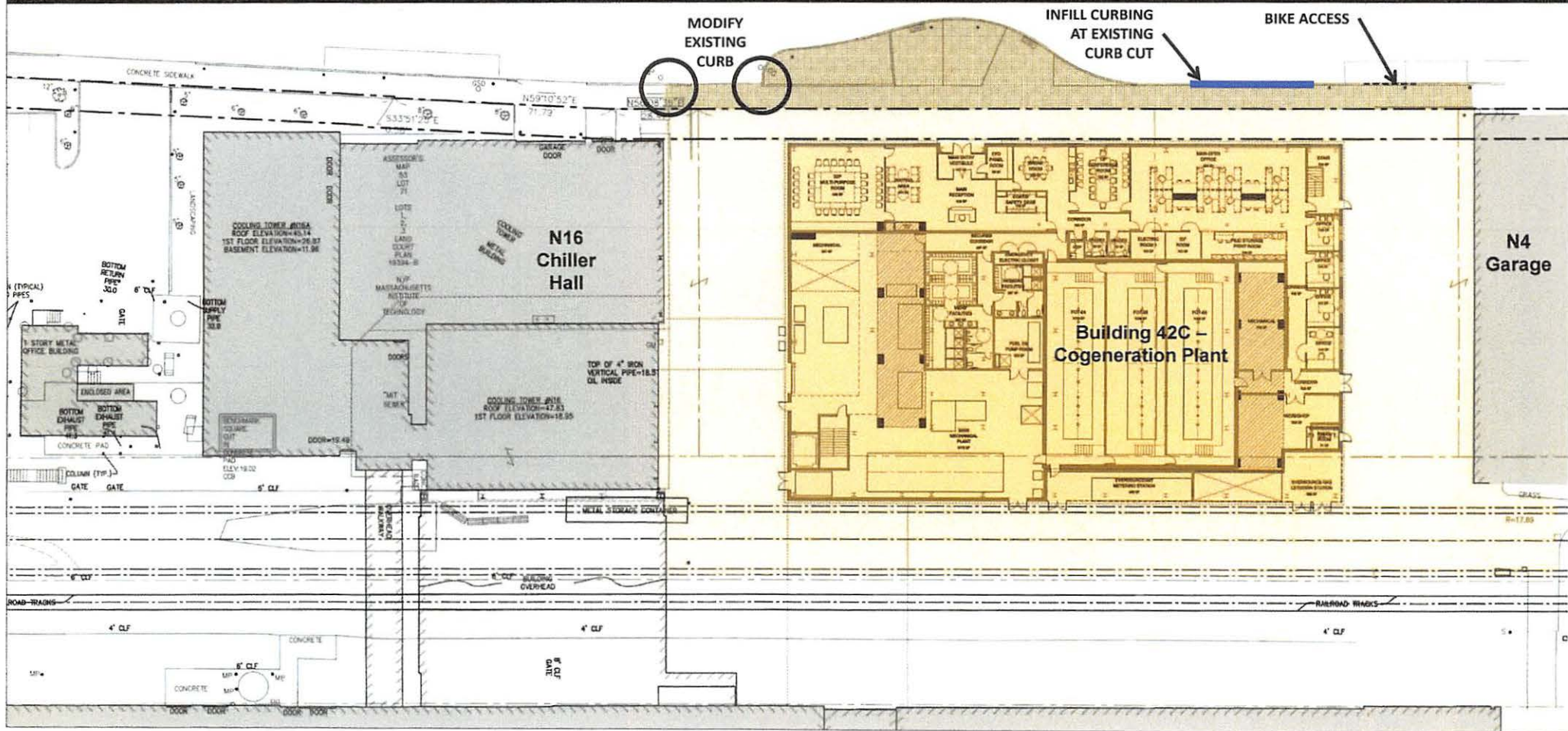


# Site Utilities

1. NEW ENCASED DUCTBANK; TWELVE (12) – 5" CONDUITS BY EVERSOURCE
2. CUT AND CAP EXISTING HP GAS SERVICE TO N16 AND PROPERTY LINE
3. CUT AND CAP EXISTING LP GAS SERVICE TO N16 AND PROPERTY LINE
4. RELOCATED LP GAS CONNECTION TO EXISTING GAS LINE
5. RELOCATE EVERSOURCE PILOT GAS METER STATION
6. TEMPORARY EVERSOURCE HIGH PRESSURE METER STATION
7. TEMPORARY EVERSOURCE 12" HPG
8. SANITARY SEWER CONNECTION TO EXISTING SEWER MANHOLE; PROP DROP CONNECTION BY MIT (INV. EL. 12.25')
9. RELOCATED HP GAS CONNECTION TO EXISTING GAS LINE
10. FUTURE EVERSOURCE 12" IPG
11. PROPOSED STORMWATER DRAINAGE; STORAGE
12. EVERSOURCE 16" LPG
13. EVERSOURCE 12" EHPG
14. FUTURE 12" STEAM AND 6" CONDENSATE



# Street Curb Modifications



# Street Curb Modifications and Site Utilities

# Zoning – Bike Storage

1. Article 6 – City of Cambridge Zoning (based on gross floor area calculations 13,319 GFA)
  - a. Long-term Bike Storage = **3 spaces** ( $13.4 \times 0.2 = 2.68$ )
  - b. Short-term Bike Storage = **6 spaces** ( $13.4 \times 0.4 = 5.36$ )

Category	Included Non-Residential Uses	Min. Long-Term Bicycle Parking Rate
N1	Offices, including: medical, professional, agencies, general, government, radio/television studios, arts/crafts studios	0.30 space per 1,000 square feet
N2	Technical offices, research facilities	0.22 space per 1,000 square feet
N3	Hospitals and clinics; veterinary clinics; public safety facilities; restaurants and eating establishments	0.20 space per 1,000 square feet
N4	Retail stores, consumer service uses, commercial recreation and entertainment	0.10 space per 1,000 square feet
N5	Transportation and utility uses; religious and civic uses; manufacturing, storage and other industrial uses, auto-related uses	0.08 space per 1,000 square feet
E1	Primary or secondary schools, vocational schools	0.30 space per classroom or 0.015 space per auditorium seat, whichever is greater
E2	College or university facilities (excluding residences)	0.20 space per 1,000 square feet
P	Automobile parking lots or parking garages for private passenger cars	1.00 space per 10 motor vehicle parking spaces

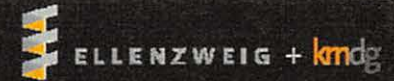
Long-term Bike Storage

Category	Included Non-Residential Uses	Min. Short-Term Bicycle Parking Rate
N1	Convenience and food stores, restaurants and eating establishments, theaters and commercial recreation	1.00 space per 1,000 square feet
N2	Retail stores and consumer service establishments	0.60 space per 1,000 square feet
N3	Passenger transportation; religious and civic uses; government offices, medical offices and clinics, agency offices, banks (ground floor only); veterinary clinics	0.50 space per 1,000 square feet
N4	Hospitals and infirmaries	0.10 space per 1,000 square feet
N5	Non-passenger transportation and utility uses; laboratories and research facilities; general, professional and technical offices; radio/television and arts/crafts studios; manufacturing, storage and other industrial uses, auto-related uses	0.06 space per 1,000 square feet
E1	Primary or secondary schools	1.70 space per classroom or 0.085 space per auditorium seat, whichever is greater
E2	College or university academic or administrative facilities	0.40 space per 1,000 square feet
E3	College or university student activity facilities	1.00 space per 1,000 square feet
P	Automobile parking lot or parking garage for private passenger cars (6.36.2 b)	No additional requirement for Short-Term Bicycle Parking; however, if motor vehicle parking is provided on an open lot, then required Long-Term Bicycle Parking Spaces may be converted to Short-Term Bicycle Parking Spaces.

Short-term Bike Storage

# Zoning – GFA (Gross Floor Area Calculations)

Plan at Mezzanine Level (el. 60'-0")



PER CAMBRIDGE ZONING ORDINANCE  
ARTICLE 2 - DEFINITIONS  
GROSS FLOOR AREA (GFA) EXCLUSION 6

MECHANICAL AND ELECTRICAL SPACE REQUIRED FOR  
THE OPERATION OF THE BUILDING HAVE BEEN  
EXCLUDED FROM GFA

ZONING GFA  
TOTAL

13,319 SF

EXCLUDED  
75,841 SF

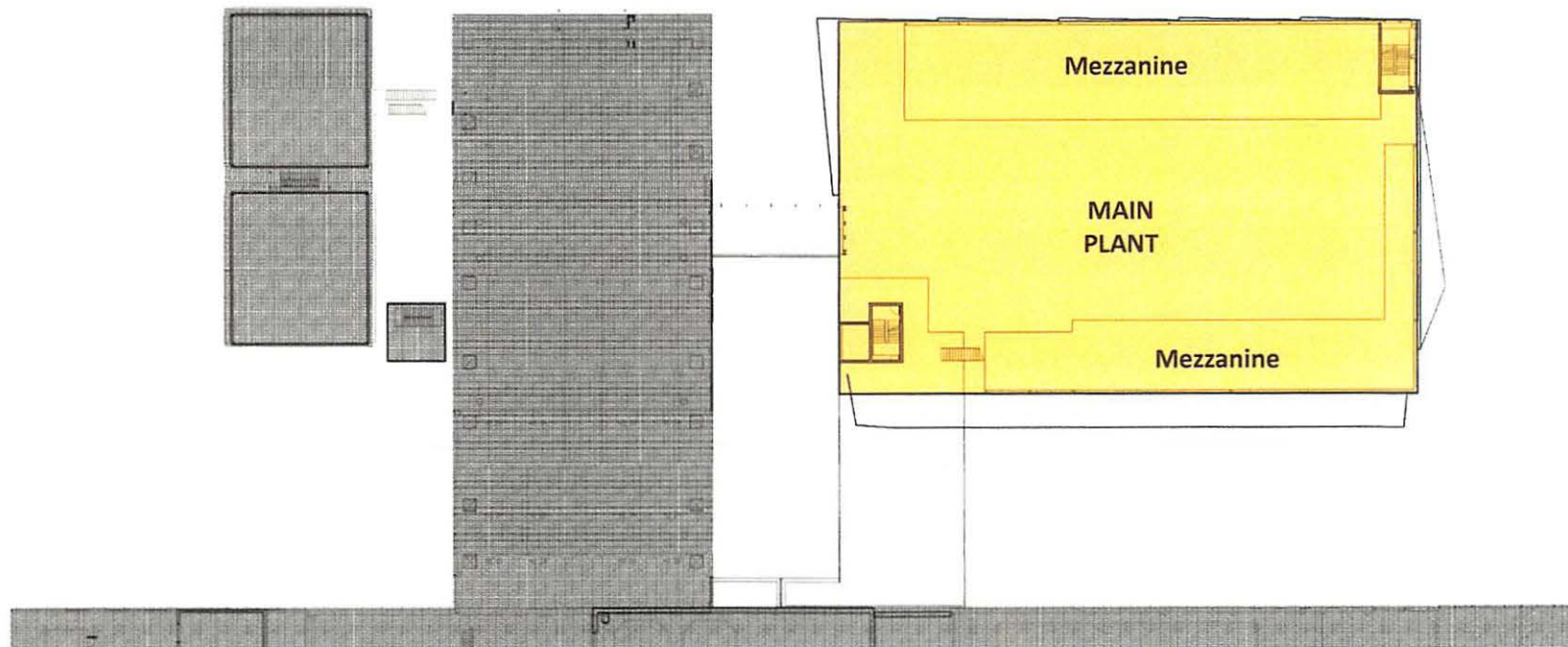
TOTAL AREA  
89,160 SF

ZONING GFA

GFA  
0 SF

EXCLUDED  
21,575 SF

TOTAL  
21,575 SF



# Zoning – GFA (Gross Floor Area Calculations)

## Plan at Main Electrical Floor (el. 50'-6")



PER CAMBRIDGE ZONING ORDINANCE  
ARTICLE 2 - DEFINITIONS  
GROSS FLOOR AREA (GFA) EXCLUSION 6

MECHANICAL AND ELECTRICAL SPACE REQUIRED FOR  
THE OPERATION OF THE BUILDING HAVE BEEN  
EXCLUDED FROM GFA

ZONING GFA  
TOTAL

13,319 SF

EXCLUDED  
75,841 SF

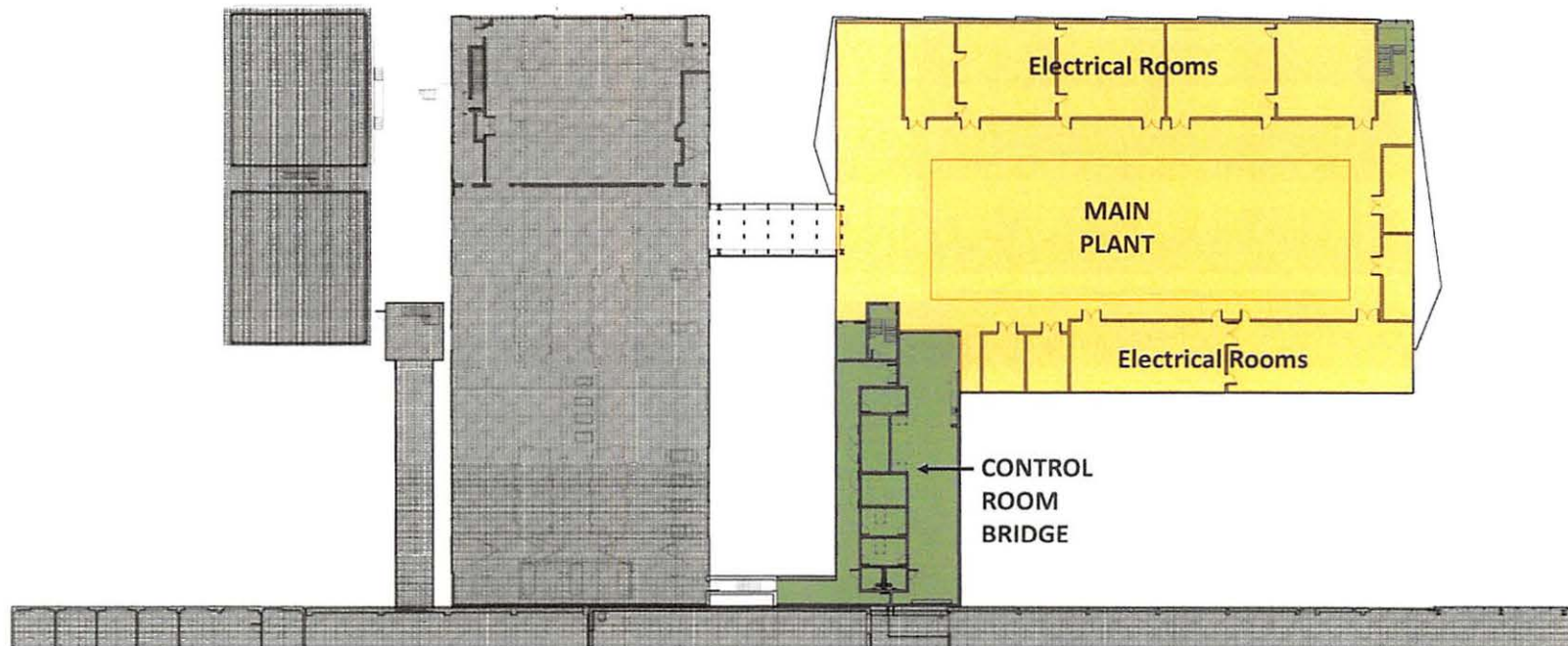
TOTAL AREA  
89,160 SF

ZONING GFA

GFA  
4,020 SF

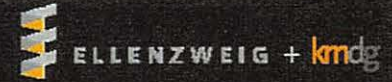
EXCLUDED  
20,424 SF

TOTAL  
24,444 SF





# Zoning – GFA (Gross Floor Area Calculations)



## Plan at Main Turbine Hall (el. 30'-0")

PER CAMBRIDGE ZONING ORDINANCE  
ARTICLE 2 - DEFINITIONS  
GROSS FLOOR AREA (GFA) EXCLUSION 6

MECHANICAL AND ELECTRICAL SPACE REQUIRED FOR  
THE OPERATION OF THE BUILDING HAVE BEEN  
EXCLUDED FROM GFA

ZONING GFA  
TOTAL

13,319 SF

EXCLUDED  
75,841 SF

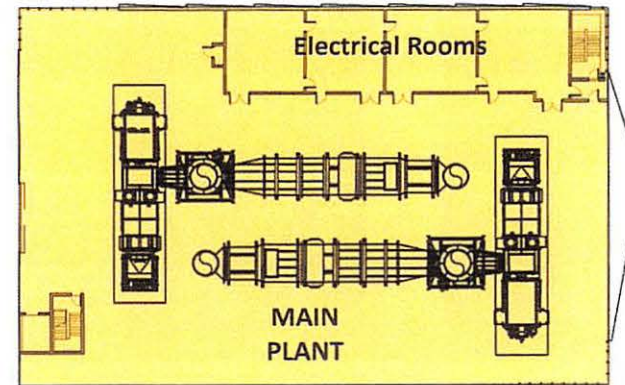
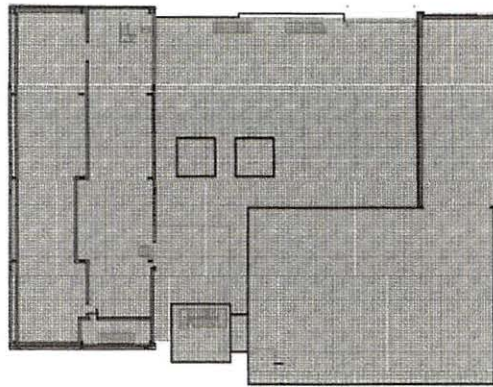
TOTAL AREA  
89,160 SF

ZONING GFA

GFA  
0 SF

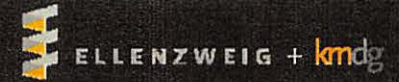
EXCLUDED  
21,575 SF

TOTAL  
21,575 SF



# Zoning – GFA (Gross Floor Area Calculations)

## Ground Floor Plan (el. 17'-9")



PER CAMBRIDGE ZONING ORDINANCE  
ARTICLE 2 - DEFINITIONS  
GROSS FLOOR AREA (GFA) EXCLUSION 6

MECHANICAL AND ELECTRICAL SPACE REQUIRED FOR  
THE OPERATION OF THE BUILDING HAVE BEEN  
EXCLUDED FROM GFA

ZONING GFA  
TOTAL

13,319 SF

EXCLUDED  
75,841 SF

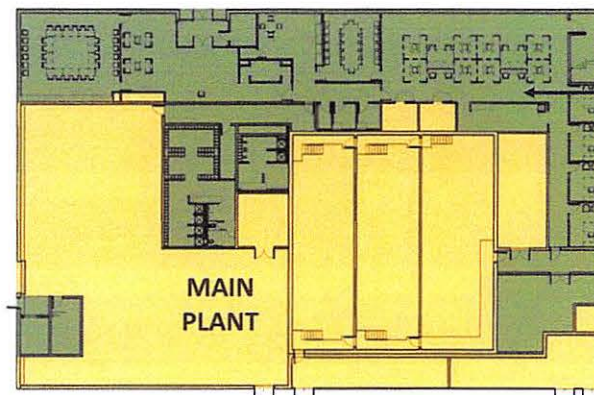
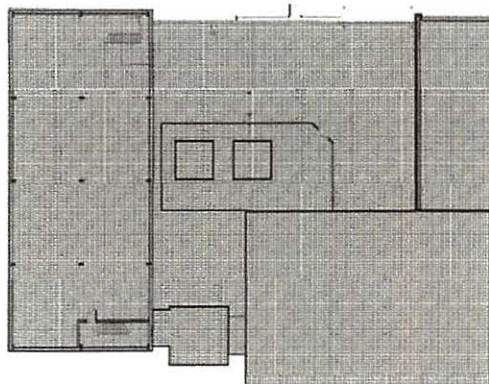
TOTAL AREA  
89,160 SF

ZONING GFA

GFA  
9,299 SF

EXCLUDED  
12,276 SF

TOTAL  
21,575 SF



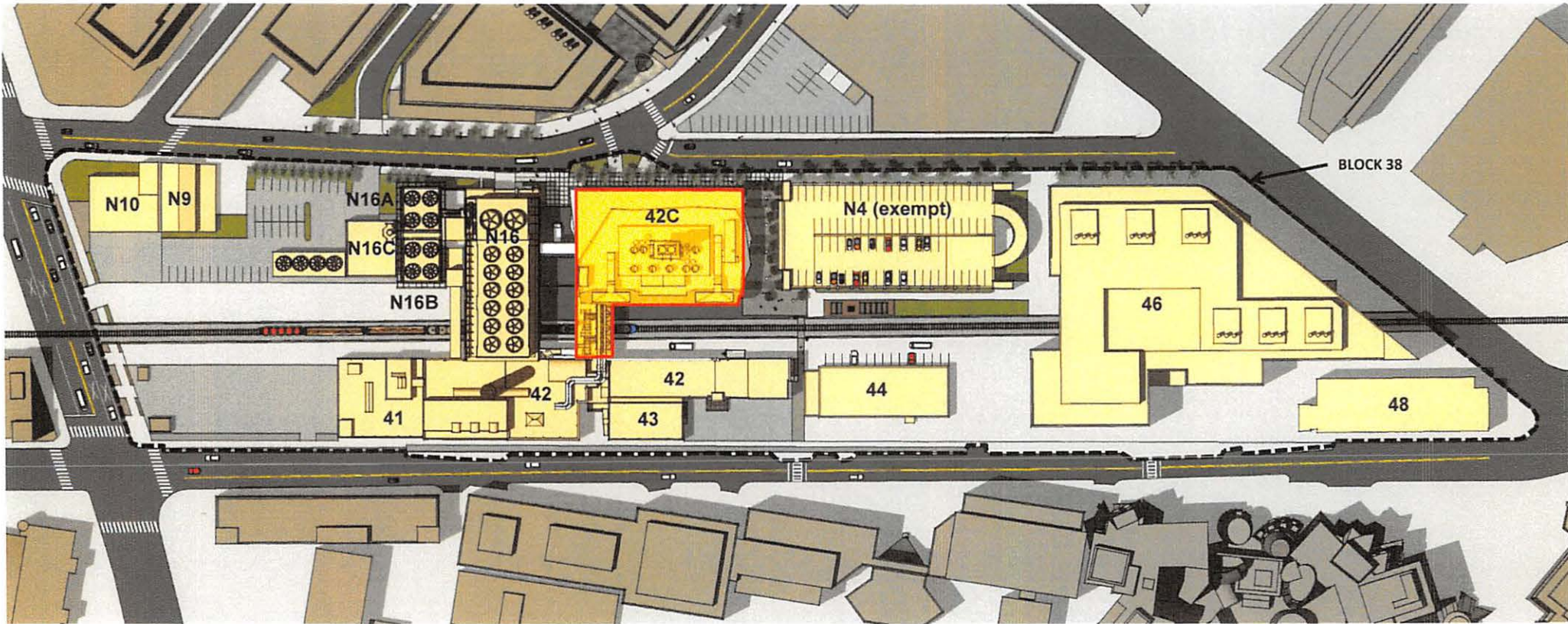
# Zoning – FAR (Floor Area Ratio)

## Aggregate for Block 38

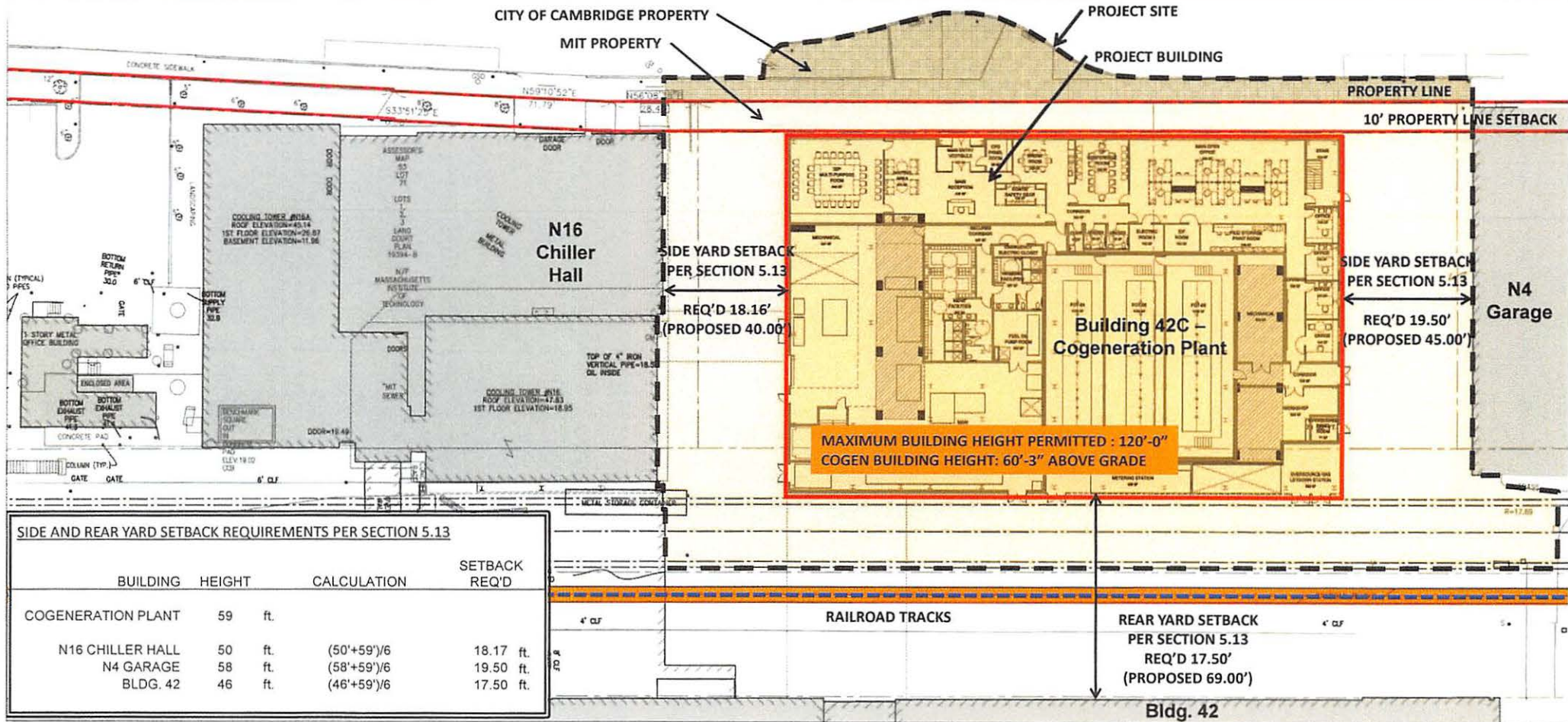
Land Area = 409,261 SF

Occupied Building Area = 510,832 GFA

FAR = 1.2 (3.0/4.0 allowed)



# Zoning – Dimensional Requirements



# Zoning Regulations

## Cambridge Zoning District:

- Zoning map district classification – Residence C-3B

Volume Based Variance (Section 8.22.3): Pre-existing non-conforming building, by virtue of the 10' setback for R-C3B district included in the zoning amendments in 2001, expanding by cumulative volume more than 25%.

## Dimensional:

- Maximum height: 120 feet
- Minimum front setback: 10 feet
- Minimum Rear Setback: none
- Minimum Side Setback: none
- Maximum Ratio of Floor Area to Lot Area: 3.0/4.0
- Minimum distance between separate buildings on a lot: the greater of 10 feet or the sum of the height of the two buildings divided by six.

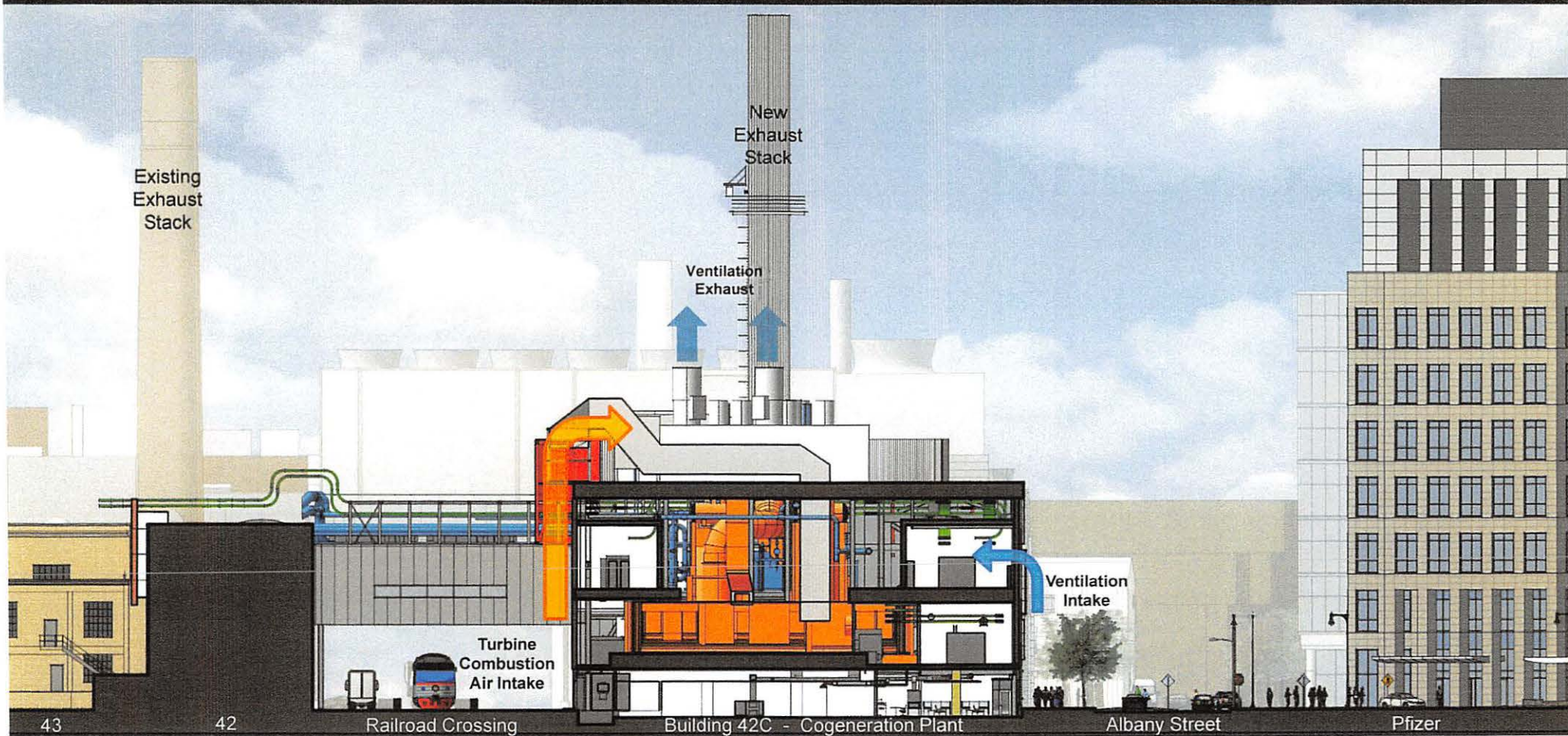
Parking: Seven (7) parking spaces are required and will be accommodated in MIT Parking Inventory (Section 6.22.1(a)(3))

Bike Storage: (3 long-term and 6 short-term)

# Zoning

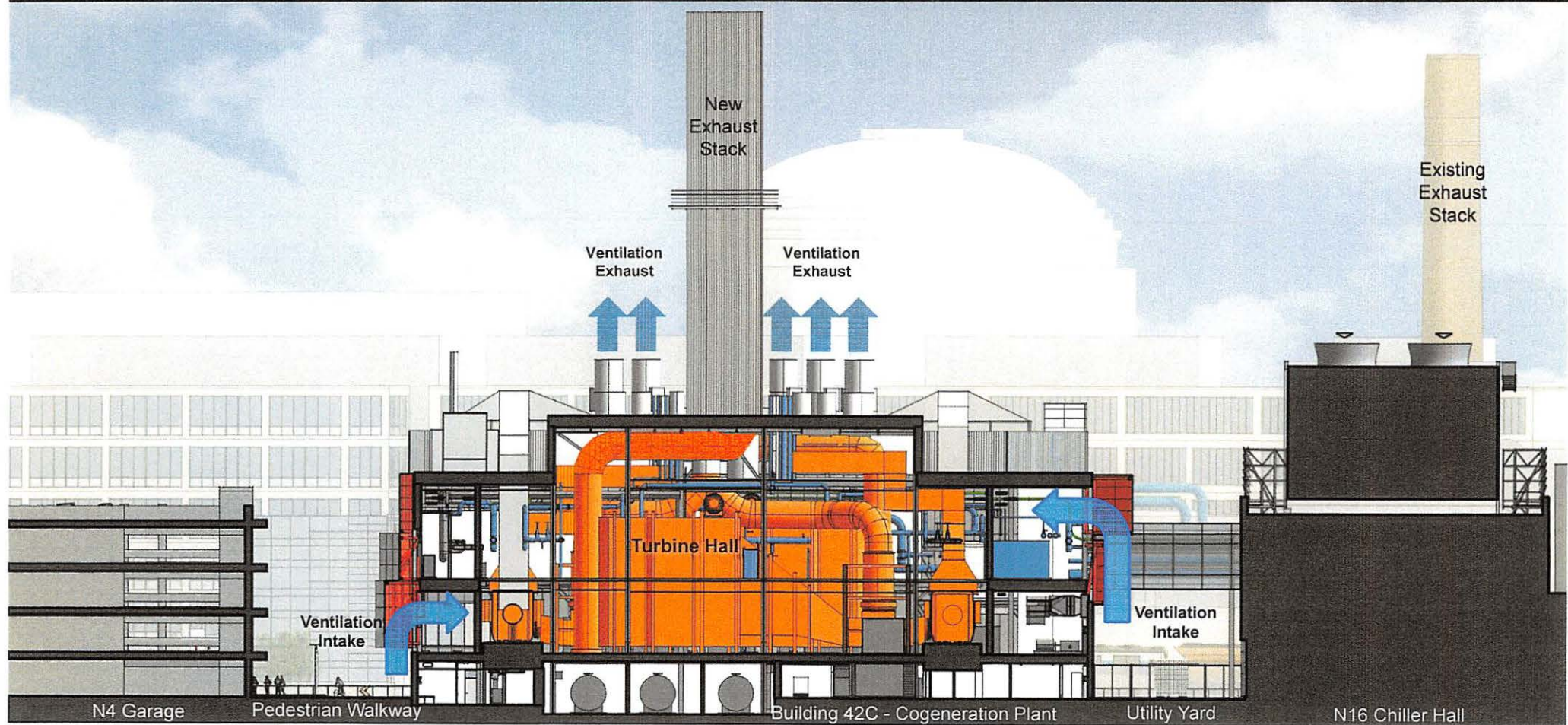
# Cogeneration Plant Function

## Cross Section View Looking West



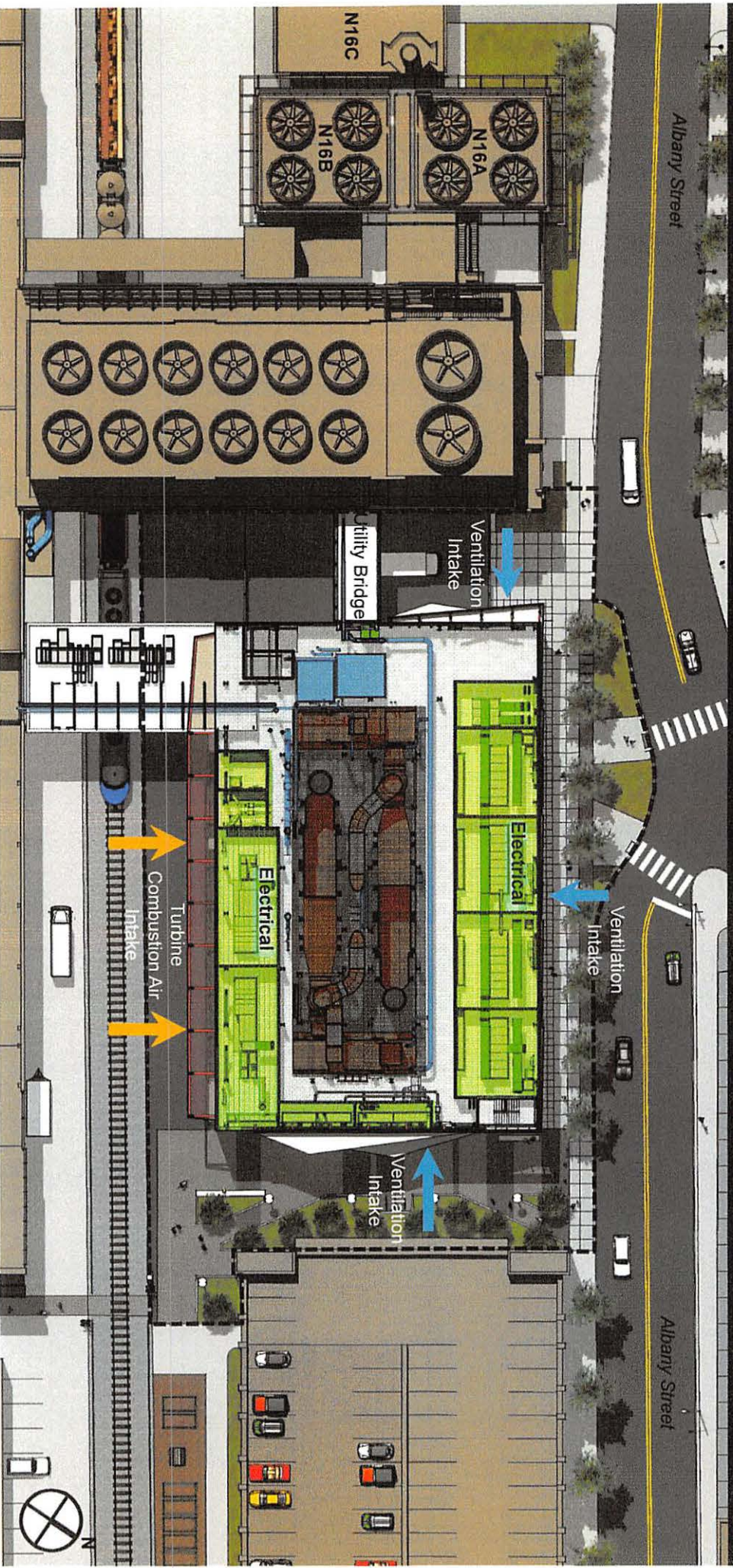
# Cogeneration Plant Function

## Longitudinal Section View Looking South

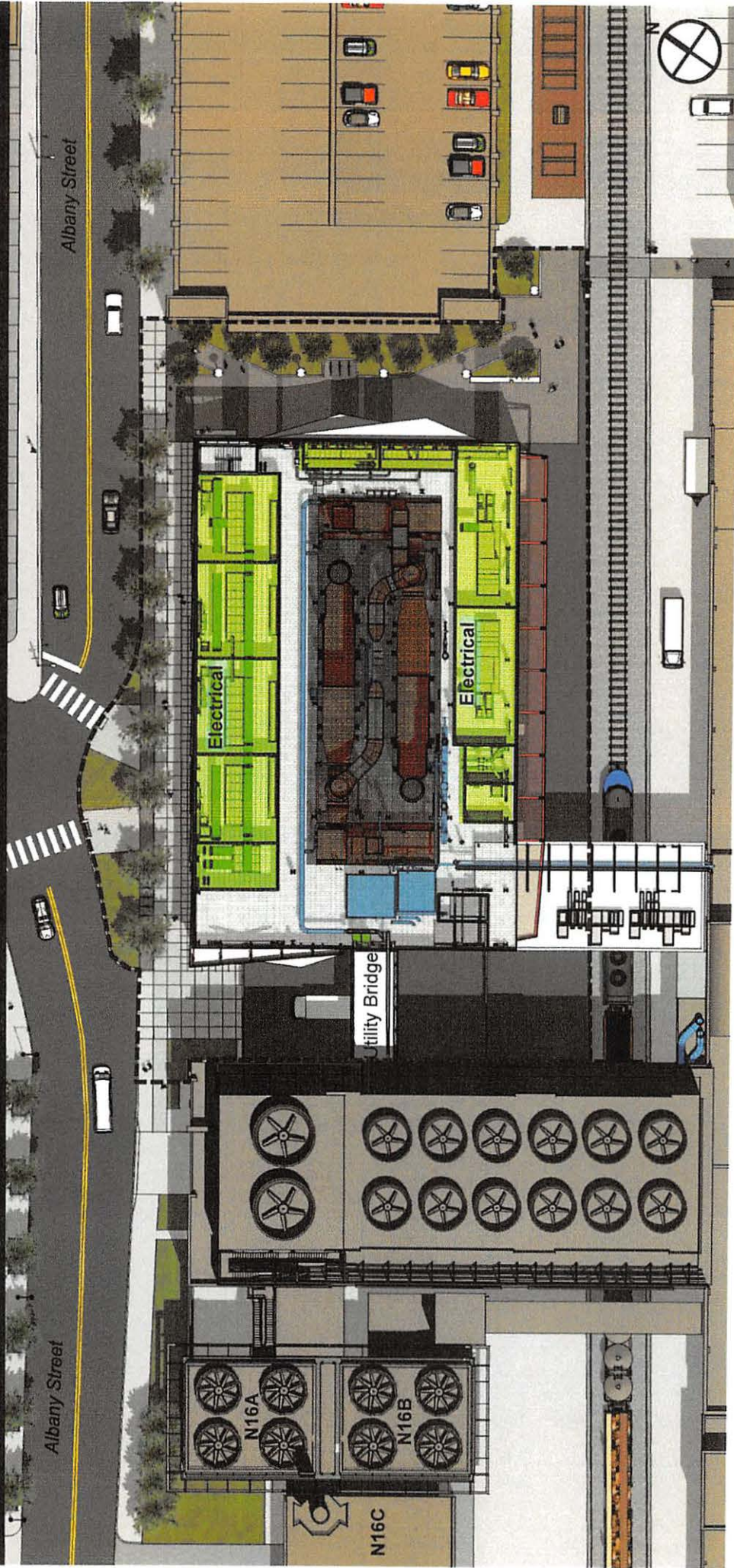




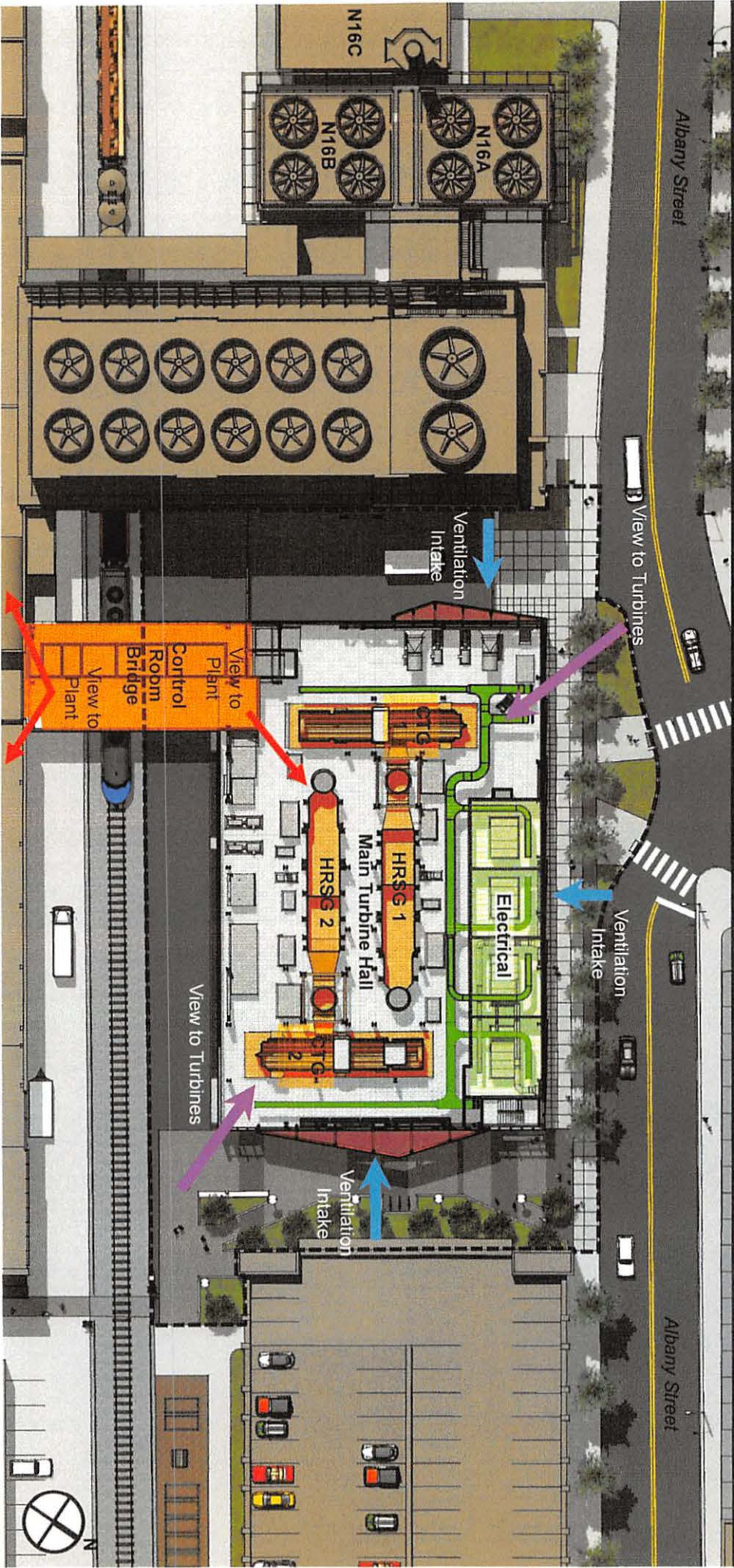
# Cogeneration Plant Function Plan at Main Electrical Floor (el. 50'-6")



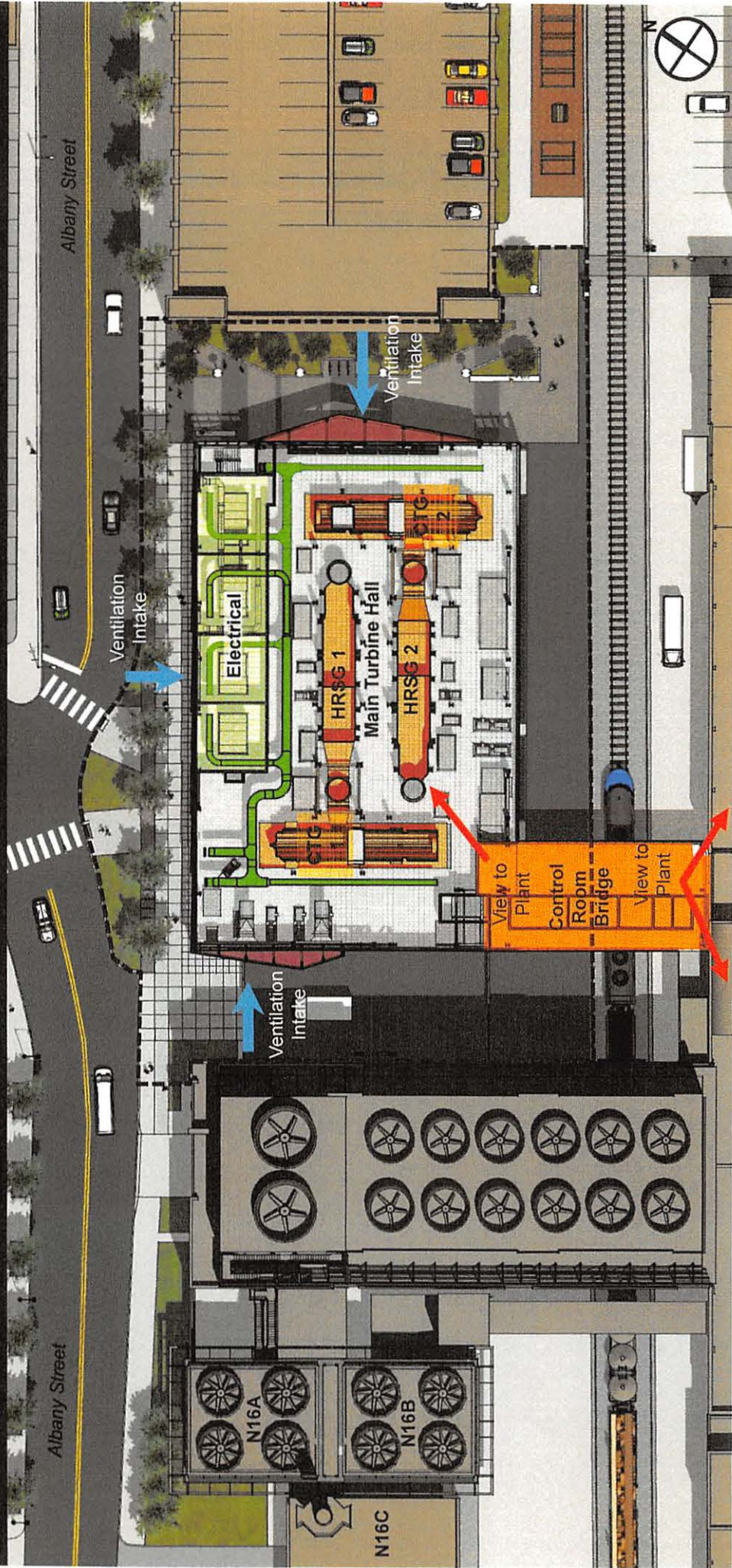
# Cogeneration Plant Function Plan at Main Electrical Floor (el. 50'-6")



# Cogeneration Plant Function Plan at Main Turbine Hall (el. 30'-0")



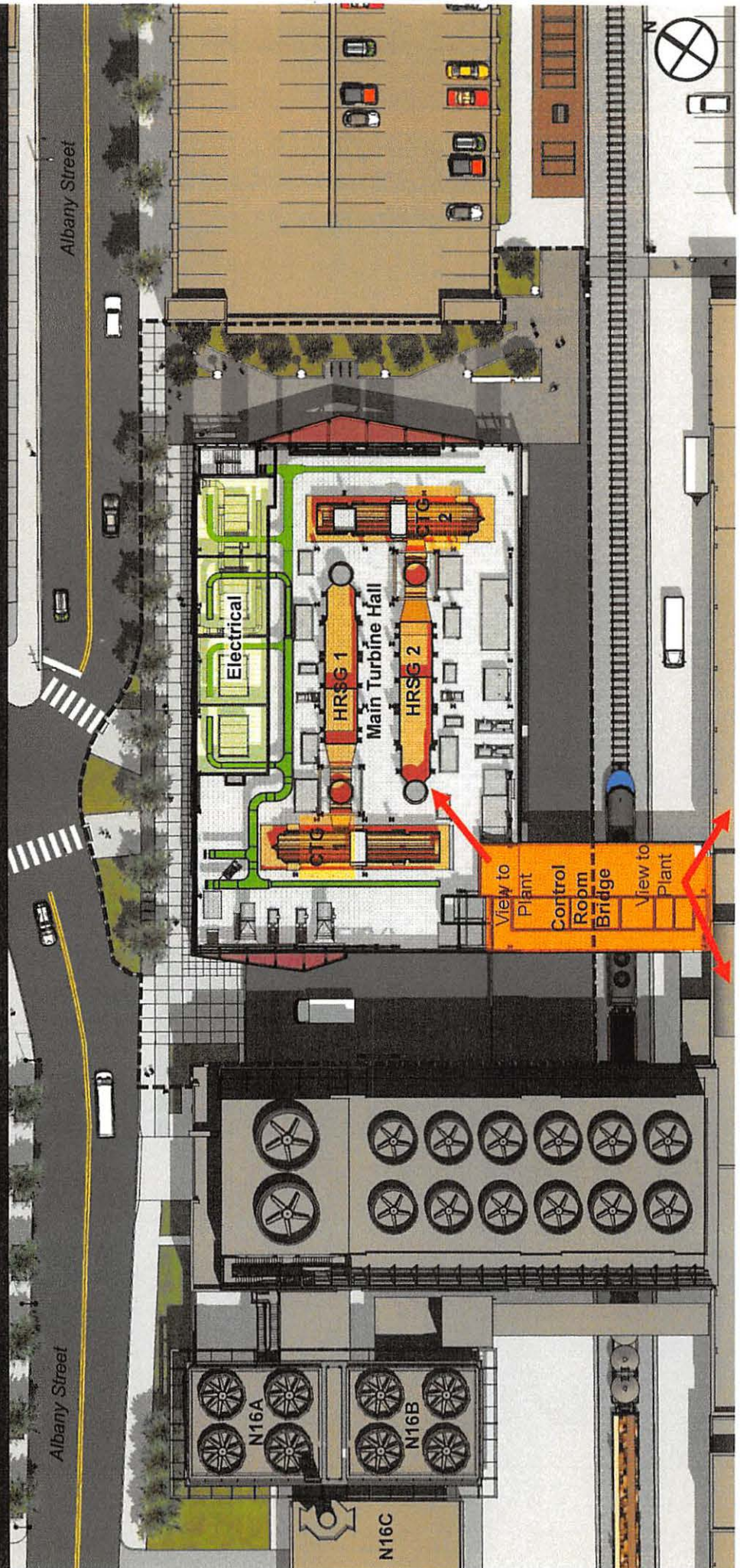
# Cogeneration Plant Function Plan at Main Turbine Hall (el. 30'-0")



# Cogeneration Plant Function Ground Floor Plan (el. 17'-9")



# Cogeneration Plant Function Plan at Main Turbine Hall (el. 30'-0")



Albany Street

Albany Street

N16A

N16B

N16C

Electrical

HRSG 1

Main Turbine Hall

HRSG 2

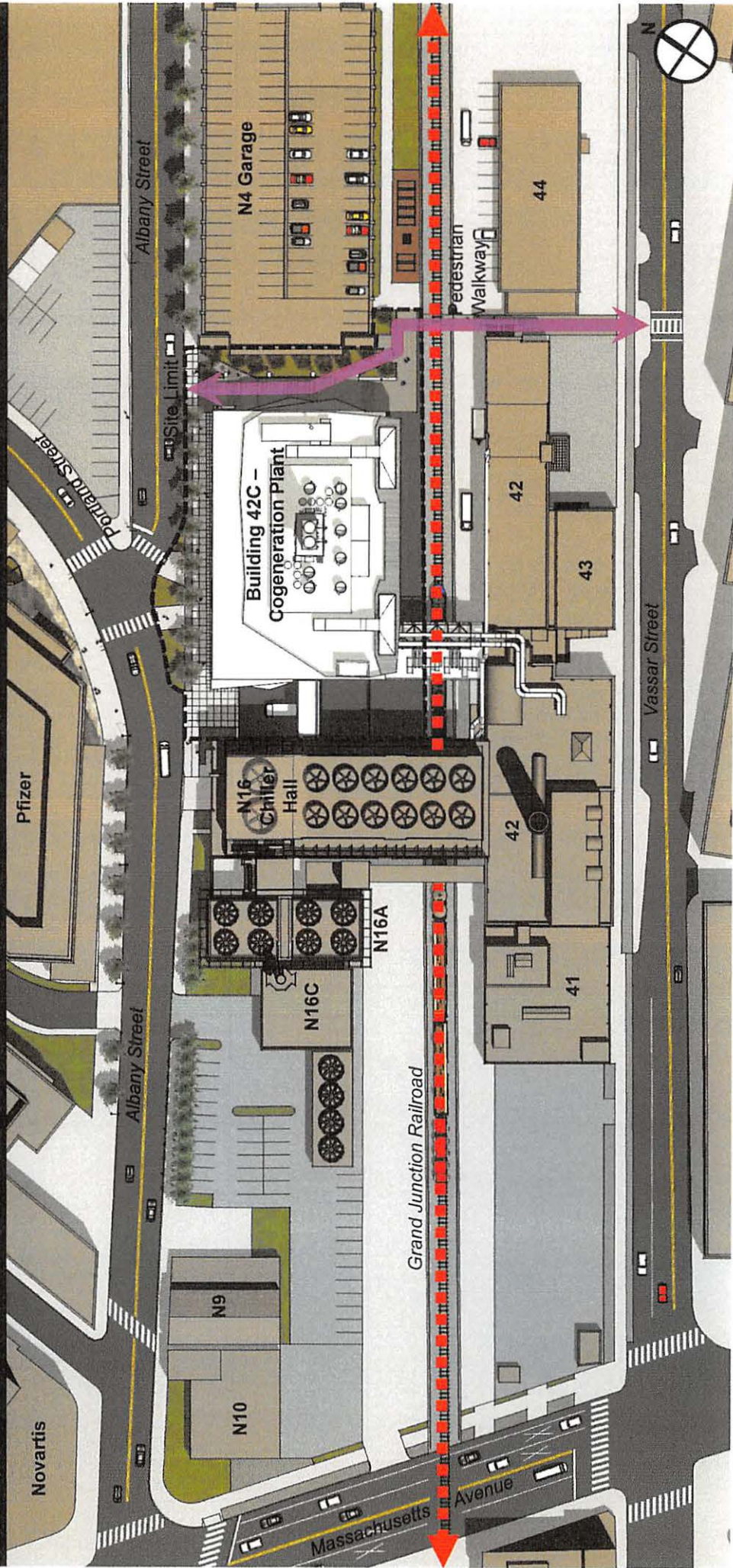
View to Plant

Control Room Bridge

View to plant

# Cogeneration Plant Function

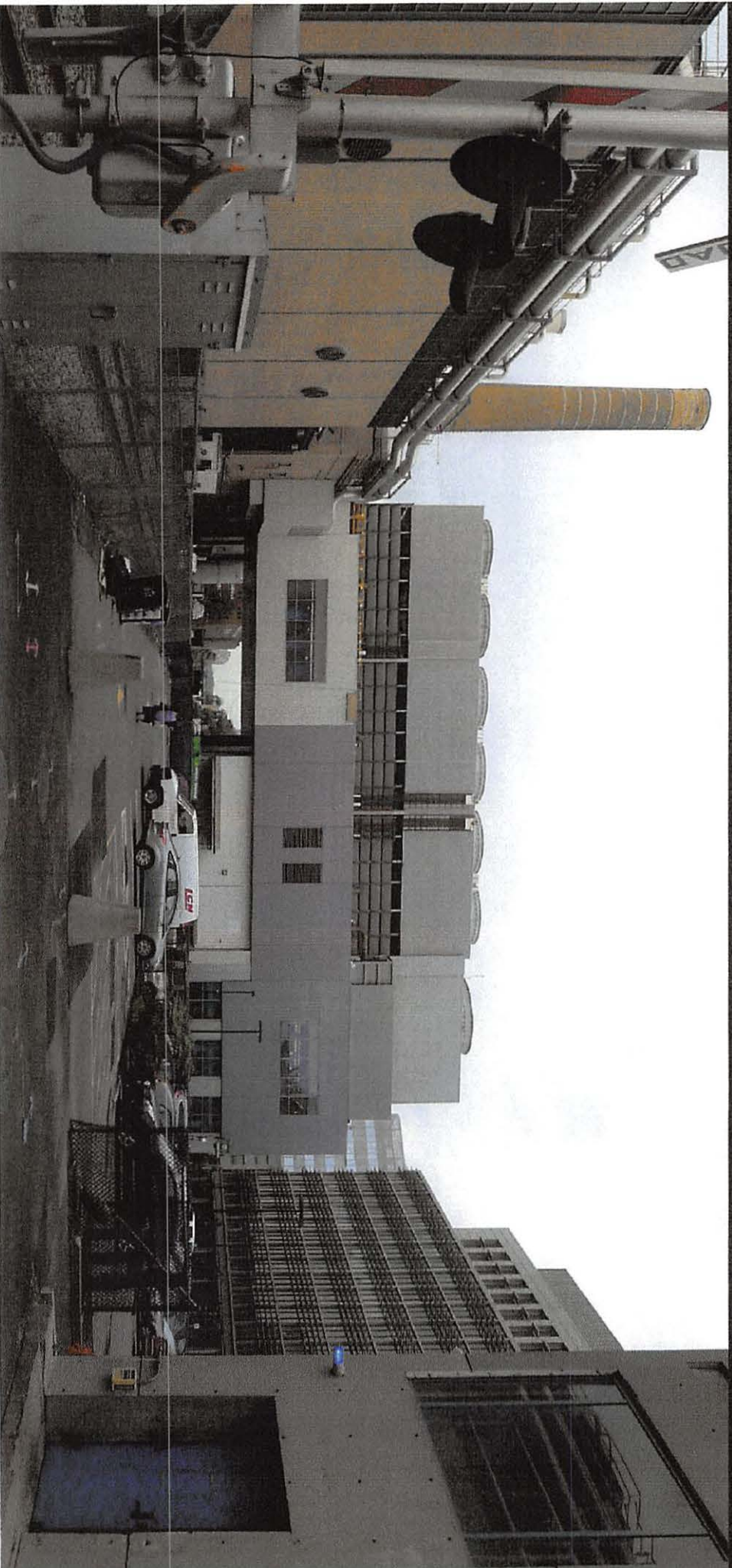
# Site Plan





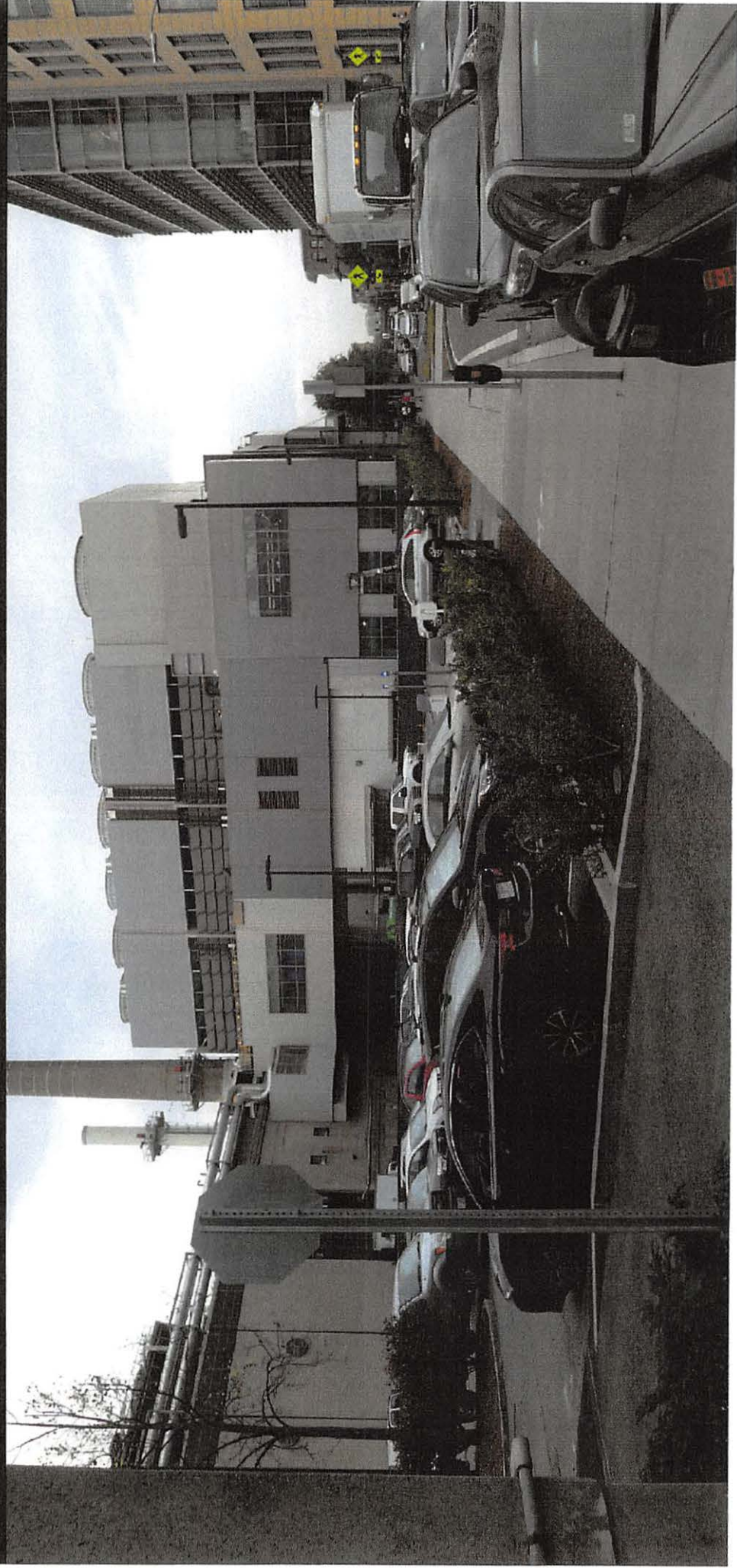
## Site Context

View of Site from Southeast at Pedestrian Railway Crossing



## Site Context

*View of Site from Northeast at Pedestrian Walkway*



## Site Context

View of Site from West Along Albany Street



## Site Context

View of Site From North Across Portland and Albany Streets



# Site Context

## City of Cambridge Map

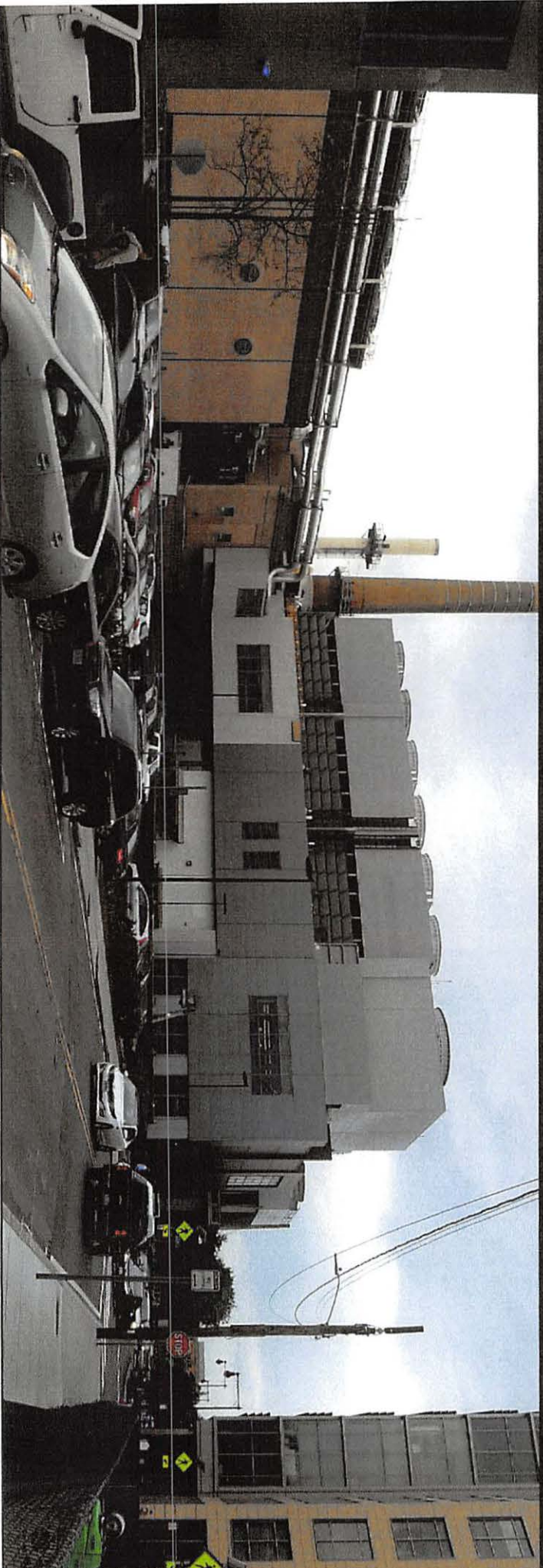


# Site Context

MIT CUP – Second Century Plant Upgrade  
Cogeneration Plant

**Variance Application**

04 November 2016





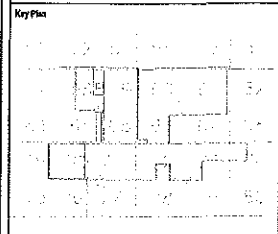
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

**VANDERWEIL POWER GROUP**  
P.O. Box 100  
275 Beacon Street  
Boston, MA 02215  
617.452.4311  
www.vanderweil.com

**ELLENZWEIG ARCHITECTURE + PLANNING**  
500 Massachusetts Avenue, Cambridge, MA 02139  
T. 617.452.1111 F. 617.452.1111 W. ellenzweig.com

Graphic Scale  
Key Plan

NO 500 YARD SETBACK REQUIRED HERE



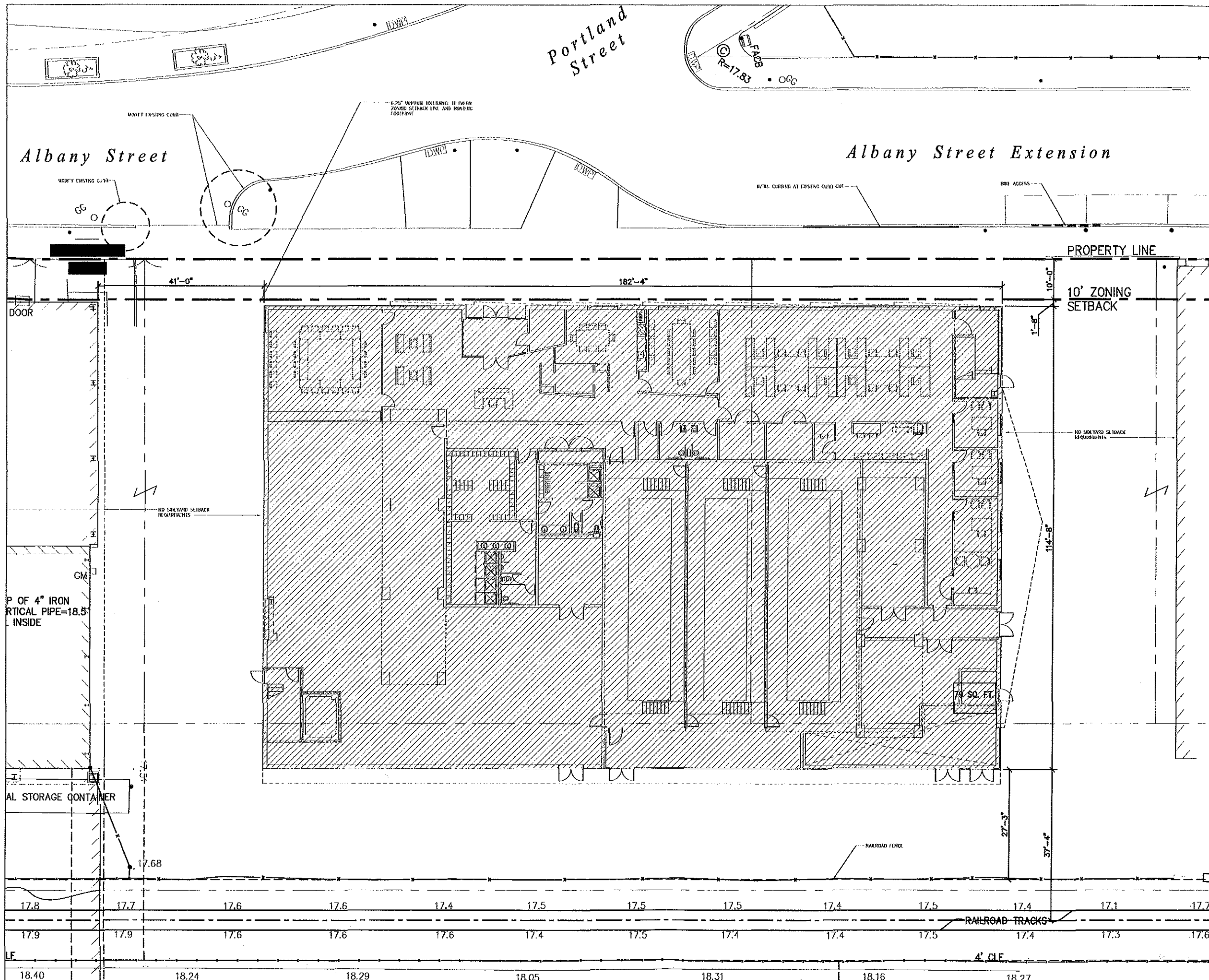
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Checked by:		
Date of original:		
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Project: **CENTRAL UTILITY PLANT (UPGRADE BUILDING 42C)**

Sheet Title: **ARCHITECTURAL SITE PLAN**

17.8	17.7	17.6	17.6	17.4	17.5	17.5	17.5	17.4	17.5	17.4	17.1	17.7
17.9	17.9	17.6	17.6	17.6	17.4	17.5	17.4	17.4	17.5	17.4	17.3	17.6

**SITE PLAN**



Portland Street

Albany Street

Albany Street Extension

PROPERTY LINE

10' ZONING SETBACK

NO 500 YARD SETBACK REQUIRED HERE

NO 500 YARD SETBACK REQUIRED HERE

NO 500 YARD SETBACK REQUIRED HERE

NO 500 YARD SETBACK REQUIRED HERE

NO 500 YARD SETBACK REQUIRED HERE

NO 500 YARD SETBACK REQUIRED HERE

NO 500 YARD SETBACK REQUIRED HERE

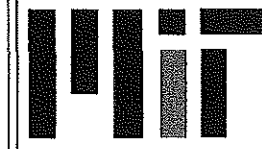
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NO 500 YARD SETBACK REQUIRED HERE

NO 500 YARD SETBACK REQUIRED HERE

NO 500 YARD SETBACK REQUIRED HERE





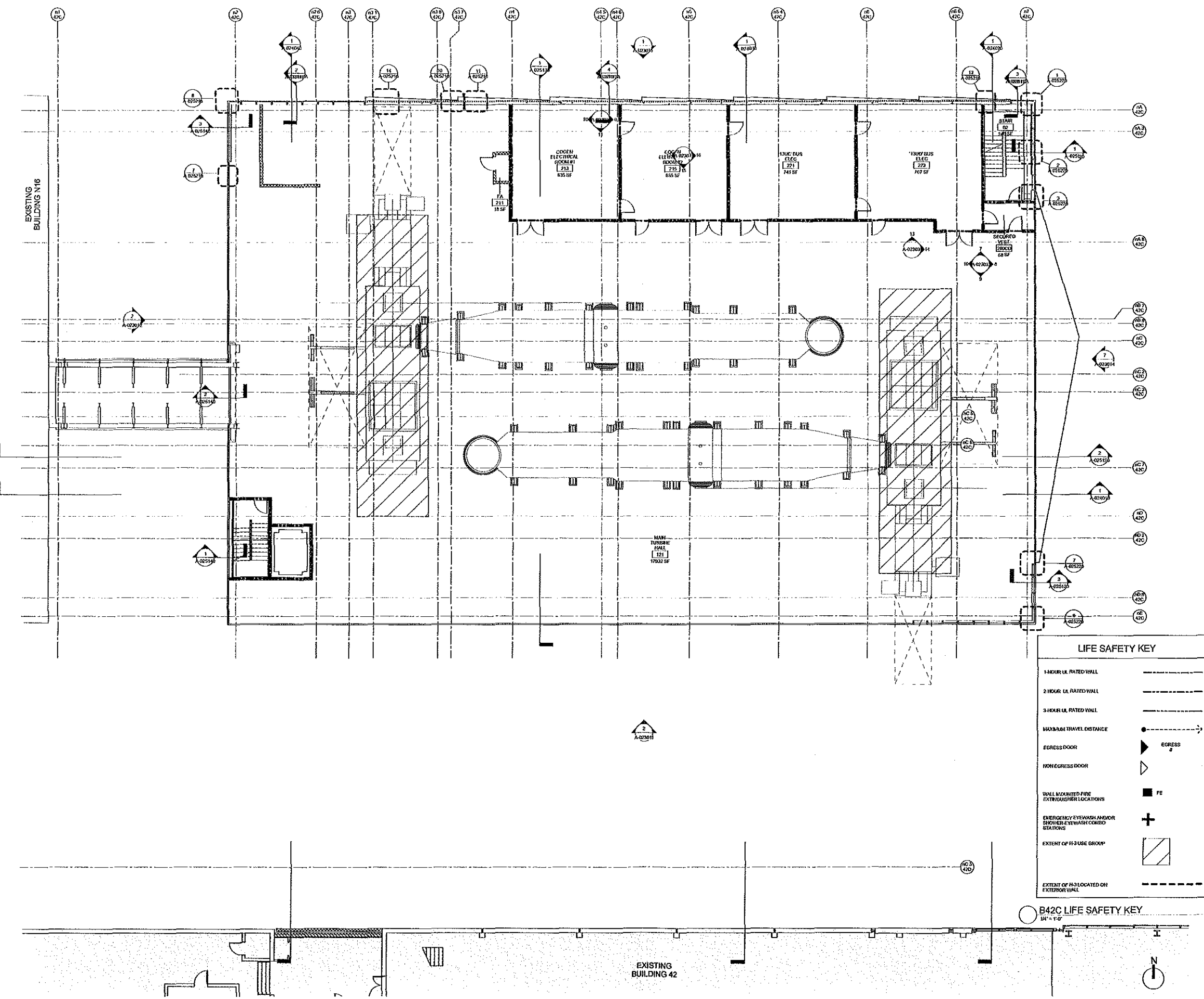
MIT ADVANCED RESEARCH AND DEVELOPMENT CENTER

### VANDERWEIL POWER GROUP

300 Vanguard Engineers, LLP  
225 Summer Street  
Boston, MA 02210  
Tel: 617-552-3100  
Fax: 617-552-3101

### ELENZWEIG

ARCHITECTURE & PLANNING  
1200 Massachusetts Avenue, Cambridge, MA 02138  
Tel: 617-495-1100  
Fax: 617-495-1101

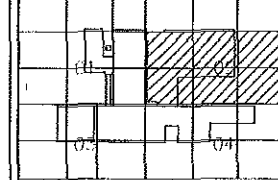


LIFE SAFETY KEY	
1 HOUR UL RATED WALL	---
2 HOUR UL RATED WALL	----
3 HOUR UL RATED WALL	-----
MAXIMUM TRAVEL DISTANCE	●----->
EGRESS DOOR	▶ EGRESS
NON-EGRESS DOOR	▷
WALL MOUNTED FIRE EXTINGUISHER LOCATIONS	■ FE
EMERGENCY EYEWASH AND/OR SHOWER EYEWASH COMBO STATIONS	+
EXTENT OF H2-USE GROUP	▨
EXTENT OF H2 LOCATED ON EXTERIOR WALL	-----

○ B42C LIFE SAFETY KEY  
3/4" = 1'-0"

Graphic Scale

Key Plan



REV.	DATE	DESCRIPTION
REV 1	03/27/10	MIT Job No. 15117

Drawn by:  
Checked by:  
Date of Original:  
Scale:

Project  
**CENTRAL UTILITY PLANT  
UPGRADE BUILDING 42C**

Show Title  
**PLAN LEVEL 03**

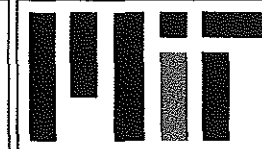
AREA  
02  
ELEV.  
30'-0"

**A-022300**

1 LV-03 AREA 2  
1/8" = 1'-0"

\\mitp001\p001\users\jgallagher\Drawings\LV-03\A-022300.dwg





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### VANDERWEIL POWER GROUP

300 Vandenweil Engineers LLP  
215 Summer Street  
Boston, MA 02110

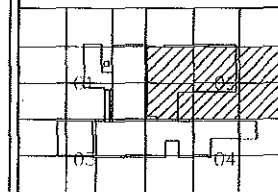
### ELLENZWEIG

A CONSULTING & PLANNING  
FIRM  
1000 Massachusetts Avenue, Cambridge, MA 02139  
TEL: 617.495.1100 FAX: 617.495.1101

**GLAZED WALL TYPES:**  
TYPE 1: SOUND ISOLATION  
TYPE 2: CONVENTIONAL

Graphic Scale

Key Plan



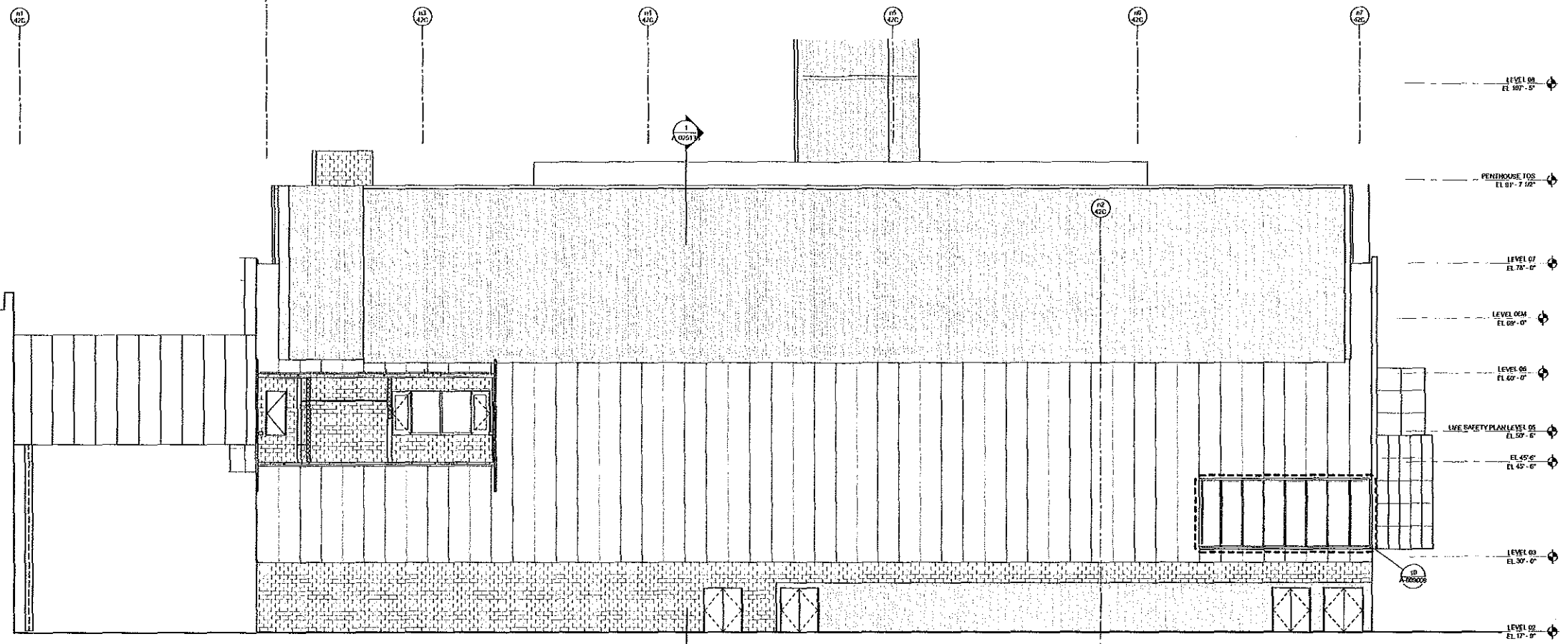
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Date of original		
Scale		
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Project: CENTRAL UTILITY PLANT UPGRADE BUILDING 42C

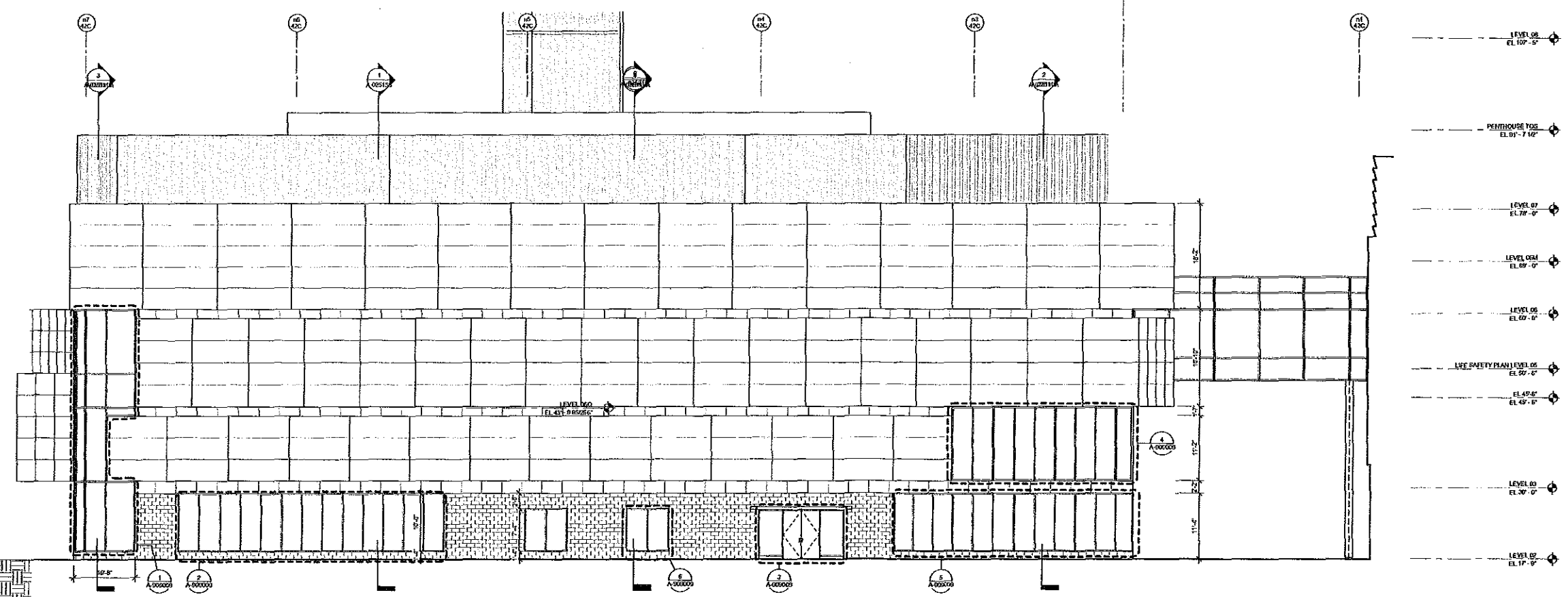
Sheet Title: NORTH & SOUTH ELEVATIONS

AREA 02

A-023011

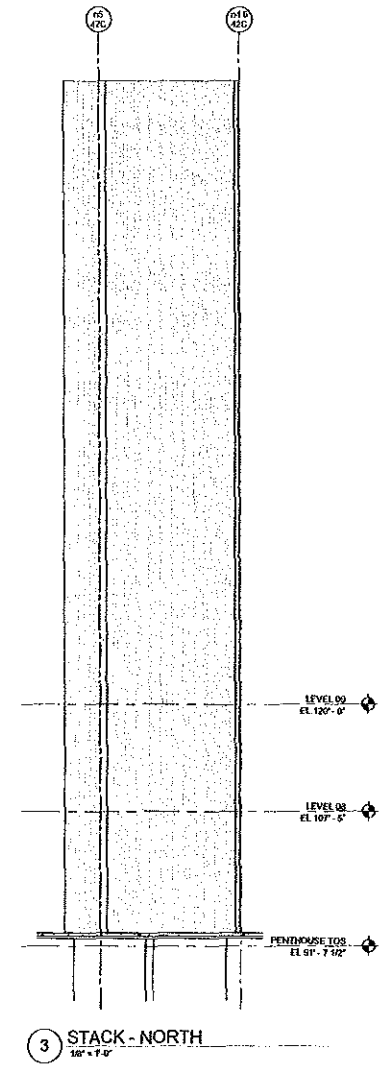
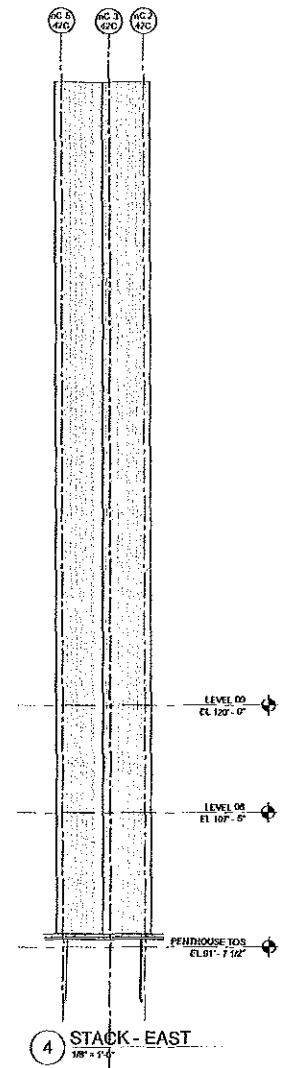
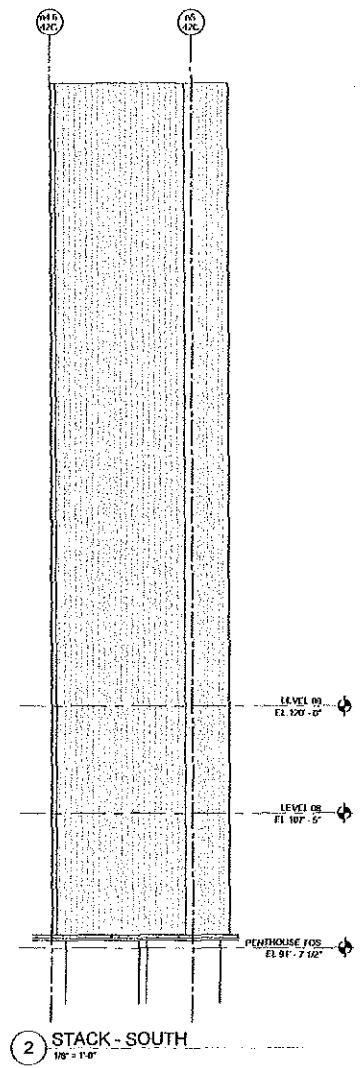
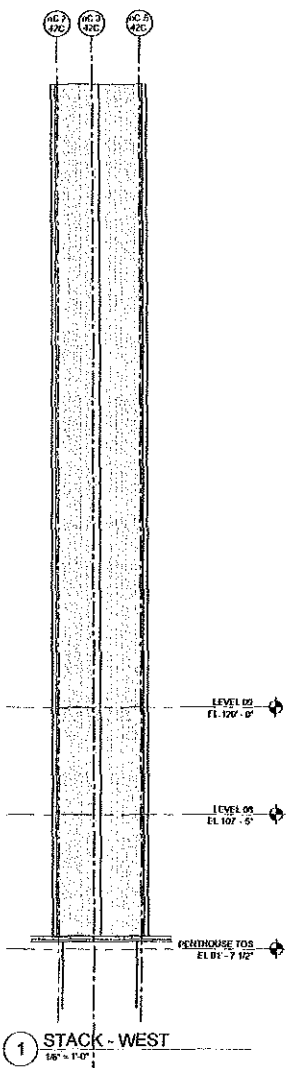


2 SOUTH  
1/8" = 1'-0"



1 NORTH  
1/8" = 1'-0"

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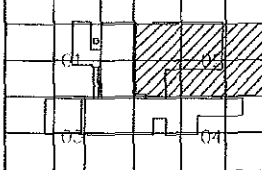
**VANDERWEIL**  
POWER GROUP  
60 Vanderveil Engineers LP 67-027-3171  
311 Summer Street 67-027-2600 FAX  
Boston, MA 02201 vanderweil.com

**ELLENZWEIG**  
ARCHITECTURE | PLANNING  
1201 South Church Avenue, Cambridge, MA 02138  
781-326-9500 | ellenzweig.com

OVERALL WALL TYPES:  
TYPE 1 SOUND ISOLATION  
TYPE 2 CONVENTIONAL

Graphic Scale

Key Plan



REV	DATE	DESCRIPTION

RDV Job No: 27721 00 MIT Job No: 16127

Drawn by:

Checked by:

Date of original:

Scale:

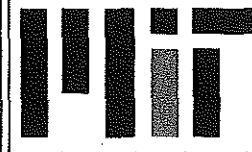
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CENTRAL UTILITY PLANT  
UPGRADE BUILDING 42C

Sheet Title  
STACK ELEVATIONS

AREA  
02

A-023013



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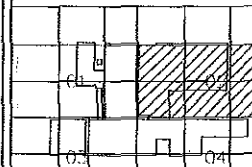
85 Vanderweil Engineers LLP 617 633 3123 ext.  
215 Vermont Street 617 633 3100 ext.  
Boston MA 02130 8 vanderweil.com

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AN EFFECTIVE PARTNERSHIP  
1000 Massachusetts Avenue, 2nd Floor, Cambridge  
MA 02139, USA 617 495 4274 ellenzweig.com

Graphic Scale

Key Plan



REV DATE DESCRIPTION

REV Job No. 2721 00 AUT Job No. 16117

Drawn by LEWIS

Checked by

Date of original

Scale

Project

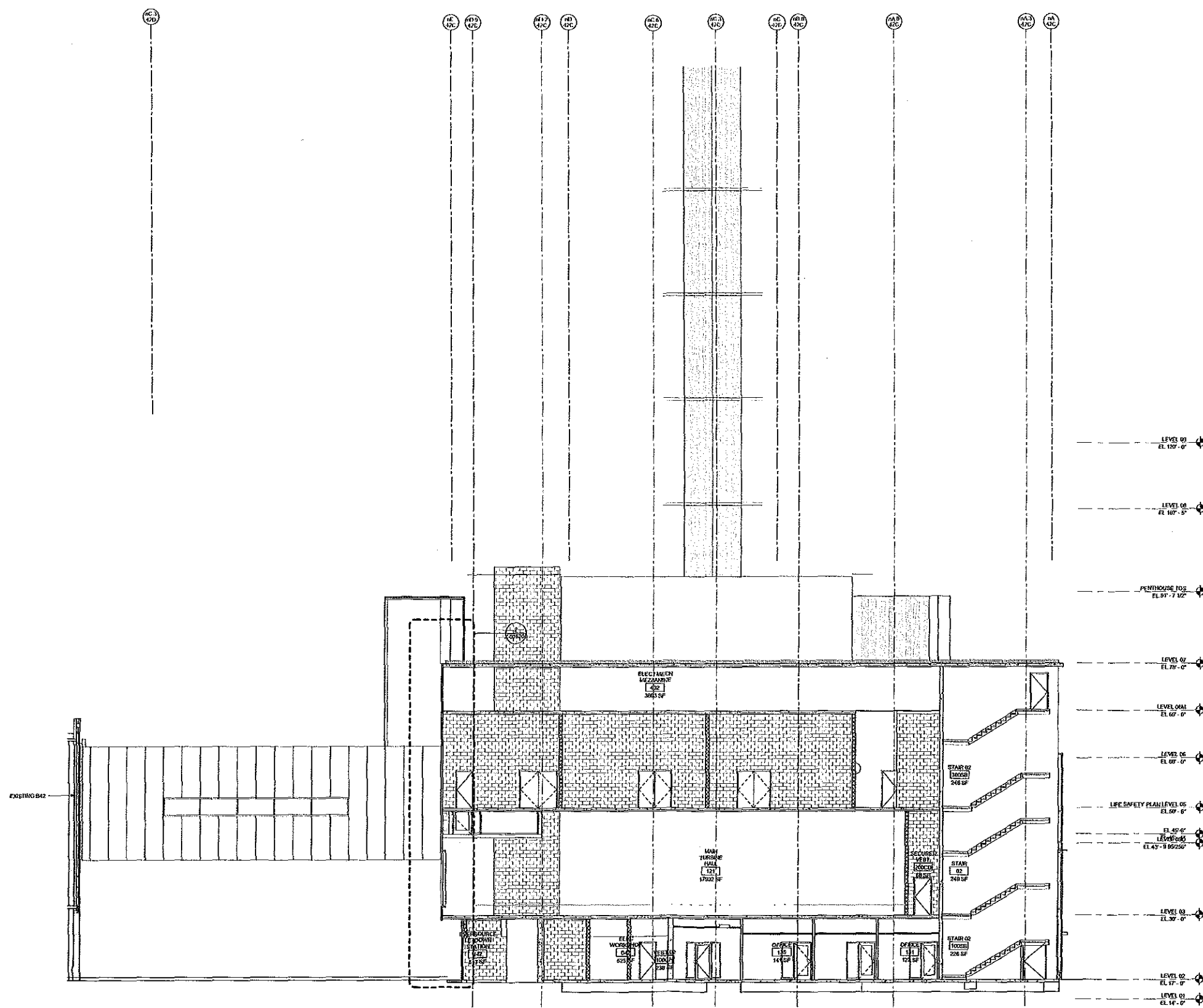
CENTRAL UTILITY PLANT  
UPGRADE BUILDING 42C

Sheet Title

BUILDING SECTION  
NORTH-SOUTH A

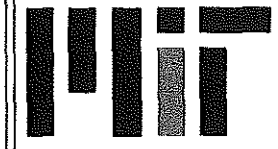
AREA  
02

A-024020



1 BUILDING SECTION NORTH-SOUTH A  
1/8" = 1'-0"

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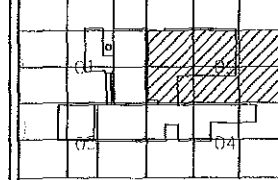
30 Vanderweil Engineers LLP 617 432 3333  
214 Summer Street #2140 Boston, MA 02108  
Boston, MA 02108

### ELLENZWEIG

ARCHITECTURE | PLANNING  
100 Massachusetts Avenue, Fifth Floor, Cambridge, MA 02139  
Tel: 617.495.1100 | Fax: 617.495.1101

Graphic Scale

Key Plan



REV	DATE	DESCRIPTION
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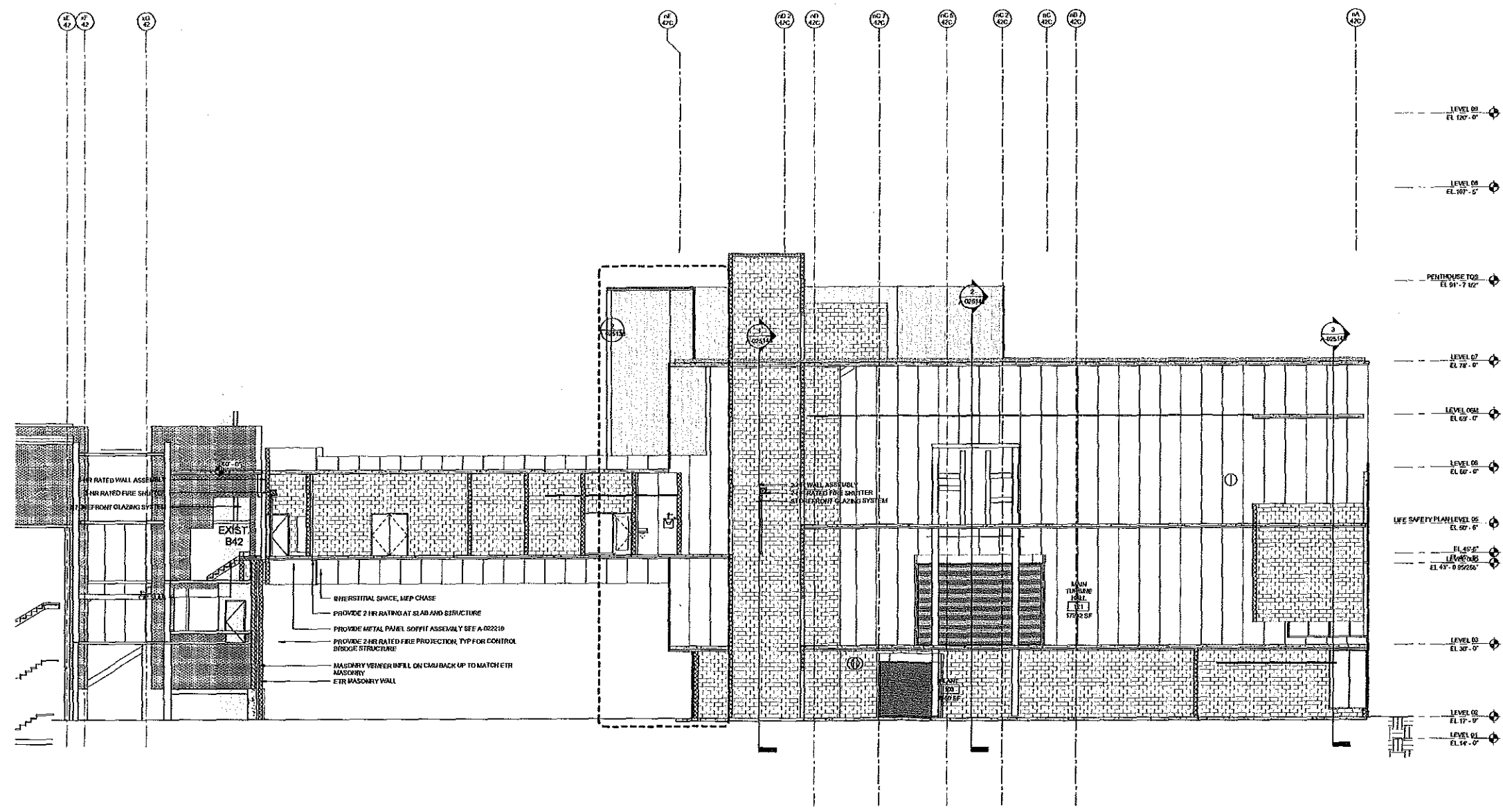
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Checked by:  
Date of original:  
Scale:

Project  
**CENTRAL UTILITY PLANT  
UPGRADE BUILDING 42C**

Sheet Title  
**BUILDING SECTION  
NORTH-SOUTH C**

AREA  
2

A-024040

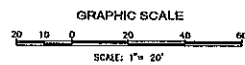


1 BUILDING SECTION NORTH-SOUTH C  
1/8" = 1'-0"

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**LEGEND**

- CHAIN BARN
- CHAIN TELEPHONE MARSHAL
- CHAIN MARSHAL
- ELECTRIC MARSHAL
- TELEPHONE MARSHAL
- SEWER MARSHAL
- TELEPHONE MARSHAL
- WATER MARSHAL
- GAS SHUT-OFF
- WATER SHUT-OFF
- GAS GATE
- WATER GATE
- FIRE HYDRANT
- DRAIN SPOUT
- UTILITY POLE WITH CONDUIT LINE TO GROUND
- LIGHT POLE
- LANDSCAPE LIGHT
- LIGHT MOUNT
- TRUSS CASE
- TELEPHONE CALL BOX
- METAL POST
- CONCRETE POST
- PAVING LETTER
- SIGN POST
- OCCUPANCY TREE WITH BRANCH DIAMETER
- CONCRETE TREE WITH BRANCH DIAMETER
- HANDED PARKING
- SPOT ELEVATION
- CURB LOW FENCE
- CONCRETE CONCRETE BERM
- VERTICAL GRANITE CURB
- VERTICAL CONCRETE CURB
- WELDED IRON RAMP
- LANDSCAPE BENCH
- FIRE ELEVATION EQUALS
- SPURT ELEVATION EQUALS
- TOP OF ROAD ELEVATION EQUALS
- TOP OF SIDEWALK
- TOP OF WALL ELEVATION
- UNDERGROUND CABLE TELEVISION LINE
- UNDERGROUND CABLE LINE
- UNDERGROUND ELECTRIC LINE
- UNDERGROUND GAS LINE
- UNDERGROUND GAS LINE (METHANOL)
- UNDERGROUND SEWER LINE
- UNDERGROUND TELEPHONE LINE
- UNDERGROUND WATER LINE
- UNDERGROUND STEAM LINE
- UNDERGROUND CONDENSATE RETURN LINE
- UNDERGROUND CABLED WATER LINE
- UNDERGROUND FIRE PROTECTION WATER LINE
- MONITORING WELL
- DEPTH MARK
- BOTTOM OF STRUCTURE ELEVATION EQUALS
- TOP OF OVERHANG ELEVATION
- METROLOGICAL WARD
- ACTIVITY AND USE LIMITATION AREA



**UTILITY INFORMATION STATEMENT**

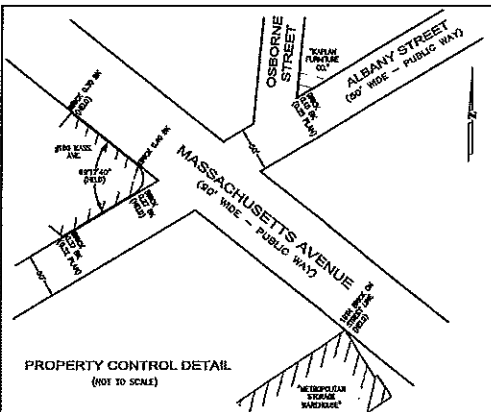
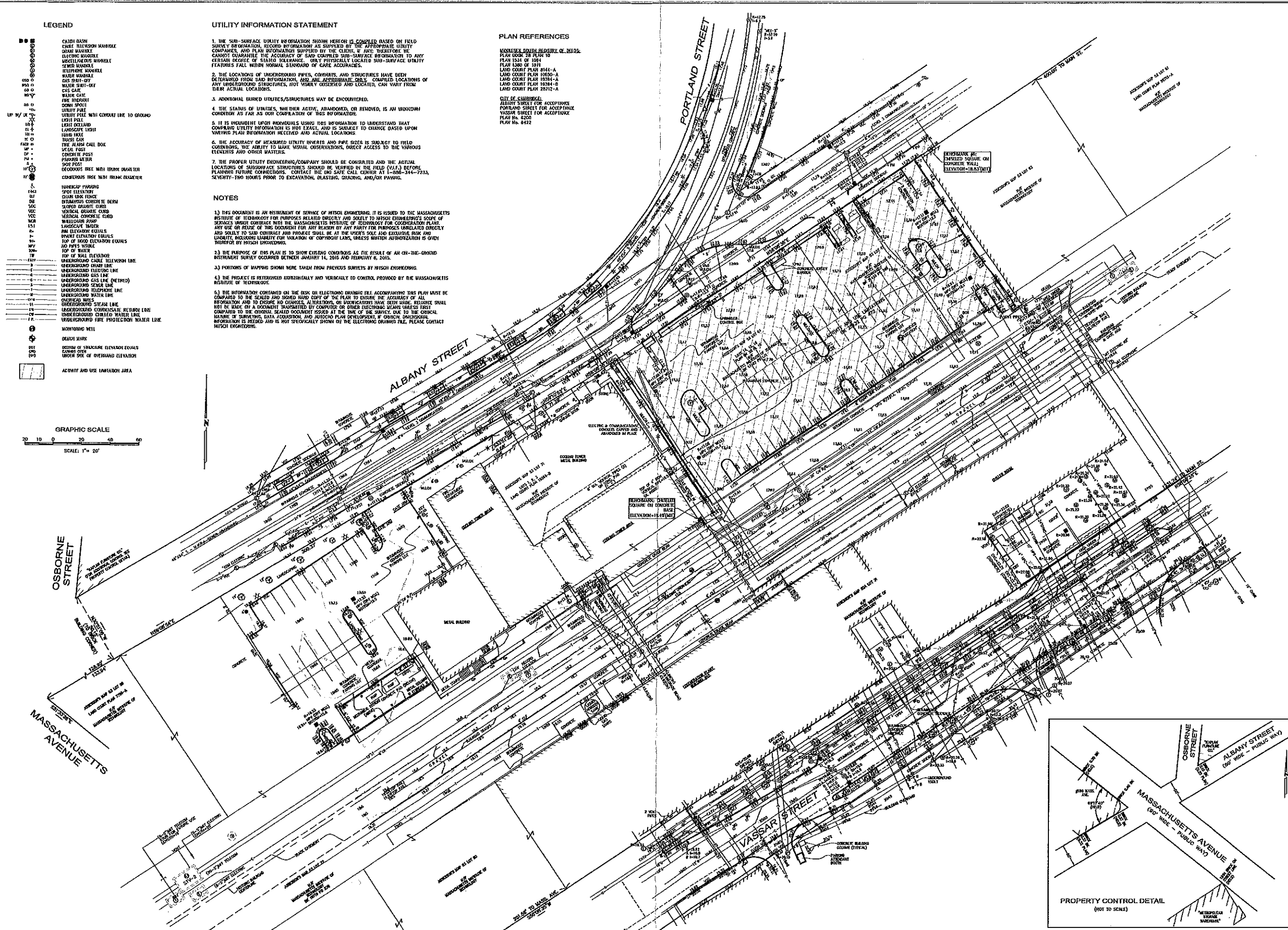
1. THE SUB-SURFACE UTILITY INFORMATION SHOWN HEREON IS COMPILED BASED ON FIELD SURVEY INFORMATION, RECORD INFORMATION AS SUPPLIED BY THE APPROPRIATE UTILITY COMPANIES, AND PLAN INFORMATION SUPPLIED BY THE CLIENT. IF ANY DISCREPANCY CANNOT BE RESOLVED, THE ACCURACY OF SAID COMPILED SUB-SURFACE INFORMATION TO ANY CERTAIN DEGREE OF STATED TOLERANCE. ONLY PHYSICALLY LOCATED SUB-SURFACE UTILITY FEATURES FALL WITHIN NORMAL STANDARD OF CARE ACCURACIES.
2. THE LOCATIONS OF UNDERGROUND PIPES, CONDUITS, AND STRUCTURES HAVE BEEN DETERMINED FROM SAID INFORMATION, AND ARE APPROXIMATE, DELAY, COMPILED LOCATIONS OF ANY UNDERGROUND STRUCTURES, NOT PHYSICALLY LOCATED AND LOCATED, CAN VARY FROM THEIR ACTUAL LOCATIONS.
3. ADDITIONAL BURIED UTILITIES/STRUCTURES MAY BE ENCOUNTERED.
4. THE STATUS OF UTILITIES, WHETHER ACTIVE, ABANDONED, OR REMOVED, IS AN UNKNOWN CONDITION AS FAR AS OUR COMPLETION OF THIS INFORMATION.
5. IT IS INCUMBENT UPON INDIVIDUALS USING THIS INFORMATION TO UNDERSTAND THAT COMPILED UTILITY INFORMATION IS NOT EXACT, AND IS SUBJECT TO CHANGE BASED UPON VARYING PLAN INFORMATION RECEIVED AND ACTUAL LOCATIONS.
6. THE ACCURACY OF MEASURED UTILITY INVERTS AND PIPE SIZES IS SUBJECT TO FIELD CONDITIONS, THE ABILITY TO MAKE VISUAL OBSERVATIONS, DIRECT ACCESS TO THE VARIOUS ELEMENTS AND OTHER MATTERS.
7. THE PROPER UTILITY ENGINEERING/COMPANY SHOULD BE CONSULTED AND THE ACTUAL LOCATIONS OF SUBSURFACE STRUCTURES SHOULD BE VERIFIED IN THE FIELD (V.I.F.) BEFORE PLANNING FUTURE CORRECTIONS. CONTACT THE ONE SAFE CALL CENTER AT 1-888-344-7233, SEVENTY-TWO HOURS PRIOR TO EXCAVATION, BLASTING, GRADING, AND/OR PAVING.

**NOTES**

- 1) THIS DOCUMENT IS AN INSTRUMENT OF SERVICE OF NITSCH ENGINEERING. IT IS ISSUED TO THE MASSACHUSETTS REGISTERED PROFESSIONAL ENGINEER AND SOLELY TO NITSCH ENGINEERING'S SCOPE OF SERVICES UNDER CONTRACT WITH THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY FOR COGENERATION PLANT. ANY USE OR REUSE OF THIS DOCUMENT FOR ANY OTHER PURPOSES UNRELATED DIRECTLY AND SOLELY TO SAID CONTRACT AND PROJECT SHALL BE AT THE USER'S SOLE AND EXCLUSIVE RISK AND LIABILITY, INCLUDING LIABILITY FOR VIOLATION OF COPYRIGHT LAW, UNLESS WRITTEN AUTHORIZATION IS GIVEN THEREFOR BY NITSCH ENGINEERING.
- 2) THE PURPOSE OF THIS PLAN IS TO SHOW EXISTING CONDITIONS AS THE RESULT OF AN ON-THE-GROUND INSTRUMENT SURVEY OCCURRED BETWEEN JANUARY 14, 2015 AND FEBRUARY 6, 2015.
- 3) PORTIONS OF MAPPING SHOWN WERE TAKEN FROM PREVIOUS SURVEYS BY NITSCH ENGINEERING.
- 4) THE PROJECT IS REFERENCED HORIZONTALLY AND VERTICALLY TO CONTROL PROVIDED BY THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY.
- 5) THE INFORMATION CONTAINED ON THE DISK OR ELECTRONIC DRAWING FILE ACCOMPANYING THIS PLAN MUST BE COMPARED TO THE SEALED AND SIGNED HARD COPY OF THE PLAN TO ENSURE THE ACCURACY OF ALL INFORMATION AND TO ENSURE NO CHANGES, ALTERATIONS, OR INDICATIONS HAVE BEEN MADE. RELIANCE SHALL NOT BE MADE ON A DOCUMENT TRANSMITTED BY COMPUTER OR OTHER ELECTRONIC MEANS UNLESS FIRST COMPARED TO THE ORIGINAL SEALED DOCUMENT ISSUED AT THE TIME OF THE SURVEY. DUE TO THE CRITICAL NATURE OF SURVEYING DATA ACQUISITION AND AUTOCAD DEVELOPER'S GRAPHIC OVERLAYING INFORMATION IS INCLUDED AND IS NOT SPECIFICALLY SHOWN ON THE ELECTRONIC DRAWING FILE. PLEASE CONTACT NITSCH ENGINEERING.

**PLAN REFERENCES**

- WOLFE'S SOUTH REGISTRY OF 2015.
- PLAN BOOK 28 PLAN 10
- PLAN 1541 OF 1914
- LAND COURT PLAN 1941-A
- LAND COURT PLAN 1952-A
- LAND COURT PLAN 1934-A
- LAND COURT PLAN 1934-B
- LAND COURT PLAN 2812-A
- CITY OF CAMBRIDGE
- UTILITY STREET FIRE ACCEPTANCE
- PORTLAND STREET FOR ACCEPTANCE
- VASSAR STREET FOR ACCEPTANCE
- PLAN NO. 8422



**Nitsch Engineering**  
 www.nitsch.com  
 2 Center Plaza, Suite 430  
 Boston, MA 02108  
 T: (617) 338-0063  
 F: (617) 338-6472

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PROJECT #	650625
FILE NUMBER	TR02.dwg
SCALE	1" = 20'
DATE	2/11/2015
PROJECT NUMBER	TNC/ORS
FIELD BOOK	599
DRAWN BY	JCC
CHECKED BY	


**EXISTING CONDITIONS**  
 COGENERATION PLANT  
 ALBANY STREET, CAMBRIDGE, MASSACHUSETTS  
 PREPARED FOR:  
 MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
 77 MASSACHUSETTS AVENUE, CAMBRIDGE, MASSACHUSETTS 02138

**EX-1**  
 REV. 0

November 4, 2016  
Ranjit Singanayagam  
Board of Zoning Appeal  
City of Cambridge  
831 Massachusetts Avenue  
Cambridge, MA 02139

**RE: MIT Central Utility Plant (CUP) Second Century Plant Expansion**

Dear Ranjit,



The Massachusetts Institute of Technology is filing its application for a variance for the above referenced project. The proposed cogeneration plant at 38-50 Albany Street (Building 42C) is connected to the south back to Building 42, which in turn is connected to a series of buildings on this block. Building 42 was made non-conforming in 2001, when the City replaced the existing Industrial District zone, which had no front yard setback requirement, with the Residence C-3B zone, which has a ten-foot front yard setback. As a result, all of the connected buildings (41, 42, 43, N16) became non-conforming and small additions made since that time (N16A, N16B and N16C) were treated as extensions of a non-conforming structure under Section 8.22.1.f.

The connection over the railroad tracks between Building 42 and 42C is essential to allow for a central control room, with visibility in to the equipment in each of the buildings. This direct access and observation of the equipment is a state regulatory requirement. Staffing for this function can be cut in half by the joint control room. The addition of Building 42C adds sufficient gross floor area and volume that the total incremental addition since 2001 is in excess of 25% which requires the variance under Section 8.22.2.c that MIT is seeking. Building 42C is designed to be conforming to the Zoning Ordinance in all other respects.

**Background on the project**

The Massachusetts Institute of Technology (MIT) is located on 168 acres that extend more than a mile along the Cambridge side of the Charles River Basin. The MIT Central Utilities Plant (CUP) has been designed to provide near 100% reliability through maintaining standby units at all times, as the heat and electrical power generated is used to maintain critical research facilities, laboratories, classrooms and dormitories. The CUP provides electricity, steam heat, and chilled water to more than 100 MIT buildings.

The existing CUP consists of a Siemens (ABB) GT10A Combustion Turbine (CT), a heat recovery steam generator (HRSG), an electric generator rated at approximately 21 megawatt (MW) and ancillary equipment that started up circa 1995 located in Building 42. The Combustion Turbine is at the end of its useful life. The CUP also includes



five existing boilers, designated as 3,4,5,7 and 9 and an emergency generator and a number of cooling towers. The CT provides about 60% of current campus electricity, and the steam from the HRSG is used for heating and steam driven chillers for cooling (cogeneration) many campus buildings via steam and chiller water distribution systems.

The proposed project consists of two nominal 22 MW CT replacement units fired primarily on natural gas. Backup Ultra Low Sulfur Diesel (ULSD) will be used for up to the equivalent heat input of 48 hours per year for testing, and up to the equivalent heat input of 168 hours per year including testing and periods when natural gas is unavailable.

Each CT will exhaust to its own HRSG with a 134 million Btu per hour (MMBtu/hr) higher heating value (HHV) gas fired duct burner. The HRSG will include selective catalytic reduction (SCR) for Oxides of Nitrogen (NOx) control, and an oxidation catalyst for the control of Carbon Monoxide (CO) and Volatile Organics (VOC).

In addition to the two new CT's, MIT has proposed the following other changes:

- ◆ Addition of a 2 megawatt (MW) ULSD-fired cold start engine unit to be used for emergency power to start the combustion turbines.
- ◆ Existing Boilers 3, 4, and 5 will cease burning #6 fuel oil and only burn natural gas, with ULSD as a backup fuel.
- ◆ Existing Boilers Nos. 7 and 9 will fire natural gas only, with ULSD as a backup fuel. MIT has proposed removal of the annual operating restrictions for Boilers 7 and 9, to allow more use of these efficient resources.

As you may be aware, the proposed project has undergone MEPA review and received a MEPA Certificate and a Determination of Public Benefit from the Secretary of Energy and Environmental Affairs. MIT's applications for two different air quality permits are now under review by the Commonwealth's Department of Environmental Protection. Finally, a Chapter 40, Section 54A hearing has been held and the letter from the Secretary of MassDOT to you approving of the issuance of a building permit for the project is pending.

As we have stated in previous zoning applications, our counsel has instructed us to provide this statement reserving our rights under the Dover Amendment. As a nonprofit educational corporation, MIT has certain protections granted by the so-called Dover Amendment, M.G.L. c.40A, §3. There is some question as to the enforceability of the variance requirements with respect to this project in light of the Dover Amendment protections. The strict application of the limits to the expansion of the non-conforming multi-building complex would have the practical effect of nullifying the use exemption afforded educational institutions. Compliance with the expansion of non-conforming building requirements would substantially diminish the usefulness of Building 42C without appreciably advancing the City's legitimate concerns.

MIT is submitting this application in an effort to satisfy the City's policy objectives under the zoning ordinance as a whole. However, in doing so, MIT must reserve the right to assert that some or all of the requirements of certain zoning provisions do not apply to MIT's proposed project under the Dover Amendment.

Please contact me ([kbrown@mit.edu](mailto:kbrown@mit.edu), 617-452-2410) if you need any further information or documentation concerning this matter.

With regards,



Kelley Brown  
Senior Campus Planner