1 SOUTHWEST CORNER VIEW OF THE BELNORD

2 SOUTHEAST CORNER VIEW OF THE BELNORD

LIST OF DRAWINGS

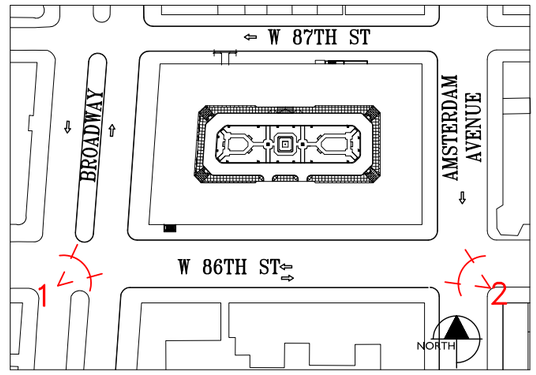
01 SITE PLAN AND VIEWS
02 EXISTING ROOF PLAN
03 PROPOSED ROOF PLAN
04 EXISTING CONDITIONS AT ROOF
05 EXISTING SOUTH ELEVATION
06 PROPOSED SOUTH ELEVATION
07 EXISTING AND PROPOSED EAST ELEVATION
08 PROPOSED SECTIONS
09 PROPOSED ELEVATION (EQUIPMENT)
10 BOILER EQUIPMENT DETAILS / PLAN
11 BOILER EQUIPMENT DETAILS / SECTION
12 VISIBILITY DIAGRAM
13 EAST FACADE PHOTOGRAPHS
14 EAST FACADE PHOTOGRAPHS
15 SOUTH FACADE PHOTOGRAPHS
16 2004/ 2016 MEP EQUIPMENT VISIBILITY COMPARISON
17 2004/ 2016 MEP EQUIPMENT VISIBILITY COMPARISON
18 2004/ 2016 MEP EQUIPMENT VISIBILITY COMPARISON
19 2004/ 2006 MEP EQUIPMENT COMPARISON
20 EXISTING BOILER INFRASTRUCTURE

LIST OF DRAWINGS – MEP EQUIPMENT ROOF STUDY

RS1 SITE PLAN AND VIEWS
RS2 ROOF PLAN
RS3 SUMMARY OF OPTIONS AND SITE MAP

LIST OF DRAWINGS – DEPARTMENT OF BUILDINGS FILING SET

BL–001 BOILER SYMBOLS, ABBREVIATIONS, SCHEDULES, AND DETAILS
BL–101 BOILER ROOM PLAN, ELEVATION, & HEATING SYSTEM PIPING DIAGRAM
BL–102 ROOF MECHANICAL PLAN
BL–201 HEATING SYSTEM PIPING DIAGRAM
BL–202 HEATING SYSTEM CONTROL DIAGRAM
BL–203 HEATING SYSTEM CONTROL DIAGRAM



3 SITE PLAN

THE BELNORD

225 WEST 86TH STREET
NEW YORK, NEW YORK

NEW YORK CITY
LANDMARKS PRESERVATION
COMMISSION SUBMISSION

UPPER ROOF MECHANICAL

MEPF Engineer
Plus Group Consulting Engineers
231 WEST 29th STREET
#706
New York, NY 10001
(212) 233–2700

SITE PLAN AND VIEWS
DRAWING TITLE

DRAWN BY:	SCALE:
NA	AS NOTED
CHECKED BY:	PROJ. NO.
IM	NA

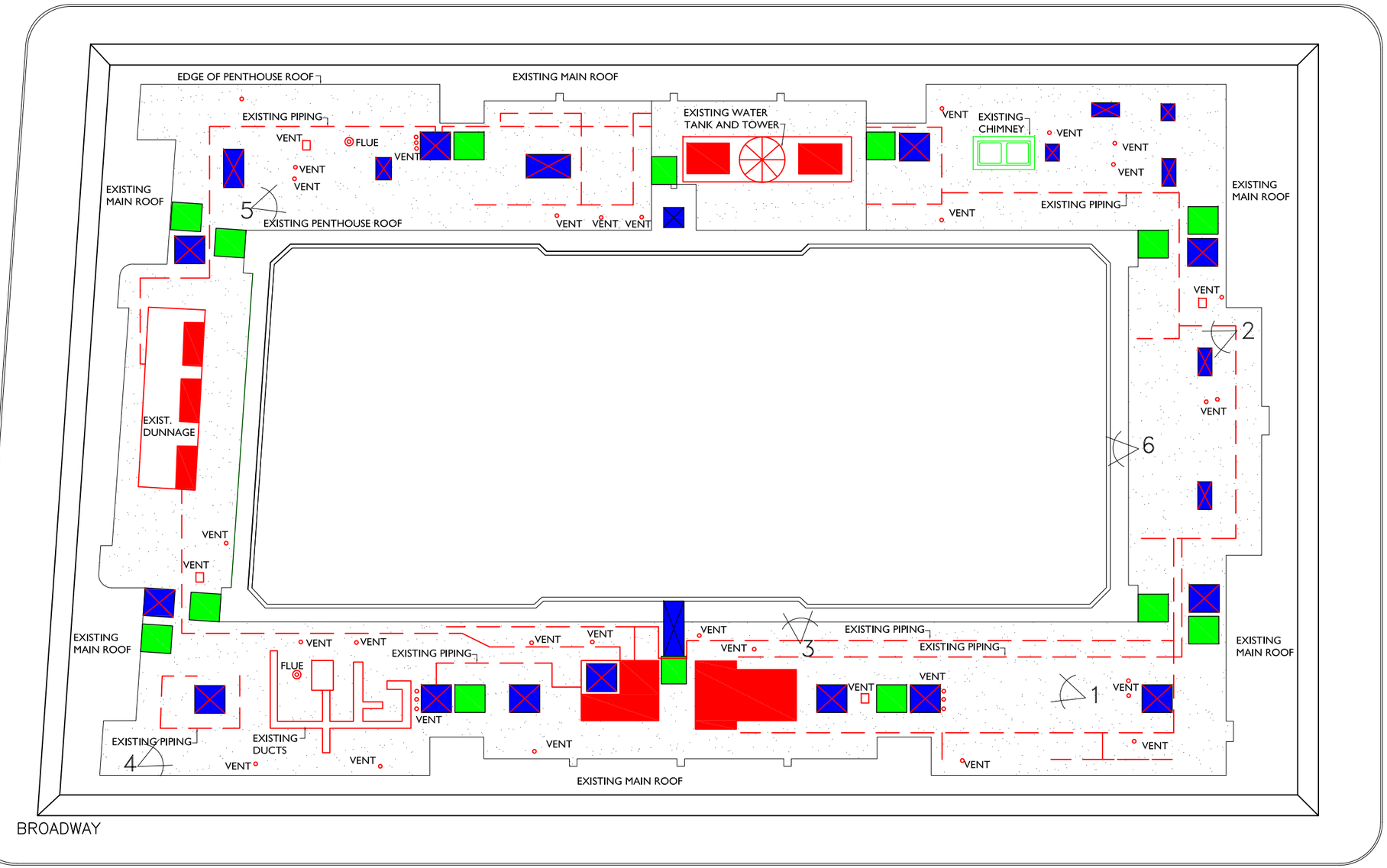
DATE: 10 MARCH 2016

01
DRAWING NO.

LEGEND

- EXISTING MECHANICAL EQUIPMENT
- PENTHOUSE ROOF
- EXISTING ELEVATOR BULKHEAD
- EXISTING SKYLIGHT
- EXISTING PIPING
- 1 PHOTOGRAPH KEY FOR SHEET 04

W 87TH ST



W 86TH ST

ROOF PLAN

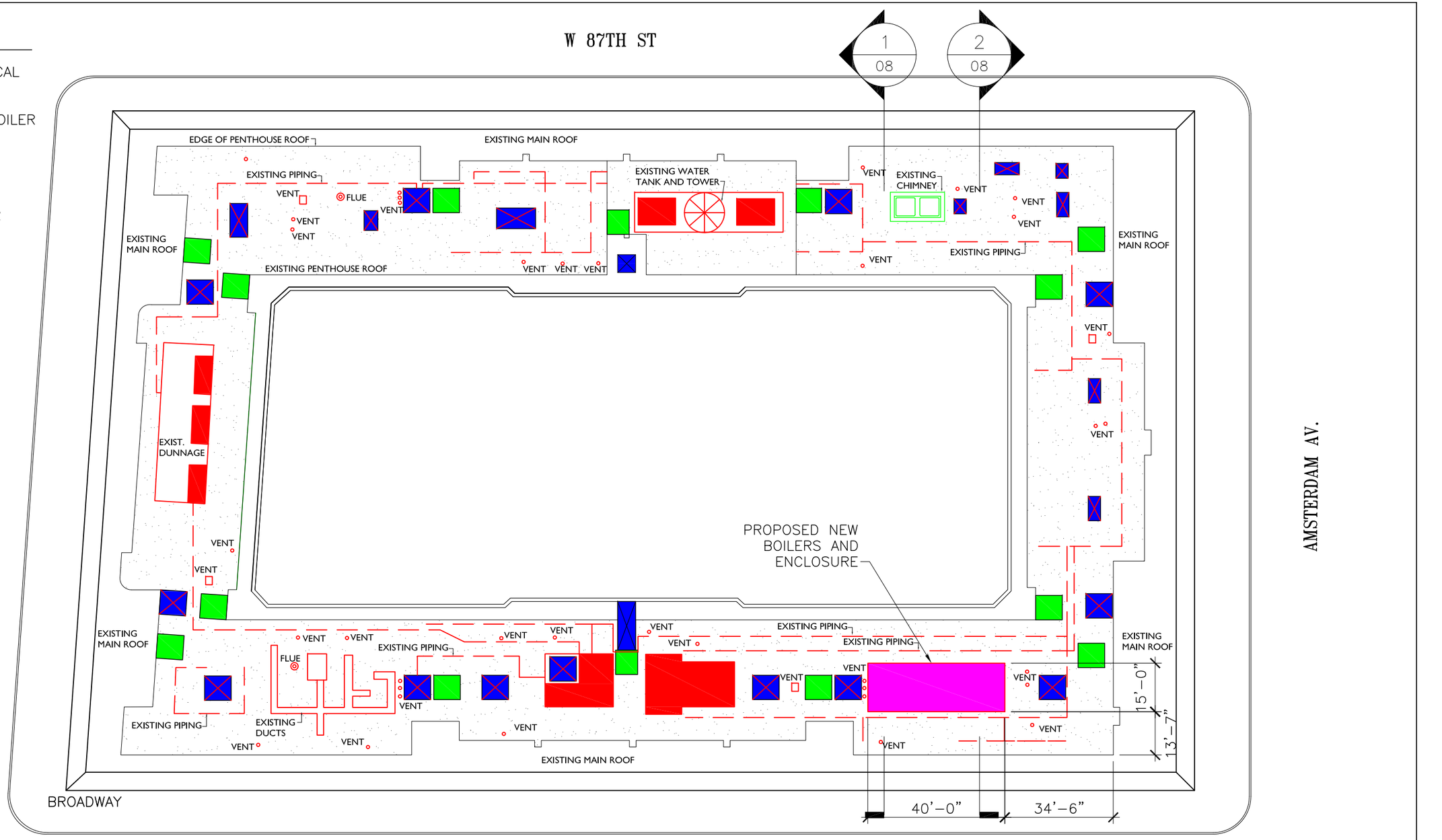
SCALE: 1/32"= 1'0"

NORTH

THE BELNORD 225 WEST 86TH STREET NEW YORK, NEW YORK	NEW YORK CITY LANDMARKS PRESERVATION COMMISSION SUBMISSION	UPPER ROOF MECHANICAL	MEPF Engineer Plus Group Consulting Engineers 231 WEST 29th STREET #706 New York, NY 10001 (212) 233-2700	EXISTING ROOF PLAN DRAWING TITLE	DRAWN BY: NA SCALE: AS NOTED CHECKED BY: IM PROJ. NO. NA DATE 10 MARCH 2016	02 DRAWING NO.

LEGEND

- EXISTING MECHANICAL EQUIPMENT
- PROPOSED MEP BOILER LOCATION
- PENTHOUSE ROOF
- EXISTING ELEVATOR BULKHEAD
- EXISTING SKYLIGHT
- EXISTING PIPING



ROOF PLAN

SCALE: 1/32"= 1'0"

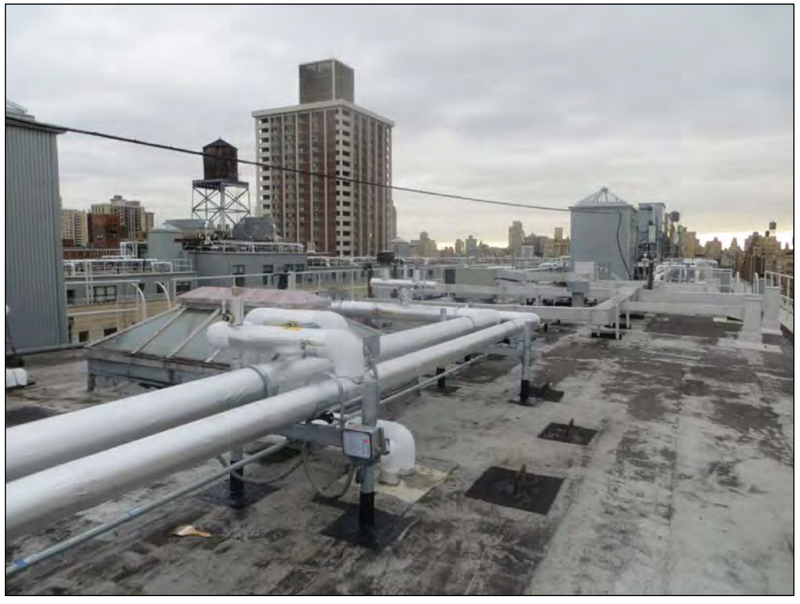
NORTH

THE BELNORD 225 WEST 86TH STREET NEW YORK, NEW YORK	NEW YORK CITY LANDMARKS PRESERVATION COMMISSION SUBMISSION	UPPER ROOF MECHANICAL	MEPF Engineer Plus Group Consulting Engineers 231 WEST 29th STREET #706 New York, NY 10001 (212) 233–2700	PROPOSED ROOF PLAN DRAWING TITLE	DRAWN BY: NA SCALE: AS NOTED CHECKED BY: IM PROJ. NO. NA DATE 10 MARCH 2016 03 DRAWING NO.

1 VIEW LOOKING WEST FROM SOUTH ELEVATION

2 VIEW LOOKING SOUTH FROM EAST ELEVATION

3 VIEW LOOKING NORTH FROM SOUTH ELEVATION



4 VIEW LOOKING EAST FROM SOUTH ELEVATION

5 VIEW LOOKING WEST FROM NORTH ELEVATION

6 VIEW LOOKING WEST FROM EAST ELEVATION

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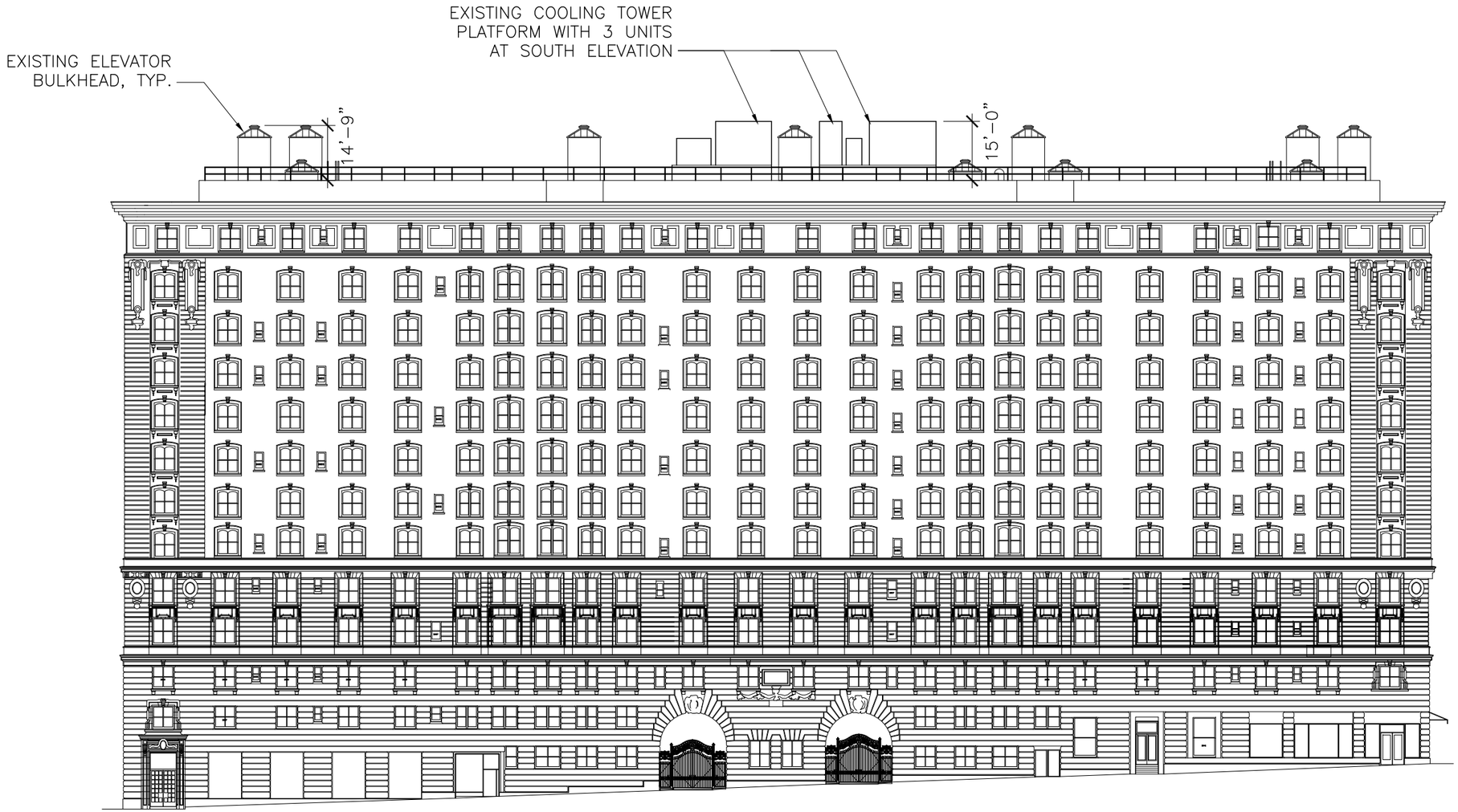
EXISTING CONDITIONS AT ROOF
DRAWING TITLE

DRAWN BY:	SCALE:
NA	AS NOTED
CHECKED BY:	PROJ. NO.
IM	NA

10 MARCH 2016
DATE

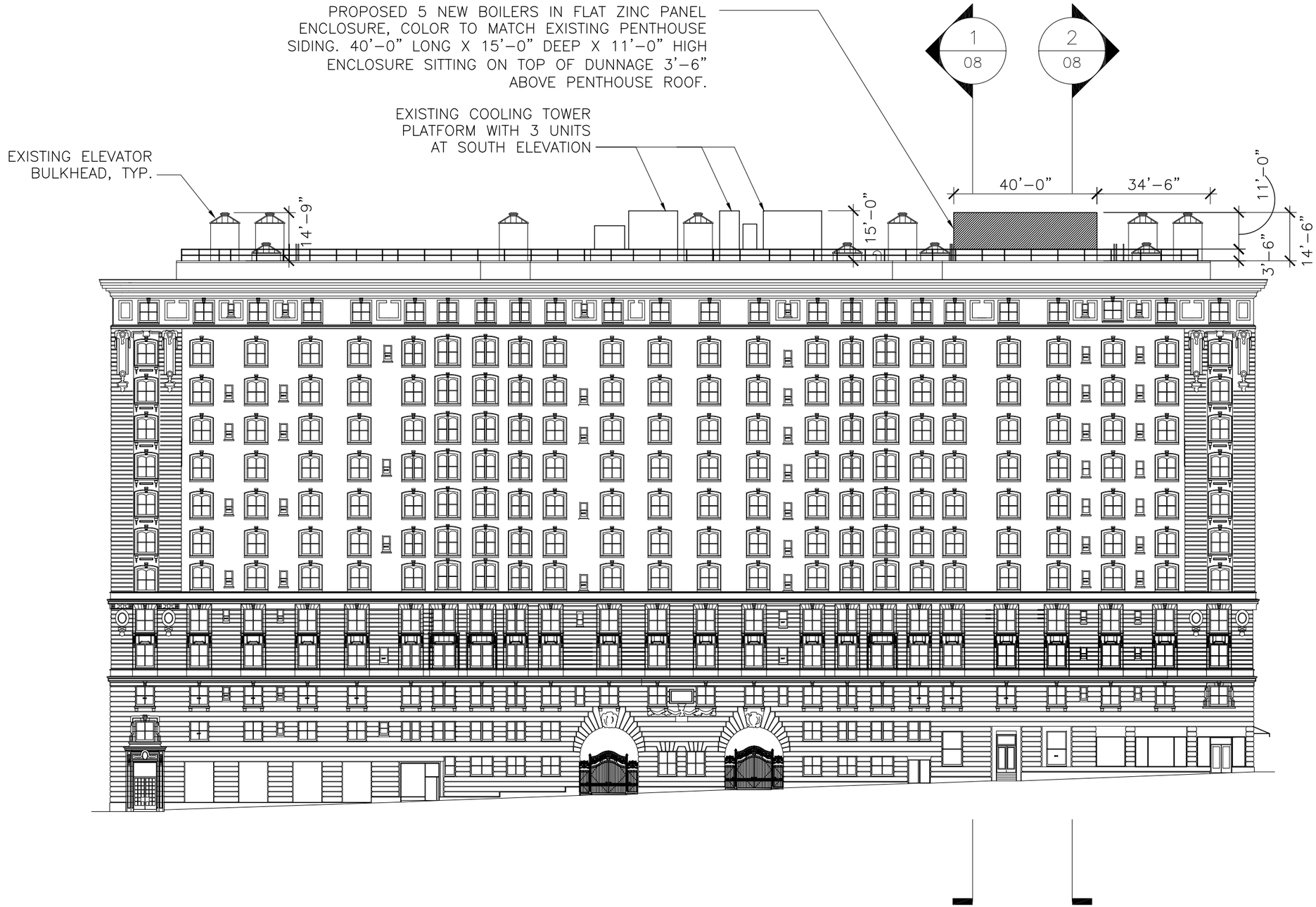
04
DRAWING NO.



SOUTH ELEVATION - 86TH STREET

SCALE: 1/32" = 1'-0"

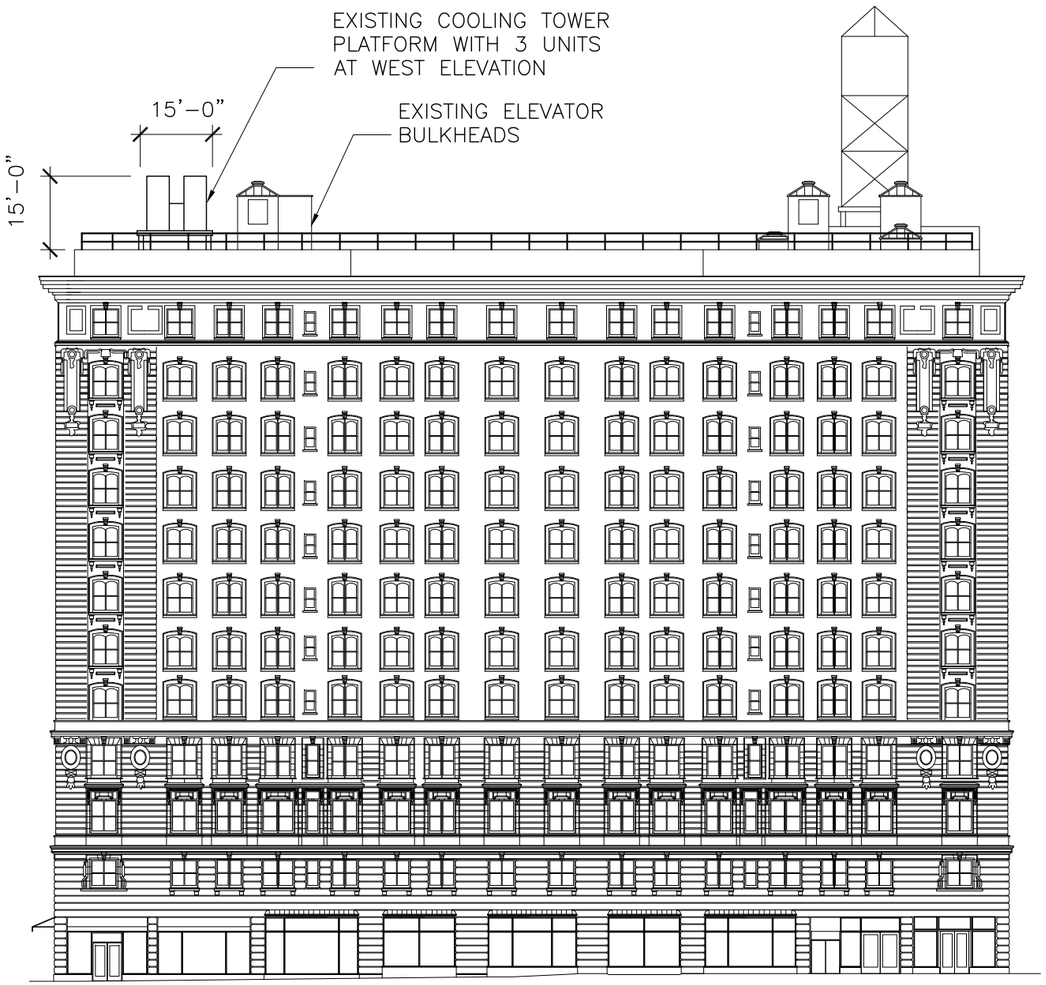
THE BELNORD 225 WEST 86TH STREET NEW YORK, NEW YORK	NEW YORK CITY LANDMARKS PRESERVATION COMMISSION SUBMISSION	UPPER ROOF MECHANICAL	MEPF Engineer Plus Group Consulting Engineers 231 WEST 29th STREET #706 New York, NY 10001 (212) 233-2700	EXISTING ELEVATION DRAWING TITLE	DRAWN BY: NA / SCALE: AS NOTED CHECKED BY: IM / PROJ. NO. NA 10 MARCH 2016 DATE	05 DRAWING NO.



SOUTH ELEVATION - 86TH STREET

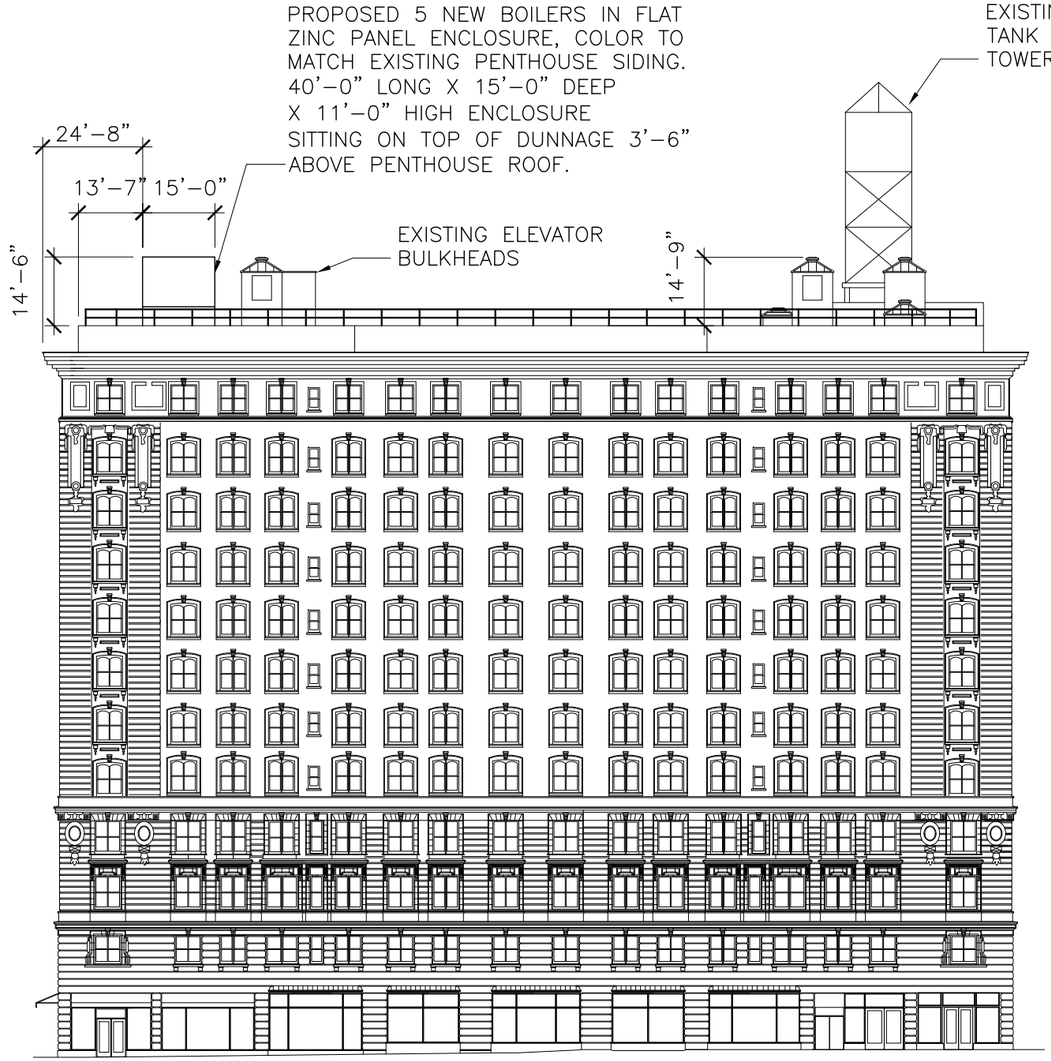
SCALE: 1/32" = 1'-0"

THE BELNORD 225 WEST 86TH STREET NEW YORK, NEW YORK	NEW YORK CITY LANDMARKS PRESERVATION COMMISSION SUBMISSION	UPPER ROOF MECHANICAL	MEPF Engineer Plus Group Consulting Engineers 231 WEST 29th STREET #706 New York, NY 10001 (212) 233–2700	PROPOSED ELEVATION DRAWING TITLE	DRAWN BY: NA / SCALE: AS NOTED CHECKED BY: IM / PROJ. NO. NA 10 MARCH 2016 DATE	06 DRAWING NO.



EXISTING EAST ELEVATION - AMSTERDAM

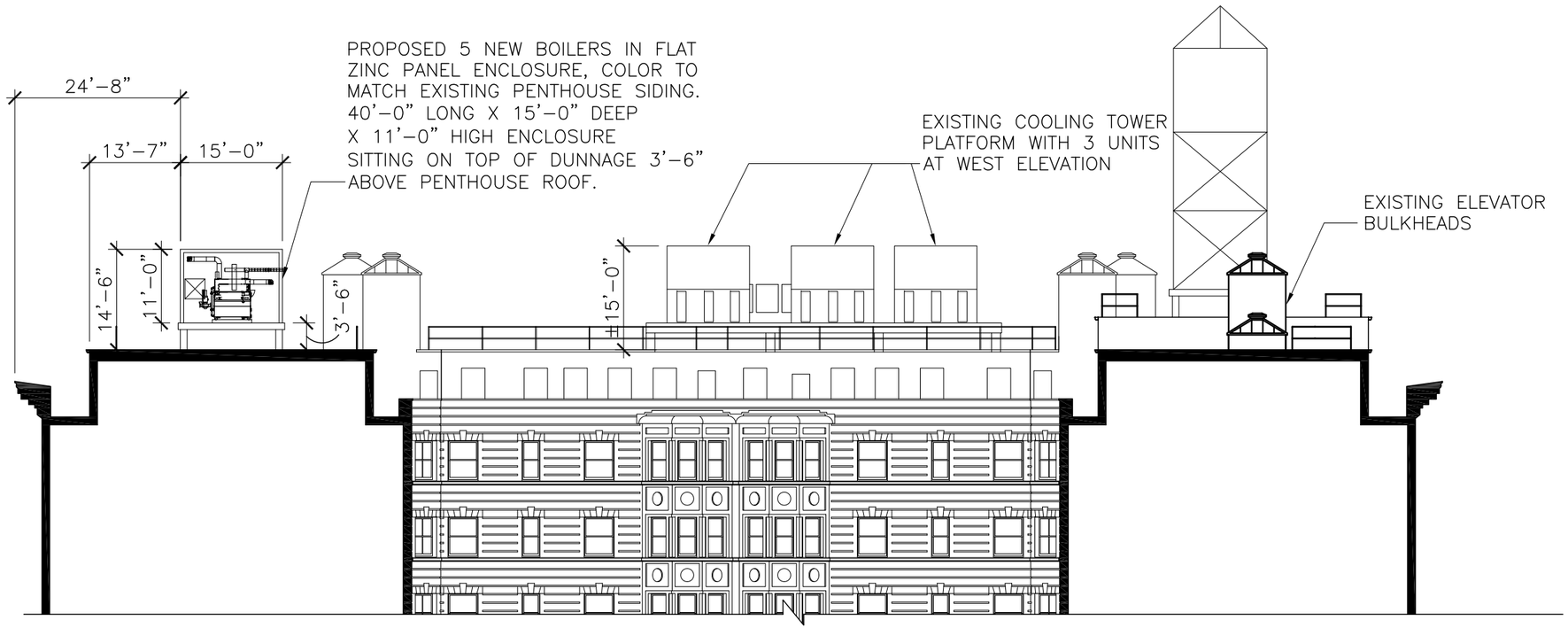
SCALE: 1/32" = 1'-0"



PROPOSED EAST ELEVATION - AMSTERDAM

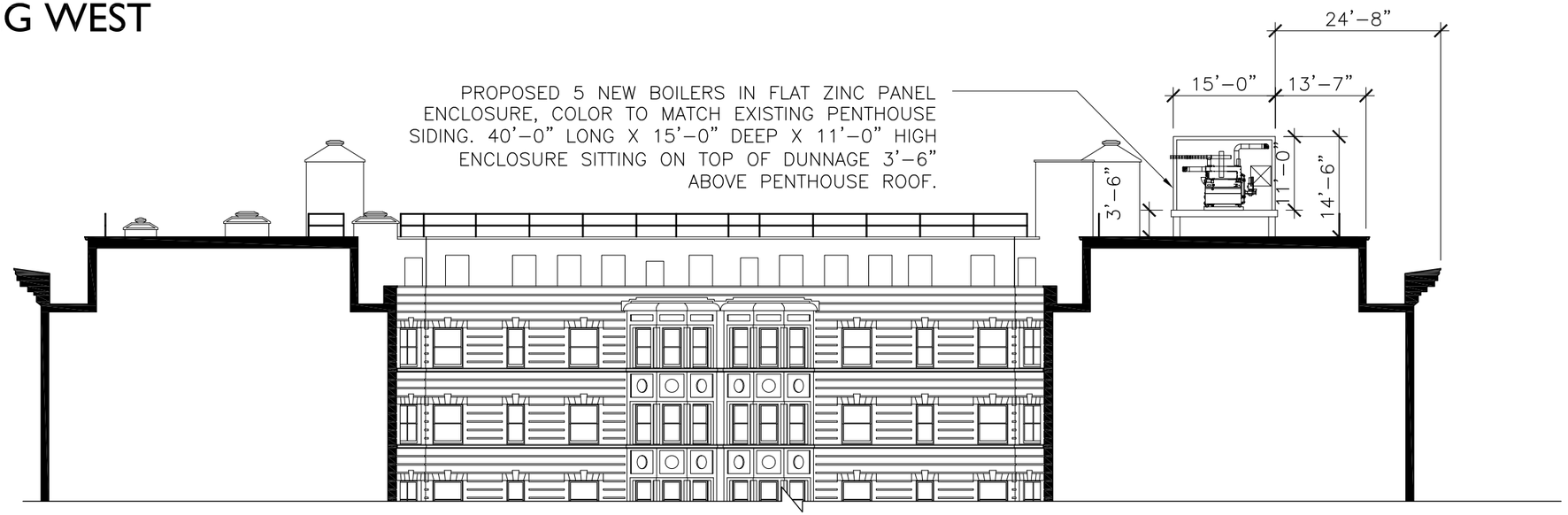
SCALE: 1/32" = 1'-0"

THE BELNORD 225 WEST 86TH STREET NEW YORK, NEW YORK	NEW YORK CITY LANDMARKS PRESERVATION COMMISSION SUBMISSION	UPPER ROOF MECHANICAL	MEPF Engineer Plus Group Consulting Engineers 231 WEST 29th STREET #706 New York, NY 10001 (212) 233–2700	EXISTING AND PROPOSED ELEVATIONS DRAWING TITLE	DRAWN BY: NA / SCALE: AS NOTED CHECKED BY: IM / PROJ. NO. NA 10 MARCH 2016 DATE	07 DRAWING NO.



1 SECTION LOOKING WEST

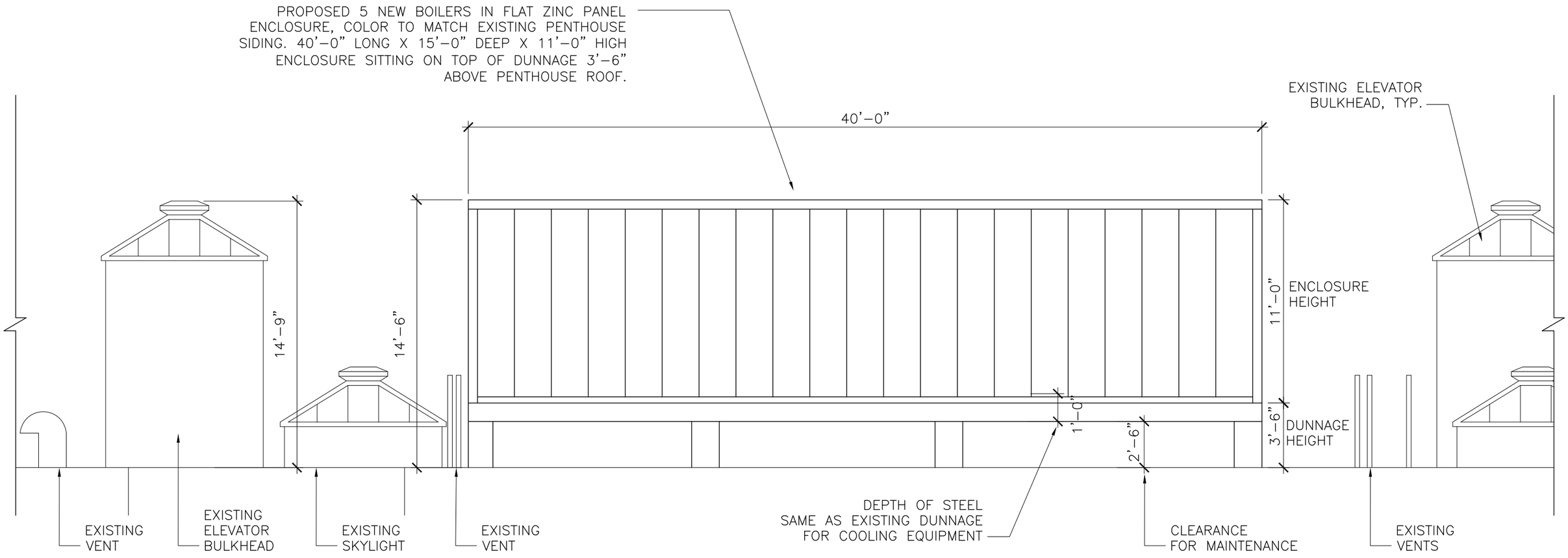
SCALE: N.T.S.



2 SECTION LOOKING EAST

SCALE: N.T.S.

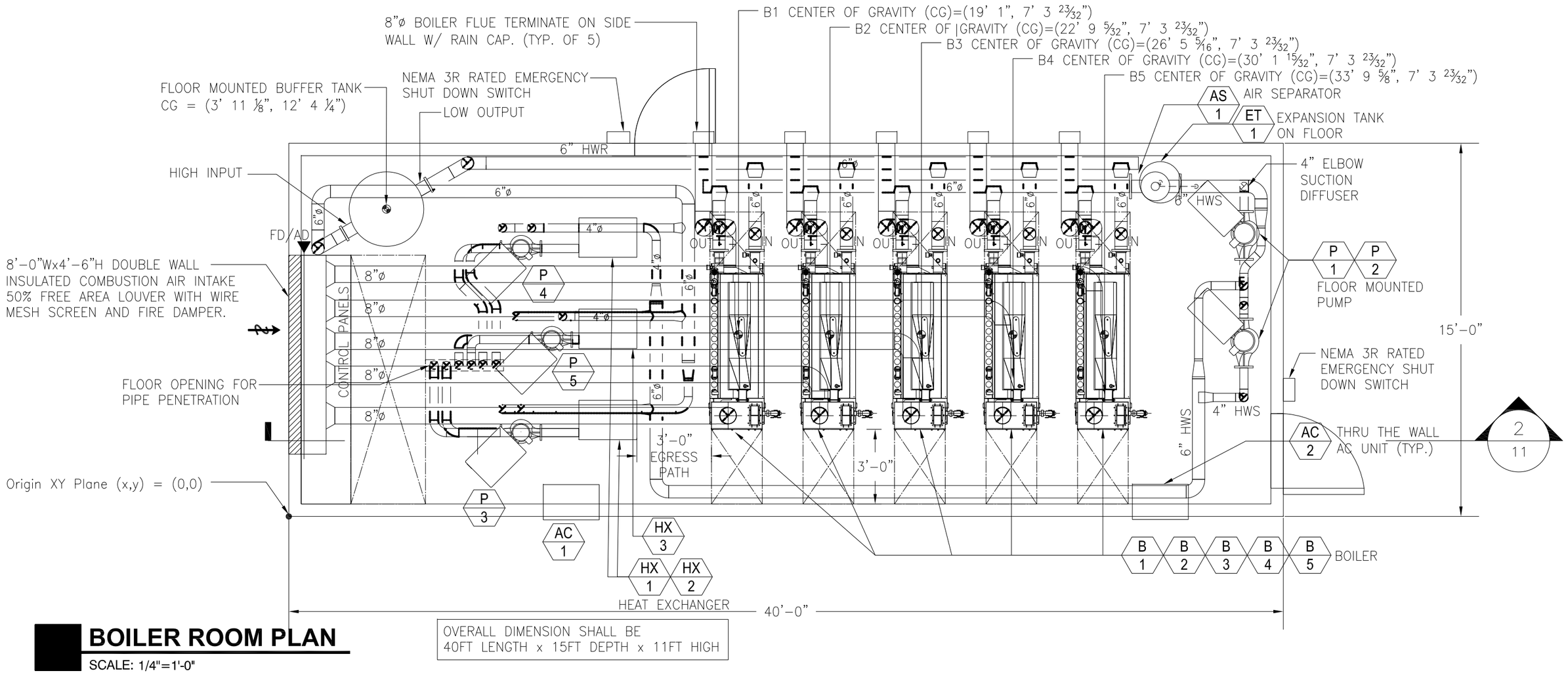
THE BELNORD 225 WEST 86TH STREET NEW YORK, NEW YORK	NEW YORK CITY LANDMARKS PRESERVATION COMMISSION SUBMISSION	UPPER ROOF MECHANICAL	MEPF Engineer Plus Group Consulting Engineers 231 WEST 29th STREET #706 New York, NY 10001 (212) 233–2700	PROPOSED SECTIONS DRAWING TITLE	DRAWN BY: NA / SCALE: AS NOTED CHECKED BY: IM / PROJ. NO. NA 10 MARCH 2016 DATE	08 DRAWING NO.



1 SOUTH ELEVATION

SCALE: 3/16" = 1'-0"

THE BELNORD 225 WEST 86TH STREET NEW YORK, NEW YORK	NEW YORK CITY LANDMARKS PRESERVATION COMMISSION SUBMISSION	UPPER ROOF MECHANICAL	MEPF Engineer Plus Group Consulting Engineers 231 WEST 29th STREET #706 New York, NY 10001 (212) 233–2700	PROPOSED ELEVATION DRAWING TITLE	DRAWN BY: NA SCALE: AS NOTED CHECKED BY: IM PROJ. NO. NA 10 MARCH 2016 DATE	09 DRAWING NO.

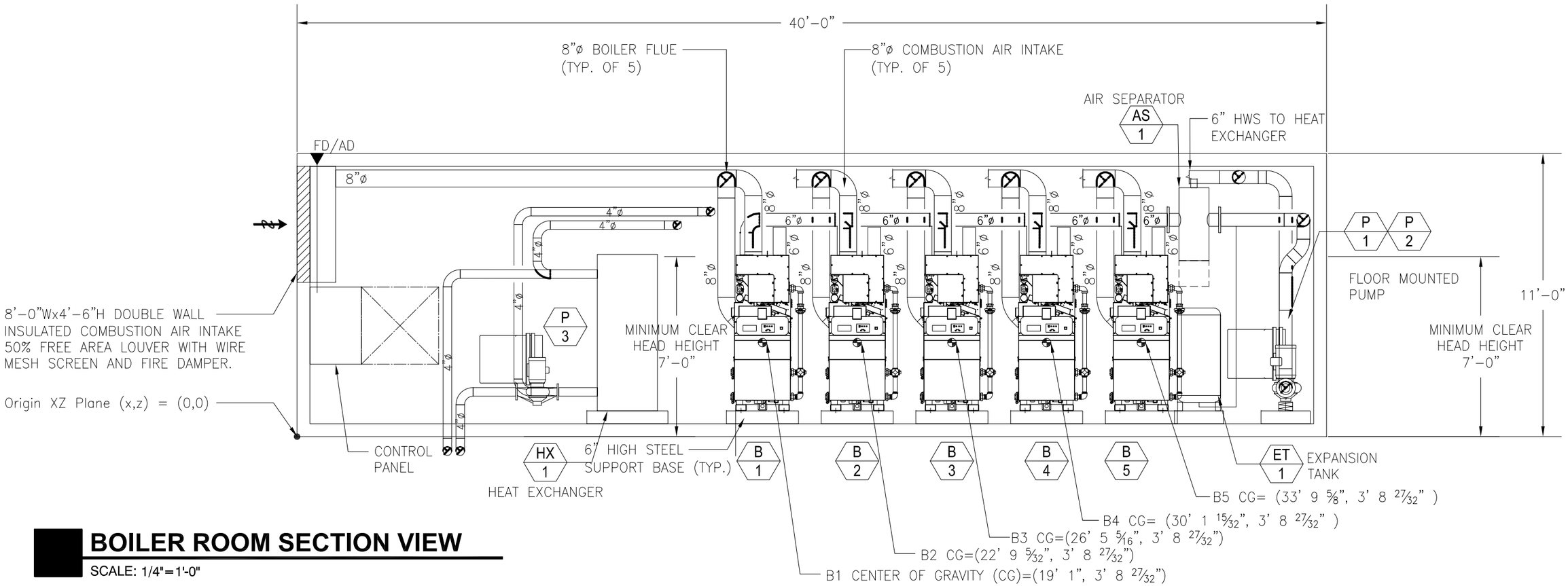


OVERALL DIMENSION SHALL BE
40FT LENGTH x 15FT DEPTH x 11FT HIGH

BOILER ROOM PLAN

SCALE: 1/4"=1'-0"

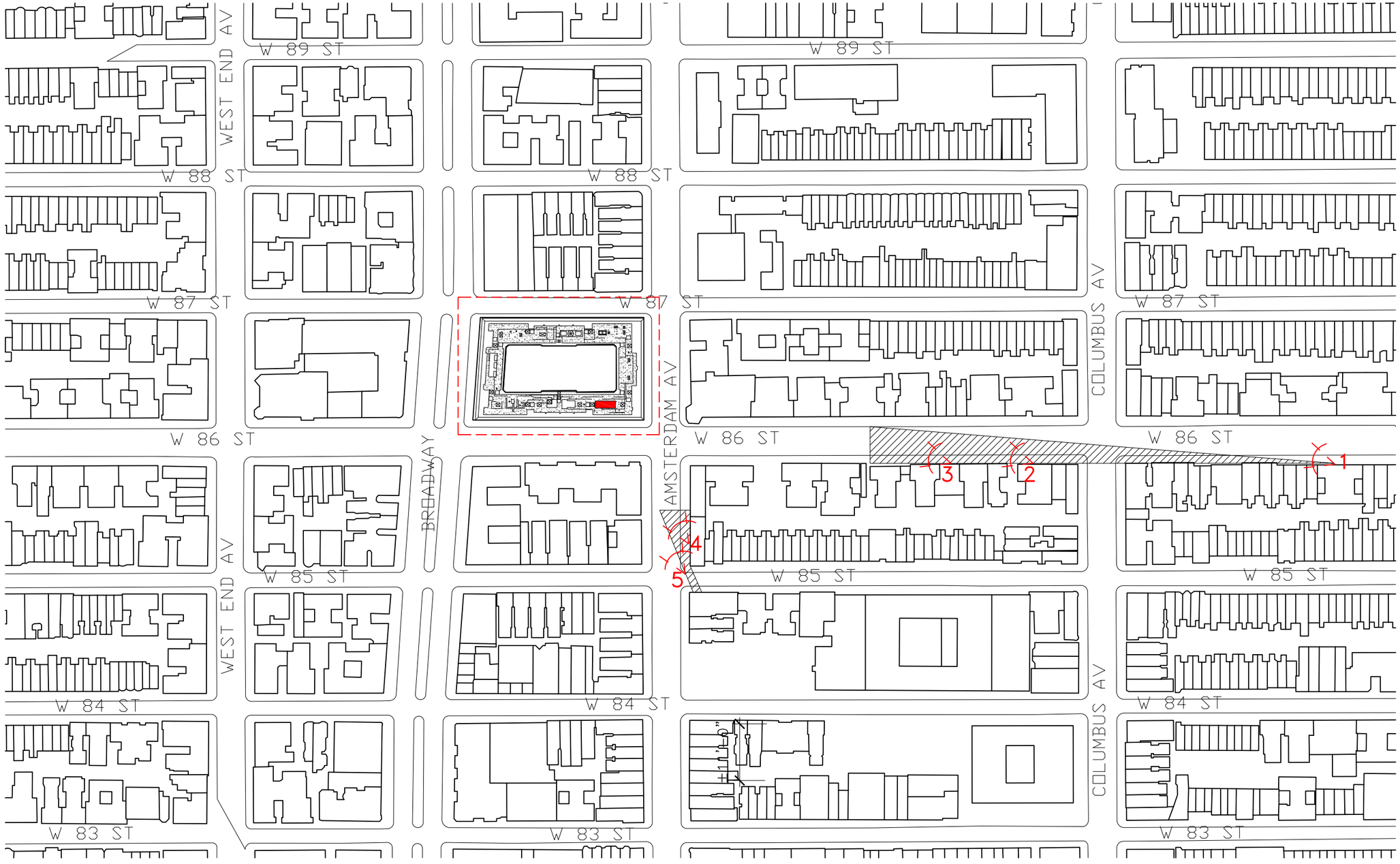
THE BELNORD 225 WEST 86TH STREET NEW YORK, NEW YORK	NEW YORK CITY LANDMARKS PRESERVATION COMMISSION SUBMISSION	UPPER ROOF MECHANICAL	MEPF Engineer Plus Group Consulting Engineers 231 WEST 29th STREET #706 New York, NY 10001 (212) 233-2700	BOILER EQUIPMENT DETAILS DRAWING TITLE	DRAWN BY: NA SCALE: AS NOTED CHECKED BY: IM PROJ. NO. NA 10 MARCH 2016 DATE	10 DRAWING NO.



BOILER ROOM SECTION VIEW

SCALE: 1/4"=1'-0"

THE BELNORD 225 WEST 86TH STREET NEW YORK, NEW YORK	NEW YORK CITY LANDMARKS PRESERVATION COMMISSION SUBMISSION	UPPER ROOF MECHANICAL	MEPF Engineer Plus Group Consulting Engineers 231 WEST 29th STREET #706 New York, NY 10001 (212) 233-2700	BOILER EQUIPMENT DETAILS DRAWING TITLE	DRAWN BY: NA SCALE: AS NOTED CHECKED BY: IM PROJ. NO. NA DATE: 10 MARCH 2016 DRAWING NO. M1



SITE PLAN

SCALE: NOT TO SCALE

NORTH

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VISIBILITY DIAGRAM
PHOTOGRAPH KEY PLAN
DRAWING TITLE

DRAWN BY:	SCALE:
NA	AS NOTED
CHECKED BY:	PROJ. NO.
IM	NA

DATE: 10 MARCH 2016

12
DRAWING NO.

EXISTING MOCK–UP

1 VIEW LOOKING WEST FROM 86TH ST
EXISTING VIEW @ ±1,450'-0"

PROPOSED
PHOTOMONTAGE

1A VIEW LOOKING WEST FROM 86TH ST
PROPOSED VIEW @ ±800'-0"

EXISTING MOCK–UP

2 VIEW LOOKING WEST FROM 86TH ST
EXISTING VIEW @ ±800'-0"

PROPOSED
PHOTOMONTAGE

2A VIEW LOOKING WEST FROM 86TH ST
PROPOSED VIEW @ ±800'-0"

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DRAWING TITLE
EAST FACADE
PHOTOGRAPHS

DRAWN BY:	SCALE:
NA	AS NOTED
CHECKED BY:	PROJ. NO.
IM	NA

DATE 10 MARCH 2016

DRAWING NO. 13

EXISTING MOCK–UP

3 VIEW LOOKING WEST FROM 86TH ST
EXISTING VIEW @ ±650'-0"

PROPOSED
PHOTOMONTAGE

3A VIEW LOOKING WEST FROM 86TH ST
PROPOSED VIEW @ ±650'-0"

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DRAWING TITLE
EAST FACADE
PHOTOGRAPHS

DRAWN BY:	SCALE:
NA	AS NOTED
CHECKED BY:	PROJ. NO.
IM	NA

DATE 10 MARCH 2016

DRAWING NO. 14

4 VIEW LOOKING NORTH FROM AMSTERDAM AVENUE
EXISTING VIEW @ ±260'-0"

4A VIEW LOOKING NORTH FROM AMSTERDAM AVENUE
PROPOSED VIEW @ ±260'-0"

5 VIEW LOOKING NORTH FROM AMSTERDAM AVENUE
EXISTING VIEW @ ±315'-0"

5A VIEW LOOKING NORTH FROM AMSTERDAM AVENUE
PROPOSED VIEW @ ±315'-0"

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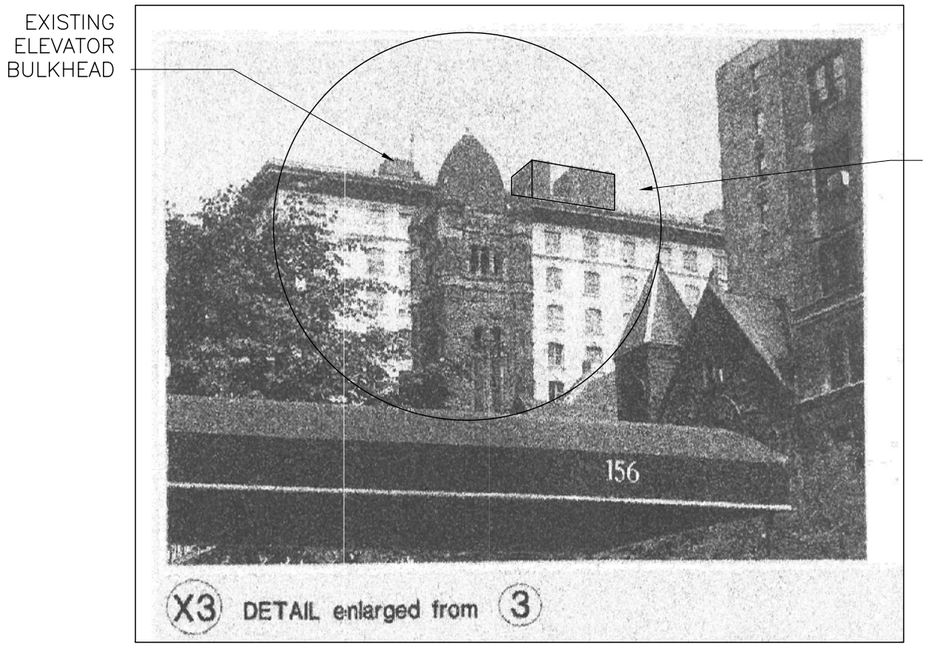
DRAWING TITLE
SOUTH FACADE
PHOTOGRAPHS

DRAWN BY:	SCALE:
NA	AS NOTED
CHECKED BY:	PROJ. NO.
IM	NA

DATE 10 MARCH 2016

DRAWING NO. 15

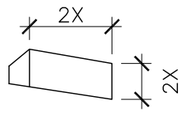


A 2004 VIEW OF PROPOSED MEP EQUIPMENT FROM 86TH STREET BETWEEN AMSTERDAM AND COLUMBUS

B 2016 COMPARABLE TO 2004 VIEW OF PROPOSED MEP EQUIPMENT FROM 86TH STREET BETWEEN AMSTERDAM AND COLUMBUS

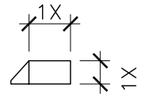
COMPARISON OF VISIBILITY BETWEEN PROPOSED 2004 EQUIPMENT AND 2016 EQUIPMENT FROM 86TH STREET LOOKING WEST

IMAGE A

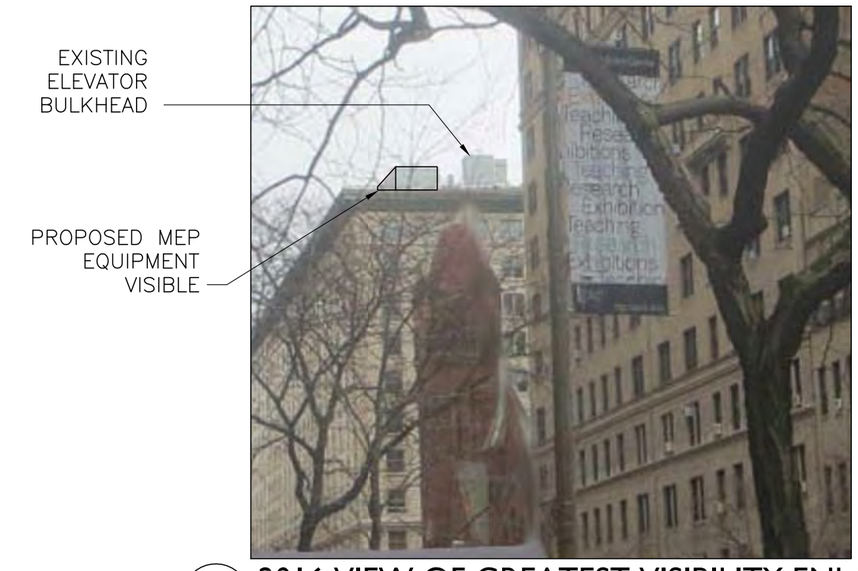


2004 PROPOSED MEP EQUIPMENT VISIBLE FROM CLOSE AND WITHIN CONTEXT OF CHURCH. 2016 PROPOSAL NOT VISIBLE FROM THIS SAME LOCATION (IMAGE B).

IMAGE C



2016 PROPOSED MEP EQUIPMENT VISIBLE FROM FAR AND HALF THE SIZE OF THE 2004 PROPOSAL AND NOT WITHIN CONTEXT OF CHURCH



C 2016 VIEW OF GREATEST VISIBILITY ENLARGED TO COMPARE WITH SAME SIZE AS 2004 VIEW (IMAGE A) BUT FROM A FARTHER DISTANCE

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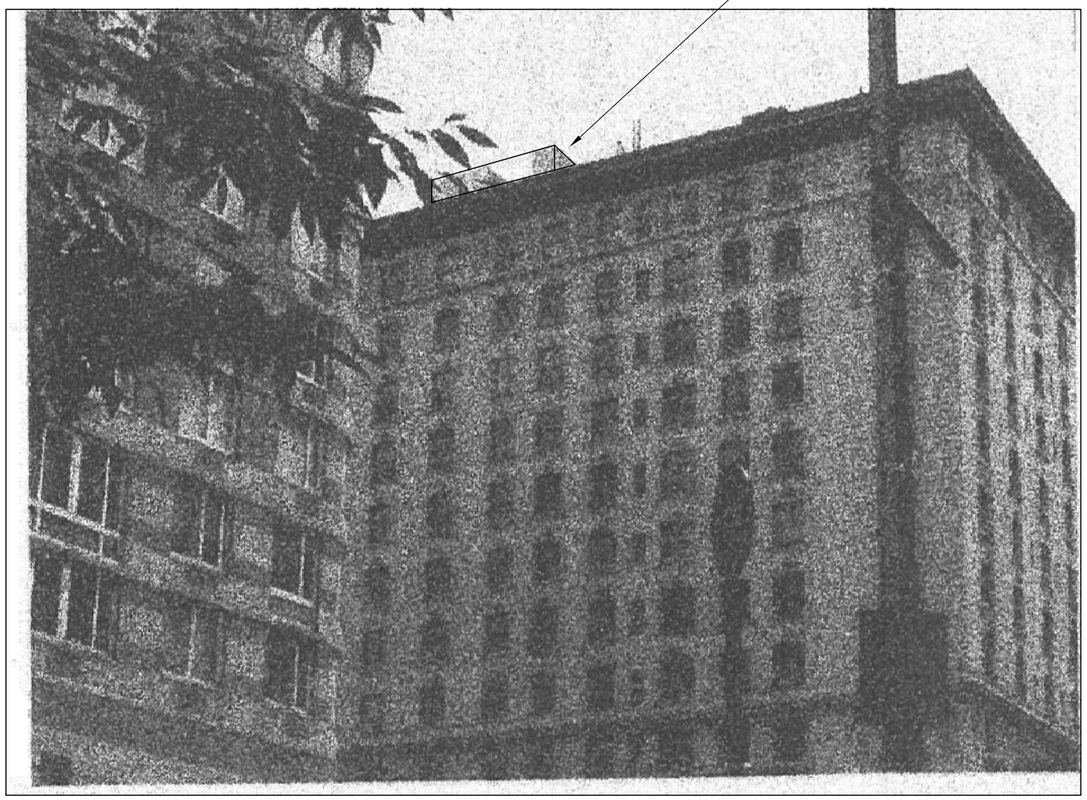
2004 / 2016 MEP EQUIPMENT VISIBILITY COMPARISON
DRAWING TITLE

DRAWN BY:	SCALE:
NA	AS NOTED
CHECKED BY:	PROJ. NO.
IM	NA

10 MARCH 2016
DATE

16
DRAWING NO.

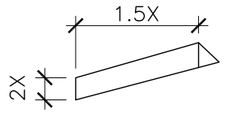


D 2004 VIEW OF PROPOSED MEP EQUIPMENT FROM 86TH STREET BETWEEN BROADWAY AND WEST END

E 2016 VIEW OF GREATEST VISIBILITY ENLARGED TO COMPARE WITH SAME SIZE AS 2004 VIEW (IMAGE A) BUT FROM AMSTERDAM BETWEEN 86TH STREET AND 85TH STREET

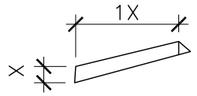
COMPARISON OF VISIBILITY BETWEEN PROPOSED 2004 EQUIPMENT AND 2016 EQUIPMENT FROM 86TH STREET LOOKING WEST

IMAGE D



2004 PROPOSED MEP EQUIPMENT VISIBLE FROM CLOSE ON BROADWAY

IMAGE E



2016 PROPOSED MEP EQUIPMENT VISIBLE FROM HALF BLOCK SOUTH AND SMALLER THAN THE 2004 PROPOSAL FROM HALF BLOCK WEST

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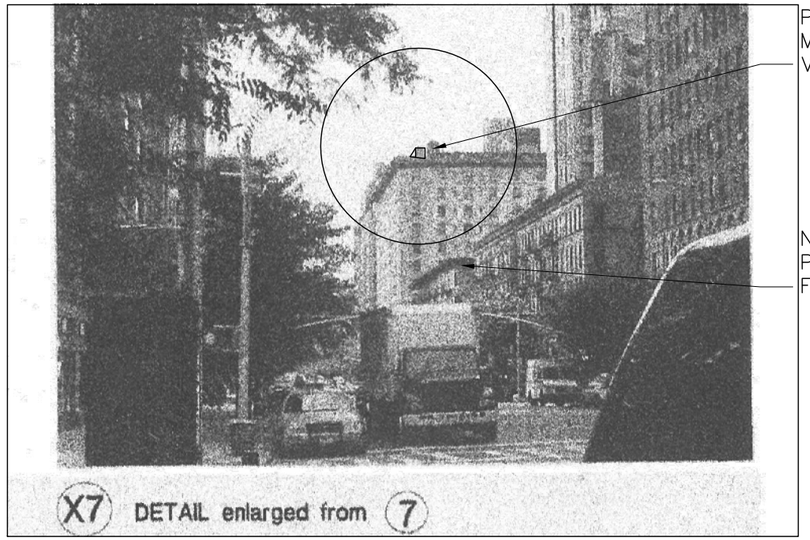
2004 / 2016 MEP EQUIPMENT VISIBILITY COMPARISON
DRAWING TITLE

DRAWN BY:	SCALE:
NA	AS NOTED
CHECKED BY:	PROJ. NO.
IM	NA

DATE 10 MARCH 2016

17
DRAWING NO.



A 2004 VIEW OF PROPOSED MEP EQUIPMENT
LOOKING SOUTH FROM AMSTERDAM AND 90TH ST

C 2016 VIEW OF PROPOSED MEP EQUIPMENT
LOOKING NORTH AMSTERDAM AND 85TH ST

B 2004 VIEW OF PROPOSED MEP EQUIPMENT
LOOKING SOUTH FROM BROADWAY AND 90TH ST

COMPARABLE VIEWS FROM EAST AND WEST THOROUGHFARES
AT ONE STREET AWAY OR GREATER

THE BELNORD
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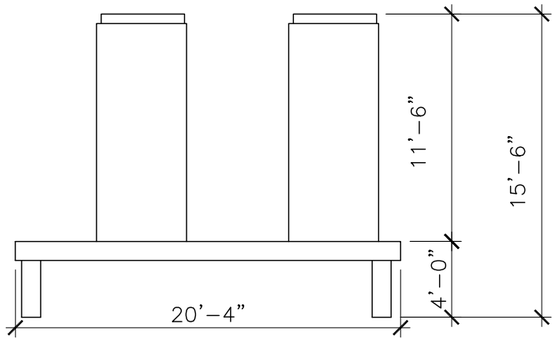
2004 / 2016 MEP EQUIPMENT
VISIBILITY COMPARISON
DRAWING TITLE

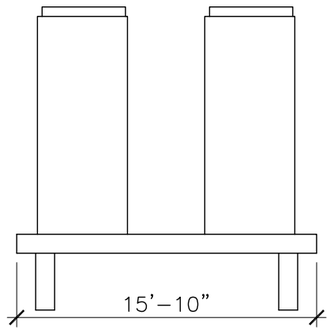
DRAWN BY:	SCALE:
NA	AS NOTED
CHECKED BY:	PROJ. NO.
IM	NA

DATE: 10 MARCH 2016

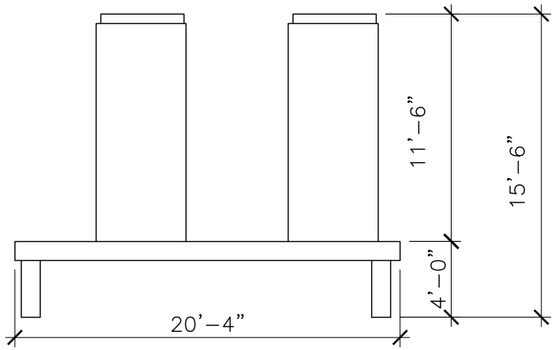
18
DRAWING NO.



EAST UNITS

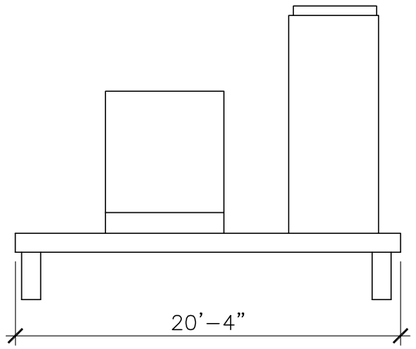


SOUTH UNITS(X2)

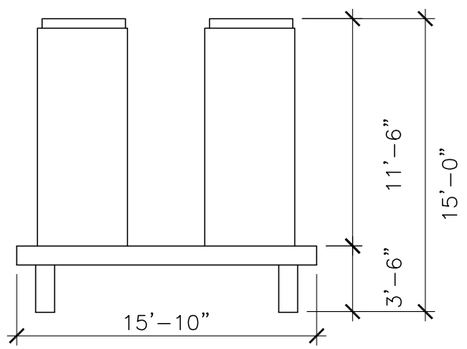


WEST UNITS

2004 PROPOSED MEP EQUIPMENT – NOT APPROVED

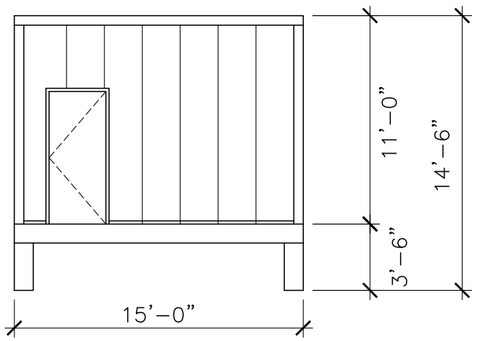


WEST UNITS



SOUTH UNITS(X2)

2004/2005 PROPOSED MEP EQUIPMENT – APPROVED



SOUTH UNIT

2016 PROPOSED MEP EQUIPMENT

(A) 2004 / 2005 / 2016 MEP EQUIPMENT COMPARISON

THE BELNORD 225 WEST 86TH STREET NEW YORK, NEW YORK	NEW YORK CITY LANDMARKS PRESERVATION COMMISSION SUBMISSION	UPPER ROOF MECHANICAL	MEPF Engineer Plus Group Consulting Engineers 231 WEST 29th STREET #706 New York, NY 10001 (212) 233–2700	2004 / 2016 MEP EQUIPMENT COMPARISON DRAWING TITLE	DRAWN BY: NA SCALE: AS NOTED CHECKED BY: IM PROJ. NO. NA DATE 10 MARCH 2016	19 DRAWING NO.

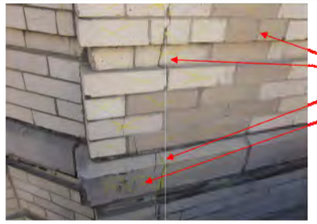


PHOTO #1: Location: Drop 3-7

- 10th Floor
- Brick replacement
- Terra Cotta crack repair
- Terra Cotta pinning

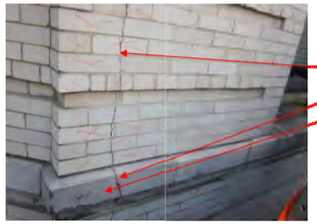


PHOTO #2: Location: Drop 3-7

- 9th Floor
- Brick replacement
- Terra Cotta crack repair
- Terra Cotta pinning

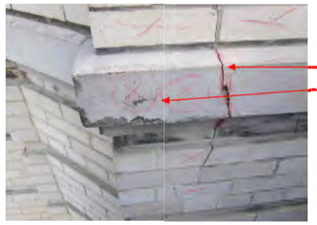


PHOTO #3: Location: Drop 3-7

- 9th Floor
- Terra Cotta crack repair
- Terra Cotta pinning

DURING THE RECENT RESTORATION OF THE MASONRY FACADE, IT WAS DISCOVERED THAT A CRACK ALONG THE SOUTHERN COURTYARD WALL EXTENDING OVER 3 FLOORS WAS CAUSED BY A LEAK IN AN OLD STEAM PIPE WHICH WAS LOCATED INSIDE THE WALL. THE PIPE HAD BEEN LEAKING INSIDE THE WALL AND CORRODED THE COLUMN AND DETERIORATED THE GROUT AND MORTAR HOLDING THE BRICK BACKUP WALL TOGETHER.

2013 - COURTYARD SOUTH FACADE RESTORATION

EXISTING BOILER SYSTEM

THE EXISTING STEAM HEATING SYSTEM CONSISTS OF TWO GAS FIRED BOILERS LOCATED IN SUB–CELLAR. THE STEAM DISTRIBUTION CONSISTS OF A TWO–PIPE SYSTEM AND FEATURES A VACUUM PUMP ON THE CONDENSATE RETURN. THE HEATING SYSTEM STEAM RISERS ARE ALL EMBEDDED WITHIN BUILDING ENVELOPE AROUND THE PERIMETER. THE STEAM AND CONDENSATE PIPING RISERS IN THE BUILDING ARE MOSTLY ORIGINAL AND OVER A CENTURY OLD; HAVE SCALING AND CORROSION AND ARE PAST IT'S USEFUL LIFE. AS IS TYPICAL OF MANY STEAM SYSTEMS THERE ARE ALSO PROBLEMS WITH DISTRIBUTION OF STEAM, KNOCKING AND HAMMERING AND CONTROL OF HEATING WITH LACK OF HEATING.

THE BELNORD HAS BEEN HAVING ISSUES WITH THE CENTURY OLD STEAM SYSTEM THAT IS ORIGINAL TO THE BUILDING. THE EXISTING PIPES, WHICH RUN INSIDE THE WALLS AND FLOORS OF THE BUILDING, HAVE STARTED TO DETERIORATE AND HAVE BEEN CAUSING LEAKS THROUGHOUT THE BUILDING. THE REPAIR OR REPLACEMENT OF THESE EXISTING PIPES WOULD BE INVASION AND DETRIMENTAL TO THE BUILDING AS IT WOULD CONSIST OF BREAKING AND REMOVING WALLS, FLOORS, AND STRUCTURE THROUGHOUT. IN THE PAST YEAR, FOUR LEAKS HAVE OCCURRED DUE TO DETERIORATED AND BROKEN STEAM PIPES. THRU INFRA RED INVESTIGATION, IT WAS FOUND THAT THE STEAM PIPES IN THE FLOOR WERE LEAKING.

PHOTO #4: Elevator #3

- Moisture test was performed at the floor and yielded positive results.

PHOTO #5: Elevator #3

- Overall view of buckled floor at kitchen.

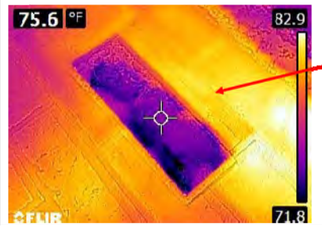


PHOTO #6: Elevator #3

- View of thermal camera image of leak location.
- Note change in temperature at leak location.

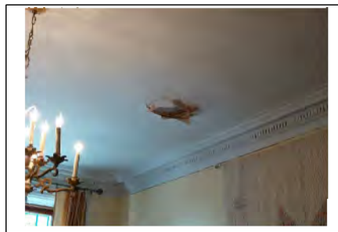


PHOTO #1: Apartment 1105

- Overall view of leak location at Apartment 1105 ceiling.

PHOTO #2: Apartment 1105

- View of thermal camera image of leak location.
- Note drop in temperature at leak location.

2015 - LEAK INVESTIGATIONS

THE BELNORD 225 WEST 86TH STREET NEW YORK, NEW YORK	NEW YORK CITY LANDMARKS PRESERVATION COMMISSION SUBMISSION	UPPER ROOF MECHANICAL	MEPF Engineer Plus Group Consulting Engineers 231 WEST 29th STREET #706 New York, NY 10001 (212) 233–2700	EXISTING BOILER INFRASTURE DRAWING TITLE	DRAWN BY: NA / SCALE: AS NOTED CHECKED BY: IM / PROJ. NO. NA 10 MARCH 2016 DATE	20 DRAWING NO.

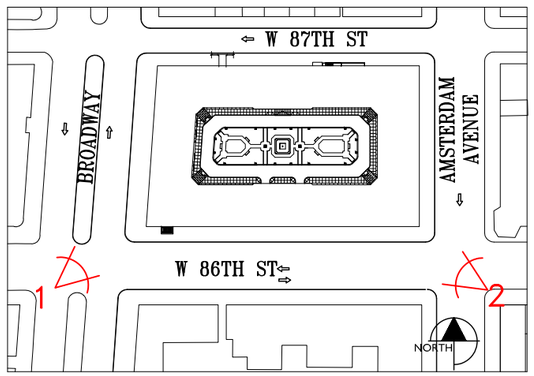
1 SOUTHWEST CORNER VIEW OF THE BELNORD

2 SOUTHEAST CORNER VIEW OF THE BELNORD

ROOF STUDY FOR BEST LOCATION FOR PLACEMENT OF NEW MECHANICAL EQUIPMENT

LIST OF DRAWINGS

RS1 SITE PLAN AND VIEWS
RS2 ROOF PLAN
RS3 SUMMARY OF OPTIONS AND SITE MAP



3 SITE PLAN

THE BELNORD
225 WEST 86TH STREET
NEW YORK, NEW YORK

NEW YORK CITY
LANDMARKS PRESERVATION
COMMISSION SUBMISSION

UPPER ROOF
MECHANICAL

MEPF Engineer
Plus Group Consulting Engineers
231 WEST 29th STREET
#706
New York, NY 10001
(212) 233-2700

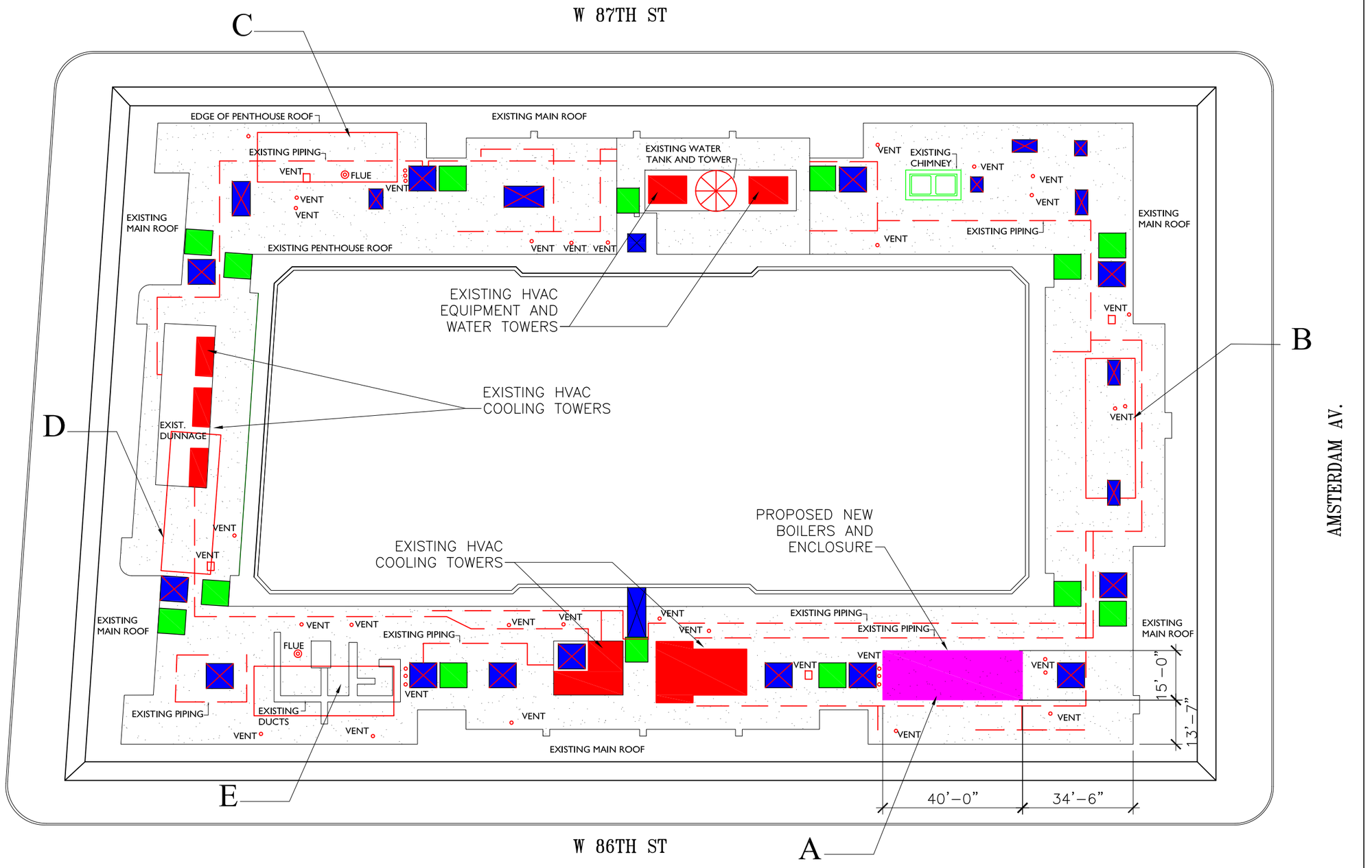
SITE PLAN AND VIEWS
DRAWING TITLE

SCALE: AS NOTED
PROJ. NO. NA
10 MARCH 2016
DATE

RS1
DRAWING NO.

LEGEND

- EXISTING MECHANICAL EQUIPMENT
- PROPOSED MEP BOILER LOCATION
- POSSIBLE MEP BOILER LOCATIONS
- PENTHOUSE ROOF
- EXISTING ELEVATOR BULKHEAD
- EXISTING SKYLIGHT
- EXISTING PIPING



ROOF PLAN

SCALE: 1/32"= 1'0"

NORTH

THE BELNORD 225 WEST 86TH STREET NEW YORK, NEW YORK	NEW YORK CITY LANDMARKS PRESERVATION COMMISSION SUBMISSION	UPPER ROOF MECHANICAL	MEPF Engineer Plus Group Consulting Engineers 231 WEST 29th STREET #706 New York, NY 10001 (212) 233-2700	UPPER ROOF PLAN DRAWING TITLE	SCALE: AS NOTED PROJ. NO. NA 10 MARCH 2016 DATE	RS2 DRAWING NO.

LEGEND

PROPOSED MEP BOILER LOCATIONS

THE BELNORD

SITE PLAN

SCALE: NOT TO SCALE

NORTH

THE EXISTING COOLING TOWERS ARE SITUATED AT LOCATIONS WHERE THEY ARE MINIMAL TO NONE VISIBLE FROM THE PUBLIC THOROUGHFARE. THEY ARE PLACED ON TOP OF STEEL DUNNAGE AND HAVE PIPES AND CABLES ALREADY LAID OUT ON THE ROOF. THESE TOWERS ARE LARGER THAN THE PROPOSED BOILERS. THESE TOWERS ARE ALMOST IMPOSSIBLE TO RELOCATE WITHOUT EXTENSIVE MODIFICATION TO THE BUILDING STRUCTURE, ROOF, AND EXISTING MECHANICAL INFRASTRUCTURE. EVEN IF THE TOWERS COULD BE MOVED, THEY ARE TALLER AND BIGGER THAN THE PROPOSED BOILERS AND WILL BE MORE VISIBLE FROM THE PUBLIC THOROUGHFARE. WITH ALL THE SKYLIGHTS, ELEVATOR BULKHEADS, EXISTING PIPING, AND CHIMNEY, THERE IS NO LOCATION LARGE ENOUGH TO ACCOMMODATE BOTH THE COOLING TOWER AND THE BOILERS IN A PLACE THAT THEY WILL BE NOT VISIBLE FROM THE STREET OR LESS VISIBLE THAN THE PROPOSED NEW BOILER.

A. SOUTHEAST SECTION OF 86TH STREET FACADE

B. CENTER SECTION OF AMSTERDAM FACADE

C. NORTHWEST SECTION OF 87TH STREET FACADE

D. CENTER SECTION OF BROADWAY FACADE

E. SOUTHWEST SECTION OF 86TH STREET FACADE

THE BELNORD 225 WEST 86TH STREET NEW YORK, NEW YORK	NEW YORK CITY LANDMARKS PRESERVATION COMMISSION SUBMISSION	UPPER ROOF MECHANICAL	MEPF Engineer Plus Group Consulting Engineers 231 WEST 29th STREET #706 New York, NY 10001 (212) 233-2700	SUMMARY OF OPTIONS AND LOCATIONS ON SITE PLAN DRAWING TITLE	SCALE: AS NOTED PROJ. NO. NA DATE 10 MARCH 2016	RS3 DRAWING NO.

PIPING SYMBOLS

SYMBOL	DESCRIPTION
HWS/R / HWS/R	HOT WATER SUPPLY/RETURN
CW / CW	DOMESTIC COLD WATER MAKE-UP
D / D	DRAIN LINE
V / V	VENT LINE
	ARROW INDICATES DIRECTION OF LOW
	PITCH PIPE DOWN IN DIRECTION OF ARROW
M	MANUAL AIR VENT
A	AUTOMATIC AIR VENT
	THERMOMETER
	PIPE SENSOR WELL
	UNION
	'Y' TYPE STRAINER WITH BLOW-OFF VALVE
	ELBOW TURNED UP
	ELBOW TURNED DOWN
	GATE VALVE
	GLOBE VALVE
	CHECK VALVE
	AUTOMATIC THREE WAY VALVE
	AUTOMATIC TWO WAY VALVE
	RELIEF VALVE
	RELIEF OR SAFETY VALVE
	BALL VALVE
AH / 3	EQUIPMENT DESIGNATION — EQUIPMENT TYPE, EQUIPMENT TAG NUMBER

MISCELLANEOUS SYMBOLS

SYMBOL	DESCRIPTION
A / M-2	SECTION — SECTION #, DRAWING LOCATION
1	REVISION NUMBER

HVAC ABBREVIATIONS

ABBREVIATIONS	DESCRIPTION
A	AMPERES
AC	AIR CONDITIONING
CFM	CUBIC FEET PER MINUTE
DHW	DOMESTIC HOT WATER
DWG	DRAWING
FT	FEET
GPM	GALLONS PER MINUTE
H	HEIGHT
IN	INCH OR INCHES
KW	KILOWATT
L	LENGTH
LBS	POUNDS
NTS	NOT TO SCALE
SS	STAINLESS STEEL
TEMP	TEMPERATURE
TYP	TYPICAL
V	VOLTS
W	WIDTH

BUILDING DEPARTMENT NOTES - HVAC

NYC BUILDING DEPT. NOTES

GENERAL NOTES

1. ALL WORK AND COMPONENTS SHOWN ON THESE PLANS COMPLY WITH THE NEW YORK BUILDING LAWS (LL 33/2008) AS AMENDED TO THIS DATE.
2. NEW YORK STATE ENERGY CONSERVATION RULES AND REGULATIONS HAVE BEEN FOLLOWED.

SPECIAL INSPECTIONS - MECHANICAL

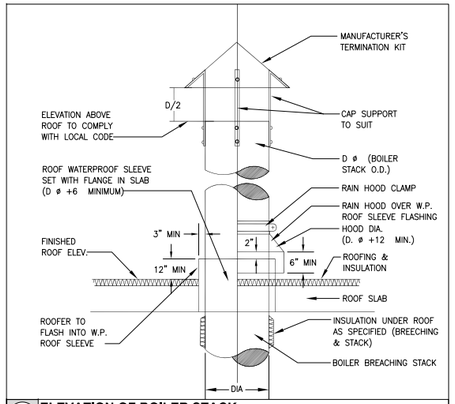
THE FOLLOWING SPECIAL INSPECTIONS ARE REQUIRED AS DESCRIBED IN THE NEW YORK CITY 2014 BUILDING CODE:

SPECIAL INSPECTIONS:

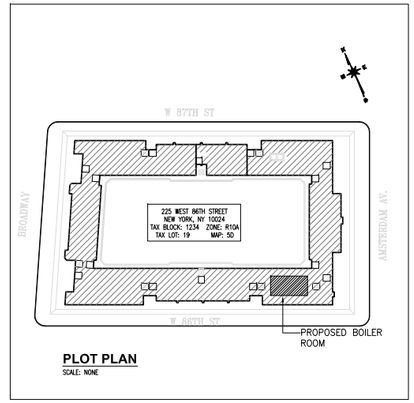
HEATING SYSTEMS	BC 1704.25
CHIMNEYS	BC 1704.26
FIRESTOPS	BC 1704.27

ENERGY COMPLIANCE STATEMENT

TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THIS APPLICATION IS IN COMPLIANCE WITH ASHRAE 2010 90.1.



1 **ELEVATION OF BOILER STACK**



PLOT PLAN
SCALE: NONE

BOILER ROOM NOTES:

1. THE DOOR SHALL BE 1½ HR FIRE RATED SELF-CLOSING DOOR. DOOR SHALL SWING OUTWARDS FROM BOILER ROOM.
2. BOILER ROOM FLOOR IS CONCRETE SLAB ON GRADE NON-COMBUSTIBLE CONSTRUCTION FOR COMPLIANCE WITH MC1004.5.
3. BOILERS ARE HOT WATER PACKAGE HEATING BOILERS WITHOUT MANHOLE ON TOP. INPUT OF 600,000BTU/H EACH. THE CLEARANCE ABOVE BOILER SHALL BE 2FT. MIN. FOR COMPLIANCE WITH MC. 1004.3.1.
4. COMBUSTION AIR SHALL BE PROVIDED FOR DIRECT COMBUSTION AIR CONNECTION TO OUTDOOR IN ACCORDANCE WITH MC707 AND FGC 304.11.
5. THE BOILER IS GAS FIRED DIRECT VENT CONDENSING TYPE. THE VENTING SHALL BE PROVIDED IN ACCORDANCE WITH FGC SEC.503.2.2. AND FGC SEC. 503.8.
6. PROVIDE VIBRATION ISOLATION FOR BOILERS, MC.1004.4. PROVIDE SIESMIC RESTRAINT.
7. PROVIDE PRIMARY AND SECONDARY LOW WATER CUT-OFF FOR EACH BOILER WIRED TO STOP COMBUSTION OPERATION WHEN WATER LEVEL DROPS BELOW SAFE LEVEL ESTABLISHED BY MFR.

EQUIPMENT EFFICIENCIES & UL LISTING

EQUIPMENT TAG	MANUFACTURER	MODEL	EFFICIENCY		UL LISTING #
			MIN CODE REQ'D	ACTUAL DOE SEASONAL	
B-1,2,3,4 & 5	HYDROTHERM	KN-30	80% Et	92.7% Et	–

AIR SEPARATOR SCHEDULE

ITEM	MANUFACTURER	MODEL NO.	SYSTEM SERVING	PIPE SIZE	MAX. INLET PRESSURE	MAX. OPERATING PRESSURE	OPERATING FLOW	NOTES
				INCH	PSIG	PSIG	GPM	
AS-1	TACO	4906AD-125	HTG. SYSTEM	6	75	125	475	FLANGED CONNECTIONS

ENERGY ANALYSIS

ASHRAE TABLE 6.8.1F

ITEM DESCRIPTION	PROPOSED DESIGN VALUE	CODE PRESCRIPTIVE VALUE AND CITATION
NEW GAS FIRED BOILER (6,000,000 BTU/H) > 2,500,000 BTU/H	92.7% Ec	82% Ec
HOT WATER PIPING INSULATION	1.5 INCH FOR PIPES =< 1½" FOR PIPES 2.0 INCH FOR PIPES >1½" FOR PIPE	MINIMUM PIPE INSULATION ASHRAE TABLE 6.8.3

HEAT EXCHANGER SCHEDULE

ITEM	MANUFACTURER	MODEL	TYPE	LOAD	HOT SIDE				COLD SIDE				HEAT	NUMBER OF	MATERIAL	DIMENSIONS	OPERATING WEIGHT	CERTIFICATION
				BTU/H	EWT	LWT	GPM	PD (PSI)	EWT	LWT	GPM	PD (PSI)	TRANSFER AREA	PLATES		LXWXH	(LBS)	
HX-1	TACO	PF50-49-4-NH	PLATE FRAME	4,180,000	150	90	141.4	4.2	60	120	150.0	6.2	253.0	60	ALLOY 304 / 0.50 MM	28 X 19 X 73	1,500	ASME, SECTION VIII, DIV. 1
HX-2	TACO	PF50-49-4-NH	PLATE FRAME	4,180,000	150	90	141.4	4.2	60	120	150.0	6.2	253.0	60	ALLOY 304 / 0.50 MM	28 X 19 X 73	1,500	ASME, SECTION VIII, DIV. 1
HX-3	TACO	PF50-31-4-NH	PLATE FRAME	2,920,000	150	108.1	142.0	3.4	60	120	105.0	3.3	156.08	60	ALLOY 304 / 0.50 MM	28 X 19 X 73	1,320	ASME, SECTION VIII, DIV. 1

EXPANSION TANK SCHEDULE

TAG	MANUFACTURER	MODEL NO.	LOCATION	SYSTEM SERVED	MIN ACCEPTANCE VOLUME GALLONS	EXPANSION VOLUME WATER GALLONS	HEIGHT	DIA.	MINIMUM CHARGE PRESSURE PSIG	MAXIMUM UNIT PRESSURE PSIG	SYSTEM OPERATING TEMP. (°F)	OPERATING WEIGHT	CERTIFICATION
							IN	IN				LBS	
ET-1	TACO	CBX-170-125	BOILER RM	HTG. SYSTEM	24	45	44	20	12	30	150	450	–

HOT WATER BOILER SCHEDULE

ITEM	MANUFACTURER	MODEL	LOCATION	INPUT MBH	OUTPUT MBH	WATER TEMP		WATER FLOW RATE	PRESSURE DROP	MAXIMUM WORKING PRESSURE	OPERATING PRESSURE	RELIEF VALVE SETTING	BURNER (GAS DATA)			NOT TO EXCEED DIMENSIONS				ELECTRICAL DATA				OPERTING WT	UL LISTING
						ENT	LVG						NAT GAS	GAS PRESS (IN WG)		WIDTH	DEPTH	HEIGHT	FLUE						
						°F	°F	(GPM)	FT (H20)	(PSIG)	(PSIG)	(PSIG)	(CFH)	MIN	MAX	(IN)	(IN)	(IN)	(IN DIA)	VOLTS	PH	HZ	AMPS	LBS	
B-1,2,3,4,5	HYDROOTHERM	KN-30	BOILER ROOM	3,000	2,781	90	150	95	10	100 @ 250'F	60	65	3,000	3	14	32	81	72	8"	208	3	60	6.3	3,700	–

NOTES:
1. PROVIDE COMMON VENTING MANIFOLD AND CONDENSATE NEUTRALIZER/DRAIN.
2. PROVIDE BOILER CONTROLS TO INCLUDE BOILER STAGING, SYSTEM PUMP CONTROL. SEE SPECIFICATIONS.

PUMP SCHEDULE

TAG	MANUFACTURER	TYPE	MODEL #	SERVICE	LOCATION	FLOW RATE	EFFICIENT	WORKING	HEAD	MOTOR DATA			WEIGHT	ISOLATION		NOTES
						GPM	(%)	FLUID	(FT H20)	RPM	HP	VOLT/PH/HZ	(LBS)	TYPE	DEFL. (IN)	
P-1,2	TACO	SELF-SENSING VARIABLE SPEED	SKV-4009	HTG. SYSTEM	BOILER RM	427.5	68	WATER	60	1,760	10	208/3/60	520	SPRING	2	DUPLEX W/ VFD (RUN & STANDBY)
P-3,4	TACO	SELF-SENSING VARIABLE SPEED	SKV-3007	HTG. SYSTEM	BOILER RM	148	69	40% GLYCOL	35	1,760	3.0	208/3/60	250	SPRING	2	–
P-5	TACO	SELF-SENSING VARIABLE SPEED	SKV-3007	HTG. SYSTEM	BOILER RM	105	64	40% GLYCOL	35	1,760	2.0	208/3/60	250	SPRING	2	–

THRU-THE-WALL AC UNIT SCHEDULE

TAG	MANUFACTURER & MODEL	MODEL #.	SERVICE	CFM	TOTAL COOLING (BTUH)	TOTAL HEATING ELECTRIC (BTUH)	HEATING (WATTS)	ELECTRICAL DATA		EER	UNIT DIMENSIONS HxWxD	IN-WALL INSTALLATION DIMENSIONS HxWxD
								Volt/Ph/Hz	AMPS			
AC-1, 2	FRIEDRICH UNI-FIT	UE12D33C	BOILER ROOM	290	11,200	11,200	3,500	208/1/60	15.3	9.8	16"x26"x17"	18"x28"x20"

NOTES:
PROVIDE WALL SLEEVE & EXTERIOR LOUVER ASSEMBLY.

NEW YORK CITY BUILDING DEPARTMENT NOTE
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THE BELNORD
225 W 86TH ST.
New York, New York 10024

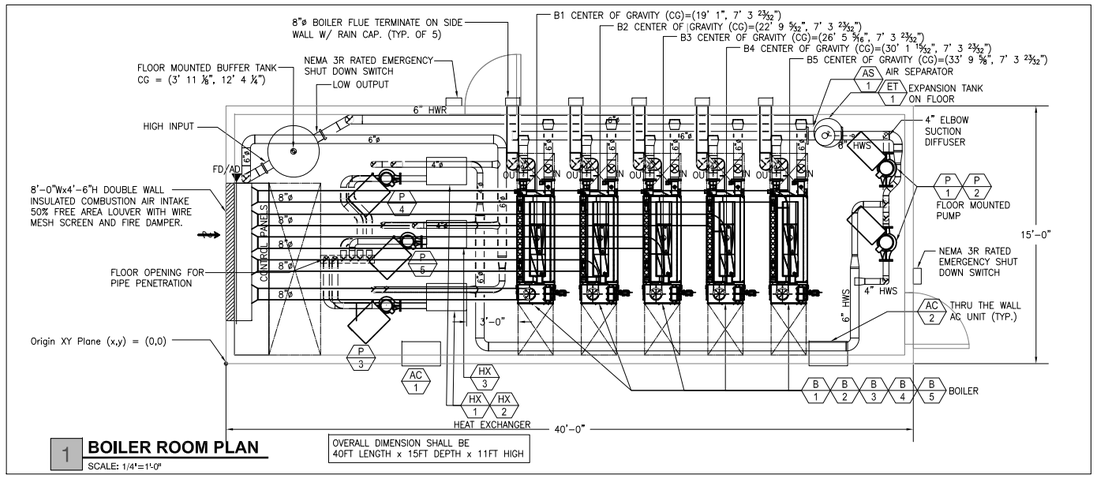
Plus Group
Consulting Engineers
MEPF Engineers
231 West 29th Street, #706
New York, NY 10001
212.233.2700 tel

Date: Issue:
07.29.15 Concept Scheme
11.10.15 Pricing Set
11.16.15 Bid Issue

BOILER SYMBOLS, ABBREVIATION, SCHEDULES, AND DETAILS

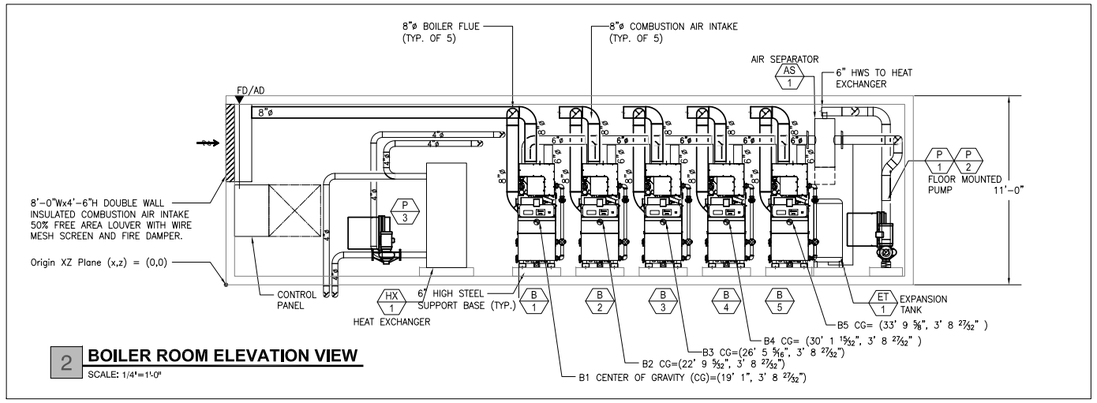
BL-001.00

01 OF 06



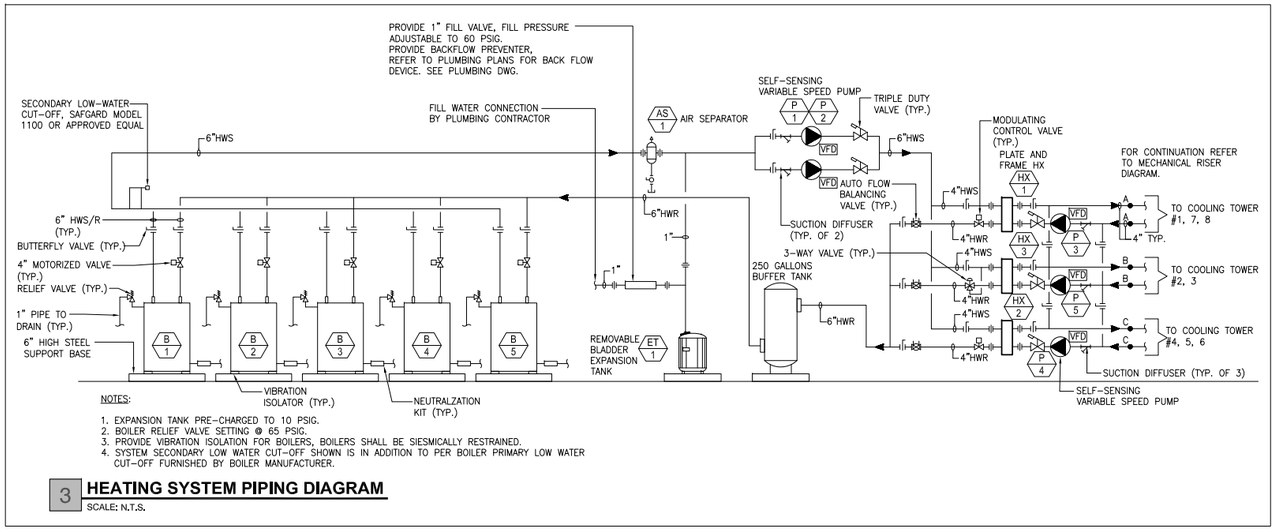
1 BOILER ROOM PLAN

SCALE: 1/4"=1'-0"



2 BOILER ROOM ELEVATION VIEW

SCALE: 1/4"=1'-0"



3 HEATING SYSTEM PIPING DIAGRAM

SCALE: N.T.S.

NEW YORK CITY BUILDING DEPARTMENT NOTE

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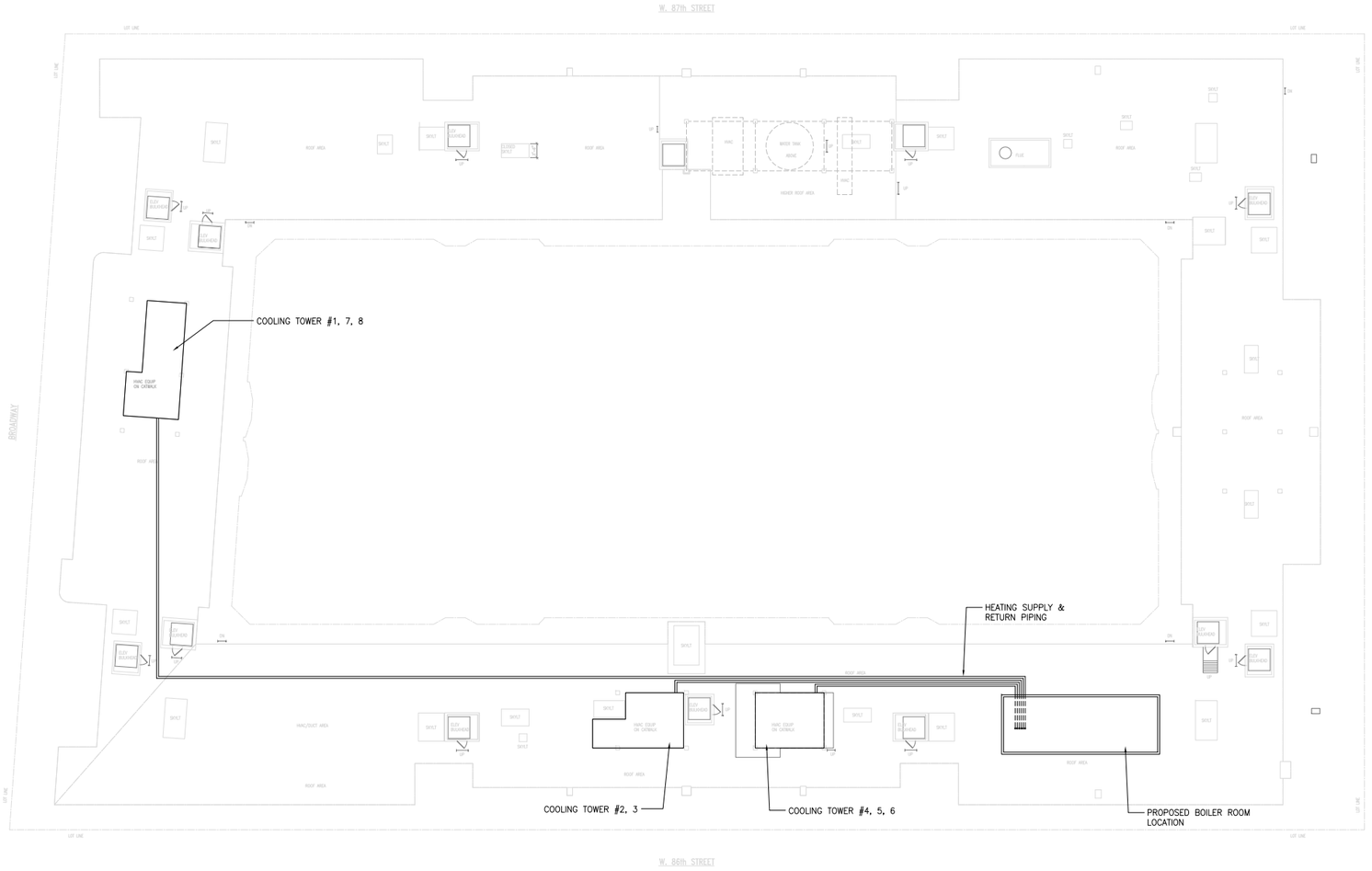
New York, New York 10024

Plus Group
Consulting Engineers
MEPF Engineer
231 West 29th Street, #706
New York, NY 10001
212.233.2700 tel

Date:	Issue:
07.29.15	Concept Scheme
11.10.15	Pricing Set
11.16.15	Bld Issue

BOILER ROOM PLAN, BOILER ELEVATION VIEW & HEATING SYSTEM PIPING DIAGRAM

BL-101.00



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THE BELNORD

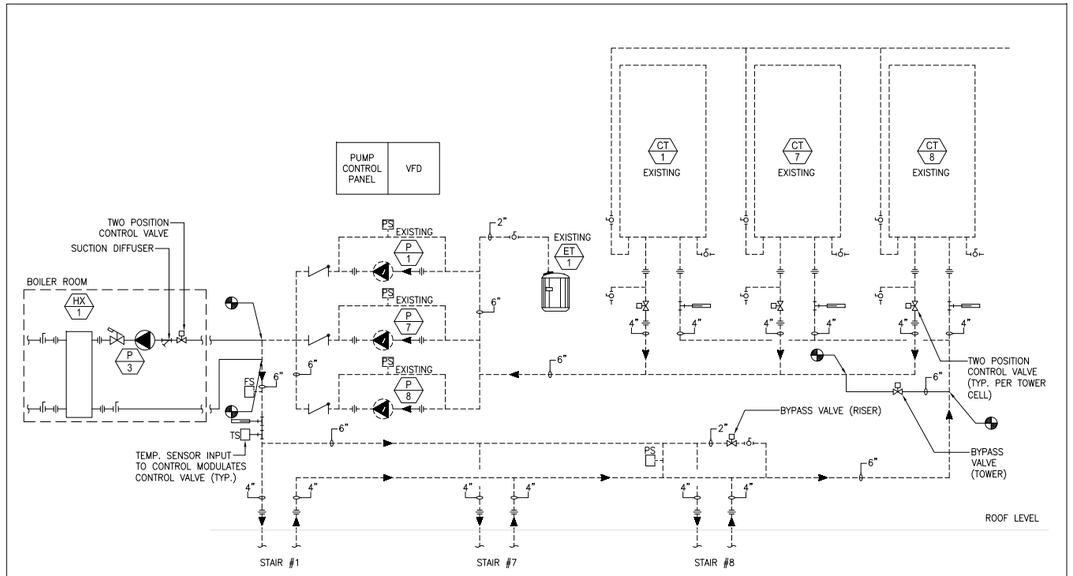
225 W 86TH ST.
New York, New York 10024

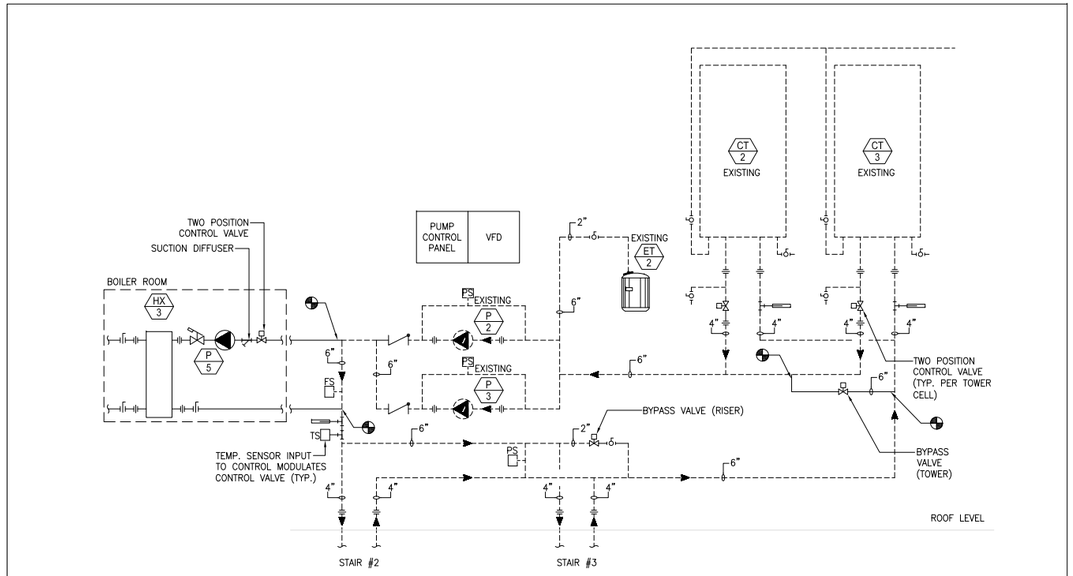
Plus Group
Consulting Engineers
MEPF Engineer
231 West 29th Street, #706
New York, NY 10001
212.233.2700 tel

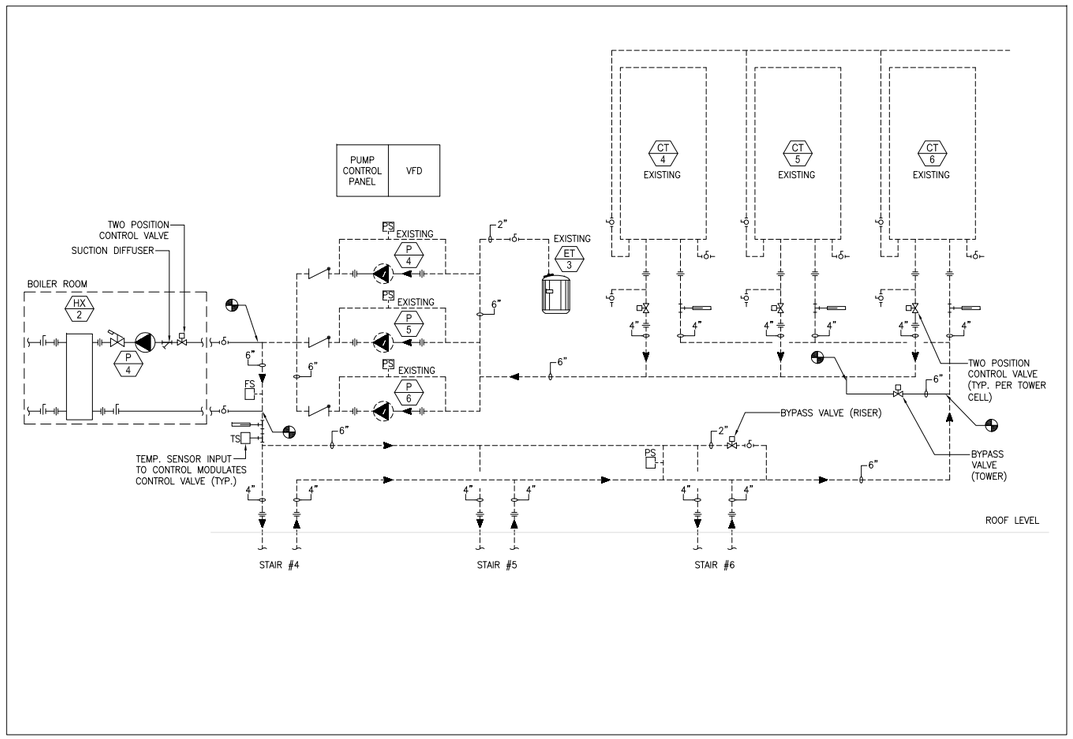
Date:	Issue:
07.29.15	Concept Scheme
11.10.15	Pricing Set
11.16.15	Bld Issue

ROOF MECHANICAL PLAN

BL-102.00







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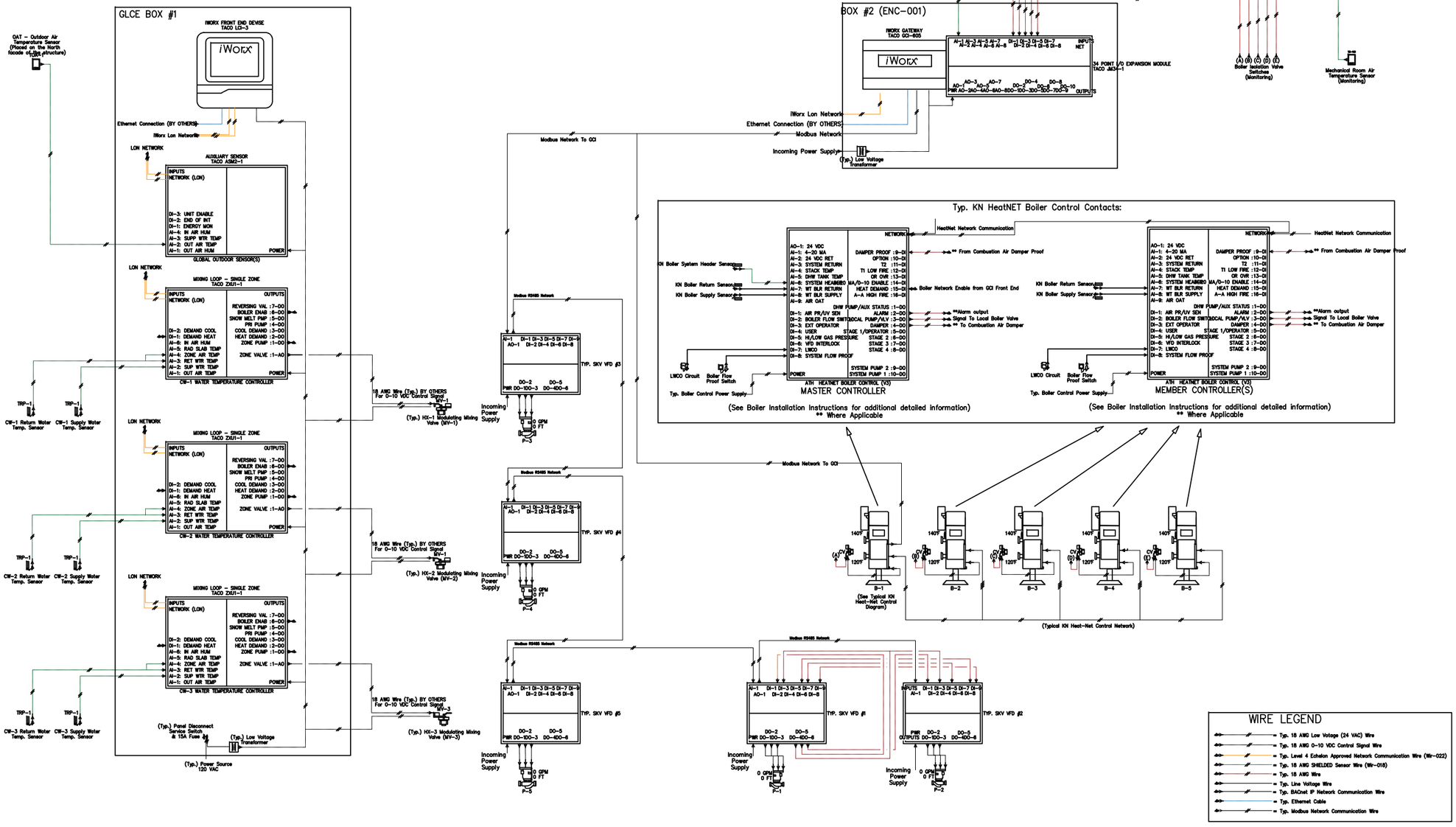
THE BELNORD
225 W 86TH ST.
New York, New York 10024

Plus Group
Consulting Engineers
MEPF Engineer
231 West 29th Street, #706
New York, NY 10001
212.233.2700 tel

Date:	Issue:
07.29.15	Concept Scheme
11.10.15	Pricing Set
11.16.15	Bid Issue

HEATING SYSTEM PIPING DIAGRAM

BL-201.00



1 iWORX NETWORK CONTROLLER(S) WIRING OVERVIEW (REV 1)

SCALE: 1/4"= 1'-0"

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THE BELNORD
225 W 86TH ST,
New York, New York 10024

Plus Group
Consulting Engineers
MEPF Engineer
231 West 29th Street, #706
New York, NY 10001
212.253.2700 tel

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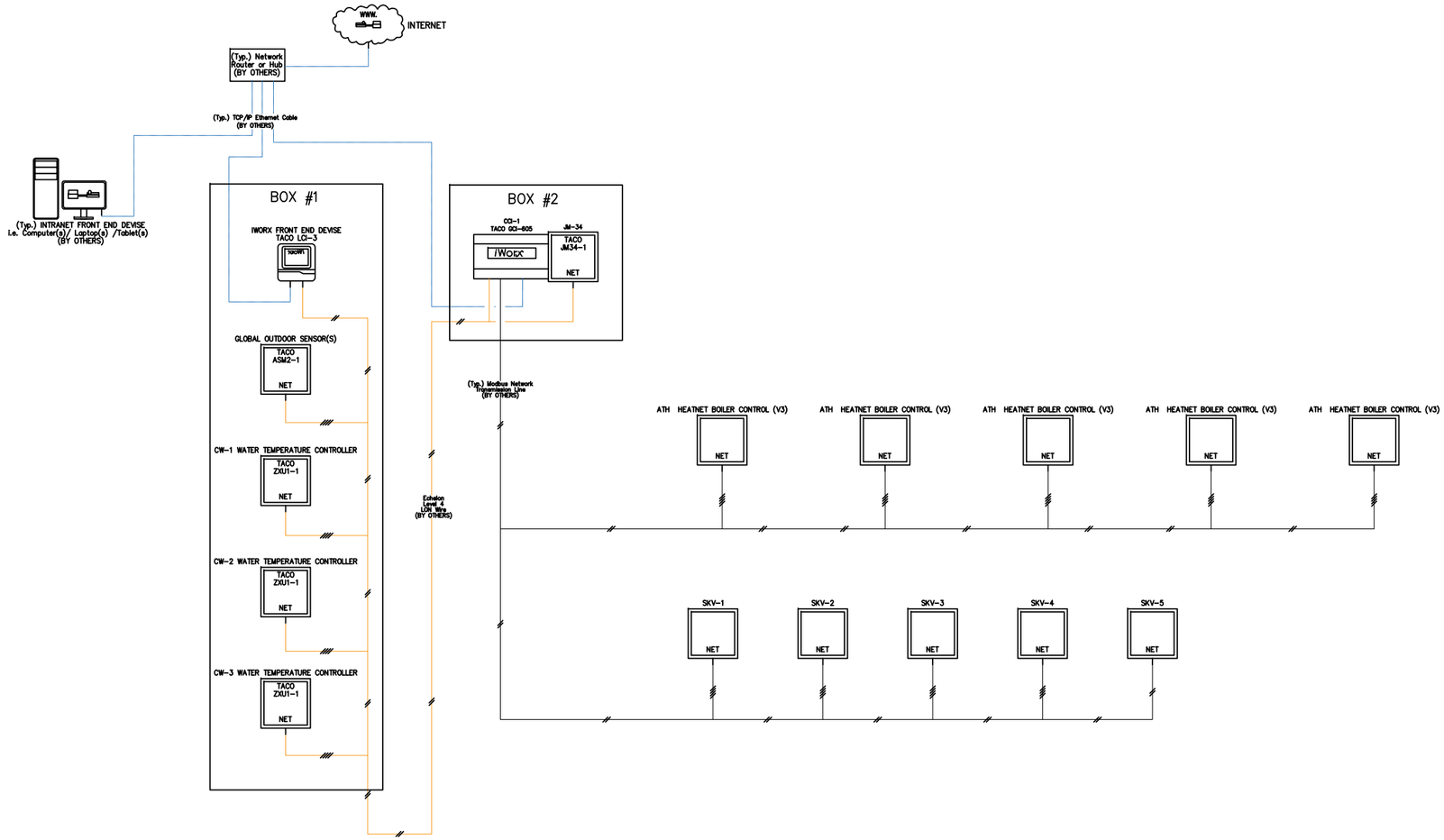
HEATING SYSTEM CONTROL DIAGRAM

BL-202.00



AUXILIARY SENSOR TACO ASM2-1 POINTS LIST		
POINT	DESCRIPTION	DEVICE
AI-2	OUTDOOR AIR TEMPERATURE	TEMPERATURE SENSOR

GLOBAL OUTDOOR SENSOR(S)

MIXING LOOP - SINGLE ZONE TACO ZXU1-1 POINTS LIST		
POINT	DESCRIPTION	DEVICE
AI-2	SUPPLY WATER TEMPERATURE	TEMPERATURE SENSOR
AI-3	RETURN WATER TEMPERATURE	TEMPERATURE SENSOR
AI-4	ZONE AIR TEMPERATURE	TEMPERATURE SENSOR
DI-1	DEMAND HEATING	OTHER
AO-1	ZONE VALVE	VALVE OPERATOR
DO-1	ZONE PUMP	OTHER
DO-6	BOILER ENABLE	OTHER

CW-1 WATER TEMPERATURE CONTROLLER

MIXING LOOP - SINGLE ZONE TACO ZXU1-1 POINTS LIST		
POINT	DESCRIPTION	DEVICE
AI-2	SUPPLY WATER TEMPERATURE	TEMPERATURE SENSOR
AI-3	RETURN WATER TEMPERATURE	TEMPERATURE SENSOR
AI-4	ZONE AIR TEMPERATURE	TEMPERATURE SENSOR
DI-1	DEMAND HEATING	OTHER
AO-1	ZONE VALVE	VALVE OPERATOR
DO-1	ZONE PUMP	OTHER
DO-6	BOILER ENABLE	OTHER

CW-2 WATER TEMPERATURE CONTROLLER

MIXING LOOP - SINGLE ZONE TACO ZXU1-1 POINTS LIST		
POINT	DESCRIPTION	DEVICE
AI-2	SUPPLY WATER TEMPERATURE	TEMPERATURE SENSOR
AI-3	RETURN WATER TEMPERATURE	TEMPERATURE SENSOR
AI-4	ZONE AIR TEMPERATURE	TEMPERATURE SENSOR
DI-1	DEMAND HEATING	OTHER
AO-1	ZONE VALVE	VALVE OPERATOR
DO-1	ZONE PUMP	OTHER
DO-6	BOILER ENABLE	OTHER

CW-3 WATER TEMPERATURE CONTROLLER

34 POINT I/O EXPANSION MODULE TACO JM34-1 POINTS LIST		
POINT	DESCRIPTION	DEVICE
AI-1	MECHANICAL ROOM TEMP	TEMPERATURE SENSOR
DI-1	BOILER ISOLATION VALVE	OTHER
DI-2	BOILER ISOLATION VALVE	OTHER
DI-3	BOILER ISOLATION VALVE	OTHER
DI-4	BOILER ISOLATION VALVE	OTHER
DI-5	BOILER ISOLATION VALVE	OTHER

JM-34

WIRE LEGEND

- Typ. 18 AWG Low Votage (24 VAC) Wire
- Typ. 18 AWG 0-10 VDC Control Signal Wire
- Typ. Level 4 Echelon Approved Network Communication Wire (WR-022)
- Typ. 18 AWG SHIELDED Sensor Wire (WR-018)
- Typ. 18 AWG Wire
- Typ. Line Voltage Wire
- Typ. BACnet IP Network Communication Wire
- Typ. Ethernet Cable
- Typ. Modbus Network Communication Wire

NOTES:
- All iWorx controller MUST be properly grounded.
- iWorx controller power source (transformer) MUST also be properly grounded.
- All 18 AWG shielded cable wiring used for sensor(s) MUST be properly grounded.
- Controller jumper placements must be configured PRIOR to installing power.
- Network communication wire MUST be 22 AWG Echelon approved Level 4 wire (WIR-022)
- Maximum iWorx LON communication wire (WIR-022) length: 1,640 feet.
- Should project requirements exceed the maximum total network wire limitations, a LON signal repeater will be required
- Port(s) 11000 & 11001 must be forwarded by the building IT manager for remote access.
- Typical ethernet cables, router and network hardware BY OTHERS.
- GCI gateway integration MUST be performed by a Niagara AX certified proffessional.
- The installer MUST review all iWorx product installation and application manuals prior to installation of material(s)

1 IWORX SYSTEM NETWORK ARCHITECTURE & POINT LIST OVERVIEW (REV 1)

SCALE: N.T.S.

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HEATING SYSTEM CONTROL DIAGRAM

BL-203.00

06 OF 06