W59th St Steam Generating Plant (IRT Powerhouse)

LANDMARKS PRESERVATION COMMISSION PUBLIC HEARING

View from Northeast Corner

855 11th Ave, Manhattan
Block 1106, Lot 1
Community Board 4
Zoning District M3-2
Zoning Map 8c

11/30/17

IRT POWERHOUSE

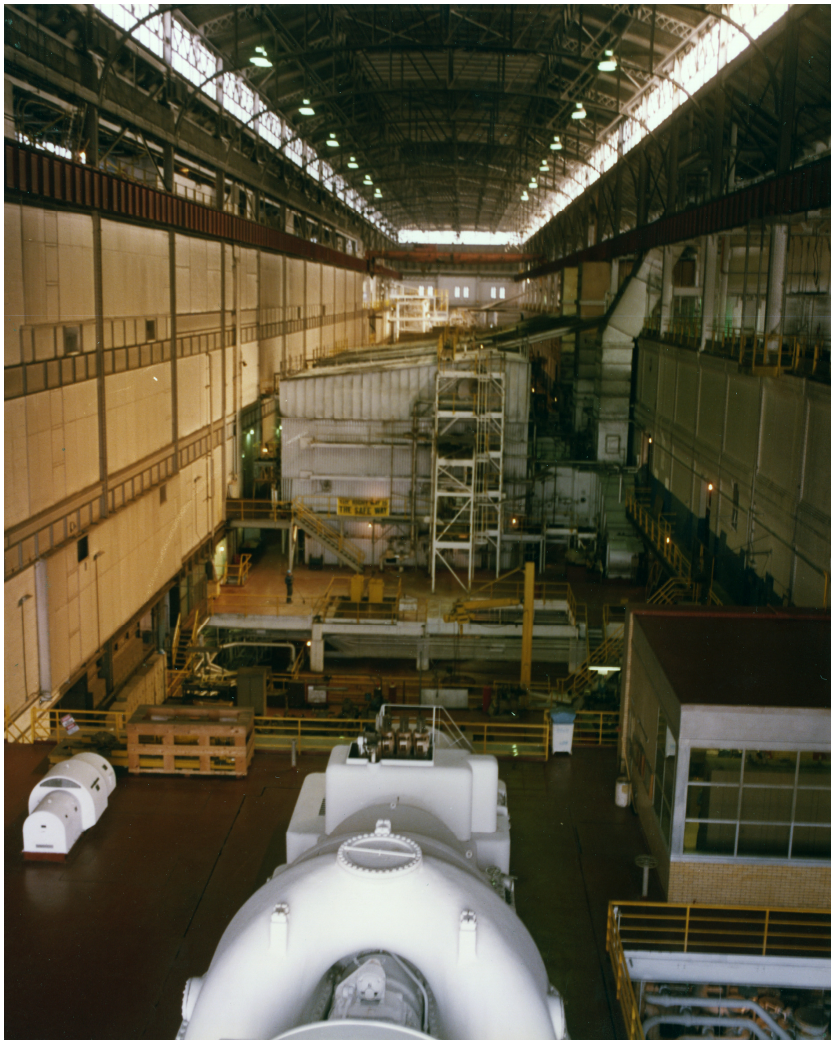
PHOTO circa 1978
Source: HABS-HAER

- The Powerhouse is a living and breathing monument to adaptive reuse that remains true to the original design intentions of the building.
- Originally built for electric production to power New York City's subway system, it is now a critical component of City's energy infrastructure.
- Technologies to produce and deliver energy have evolved over the years and will continue to change; this plant remains a critical part of the system to delivery that energy.
- Over time the character of the neighborhood has changed but this industrial building will continue to provide energy to the City well into the future.

Master Plan Objectives

Establish a Master Plan that:

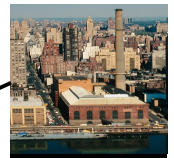
- Facilitates the building's original and current use for energy production
- Provides flexibility to accommodate our customers' future energy needs
- Allows for long-term planning in conjunction with the regulatory process
- Ensures future modifications respect the existing architectural character and honor the building's original purpose



INTERIOR PHOTO circa 1980
Source: Con Edison

Steam Generating Stations

59th Street Station



74th Street Station

60th Street Station

Delivered Via Tunnel

Ravenswood A House

East River Station

Contracted - Delivered Via Tunnel

B.N.Y.C.P. Plant

- Critical Facility on west side of Manhattan
- System serves Manhattan from 96th Street to the Battery
- 105 miles of distribution and service piping

Steam Supports Major NYC Institutions

Radio City Music Hall

Federal Reserve Bank of New York

Empire State Building

Chrysler Building

The Waldorf-Astoria Hotel

American Museum of Natural History

Lincoln Center

Environmental Benefits

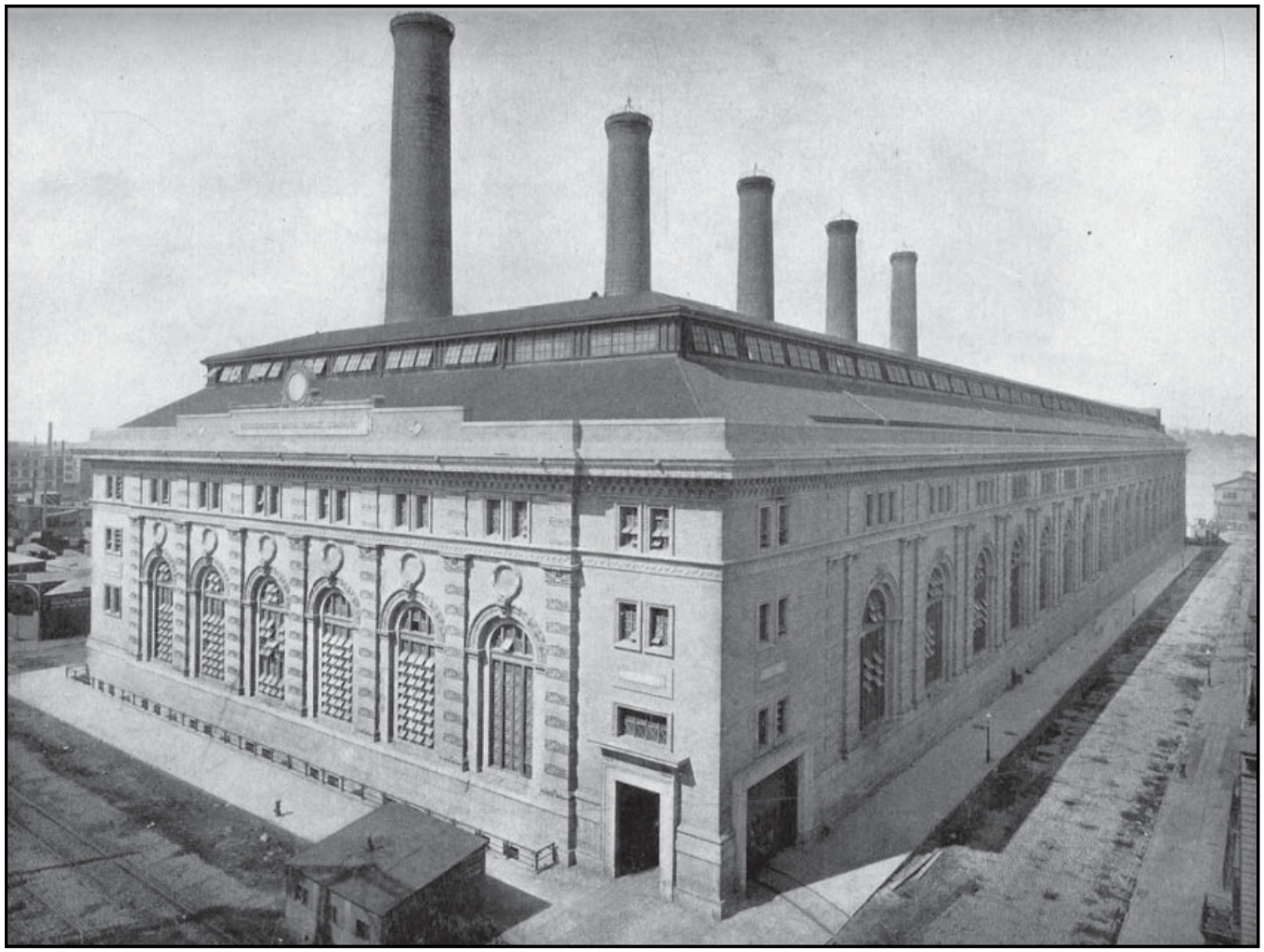
- No emissions at steam customer buildings
- Cogeneration utilization
  - 900,500 metric tons of avoided CO2 emissions (~200,000 passenger vehicles) annually due to cogenerated steam
- Instrumental in meeting evolving clean energy goals
  - NYS Public Service Commission – Reforming the Energy Vision goals
  - NYC - 80x50 greenhouse gas reduction goals

Future Clean Energy Uses

There are a number of potential future clean energy uses that will help meet NYC and NYS goals while continuing to meet the energy needs of our customers:

- Modernization of the steam system
- Electric infrastructure substations investments
- Alternative technologies

Historic Overview



HISTORIC PHOTOS FROM 1905
VIEW FROM 11th AVE & 59th ST

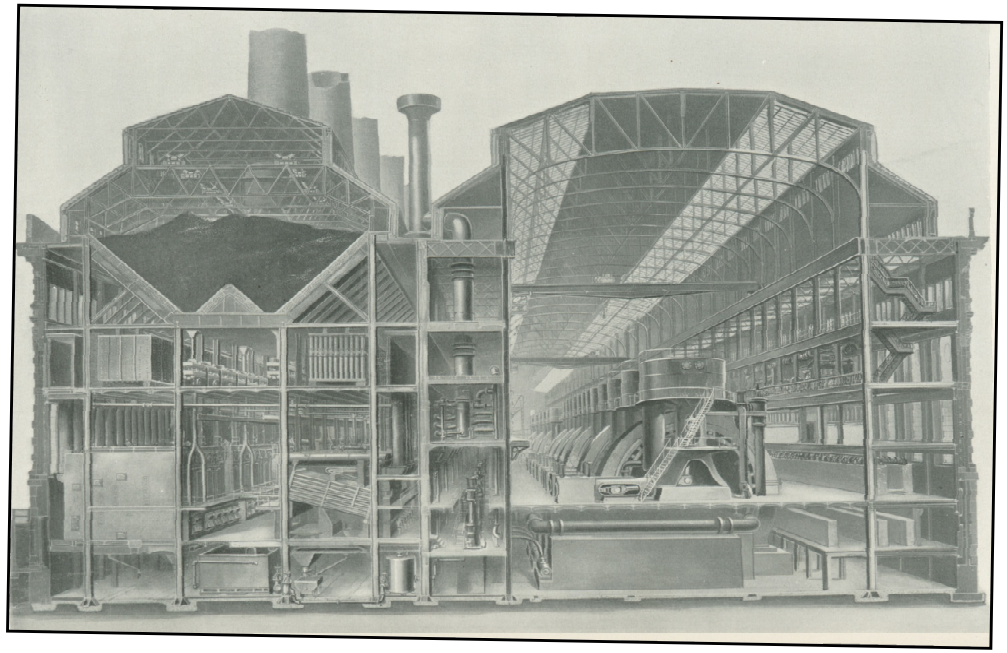
Source: NYPL

Source: NYPL
VIEW FROM 11th AVE & 59th ST

Original Building Sections

HISTORIC PHOTO FROM 1904
VIEW FROM 12th AVE & 58th ST

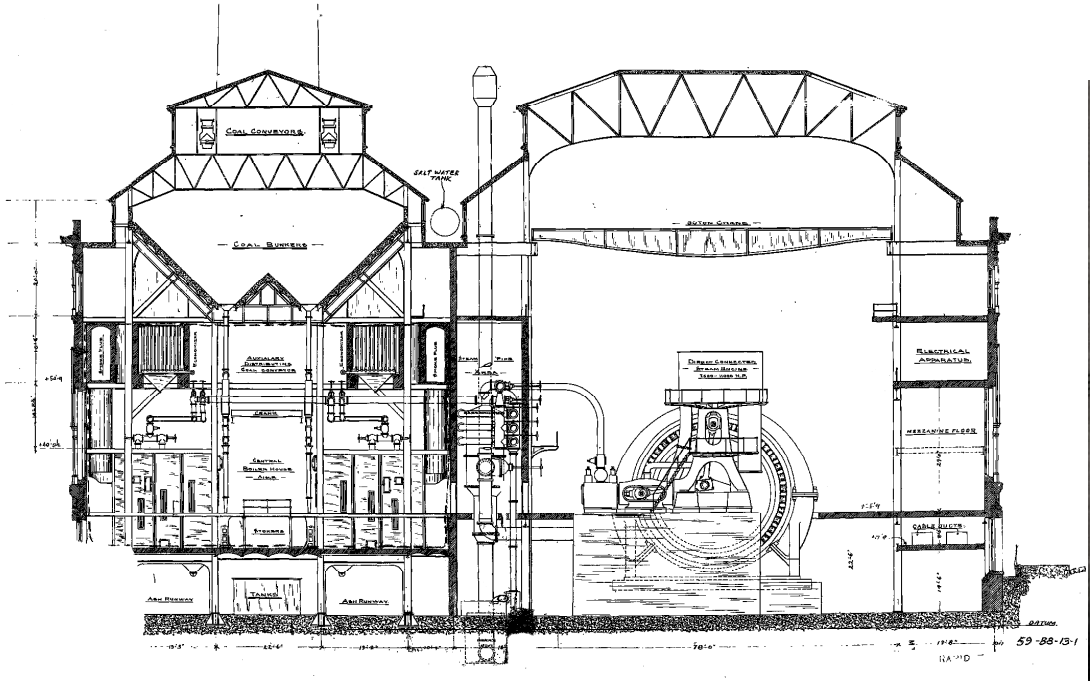
Source: NYPL “Interborough Rapid Transit”



HISTORIC CROSS SECTION DRAWING
LOOKING WEST

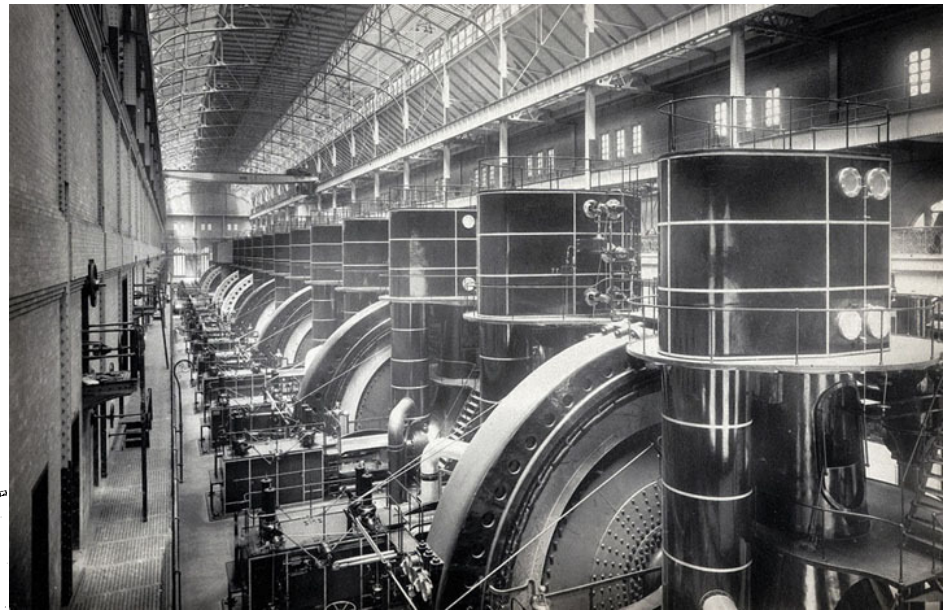
Source: NYPL “Interborough Rapid Transit”

Original Cross Section with Equipment



CROSS SECTION DRAWING
LOOKING WEST

Source: Con Edison

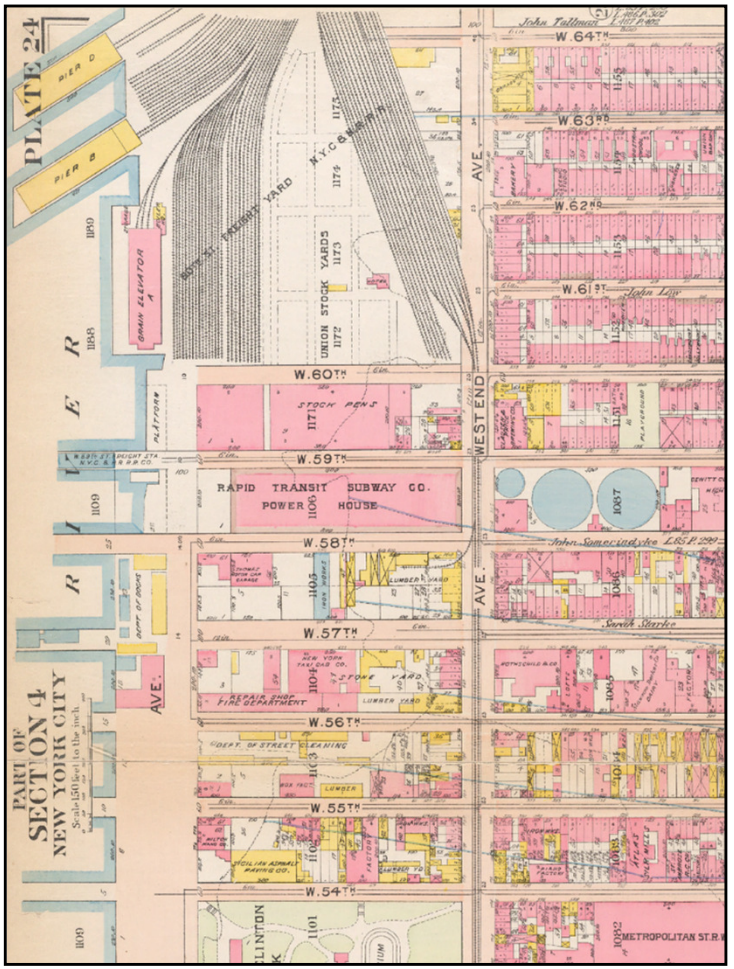


HISTORIC INTERIOR PHOTO FROM 1905
VIEW LOOKING WEST

Source: NYC Municipal Archives

Historic Context

HISTORIC AERIAL PHOTO circa 1960
Source: Con Edison



HISTORIC MAP circa 1911
Source: Bromley Atlas

Existing Conditions

VIEW FROM 11th AVE

Existing Conditions

VIEW FROM CORNER OF 11th AVE & 58th ST

Existing Conditions

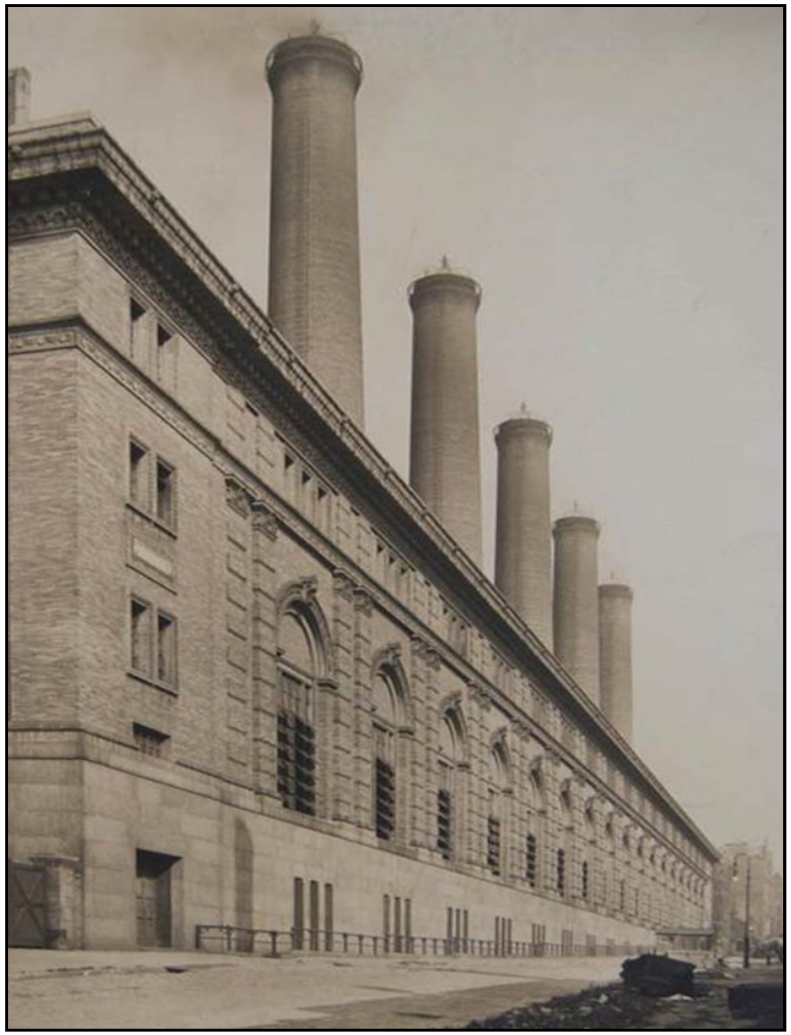
59th ST WINDOW DETAIL

59th ST VIEW LOOKING WEST

Existing Conditions

58th ST VIEW LOOKING EAST

58th St Elevation Comparison



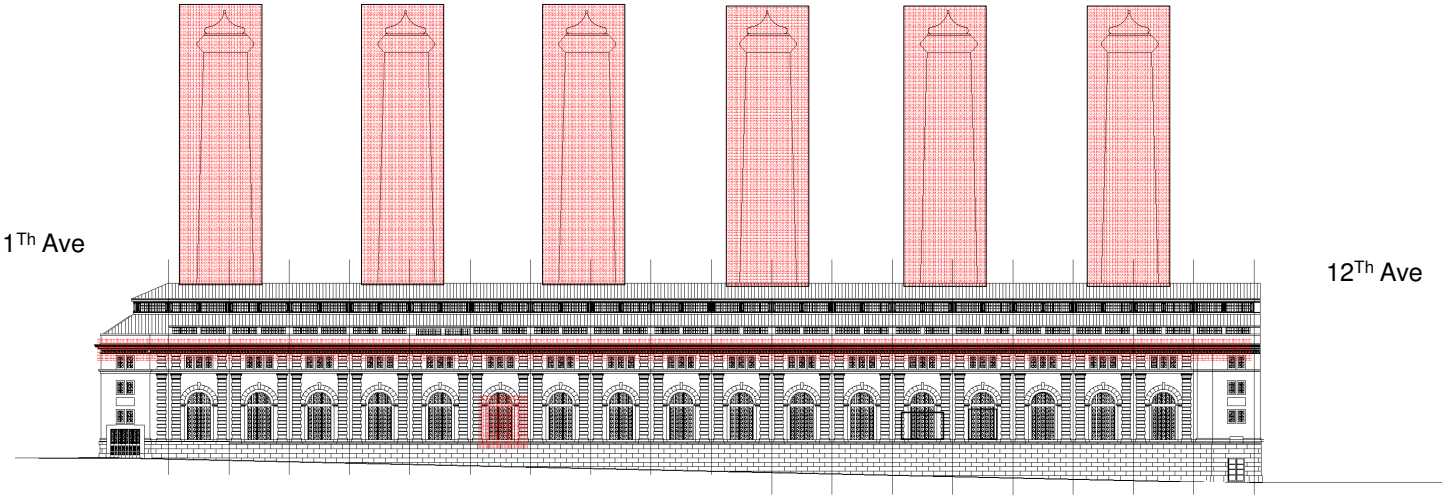
Circa 1905

Current

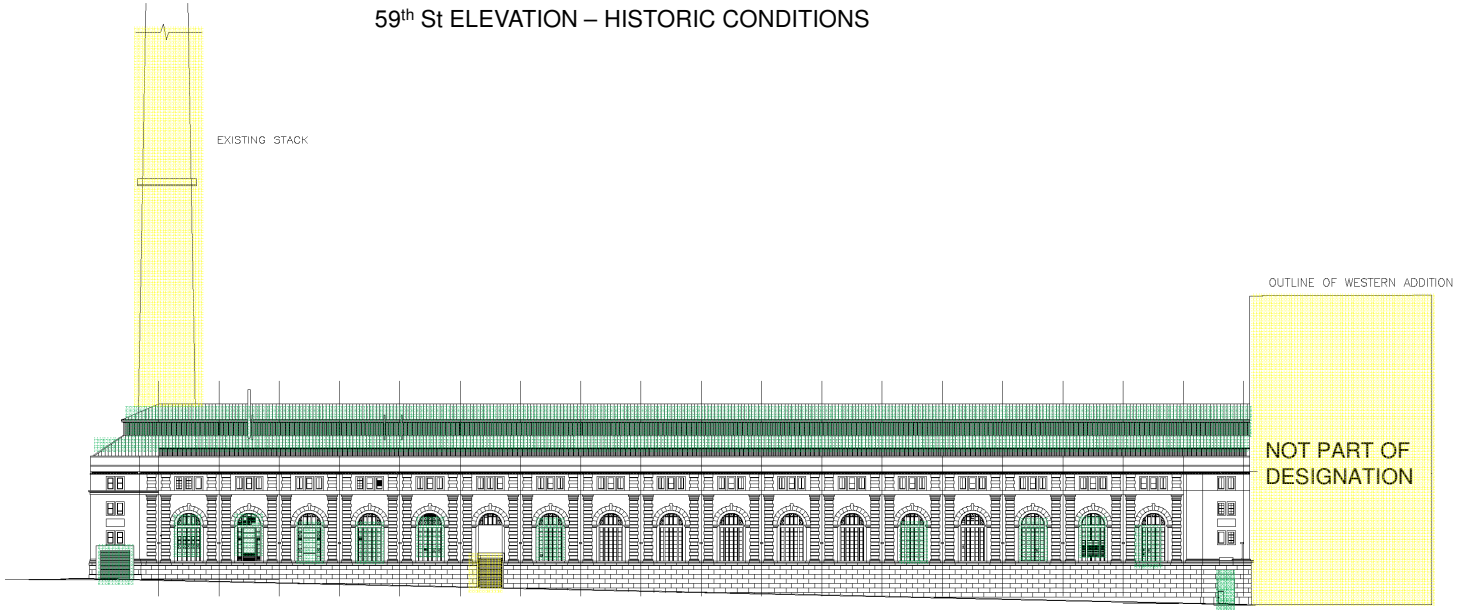
Context

- Significant development of the adjacent properties
- Building is no longer the prominent structure
- Character of the area has changed from industrial to residential/commercial

59TH St Elevation



59th St ELEVATION – HISTORIC CONDITIONS



59th St ELEVATION – CURRENT CONDITIONS

SIGNIFICANT CHANGES

- MONITOR WINDOWS REPLACE WITH TRANSLUCENT PANELS
- ORIGINAL STACKS REMOVED
- ORIGINAL CORNICE REMOVED
- NEW CONCRETE STACK INSTALLED (1967)
- WINDOWS MODIFIED IN WHOLE OR PART
- NEW ROLL UP DOOR INSTALLED
- EXISTING LG DOOR OPENING FILLED WITH BRICK, MAN DOOR INSTALLED
- ADDITION ON WEST SIDE OF THE BUILDING (1952)
- ORIGINAL FOLDING MAIN DOOR REPLACED WITH MTL ROLL UP DOOR
- ORIGINAL TILE ROOFING REPLACED WITH MEMBRANE ROOFING

ITEMS REMOVED

ITEMS MODIFIED

ITEMS ADDED

58TH St Elevation

SIGNIFICANT CHANGES

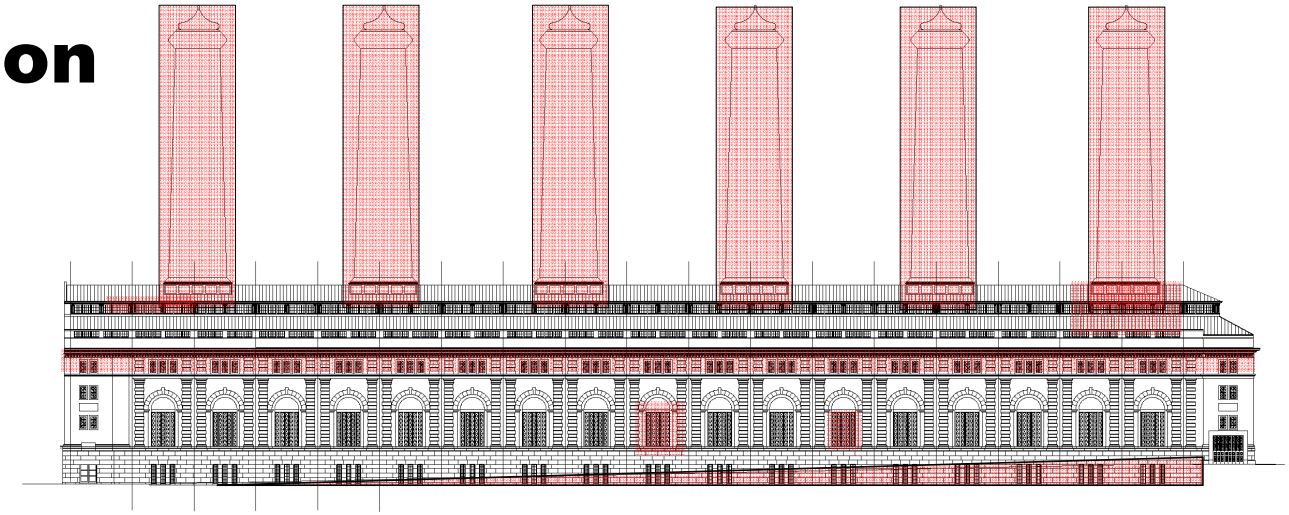
- MONITOR WINDOWS REPLACE WITH TRANSLUCENT PANELS
- ORIGINAL STACKS REMOVED
- ORIGINAL CORNICE REMOVED
- NEW CONCRETE STACK INSTALLED (1967)
- WINDOWS MODIFIED IN WHOLE OR PART
- THREE NEW ROLL UP DOOR INSTALLED
- TWO WINDOWS INFILLED WITH BRICK
- ADDTION ON WEST SIDE OF THE BUILDING (1952)
- ORIGINAL FOLDING MAIN DOOR REPLACED WITH MTL ROLL UP DOOR
- BASEMENT WINDOWS AND AREAWAY FILLED IN
- ORIGINAL TILE ROOFING REPLACED WITH NEW ROOFING

ITEMS REMOVED

ITEMS MODIFIED

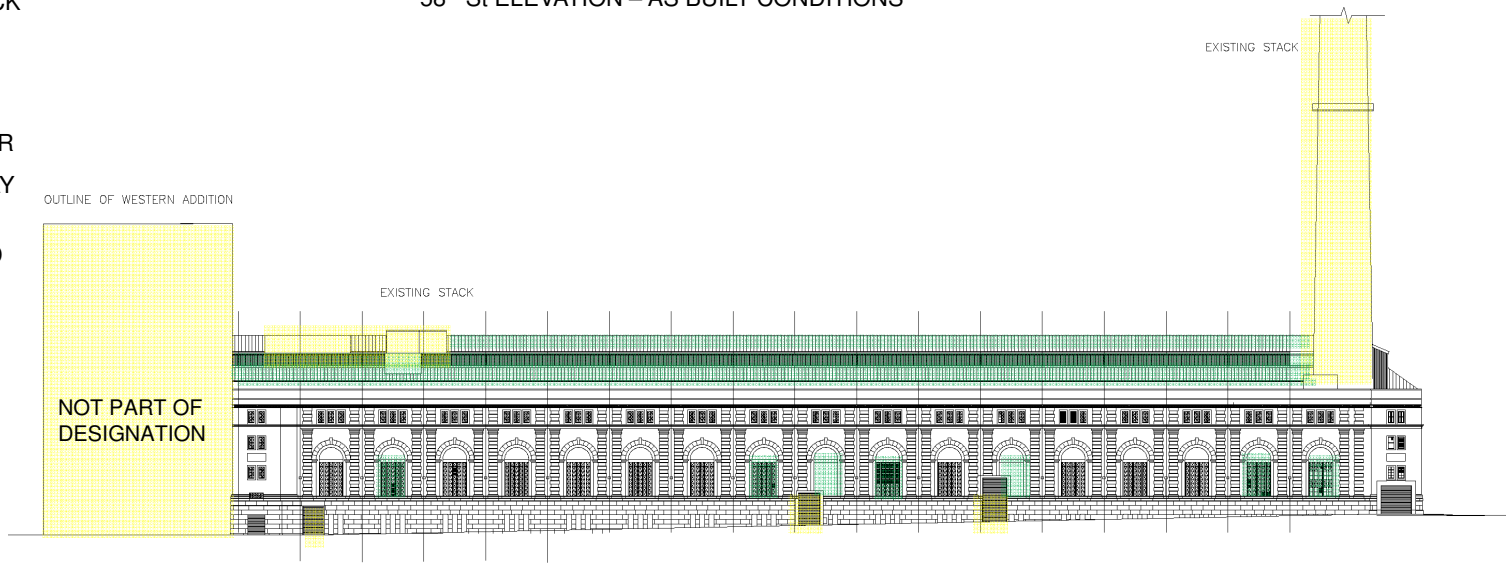
ITEMS ADDED

12Th Ave



11Th Ave

58th St ELEVATION – AS BUILT CONDITIONS

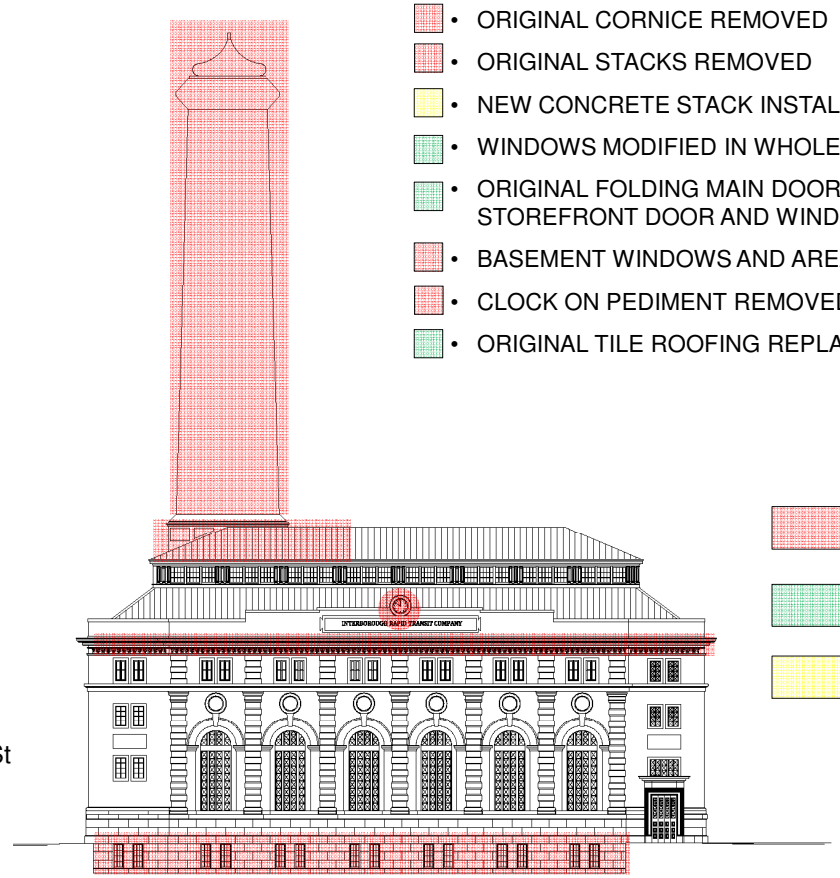


58th St ELEVATION – CURRENT CONDITIONS

11Th Ave Elevation

SIGNIFICANT CHANGES

- MONITOR WINDOWS REPLACE WITH TRANSLUCANT PANELS
- ORIGINAL CORNICE REMOVED
- ORIGINAL STACKS REMOVED
- NEW CONCRETE STACK INSTALLED (1967)
- WINDOWS MODIFIED IN WHOLE OR PART
- ORIGINAL FOLDING MAIN DOOR REPLACED WITH ALUM FRAME STOREFRONT DOOR AND WINDOWS
- BASEMENT WINDOWS AND AREAWAY FILLED IN
- CLOCK ON PEDIMENT REMOVED
- ORIGINAL TILE ROOFING REPLACED WITH NEW ROOFING

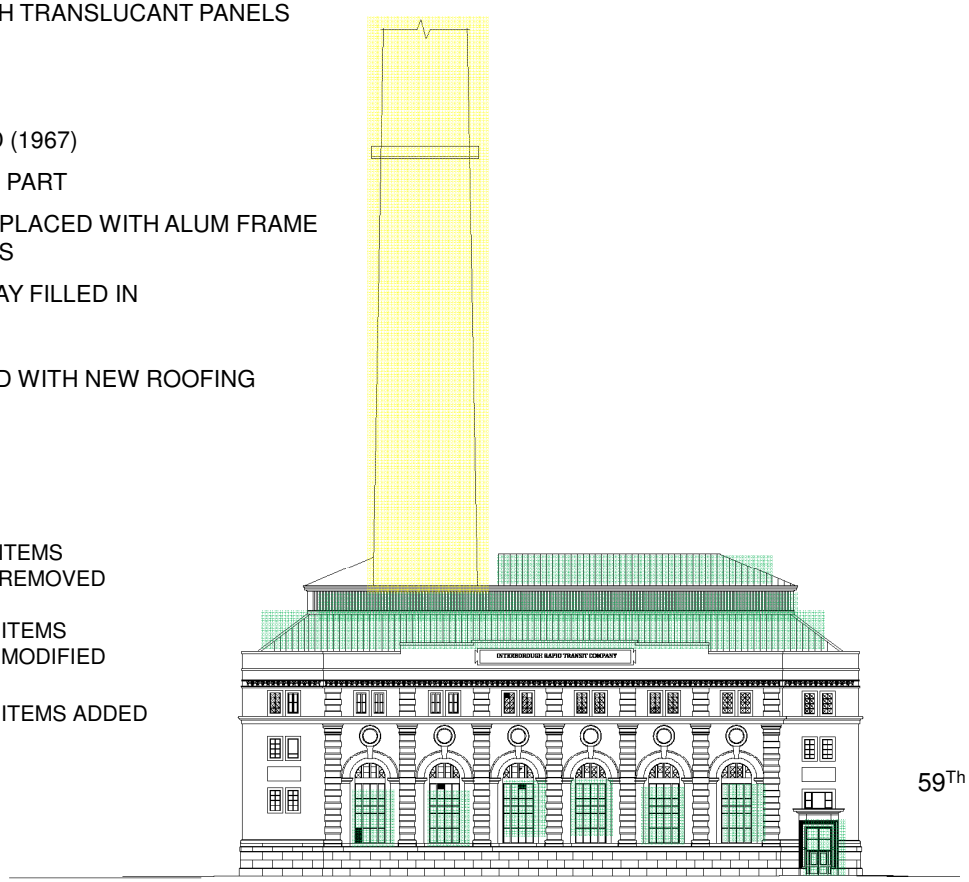


58Th St

ITEMS REMOVED

ITEMS MODIFIED

ITEMS ADDED



59Th St

11th Ave ELEVATION – HISTORIC CONDITIONS

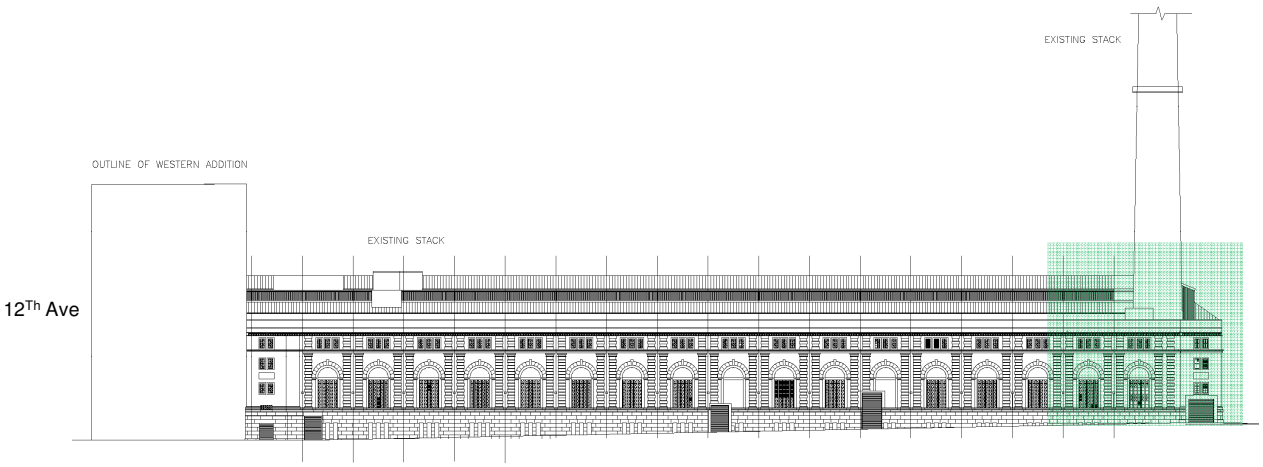
11th Ave ELEVATION – CURRENT CONDITIONS

Master Plan Objectives

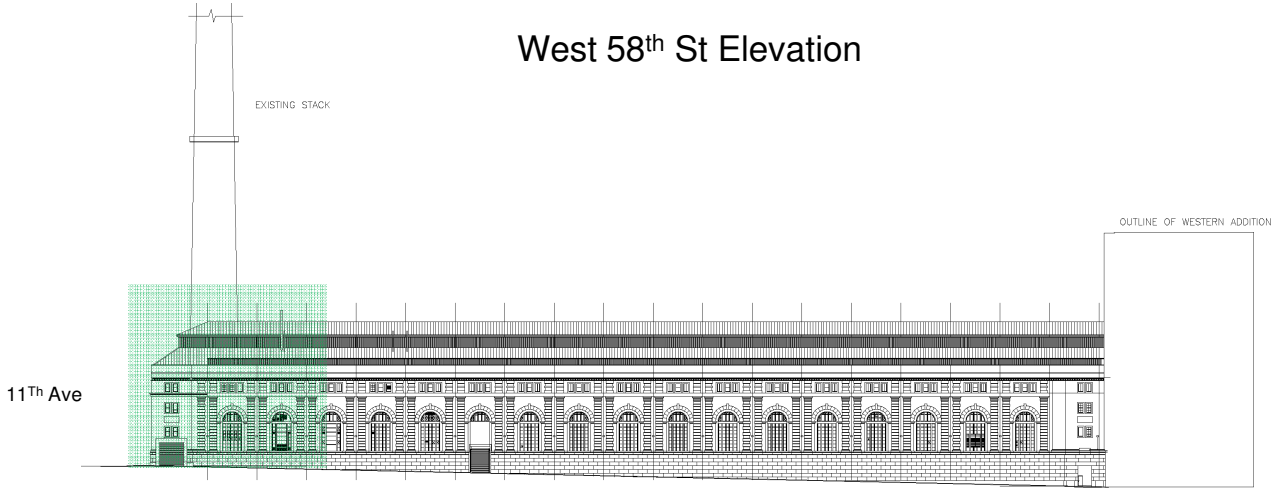
Establish a Master Plan that:

- Facilitates the building's original and current use for energy production
- Provides flexibility to accommodate our customers' future energy needs
- Allows for long-term planning in conjunction with the regulatory process
- Ensures future modifications respect the existing architectural character and honor the building's original purpose

Master Plan Design Principles



West 58th St Elevation



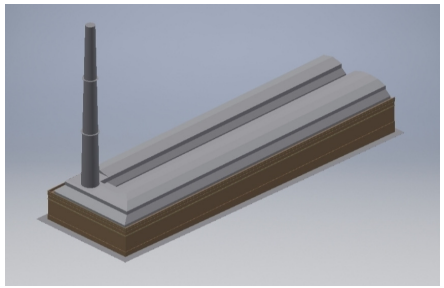
West 59th St Elevation

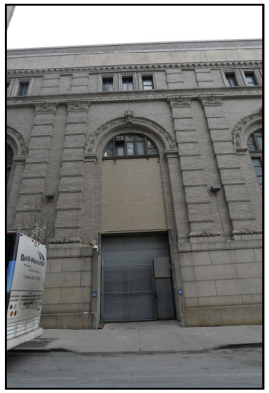
Design Principles:

- Set future rooftop equipment back from 11th Ave 125’; from 58th & 59th St 20’
- No modifications to the 11th Ave façade nor the eastern 100’ of the 58th & 59th St facades
- Place future rooftop equipment to minimize visibility as permitted by equipment needs
- Restore missing or altered features on windows that are modified
- Align future access doors with existing windows

Master Plan Elements

1. Roof equipment envelope for future mechanical equipment
2. Window modifications
    1. Modifications for louvers
    2. Modifications for louvers & equipment access
3. Addition of doors for large equipment access
4. Potential stack modifications





1.1 - Historic Powerhouses

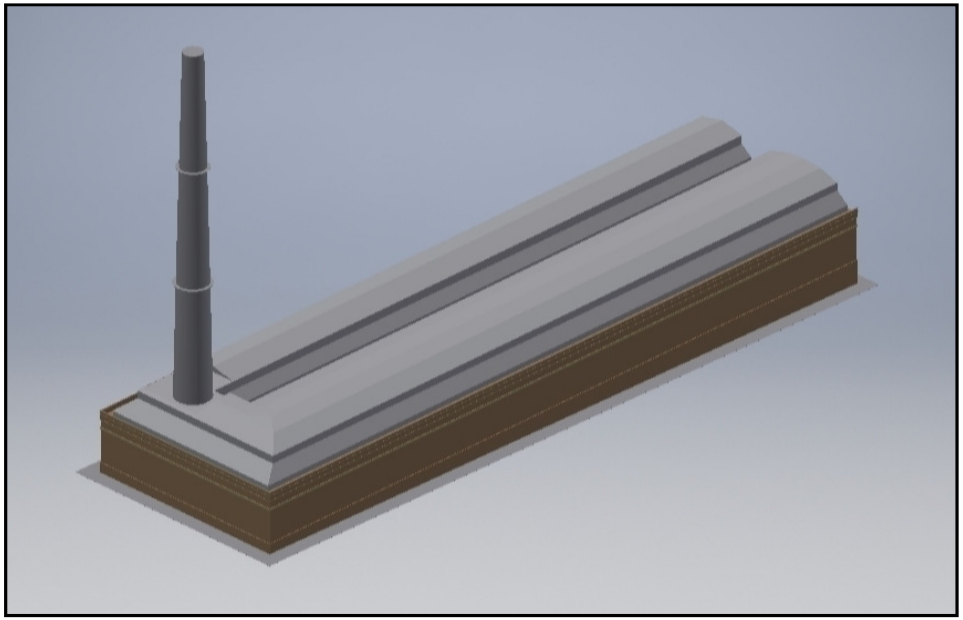
Ashley St Station (Source: St Louis Mo City Landmarks www.stlouis-mo.gov)

Valmont Power Station, Boulder, CO (Source: Denver Post)

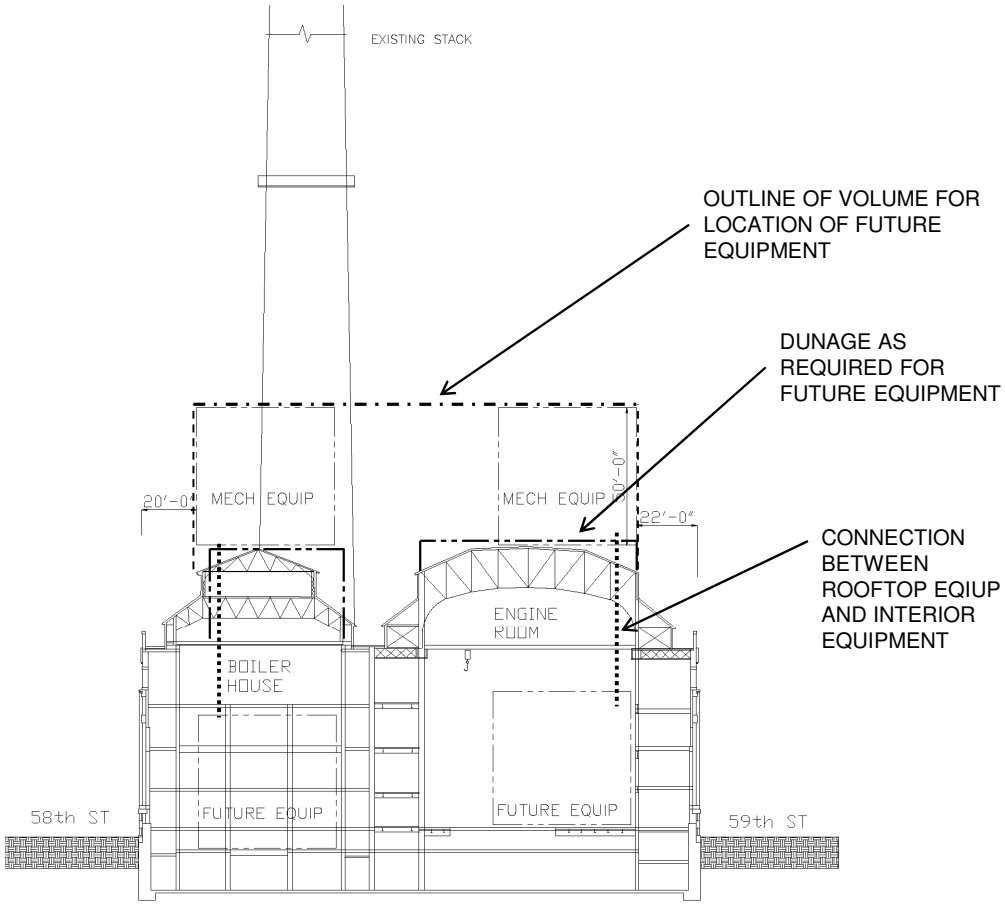
Blount St Generating Plant, Madison WI (Source: Wikipedia)

Delaware Power 1954 photo, Philadelphia, PA (Source: hiddencity.org)

1.2 Roof Configuration

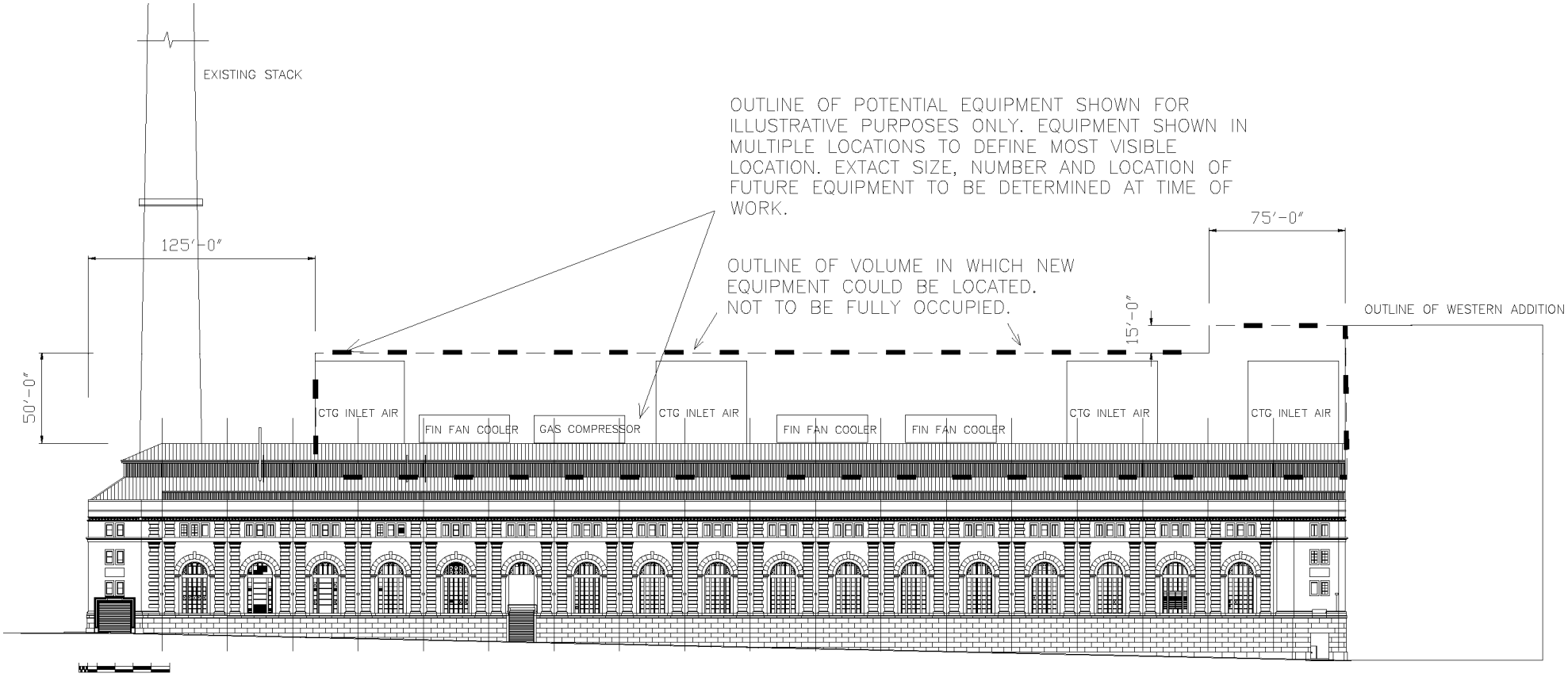


AERIAL VIEW LOOKING SOUTHWEST FROM 11th Ave & 59th ST



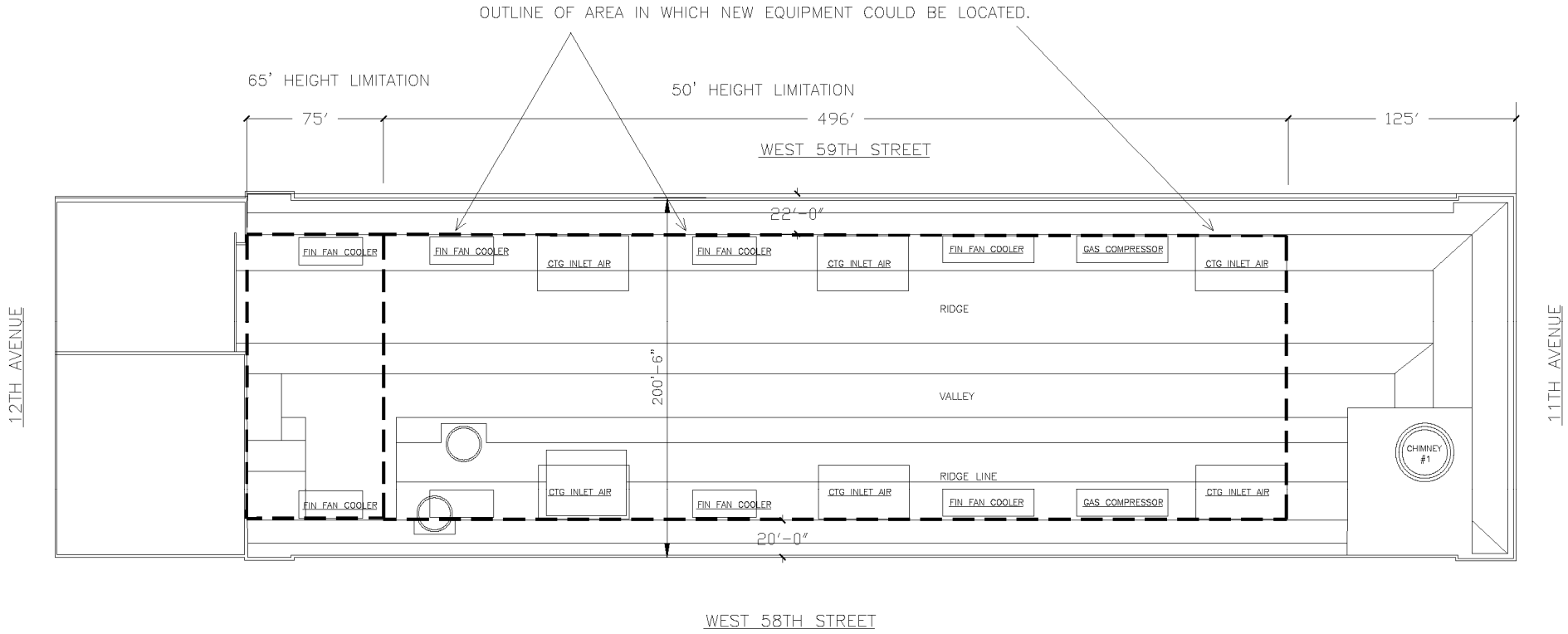
BUILDING SECTION SHOW POTENTIAL EQUIPMENT

1.3 59th St – Illustrative Equipment



59th St elevation with illustrative equipment show in the most visible locations for sight line studies.

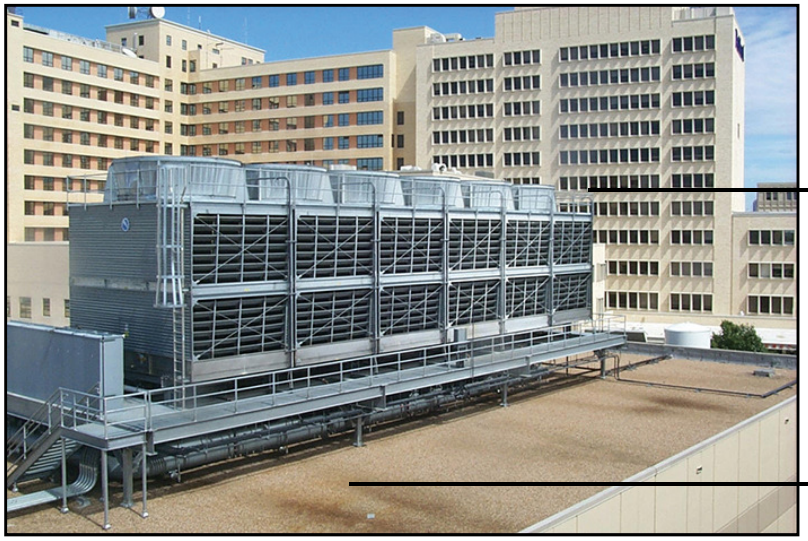
1.4 Roof Plan – Illustrative Equipment



Roof plan with illustrative equipment.

1.5 - Samples of Potential Rooftop Equipment

Fin Fan Cooler on posts



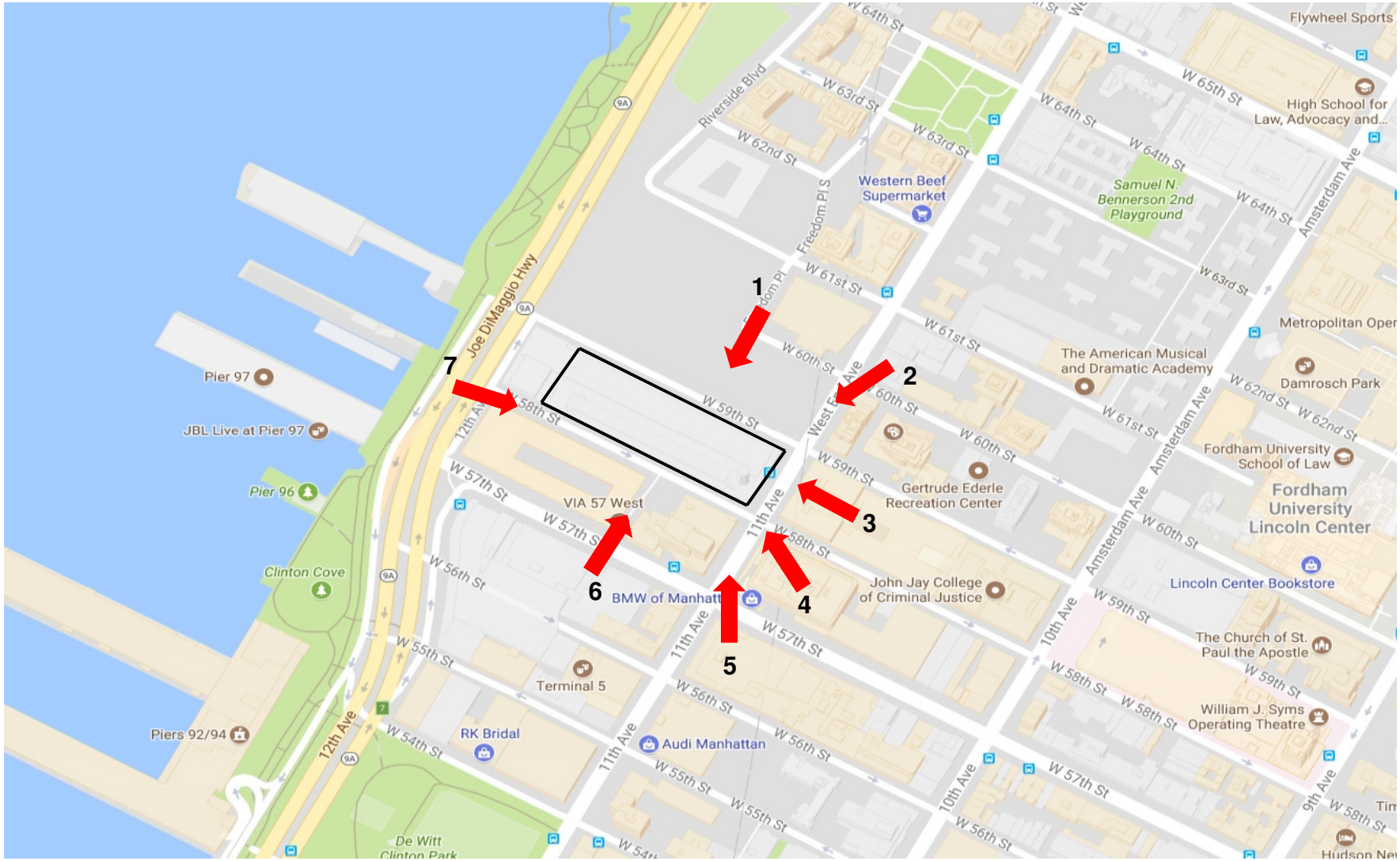
Evaporative cooling tower

Fin Fan Cooler on louvers

Cooling tower

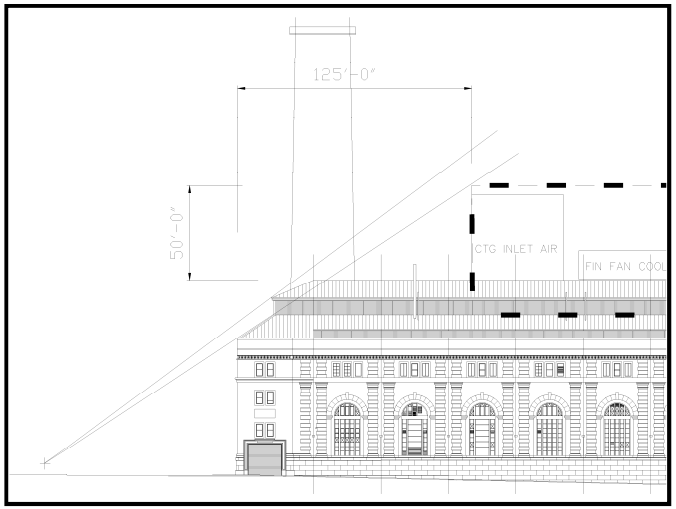
Cooling tower

1.6 - Photo Locations



1.7 – Locations with No View of Future Equipment

3 - VIEW FROM 11th AVE



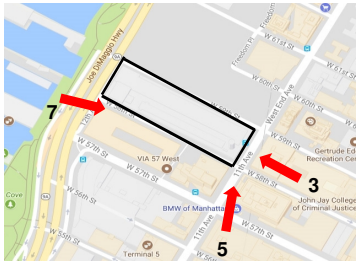
3 – LINE OF SIGHT FOR 11TH AVE

5 - VIEW FROM 57th St and 11th AVE

7 - VIEW FROM 58th St

N

Location Map



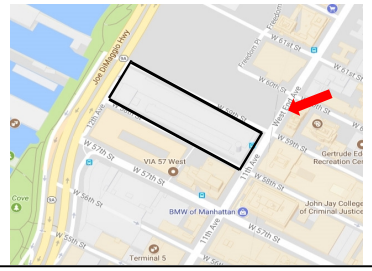
1.8 - View 2 – View from 11th Ave & 60th St

SHOWING VOLUME FOR POTENTIAL EQUIPMENT

SHOWING ILLUSTRATIVE EQUIPMENT

N

Location Map



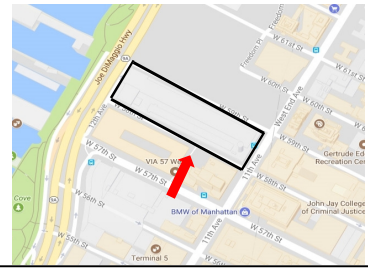
1.9 - View 6 – View from 57th St, mid-block

SHOWING VOLUME FOR POTENTIAL EQUIPMENT

SHOWING ILLUSTRATIVE EQUIPMENT

N

Location Map

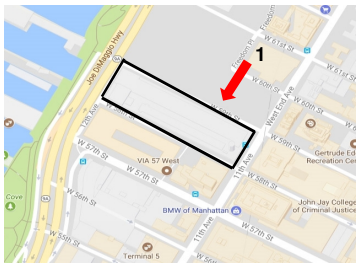


1.10 - View 1 – View from 59th St, mid-block

SHOWING VOLUME FOR POTENTIAL EQUIPMENT

SHOWING ILLUSTRATIVE EQUIPMENT

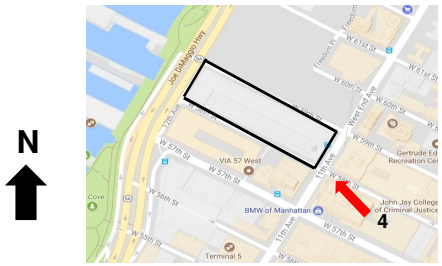
N



1.11 - View 4 – View from 58th St, 11th Ave

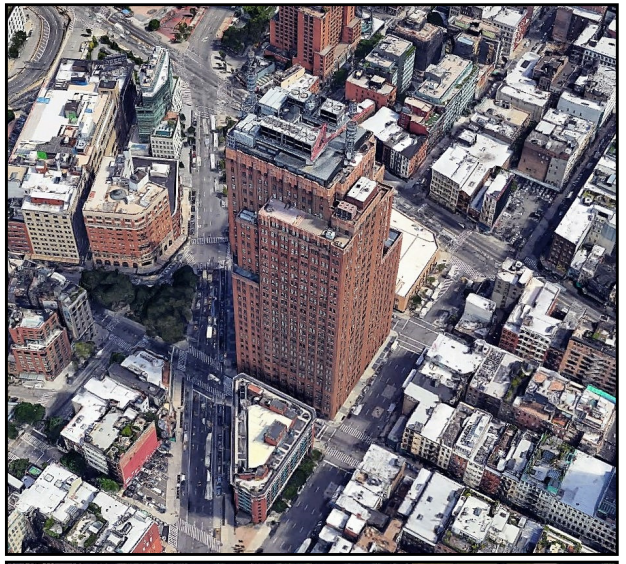
SHOWING VOLUME FOR POTENTIAL EQUIPMENT

SHOWING ILLUSTRATIVE EQUIPMENT



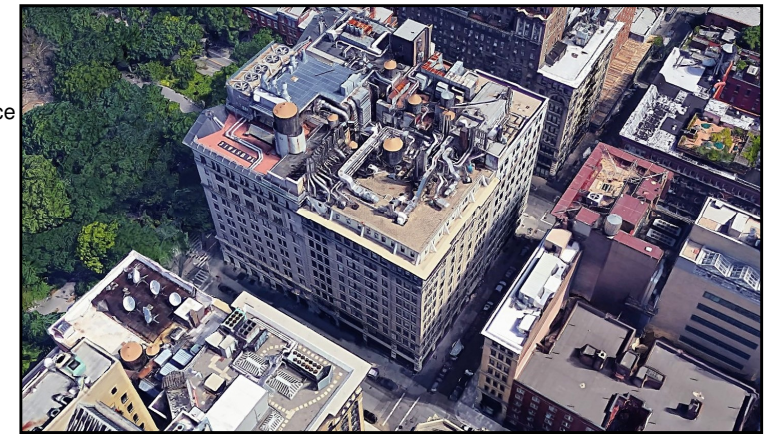
1.12 – Approved Master Plans for Visible Rooftop Equipment - Individual Landmarks

220-224 12th Ave
Terminal Stores
Building



32 Avenue of the
Americas
American Telephone and
Telegraph Company
Building

23-29 Washington Place
NYU Brown Building



2 Eastern Parkway
Brooklyn Public Library

1.13 - Approved Master Plans for Visible Rooftop Equipment

32 Avenue of the Americas
American Telephone and Telegraph Company Building

23-29 Washington Place
NYU Brown Building

Master Plan Elements

1. Roof equipment envelope for future mechanical equipment
2. Window modifications for potential louver installations
    1. Modification for Louvers
    2. Modification for Louver & Equip Access
3. Addition of doors for large equipment access
4. Potential stack modifications

2.1 - Existing Window Conditions

Examples

Solid upper panel, all grillwork in place

12 Bays (less than 30%)

Glazed upper panel, all grillwork in missing

9 Bays

Glazed upper panel, all grillwork in missing, some mullions missing

2 Bays

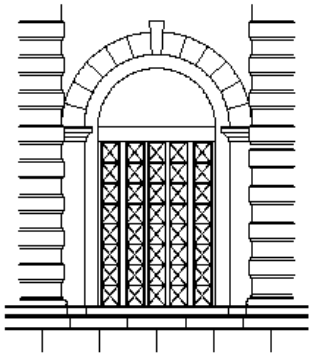
ANALYSIS

34 large window bays total on 58th & 59th Streets + 6 large windows on 11th Ave.

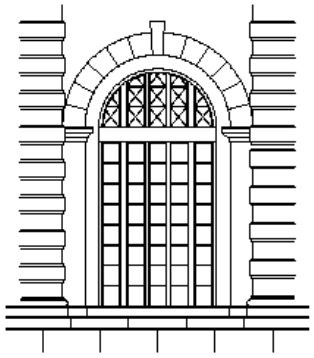
12 – intact windows
5 – primarily intact, some louvers replacing sash
14 – sash and muntins replaced, most mullions in place
9 – mullions and sash partly or completely replaced

2.2 – Existing Window Elevations

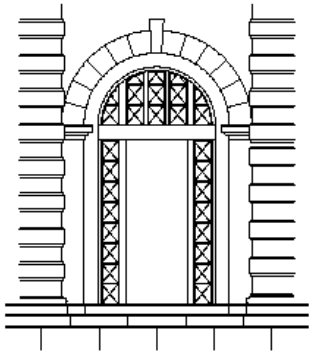
Typical Window Bays



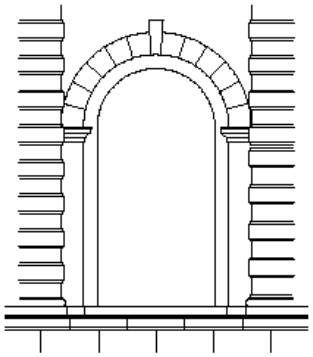
Solid transom intact sash



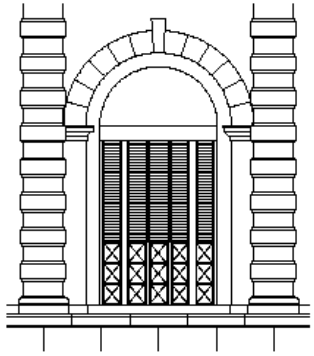
Glazed transom, decorative grid missing



Center sash replaced



Entire window removed

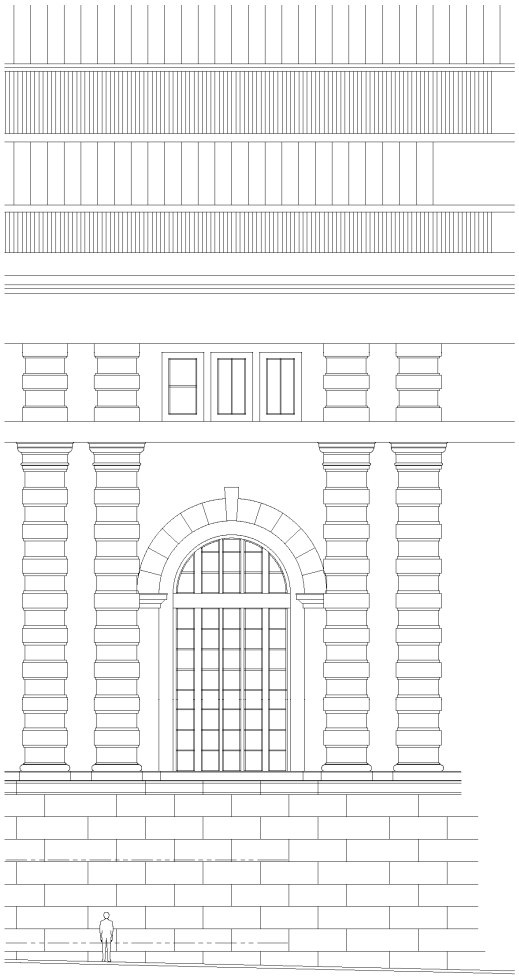


Selected sash replaced with louvers

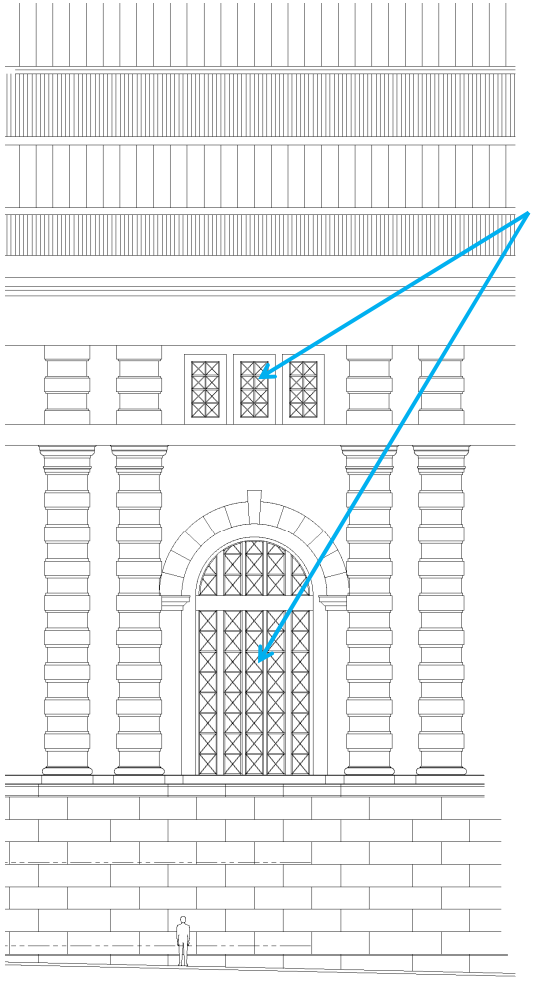
2.3 Potential Window Modifications

- Case 1
  - To allow for necessary ventilation for new equipment
    - Retain existing window frames, remove existing glazing, installing a screen in lieu of glazing
    - Restore frames replicating original detailing using alternate materials
- Case 2
  - To allow for necessary ventilation for new equipment installations and for rapid emergency replacement of the equipment (approx. 28 days to replace an Area Substation transformer)
    - Replace existing window frames with new removable frames replicating original detailing using alternate materials and installing a screen in lieu of glazing
    - Replace existing brick window jambs with removable brick panels. New brickwork to match the existing brick color and profile. Removable panel profile to match existing wall profile

2.4 – Modifications for Ventilation



EXISTING (TYPICAL CONDITION)

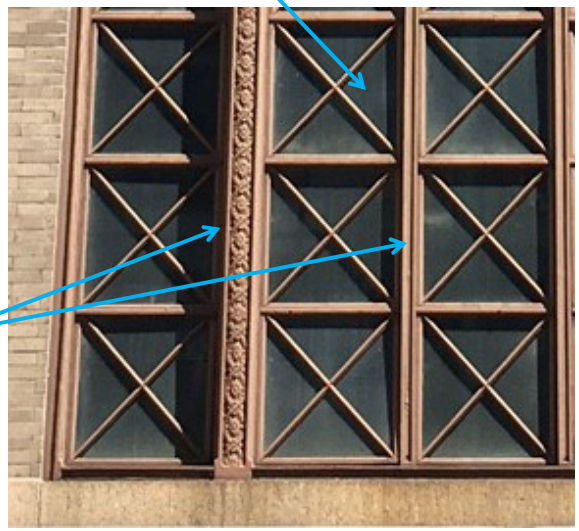


PROPOSED

RESTORED WINDOW FRAMES AND DETAILING AS SHOWN AT RIGHT TO PROVIDE VENTILATION

SALVAGE AND RETAIN EXISTING WINDOW FRAME AND TRIM WHERE POSSIBLE, REPLACE AS REQUIRED. REPLACE DAMAGED OR MISSING GRILLES, MULLIONS AND TRIM WITH NEW ALUM OR STEEL FINISHED TO MATCH EXISTING DETAILING AND COLOR.

GLAZING – TO BE REMOVED AND REPLACED WITH METAL SCREEN



WINDOW RESTORATION DETAILS

When modifying windows for ventilation

2.5 - Window Modifications

NEW PREFORATED METAL SCREEN IN LEIU OF GLAZING.

CASE 2 – MODIFY BRICK JAMBS AND PILISTERS. SEE NEXT SLIDES FOR DETAILS

NEW PREFORATED METAL SCREEN IN LEIU OF GLAZING. TO BE FINISHED TO MATCH EXISTING WINDOW COLOR.

CASE 1 – EXISTING WINDOW FRAME TO REMAIN, DECORATIVE GRID TO BE REPLACED WHERE MISSING

CASE 2 - NEW REMOVEABLE WINDOW MUNTINS AND GRILLE WORK TO MATCH ORIGINAL DESIGN IN CONFIGURATION AND FINISH. MATERIAL SELECTION AND EXACT DETAILING TO BE DETERMINED AT THE TIME OF CONSTRUCTION.

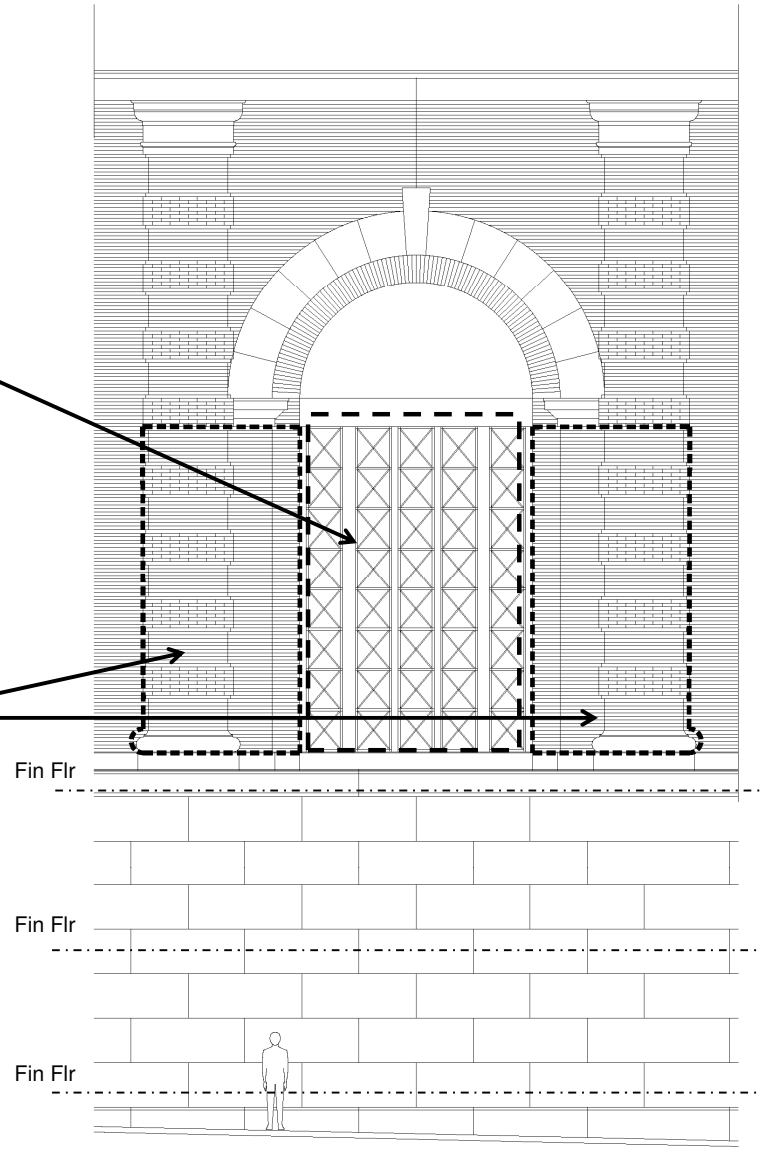
Case 2 - Approx. 10 of 34 bays to be modified (max. build out scenario) for removable frames

PROVIDE NEW INTERNAL STRUCTURAL FRAMING AS REQUIRED TO SUPPORT NEW LOUVER CONSTRUCTION. EXACT DETAILING TO BE DETERMINED AT THE TIME OF CONSTRUCTION.

2.6 Removable Panel

Example of large transformer installed into a vault

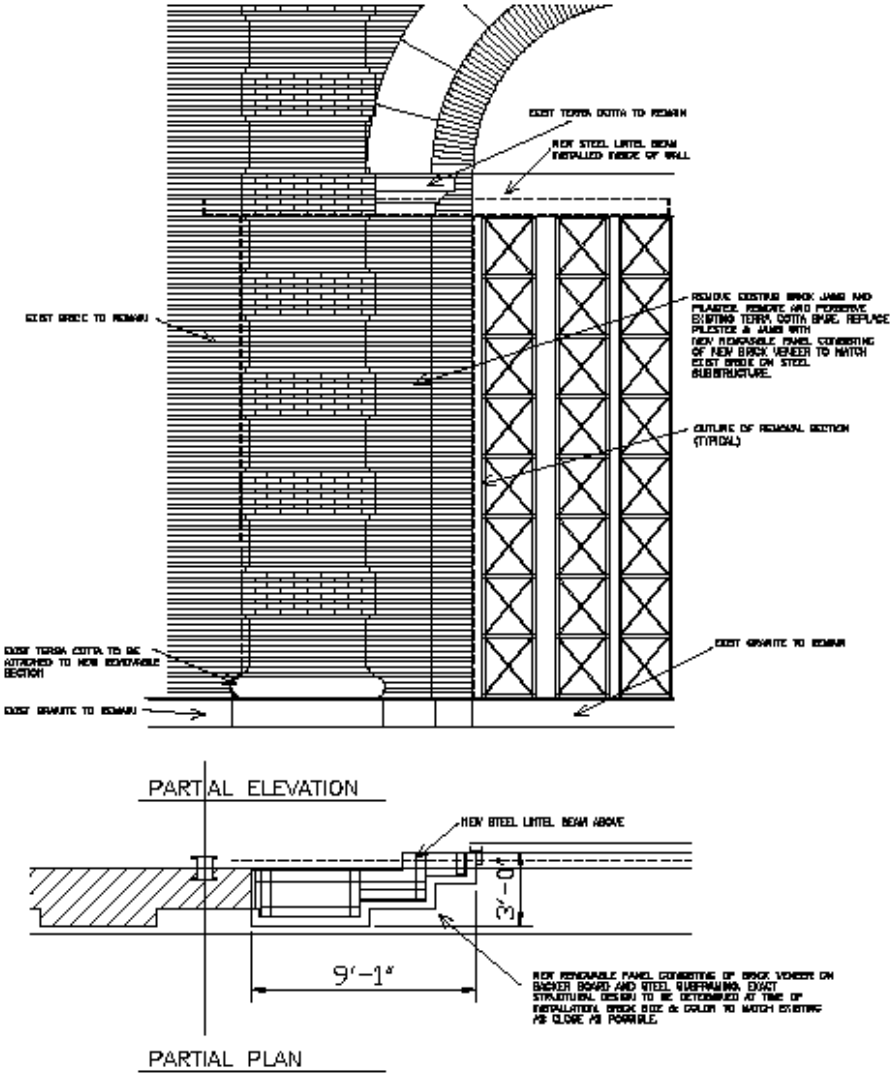
New removable window frame and grille

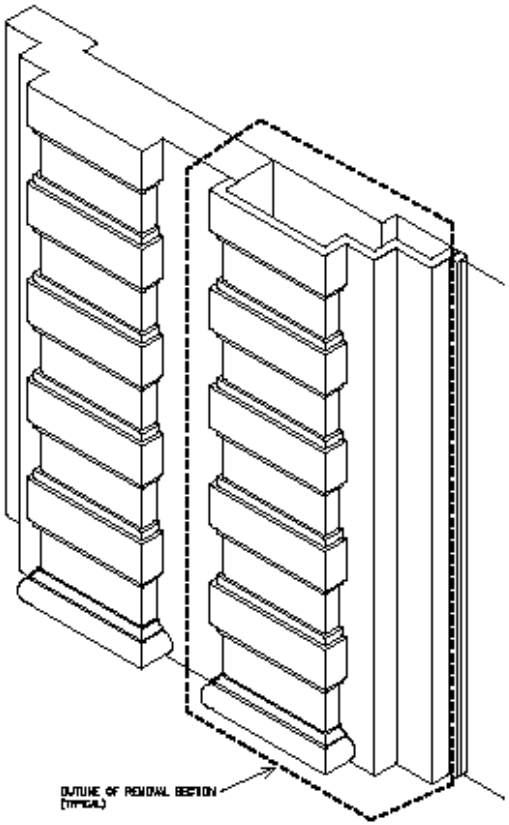


Remove existing brick jamb and pilaster, salvage bricks and reuse if possible. Remove and preserve existing terra cotta base. Replace pilaster & jamb with new removable panel consisting of salvaged brick where possible or new full-sized brick veneer, to match existing brick, on new structural substructure. Potentially up to approx. 10 windows modified for equipment installation.

Examples of large equipment that could be installed
Sm Transformer: 28'-4" x 8'-9" x 12'-6"; 90 tons
Lg Transformer: 11'-0" x 38'-7" x 13'-0"; 170 tons
Steam HRSG: 110'-0" x 15'-4" x 110'-0"; 530 tons

2.7 – Window Jamb Modifications



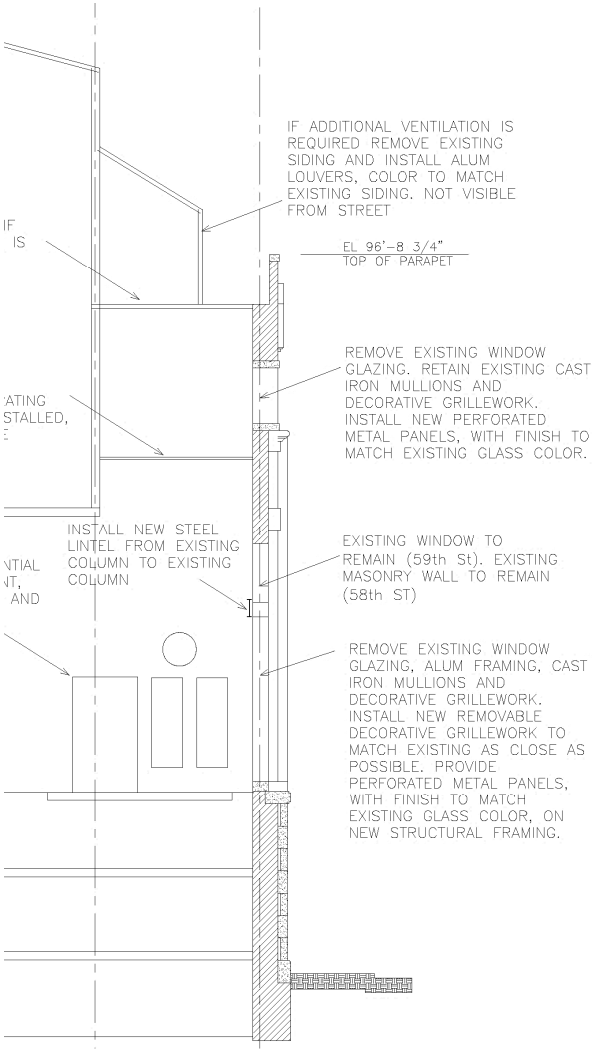


ISOMETRIC STUDY

9/15/17 SK-108

Remove existing brick jamb and pilaster, salvaging where possible. Remove and preserve existing terra cotta base. Replace pilaster & jamb with new removable panel consisting of salvaged brick where possible or new full-sized brick veneer, to match existing brick on structural substructure. Potentially up to approx. 10 windows modified for equipment installation.

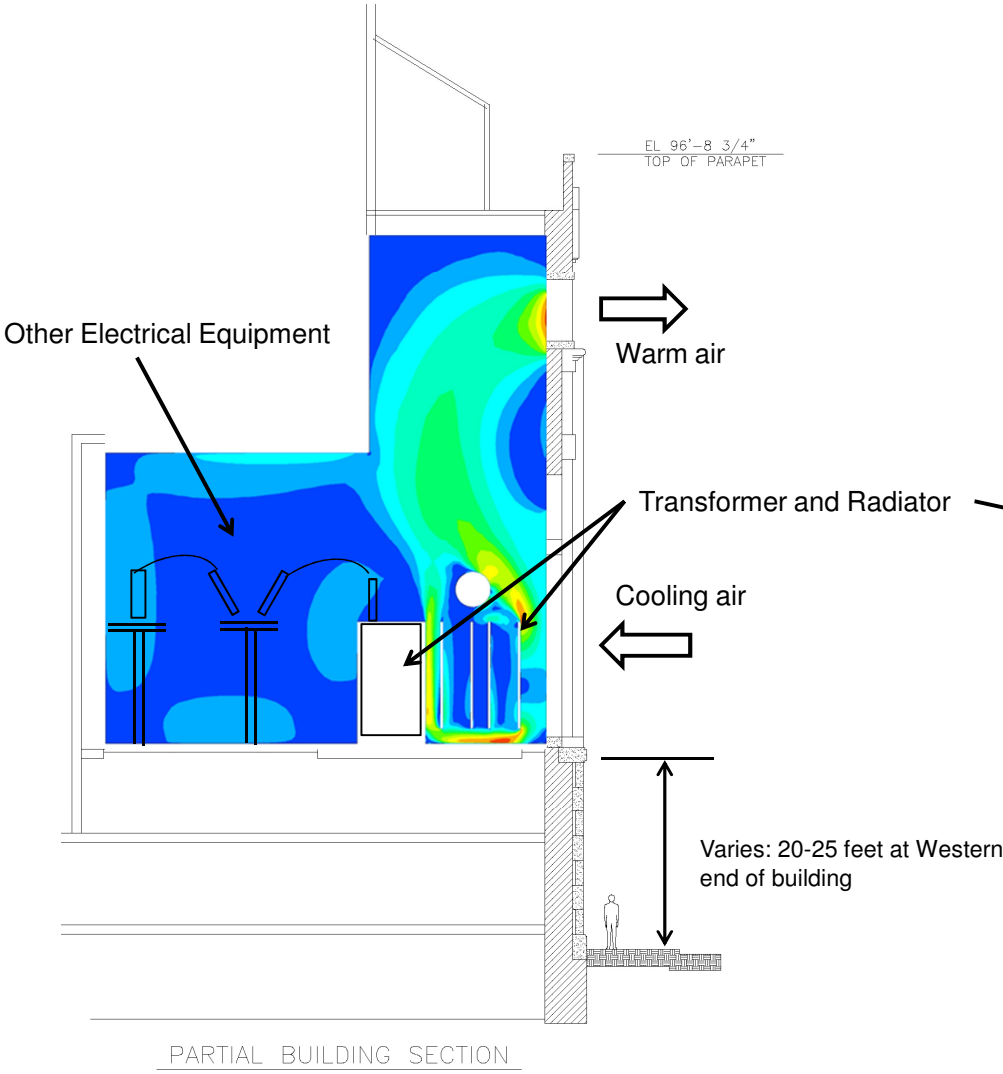
2.8 Potential Window Modifications



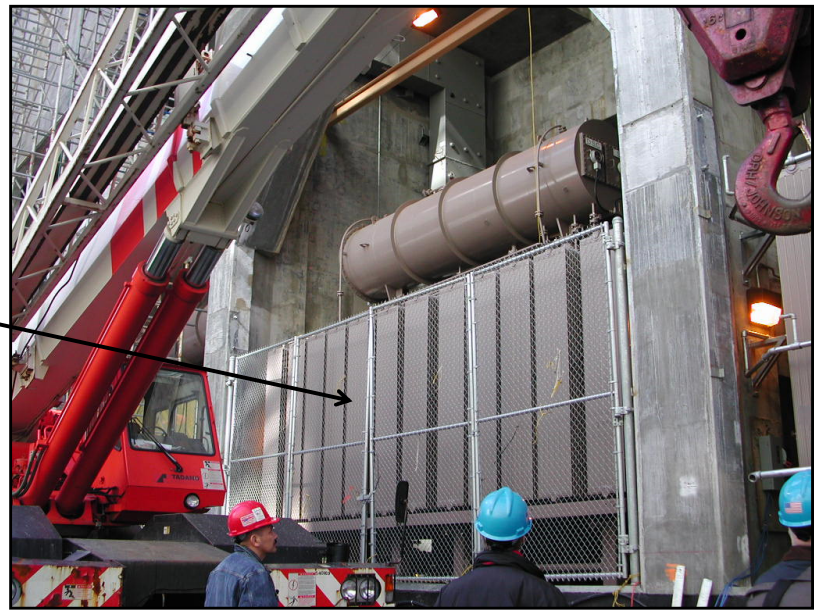
Generator being installed at East River Generating Station

Examples of large equipment that could be installed
Sm Transformer: 28'-4" x 8'-9" x 12'-6"; 90 tons
Lg Transformer: 11'-0" x 38'-7" x 13'-0"; 170 tons
Steam HRSG: 110'-0" x 15'-5" x 110'-0"; 530 tons

2.9 Transformer Vault Study



Heat Flow study of transformer vault



Example of transformer in interior vault

Master Plan Elements

1. Roof equipment envelope for future mechanical equipment
2. Window modifications for potential louver installations
    1. Modification for Louvers
    2. Modification for Louver & Equip Access
3. Addition of doors for large equipment access
4. Potential stack modifications

3.0 Door Analysis

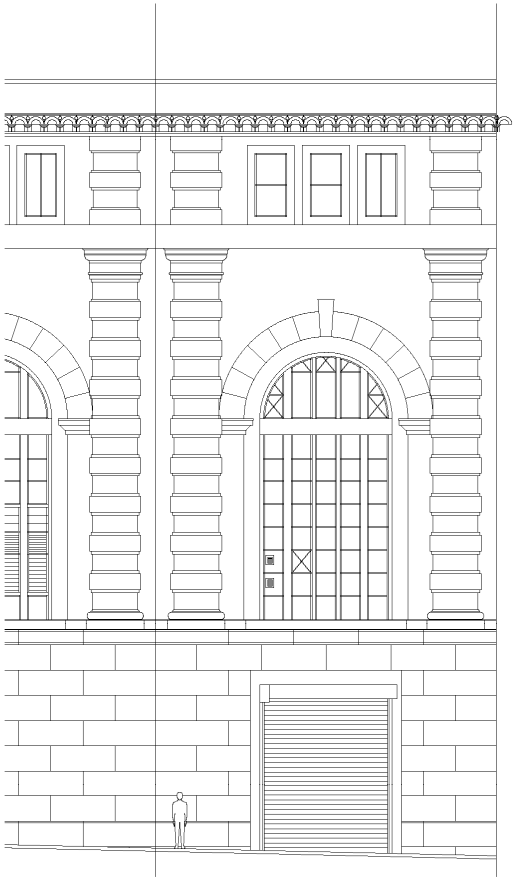
Door Analysis
3 doors added on 58th Street
1 door added on 59th Street
5 original doors replaced

3.1 Addition of Doors

Design Principal: any new access door shall be located as close to 12th Ave as is operationally reasonable.

Proposed metal roll up door and frame to receive finish to match adjacent material as closely as possible. Door to be centered on existing window and not to exceed width of window plus brick jambs

Illustrative location close to 11th Ave



Illustrative location close to 12th Ave

Max 5 of 34 bays to be modified
(max. build out scenario)

Master Plan Elements

1. Roof equipment envelope for future mechanical equipment
2. Window modifications for potential louver installations
    1. Modification for Louvers
    2. Modification for Louvers & Equip Access
3. Addition of doors for large equipment access
4. Potential stack modifications

4.0 Potential Stack Modification

- Existing concrete stack is non-historic installed approx. 1968
- Potential modifications/replacement
- Master Plan Proposal: stack will be maintained as far back from 11th Ave as operationally reasonable

Master Plan Summary

Establish a Master Plan that:

- Facilitates the building's original and current use for energy production
- Provides flexibility to accommodate future energy needs
- Allows for long-term planning in conjunction with the regulatory process
- Ensures future modifications respect the existing architectural character and honor the building's original purpose

MASTER PLAN ELEMENTS

- Roof equipment envelope for future mechanical equipment
- Window modifications for potential louvers or equipment access
- Addition of doors for large equipment access
- Potential stack modifications