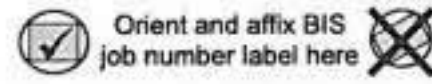




TR8: Technical Report
Statement of Responsibility for
Energy Code Progress Inspections
This form must be typewritten



1 Location Information Required for all applications.				
House No(s) 375		Street Name 9 Avenue (aka 401 9 Avenue)		
Work on Floor(s) SC1,CEL,1-69,ROF				
2 Applicant Information Required for all applications.				
Choose all that apply: <input checked="" type="checkbox"/> Design Applicant 3A, 4 <input type="checkbox"/> Progress Inspections Applicant 3B-D, 5-6				
Last Name Gottesdiener		First Name Ted	Middle Initial J	
Business Name Skidmore Owings & Merrill, LLP		Business Telephone (212) 298-9300		
Business Address 14 Wall Street		Business Fax		
City NY	State NY	Zip 10005	Mobile Telephone	
License Type choose one: <input type="checkbox"/> P.E. <input checked="" type="checkbox"/> R.A.	License Number 079322			
3 Energy Code Progress Inspection Required for applications where Energy Code Compliance Progress Inspection is marked Yes on TR1				
3A Identification of Requirement	Table Reference in 1 RCNY §5000-01(h) (1) and (2)	3B Identification of Responsibilities	3C Certificate of Complete Inspections / Tests	3D Withdraw Responsibilities
Y N Progress Inspections		Initial & Date	Initial & Date	Initial & Date
<input checked="" type="checkbox"/> Protection of foundation insulation	(IA1), (IA1)			
<input checked="" type="checkbox"/> Insulation placement and R values	(IA2), (IA2)			
<input checked="" type="checkbox"/> Fenestration thermal values and ratings	(IA3), (IA3)			
<input checked="" type="checkbox"/> Fenestration ratings for air leakage	(IA4), (IA4)			
<input checked="" type="checkbox"/> Fenestration areas	(IA5), (IA5)			
<input checked="" type="checkbox"/> Air sealing and insulation — visual	(IA6), (IA6)			
<input checked="" type="checkbox"/> Air sealing and insulation — testing	(IA7)			
<input checked="" type="checkbox"/> Projection factors	(IA7)			
<input checked="" type="checkbox"/> Loading deck weather seals	(IA8)			
<input checked="" type="checkbox"/> Vestibules	(IA9)			
<input checked="" type="checkbox"/> Fireplaces	(IB1), (IB1)			
<input checked="" type="checkbox"/> Dampers integral to building envelope	(IB2), (IB2)			
<input checked="" type="checkbox"/> HVAC and service water heating equipment	(IB3), (IB3)			
<input checked="" type="checkbox"/> HVAC and service water heating system controls	(IB4), (IB4)			
<input checked="" type="checkbox"/> Duct plenum and piping insulation and sealing	(IB5), (IB5)			
<input checked="" type="checkbox"/> Duct leakage testing	(IB6), (IB6)			
<input checked="" type="checkbox"/> Electrical metering	(IC1), (IC1)			
<input checked="" type="checkbox"/> Lighting in dwelling units	(IC2), (IC2)			
<input checked="" type="checkbox"/> Interior lighting power	(IC3)			
<input checked="" type="checkbox"/> Exterior lighting power	(IC4)			
<input checked="" type="checkbox"/> Lighting controls	(IC5)			
<input checked="" type="checkbox"/> Exit signs	(IC6)			
<input checked="" type="checkbox"/> Tandem wiring	(IC7)			
<input checked="" type="checkbox"/> Electrical motors	(IC8)			
<input checked="" type="checkbox"/> Maintenance information	(ID1), (ID1)			
<input checked="" type="checkbox"/> Permanent certificate	(ID2)			

01/11

TR8

PAGE 2

4 Design Applicant's Statements and Signatures P.E./R.A. responsible for plans must sign and seal.	
I have identified herein all of the progress inspections and tests required for compliance.	
Name (please print) Ted J. Gottesdiener	Date
Signature	SIGN AND SEAL
P.E./R.A. Seal (apply seal, then sign and date over seal)	

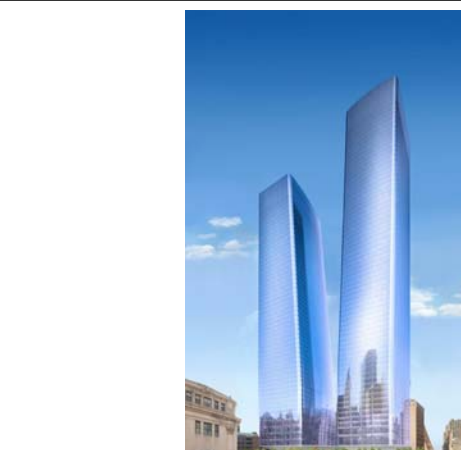
5 Inspection Applicant's Identification of Responsibilities	
Check all that apply below:	
<input type="checkbox"/> For the progress inspections indicated above in section 3, I certify that I am the principal/director of the progress inspection agency accepting responsibility for conducting the inspections. I further certify that I have read the applicable sections of the New York City Construction Codes and 1 RCNY 5000-01 in connection with progress inspections as well as 1 RCNY 101-07, which specifies the qualifications required for each progress inspector and that this agency meets those qualifications for each and every progress inspection for which I/we take responsibility. I agree that both I and the agency will comply with all provisions of the New York City Construction Codes and the Rules. I am aware of the additional sanctions imposed on false filings by §28-211.1.2 of the Administrative Code.	
<input type="checkbox"/> Change of Applicant: I am a newly designated individual responsible for the items specified herein and I hereby state that:	
<input type="checkbox"/> None of the inspections/tests indicated herein have been performed to date by the previously designated individual.	
<input type="checkbox"/> Some of the inspections/tests indicated herein have been performed by the previously designated individual, as indicated in the attached report.	
I am aware of the additional sanctions imposed on false filings by §28-211.1.2 of the Administrative Code.	
Name (please print)	Date
Signature	
P.E./R.A. Seal (apply seal, then sign and date over seal)	

6 Inspection Applicant's Certification of Completion	
<input type="checkbox"/> I have completed the items specified herein and certify the following (check one only):	
<input type="checkbox"/> All work performed substantially conforms to approved construction documents and has been performed in accordance with applicable provisions of the New York City Energy Conservation Code and other designated rules and regulations.	
<input type="checkbox"/> All work performed substantially conforms to approved construction documents and has been performed in accordance with applicable provisions of the New York City Energy Conservation Code and other designated rules and regulations, except as indicated in the attached report.	
I am aware of the additional sanctions imposed on false filings by §28-211.1.2 of the Administrative Code.	
<input type="checkbox"/> Withdrawal of Applicant: I am withdrawing responsibility for the items of progress inspections and/or tests indicated herein and herewith submit the results or status of the work performed to date.	
Name (please print)	Date
Signature	
P.E./R.A. Seal (apply seal, then sign and date over seal)	

01/11

SHEET NOTES

1. THE SCOPE OF WORK INDICATED IS BASED ON A PERFORMANCE BASED ENERGY ANALYSIS TO COMPLY WITH THE NEW YORK CITY ENERGY CONSERVATION CODE (NYECC). THE ENERGY COST BUDGET METHOD OF ASHRAE 90.1-2007 IS USED TO SHOW COMPLIANCE ENERGY CODE COMPLIANCE PER NYECC 501.1.
2. REFER TO SHEET EN-200 FOR BUILDING ASSEMBLY DESCRIPTIONS, DETAILS, AND PERFORMANCE CRITERIA.
3. REFER TO PERFORMANCE BASED ENERGY ANALYSIS TITLED "ENERGY MODELING OF THE MANHATTAN WEST NORTH TOWER" FOR OUTPUT REPORTS OF THE ASSEMBLIES ON SHEET EN-200.



MANHATTAN WEST:
NORTH TOWER
375 Ninth Avenue, New York, NY 10001
Client

Brookfield
Brookfield Place
250 Vesey Street, 15th Floor, New York, NY 10021

Architecture/Structural Engineering
SOM
Skidmore, Owings & Merrill LLP
14 Wall Street, New York, NY 10005

Civil Engineering
Philip Habib & Associates
102 Madison Avenue #11, New York, NY 10016

MEP Engineering
Jaros Baum & Bolles
80 Pine Street, New York, NY 10005

Vertical Transportation
Edgett Williams Consulting Group, Inc.
102 East Bluffside Ave., Suite 1, Mill Valley, California 94041

Sustainable Design
Viridian Energy & Environmental
50 Washington Street, Newark, CT 06854

Geotechnical Engineering
Mueser Rutledge Consulting Engineers
14 Penn Plaza, 22nd W, 34th Street, New York, NY 10122

Landscape Consultant
Field Operations
475 10th Avenue, New York, NY 10018

Security Consultant
Ducibella, Ventor & Santoro
250 State Street #F1, North Haven, CT 06473

Blast Consultant
Weidinger Associates, Inc.
40 Wall Street, New York, NY 10005

Acoustical Consultant
Cerami & Associates
404 Fifth Avenue #8, New York, NY 10018

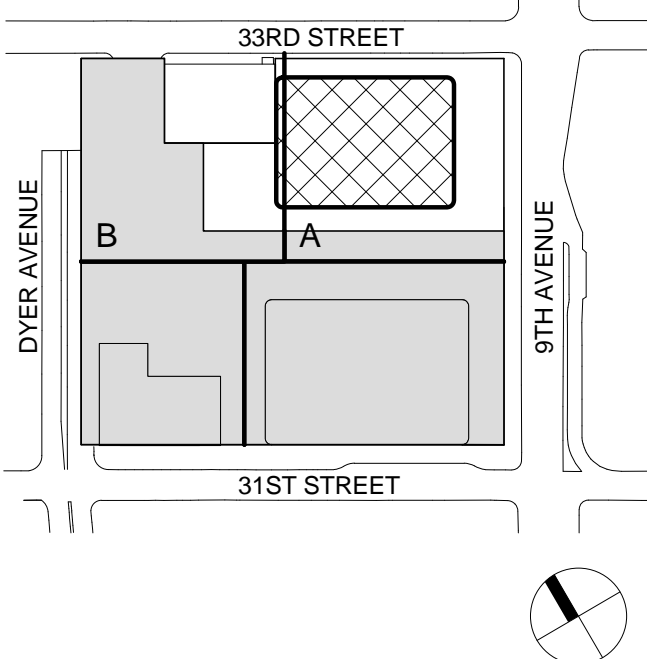
Vibration Consultant
Wilson, Uhrig & Associates, Inc.
65 Broadway, Suite 401, New York, NY 10006

Code Consultant
Code Consultants Professional Engineers PC
215 West 40th Street, 15th Floor, New York, NY 10018

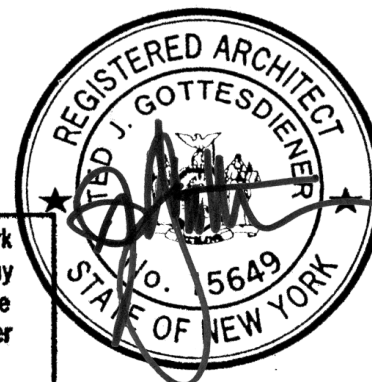
Facade Maintenance Consultant
Entek Engineering LLC
166 Ames Street, Hackensack, NJ 07601

Wind Tunnel Consultant
Rowan Williams Davies & Irwin Inc.
650 Woodlawn Road West, Guelph, Ontario, Canada N1K 1B6

Key Plan:



Seal & Signature:



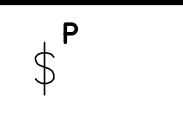

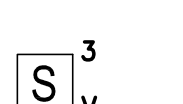
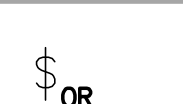

Warning: It is a violation of the New York State Architecture Law, §83.5(b) for any person, unless they are acting under the direction of a Licensed Architect, to alter this item in any way.

1. 30 JAN 2015 ISSUED FOR BUILDING PERMIT
No. Date Description
Sheet Name:

**ENERGY CODE
PROGRESS
INSPECTIONS**

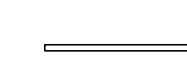

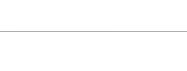




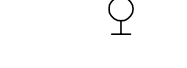

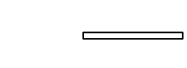
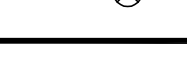

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Date: 30 JAN 2015
Scale:
File No.: EN-000
B-SCAN Sheet No.:
EN-000.00
Sheet No.: EN-000
Page No.: 30

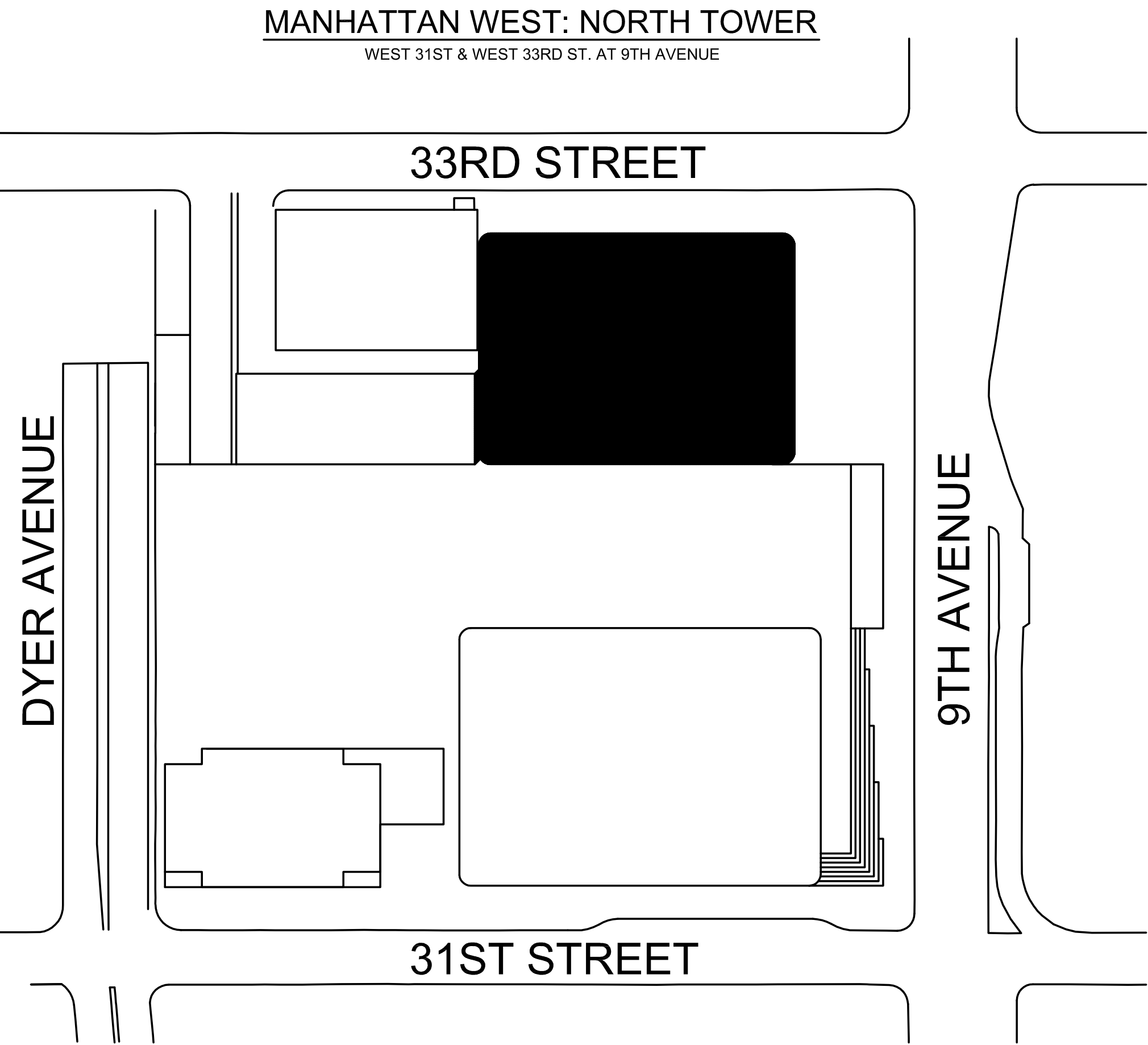
MEP DRAWING INDEX				
DRAWING NUMBER	DRAWING TITLE	ISSUED DRAWING DATES		
		01.30.2015		
EN-001.00	NYC EC COMPLIANCE COVER SHEET	•		
EN-002.00	NYC EC COMPLIANCE MANDATORY MEASURES SHEET NO. 1	•		
EN-003.00	NYC EC COMPLIANCE MANDATORY MEASURES SHEET NO. 2	•		
EN-004.00	NYC EC COMPLIANCE ENERGY MODELING SHEET NO. 1	•		
EN-100.00	NYC EC COMPLIANCE LIGHTING CELLAR B1 FLOOR PLAN - PART A	•		
EN-101.00	NYC EC COMPLIANCE LIGHTING CELLAR B FLOOR PLAN - PART A	•		
EN-102.00	NYC EC COMPLIANCE LIGHTING CELLAR B FLOOR PLAN - PART B	•		
EN-103.00	NYC EC COMPLIANCE LIGHTING LEVEL 1 FLOOR PLAN	•		
EN-104.00	NYC EC COMPLIANCE LIGHTING LEVEL 3 FLOOR PLAN	•		
EN-105.00	NYC EC COMPLIANCE LIGHTING LEVEL 4 FLOOR PLAN	•		
EN-106.00	NYC EC COMPLIANCE LIGHTING LEVEL 5 FLOOR PLAN	•		
EN-107.00	NYC EC COMPLIANCE LIGHTING LEVEL 6-16 FLOOR PLAN	•		
EN-108.00	NYC EC COMPLIANCE LIGHTING LEVEL 17 FLOOR PLAN	•		
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EN-110.00	NYC EC COMPLIANCE LIGHTING LEVEL 19-20 FLOOR PLAN	•		
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EN-119.00	NYC EC COMPLIANCE LIGHTING LEVEL 40-41 FLOOR PLAN	•		
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EN-125.00	NYC EC COMPLIANCE LIGHTING LEVEL 53 FLOOR PLAN	•		
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EN-136.00	NYC EC COMPLIANCE LIGHTING LEVEL 69 FLOOR PLAN	•		
EN-137.00	NYC EC COMPLIANCE LIGHTING ROOF PLAN MECH PENTHOUSE	•		
EN-138.00	NYC EC COMPLIANCE LIGHTING ROOF PLAN MECH PENTHOUSE ROOF	•		
EN-139.00	NYC EC COMPLIANCE LIGHTING SYSTEM CONTROLS SHEET NO. 1	•		

LIGHTING DEVICE SYMBOLS	
SYMBOL	LIGHTING DEVICES
	PILOT LIGHT SWITCH
	CEILING MOUNTED SENSOR
	VACANCY SENSOR SWITCH
	LIGHTING RELAY PANEL OVERRIDE SWITCH
	EMERGENCY NIGHT LIGHT

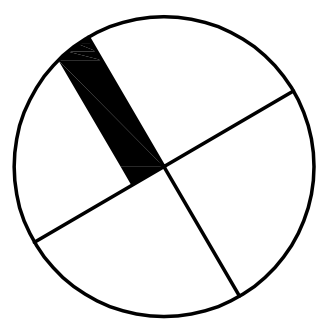
ENERGY ANALYSIS 2011 NEW YORK CITY ENERGY CONSERVATION CODE CHAPTER 5 CLIMATE ZONE 4A				
2011 NEW YORK CITY ENERGY CONSERVATION CODE PROGRESS INSPECTIONS FOR ENERGY CODE COMPLIANCE – COMMERCIAL BUILDINGS				
	Inspection/Test	Periodic (minimum)	Reference Standard (See ECC Chapter 6) or Other Criteria	ECC or Other Citation
IIA	Envelope Inspections			
IIA1	Protection of exposed foundation insulation: Insulation shall be visually inspected to verify proper protection where applied to the exterior of basement or cellar walls, crawl-space walls and/or the perimeter of slab-on-grade floors.	As required during foundation work and prior to backfill	Approved construction documents	303.2.1; ASHRAE 90.1 – 5.8.1.7
IIA2	Insulation placement and R-values: Installed insulation for each component of the conditioned space envelope and at junctions between components shall be visually inspected to ensure that the R-values are marked, that such R-values conform to the R-values identified in the construction documents and that the insulation is properly installed. Certifications for unmarked insulation shall be similarly visually inspected.	As required to verify continuous enclosure while walls, ceilings and floors are open	Approved construction documents	303.1, 303.1.1, 303.1.2, 502.1, 502.2; ASHRAE 90.1 – 5.5, 5.6 or 11; 5.8.1
IIA3	Fenestration thermal values and product ratings: U-factors and SHGC values of installed fenestration shall be visually inspected for conformance with the U-factors and SHGC values identified in the construction drawings by verifying the manufacturer's NFRC labels or, where not labeled, using the ratings in ECC Tables 303.1.3(1), (2) and (3). Where ASHRAE 90.1 is used, visible light transmittance values shall also be verified.	As required during installation	Approved construction documents; NFRC 100, NFRC 200	303.1, 303.1.3, 502.3; ASHRAE 90.1 – 5.5; 5.6 or 11; 5.8.2
IIA4	Fenestration and door assembly product ratings for air leakage: Windows and sliding or swinging door assemblies, except site-built windows and/or doors, shall be visually inspected to verify that installed assemblies are listed and labeled by the manufacturer to the referenced standard. For curtain wall, storefront glazing, commercial entrance doors and revolving doors, the testing reports shall be reviewed to verify that the installed assembly complies with the standard cited in the approved plans.	As required during installation; prior to final construction inspection	NFRC 400, AAMA/WDMA/CSA 101/5.2/A440 ASTM E283; ANSI/DASMA 105	502.4; ASHRAE 90.1 – 5.4.3.2
IIA5	Fenestration areas: Dimensions of windows, doors and skylights shall be verified by visual inspection.	Prior to final construction inspection	Approved construction documents	502.3; ASHRAE 90.1 – 5.5.4, 5.6 or 11
IIA6	Sealing: Openings and penetrations in the building envelope, including site-built fenestration and doors, shall be visually inspected to verify that a continuous air barrier around the envelope forms an air-tight enclosure. The progress inspector shall visually inspect to verify that materials and/or assemblies have been tested and meet the requirements of the respective standards, or that the building is tested and meets the requirements of the standard, in accordance with the standard(s) cited in the approved plans.	As required during construction	Approved construction documents; ASTM E2178, ASTM E2357, ASTM E1677, ASTM E779, ASTM E283.	502.4.3, 502.4.7; ASHRAE 90.1 – 5.4.3.1
IIA7	Projection factors: Where the energy analysis utilized a projection factor > 0, the projection dimensions of overhangs, eaves or permanently attached shading devices shall be verified for conformance with approved plans by visual inspection.	Prior to final construction inspection	Approved construction documents, including energy analysis	502.3; ASHRAE 90.1 – 5.5.4, 5.6 or 11
IIA8	Loading dock weathershals: Weathershals at loading docks shall be visually verified.	Prior to final construction inspection	Approved construction documents	502.4.5; ASHRAE 90.1 – 5.4.3.3
IIA9	Building entrance vestibules: Required entrance vestibules shall be visually inspected for proper operation.	Prior to final construction inspection	Approved construction documents	502.4.6; ASHRAE 90.1 – 5.4.3.4
IIIB	Mechanical and Service Water Heating Inspections			
IIIB2	Outdoor air intakes and exhaust openings: Dampers for stair and elevator shaft vents and other outdoor air intakes and exhaust openings integral to the building envelope shall be visually inspected to verify that such dampers, except where permitted to be gravity dampers, comply with approved construction drawings. Manufacturer's literature shall be reviewed to verify that the product has been tested and found to meet the standard.	As required during installation	Approved construction documents; AMCA 500D	502.4.4; ASHRAE 90.1 – 6.4.3.4
IIIB3	HVAC, service water heating and pool equipment sizing and performance: Equipment sizing, efficiencies and other performance factors of all major equipment units, as determined by the applicant of record, and no less than 15% of minor equipment units, shall be verified by visual inspection and, where necessary, review of manufacturer's data. Pool heaters and covers shall be verified by visual inspection.	Prior to final plumbing and construction inspection	Approved construction documents	503.2, 504.2, 504.7; ASHRAE 90.1 – 6.3, 6.4.1, 6.4.2, 6.8; 7.4, 7.8
IIIB4	HVAC system controls and economizers and service hot water system controls: No less than 20% of each type of required controls and economizers shall be verified by visual inspection and tested for functionality and proper operation. Such controls shall include, but are not limited to: Thermostatic; Set point overlap restriction; Off-hour; Shutoff damper; Snow-melt system; Demand control systems; Outdoor heating systems; Zones; Economizers; Air systems; Variable air volume fan; Hydronic systems; Heat rejection equipment fan speed; Complex mechanical systems serving multiple zones; Ventilation; Energy recovery systems; Hot gas bypass limitation; Temperature; Service water heating; Hot water system; Pool heater and time switches; Exhaust hoods; Radiant heating systems. Controls with seasonally dependent functionality: Controls whose complete operation cannot be demonstrated due to prevailing weather conditions typical of the season during which progress inspections will be performed shall be permitted to be signed off for the purpose of a Temporary Certificate of Occupancy with only a visual inspection, provided, however, that the progress inspector shall perform a supplemental inspection where the controls are visually inspected and tested for functionality and proper operation during the next immediate season thereafter. The owner shall provide full access to the progress inspector within two weeks of the progress inspector's request for such access to perform the progress inspection. For such supplemental inspections, the Department shall be notified by the approved progress inspection agency of any unresolved deficiencies in the installed work within 180 days of such supplemental inspection.	After installation and prior to final electrical and construction inspection, except that for controls with seasonally dependent functionality, such testing shall be performed before sign-off for issuance of a Final Certificate of Occupancy	Approved construction documents, including control system narratives; ASHRAE Guideline 1; The HVAC Commissioning Process where applicable	503.2.4, 503.2.5.1, 503.2.11, 503.3, 503.4, 504.3, 504.6, 504.7; ASHRAE 90.1 – 6.3, 6.4, 6.5, 6.7, 7.4, 7.4.4, 7.4.5
IIIB5	Duct, plenum and piping insulation and sealing: Installed duct and piping insulation shall be visually inspected to verify proper insulation placement and values. Joints, longitudinal and transverse seams and connections in ductwork shall be visually inspected for proper sealing.	After installation and prior to closing shafts, ceilings and walls	Approved construction documents; SMACNA Duct Construction Standards, Metal and Flexible	503.2.7, 503.2.8, 504.5; ASHRAE 90.1 – 6.3, 6.4-4.2, 6.8.2, 6.8.3; 7.4.3
IIIB6	Air leakage testing for high-pressure duct systems: For duct systems designed to operate at static pressures in excess of 3 inches w.g. (746 Pa), representative sections, as determined by the progress inspector, totaling at least 25% of the duct area, per ECC 503.2.7.1.3, shall be tested to verify that actual air leakage is below allowable amounts.	After installation and sealing and prior to closing shafts, ceilings and walls	Approved construction documents; SMACNA HVAC Air Duct Leakage Test Manual	503.2.7.1.3; ASHRAE 90.1 – 6.4.4.2
IIIC	Electrical Power and Lighting Systems			
IIIC1	Electrical metering: The presence and operation of individual meters or other means of monitoring individual apartments shall be verified by visual inspection for all apartments.	Prior to final electrical and construction inspection	Approved construction documents	505.7
IIIC3	Interior lighting power: Installed lighting shall be verified for compliance with the lighting power allowance by visual inspection of fixtures, lamps, ballasts and transformers.	Prior to final electrical and construction inspection	Approved construction documents	505.5; ASHRAE 90.1 – 9.1, 9.2, 9.5, 9.6; 13RCM §101-07(c)(3)(v)(C)4
IIIC4	Exterior lighting: Installed lighting shall be verified for compliance with source efficacy and/or the lighting power allowance by visual inspection of fixtures, lamps, ballasts and relevant transformers.	Prior to final electrical and construction inspection	Approved construction documents	505.6; ASHRAE 90.1 – 9.4.4, 9.4.5; 13RCM §101-07(c)(3)(v)(C)4
IIIC5	Lighting controls: Each type of required lighting controls, including: occupant sensors; manual interior lighting controls; light-reduction controls; automatic lighting shut-off; daylight zone controls; sleeping unit controls; exterior lighting controls, shall be verified by visual inspection and tested for functionality and proper operation.	Prior to final electrical and construction inspection	Approved construction documents, including control system narratives	505.2, 505.2.2; ASHRAE 90.1 – 9.4.1, 9.4.1.2 (as modified by section ECC A103)
IIIC6	Exit signs: Installed exit signs shall be visually inspected to verify that the label indicates that they do not exceed maximum permitted wattage.	Prior to final electrical and construction inspection	Approved construction documents	505.4; ASHRAE 90.1 – 9.4.3
IIIC7	Tandem wiring: Tandem wiring shall be tested for functionality.	Prior to final electrical and construction inspection	Approved construction documents	505.3; ASHRAE 90.1 – 9.4.2
IIIC8	Electric motors (including but not limited to fan motors): Where required by the construction documents for energy code compliance, motor listing or labels shall be visually inspected to verify that they comply with the respective energy requirements in the construction documents.	Prior to final electrical and construction inspection	Approved construction documents	503.2.10; ASHRAE 90.1 – 10.4
IIID	Other			
IID1	Maintenance information: Maintenance manuals for mechanical, service hot water and electrical equipment and systems requiring preventive maintenance shall be reviewed for applicability to installed equipment and systems before such manuals are provided to the owner. The progress inspector shall certify that to the best of his or her knowledge and belief the building as built complies with such signed and sealed energy analysis and construction drawings for energy code compliance; where no trade-offs have been used among disciplines, more than one registered design professional may sign and seal the elements of the energy analysis. The energy analysis shall be approved or accepted by the Department prior to sign-off.	Prior to sign-off or issuance of Final Certificate of Occupancy	Approved construction documents, including electrical drawings where applicable; ASHRAE Guideline 4; Preparation of Operating and Maintenance Documentation for Building Systems	303.3, 503.2.9.3; ASHRAE 90.1 – 4.2.2.3, 6.7.2.2, 8.7.2
Note:				
(i)	Energy Analysis of Constructed Conditions. In accordance with Section 28-104.3 of the Administrative Code and section ECC 103.4, if constructed work differs from the last-approved full energy analysis, an as-built energy analysis shall be submitted to the Department, listing the actual values used in the building for all applicable energy code-regulated items and demonstrating that the building complies with the Energy Code. Such energy analysis shall be signed and sealed by a registered design professional. The progress inspector shall certify that to the best of his or her knowledge and belief the building as built complies with such signed and sealed energy analysis and construction drawings for energy code compliance; where no trade-offs have been used among disciplines, more than one registered design professional may sign and seal the elements of the energy analysis. The energy analysis shall be approved or accepted by the Department prior to sign-off.			

ARCH DRAWING INDEX		
DRAWING NUMBER	DRAWING TITLE	ISSUED DRAWING DATES
		09.12.2014
EN-200.00	ENCLOSURE ASSEMBLIES	•

LIGHTING FIXTURE SCHEDULE						
FIXTURE IDENTIFICATION	SYMBOL	FIXTURE DESCRIPTION	LOCATION	UNITS	CONTROL GEAR	TOTAL SYSTEM WATTS
F1		LINEAR LED RECESSED DOWNLIGHT	RESTROOMS	PER FT.	ELECTRONIC DRIVER	7 W/FT.
LT01		RECESSED LED FIXED DOWNLIGHT, NOMINAL 4-1/2" SQUARE APERTURE AND 10" HOUSING DEPTH, SEMI-SPECULAR, NON-REDUCED DEPTH, ALZAK REFLECTOR WITH WHITE PAINTED OVERLAP SELF-FLANGE, MICROPRISM GLASS LENS, DIMMABLE.	GROUND FLOOR LOBBY	EA.	DIMMING BALLAST	34 W
F2		LINEAR CORE VAPOR PROOF	SHOWERS	PER FT.	REMOTE DIMMING DRIVER	3.26 W/FT.
LT03		RECESSED LED WALL WASHER, NOMINAL 4-1/2" SQUARE APERTURE AND 11" HOUSING DEPTH, SEMI-SPECULAR, NON-REDUCED DEPTH, ALZAK REFLECTOR WITH WHITE PAINTED OVERLAP SELF-FLANGE, FROSTED MICROPRISM GLASS LENS, DIMMABLE.	GROUND FLOOR LOBBY	EA.	DIMMING BALLAST	34 W
FA		5" COMPACT FLUORESCENT SEMI-RECESSED DOWNLIGHT	RESTROOMS	EA.	DIMMING BALLAST	32 W
FB		6" SQUARE COMPACT FLUORESCENT RECESSED DOWNLIGHT	ELEVATOR LOBBY	EA.	DIMMING BALLAST	26 W
FG		PENDANT-MOUNTED TWO LAMP FLUORESCENT GASKETED FIXTURE.	LOADING DOCK	EA.	ELECTRONIC BALLAST	120 W
FJ		LED WALL MOUNTED	PLENUM	EA.	REMOTE DIMMING DRIVER	26 W
FK		4' STRIP INDUSTRIAL FLUORESCENT PENDENT	GENERAL	EA.	ELECTRONIC BALLAST	32 W
FS		4" LINEAR FLUORESCENT LENSED SURFACE	STAIRWELLS	EA.	DIMMING DRIVER	32 W
FV		4" LINEAR INDUSTRIAL SURFACE	ELEVATOR/JUMP PUMP PIT	EA.	DIMMING DRIVER	64 W
EX		RECESSED WALL- OR CEILING-MOUNTED LED EXIT SIGN	GENERAL	PER FACE.	INTEGRAL BATTERY PACK	5 W/ FACE (MAX)



PLOT PLAN
NOT TO SCALE



PROFESSIONAL'S STATEMENT

TO THE BEST OF OUR KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE NEW YORK CITY ENERGY CONSERVATION CODE.

BUILDING DEPARTMENT NOTE:

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SHEET NOTES

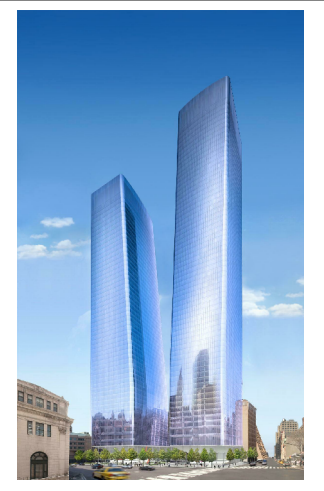
ENERGY ANALYSIS NOTES:

1. THE SCOPE OF WORK INDICATED IS BASED ON A PERFORMANCE BASED ENERGY ANALYSIS TO CONFIRM COMPLIANCE WITH THE NEW YORK CITY ENERGY CONSERVATION CODE (NYCECC).

2. REFER TO SHEET EN-200 FOR BUILDING ASSEMBLY DESCRIPTIONS, DETAILS, AND PERFORMANCE CRITERIA.

3. REFER TO PERFORMANCE BASED ENERGY ANALYSIS TITLED "ENERGY MODELING OF THE MANHATTAN WEST NORTH TOWER" FOR OUTPUT REPORTS OF THE ASSEMBLIES ON SHEET EN-200.

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Code Consultant

Code Consultants Professional Engineers PC
215 West 48th Street, 15th Floor, New York, NY 10019

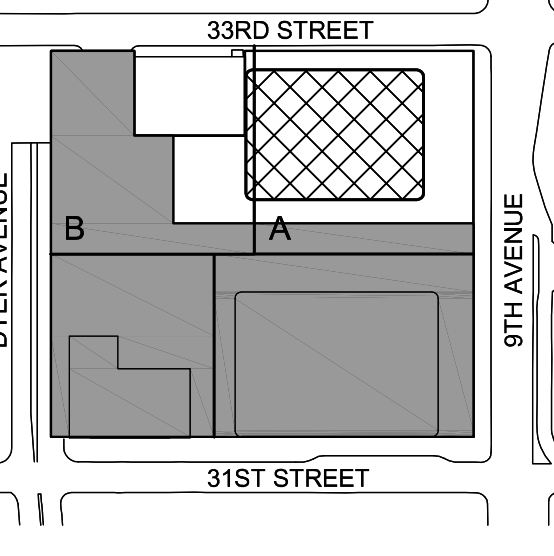
Facade Maintenance Consultant

Entek Engineering LLC
166 Ames Street, Hackensack, NJ 07601


Wind Tunnel Consultant

Rowan Williams Davies & Irwin Inc.
650 Woodlawn Road West, Guelph Ontario, Canada N1K 1B8

Key Plan:



Seal & Signature:



2 / 30 JAN 2015 ISSUED FOR BUILDING PERMIT
1 / 12 SEPT 2014 ISSUED FOR FOUNDATION PERMIT

No. Date Description

Sheet Name:

NYC EC COMPLIANCE COVER SHEET

Project No.: 14830 A 000 Sheet No.: EN-001.00

Date: 19 DEC 2014

Scale: N.T.S.

File No.: Page No.:

NEW YORK STATE ENERGY CODE COMPLIANCE SECTION 5 - BUILDING ENVELOPE MANDATORY PROVISIONS		
STANDARD: ASHRAE 90.1-2007 CLIMATE ZONE: 4A		
ITEM DESCRIPTION	PROPOSED DESIGN VALUE	CODE PRESCRIPTIVE VALUE AND CITATION
5.4.1: INSULATION	INSULATION SPECIFIED MEETS THE MINIMUM REQUIREMENTS	INSULATION REQUIRED FOR ROOFS, WALLS, ETC., MEETS THE MINIMUM REQUIREMENTS OF TABLE 5.6.1.1 THROUGH 5.6.1.9 OF ASHRAE 90.1.
5.4.2: FENESTRATION AND DOORS	FENESTRATION AND DOOR PERFORMANCE OF THE EQUIPMENT SPECIFIED HAS BEEN DETERMINED BY A NATIONALLY RECOGNIZED ACCREDITATION ORGANIZATION.	FENESTRATION AND DOOR PERFORMANCE OF PRODUCTION LINE EQUIPMENT SHALL BE DETERMINED BY A LABORATORY ACCREDITED BY A NATIONALLY RECOGNIZED ACCREDITATION ORGANIZATION.
5.4.3: AIR LEAKAGE		
5.4.3.1: BUILDING ENVELOP SEALING	THE BUILDING ENVELOPE OPENINGS HAVE BEEN SPECIFIED TO MINIMIZE AIR LEAKAGE.	ALL JOINTS, JUNCTIONS, OPENINGS, PENETRATIONS, ETC., OF THE BUILDING ENVELOPE SHALL BE SEALED CAULKED, GASKETED, OR WEATHER-STRIPPED TO MINIMIZE AIR LEAKAGE.
5.4.3.2: FENESTRATION AND DOORS	THE AIR LEAKAGE DOES NOT EXCEED THE MAXIMUM OF 1.0 CFM/FT ² FOR GLAZED SWINGING ENTRANCE DOORS AND 0.4 CFM/FT ² FOR ALL OTHER PRODUCTS WHEN TESTED IN ACCORDANCE WITH NRC 400.	AIR LEAKAGE FOR FENESTRATION AND DOORS SHALL BE DETERMINED IN ACCORDANCE WITH NRC 400. AIR LEAKAGE SHALL NOT EXCEED 1.0 CFM/FT ² FOR GLAZED SWINGING ENTRANCE DOORS AND 0.4 CFM/FT ² FOR ALL OTHER PRODUCTS.
5.4.3.3: LOADING DOCK WEATHERSEALS	LOADING DOCK DOORS HAVE BEEN SPECIFIED WITH WEATHER-STRIPPING.	CARGO DOORS AND LOADING DOCKS DOORS SHALL BE EQUIPPED WITH WEATHERSEALS TO RESTRICT INFILTRATION WHEN VEHICLES ARE PARKED IN THE DOORWAY.
5.4.3.4: VESTIBULES	VESTIBULES MEETING THESE REQUIREMENTS HAVE BEEN DESIGNED.	A DOOR THAT SEPARATES CONDITIONED SPACE FROM THE EXTERIOR SHALL BE PROTECTED WITH AN ENCLOSED VESTIBULE, WITH ALL DOORS OPENING INTO AND OUT OF THE VESTIBULE EQUIPPED WITH SELF-CLOSING DEVICES. THE INTERIOR AND EXTERIOR DOOR SHALL HAVE A MINIMUM DISTANCE OF 7 FEET BETWEEN THEM WHEN BOTH DOORS ARE CLOSED.

NEW YORK STATE ENERGY CODE COMPLIANCE SECTION 7 - SERVICE WATER HEATING MANDATORY PROVISIONS		
STANDARD: ASHRAE 90.1-2007 CLIMATE ZONE: 4A		
ITEM DESCRIPTION	PROPOSED DESIGN VALUE	CODE PRESCRIPTIVE VALUE AND CITATION
7.4.1: LOAD CALCULATIONS	SYSTEM AND EQUIPMENT HAS BEEN SIZED IN ACCORDANCE WITH MANUFACTURER'S GUIDELINES AND ACCEPTED ENGINEERS STANDARDS.	SYSTEMS AND EQUIPMENT SIZED IN ACCORDANCE WITH MANUFACTURER'S GUIDELINES AND ACCEPTED ENGINEERS STANDARDS.
7.4.2: EQUIPMENT EFFICIENCY	SPECIFIED DOMESTIC HOT WATER HEATERS ARE BOILERS WATER TO DOMESTIC HOT WATER AND ARE NO APPLICABLE TO A MINIMUM PERFORMANCE RATING EFFICIENCY	EQUIPMENT SHOWN IN TABLES 7.8 SHALL HAVE A MINIMUM PERFORMANCE AT THE SPECIFIED RATING CONDITIONS IN ACCORDANCE WITH THE SPECIFIED TEST PROCEDURE
7.4.3: PIPE INSULATION	DOMESTIC HOT WATER PIPING MINIMUM INSULATION IS SPECIFIED AS FOLLOWS: PIPING WITH DIAMETER < 1 1/2" = 1.0" PIPING WITH DIAMETER >= 1 1/2" = 1.0"	INSULATION SHALL BE INSTALLED AS PER INDUSTRY-ACCEPTED STANDARDS. PIPING SHALL BE THERMALLY INSULATED IN ACCORDANCE WITH TABLE 6.8.3 OF ASHRAE 90.1.
7.4.4: SERVICE WATER HEATING CONTROLS		
7.4.4.1: TEMPERATURE CONTROLS	SPECIFIED DOMESTIC HOT WATER HEATERS HAVE A STORAGE TEMPERATURE CONTROL SETTING OF 140° F.	TEMPERATURE CONTROLS SHALL BE PROVIDED THAT ALLOW FOR STORAGE TEMPERATURE ADJUSTMENT FROM A MINIMUM OF 120°F TO A MAXIMUM TEMPERATURE COMPATIBLE FOR INTENDED USE.
7.4.4.2: TEMPERATURE MAINTENANCE CONTROLS	SPECIFIED DOMESTIC WATER HEATER SYSTEM HAS AN AUTOMATIC CONTROL SYSTEM THAT TURNS OFF THE USAGE TEMPERATURE WHEN NOT REQUIRED.	SYSTEMS DESIGNED TO MAINTAIN USAGE TEMPERATURES IN HOT WATER PIPES SHALL BE EQUIPPED WITH AUTOMATIC CONTROLS THAT CAN SWITCH OFF THE USAGE TEMPERATURE WHEN HOT WATER IS NOT REQUIRED.
7.4.4.3: OUTLET TEMPERATURE CONTROLS	THE FIXTURE DELIVERY TEMPERATURE IS LIMITED TO NOT GREATER THAN 110°F VIA A MIXING VALVE.	THE MAXIMUM TEMPERATURE OF WATER DELIVERY FOR A FIXTURE SHALL BE 110°F.
7.4.4.4: CIRCULATING PUMP CONTROLS	CONTROLS TO LIMIT THE CIRCULATING PUMP RUN TIME TO A MAXIMUM OF FIVE MINUTES HAS BEEN PROVIDED.	WHEN USED TO MAINTAIN STORAGE TANK TEMPERATURE, CONTROLS TO LIMIT CIRCULATING PUMP OPERATION FROM START OF HEATING CYCLE TO 5 MIN AFTER END OF HEATING CYCLE SHALL BE PROVIDED.
7.4.5: POOLS	NOT INCLUDED IN THIS APPLICATION.	NOT INCLUDED IN THIS APPLICATION.
7.4.6: HEAT TRAPS	NOT INCLUDED IN THIS APPLICATION.	VERTICAL PIPING SERVING STORAGE TYPE HEATERS AND STORAGE HEATERS WITHOUT AN INTEGRAL HEAT TRAP AND SERVING A NONRECIRCULATING SYSTEM SHALL HAVE INLET AND OUTLET HEAT TRAPS.

NEW YORK STATE ENERGY CODE COMPLIANCE SECTION 8 - POWER MANDATORY PROVISIONS		
STANDARD: ASHRAE 90.1-2007 CLIMATE ZONE: 4A		
ITEM DESCRIPTION	PROPOSED DESIGN VALUE	CODE PRESCRIPTIVE VALUE AND CITATION
8.4.1: VOLTAGE DROP		
8.4.1.1: FEEDERS	FEEDER CONDUCTORS ARE SIZED FOR A VOLTAGE DROP OF LESS THAN 2%.	FEEDER CONDUCTORS SHALL BE SIZED FOR A MAXIMUM VOLTAGE DROP OF 2% AT DESIGN LOAD.
8.4.1.2: BRANCH CIRCUITS	BRANCH CIRCUIT CONDUCTORS ARE SIZED FOR A VOLTAGE DROP OF LESS THAN 3% AT DESIGN LOAD.	BRANCH CIRCUIT CONDUCTORS SHALL BE SIZED FOR A MAXIMUM VOLTAGE DROP OF 3% AT DESIGN LOAD.

NEW YORK STATE ENERGY CODE COMPLIANCE SECTION 6 - HEATING VENTILATING AND AIR CONDITIONING MANDATORY PROVISIONS		
STANDARD: ASHRAE 90.1-2007 CLIMATE ZONE: 4A		
ITEM DESCRIPTION	PROPOSED DESIGN VALUE	CODE PRESCRIPTIVE VALUE AND CITATION
6.4.1: EQUIPMENT EFFICIENCIES, VERIFICATION & LABELING REQUIREMENTS		
6.4.1.1: MINIMUM EQUIPMENT EFFICIENCIES - LIST EQUIPMENT - STANDARD RATING CONDITIONS	EQUIPMENT HAS BEEN SELECTED TO MEET THE MINIMUM PERFORMANCE. SEE TABLE 1.	EQUIPMENT SHOWN IN TABLES 6.8.1A TO 6.8.1G SHALL HAVE A MINIMUM PERFORMANCE AT THE SPECIFIED RATING CONDITIONS IN ACCORDANCE WITH THE SPECIFIED TEST PROCEDURE
6.4.1.2: MINIMUM EQUIPMENT EFFICIENCIES - LIST EQUIPMENT - NONSTANDARD RATING CONDITIONS	EQUIPMENT HAS BEEN SELECTED TO MEET THE MINIMUM PERFORMANCE. SEE TABLE 2.	PERFORMANCE SHOWN IN TABLES 6.8.1H TO 6.8.1J SHALL BE MET AT THE GIVEN EQUIPMENT SIZE.
6.4.1.3: EQUIPMENT NOT LISTED		EQUIPMENT NOT LISTED IN TABLES 6.8.1A TO 6.8.1J MAY BE USED.
6.4.1.4: VERIFICATION OF EQUIPMENT EFFICIENCIES	EQUIPMENT EFFICIENCY HAS BEEN VERIFIED	EQUIPMENT EFFICIENCY INFORMATION SUPPLIED BY MANUFACTURERS SHALL BE VERIFIED.
6.4.1.5: LABELING	EQUIPMENT IS COVERED BY THE NAECA OF 1987	MECHANICAL EQUIPMENT THAT IS NOT COVERED BY THE US NATIONAL APPLIANCE ENERGY CONSERVATION ACT (NAECA) OF 1987 SHALL CARRY A PERMANENT LABEL INSTALLED BY THE MANUFACTURER STATING THAT THE EQUIPMENT COMPLIES WITH THE REQUIREMENTS OF ASHRAE 90.1.
6.4.2: LOAD CALCULATIONS	SYSTEM AND EQUIPMENT HAS BEEN SIZED IN ACCORDANCE WITH MANUFACTURER'S GUIDELINES AND ACCEPTED ENGINEERS STANDARDS.	SYSTEMS AND EQUIPMENT SIZED IN ACCORDANCE WITH MANUFACTURER'S GUIDELINES AND ACCEPTED ENGINEERS STANDARDS.
6.4.3: CONTROLS		
6.4.3.1: ZONE THERMOSTATIC CONTROLS		
6.4.3.1.1: GENERAL	EACH HEATING AND COOLING ZONE IS THERMOSTATICALLY CONTROLLED.	THE SUPPLY OF HEATING AND COOLING ENERGY TO EACH ZONE SHALL BE INDIVIDUALLY CONTROLLED BY THERMOSTATIC CONTROLS RESPONDING TO TEMPERATURE WITHIN THE ZONE.
6.4.3.1.2: DEAD BAND	SEE TABLE 3	ZONE THERMOSTATIC CONTROLS SHALL BE CAPABLE OF PROVIDING A TEMPERATURE RANGE OR DEAD BAND OF AT LEAST 5°F WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS SHUT-OFF OR REDUCED TO A MINIMUM.
6.4.3.2: SET POINT OVERLAP RESTRICTIONS	THE SYSTEMS PROVIDED AS SPECIFIED HAVING CONTROLS WHICH PREVENT THE HEAT SET POINT FROM EXCEEDING THE COOL SET POINT - THE DEADBAND.	MEANS SHALL BE PROVIDED TO PREVENT THE HEATING SET POINT FROM EXCEEDING THE COOLING SET POINT MINUS ANY APPLICABLE PROPORTIONAL BAND.
6.4.3.3: OFF-HOUR CONTROLS		
6.4.3.3.1: AUTOMATIC SHUTDOWN	SEE TABLE 3	HVAC SYSTEM SHALL BE EQUIPPED WITH AN AUTOMATIC COMPLYING WITH SECTION 6.4.3.2.1
6.4.3.3.2: SETBACK CONTROLS	SEE TABLE 3	HVAC SYSTEM SHALL BE EQUIPPED WITH A TEMPERATURE RESET FUNCTION COMPLYING WITH SECTION 6.4.3.2.2
6.4.3.3.3: OPTIMAL START CONTROLS	SEE TABLE 3	INDIVIDUAL AIR DISTRIBUTION SYSTEMS WITH A TOTAL DESIGN SUPPLY AIR CAPACITY OF 10,000 CFM SHALL HAVE OPTIMAL START CONTROLS.
6.4.3.3.4: ZONE ISOLATION	SEE TABLE 3	HVAC SYSTEM SHALL BE DIVIDED IN INDIVIDUAL ZONES COMPLYING WITH SECTION 6.4.3.2.4
6.4.3.4: VENTILATION SYSTEM CONTROLS		
6.4.3.4.1: STAIR AND SHAFT VENT	THE STAIR AND SHAFT VENTS AS SPECIFIED COMPLY WITH THESE REQUIREMENTS.	STAIR AND ELEVATOR SHAFT VENTS SHALL BE EQUIPPED WITH MOTORIZED DAMPERS THAT ARE CAPABLE OF BEING AUTOMATICALLY CLOSED DURING NORMAL OPERATION AND ARE INTERLOCKED TO BE OPEN AS REQUIRED BY FIRE AND SMOKE DETECTION SYSTEMS.
6.4.3.4.2: GRAVITY HOODS, VENTS & VENTILATORS	THE GRAVITY HOODS, VENTS AND VENTILATORS AS SPECIFIED COMPLY WITH THESE REQUIREMENTS.	OUTDOOR AIR SUPPLY AND EXHAUST HOODS, VENTS AND VENTILATORS SHALL BE EQUIPPED WITH MOTORIZED DAMPERS THAT WILL AUTOMATICALLY SHUT WHEN THE SPACES SERVED ARE NOT IN USE.
6.4.3.4.3: SHUTOFF DAMPER CONTROL	SEE TABLE 3	OUTDOOR AIR SUPPLY AND EXHAUST SYSTEMS SHALL BE EQUIPPED WITH MOTORIZED DAMPERS THAT WILL AUTOMATICALLY SHUT WHEN THE SYSTEMS OR SPACES SERVED ARE NOT IN USE.
6.4.3.4.4: DAMPERS	THE DAMPERS HAVE BEEN SPECIFIED TO MEET THE MAXIMUM LEAKAGE REQUIREMENTS IN TABLE 6.4.3.3.4.	THE MAXIMUM LEAKAGE OF REQUIRED DAMPERS SHALL HAVE A MAXIMUM LEAKAGE RATE WHEN TESTED IN ACCORDANCE WITH AMCA STANDARD 500 AS INDICATED IN TABLE 6.4.3.3.4
6.4.3.4.5: VENTILATION FAN CONTROLS	THE VENTILATION FANS AS SPECIFIED COMPLY WITH THESE REQUIREMENTS.	VENTILATION FANS WITH MOTORS GREATER THAN 3/4 HP SHALL HAVE CONTROLS WHICH WILL AUTOMATICALLY SHUT OFF THE FANS WHEN NOT REQUIRED.
6.4.3.5: HEAT PUMP AUXILIARY HEAT CONTROL	SEE TABLE 3	HEAT PUMPS WITH INTERNAL ELECTRIC RESISTANCE HEATERS SHALL HAVE CONTROLS THAT PREVENT SUPPLEMENTAL HEATER OPERATION WHEN THE HEATING LOAD CAN BE MET BY THE HEAT PUMP ALONE DURING BOTH STEADY-STATE OPERATION AND SETBACK RECOVERY.
6.4.3.6: HUMIDIFIER PREHEAT	SEE TABLE 3	HUMIDIFIERS WITH PREHEATING JACKETS MOUNTED IN THE AIR STREAM SHALL BE PROVIDED WITH AN AUTOMATIC VALVE TO SHUT OFF THE PREHEAT WHEN HUMIDIFICATION IS NOT REQUIRED.
6.4.3.7: HUMIDIFICATION & DEHUMIDIFICATION	SEE TABLE 3	SYSTEMS WITH BOTH MEANS FOR HUMIDIFICATION AND DEHUMIDIFICATION SHALL BE PROVIDED WITH THE CAPABILITY OF PREVENTING SIMULTANEOUS OPERATION OF HUMIDIFICATION AND DEHUMIDIFICATION EQUIPMENT.
6.4.3.8: FREEZE PROTECTION & SNOW/ICE MELTING SYSTEMS	THE FREEZE PROTECTION SYSTEMS AS SPECIFIED COMPLY WITH THESE REQUIREMENTS, AS SPECIFIED.	FREEZE PROTECTION SYSTEMS SHALL INCLUDE AUTOMATIC CONTROLS CAPABLE OF SHUTTING OFF SYSTEM WHEN THE OUTDOOR AIR TEMPERATURE IS ABOVE 40°F. SNOW/ICE MELTING SYSTEMS SHALL INCLUDE AUTOMATIC CONTROLS CAPABLE OF SHUTTING OFF SYSTEM WHEN THE PAVEMENT TEMPERATURE IS ABOVE 50°F.
6.4.3.9: VENTILATION CONTROLS FOR HIGH OCCUP AREAS	VENTILATION SYSTEMS FOR HIGH OCCUPANCY AREAS COMPLY WITH THESE REQUIREMENTS, AS SPECIFIED.	SYSTEMS WITH DESIGN OUTDOOR AIR CAPACITIES GREATER THAN 3000 CFM SERVING AREAS HAVING AN AVERAGE DESIGN OCCUPANCY EXCEEDING 100 PEOPLE PER 1000 FT ² SHALL INCLUDE MEANS TO AUTOMATICALLY REDUCE OUTDOOR AIR INTAKE BELOW DESIGN RATES WHEN SPACES ARE PARTIALLY OCCUPIED.
6.4.4: HVAC SYSTEM CONSTRUCTION AND INSULATION		
6.4.4.1: INSULATION	INSULATION HAS BEEN SPECIFIED TO BE INSTALLED AS PER INDUSTRY-STANDARD. SUPPLY AND RETURN DUCTS AND PLENUMS HAVE BEEN SPECIFIED TO BE INSULATED IN ACCORDANCE WITH TABLE 6.8.2A AND B. PIPING HAS BEEN SPECIFIED TO BE INSULATED ACCORDING TO TABLE 6.8.3	INSULATION SHALL BE INSTALLED AS PER INDUSTRY-ACCEPTED STANDARDS. ALL SUPPLY AND RETURN DUCTS AND PLENUMS SHALL BE INSULATED IN ACCORDANCE WITH TABLES 6.8.2A AND 6.8.2B. PIPING SHALL BE THERMALLY INSULATED IN ACCORDANCE WITH TABLE 6.8.3.
6.4.4.2: DUCTS AND PLENUM LEAKAGE	DUCTWORK AND PLENUMS HAVE BEEN SPECIFIED TO BE SEALED IN ACCORDANCE WITH TABLE 6.4.4.2A. DUCT DESIGNED TO OPERATE AT STATIC PRESSURES GREATER THAN 3 IN OF WG HAS BEEN SPECIFIED TO BE LEAK TESTED ACCORDING TO INDUSTRY STANDARDS	DUCTWORK AND PLENUMS SHALL BE SEALED IN ACCORDANCE WITH TABLE 6.4.4.2A. DUCTWORK THAT IS DESIGNED TO OPERATE AT STATIC PRESSURES IN EXCESS OF 3 IN OF WG SHALL BE LEAK TESTED ACCORDING TO INDUSTRY-ACCEPTED PROCEDURES.
6.4.5: COMPLETION REQUIREMENTS	CONSTRUCTION DOCUMENTS REQUIRE RECORD DRAWINGS, MANUALS, SYSTEM BALANCING AND SYSTEM COMMISSIONING.	CONSTRUCTION DOCUMENTS SHALL REQUIRE RECORD DRAWINGS, MANUALS, SYSTEM BALANCING AND SYSTEM COMMISSIONING.

NEW YORK STATE ENERGY CODE COMPLIANCE SECTION 10 - OTHER EQUIPMENT MANDATORY PROVISIONS		
STANDARD: ASHRAE 90.1-2007 CLIMATE ZONE: 4A		
ITEM DESCRIPTION	PROPOSED DESIGN VALUE	CODE PRESCRIPTIVE VALUE AND CITATION
10.4.1: ELECTRIC MOTORS	ALL MOTORS HAVE MINIMUM EFFICIENCY GREATER OR EQUAL TO THE EFFICIENCIES REQUIRED BY THE ENERGY POLICY ACT OF 1992.	ELECTRIC MOTORS SHALL COMPLY WITH THE REQUIREMENTS OF THE ENERGY POLICY ACT OF 1992 WHERE APPLICABLE.

PROFESSIONAL'S STATEMENT

TO THE BEST OF OUR KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE NEW YORK CITY ENERGY CONSERVATION CODE.

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SHEET NOTES

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Entek Engineering LLC

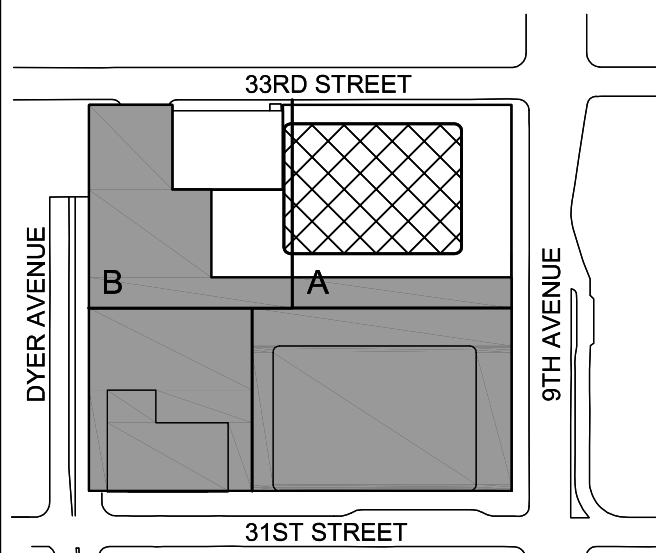
166 Ames Street, Hackensack, NJ 07601

Wind Tunnel Consultant

Rowan Williams Davies & Irwin Inc.

650 Woodlawn Road West, Guelph, Ontario, Canada N1K 1S8

Key Plan:



Seal & Signature:



2. 30 JAN 2015 ISSUED FOR BUILDING PERMIT
1. 12 SEPT 2014 ISSUED FOR FOUNDATION PERMIT

No. Date Description

Sheet Name:

NYC EC
COMPLIANCE
MANDATORY
MEASURES
SHEET NO. 1

Project No.: 14830 A 000

Date: 19 DEC 2014

Scale: N.T.S.

File No.:

Sheet No.:


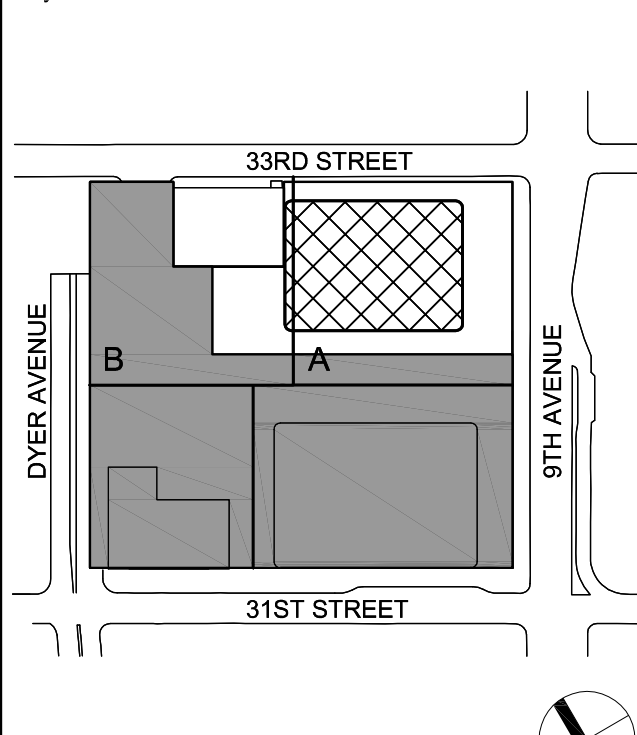

EN-002.00

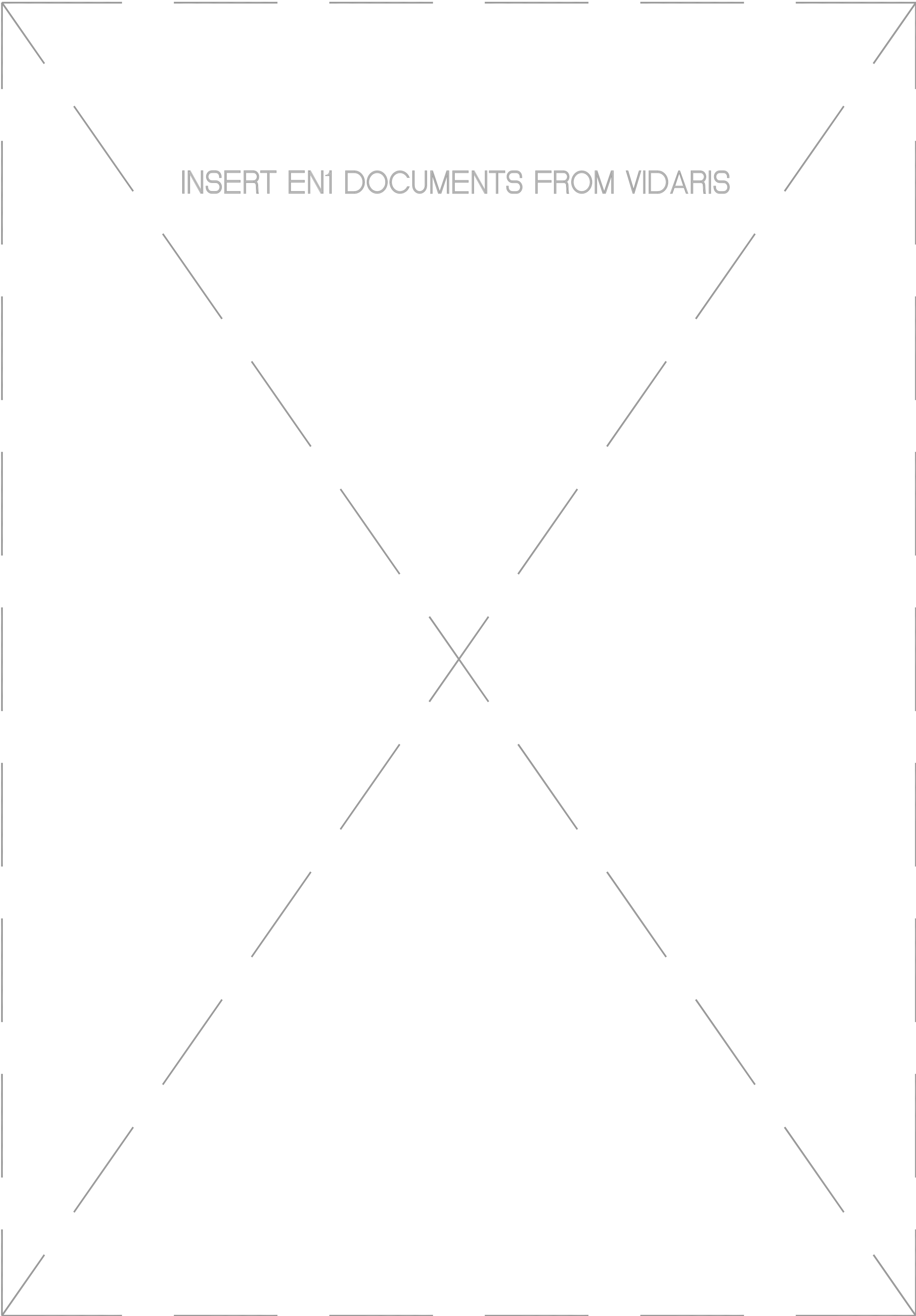
Page No.:

MISCELLANEOUS REQUIREMENTS - MANDATORY MEASURES	
1. MECHANICAL EQUIPMENT NOT COVERED BY THE US NATIONAL APPLIANCE ENERGY CONSERVATION ACT (MCECA) OF 1978 SHALL BE PROVIDED A PERMANENT LABEL INSTALLED BY THE MANUFACTURER STATING THAT THE EQUIPMENT COMPLIES WITH THE REQUIREMENTS OF ASHRAE 90.1.	6. FREEZE PROTECTION SYSTEMS (SUCH AS HEAT TRACING) SHALL HAVE CONTROLS TO SHUT OFF THE SYSTEM WHEN THE OUTDOOR AIR TEMPERATURE IS ABOVE 40°F. SNOW/ICE MELTING SYSTEMS SHALL HAVE CONTROLS TO SHUT OFF THE SYSTEM WHEN THE PAVEMENT TEMPERATURE IS ABOVE 50°F.
2. PACKAGED TERMINAL AIR CONDITIONERS AND HEAT PUMPS WITH SLEEVE SIZES LESS THAN 18 INCHES HIGH AND 42 INCHES WIDE SHALL BE PROVIDED WITH A FACTORY LABEL WHICH READS: "MANUFACTURED FOR REPLACEMENT APPLICATIONS ONLY; NOT TO BE INSTALLED IN NEW CONSTRUCTION PROJECTS."	7. CO ₂ SENSORS, WHICH REDUCE THE OUTDOOR AIR INTAKE BELOW DESIGN RATES WHEN SPACES ARE PARTIALLY OCCUPIED, HAVE BEEN PROVIDED FOR SYSTEMS WITH DESIGN OUTDOOR AIR CAPACITIES GREATER THAN 3000 CFM SERVING AREAS HAVING AN AVERAGE DESIGN OCCUPANCY EXCEEDING 100 PEOPLE PER 1000 FT ² .
3. A DEADBAND OF _____°F SHALL BE PROVIDED TO PREVENT THE HEATING SET POINT FROM EXCEEDING THE COOLING SET POINT.	8. DUCTWORK USED FOR BOTH HEATING AND COOLING SHALL HAVE BE INSULATED WITH AN R-VALUE GREATER THAN OR EQUAL TO 3.5. RETURN AIR DUCTS ARE NOT TO BE INSULATED.
4. THE LEAKAGE OF THE SPECIFIED DAMPERS SHALL BE LESS THAN THE 10 CFM / SQUARE FOOT FOR MOTORIZED DAMPERS AND 20 CFM / SQUARE FOOT FOR NONMOTORIZED DAMPERS AT 1.0 INCHES OF WATER GAUGE WHEN TESTED IN ACCORDANCE WITH AMCA STANDARD 500.	9. SUPPLY AND RETURN DUCTWORK AND PLENUMS LOCATED OUTDOORS AND SUPPLY DUCTWORK AND PLENUMS GREATER THAN 2 INCHES OF W.C. IN UNCONDITIONED SPACES SHALL BE A MINIMUM OF CLASS "A" SEALED. SUPPLY DUCTWORK AND PLENUMS LESS THAN 2 INCHES OF W.C. AND RETURN DUCTWORK AND PLENUMS GREATER THAN 2 INCHES OF W.C. AND PLENUMS GREATER THAN 2 INCHES OF W.C. AND EXHAUST DUCTWORK IN CONDITIONED SPACES SHALL BE A MINIMUM OF CLASS "B" SEALED. EXHAUST DUCTWORK AND PLENUMS LOCATED OUTDOORS AND IN UNCONDITIONED SPACE AND SUPPLY DUCTWORK AND PLENUMS LESS THAN 2 INCHES OF W.C. AND RETURN DUCTWORK IN CONDITIONED SPACE SHALL BE A MINIMUM OF CLASS "C" SEALED.
5. VENTILATION FANS WITH MOTORS GREATER THAN 3/4 HP SHALL HAVE CONTROLS WHICH AUTOMATICALLY SHUT OFF THE FANS WHEN NOT REQUIRED.	10. THIS CONTRACTOR IS REQUIRED TO PROVIDE RECORD DRAWINGS AND OWNER'S OPERATIONAL MANUALS. THIS CONTRACTOR IS ALSO RESPONSIBLE TO PARTICIPATE IN THE AIR AND WATER SYSTEM BALANCING AND ANY REQUIRED CONTROL SYSTEM COMMISSIONING.

TO THE BEST OF OUR KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE NEW YORK CITY ENERGY CONSERVATION CODE

ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.

	
<h1 style="margin: 0;">MANHATTAN WEST: NORTH TOWER</h1> <p style="margin: 0;">375 Ninth Avenue, New York, NY 10001</p>	
Client	
<h1 style="margin: 0; color: #0056b3;">Brookfield</h1>	
Brookfield Place 250 Vesey Street, 15th Floor, New York, NY 10021	
Architecture/Structural Engineering	
<div style="font-size: 4em; font-weight: bold; color: #e91e63;">SOM</div> Skidmore, Owings & Merrill LLP 14 Wall Street, New York, NY 10005	
Civil Engineering	
Philip Habib & Associates 102 Madison Avenue #11, New York, NY 10016	
MEP Engineering	
Jaros Baum & Bolles 80 Pine Street, New York, NY 10005	
Vertical Transportation	
Edgett Williams Consulting Group, Inc. 102 East Bldedale Ave., Suite 1, Mill Valley, California 94941	
Sustainable Design	
Viridian Energy & Environmental 50 Washington Street, Norwalk, CT 06854	
Geo-Technical Engineering	
Mueser Rutledge Consulting Engineers 14 Penn Plaza, 22nd W, 34th Street #610, New York, NY 10122	
Landscape Consultant	
Field Operations 475 10th Avenue, New York, NY 10018	
Security Consultant	
Ducibella, Vantor & Santore 250 State Street #F1, North Haven, CT 06473	
Blatt Consultant	
Weidinger Associates, Inc. 404 Fifth Avenue #B, New York, NY 10005	
Acoustical Consultant	
Cerami & Associates 404 Fifth Avenue #B, New York, NY 10018	
Vibration Consultant	
Wilson, Uhrig & Associates, Inc. 65 Broadway, Suite 401, New York, NY 10006	
Code Consultant	
Code Consultants Professional Engineers PC 215 West 49th Street, 15th Floor, New York, NY 10018	
Facade Maintenance Consultant	
Entek Engineering LLC 166 Ames Street, Hackensack, NJ 07601	
Wind Tunnel Consultant	
Rowan Williams Davies & Irwin Inc. 650 Woodlawn Road West, Guelph Ontario, Canada N1R 1B9	
Key Plan:	
	
Seal & Signature:	
 <i>[Signature]</i>	
<div style="display: flex; justify-content: space-between;"> <div> Project No.: 14830-A.000 </div> <div> Sheet No.: EN-003.00 </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div> Date: 19 DEC 2014 </div> <div> Scale: N.T.S. </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div> File No.: </div> <div> Page No.: </div> </div>	
<h2 style="margin: 0;">NYC EC COMPLIANCE MANDATORY MEASURES SHEET NO. 2</h2>	



INSERT ENI DOCUMENTS FROM VIDARIS

PROFESSIONAL'S STATEMENT

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SHEET NOTES

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2. REFER TO SHEET EN-200 FOR BUILDING ASSEMBLY DESCRIPTIONS, DETAILS, AND PERFORMANCE CRITERIA.

3. REFER TO PERFORMANCE BASED ENERGY ANALYSIS TITLED "ENERGY MODELING OF THE MANHATTAN WEST NORTH TOWER" FOR OUTPUT REPORTS OF THE ASSEMBLIES ON SHEET EN-200.

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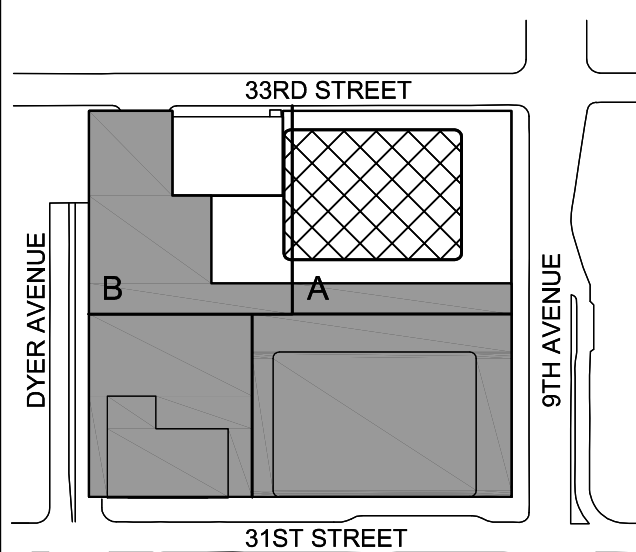
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Wind Tunnel Consultant

Rowan Williams Davies & Irwin Inc.
650 Woodlawn Road West, Guelph
Ontario, Canada N1K 1B8

Key Plan:



A1 A B B.7 C C.8 D D.6 E E.3 F F.2 G G.5 H J J.3 K K.2 K.7 L

FLOOR LPD CALCULATIONS

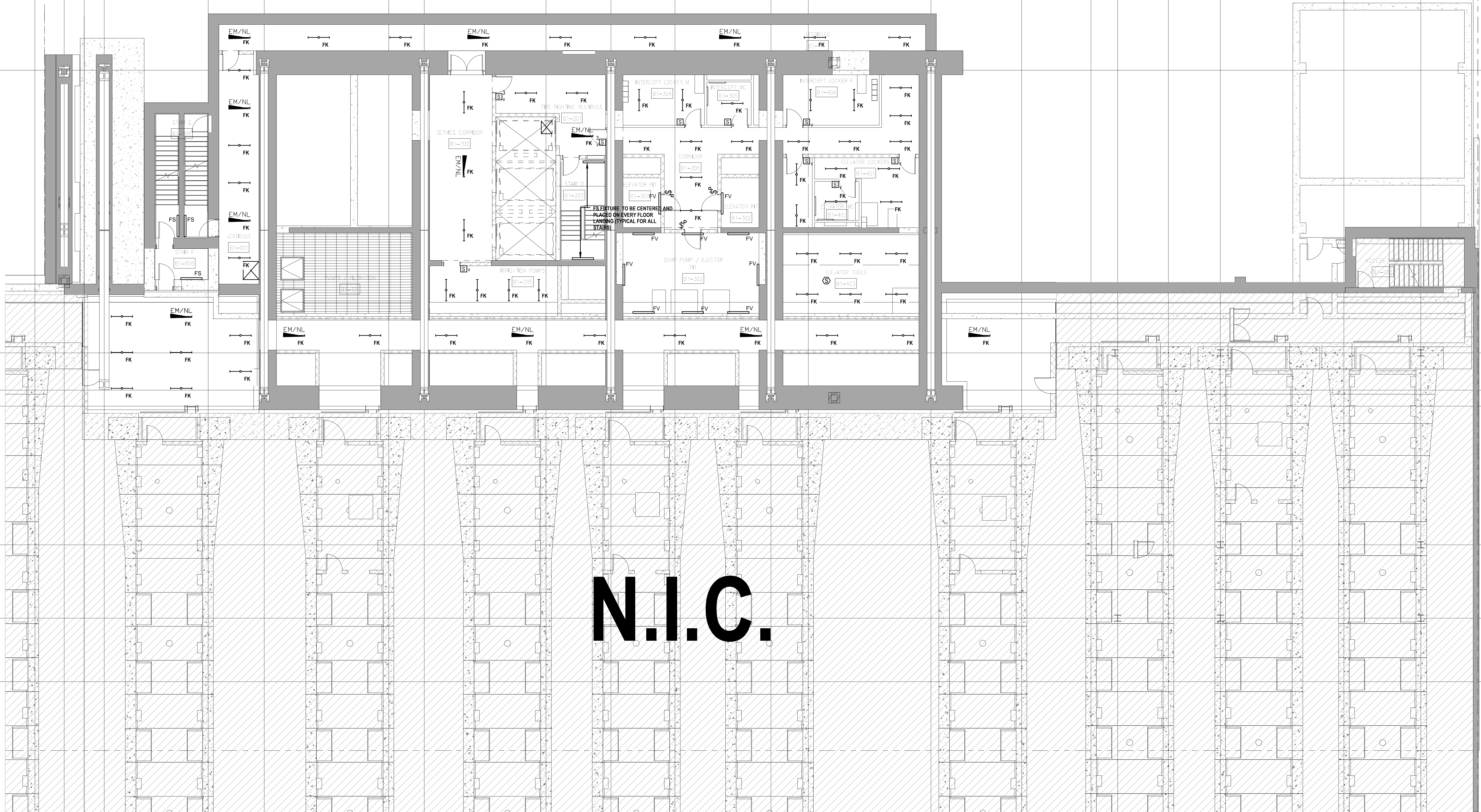
STAIRS
WATTAGE: 160
AREA: 428
PROPOSED LPD = 0.37
ALLOWABLE LPD = 1.0

CORRIDOR
WATTAGE: 1632
AREA: 3678
PROPOSED LPD = 0.44
ALLOWABLE LPD = 1.0

ELECTRICALMECHANICAL
WATTAGE: 992
AREA: 1180
PROPOSED LPD = 0.84
ALLOWABLE LPD = 1.0

ACTIVE STORAGE
WATTAGE: 256
AREA: 561
PROPOSED LPD = 0.46
ALLOWABLE LPD = 1.0

PROPOSED FLOOR LPD = $(160+1632+992+256)/(482+3678+1180+561) = 0.52$
ALLOWABLE FLOOR LPD = $(482+3678+1180+561)/(482+3678+1180+561) = 1.0$



SHEET NOTES

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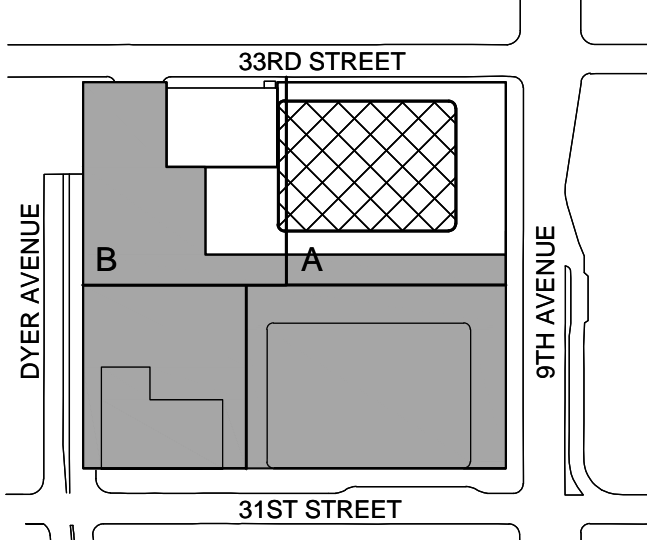
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Ontario, Canada N1K 1B8

Key Plan:



Seal & Signature:



2 30 JAN 2015 ISSUED FOR BUILDING PERMIT
12 SEPT 2014 ISSUED FOR FOUNDATION PERMIT
No. Date Description
Sheet Name:

NYC EC
COMPLIANCE
LIGHTING
CELLAR B1
FLOOR PLAN -
PART A

Project No.:

Date:

Scale:

File No.:

Sheet No.:

EN-100.00

Page No.:

PROFESSIONAL'S STATEMENT

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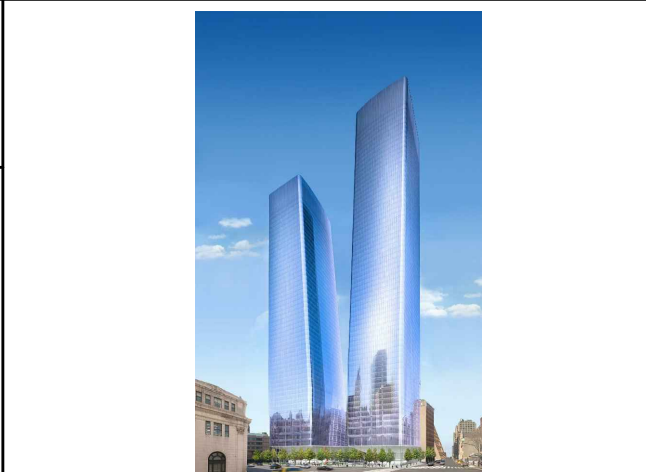
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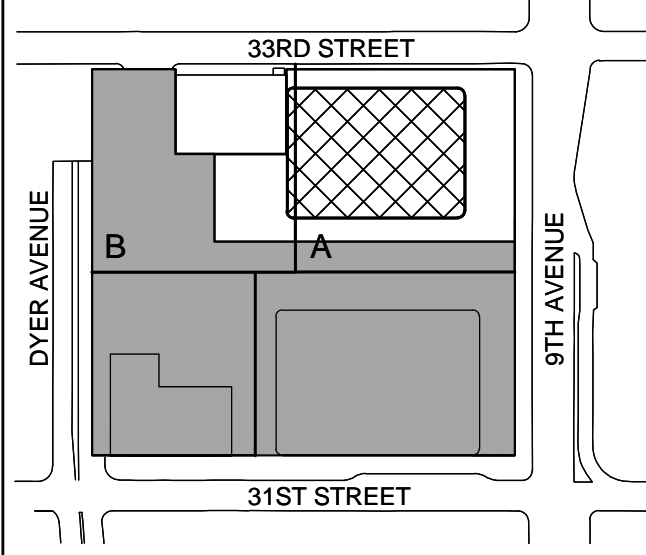
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Key Plan:



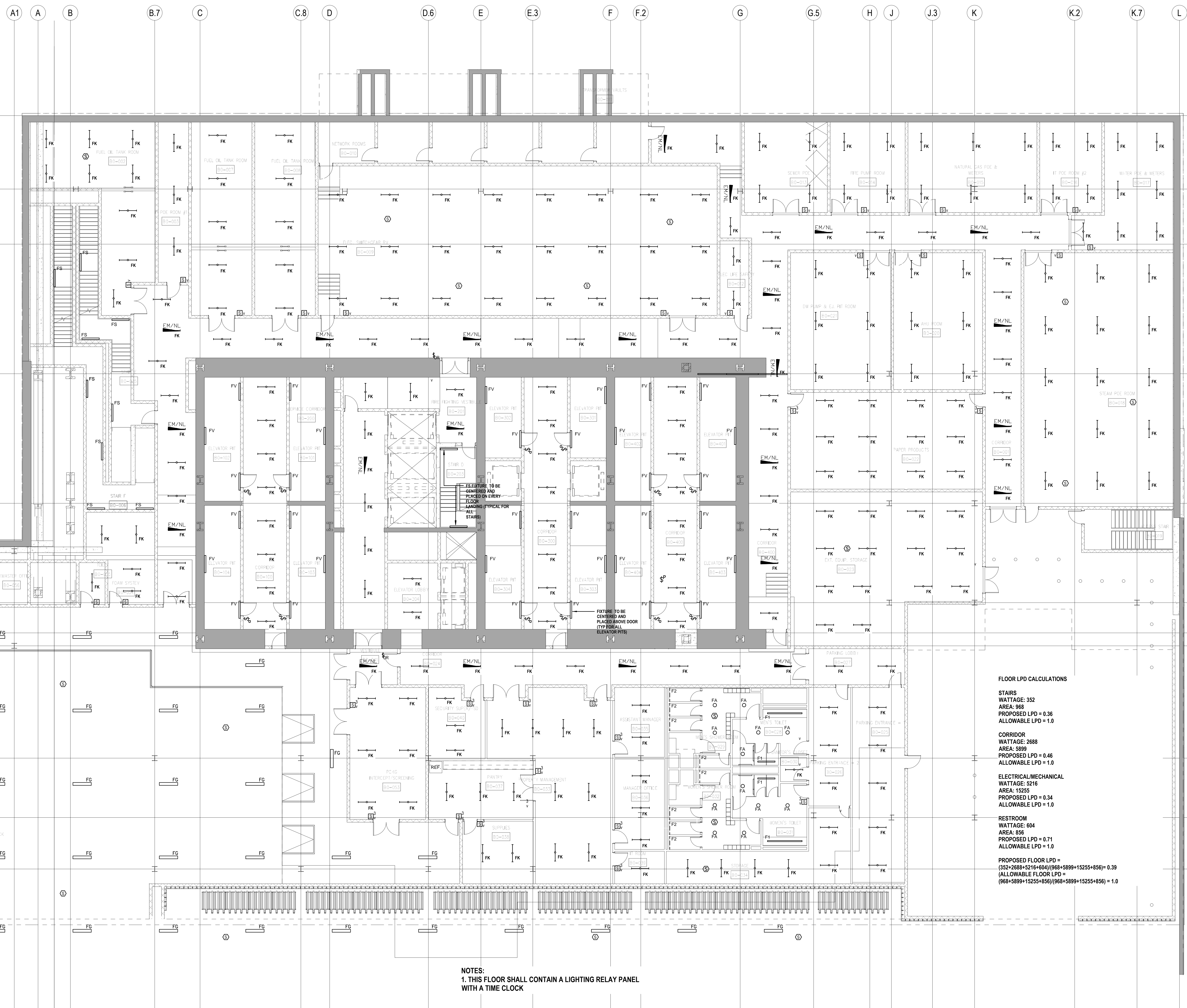
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2 30 JAN 2015 ISSUED FOR BUILDING PERMIT
1 12 SEPT 2014 ISSUED FOR FOUNDATION PERMIT

Sheet Name:
NYC EC COMPLIANCE LIGHTING CELLAR B FLOOR PLAN - PART A

Project No.: 14830-1.000
Date: 19 DEC 2014
Scale: N.T.S.
File No.:
Sheet No.:
Page No.:
EN-101.00



FLOOR LPD CALCULATIONS

STAIRS
WATTAGE: 352
AREA: 968
PROPOSED LPD = 0.36
ALLOWABLE LPD = 1.0

CORRIDOR
WATTAGE: 2688
AREA: 5999
PROPOSED LPD = 0.46
ALLOWABLE LPD = 1.0

ELECTRICAL/MECHANICAL
WATTAGE: 5216
AREA: 15255
PROPOSED LPD = 0.34
ALLOWABLE LPD = 1.0

RESTROOM
WATTAGE: 604
AREA: 856
PROPOSED LPD = 0.71
ALLOWABLE LPD = 1.0

PROPOSED FLOOR LPD =
 $(352+2688+5216+604)/(968+5999+15255+856) = 0.39$
(ALLOWABLE FLOOR LPD =
 $(968+5999+15255+856)/(968+5999+15255+856) = 1.0$

NOTES:
1. THIS FLOOR SHALL CONTAIN A LIGHTING RELAY PANEL WITH A TIME CLOCK

PROFESSIONAL'S STATEMENT

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SHEET NOTES

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NORTH TOWER
375 Ninth Avenue, New York, NY 10001

Client

Brookfield
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102 Madison Avenue #11, New York, NY 10016

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14 Penn Plaza, 225 W. 34th Street #610,
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Landscape Consultant

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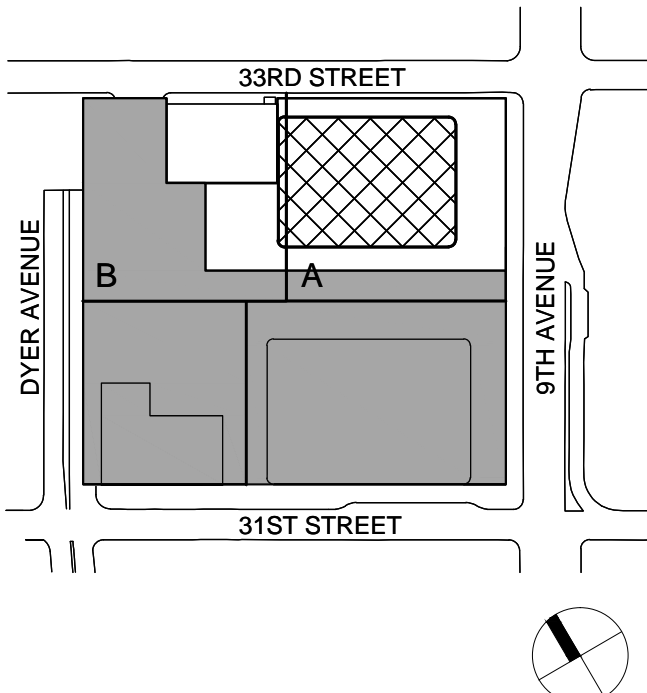
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Key Plan:



Seal & Signature:



2	30 JAN 2015	ISSUED FOR BUILDING PERMIT
1	12 SEPT 2014	ISSUED FOR FOUNDATION PERMIT
No.	Date	Description

Sheet Name:

NYC EC
COMPLIANCE
LIGHTING
CELLAR B
FLOOR PLAN -
PART B

Project No.:

14830.A.000

Date:

19 DEC 2014

Scale:

N.T.S.

File No.:

Sheet No.:

EN-102.00

Page No.:

PROFESSIONAL'S STATEMENT

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FLOOR LPD CALCULATIONS

ACTIVE STORAGE
WATTAGE: 320
AREA: 1236
PROPOSED FLOOR LPD = 0.26
ALLOWABLE FLOOR LPD = 1.0

A4

A3

A2

A1

A

B

0.5

1

2

3

4

4.8

5

5.2

6

7

8

SHEET NOTES

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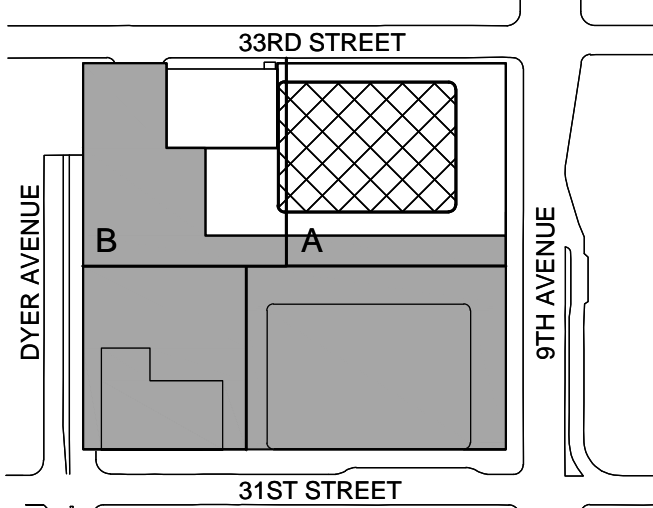
Facade Maintenance Consultant

Entek Engineering LLC
166 Ames Street, Hackensack, NJ 07601

Wind Tunnel Consultant

Rowan Williams Davies & Irwin Inc.
650 Woodlawn Road West, Guelph
Ontario, Canada N1K 1B8

Key Plan:



Seal & Signature:



2	30 JAN 2015	ISSUED FOR BUILDING PERMIT
1	12 SEPT 2014	ISSUED FOR FOUNDATION PERMIT
No.	Date	Description

Sheet Name:

NYC EC
COMPLIANCE
LIGHTING
LEVEL 3
FLOOR PLAN

Project No.:

Date:

Scale:

File No.:

Sheet No.:

Date:

Scale:

Page No.:

EN-104.00

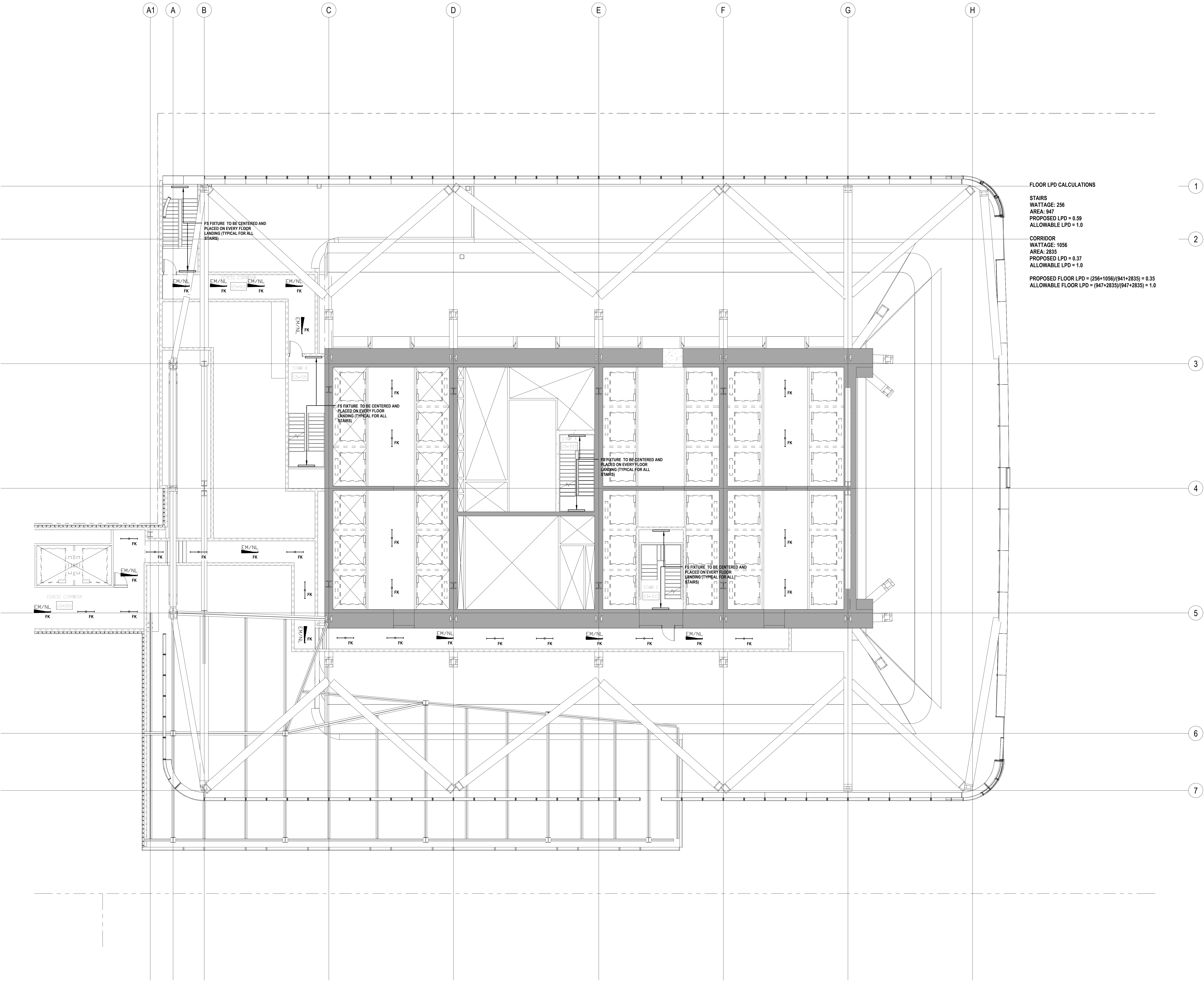
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PROFESSIONAL'S STATEMENT

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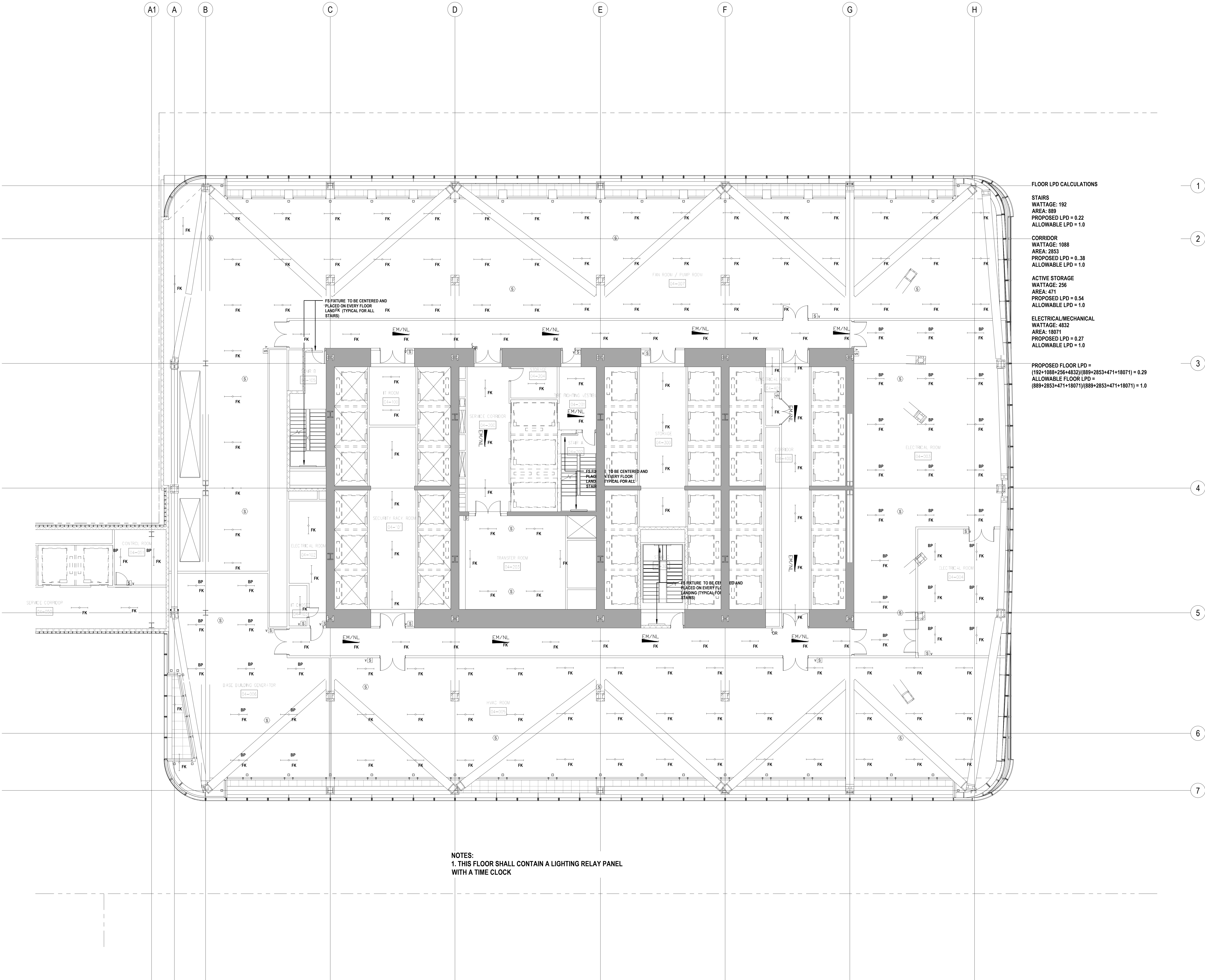


FLOOR LPD CALCULATIONS

STAIRS
WATTAGE: 256
AREA: 947
PROPOSED LPD = 0.59
ALLOWABLE LPD = 1.0

CORRIDOR
WATTAGE: 1056
AREA: 2835
PROPOSED LPD = 0.37
ALLOWABLE LPD = 1.0

PROPOSED FLOOR LPD = $(256 + 1056) / (947 + 2835) = 0.35$
ALLOWABLE FLOOR LPD = $(947 + 2835) / (947 + 2835) = 1.0$



FLOOR LPD CALCULATIONS

STAIRS
WATTAGE: 192
AREA: 889
PROPOSED LPD = 0.22
ALLOWABLE LPD = 1.0

CORRIDOR
WATTAGE: 1088
AREA: 2833
PROPOSED LPD = 0.38
ALLOWABLE LPD = 1.0

ACTIVE STORAGE
WATTAGE: 256
AREA: 947
PROPOSED LPD = 0.54
ALLOWABLE LPD = 1.0

ELECTRICAL/MECHANICAL
WATTAGE: 4832
AREA: 18071
PROPOSED LPD = 0.27
ALLOWABLE LPD = 1.0

PROPOSED FLOOR LPD =
 $(192+1088+256+4832)/(889+2833+471+18071) = 0.29$
ALLOWABLE FLOOR LPD =
 $(889+2833+471+18071)/(889+2833+471+18071) = 1.0$

SHEET NOTES

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FLOOR LPD CALCULATIONS

STAIRS
WATTAGE: 256
AREA: 947
LPD=0.59

CORRIDOR
WATTAGE: 1056
AREA: 2835



MANHATTAN WEST:
NORTH TOWER
375 Ninth Avenue, New York, NY 10001

Client
Brookfield
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80 Pine Street, New York, NY 10005

Vertical Transportation
Edgett Williams Consulting Group, Inc.
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Viridian Energy & Environmental
50 Washington Street, Norwalk, CT 06854

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Blast Consultant
Weidinger Associates, Inc.
40 Wall Street, New York, NY 10005

Acoustical Consultant
Cerami & Associates
404 Fifth Avenue #8, New York, NY 10018

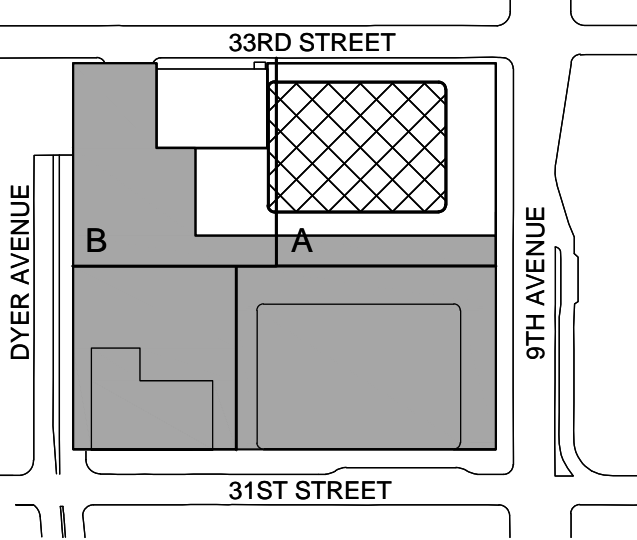
Vibration Consultant
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65 Broadway, Suite 401, New York, NY 10005

Code Consultant
Code Consultants Professional Engineers PC
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Key Plan:



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No. Date Description

Sheet Name:
**NYC EC
COMPLIANCE
LIGHTING
LEVEL 4
FLOOR PLAN**

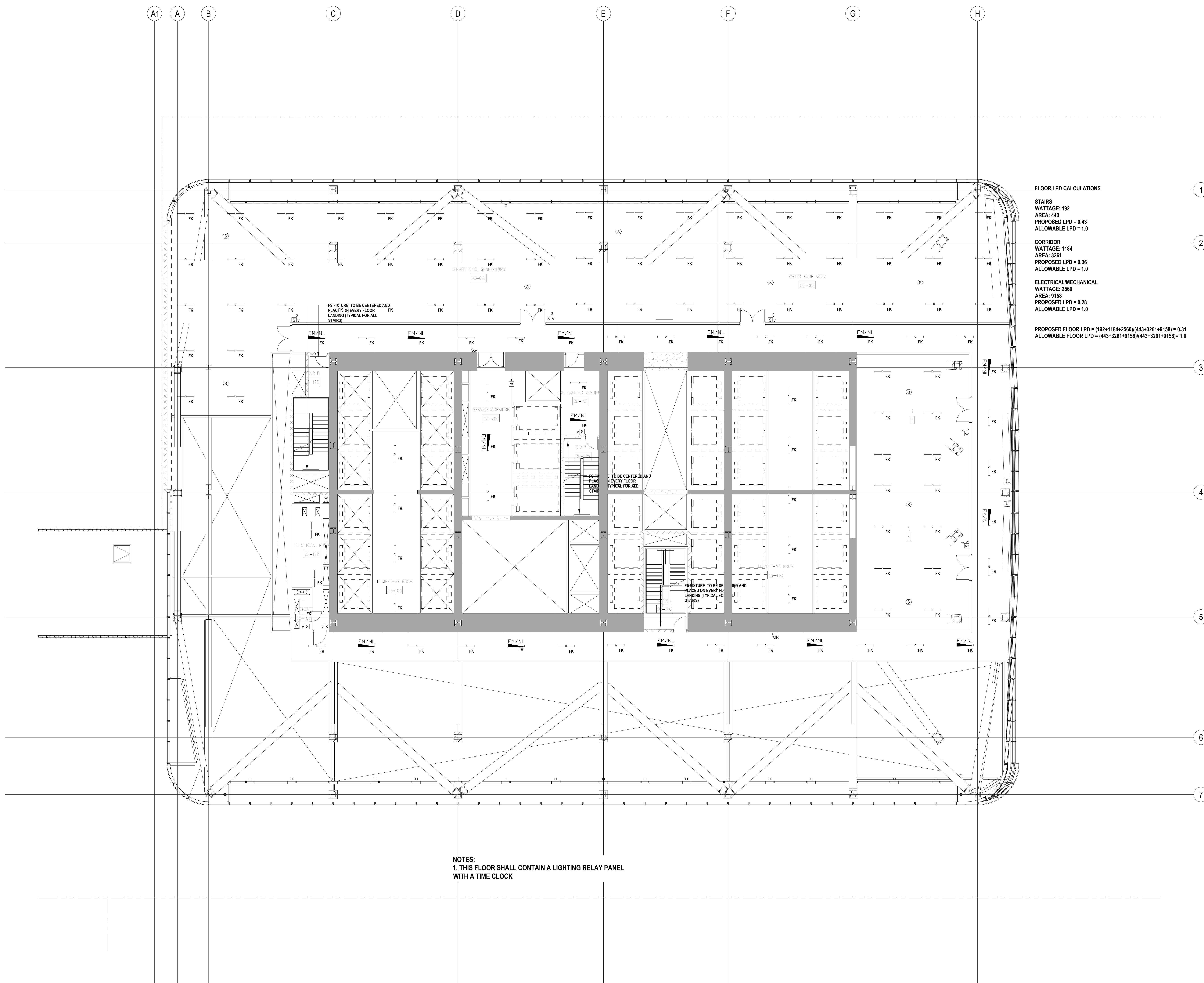
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Date: 19 DEC 2014
Scale: N.T.S.
File No.:
Sheet No.:
EN-105.00
Page No.:

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NOTES:
1. THIS FLOOR SHALL CONTAIN A LIGHTING RELAY PANEL
WITH A TIME CLOCK

FLOOR LPD CALCULATIONS

STAIRS
WATTAGE: 192
AREA: 443
PROPOSED LPD = 0.43
ALLOWABLE LPD = 1.0

CORRIDOR
WATTAGE: 1184
AREA: 3261
PROPOSED LPD = 0.36
ALLOWABLE LPD = 1.0

ELECTRICAL/MECHANICAL
WATTAGE: 2560
AREA: 9158
PROPOSED LPD = 0.28
ALLOWABLE LPD = 1.0

PROPOSED FLOOR LPD = $(192+1184+2560)/(443+3261+9158) = 0.31$
ALLOWABLE FLOOR LPD = $(443+3261+9158)/(443+3261+9158) = 1.0$

SHEET NOTES

ENERGY ANALYSIS NOTES:

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Edgett Williams Consulting Group, Inc.
102 East Blithedale Ave. Suite 1, Mill Valley, California 94941

	<p>Sustainable Design</p> <p>Viridian Energy & Environmental</p> <p>50 Washington Street, Norwalk, CT 06854</p>
--	---

Geo-Technical Engineering
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 14 Penn Plaza, 225 W. 34th Street #610,
 New York, NY 10122

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475 10th Avenue, New York, NY 10018

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	Blast Consultant
	Weidlinger Associates, Inc. 40 Wall Street, New York, NY 10005

	Acoustical Consultant
	Cerami & Associates
	404 Fifth Avenue #8, New York, NY 10018

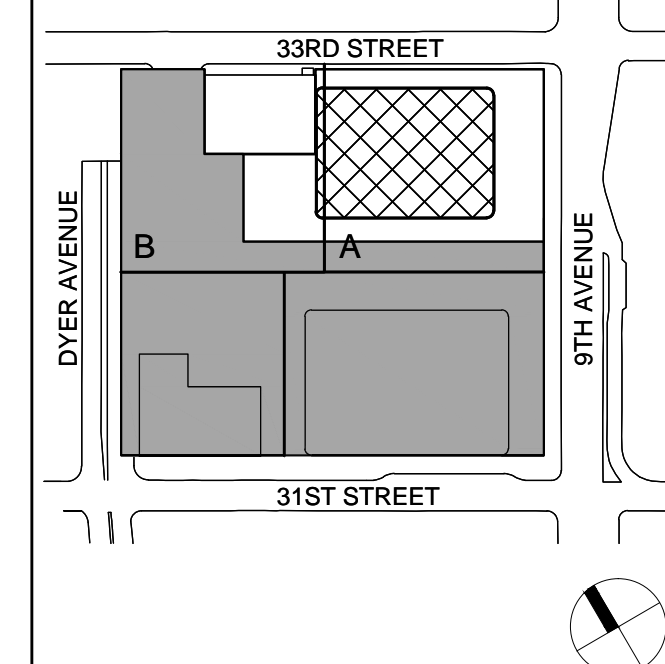
	Vibration Consultant
	Wilson, Uhrig & Associates, Inc. 65 Broadway, Suite 401, New York, NY 10006

	Code Consultant
	Code Consultants Professional Engineers PC 215 West 40th Street, 15th Floor, New York, NY 10018

	<p>Facade Maintenance Consultant</p> <p>Entek Engineering LLC</p> <p>166 Ames Street, Hackensack, NJ 07601</p>
--	---

	<p>Wind Tunnel Consultant</p> <p>Rowan Williams Davies & Irwin Inc.</p> <p>650 Woodlawn Road West, Guelph Ontario, Canada N1K 1B8</p>
--	--

Key Plan:



Seal & Signature



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No.	Date	Description
Sheet Name:		

NYC EC
COMPLIANCE
LIGHTING
LEVEL 5
FLOOR PLAN

Project No. :

Date: 19 DEC 2014

Scale:

Sheet No :

EN-106.00

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SHEET NOTES

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MANHATTAN WEST:
NORTH TOWER

375 Ninth Avenue, New York, NY 10001

Client

Brookfield

Brookfield Place
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Architecture/Structural Engineering

SOM

Skidmore, Owings & Merrill LLP
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Civil Engineering

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102 Madison Avenue #11, New York, NY 10016

MEP Engineering

Jaros Baum & Bolles
80 Pine Street, New York, NY 10005

Vertical Transportation

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102 East Bithedale Ave. Suite 1, Mill Valley, California 94041

Sustainable Design

Viridian Energy & Environmental
50 Washington Street, Norwalk, CT 06854

Geo-Technical Engineering

Mueser Rutledge Consulting Engineers
14 Penn Plaza, 225 W. 34th Street #610,
New York, NY 10122

Landscape Consultant

Field Operations
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Security Consultant

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250 State Street #F1, North Haven, CT 06473

Blast Consultant

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Acoustical Consultant

Cerami & Associates
404 Fifth Avenue #8, New York, NY 10018

Vibration Consultant

Wilson, Uhrig & Associates, Inc.
65 Broadway, Suite 401, New York, NY 10005

Code Consultant

Code Consultants Professional Engineers PC
215 West 40th Street, 15th Floor, New York, NY 10018

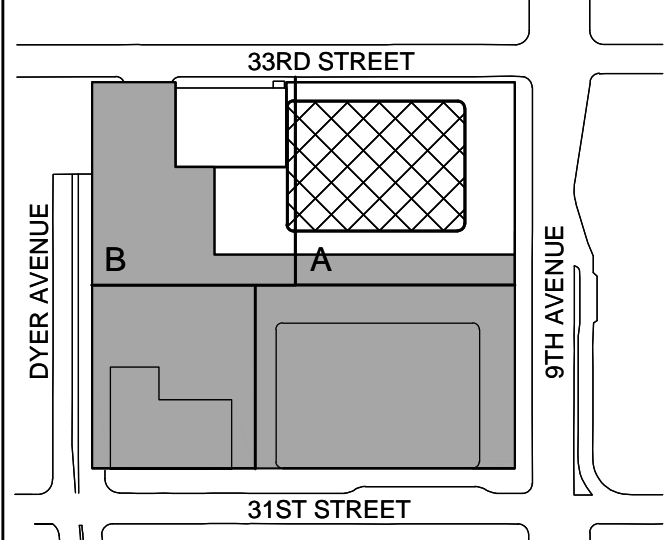
Facade Maintenance Consultant

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Wind Tunnel Consultant

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Ontario, Canada N1K 1B8

Key Plan:



Seal & Signature:



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No.	Date	Description

Sheet Name:

NYC EC
COMPLIANCE
LIGHTING
LEVEL 6-16
FLOOR PLAN

Project No.:

14830-A-000

Date:

19 DEC 2014

Scale:

N.T.S.

File No.:

Sheet No.:

EN-107.00

Date:

19 DEC 2014

Scale:

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Page No.:

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LIGHTING WITHIN DASHED LINES SHALL BE
PART OF A SEPARATE FIT-OUT FILING

FLOOR LPD CALCULATIONS

LOBBY
WATTAGE: 520
AREA: 1172
PROPOSED LPD: 0.44
ALLOWABLE LPD: 1.0

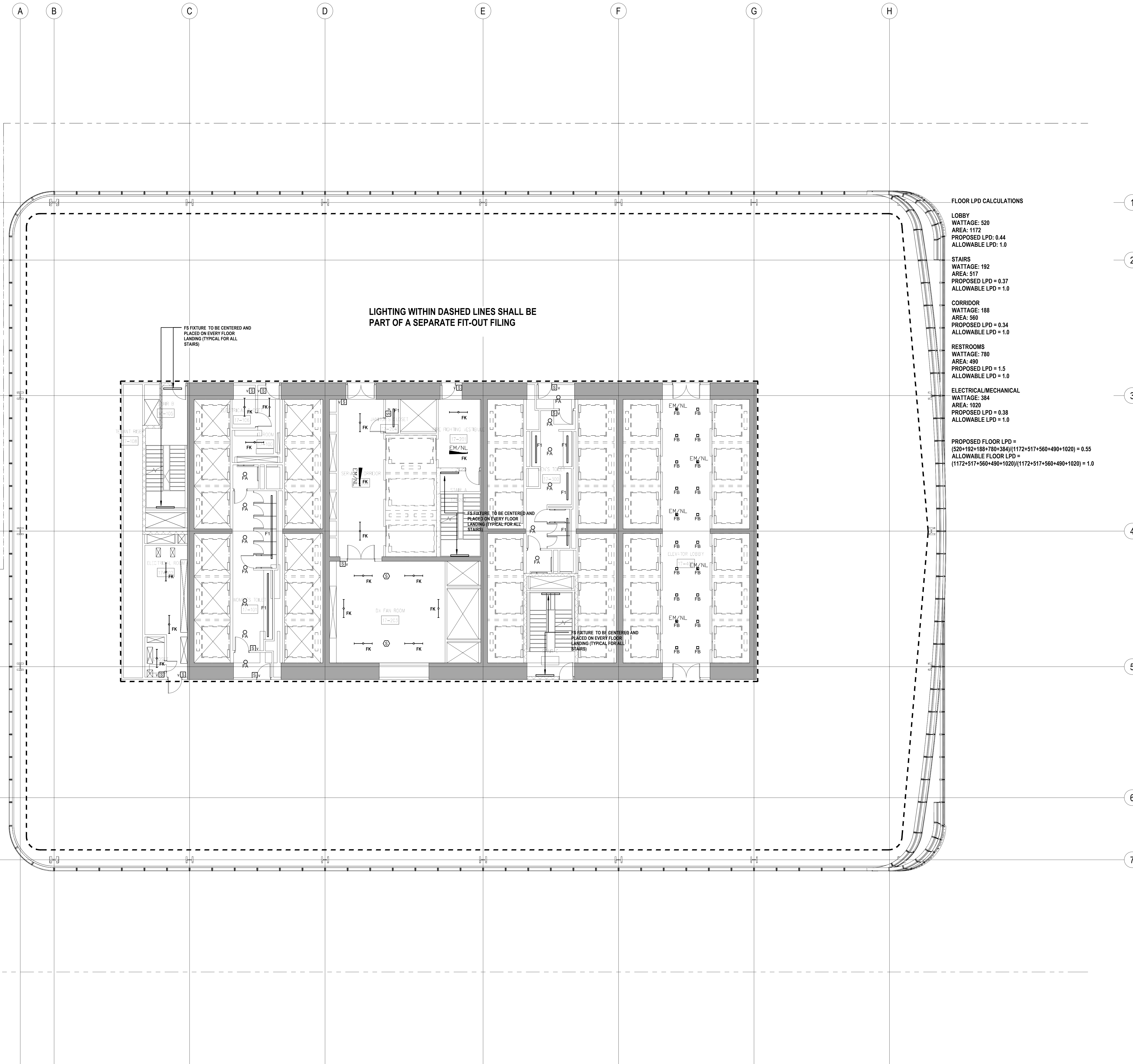
STAIRS
WATTAGE: 192
AREA: 517
PROPOSED LPD = 0.37
ALLOWABLE LPD = 1.0

CORRIDOR
WATTAGE: 188
AREA: 560
PROPOSED LPD = 0.34
ALLOWABLE LPD = 1.0

RESTROOMS
WATTAGE: 780
AREA: 490
PROPOSED LPD = 1.5
ALLOWABLE LPD = 1.0

ELECTRICAL/MECHANICAL
WATTAGE: 384
AREA: 1020
PROPOSED LPD = 0.38
ALLOWABLE LPD = 1.0

PROPOSED FLOOR LPD =
(520+192+188+780+384)/((1172+517+560+490+1020)) = 0.54
ALLOWABLE FLOOR LPD =
(1172+517+560+490+1020)/((1172+517+560+490+1020)) = 1.0



SHEET NOTES

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	<p>Sustainable Design</p> <p>Viridian Energy & Environmental 50 Washington Street, Norwalk, CT 06854</p>
--	--

	<p>Geo-Technical Engineering</p> <p>Mueser Rutledge Consulting Engineers</p> <p>14 Penn Plaza, 225 W. 34th Street #610,</p>
--	--

	Landscape Consultant
	Field Operations
	475 10th Avenue, New York, NY 10018

	Security Consultant
	Ducibella, Vantor & Santore

	Blast Consultant Weidinger Associates, Inc.
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	Acoustical Consultant
	Cerami & Associates

	484 Third Avenue #8, New York, NY 10016
	Vibration Consultant
	Wilson, Uhrig & Associates, Inc.

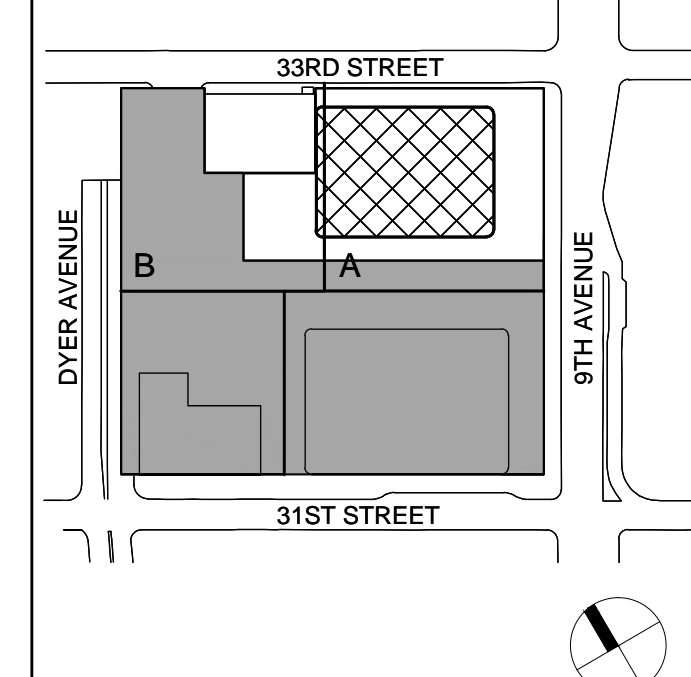
	65 Broadway, Suite 401, New York, NY 10006
	Code Consultant
	Code Consultants Professional Engineers PC

	215 West 40th Street, 15th Floor, New York, NY 10018
	Facade Maintenance Consultant

	166 Ames Street, Hackensack, NJ 07601
	Wind Tunnel Consultant

	Rowan Williams Davies & Irwin Inc. 650 Woodlawn Road West, Guelph Ontario, Canada N1K 1B8
--	---

Key Plan:



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NYC EC
COMPLIANCE
LIGHTING
LEVEL 17
FLOOR PLAN

Project No.: 14830.A.000	Sheet No.:
Date: 19 DEC 2014	EN-108.00
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File No.:	Page No.:

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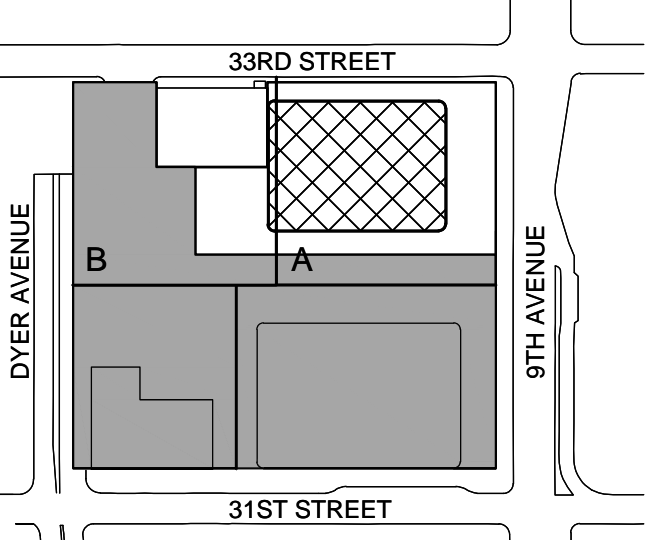
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Key Plan:



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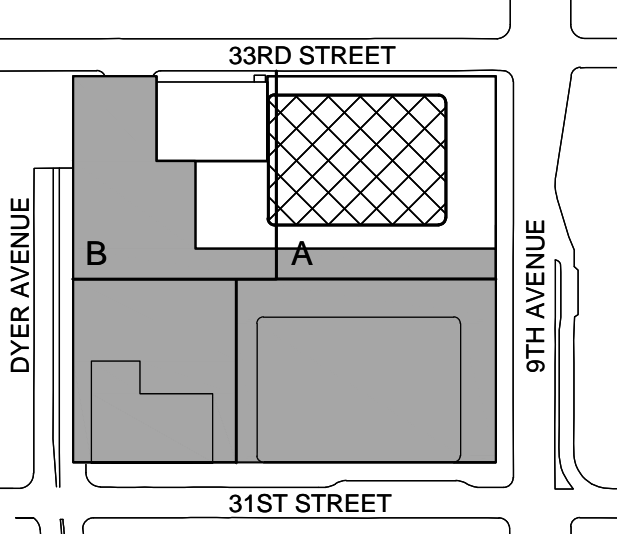
Facade Maintenance Consultant

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Key Plan:



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2 30 JAN 2015 ISSUED FOR BUILDING PERMIT
1 12 SEPT 2014 ISSUED FOR FOUNDATION PERMIT
No. Date Description

Sheet Name:

**NYC EC
COMPLIANCE
LIGHTING
LEVEL 19 - 20
FLOOR PLAN**

Project No.:

14200-A-000

Date:

19 DEC 2014

Scale:

N.T.S.

File No.:

Sheet No.:

EN-110.00

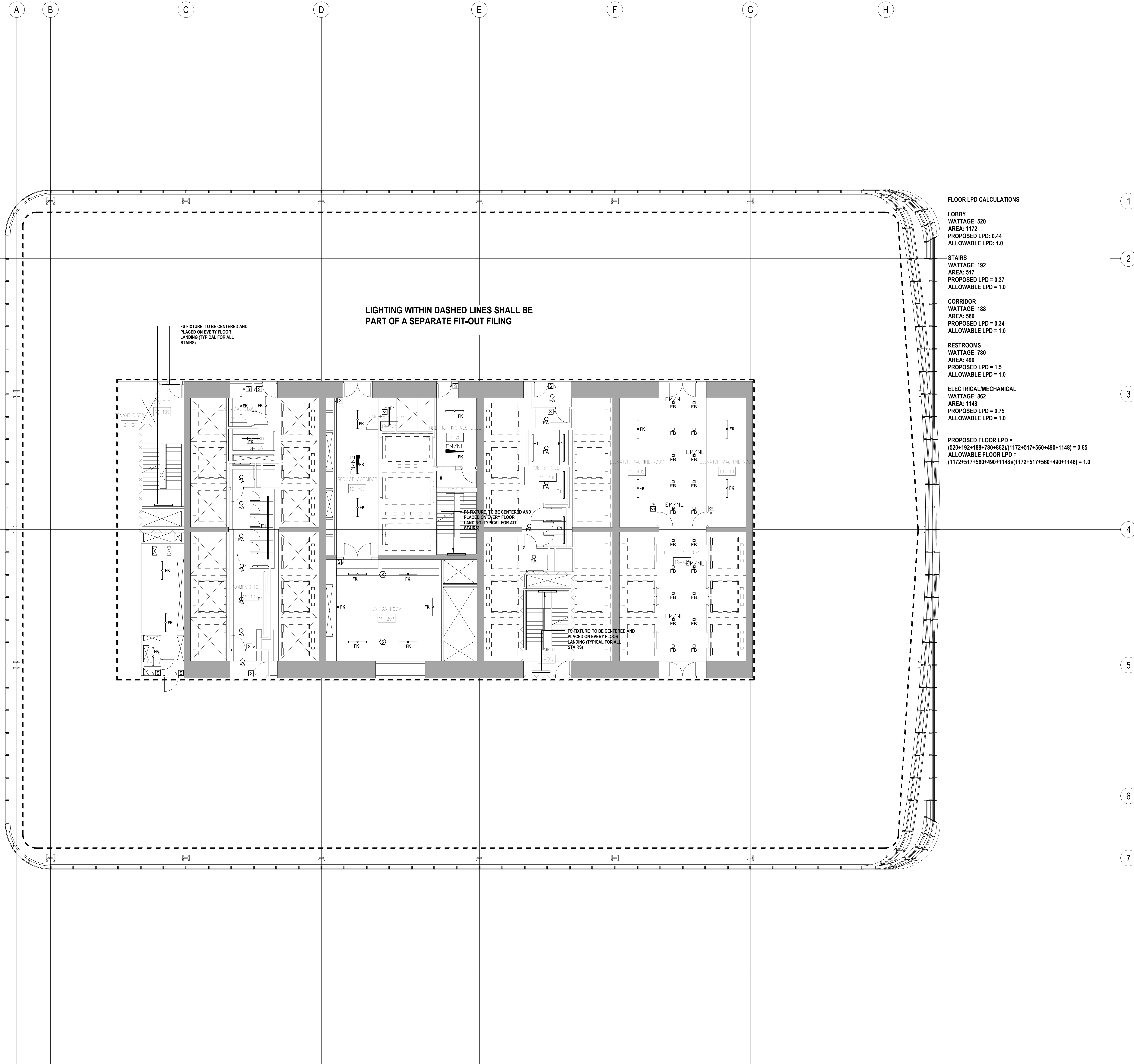
Page No.:

PROFESSIONAL'S STATEMENT

TO THE BEST OF OUR KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE NEW YORK CITY ENERGY CONSERVATION CODE.

BUILDING DEPARTMENT NOTE:

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FLOOR LPD CALCULATIONS

LOBBY
WATTAGE: 520
AREA: 1172
PROPOSED LPD: 0.44
ALLOWABLE LPD: 1.0

STAIRS
WATTAGE: 192
AREA: 517
PROPOSED LPD = 0.37
ALLOWABLE LPD = 1.0

CORRIDOR
WATTAGE: 188
AREA: 560
PROPOSED LPD = 0.34
ALLOWABLE LPD = 1.0

RESTROOMS
WATTAGE: 780
AREA: 490
PROPOSED LPD = 1.5
ALLOWABLE LPD = 1.0

ELECTRICAL/MECHANICAL
WATTAGE: 862
AREA: 1148
PROPOSED LPD = 0.75
ALLOWABLE LPD = 1.0

PROPOSED FLOOR LPD =
(520+192+188+780+862)/((1172+517+560+490+1148) = 0.65
ALLOWABLE FLOOR LPD =
(1172+517+560+490+1148)/((1172+517+560+490+1148) = 1.0

LIGHTING WITHIN DASHED LINES SHALL BE
PART OF A SEPARATE FIT-OUT FILING

FS FIXTURE TO BE CENTERED AND
PLACED ON EVERY FLOOR
LANDING (TYPICAL FOR ALL
STAIRS)

FS FIXTURE TO BE CENTERED AND
PLACED ON EVERY FLOOR
LANDING (TYPICAL FOR ALL
STAIRS)

FS FIXTURE TO BE CENTERED AND
PLACED ON EVERY FLOOR
LANDING (TYPICAL FOR ALL
STAIRS)

SHEET NOTES

ENERGY ANALYSIS NOTES:

1. THE SCOPE OF WORK INDICATED IS BASED ON A PERFORMANCE BASED ENERGY ANALYSIS TO CONFIRM COMPLIANCE WITH THE NEW YORK CITY ENERGY CONSERVATION CODE (NYCECC).

2. REFER TO SHEET EN-200 FOR BUILDING ASSEMBLY DESCRIPTIONS, DETAILS, AND PERFORMANCE CRITERIA.

3. REFER TO PERFORMANCE BASED ENERGY ANALYSIS TITLED "ENERGY MODELING OF THE MANHATTAN WEST NORTH TOWER" FOR OUTPUT REPORTS OF THE ASSEMBLIES ON SHEET EN-200.

4. THE LIGHTING WITHIN THE TENANT OFFICE SPACE IS NOT PART OF THE CORE AND SHELL SCOPE OF WORK. A SEPARATE FIT-OUT IS REQUIRED FROM EACH TENANT WHICH PROVES INDIVIDUAL COMPLIANCE WITH THE NEW YORK CITY ENERGY CONSERVATION CODE (NYCECC).



MANHATTAN WEST:
NORTH TOWER
375 Ninth Avenue, New York, NY 10001

Client

Brookfield
Brookfield Place
250 Vesey Street, 15th Floor, New York, NY 10281

Architecture/Structural Engineering

SOM

Skidmore, Owings & Merrill LLP
14 Wall Street, New York, NY 10005

Civil Engineering

Philip Habib & Associates
102 Madison Avenue #11, New York, NY 10016

MEP Engineering

Jaros Baum & Bolles
80 Pine Street, New York, NY 10005

Vertical Transportation

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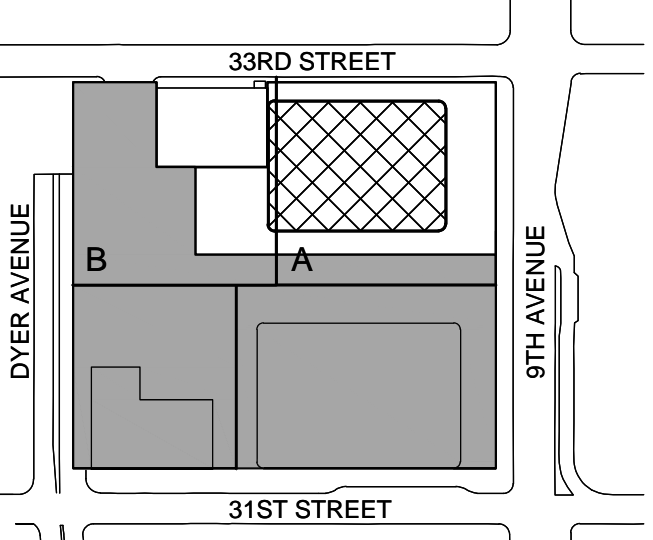
Facade Maintenance Consultant

Entek Engineering LLC
166 Ames Street, Hackensack, NJ 07601

Wind Tunnel Consultant

Rowan Williams Davies & Irwin Inc.
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Ontario, Canada N1K 1B8

Key Plan:



Seal & Signature:



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Sheet Name:

**NYC EC
COMPLIANCE
LIGHTING
LEVEL 21-27
FLOOR PLAN**

Project No.:

Date:

Scale:

File No.:

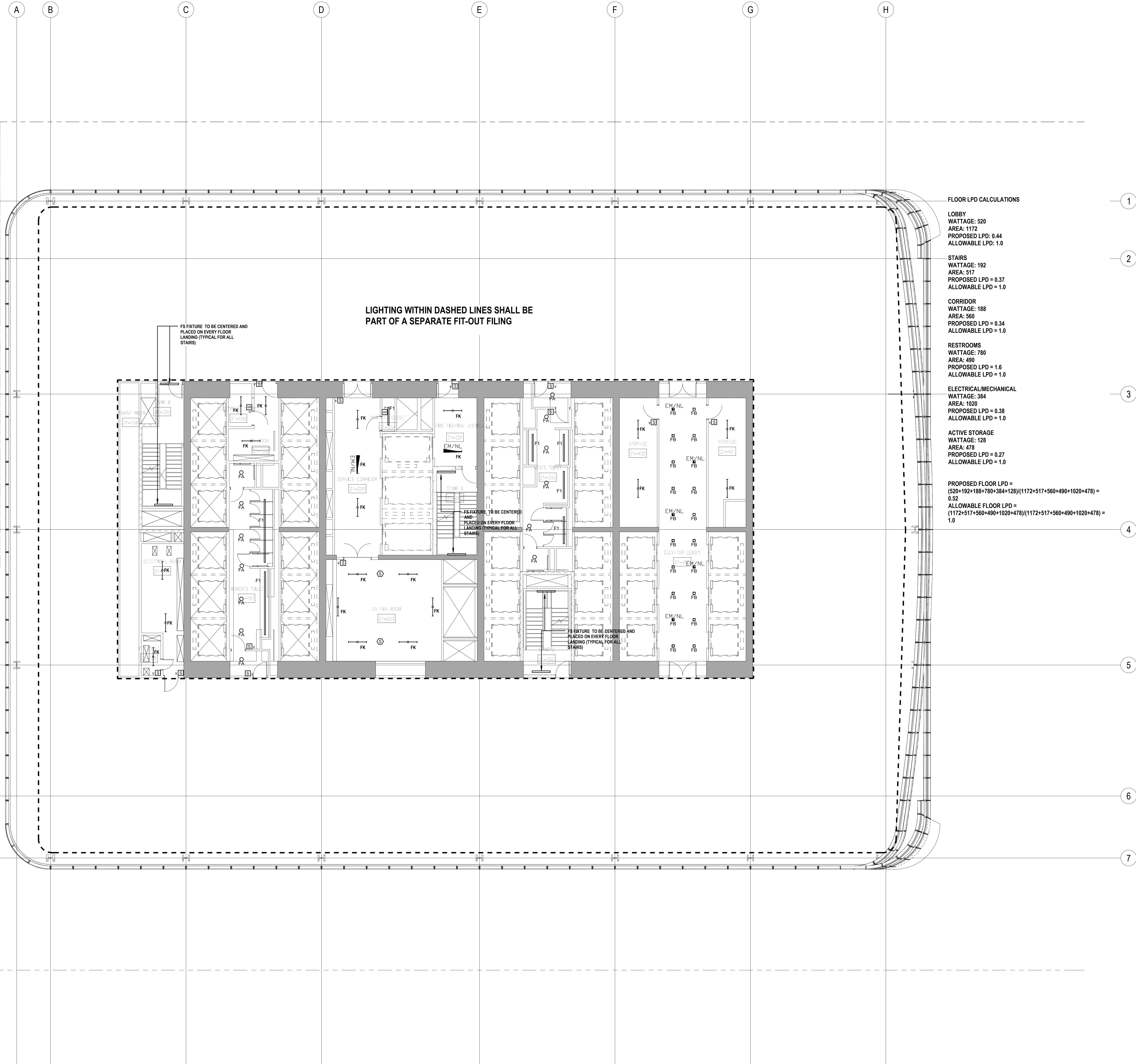
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Date:

Scale:

Page No.:

EN-111.00



FLOOR LPD CALCULATIONS

LOBBY
WATTAGE: 520
AREA: 1172
PROPOSED LPD: 0.44
ALLOWABLE LPD: 1.0

STAIRS
WATTAGE: 192
AREA: 517
PROPOSED LPD = 0.37
ALLOWABLE LPD = 1.0

CORRIDOR
WATTAGE: 188
AREA: 560
PROPOSED LPD = 0.34
ALLOWABLE LPD = 1.0

RESTROOMS
WATTAGE: 780
AREA: 490
PROPOSED LPD = 1.6
ALLOWABLE LPD = 1.0

ELECTRICAL/MECHANICAL
WATTAGE: 384
AREA: 1020
PROPOSED LPD = 0.38
ALLOWABLE LPD = 1.0

ACTIVE STORAGE
WATTAGE: 128
AREA: 478
PROPOSED LPD = 0.27
ALLOWABLE LPD = 1.0

PROPOSED FLOOR LPD =
(520+192+188+780+384+128)/((1172+517+560+490+1020+478)) =
0.52
ALLOWABLE FLOOR LPD =
(1172+517+560+490+1020+478)/((1172+517+560+490+1020+478)) =
1.0

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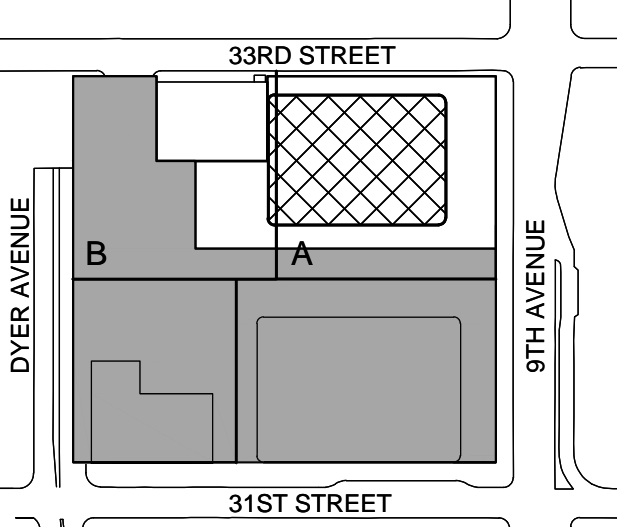
Facade Maintenance Consultant

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Key Plan:



Seal & Signature:



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Sheet Name:

**NYC EC
COMPLIANCE
LIGHTING
LEVEL 28
FLOOR PLAN**

Project No.:

14200.A.000

Date:

19 DEC 2014

Scale:

N.T.S.

File No.:

Sheet No.:

EN-112.00

Date:

19 DEC 2014

Scale:

N.T.S.

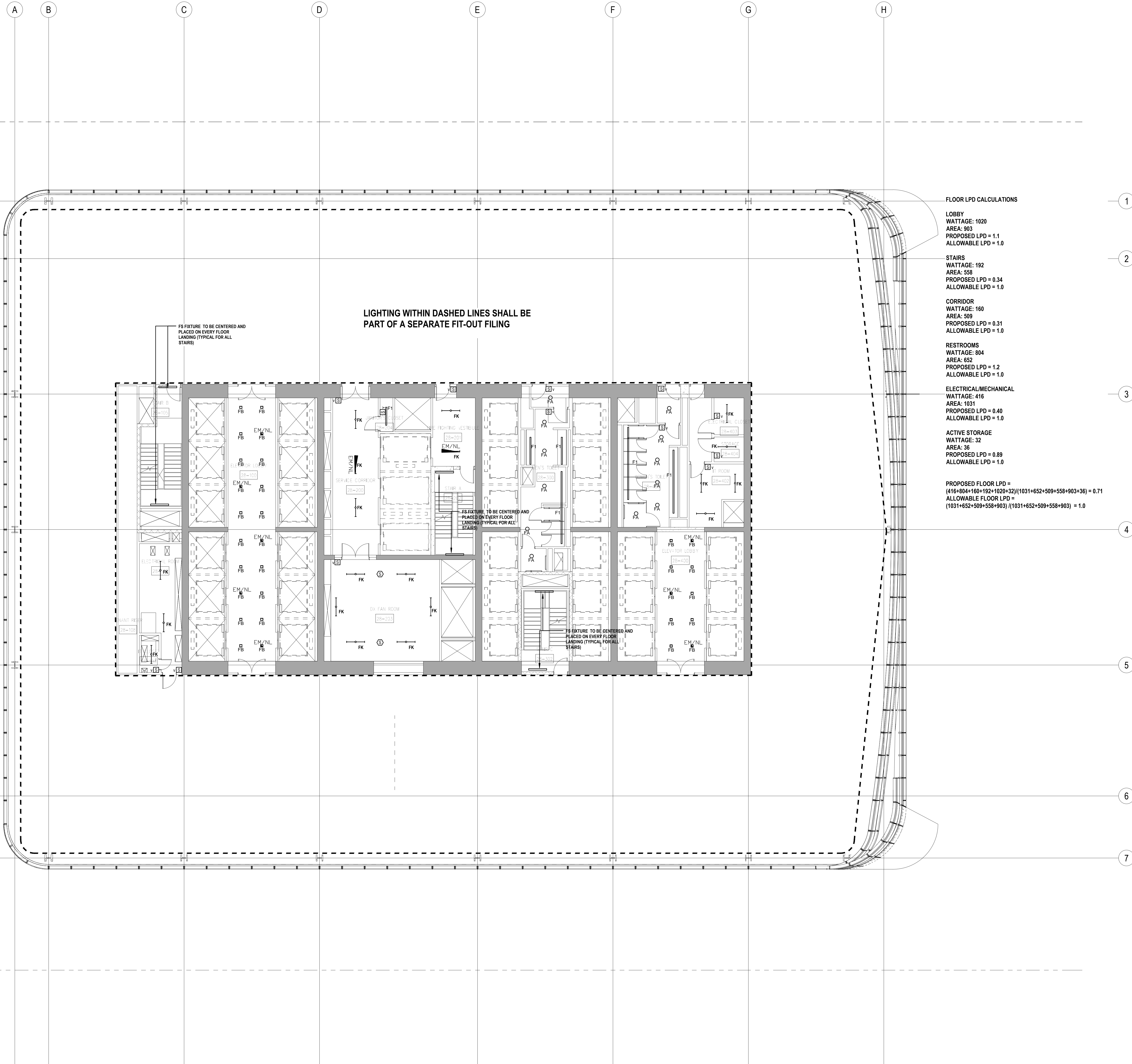
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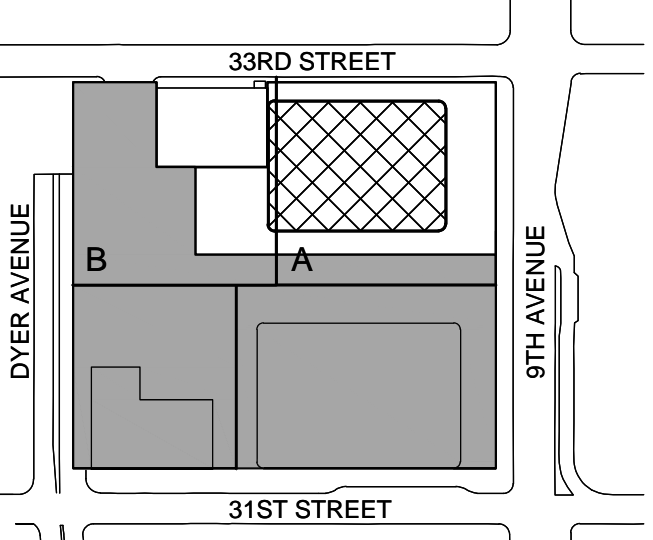
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Key Plan:



Seal & Signature:



2	30 JAN 2015	ISSUED FOR BUILDING PERMIT
1	12 SEPT 2014	ISSUED FOR FOUNDATION PERMIT
No.	Date	Description

Sheet Name:

NYC EC
COMPLIANCE
LIGHTING
LEVEL 29
FLOOR PLAN

Project No.:

Date:

Scale:

File No.:

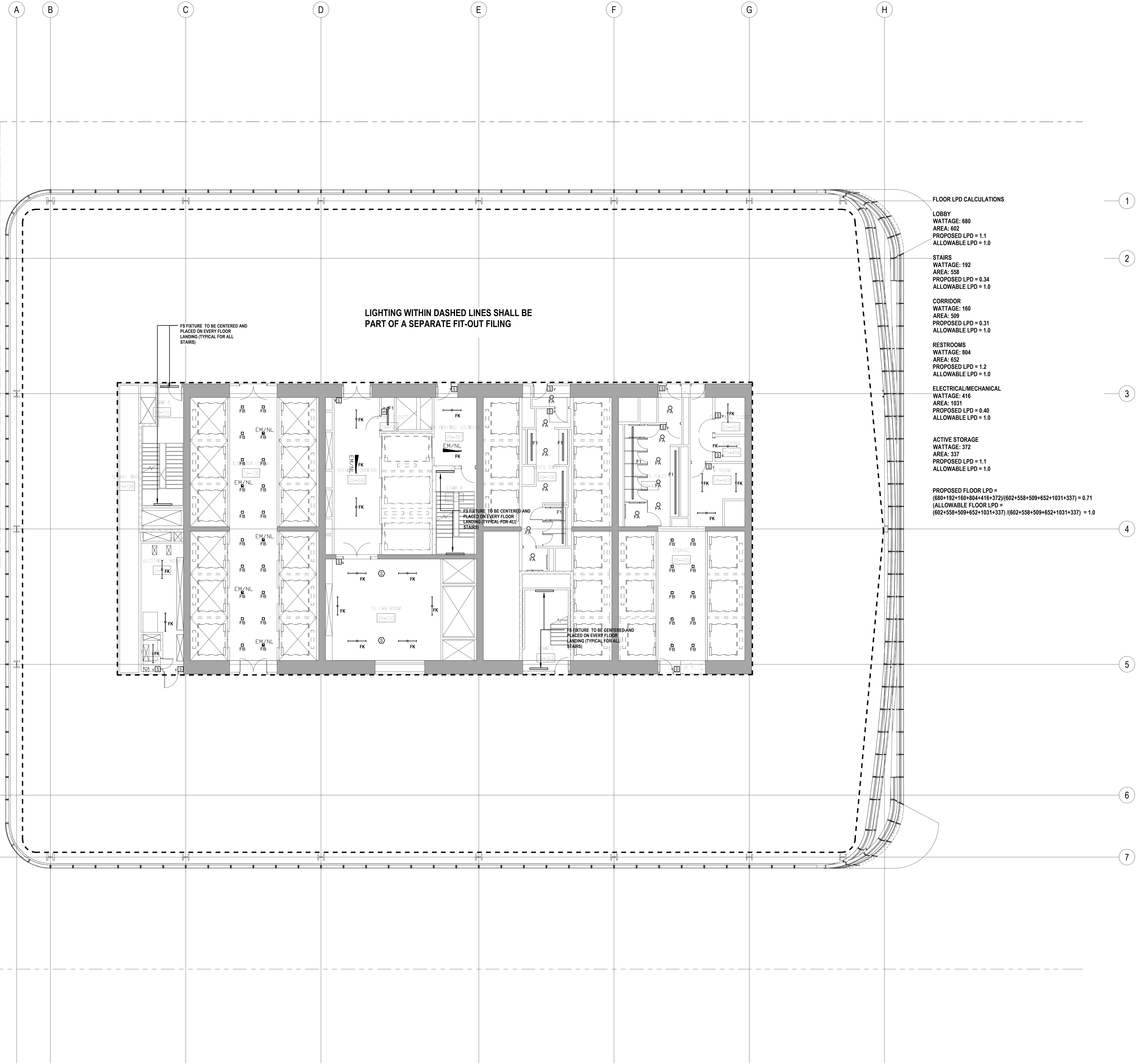
Sheet No.:

Date:

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Page No.:

EN-113.00



FLOOR LPD CALCULATIONS

LOBBY
WATTAGE: 680
AREA: 602
PROPOSED LPD = 1.1
ALLOWABLE LPD = 1.0

STAIRS
WATTAGE: 192
AREA: 558
PROPOSED LPD = 0.34
ALLOWABLE LPD = 1.0

CORRIDOR
WATTAGE: 160
AREA: 509
PROPOSED LPD = 0.31
ALLOWABLE LPD = 1.0

RESTROOMS
WATTAGE: 804
AREA: 652
PROPOSED LPD = 1.2
ALLOWABLE LPD = 1.0

ELECTRICAL/MECHANICAL
WATTAGE: 416
AREA: 1031
PROPOSED LPD = 0.40
ALLOWABLE LPD = 1.0

ACTIVE STORAGE
WATTAGE: 372
AREA: 337
PROPOSED LPD = 1.1
ALLOWABLE LPD = 1.0

PROPOSED FLOOR LPD =
(680+192+160+804+416+372)/(602+558+509+652+1031+337) = 0.71
ALLOWABLE FLOOR LPD =
(602+558+509+652+1031+337)/(602+558+509+652+1031+337) = 1.0

PROFESSIONAL'S STATEMENT

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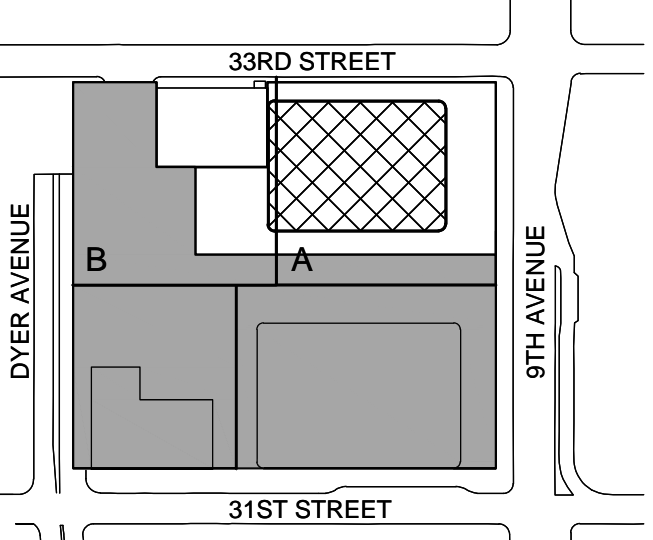
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Key Plan:



Seal & Signature:



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Sheet Name:

**NYC EC
COMPLIANCE
LIGHTING
LEVEL 30
FLOOR PLAN**

Project No.:

Date:

Scale:

File No.:

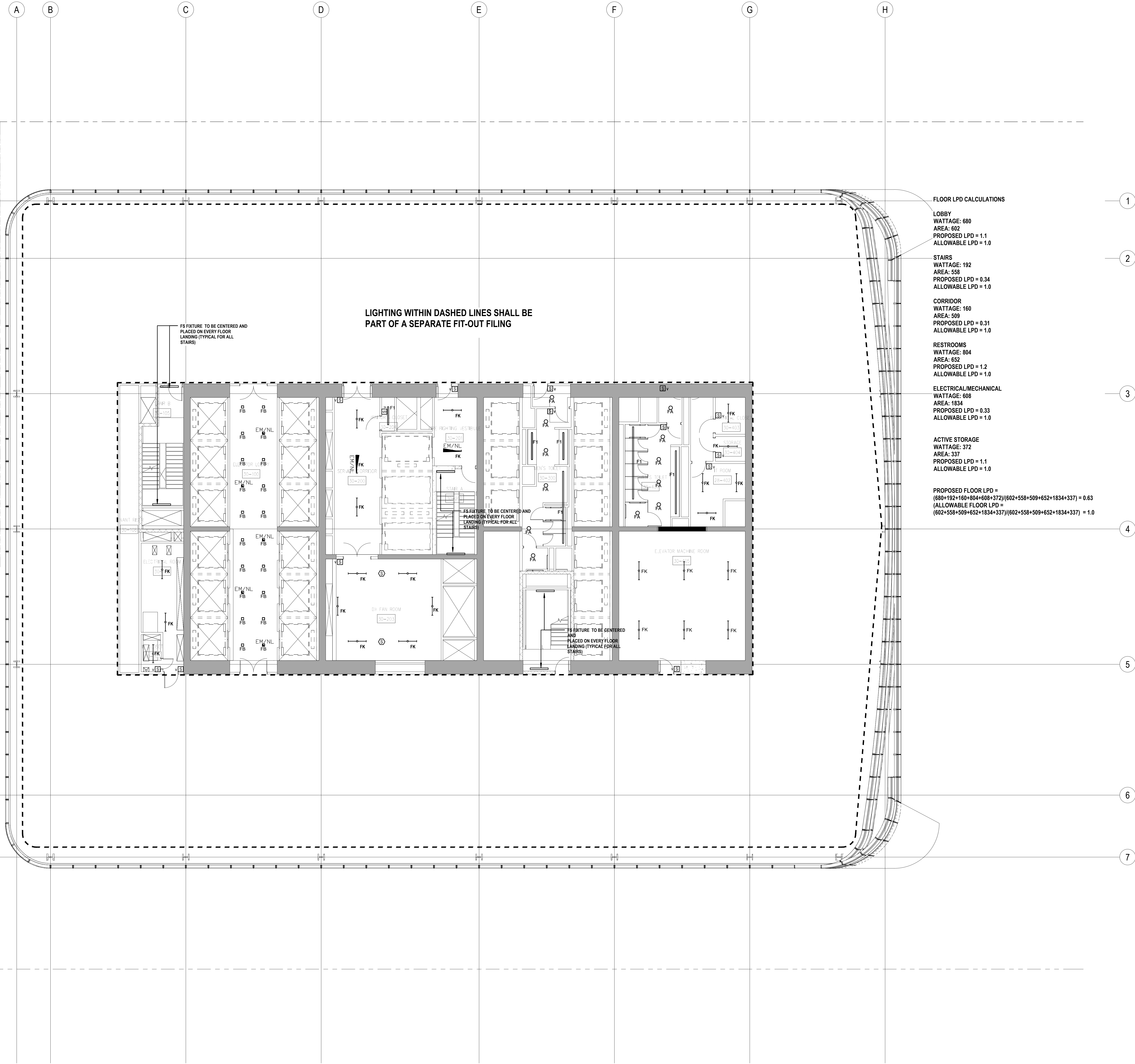
Sheet No.:

Date:

Scale:

Page No.:

EN-114.00



FLOOR LPD CALCULATIONS

LOBBY
WATTAGE: 680
AREA: 602
PROPOSED LPD = 1.1
ALLOWABLE LPD = 1.0

STAIRS
WATTAGE: 192
AREA: 558
PROPOSED LPD = 0.34
ALLOWABLE LPD = 1.0

CORRIDOR
WATTAGE: 160
AREA: 509
PROPOSED LPD = 0.31
ALLOWABLE LPD = 1.0

RESTROOMS
WATTAGE: 804
AREA: 652
PROPOSED LPD = 1.2
ALLOWABLE LPD = 1.0

ELECTRICAL/MECHANICAL
WATTAGE: 608
AREA: 1834
PROPOSED LPD = 0.33
ALLOWABLE LPD = 1.0

ACTIVE STORAGE
WATTAGE: 372
AREA: 337
PROPOSED LPD = 1.1
ALLOWABLE LPD = 1.0

PROPOSED FLOOR LPD =
(680+192+160+804+608+372)/(602+558+509+652+1834+337) = 0.63
ALLOWABLE FLOOR LPD =
(602+558+509+652+1834+337)/(602+558+509+652+1834+337) = 1.0

PROFESSIONAL'S STATEMENT

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SHEET NOTES

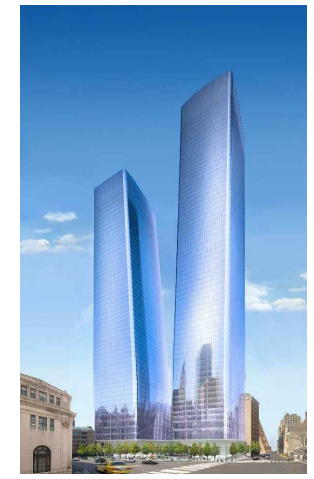
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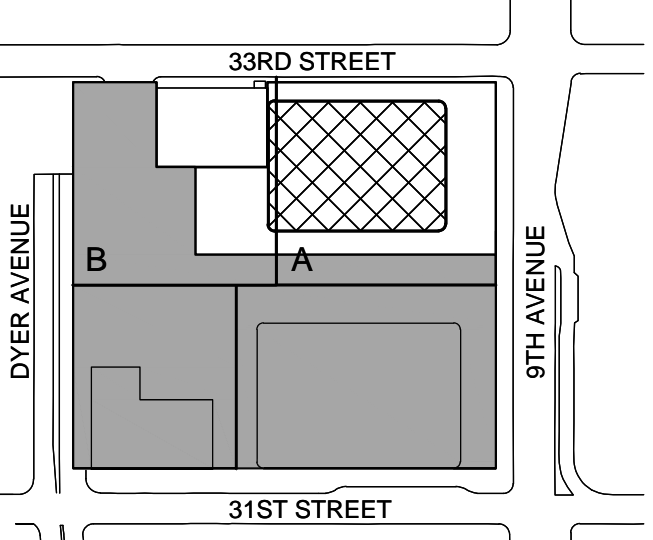
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Key Plan:



Seal & Signature:



2 30 JAN 2015 ISSUED FOR BUILDING PERMIT
1 12 SEPT 2014 ISSUED FOR FOUNDATION PERMIT
No. Date Description

Sheet Name:

**NYC EC
COMPLIANCE
LIGHTING
LEVEL 31
FLOOR PLAN**

Project No.:

Date:

Scale:

File No.:

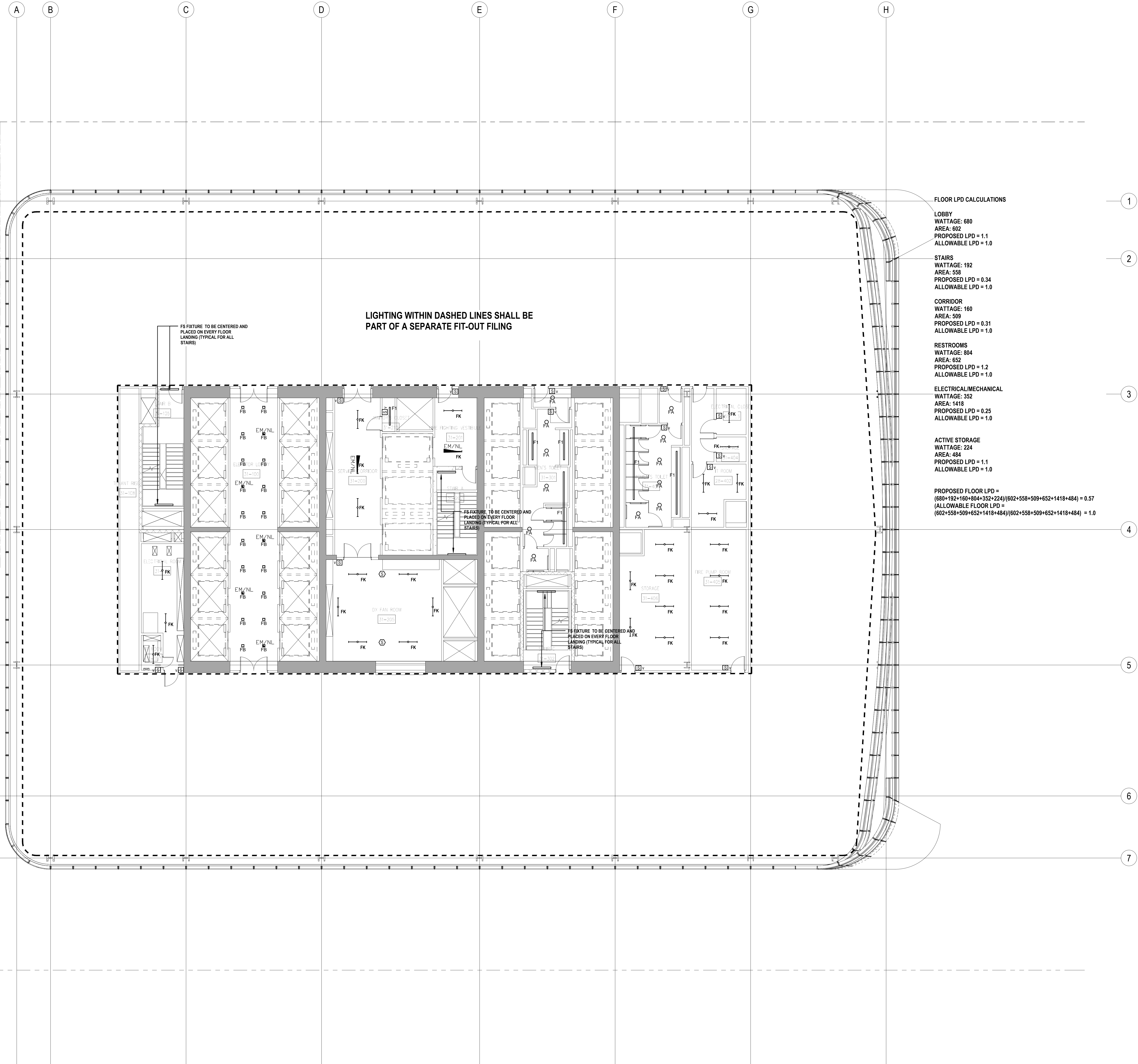
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Date:

Scale:

Page No.:

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14 Wall Street, New York, NY 10005

Civil Engineering

Philip Habib & Associates
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MEP Engineering

Jaros Baum & Bolles
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Vertical Transportation

Edgett Williams Consulting Group, Inc.
102 East Blithedale Ave. Suite 1, Mill Valley, California 94041

Sustainable Design

Viridian Energy & Environmental
50 Washington Street, Norwalk, CT 06854

Geo-Technical Engineering

Mueser Rutledge Consulting Engineers
14 Penn Plaza, 225 W. 34th Street #610,
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Landscape Consultant

Field Operations
475 10th Avenue, New York, NY 10018

Security Consultant

Ducibella, Ventor & Santore
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Blast Consultant

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Acoustical Consultant

Cerami & Associates
404 Fifth Avenue #8, New York, NY 10018

Vibration Consultant

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65 Broadway, Suite 401, New York, NY 10005

Code Consultant

Code Consultants Professional Engineers PC
215 West 40th Street, 15th Floor, New York, NY 10018

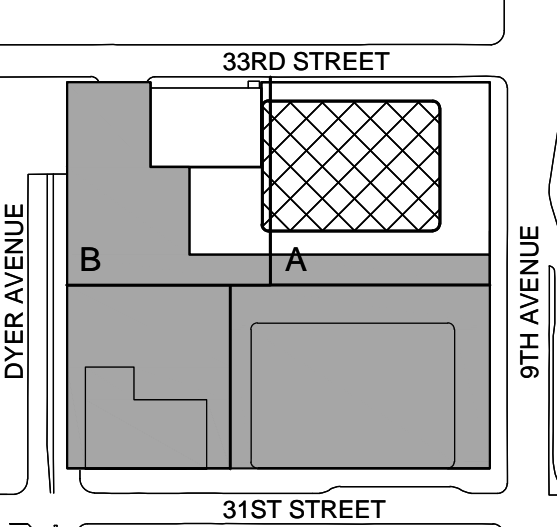
Facade Maintenance Consultant

Entek Engineering LLC
166 Ames Street, Hackensack, NJ 07601

Wind Tunnel Consultant

Rowan Williams Davies & Irwin Inc.
650 Woodlawn Road West, Guelph
Ontario, Canada N1K 1B8

Key Plan:



Seal & Signature:



2	30 JAN 2015	ISSUED FOR BUILDING PERMIT
1	12 SEPT 2014	ISSUED FOR FOUNDATION PERMIT
No.	Date	Description

Sheet Name:

NYC EC
COMPLIANCE
LIGHTING
LEVEL 32
FLOOR PLAN

Project No.:

Date:

Scale:

File No.:

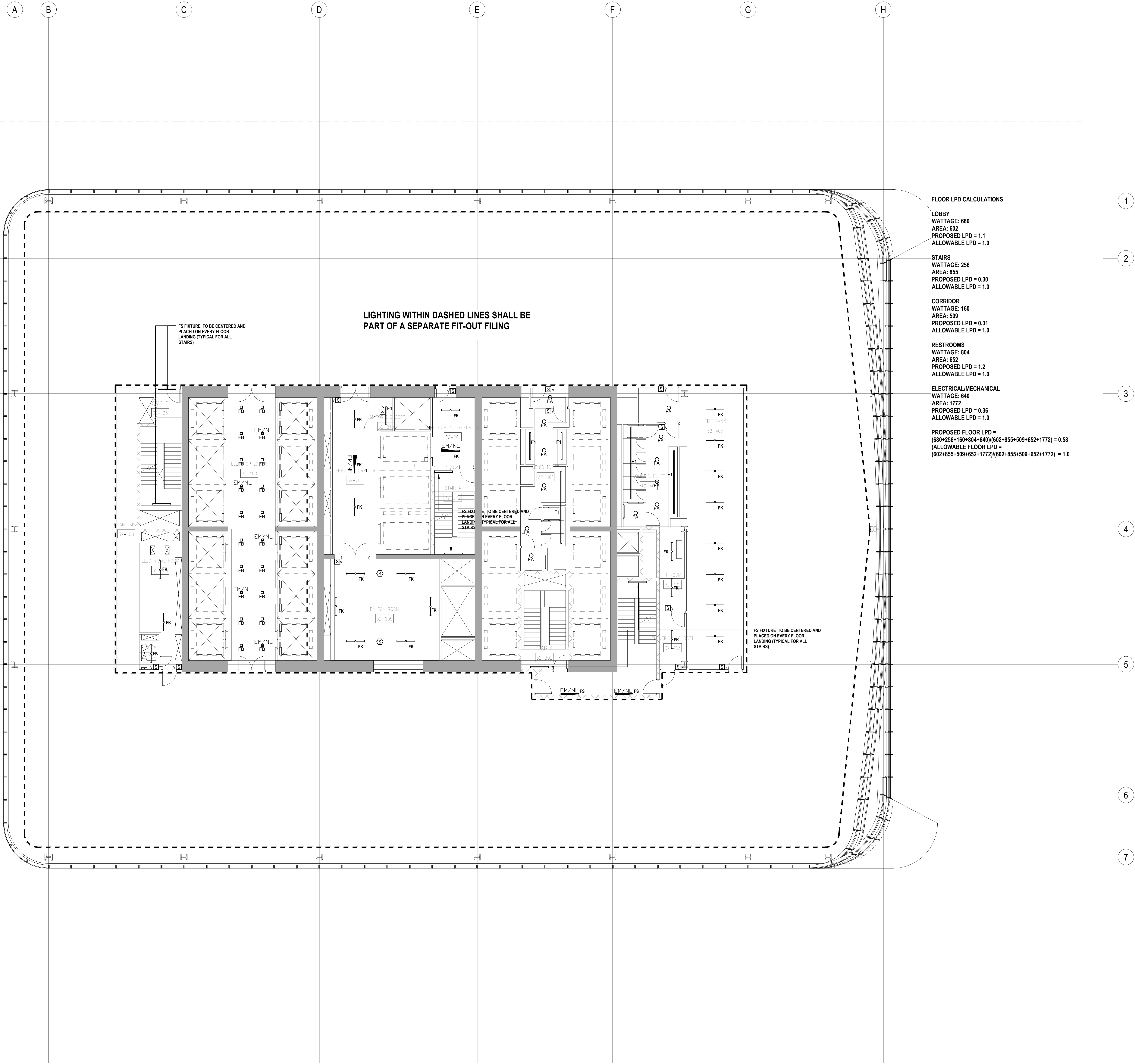
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PROFESSIONAL'S STATEMENT

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SHEET NOTES

ENERGY ANALYSIS NOTES:

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4. THE LIGHTING WITHIN THE TENANT OFFICE SPACE IS NOT PART OF THE CORE AND SHELL SCOPE OF WORK. A SEPARATE FIT-OUT IS REQUIRED FROM EACH TENANT WHICH PROVES INDIVIDUAL COMPLIANCE WITH THE NEW YORK CITY ENERGY CONSERVATION CODE (NYCECC).



MANHATTAN WEST:
NORTH TOWER
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Client

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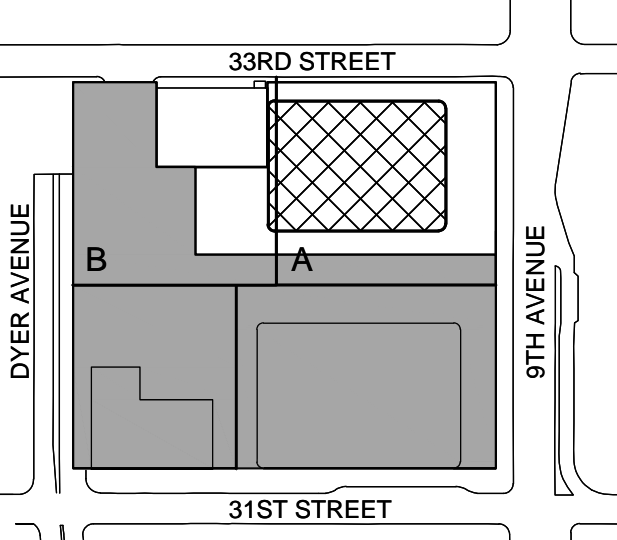
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Key Plan:



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No. Date Description

Sheet Name:

**NYC EC
COMPLIANCE
LIGHTING
LEVEL 33-38
FLOOR PLAN**

Project No.:

14000.A.000

Date:

19 DEC 2014

Scale:

N.T.S.

File No.:

Sheet No.:

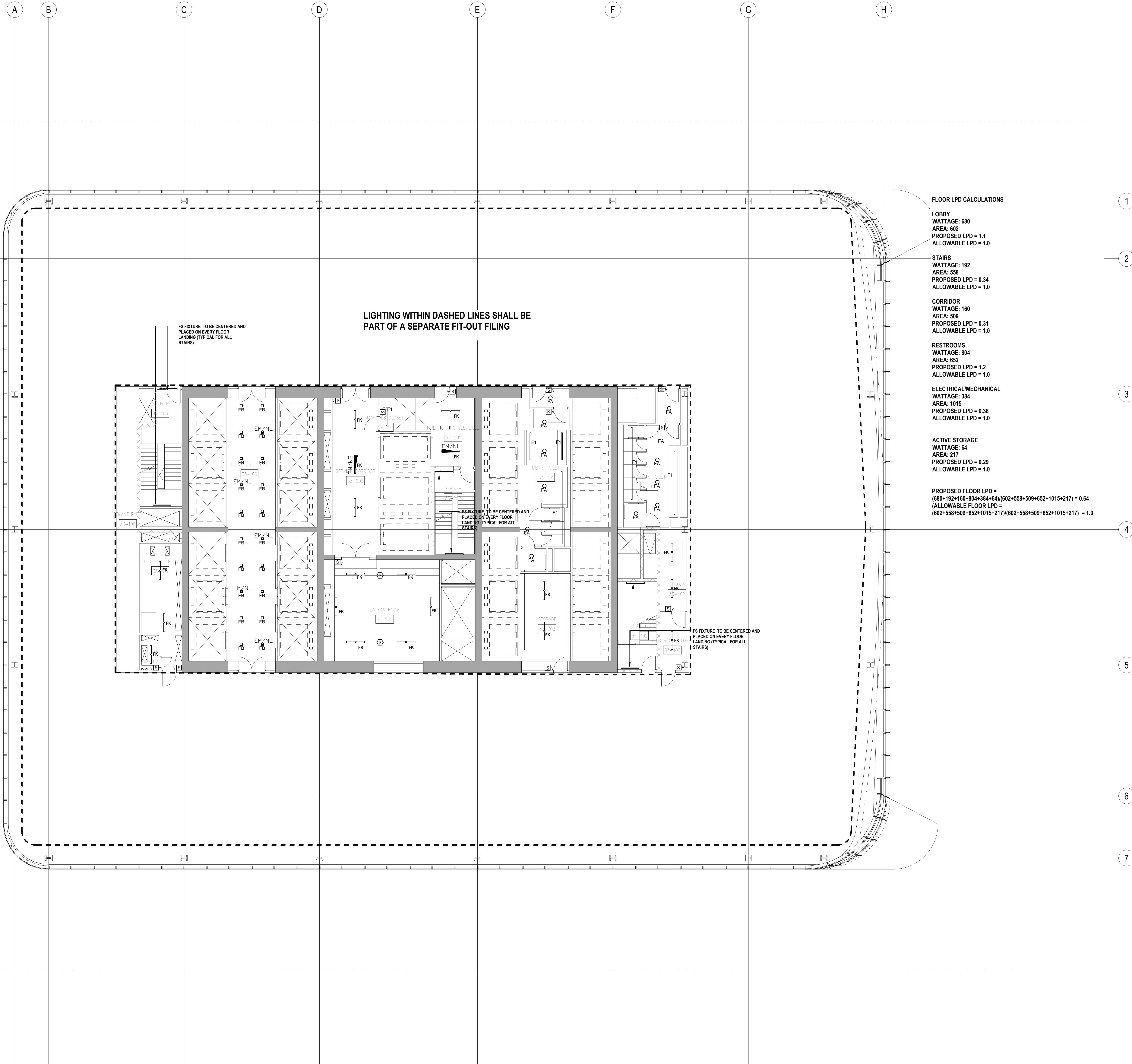
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FLOOR LPD CALCULATIONS

LOBBY
WATTAGE: 680
AREA: 802
PROPOSED LPD = 1.1
ALLOWABLE LPD = 1.0

STAIRS
WATTAGE: 192
AREA: 558
PROPOSED LPD = 0.34
ALLOWABLE LPD = 1.0

CORRIDOR
WATTAGE: 160
AREA: 509
PROPOSED LPD = 0.31
ALLOWABLE LPD = 1.0

RESTROOMS
WATTAGE: 804
AREA: 652
PROPOSED LPD = 1.2
ALLOWABLE LPD = 1.0

ELECTRICAL/MECHANICAL
WATTAGE: 384
AREA: 1015
PROPOSED LPD = 0.38
ALLOWABLE LPD = 1.0

ACTIVE STORAGE
WATTAGE: 64
AREA: 217
PROPOSED LPD = 0.29
ALLOWABLE LPD = 1.0

PROPOSED FLOOR LPD =
(680+192+160+804+384+64)/(802+558+509+652+1015+217) = 0.64
(ALLOWABLE FLOOR LPD =
(802+558+509+652+1015+217)/(802+558+509+652+1015+217) = 1.0

LIGHTING WITHIN DASHED LINES SHALL BE
PART OF A SEPARATE FIT-OUT FILING

FS FIXTURE TO BE CENTERED AND
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LANDING (TYPICAL FOR ALL
STAIRS)

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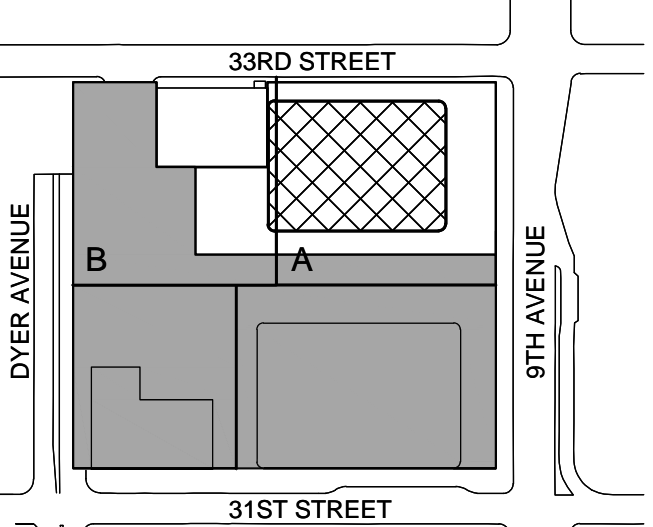
Facade Maintenance Consultant

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166 Ames Street, Hackensack, NJ 07601

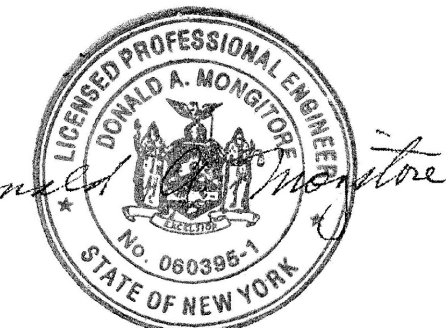
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Key Plan:



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Sheet Name:

NYC EC
COMPLIANCE
LIGHTING
LEVEL 39
FLOOR PLAN

Project No.:

Date:

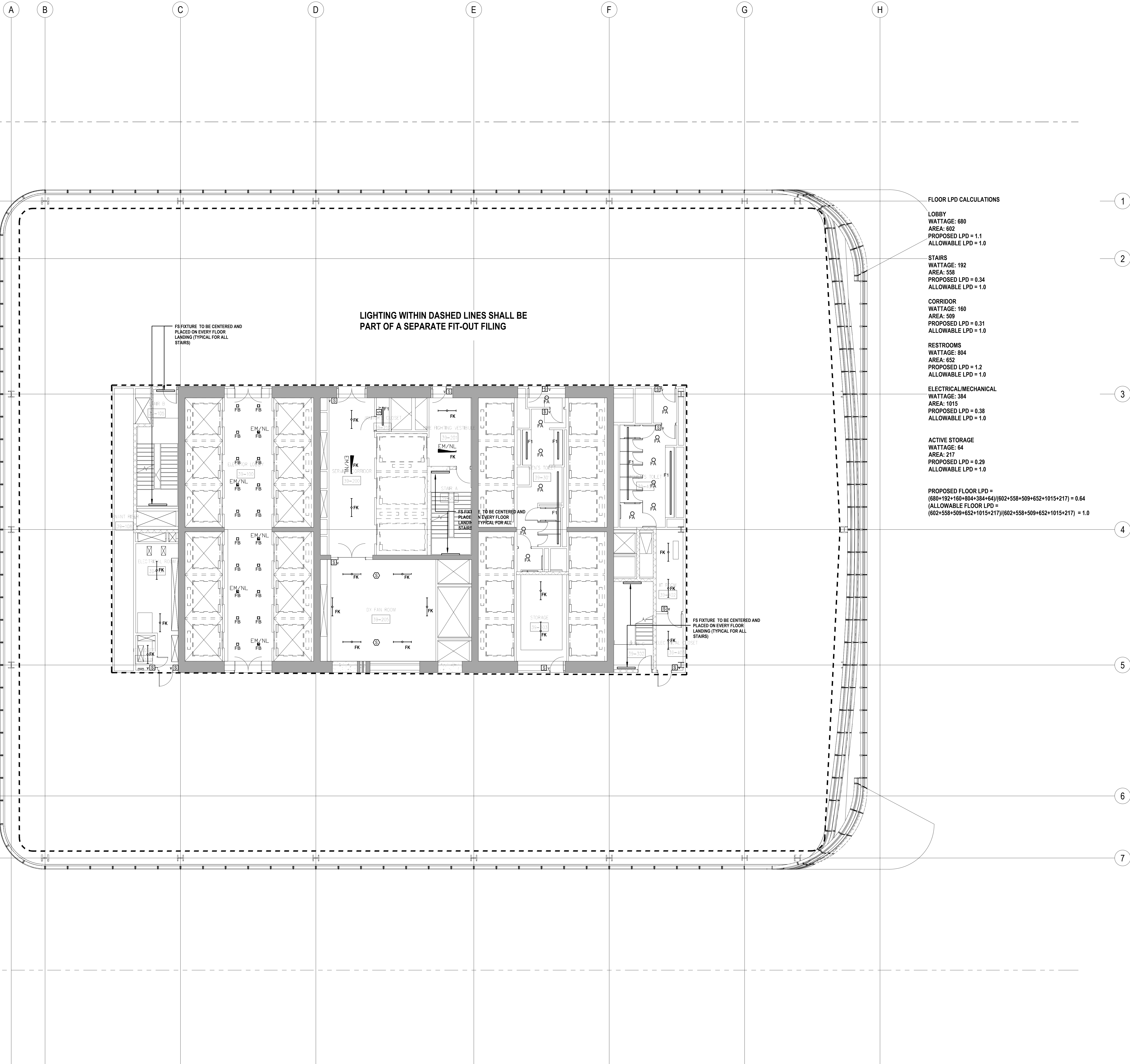
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File No.:

Sheet No.:

EN-118.00

Page No.:



FLOOR LPD CALCULATIONS

LOBBY
WATTAGE: 680
AREA: 602
PROPOSED LPD = 1.1
ALLOWABLE LPD = 1.0

STAIRS
WATTAGE: 192
AREA: 558
PROPOSED LPD = 0.34
ALLOWABLE LPD = 1.0

CORRIDOR
WATTAGE: 160
AREA: 509
PROPOSED LPD = 0.31
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WATTAGE: 64
AREA: 217
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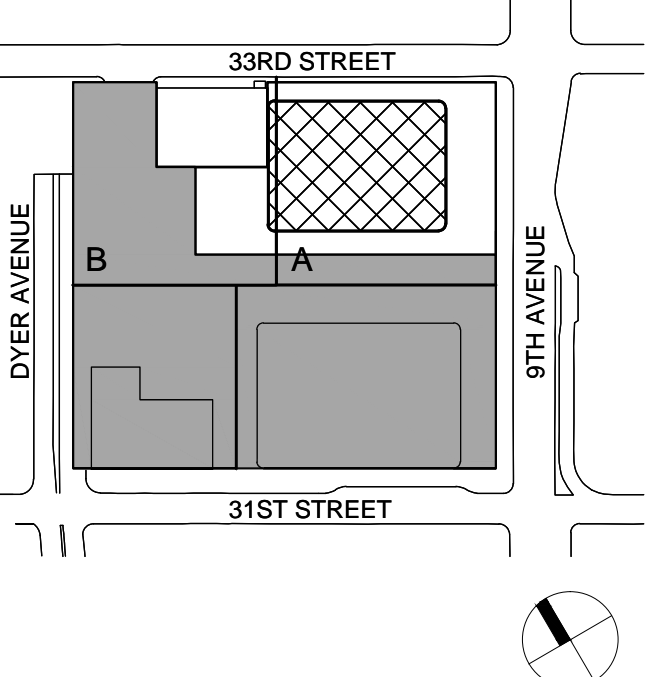
Facade Maintenance Consultant

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Ontario, Canada N1K 1B8

Key Plan:



Seal & Signature:



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**NYC EC
COMPLIANCE
LIGHTING
LEVEL 40-41
FLOOR PLAN**

Project No.:
14830.A.000

Date:
19 DEC 2014

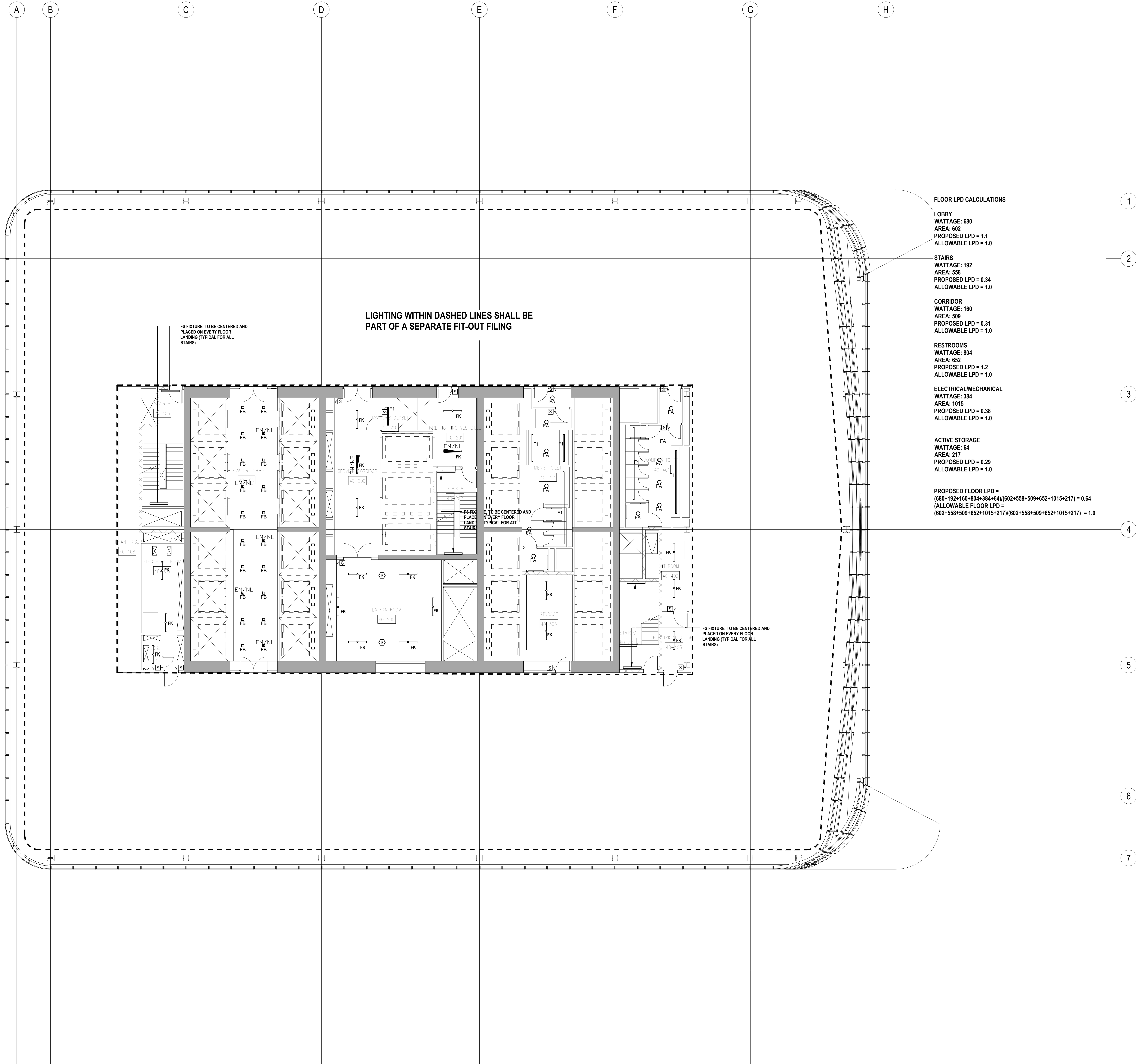
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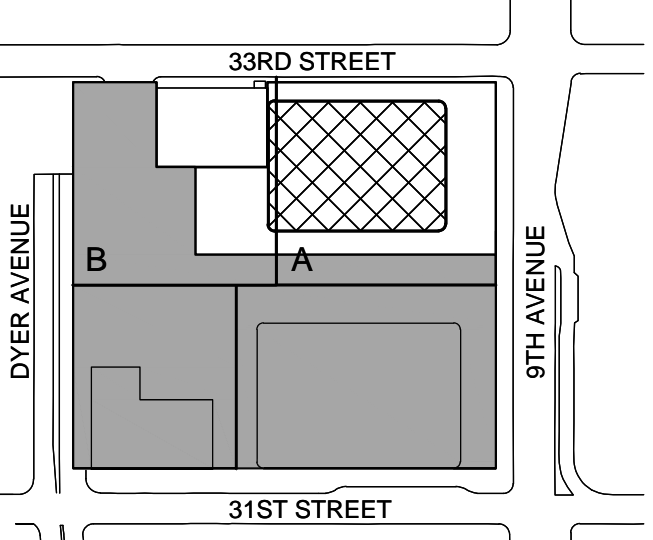
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Key Plan:



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**NYC EC
COMPLIANCE
LIGHTING
LEVEL 43-48
FLOOR PLAN**

Project No.:

Date:

Scale:

File No.:

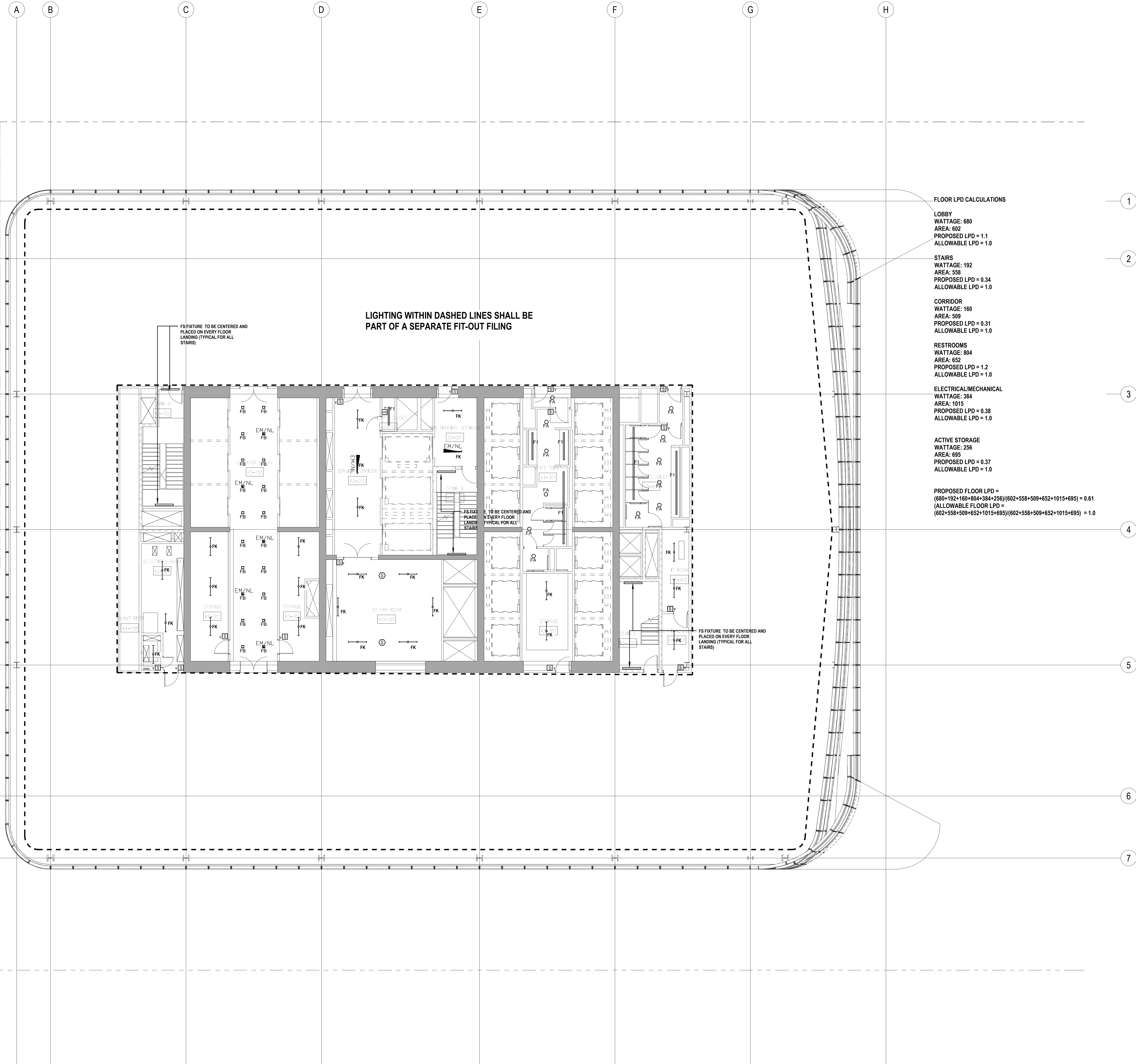
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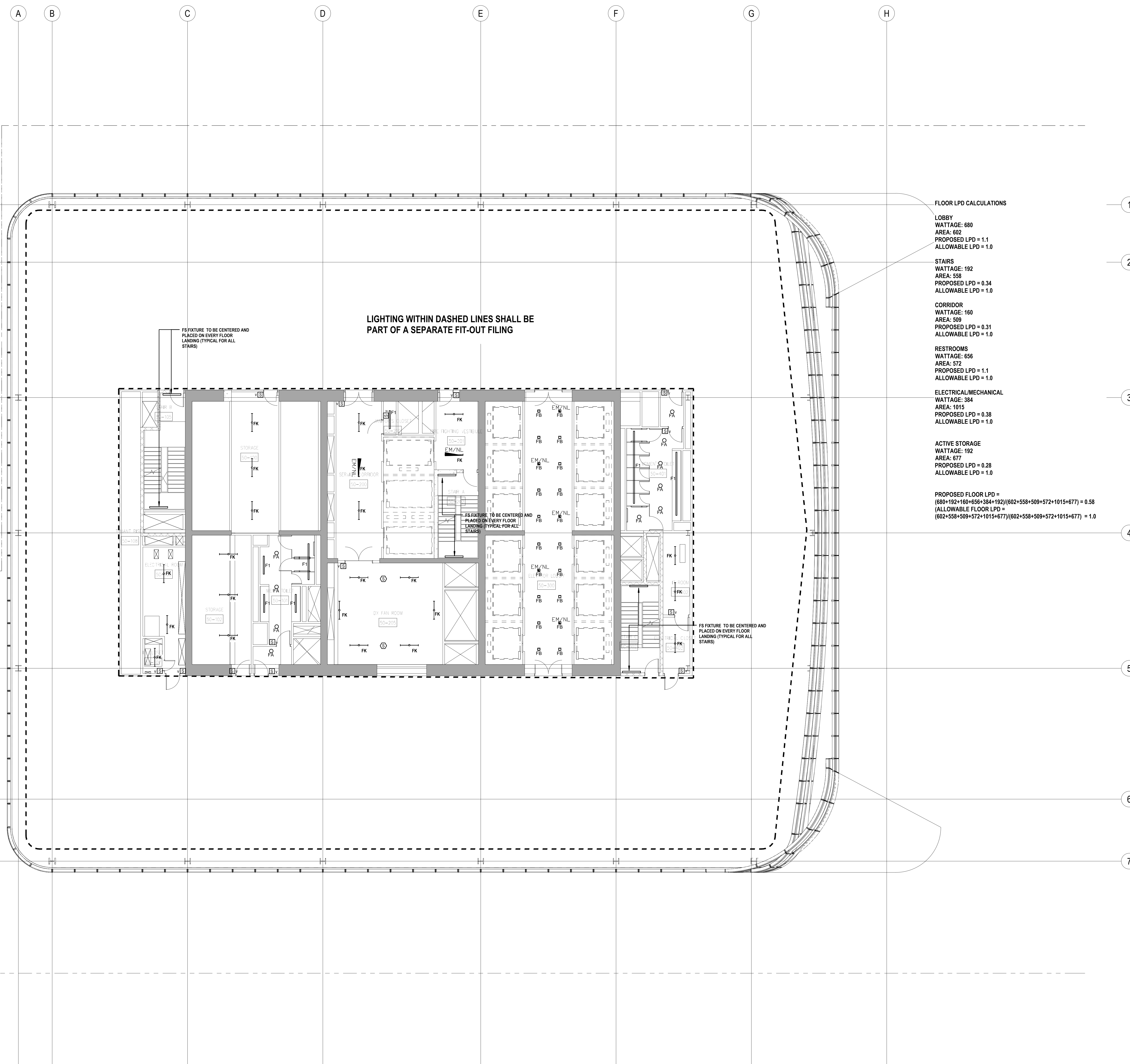


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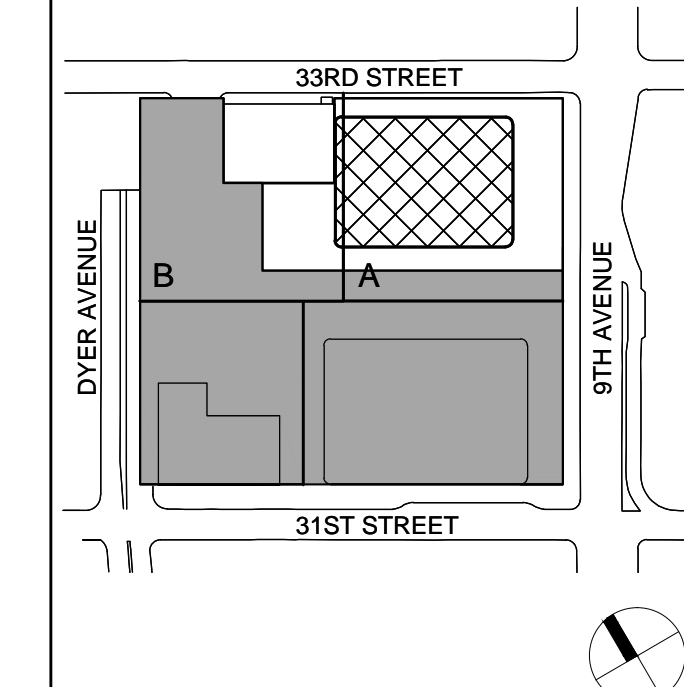
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Key Plan:



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NYC EC
COMPLIANCE
LIGHTING
LEVEL 50-51
FLOOR PLAN

Project No.: 14830.A.000	Sheet No.:
Date: 19 DEC 2014	EN-123.00
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New York, NY 10122

Landscape Consultant

Field Operations
475 10th Avenue, New York, NY 10018

Security Consultant

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250 State Street #F1, North Haven, CT 06473

Blast Consultant

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Acoustical Consultant

Cerami & Associates
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Vibration Consultant

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65 Broadway, Suite 401, New York, NY 10005

Code Consultant

Code Consultants Professional Engineers PC
215 West 40th Street, 15th Floor, New York, NY 10018

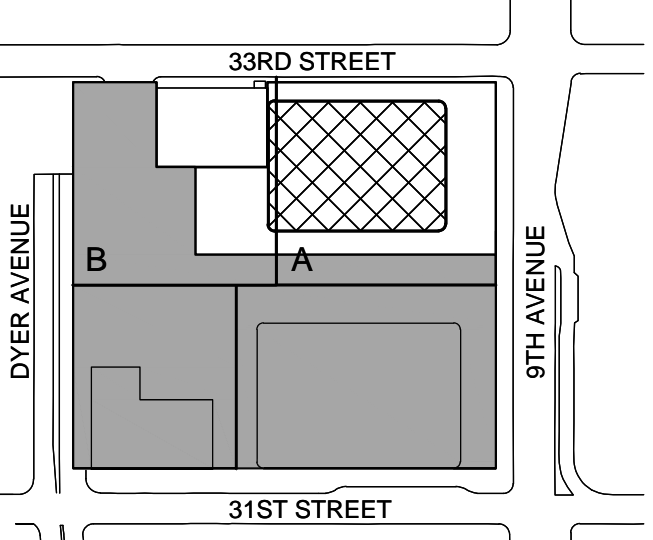
Facade Maintenance Consultant

Entek Engineering LLC
166 Ames Street, Hackensack, NJ 07601

Wind Tunnel Consultant

Rowan Williams Davies & Irwin Inc.
650 Woodlawn Road West, Guelph
Ontario, Canada N1K 1B8

Key Plan:



Seal & Signature:



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No. Date Description

Sheet Name:

NYC EC
COMPLIANCE
LIGHTING
LEVEL 52
FLOOR PLAN

Project No.:

Date:

Scale:

File No.:

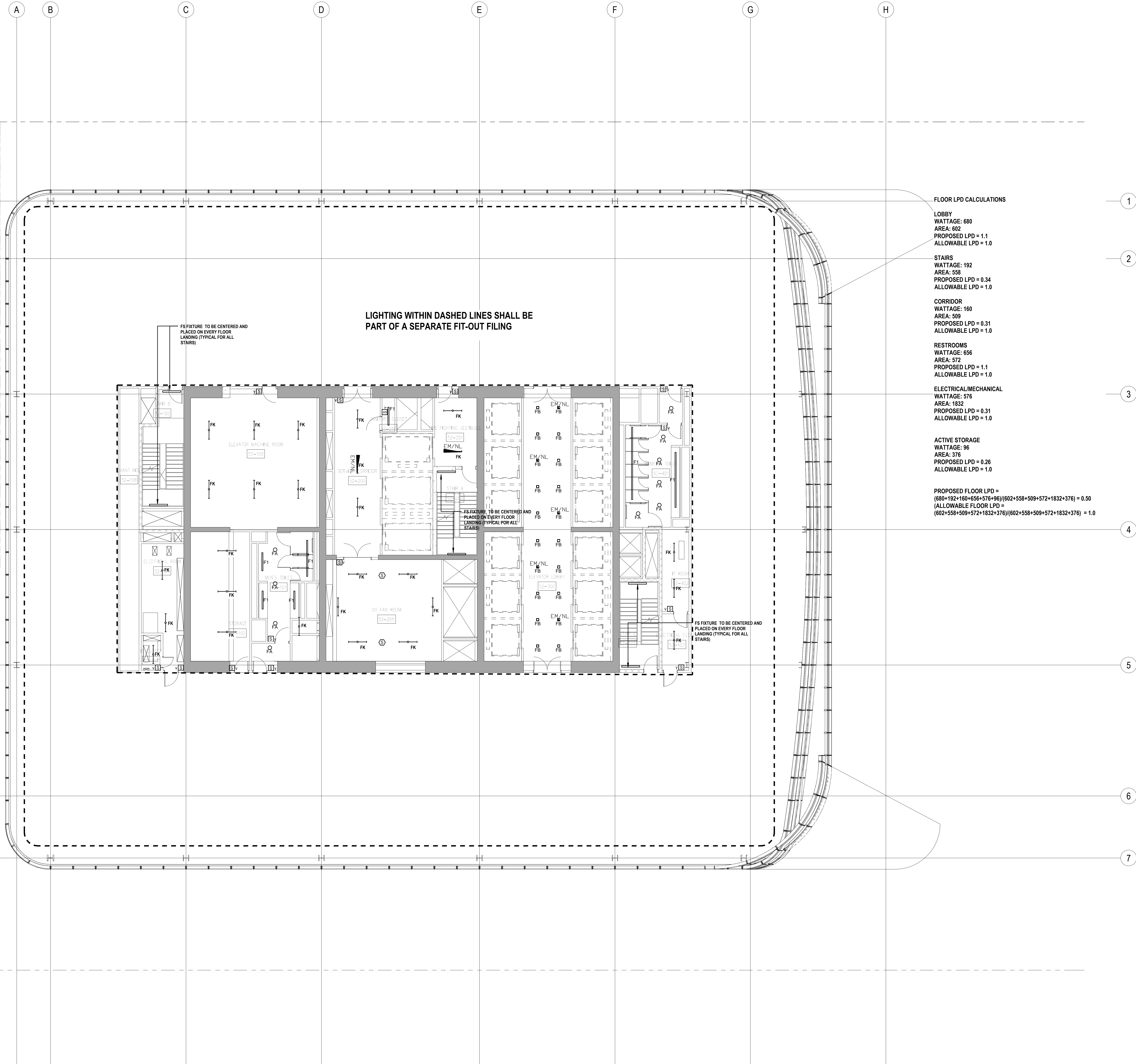
Sheet No.:

Date:

Scale:

File No.:

EN-124.00



FLOOR LPD CALCULATIONS

LOBBY
WATTAGE: 680
AREA: 602
PROPOSED LPD = 1.1
ALLOWABLE LPD = 1.0

STAIRS
WATTAGE: 192
AREA: 558
PROPOSED LPD = 0.34
ALLOWABLE LPD = 1.0

CORRIDOR
WATTAGE: 160
AREA: 509
PROPOSED LPD = 0.31
ALLOWABLE LPD = 1.0

RESTROOMS
WATTAGE: 656
AREA: 572
PROPOSED LPD = 1.1
ALLOWABLE LPD = 1.0

ELECTRICAL/MECHANICAL
WATTAGE: 576
AREA: 1832
PROPOSED LPD = 0.31
ALLOWABLE LPD = 1.0

ACTIVE STORAGE
WATTAGE: 96
AREA: 376
PROPOSED LPD = 0.26
ALLOWABLE LPD = 1.0

PROPOSED FLOOR LPD =
(680+192+160+656+576+96)/(602+558+509+572+1832+376) = 0.50
ALLOWABLE FLOOR LPD =
(602+558+509+572+1832+376)/(602+558+509+572+1832+376) = 1.0

PROFESSIONAL'S STATEMENT

TO THE BEST OF OUR KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE NEW YORK CITY ENERGY CONSERVATION CODE.

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SHEET NOTES

ENERGY ANALYSIS NOTES:

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4. THE LIGHTING WITHIN THE TENANT OFFICE SPACE IS NOT PART OF THE CORE AND SHELL SCOPE OF WORK. A SEPARATE FIT-OUT IS REQUIRED FROM EACH TENANT WHICH PROVES INDIVIDUAL COMPLIANCE WITH THE NEW YORK CITY ENERGY CONSERVATION CODE (NYCECC).



MANHATTAN WEST:
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Sustainable Design

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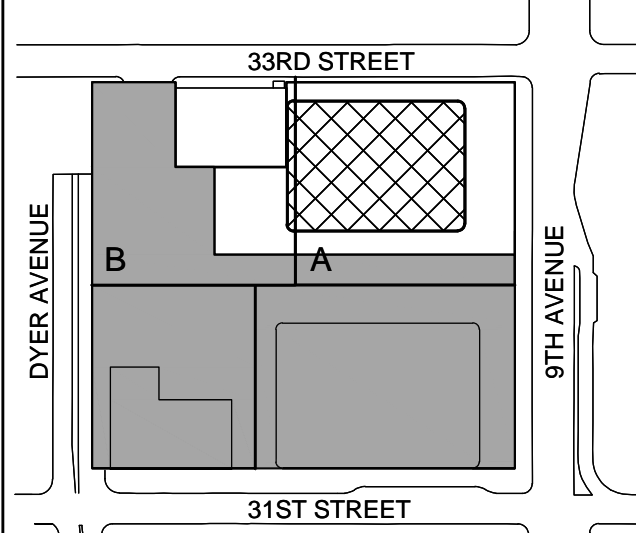
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Key Plan:



Seal & Signature:



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No. Date Description

Sheet Name:

**NYC EC
COMPLIANCE
LIGHTING
LEVEL 53
FLOOR PLAN**

Project No.:

Date:

Scale:

File No.:

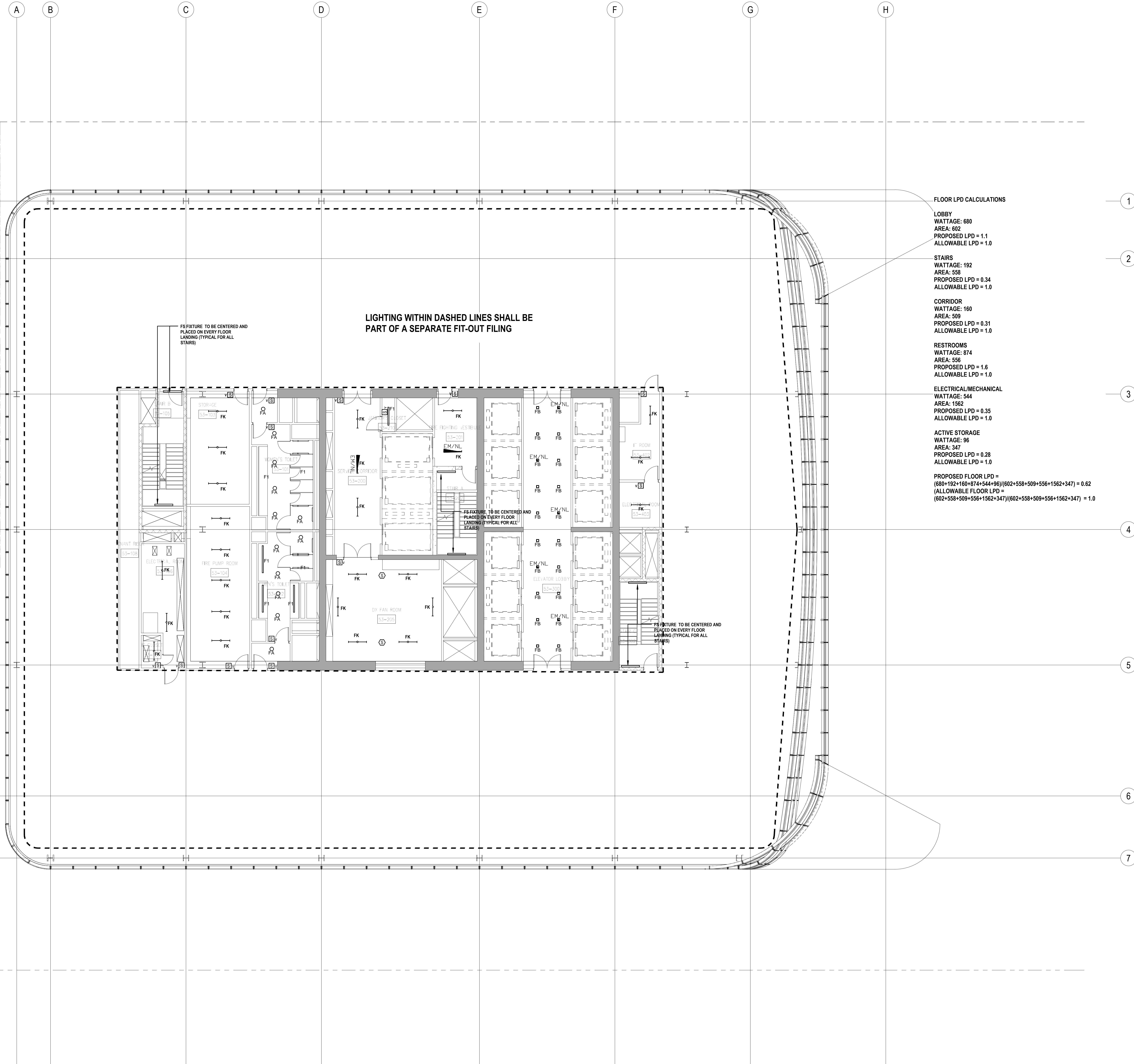
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Date:

Scale:

Page No.:

EN-125.00



FLOOR LPD CALCULATIONS

LOBBY
WATTAGE: 680
AREA: 802
PROPOSED LPD = 1.1
ALLOWABLE LPD = 1.0

STAIRS
WATTAGE: 192
AREA: 558
PROPOSED LPD = 0.34
ALLOWABLE LPD = 1.0

CORRIDOR
WATTAGE: 160
AREA: 509
PROPOSED LPD = 0.31
ALLOWABLE LPD = 1.0

RESTROOMS
WATTAGE: 874
AREA: 556
PROPOSED LPD = 1.6
ALLOWABLE LPD = 1.0

ELECTRICAL/MECHANICAL
WATTAGE: 544
AREA: 1562
PROPOSED LPD = 0.35
ALLOWABLE LPD = 1.0

ACTIVE STORAGE
WATTAGE: 96
AREA: 347
PROPOSED LPD = 0.28
ALLOWABLE LPD = 1.0

PROPOSED FLOOR LPD =
(680+192+160+874+544+96)/(802+558+509+556+1562+347) = 0.62
ALLOWABLE FLOOR LPD =
(602+558+509+556+1562+347)/(802+558+509+556+1562+347) = 1.0

PROFESSIONAL'S STATEMENT

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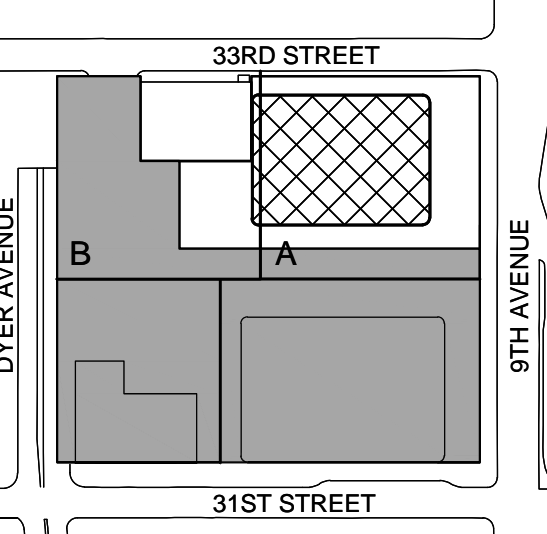
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Key Plan:



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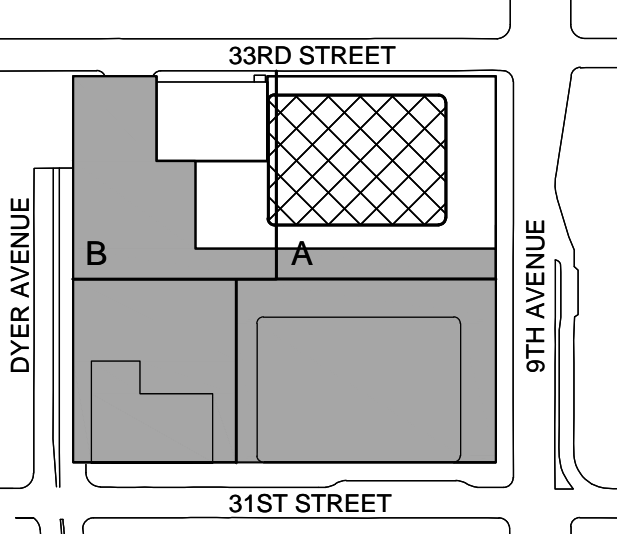
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Ontario, Canada N1K 1B8

Key Plan:



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1 12 SEPT 2014 ISSUED FOR FOUNDATION PERMIT
No. Date Description

Sheet Name:

**NYC EC
COMPLIANCE
LIGHTING
LEVEL 56
FLOOR PLAN**

Project No.:

Date:
19 DEC 2014

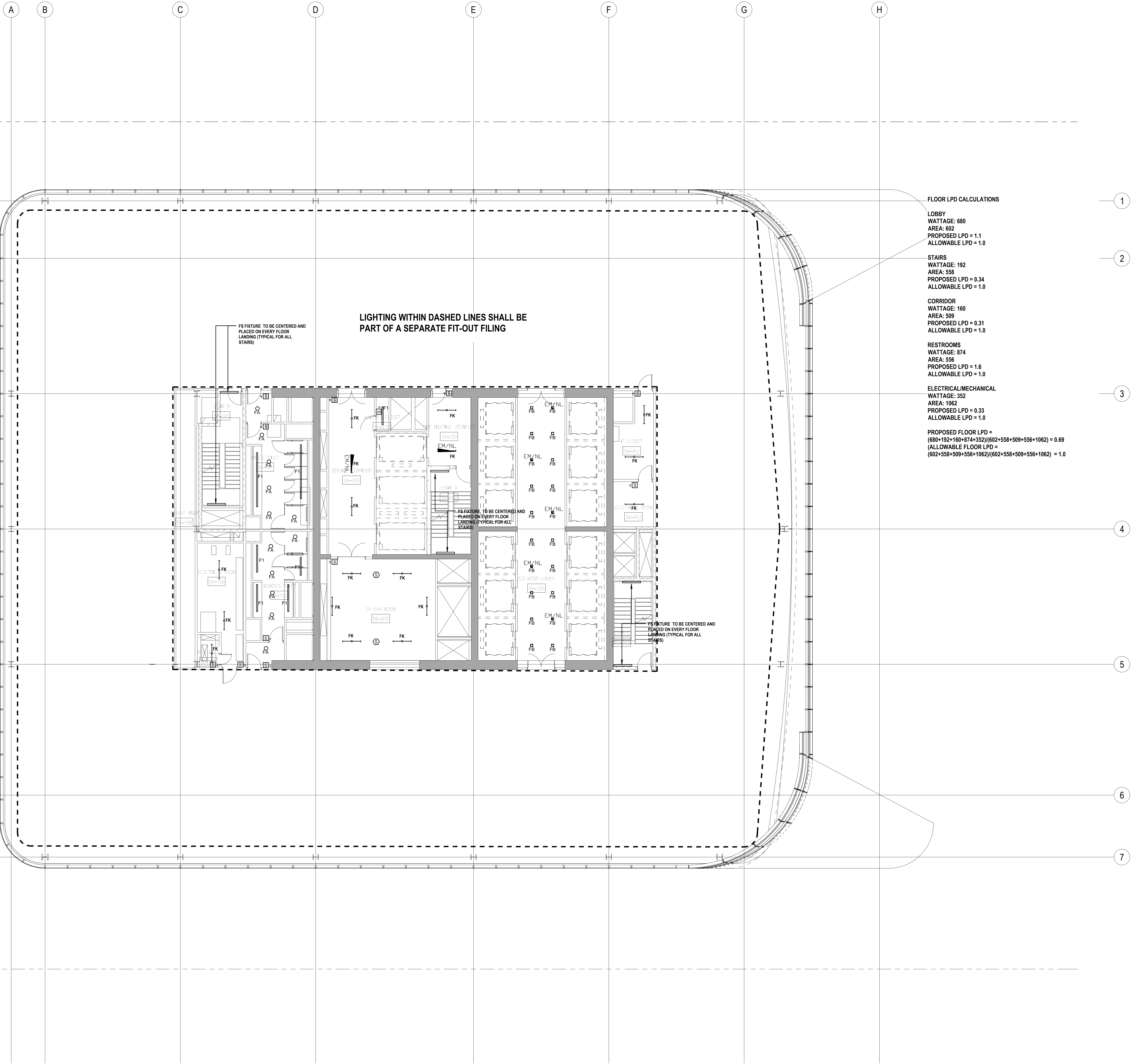
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File No.:

Sheet No.:

EN-128.00

Page No.:



FLOOR LPD CALCULATIONS

LOBBY
WATTAGE: 680
AREA: 602
PROPOSED LPD = 1.1
ALLOWABLE LPD = 1.0

STAIRS
WATTAGE: 192
AREA: 558
PROPOSED LPD = 0.34
ALLOWABLE LPD = 1.0

CORRIDOR
WATTAGE: 160
AREA: 509
PROPOSED LPD = 0.31
ALLOWABLE LPD = 1.0

RESTROOMS
WATTAGE: 874
AREA: 556
PROPOSED LPD = 1.6
ALLOWABLE LPD = 1.0

ELECTRICAL/MECHANICAL
WATTAGE: 352
AREA: 1062
PROPOSED LPD = 0.33
ALLOWABLE LPD = 1.0

PROPOSED FLOOR LPD =
(680+192+160+874+352)/(602+558+509+556+1062) = 0.69
ALLOWABLE FLOOR LPD =
(602+558+509+556+1062)/(602+558+509+556+1062) = 1.0

PROFESSIONAL'S STATEMENT

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SHEET NOTES

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Client

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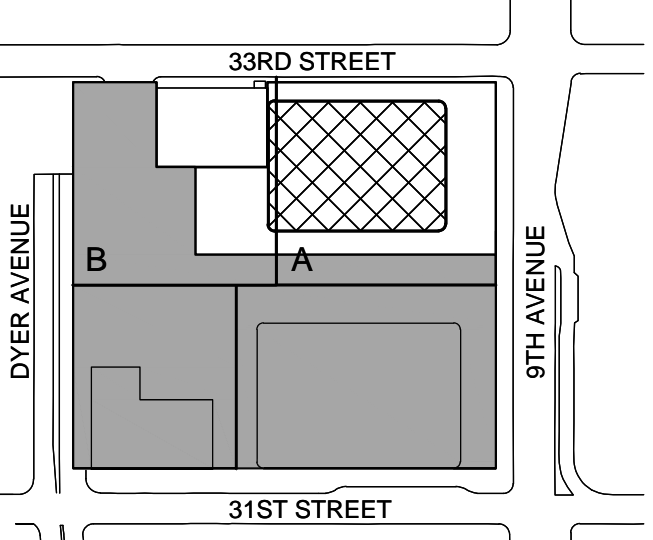
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Key Plan:



Seal & Signature:



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No. Date Description

Sheet Name:

**NYC EC
COMPLIANCE
LIGHTING
LEVEL 57-58
FLOOR PLAN**

Project No.:

14530.A.000

Date:

19 DEC 2014

Scale:

N.T.S.

File No.:

Sheet No.:

EN-129.00

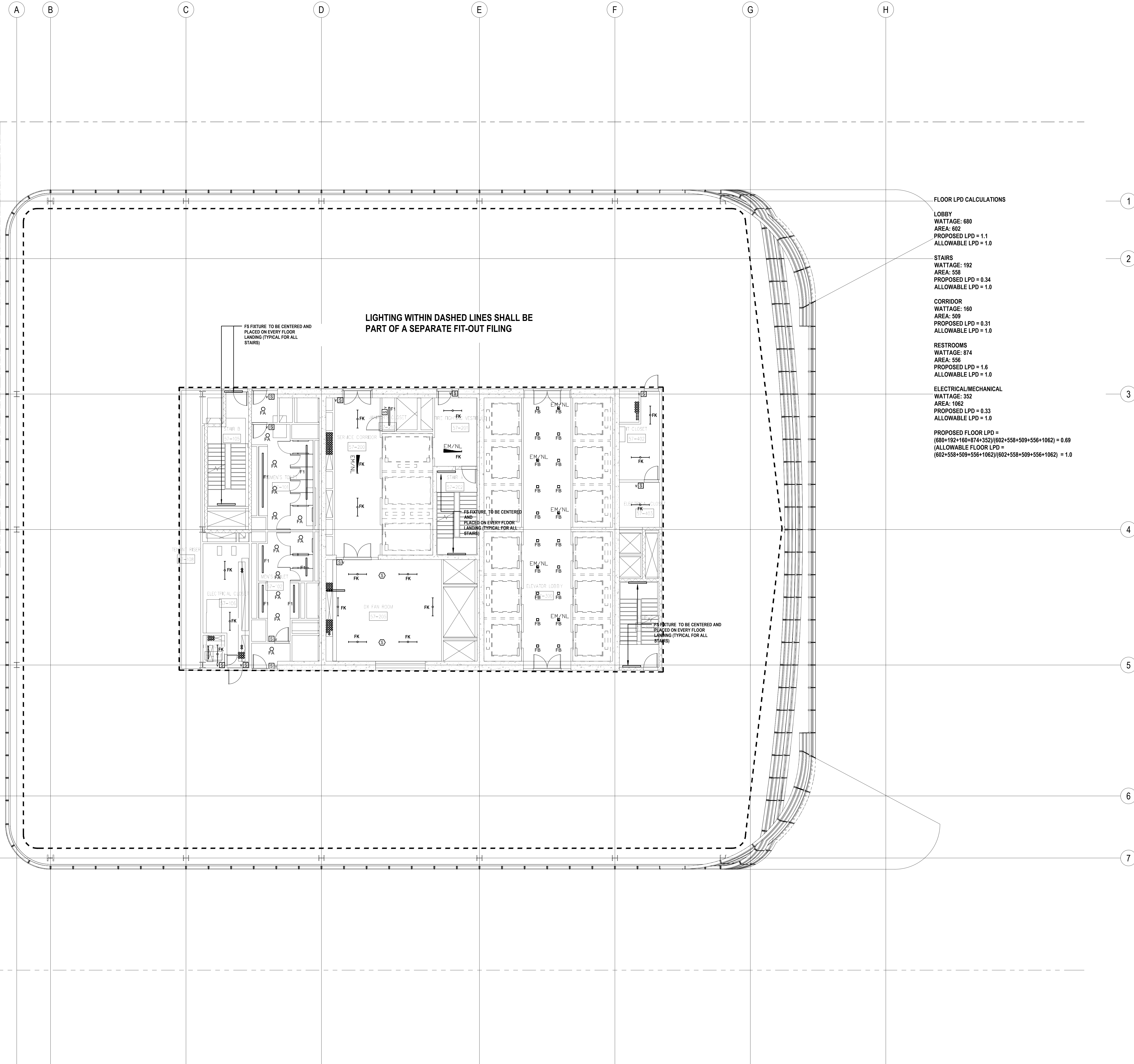
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FLOOR LPD CALCULATIONS

LOBBY
WATTAGE: 680
AREA: 602
PROPOSED LPD = 1.1
ALLOWABLE LPD = 1.0

STAIRS
WATTAGE: 192
AREA: 558
PROPOSED LPD = 0.34
ALLOWABLE LPD = 1.0

CORRIDOR
WATTAGE: 160
AREA: 509
PROPOSED LPD = 0.31
ALLOWABLE LPD = 1.0

RESTROOMS
WATTAGE: 874
AREA: 556
PROPOSED LPD = 1.6
ALLOWABLE LPD = 1.0

ELECTRICAL/MECHANICAL
WATTAGE: 352
AREA: 1062
PROPOSED LPD = 0.33
ALLOWABLE LPD = 1.0

PROPOSED FLOOR LPD =
(680+192+160+874+352)/(602+558+509+556+1062) = 0.69
(ALLOWABLE FLOOR LPD =
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SHEET NOTES

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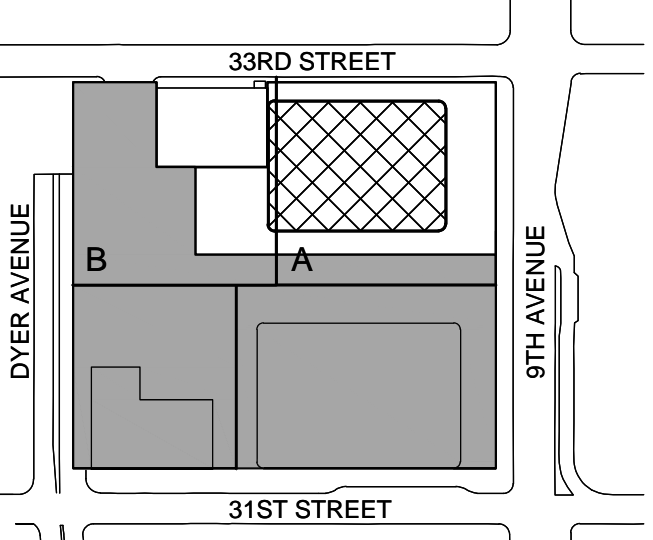
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Key Plan:



Seal & Signature:



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No Date Description

Sheet Name:

NYC EC
COMPLIANCE
LIGHTING
LEVEL 59
FLOOR PLAN

Project No.:

Date:

Scale:

File No.:

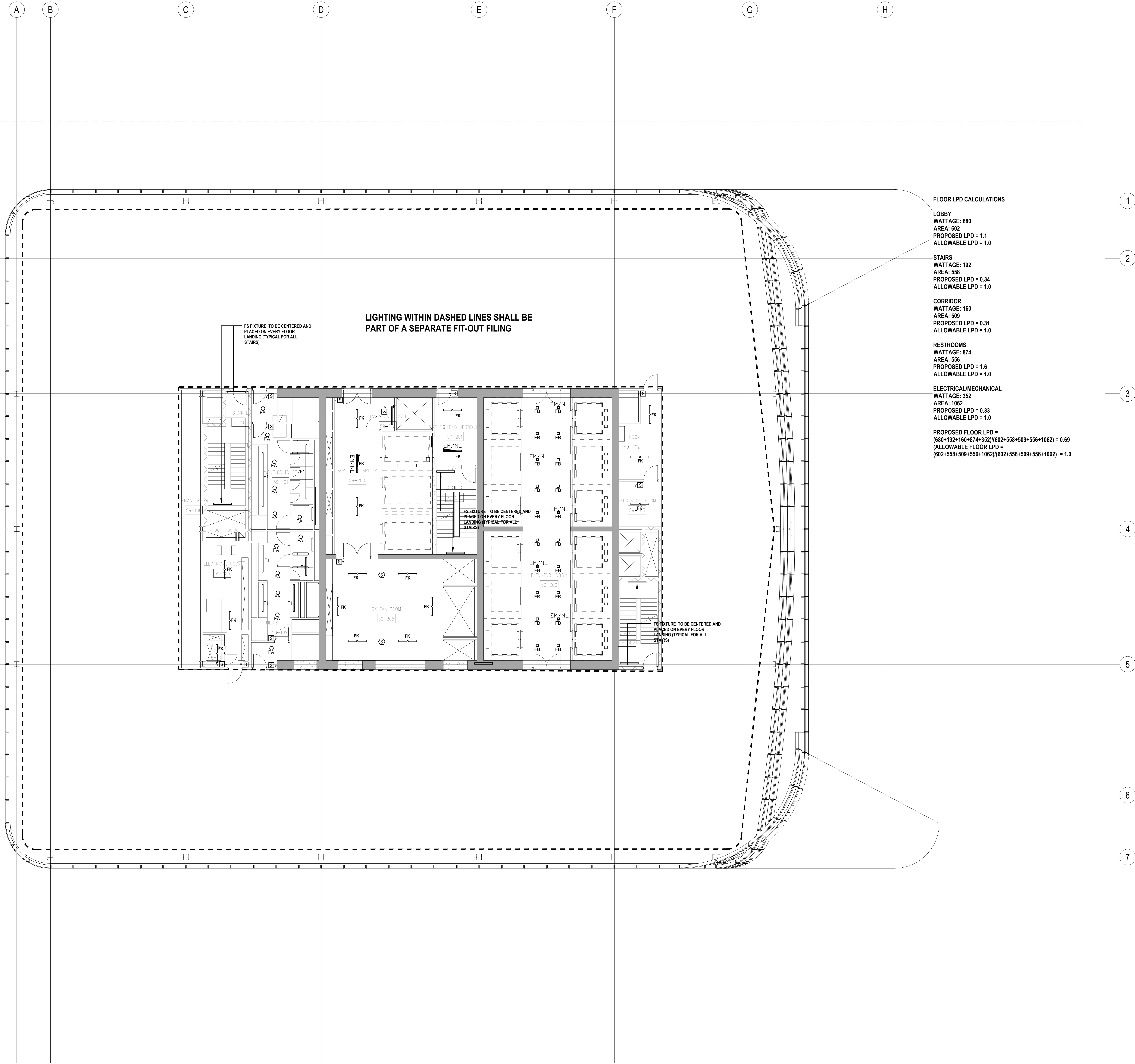
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Page No.:

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215 West 40th Street, 15th Floor, New York, NY 10018

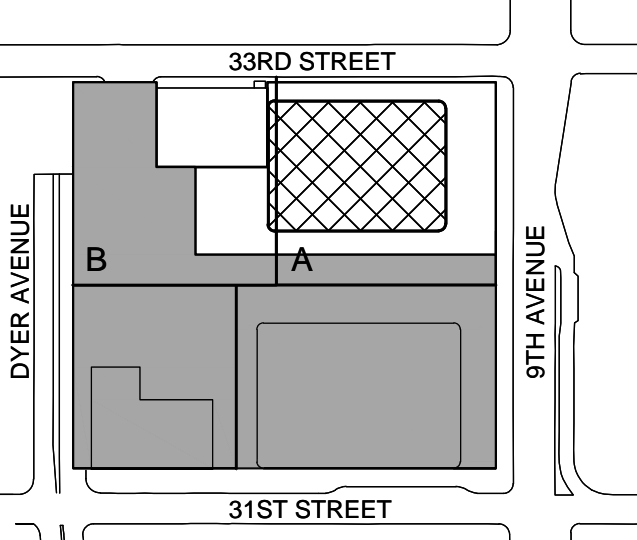
Facade Maintenance Consultant

Entek Engineering LLC
166 Ames Street, Hackensack, NJ 07601

Wind Tunnel Consultant

Rowan Williams Davies & Irwin Inc.
650 Woodlawn Road West, Guelph
Ontario, Canada N1K 1B8

Key Plan:



Seal & Signature:



2 30 JAN 2015 ISSUED FOR BUILDING PERMIT
1 12 SEPT 2014 ISSUED FOR FOUNDATION PERMIT
No Date Description

Sheet Name:
**NYC EC
COMPLIANCE
LIGHTING
LEVEL 60-61
FLOOR PLAN**

Project No.:

Date:

Scale:

File No.:

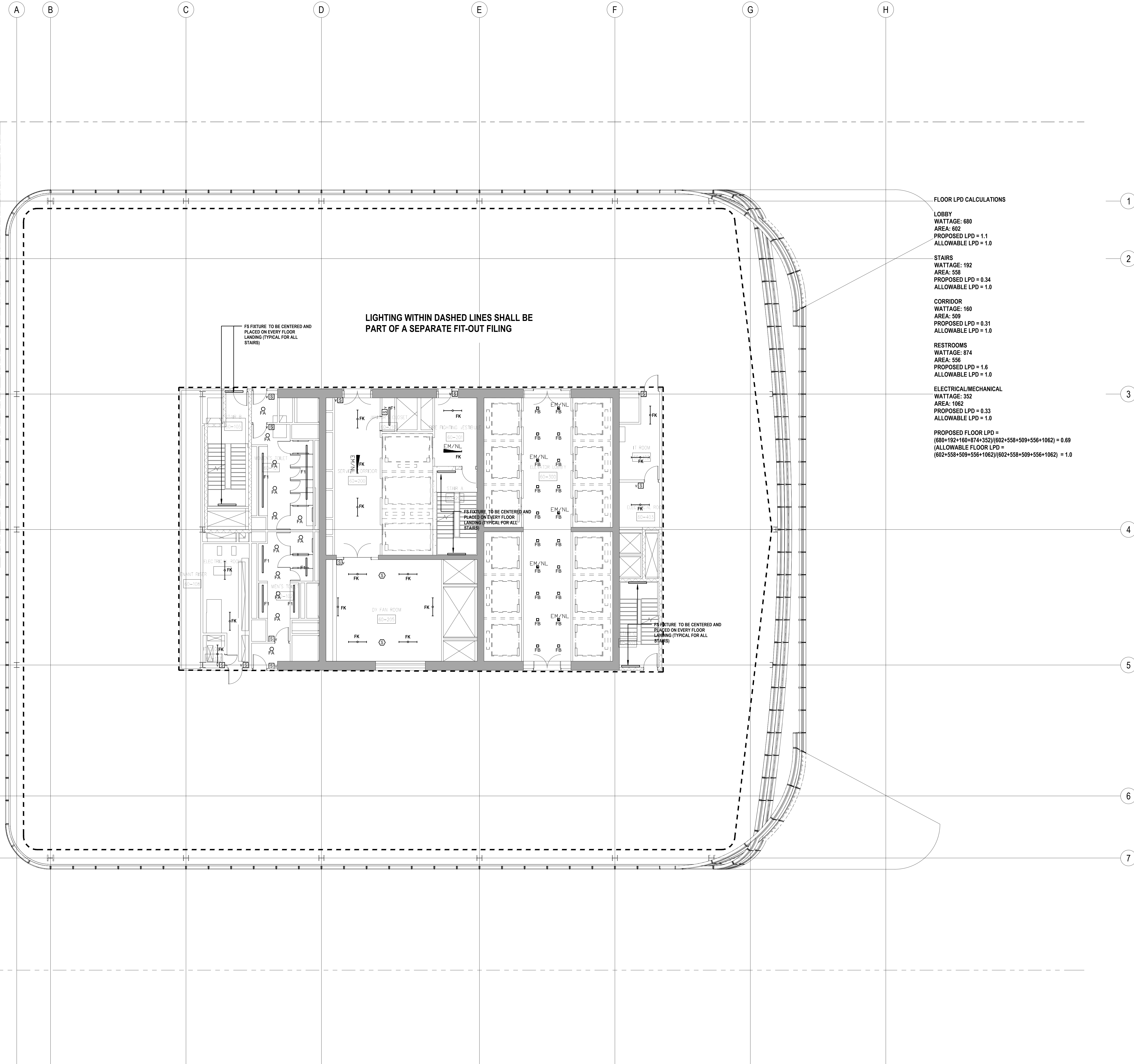
Sheet No.:

Date:

Scale:

Page No.:

EN-131.00



FLOOR LPD CALCULATIONS

LOBBY
WATTAGE: 680
AREA: 602
PROPOSED LPD = 1.1
ALLOWABLE LPD = 1.0

STAIRS
WATTAGE: 192
AREA: 558
PROPOSED LPD = 0.34
ALLOWABLE LPD = 1.0

CORRIDOR
WATTAGE: 160
AREA: 509
PROPOSED LPD = 0.31
ALLOWABLE LPD = 1.0

RESTROOMS
WATTAGE: 874
AREA: 556
PROPOSED LPD = 1.6
ALLOWABLE LPD = 1.0

ELECTRICAL/MECHANICAL
WATTAGE: 352
AREA: 1062
PROPOSED LPD = 0.33
ALLOWABLE LPD = 1.0

PROPOSED FLOOR LPD =
(680+192+160+874+352)/(602+558+509+556+1062) = 0.69
(ALLOWABLE FLOOR LPD =
(602+558+509+556+1062)/(602+558+509+556+1062) = 1.0

PROFESSIONAL'S STATEMENT

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SHEET NOTES

ENERGY ANALYSIS NOTES:

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MANHATTAN WEST:
NORTH TOWER
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Brookfield
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Skidmore, Owings & Merrill LLP
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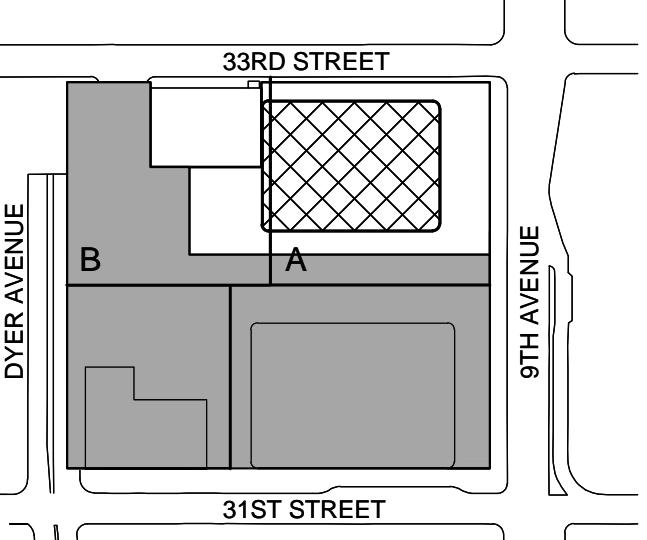
Facade Maintenance Consultant

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Wind Tunnel Consultant

Rowan Williams Davies & Irwin Inc.
650 Woodlawn Road West, Guelph
Ontario, Canada N1K 1B8

Key Plan:



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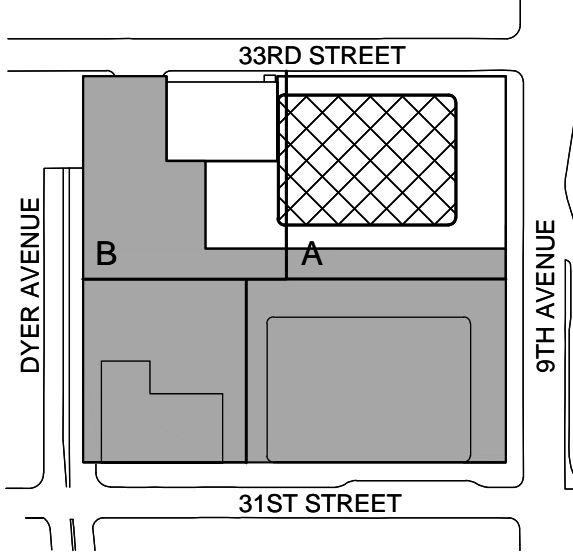
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Ontario, Canada N1K 1B8

Key Plan:



Seal & Signature:



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1	12 SEPT 2014	ISSUED FOR FOUNDATION PERMIT
No.	Date	Description

Sheet Name:

NYC EC
COMPLIANCE
LIGHTING
LEVEL 64-67
FLOOR PLAN

Project No.:

Date:

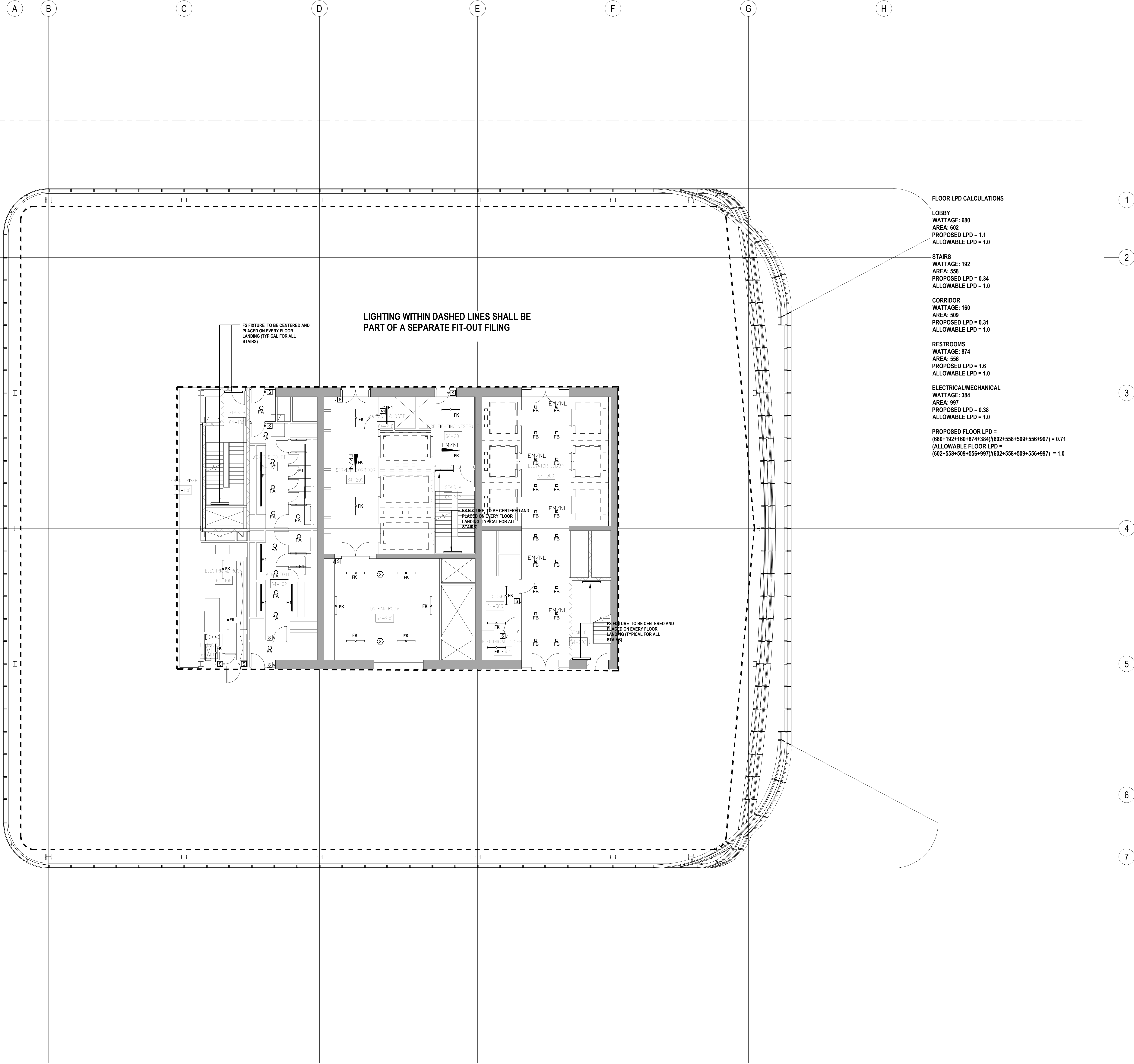
Scale:

File No.:

Sheet No.:

EN-134.00

Page No.:



FLOOR LPD CALCULATIONS

LOBBY
WATTAGE: 680
AREA: 602
PROPOSED LPD = 1.1
ALLOWABLE LPD = 1.0

STAIRS
WATTAGE: 192
AREA: 558
PROPOSED LPD = 0.34
ALLOWABLE LPD = 1.0

CORRIDOR
WATTAGE: 160
AREA: 509
PROPOSED LPD = 0.31
ALLOWABLE LPD = 1.0

RESTROOMS
WATTAGE: 874
AREA: 556
PROPOSED LPD = 1.6
ALLOWABLE LPD = 1.0

ELECTRICAL/MECHANICAL
WATTAGE: 384
AREA: 997
PROPOSED LPD = 0.38
ALLOWABLE LPD = 1.0

PROPOSED FLOOR LPD =
(680+192+160+874+384)/(602+558+509+556+997) = 0.71
ALLOWABLE FLOOR LPD =
(602+558+509+556+997)/(602+558+509+556+997) = 1.0

PROFESSIONAL'S STATEMENT

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SHEET NOTES

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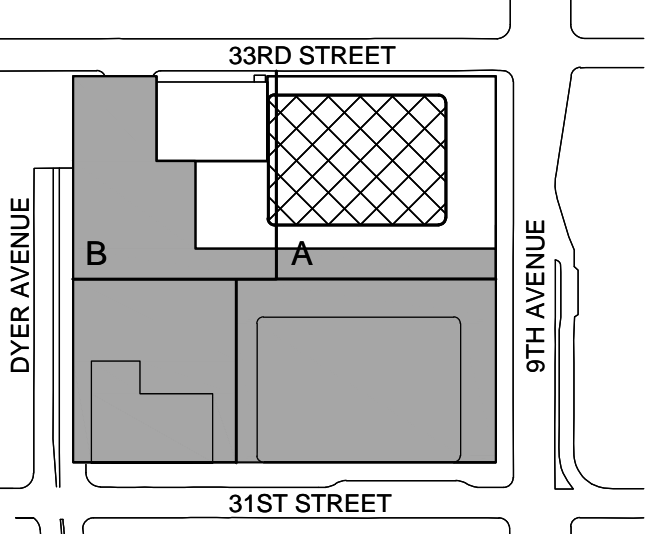
Facade Maintenance Consultant

Entek Engineering LLC
166 Ames Street, Hackensack, NJ 07601

Wind Tunnel Consultant

Rowan Williams Davies & Irwin Inc.
650 Woodlawn Road West, Guelph
Ontario, Canada N1K 1B8

Key Plan:



Seal & Signature:



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No. Date Description
Sheet Name:

NYC EC
COMPLIANCE
LIGHTING
LEVEL 68
FLOOR PLAN

Project No.:

Date:

Scale:

File No.:

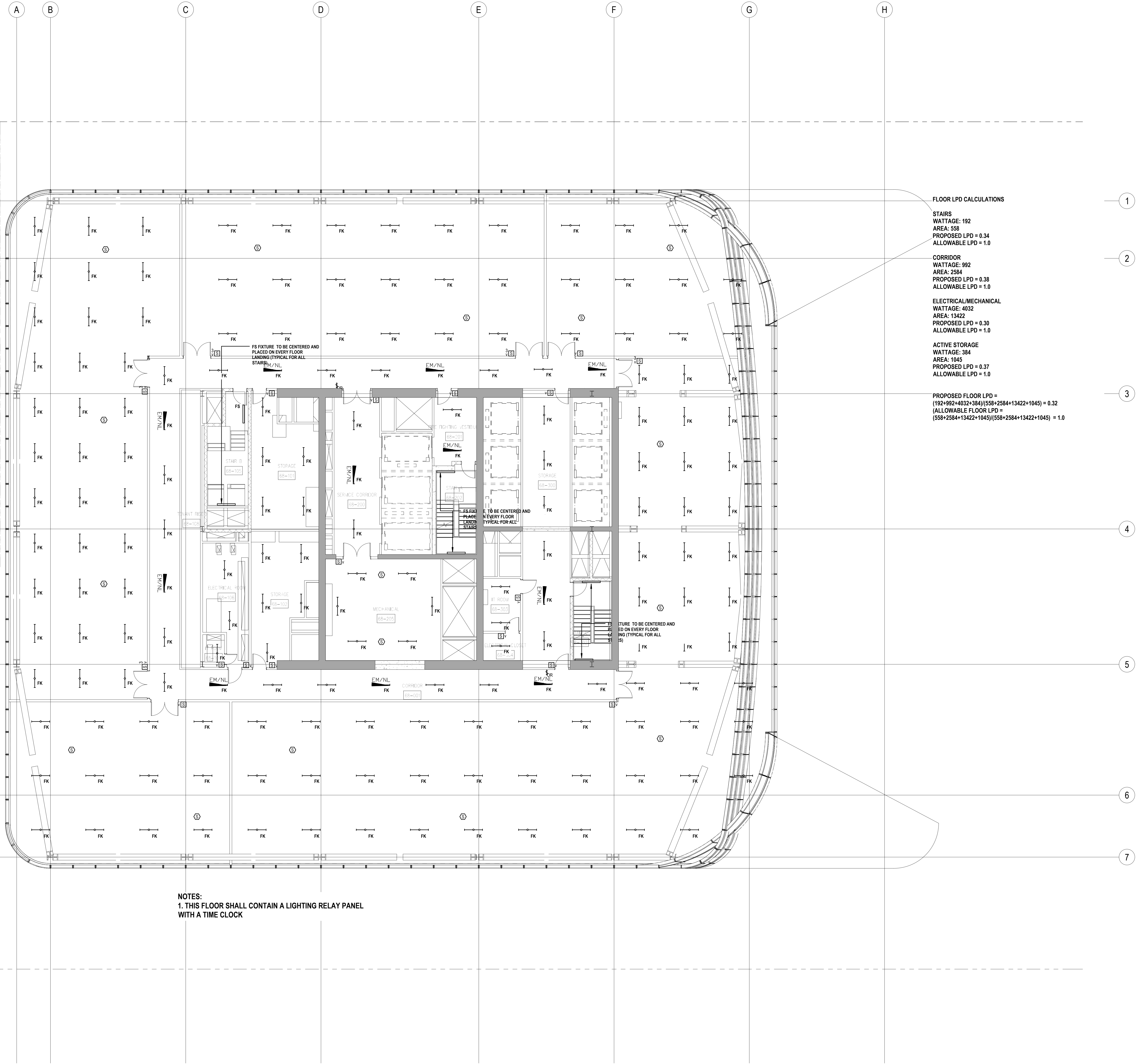
Sheet No.:

Date:

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Page No.:

EN-135.00



NOTES:
1. THIS FLOOR SHALL CONTAIN A LIGHTING RELAY PANEL
WITH A TIME CLOCK

PROFESSIONAL'S STATEMENT

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MANHATTAN WEST:
NORTH TOWER
375 Ninth Avenue, New York, NY 10001

Client

Brookfield
Brookfield Place
250 Vesey Street, 15th Floor, New York, NY 10281

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Skidmore, Owings & Merrill LLP
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Jaros Baum & Bolles
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102 East Blithedale Ave. Suite 1, Mill Valley, California 94041

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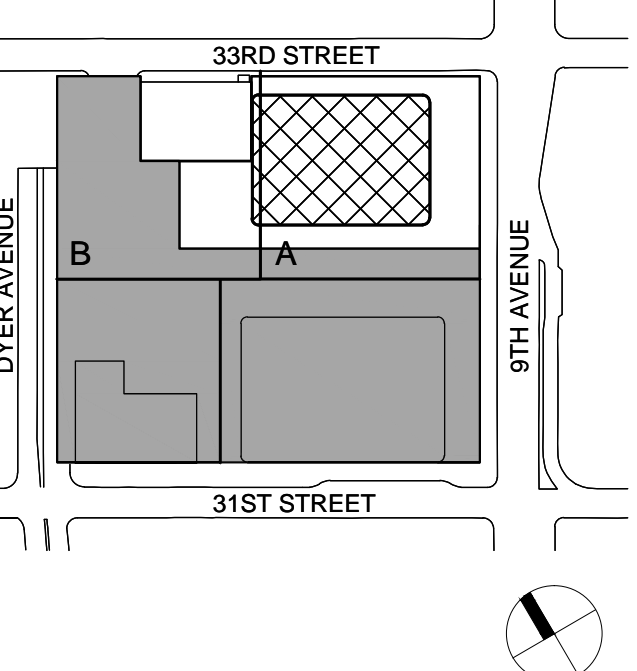
Facade Maintenance Consultant

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166 Ames Street, Hackensack, NJ 07601

Wind Tunnel Consultant

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650 Woodlawn Road West, Guelph
Ontario, Canada N1K 1B8

Key Plan:



Seal & Signature:



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1 12 SEPT 2014 ISSUED FOR FOUNDATION PERMIT

Sheet Name:

NYC EC
COMPLIANCE
LIGHTING
LEVEL 69
FLOOR PLAN

Project No.:

Date:

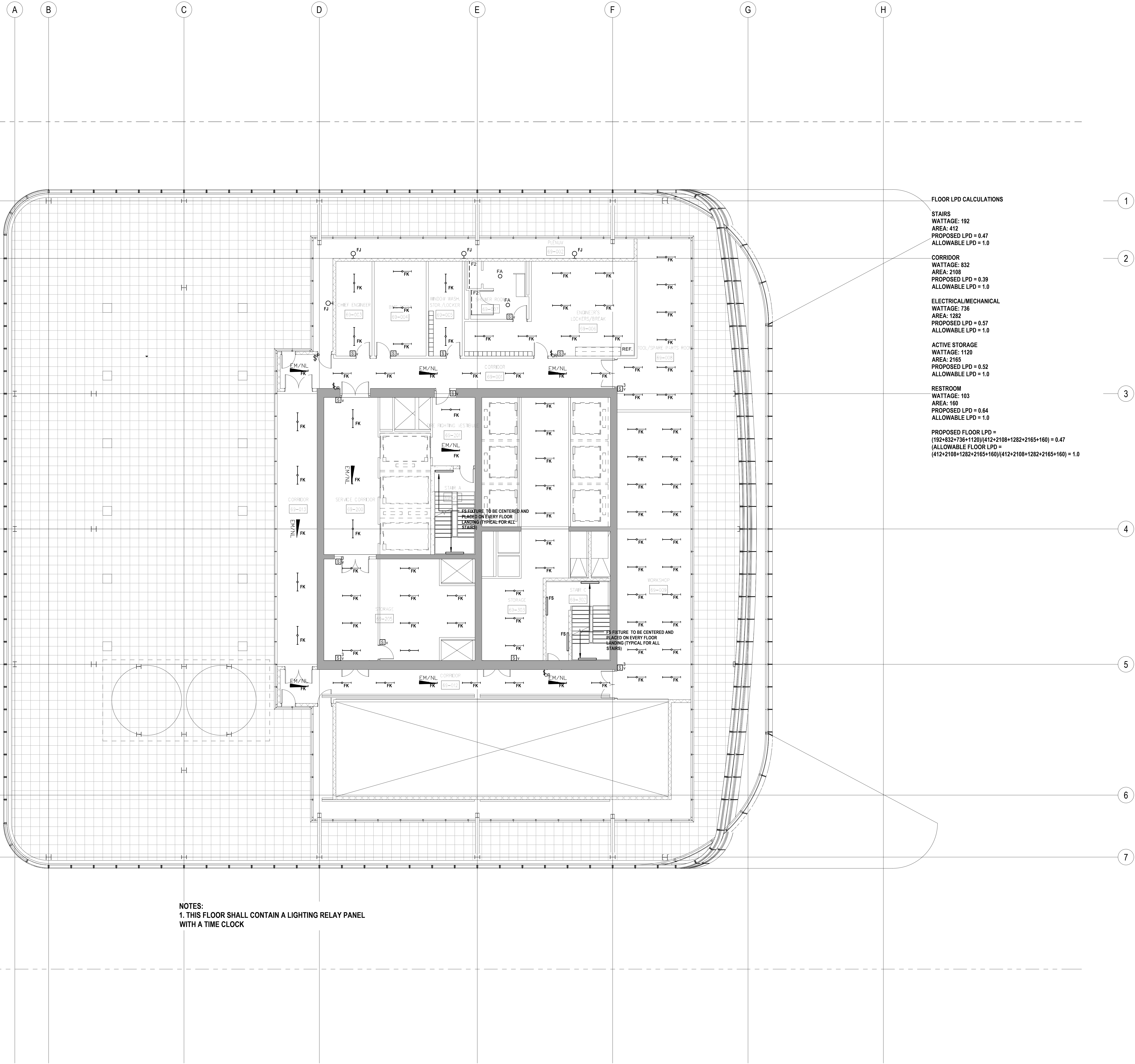
Scale:

File No.:

Sheet No.:

EN-136.00

Page No.:



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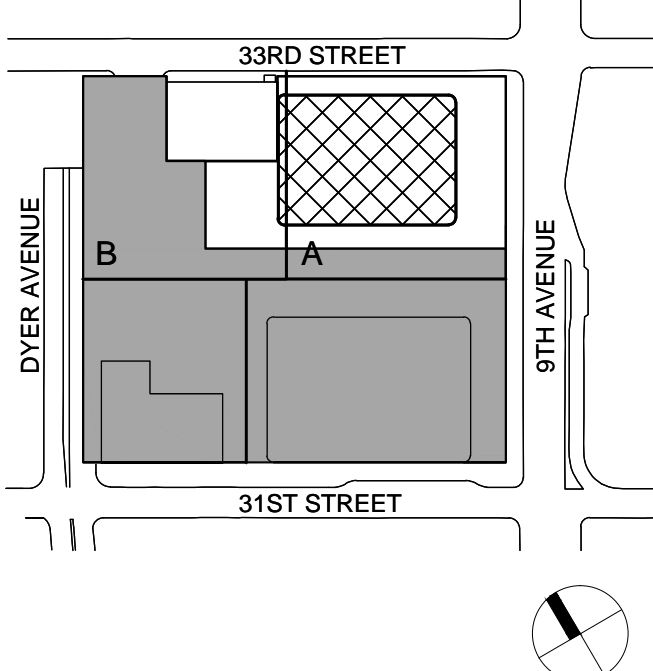
Facade Maintenance Consultant

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Sheet Name:

NYC EC
COMPLIANCE
LIGHTING ROOF
PLAN MECH
PENTHOUSE

Project No.:

Date:

Scale:

File No.:

Sheet No.:

EN-137.00

Page No.:

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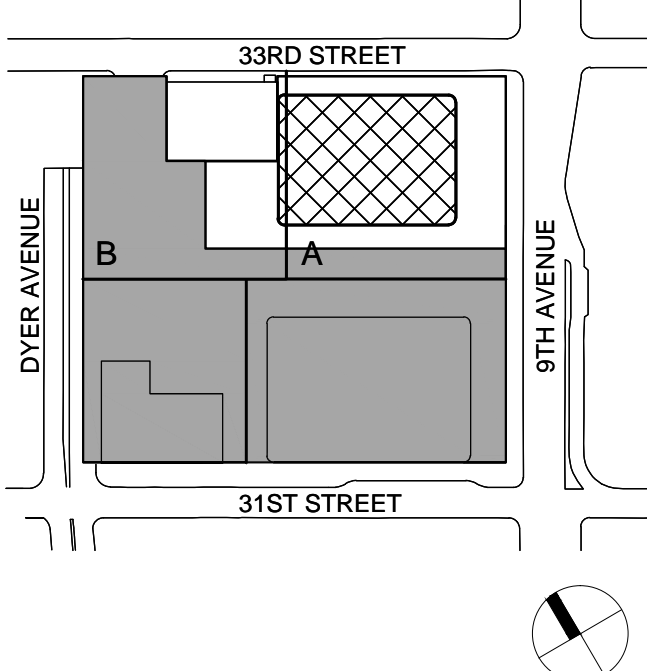
Facade Maintenance Consultant

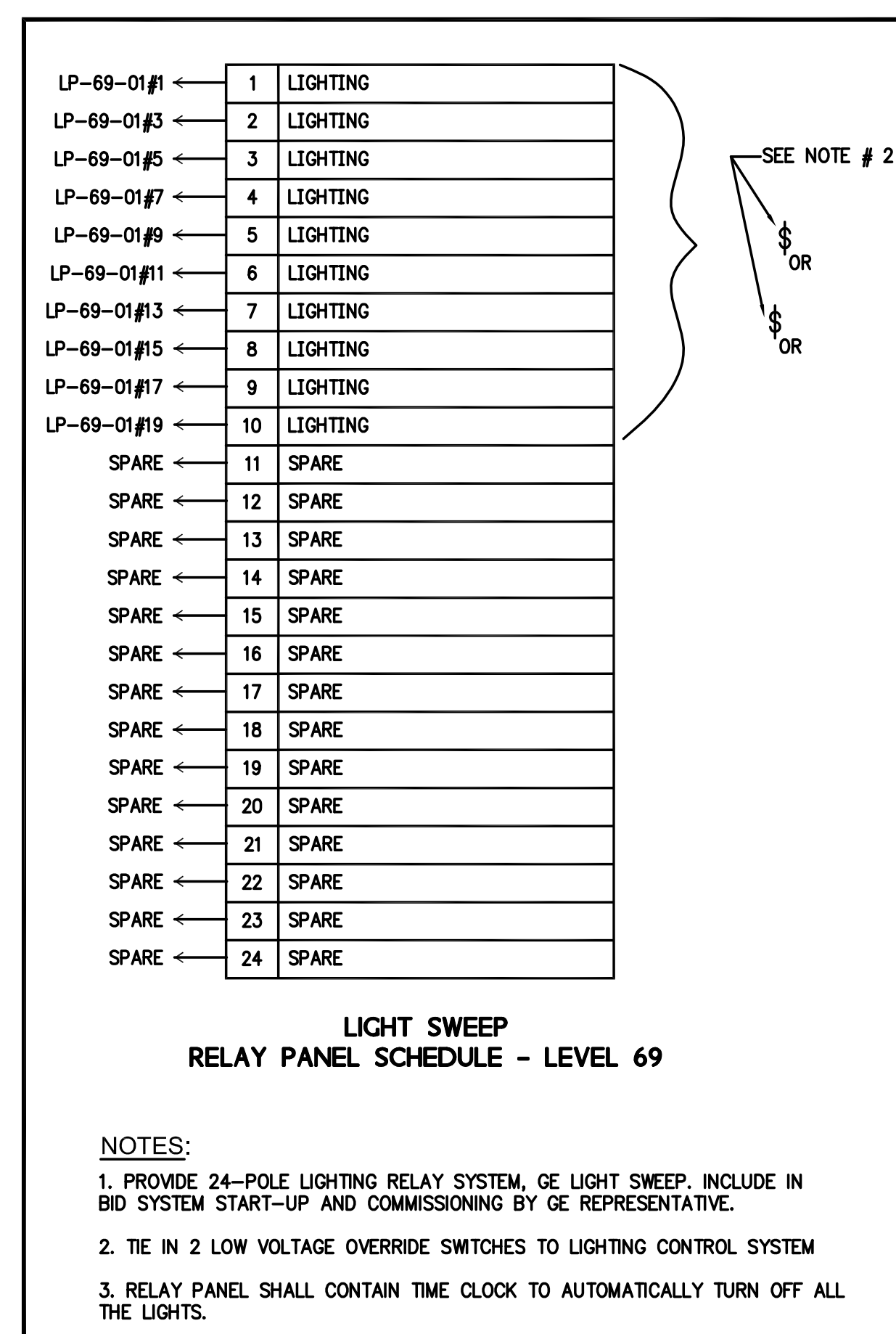
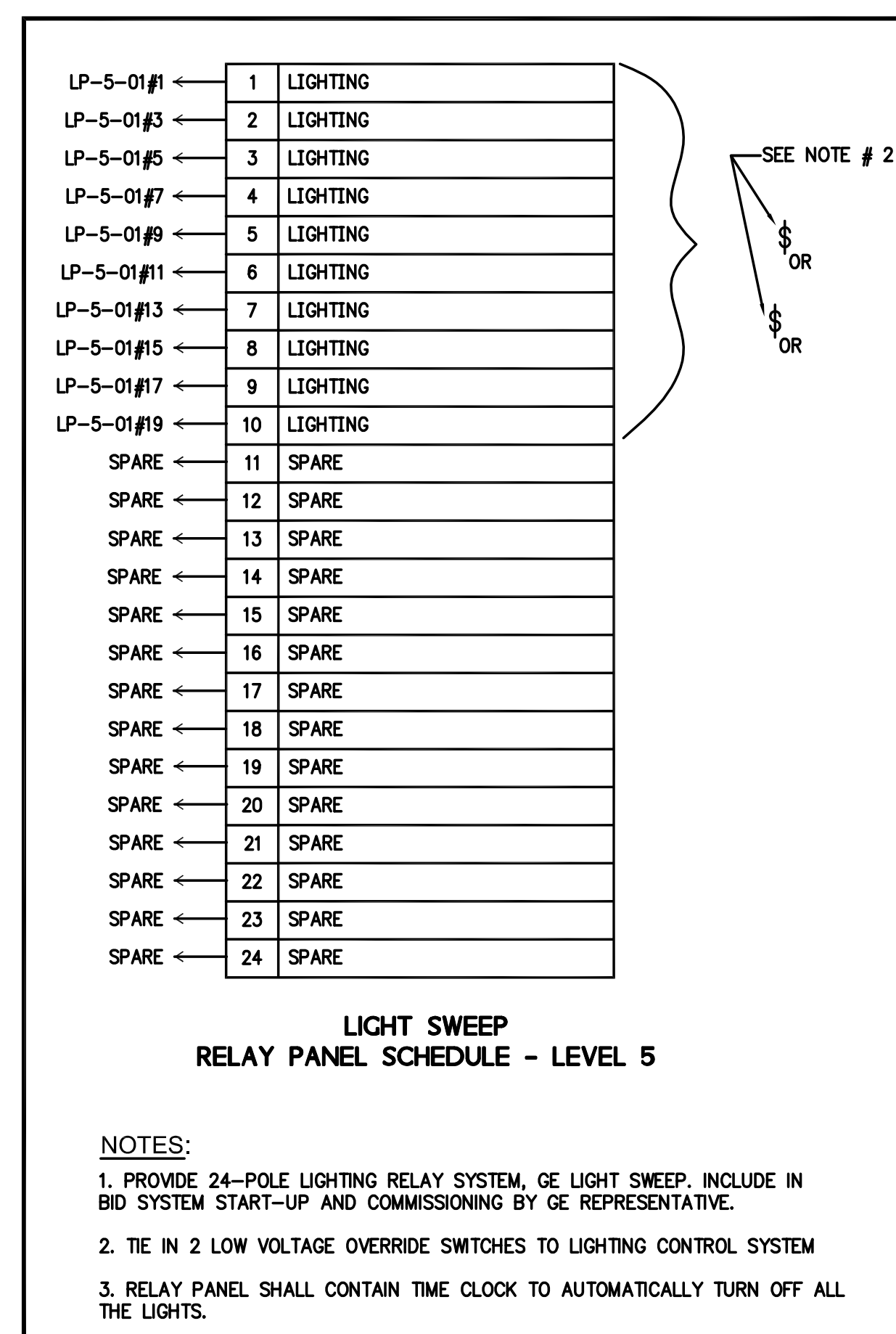
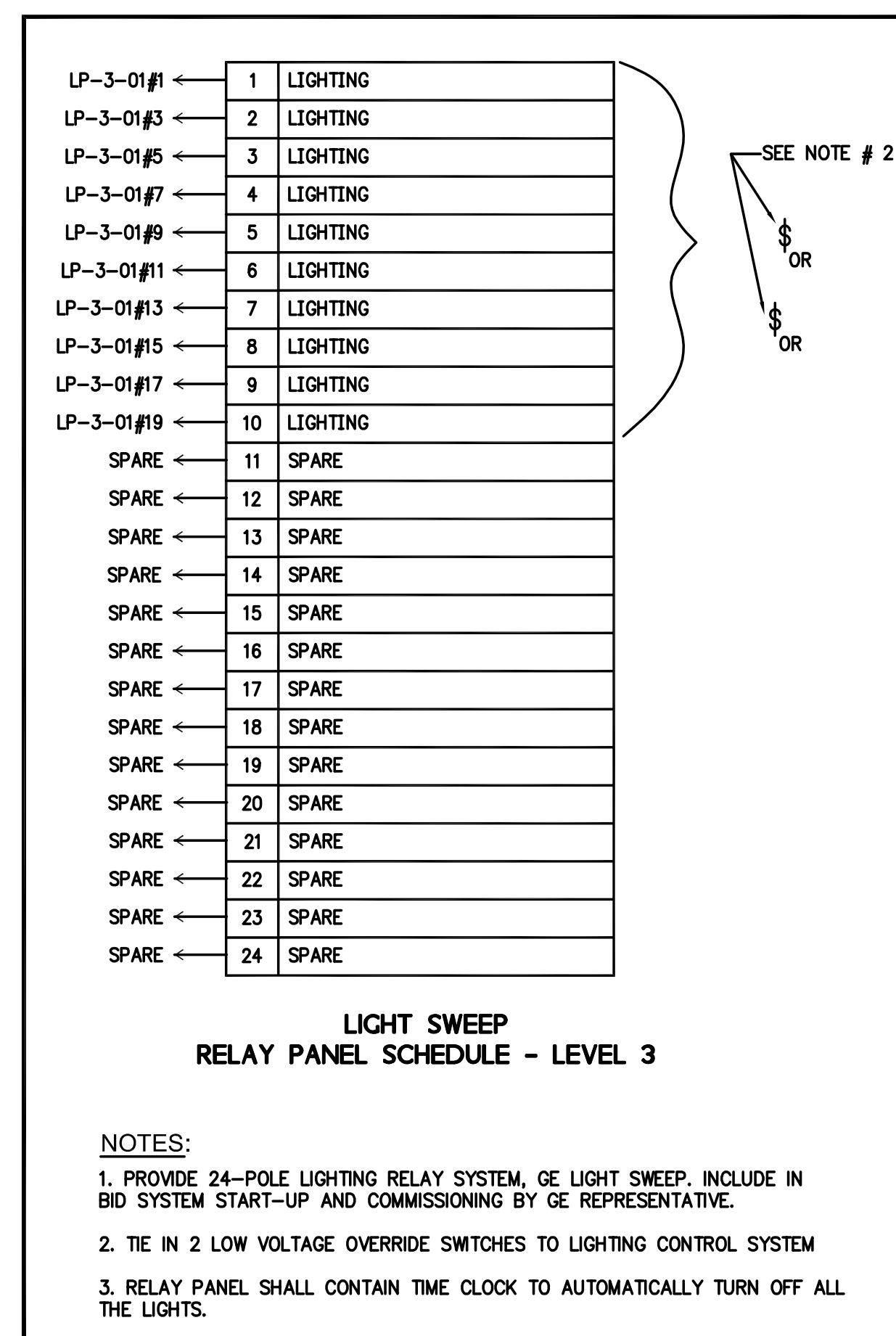
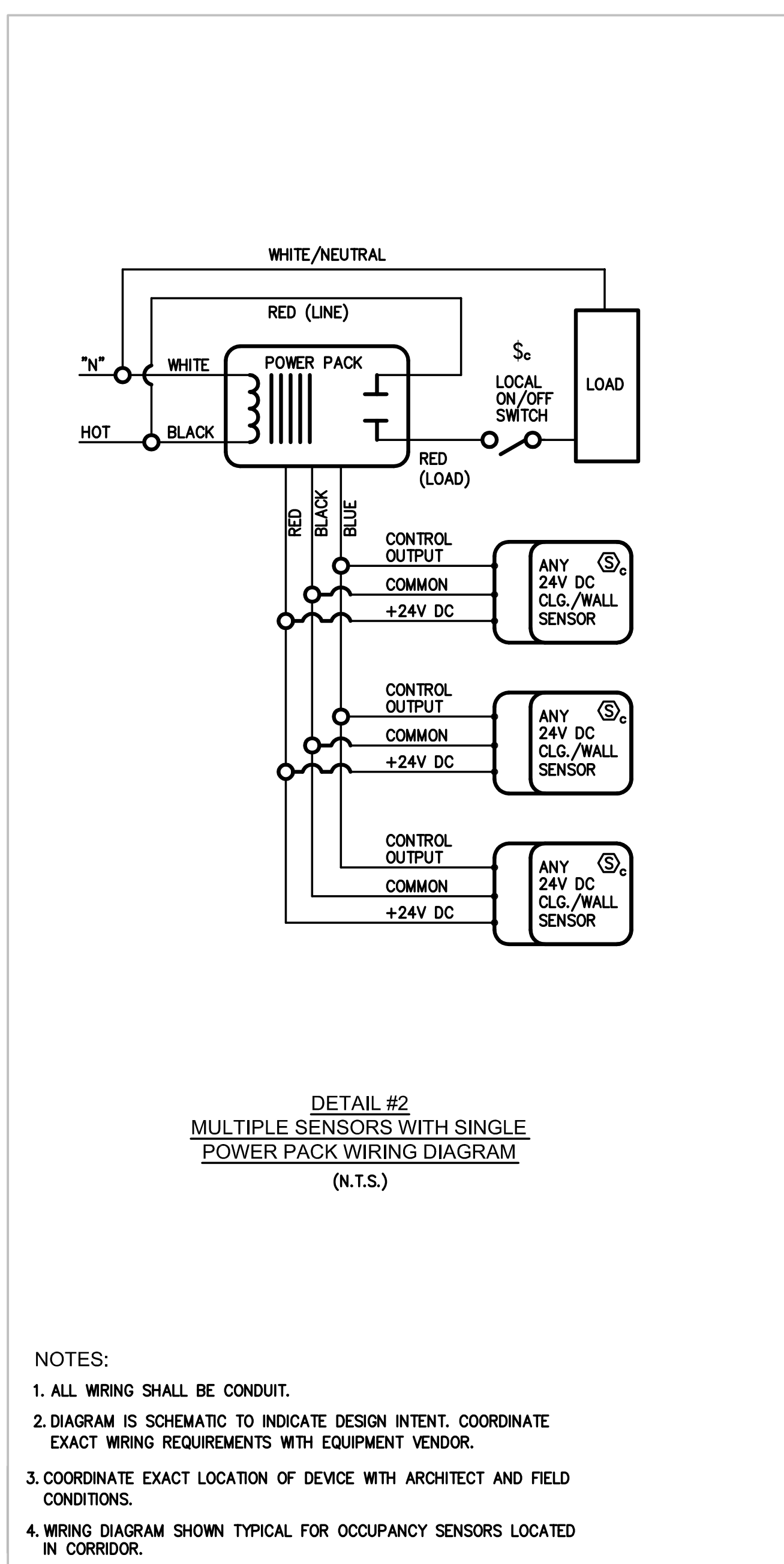
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Key Plan:





<div>USCRIPT NEW YORK 2011/05/27</div>	
<div><div>MANHATTAN WEST: NORTH TOWER</div><div>375 Ninth Avenue, New York, NY 10001</div></div>	
<div>Client</div> <div>Brookfield</div> <div>Brookfield Place 250 Vesey Street, 15th Floor, New York, NY 10021</div>	
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<div>Vertical Transportation</div> <div>Edgett Williams Consulting Group, Inc. 102 East Blithedale Ave., Suite 1, Hill Valley, California 94024</div>	
<div>Sustainable Design</div> <div>Viridian Energy & Environmental 50 Washington Street, Norwalk, CT 06854</div> <div>Geo-Technical Engineering</div> <div>Mueser Rutledge Consulting Engineers 14 Penn Plaza, 225 W. 34th Street #610, New York, NY 10122</div> <div>Landscape Consultant</div> <div>Field Operations 475 10th Avenue, New York, NY 10018</div>	
<div>Security Consultant</div> <div>Ducibella, Vantor & Santoro 251 State Street #F1, North Haven, CT 06473</div> <div>Blast Consultant</div> <div>Weidinger Associates, Inc. 401 Wall Street, New York, NY 10005</div>	
<div>Acoustical Consultant</div> <div>Cerami & Associates 404 Fifth Avenue #B, New York, NY 10018</div> <div>Vibration Consultant</div> <div>Wilson, Uhrig & Associates, Inc. 65 Broadway, Suite 401, New York, NY 10006</div>	
<div>Code Consultant</div> <div>Code Consultants Professional Engineers PC 215 West 40th Street, 15th Floor, New York, NY 10018</div>	
<div>Facade Maintenance Consultant</div> <div>Entek Engineering LLC 166 Ames Street, Hackensack, NJ 07601</div>	
<div>Wind Tunnel Consultant</div> <div>Rowan Williams Davies & Irwin Inc. 650 Woodlawn Road West, Guelph Ontario, Canada N1W 1B9</div>	

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NYC EC
COMPLIANCE
LIGHTING
SYSTEM
CONTROLS
SHEET NO. 1

Project No.: 14830 A.000	Sheet No.:
Date: 19 DEC 2014	EN-139.00
Scale: N.T.S.	
File No.:	Page No.:

TO THE BEST OF OUR KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE NEW YORK CITY ENERGY CONSERVATION CODE.

THIS PLAN IS APPROVED ONLY FOR WORK INDICATED
ON THE APPLICATION SPECIFICATION SHEET. ALL
OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON
OR TO BE CONSIDERED AS EITHER BEING APPROVED
OR IN ACCORDANCE WITH APPLICABLE CODES.

NYCECC BUILDING ENVELOPE REQUIREMENTS - OPAQUE ELEMENTS (ECCONS TABLE 502.1.2)							
CLIMATE ZONE 4, COMMERCIAL BUILDING		MAXIMUM U-FACTOR	PROPOSED U-FACTOR	MAXIMUM SHGC	PROPOSED SHGC		
ENVELOPE TYPE	ENVELOPE AREA	MAXIMUM U-FACTOR	PROPOSED U-FACTOR	MAXIMUM SHGC	PROPOSED SHGC		
A. ROOF'S							
A1: INSULATION ENTIRELY ABOVE DECK - PLAZA	76,999 R ²	U-0.048	U-0.025	-	-	-	-
A2: INSULATION ENTIRELY ABOVE DECK - TOWER	31,173 R ²	U-0.048	U-0.025	-	-	-	-
B. WALLS							
B1: METAL FRAMED - CURTAIN WALL	134,288 R ²	U-0.064	U-0.179	-	-	-	-
B2: METAL FRAMED - STOREFRONT	53.8 R ²	U-0.064	U-0.090	-	-	-	-
B3: METAL FRAMED - SHADOW BOX	43,885 R ²	U-0.064	U-0.179	-	-	-	-
B4: MASS - CONCRETE MASONRY UNIT	31,371 R ²	U-0.104	U-0.128	-	-	-	-
C. BELOW GRADE WALLS							
C1: MASS - CONCRETE WALL	13,291 R ²	-	-	C-1.140	C-0.550	-	-
C2: MASS - CONCRETE MASONRY UNIT	10,474 R ²	-	-	C-1.140	C-0.143	-	-
D. SLAB-ON-GRADE FLOORS							
D1: UNHEATED SLABS	56,263 R ²	-	-	-	-	F-0.730	F-0.440

NYCECC BUILDING ENVELOPE REQUIREMENTS - FENESTRATION (ECCONS TABLE 502.3)					
CLIMATE ZONE 4, COMMERCIAL BUILDING		MAXIMUM U-FACTOR	PROPOSED U-FACTOR	MAXIMUM SHGC	PROPOSED SHGC
FENESTRATION TYPE	FENESTRATION AREA	MAXIMUM U-FACTOR	PROPOSED U-FACTOR	MAXIMUM SHGC	PROPOSED SHGC
METAL FRAMING WITH OR WITHOUT THERMAL BREAK					
CURTAIN WALL (GL01) - PF = 0.25	404,959 R ²	U-0.500	U-0.450	SHGC: 0.400	SHGC: 0.290
STOREFRONT (GL02) - PF = 0.25	21,975 R ²	U-0.500	U-1.06	SHGC: 0.400	SHGC: 0.080

NYCECC BUILDING ENVELOPE MANDATORY PROVISIONS			
CLIMATE ZONE 4, COMMERCIAL BUILDING			
SECTION	TITLE	DESCRIPTION	COMPLIANCE
502.4.1	WINDOW AND DOOR ASSEMBLIES	The air leakage of window and sliding or swinging door assemblies that are part of the building envelope shall be determined in accordance with AIAA/NOMAS/CA 1601.5.20A40, or NFRC 400 by an accredited, independent laboratory, and labeled and certified by the manufacturer and shall not exceed 1.3 cm per square foot (1.5 U/m ²), and swinging doors no more than 0.5 cm per square foot (2.6 U/m ²).	COMPLIES
502.4.2	CURTAIN WALL, STOREFRONT GLAZING AND COMMERCIAL ENTRANCE DOORS	Curtain wall, storefront glazing and commercial glazed swinging entrance doors and revolving doors shall be tested for air leakage at 1.57 pounds per square foot (psf) (75 Pa) in accordance with ASTM E 283. For curtain walls and storefront glazing, the maximum air leakage rate shall be 0.3 cubic foot per minute per square foot (cm ³ /m ²) (5.5 m ³ /h = m ²) of fenestration area. For commercial glazed swinging entrance doors and revolving doors, the maximum air leakage rate shall be 1.00 cm ³ /m ² (16.3 m ³ /h = m ²) of door area when tested in accordance with ASTM E 283.	COMPLIES
502.4.3	CONTINUOUS AIR BARRIER	Except in unheated structures and as permitted by this section, a continuous air barrier shall be installed, sealing all seams, openings, and penetrations of the building shell and shall be sealed with caulking materials or closed with gasketing systems compatible with the construction materials and location. Joints and seams shall be sealed in the same manner or taped or covered with a moisture vapor permeable wrapping material. Sealing materials spanning joints between construction materials shall allow for expansion and contraction of the construction materials. Such air barrier shall have all the following characteristics: 1. Continuous throughout the envelope with all joints and seams sealed and with sealed connections between all transitions in planes and changes in materials and at penetrations. 2. Joined and sealed in a flexible manner to the air barrier component of adjacent assemblies, allowing for the relative movement of these assemblies and components. 3. Installed in accordance with the manufacturer's instructions and in such a manner as to achieve the performance requirements. 4. Penetrations of the continuous air barrier shall be made in a way such that the integrity of the continuous air barrier is maintained. Seal and insulator shall weirs and other outdoor air intakes and exhaust openings integral to the building envelope shall be equipped with not less than a Class I cargo doors, leakage-rated damper with a maximum leakage rate of 4 cm ³ per square foot (6.8 U _A = m ²) at 1.0 inch water gauge (4.9 g) (1250 Pa) when tested in accordance with AIA/CA 5000.	COMPLIES
502.4.5	LOADING DOCK WEATHERSEALS	Cargo doors and loading dock doors shall be equipped with weatherseals to restrict infiltration when vehicles are parked in the doorway.	COMPLIES
502.4.6	VESTIBULES	A door that separates conditioned space from the exterior shall be protected with an enclosed vestibule, with all doors opening into and out of the vestibule equipped with self-closing devices. Vestibules shall be designed so that in passing through the vestibule it is not necessary for the interior and exterior doors to open at the same time. Exceptions: 1. Doors not intended to be used as a building entrance door, such as doors to mechanical or electrical equipment rooms. 2. Doors opening directly from a sleeping unit or dwelling unit. 3. Doors that open directly from a space less than 3,000 square feet (279 m ²) in area. 4. Revolving doors. 5. Doors used primarily to facilitate vehicular movement or material handling and adjacent personnel doors.	DOES NOT COMPLY

BUILDING ENVELOPE MATERIALS			
MATERIAL ID	DESCRIPTION	LOCATION	COMMENTS
GLASS			
GL01	1 1/4" INSULATED GLASS UNIT COMPOSED OF: 3/8" CLEAR LOW-IRON, HEAT STRENGTHENED OUTER LITE WITH A LOW-E COATING ON THE NO. 2 SURFACE + 1/2" BLACK STAINLESS STEEL SPACER WITH ARGON FILL + 3/8" CLEAR LOW-IRON FULLY TEMPERED HEAT SOAKED INNER LITE.	TOWER CURTAIN WALL VISION	GL01B IS A THERMALLY CURVED VERSION OF GL01 ASSEMBLY.
GL02	1 1/4" LAMINATED SAFETY GLASS COMPOSED OF: 3/8" LOW-IRON HEAT STRENGTHENED GLASS + A .060" PVB INTERLAYER + 3/8" LOW-IRON HEAT STRENGTHENED GLASS.	STOREFRONT VISION GLAZING	GL02B IS A THERMALLY CURVED VERSION OF GL02 ASSEMBLY.
GL03	1 1/4" INSULATED GLASS UNIT COMPOSED OF: 3/8" CLEAR LOW-IRON, HEAT STRENGTHENED OUTER LITE WITH A LOW-E COATING ON THE NO. 2 SURFACE + 1/2" SPACER WITH ARGON FILL + 3/8" CLEAR LOW-IRON INNER LITE.	TOWER CURTAIN WALL	GL03B IS A THERMALLY CURVED VERSION OF GL03 ASSEMBLY.
GL04	2 3/8" LAMINATED GLASS FR COMPOSED OF: 3/4" LOW-IRON TEMPERED GLASS + .060" IONOPLAST INTERLAYER + 3/4" LOW-IRON TEMPERED GLASS + .060" IONOPLAST INTERLAYER + 3/4" LOW-IRON TEMPERED GLASS.	STOREFRONT FINS	
GL05	3/4" LAMINATED SAFETY GLASS COMPOSED OF: 3/8" LOW-IRON GLASS + .060" IONOPLAST INTERLAYER + 3/8" LOW-IRON GLASS WITH A CUSTOM CERAMIC FRIT ON THE NO. 2 SURFACE.	STOREFRONT CANOPY	
GL06	1/2" LOW-IRON FULLY TEMPERED GLASS.	STOREFRONT DOORS/REVOLVERS	
GL07	1 1/4" INSULATED GLASS UNIT COMPOSED OF: 3/8" CLEAR LOW-IRON, HEAT STRENGTHENED OUTER LITE WITH A LOW-E COATING ON THE NO. 2 SURFACE + 1/2" BLACK STAINLESS STEEL SPACER WITH ARGON FILL + 3/8" CLEAR LOW-IRON HEAT STRENGTHENED INNER LITE.	TOWER CURTAIN WALL SHADOW BOX	GL07B IS A THERMALLY CURVED VERSION OF GL07 ASSEMBLY.
INSULATION			
INS04	EXTRUDED POLYSTYRENE INSULATION	ROOF DECK	
INS06	EXTRUDED POLYSTYRENE INSULATION	PLAZA DECK	
INS09	SEMI-RIGID MINERAL FIBER INSULATION	CURTAIN WALL / STOREFRONT	
METAL			
MTL04	STAINLESS STEEL, BRIGHT DIRECTIONAL POLISH.	STOREFRONT INTERIOR MULLIONS	
MTL08	STAINLESS STEEL, NON-DIRECTIONAL MIRROR POLISH.	STOREFRONT EXTERIOR MULLIONS	
MTL20	PAINTED ALUMINUM.	TOWER CURTAIN WALL EXTERIOR MULLIONS	
MTL21	PAINTED ALUMINUM.	TOWER CURTAIN WALL INTERIOR MULLIONS	
MTL22	PAINTED ALUMINUM.	TOWER CURTAIN WALL SPANNERS/SHADOW BOX	
PAVERS			
PAW01	CONCRETE PAVERS	ROOF DECK	
STONE			
ST05	STONE.	PLAZA DECK	

REFERENCE STANDARDS:

2014 NEW YORK CITY ENERGY CONSERVATION CODE (NYCECC)

2010 ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE (ECCONSYS)

ASHRAE STANDARD 90.1-2007

NOTE:

1. THE SCOPE OF WORK INDICATED IS BASED ON A PERFORMANCE BASED ENERGY ANALYSIS TO CONFIRM COMPLIANCE WITH THE NEW YORK CITY ENERGY CONSERVATION CODE (NYCECC)

2. REFER TO PERFORMANCE BASED ENERGY ANALYSIS TITLED "ENERGY MODELING OF THE MANHATTAN WEST NORTH TOWER" FOR OUTPUT REPORTS OF THE ASSEMBLIES ON THIS SHEET.

ASSEMBLY TYPE B3*		R-VALUE
LAYER DESCRIPTION		
EXTERIOR AIR FILM		0.17
1 1/4" IGU (GL07, U-FACTOR = 0.42, R-1.53) EXCLUDING FILMS) - VERT. MULL. 5'-0" O.C., HORIZ. MULL. 18'-4.5" O.C.		1.53
3 11/16" AIR SPACE		1.01
4" SEM-RIGID INSUL (INS09) - VERT. MULL. 5'-0" O.C., HORIZ. MULL. 18'-4.5" O.C., R-16.8 DERATED TO R-2.20 FOR THERMAL BRIDGING		2.2
INTERIOR AIR FILM		0.68
TOTAL R-VALUE = 5.59 (WITH THERM-COMBINED)		
TOTAL U-FACTOR = 0.179 Btu/(h ² ·ft ² ·°F) (WITH THERM)		
*NOTE: REFER TO ENERGY MODEL REPORT DATED 09/12/2014 FOR CALCULATIONS AND ADDITIONAL INFORMATION.		

6 ROOF ASSEMBLY AT TOWER

ASSEMBLY TYPE B1*		R-VALUE
LAYER DESCRIPTION		
EXTERIOR AIR FILM		0.17
1 1/4" IGU (GL07, U-FACTOR = 0.42, R-1.53) EXCLUDING AIR FILMS) - VERT. MULL. 5'-0" O.C., HORIZ. MULL. 18'-4.5" O.C.		1.53
3 11/16" AIR SPACE		1.01
4" SEM-RIGID INSUL (INS09) - VERT. MULL. 5'-0" O.C., HORIZ. MULL. 18'-4.5" O.C., R-16.8 DERATED TO R-2.20 FOR THERMAL BRIDGING		2.20
INTERIOR AIR FILM		0.68
TOTAL R-VALUE = 5.59 (WITH THERM-COMBINED)		
TOTAL U-FACTOR = 0.179 Btu/(h ² ·ft ² ·°F) (WITH THERM)		
*NOTE: REFER TO ENERGY MODEL REPORT DATED 09/12/2014 FOR CALCULATIONS AND ADDITIONAL INFORMATION.		

5 WALL/FLOOR ASSEMBLY AT CURTAIN WALL

ASSEMBLY TYPE B4*		R-VALUE
LAYER DESCRIPTION		
EXTERIOR AIR FILM		0.17
8" CONCRETE MASONRY UNIT (FULLY GROUTED)		0.64
1 3/8" MINERAL FIBER INSULATION		5.78
5/8" GYPSUM BOARD		0.56
INTERIOR AIR FILM		0.68
TOTAL R-VALUE = 7.83 (WITH THERM-COMBINED)		
TOTAL U-FACTOR = 0.128 Btu/(h ² ·ft ² ·°F) (WITH THERM)		
*NOTE: REFER TO ENERGY MODEL REPORT DATED 09/12/2014 FOR CALCULATIONS AND ADDITIONAL INFORMATION.		
ASSEMBLY TYPE C2*		R-VALUE
LAYER DESCRIPTION		
8" CONCRETE MASONRY UNIT (FULLY GROUTED)		0.64
1 3/8" MINERAL FIBER INSULATION		5.78
5/8" GYPSUM BOARD		0.56
TOTAL R-VALUE = 6.98		
TOTAL U-FACTOR = 0.143 Btu/(h ² ·ft ² ·°F)		
*NOTE: REFER TO ENERGY MODEL REPORT DATED 09/12/2014 FOR CALCULATIONS AND ADDITIONAL INFORMATION.		

4 WALL ASSEMBLY AT CONCRETE MASONRY WALL

SCALE: 1/12" = 1'-0"

3 WALL ASSEMBLY AT STOREFRONT

ASSEMBLY TYPE A1*		R-VALUE
LAYER DESCRIPTION		
EXTERIOR AIR FILM		0.17
2" EXTERIOR STONE PAVING (ST00)		0.10
3" MORTAR SETTING BED		0.27
7" EXTRUDED POLYSTYRENE (INS06)		35.00
4" CONCRETE SLAB		0.45
12" EXTRUDED POLYSTYRENE (INS06)		2.50
10" METAL DECK WITH CONCRETE		0.76
INTERIOR AIR FILM, VERTICAL UP		0.61
TOTAL R-VALUE = 39.86 (WITH AIR FILMS)		
TOTAL U-FACTOR = 0.025 Btu/(h ² ·ft ² ·°F) (WITH AIR FILMS)		
*NOTE: REFER TO ENERGY MODEL REPORT DATED 09/12/2014 FOR CALCULATIONS AND ADDITIONAL INFORMATION.		

2 ROOF ASSEMBLY AT PLAZA

ASSEMBLY TYPE D1*		R-VALUE
LAYER DESCRIPTION		
6" CONCRETE SLAB		0.45
1" EXTRUDED POLYSTYRENE (INS04)		5.00
TOTAL R-VALUE = 5.45		
TOTAL U-FACTOR = 0.460 Btu/(h ² ·ft ² ·°F)		
*NOTE: REFER TO ENERGY MODEL REPORT DATED 09/12/2014 FOR CALCULATIONS AND ADDITIONAL INFORMATION.		
ASSEMBLY TYPE C1*		R-VALUE
LAYER DESCRIPTION		
24" CONCRETE WALL		1.82
TOTAL R-VALUE = 1.82		
TOTAL U-FACTOR = 0.550 Btu/(h ² ·ft ² ·°F)		
*NOTE: REFER TO ENERGY MODEL REPORT DATED 09/12/2014 FOR CALCULATIONS AND ADDITIONAL INFORMATION.		



**MANHATTAN WEST:
NORTH TOWER**
375 Ninth Avenue, New York, NY 10001

Brookfield

Brookfield Place
250 Vesey Street, 15th Floor, New York, NY 10021

Architecture/Structural Engineering
SOM
Skidmore, Owings & Merrill LLP
14 Wall Street, New York, NY 10005

Civil Engineering
Philip Habb & Associates
105 Madison Avenue #11, New York, NY 10016

MEP Engineering
Jaros Baum & Bolles
80 Pine Street, New York, NY 10005

Vertical Transportation
Edgett Williams Consulting Group, Inc.
102 East Bluffside Ave, Suite 1, Mill Valley, California 94941

Sustainable Design
Viridian Energy & Environmental
50 Washington Street, Norwalk, CT 06854

Geotechnical Engineering
Mueser Rutledge Consulting Engineers
14 Penn Plaza, 225 W. 34th Street, New York, NY 10122

Landscape Consultant
Field Operations
475 10th Avenue, New York, NY 10018

Security Consultant
Ducibella, Vantor & Santoro
250 State Street #F1, North Haven, CT 06473

Blast Consultant
Weidinger Associates, Inc.
40 Wall Street, New York, NY 10005

Acoustical Consultant
Cerami & Associates
404 Fifth Avenue #8, New York, NY 10016

Vibration Consultant
Wilson, Uhrig & Associates, Inc.
65 Broadway, Suite 401, New York, NY 10006

Code Consultant
Code Consultants Professional Engineers PC
215 West 40th Street, 15th Floor, New York, NY 10018

Facade Maintenance Consultant
Entek Engineering LLC
166 Ames Street, Hackensack, NJ 07601

Wind Tunnel Consultant
Rowan Williams Davies & Irwin Inc.
680 Woodlawn Road West, Guelph Ontario, Canada N1K 1B8

Key Plan:



Seal & Signature:



Warning: It is a violation of the New York State Architecture Law, §19-5(b) for any person, unless they are acting under the direction of a Licensed Architect, to alter this item in any way.

2 30 JAN 2015 ISSUED FOR BUILDING PERMIT
1 12 SEPT 2014 ISSUED FOR FOUNDATION PERMIT
No. Date Description
Sheet Name:

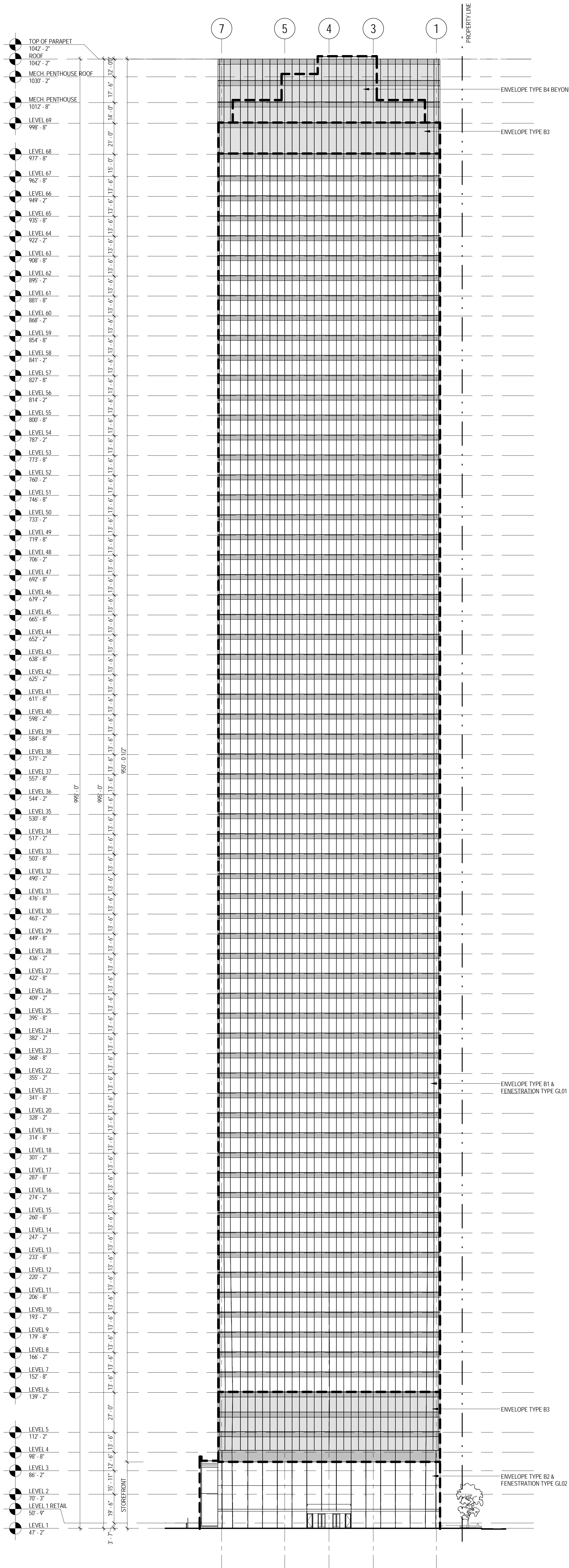
**ENCLOSURE
ASSEMBLIES**

Project No.: 207150
Date: 30 JAN 2015
Scale: 1/12" = 1'-0"
File No.: EN-200

Sheet No.: EN-200.00
Page No.: 1 OF 30

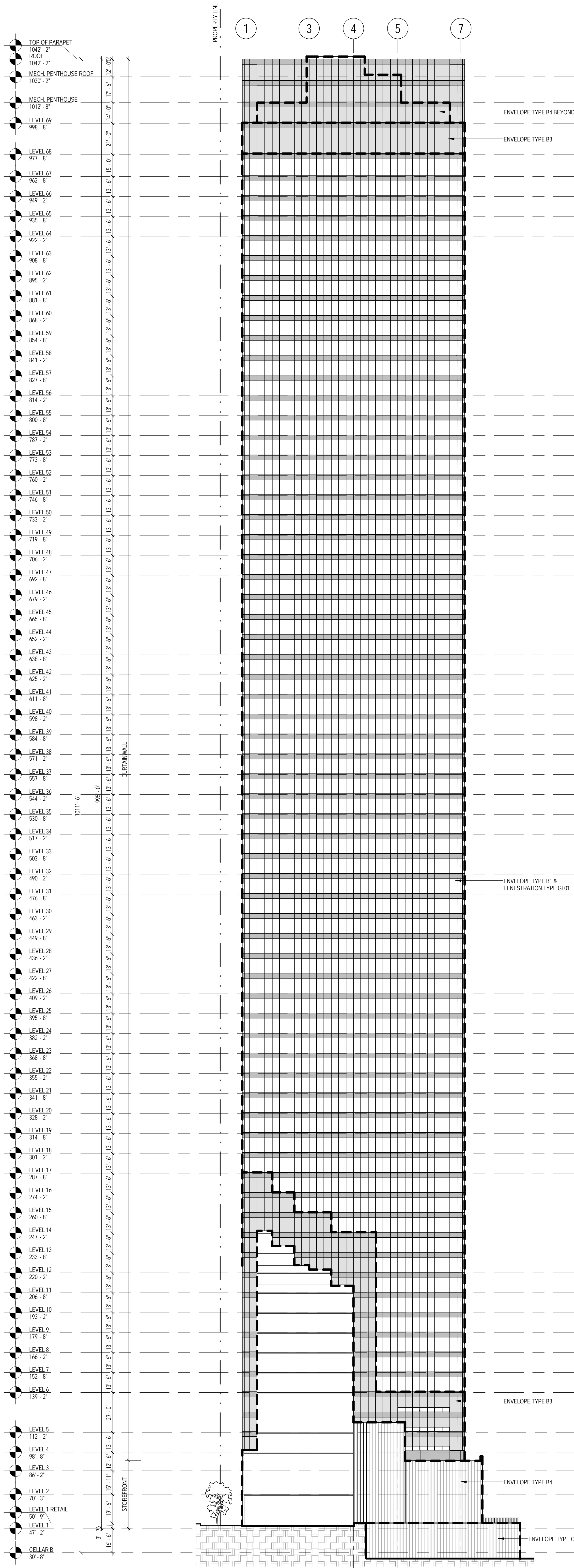
1 EAST BUILDING ELEVATION

SCALE: NTS



2 WEST BUILDING ELEVATION

SCALE: NTS



NYCECC BUILDING ENVELOPE REQUIREMENTS - OPAQUE ELEMENTS (ECCONYS TABLE 502.1.2)							
CLIMATE ZONE 4, COMMERCIAL BUILDING							
ENVELOPE TYPE	ENVELOPE AREA	MAXIMUM U-FACTOR	PROPOSED U-FACTOR	MAXIMUM C-FACTOR	PROPOSED C-FACTOR	MAXIMUM F-FACTOR	PROPOSED F-FACTOR
A. ROOFS							
A1: INSULATION ENTIRELY ABOVE DECK - PLAZA	76,939 SF	U-0.048	U-0.025	-	-	-	-
A2: INSULATION ENTIRELY ABOVE DECK - TOWER	31,173 SF	U-0.048	U-0.026	-	-	-	-
B. WALLS							
B1: METAL FRAMED - CURTAIN WALL	134,788 SF	U-0.064	U-0.179	-	-	-	-
B2: METAL FRAMED - STOREFRONT	536 SF	U-0.064	U-0.890	-	-	-	-
B3: METAL FRAMED - SHADOW BOX	43,895 SF	U-0.064	U-0.179	-	-	-	-
B4: MASS - CONCRETE MASONRY UNIT	31,371 SF	U-0.104	U-0.128	-	-	-	-
C. BELOW GRADE WALLS							
C1: MASS - CONCRETE WALL	13,291 SF	-	-	C-1.140	C-0.550	-	-
C2: MASS - CONCRETE MASONRY UNIT	10,474 SF	-	-	C-1.140	C-0.143	-	-
D. SLAB ON GRADE FLOORS							
D1: UNHEATED SLABS	56,263 SF	-	-	-	-	F-0.730	F-0.460

NYCECC BUILDING ENVELOPE REQUIREMENTS - FENESTRATION (ECCONYS TABLE 502.3)					
CLIMATE ZONE 4, COMMERCIAL BUILDING					
FENESTRATION TYPE	FENESTRATION AREA	MAXIMUM U-FACTOR	PROPOSED U-FACTOR	MAXIMUM SHGC	PROPOSED SHGC
METAL FRAMING WITH OR WITHOUT THERMAL BREAK					
CURTAIN WALL (GL01): PF < 0.25	40,959 SF	U-0.500	U-0.450	SHGC-0.400	SHGC-0.290
STOREFRONT (GL02): PF < 0.25	23,979 SF	U-0.500	U-0.106	SHGC-0.400	SHGC-0.880

REFERENCE STANDARDS:

- 2014 NEW YORK CITY ENERGY CONSERVATION CODE (NYCECC)
- 2010 ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE (ECCONYS)
- ASHRAE STANDARD 90.1-2007

NOTES:

- THE SCOPE OF WORK INDICATED IS BASED ON A PERFORMANCE BASED ENERGY ANALYSIS TO CONFIRM COMPLIANCE WITH THE NEW YORK CITY ENERGY CONSERVATION CODE.
- REFER TO SHEET EN-200 FOR BUILDING ASSEMBLY DESCRIPTIONS, DETAILS AND PERFORMANCE CRITERIA.
- REFER TO PERFORMANCE BASED ENERGY ANALYSIS TITLED "ENERGY MODELING OF THE MANHATTAN WEST NORTH TOWER" FOR OUTPUT REPORTS OF THE ASSEMBLIES ON SHEET EN-200.

MANHATTAN WEST: NORTH TOWER

375 Ninth Avenue, New York, NY 10001

Client

Brookfield

Brookfield Place
250 Vesey Street, 15th Floor, New York, NY 10021

Architecture/Structural Engineering

SOM

Skidmore, Owings & Merrill LLP
14 Wall Street, New York, NY 10005

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Entek Engineering LLC
166 Ames Street, Hackensack, NJ 07601

Wind Tunnel Consultant

Rowan Williams Davies & Irwin Inc.
650 Woodlawn Road West, Guelph Ontario, Canada N1K 1B6

Key Plan:

Seal & Signature

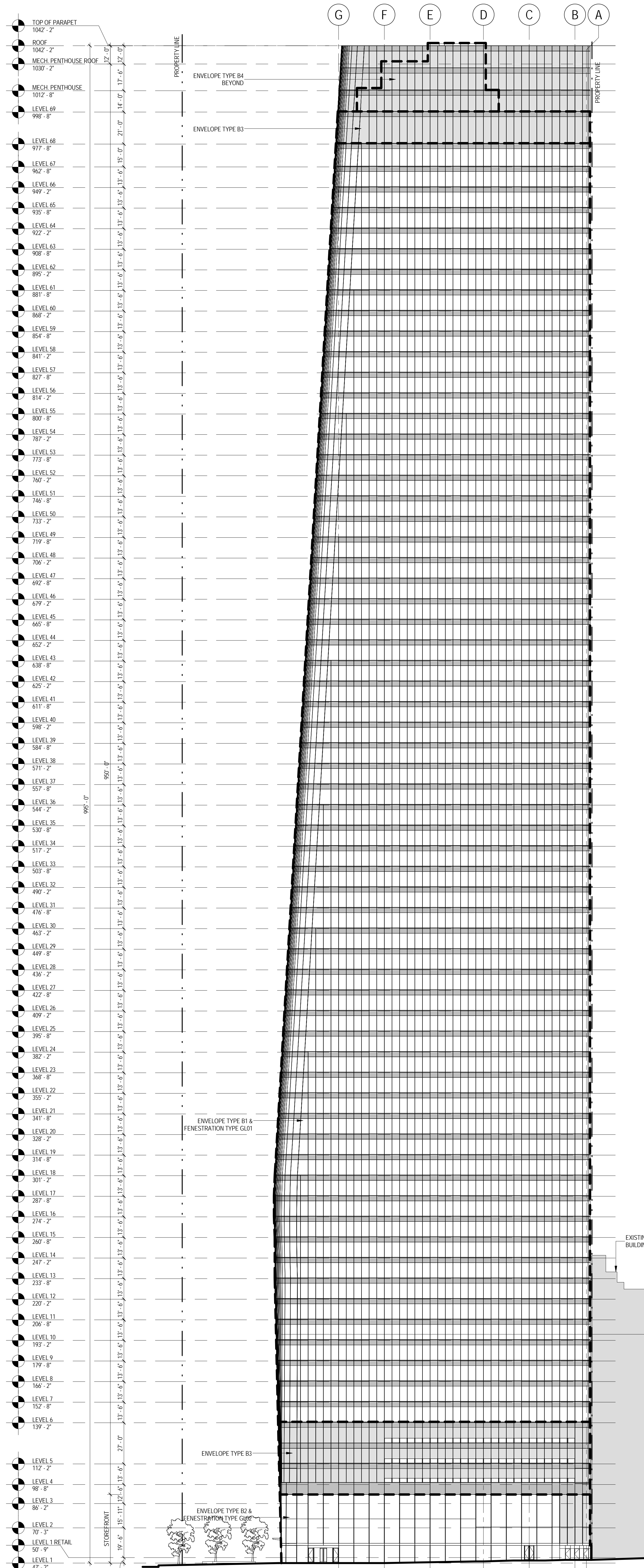
Warning: It is a violation of the New York State Architecture Law, §93.5(b) for any person, unless they are acting under the direction of a Licensed Architect, to alter this item in any way.

Project No.: 207150	B-SCAN Sheet No.: EN-201.00
Date: 30 JAN 2015	Sheet No.: EN-201
Scale: 1/32" = 1'-0"	Page No.: 30
File No.: EN-201	

BUILDING ELEVATIONS - FACADE PERFORMANCE

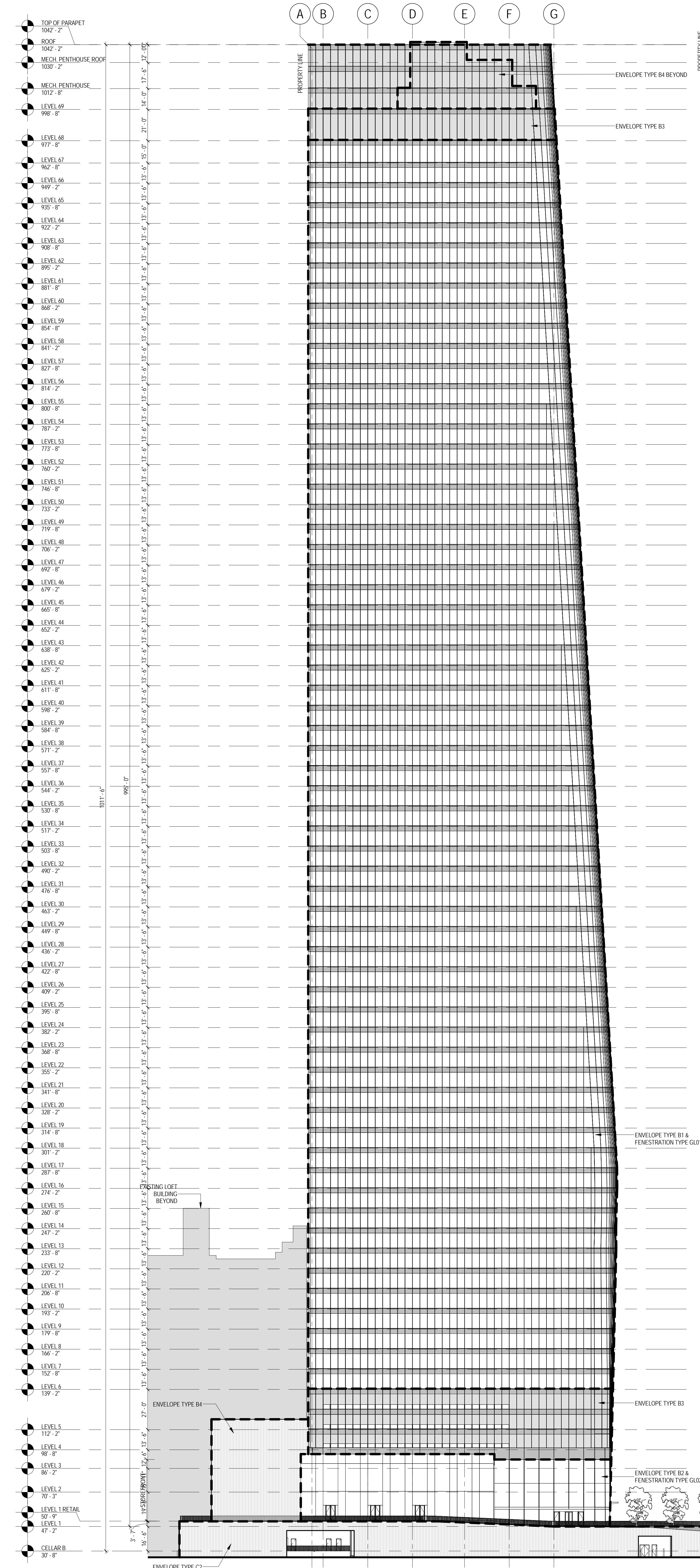
1 NORTH BUILDING ELEVATION

SCALE: NTS



2 SOUTH BUILDING ELEVATION


SCALE: NTS



NYCECC BUILDING ENVELOPE REQUIREMENTS - OPAQUE ELEMENTS (ECCO/NYS TABLE 502.1.2)						
CLIMATE ZONE 4, COMMERCIAL BUILDING						
ENVELOPE TYPE	ENVELOPE AREA	MAXIMUM U-FACTOR	PROPOSED U-FACTOR	MAXIMUM C-FACTOR	PROPOSED C-FACTOR	MAXIMUM F-FACTOR
A: ROOFS						
A1: INSULATION ENTIRELY ABOVE DECK - PLAZA	76,939 SF	U-0.048	U-0.025	-	-	-
A2: INSULATION ENTIRELY ABOVE DECK - TOWER	31,173 SF	U-0.048	U-0.026	-	-	-
B: WALLS						
B1: METAL FRAMED - CURTAIN WALL	134,788 SF	U-0.064	U-0.179	-	-	-
B2: METAL FRAMED - STOREFRONT	536 SF	U-0.064	U-0.890	-	-	-
B3: METAL FRAMED - SHADOW BOX	43,895 SF	U-0.064	U-0.179	-	-	-
B4: MASS - CONCRETE MASONRY UNIT	31,371 SF	U-0.104	U-0.128	-	-	-
C: BELOW-GRADE WALLS						
C1: MASS - CONCRETE WALL	13,291 SF	-	-	C-1.140	C-0.550	-
C2: MASS - CONCRETE MASONRY UNIT	10,414 SF	-	-	C-1.140	C-0.143	-
D: SLAB ON-GRADE FLOORS						
D1: UNHEATED SLABS	56,263 SF	-	-	-	-	F-0.730 F-0.460

NYCECC BUILDING ENVELOPE REQUIREMENTS - FENESTRATION (ECCO/NYS TABLE 502.3)				
CLIMATE ZONE 4, COMMERCIAL BUILDING				
FENESTRATION TYPE	FENESTRATION AREA	MAXIMUM U-FACTOR	PROPOSED U-FACTOR	MAXIMUM SHGC
METAL FRAMING WITH OR WITHOUT THERMAL BREAK				
CURTAIN WALL (GLOI) - PF < 0.25	40,959 SF	U-0.500	U-0.450	SHGC-0.400
STOREFRONT (GLOI) - PF < 0.25	23,975 SF	U-0.500	U-0.106	SHGC-0.400

- REFERENCE STANDARDS:
- 2014 NEW YORK CITY ENERGY CONSERVATION CODE (NYCECC)
 - 2010 ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE (ECCO/NYS)
 - ASHRAE STANDARD 90.1-2007
- NOTES:
1. THE SCOPE OF WORK INDICATED IS BASED ON A PERFORMANCE BASED ENERGY ANALYSIS TO CONFIRM COMPLIANCE WITH THE NEW YORK CITY ENERGY CONSERVATION (NYCECC).
 2. REFER TO SHEET EN-200 FOR BUILDING ASSEMBLY DESCRIPTIONS, DETAILS AND PERFORMANCE CRITERIA.
 3. REFER TO PERFORMANCE BASED ENERGY ANALYSIS TITLED "ENERGY MODELING OF THE MANHATTAN WEST NORTH TOWER" FOR OUTPUT REPORTS OF THE ASSEMBLIES ON SHEET EN-200.



**MANHATTAN WEST:
NORTH TOWER**
375 Ninth Avenue, New York, NY 10001
Client

Brookfield
Brookfield Place
250 Vesey Street, 15th Floor, New York, NY 10021

Architecture/Structural Engineering
SOM
Skidmore, Owings & Merrill LLP
14 Wall Street, New York, NY 10005

Civil Engineering
Philip Habib & Associates
102 Madison Avenue #11, New York, NY 10016

MEP Engineering
Jaros Baum & Bolles
80 Pine Street, New York, NY 10005

Vertical Transportation
Edgett Williams Consulting Group, Inc.
102 East Bluffside Ave., Suite 1, Mill Valley, California 94941

Sustainable Design
Viridian Energy & Environmental
50 Washington Street, Newark, CT 06854

Geotechnical Engineering
Mueser Rutledge Consulting Engineers
14 Penn Plaza, 225 W. 34th Street, New York, NY 10122

Landscape Consultant
Field Operations
475 10th Avenue, New York, NY 10018

Security Consultant
Ducibella, Vantor & Santoro
250 State Street #F1, North Haven, CT 06473

Blast Consultant
Weidinger Associates, Inc.
40 Wall Street, New York, NY 10005

Acoustical Consultant
Cerami & Associates
404 Fifth Avenue #8, New York, NY 10016

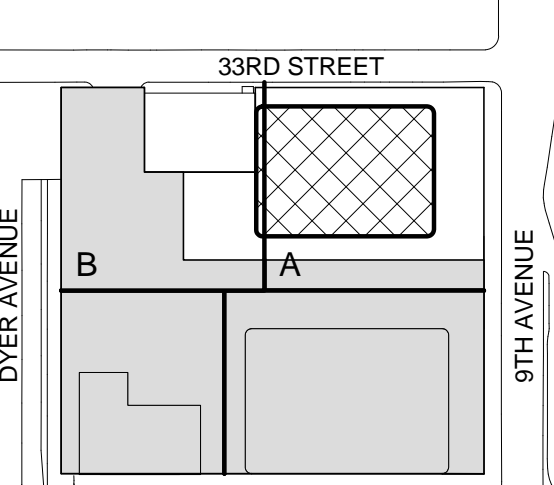
Vibration Consultant
Wilson, Uhrig & Associates, Inc.
65 Broadway, Suite 401, New York, NY 10006

Code Consultant
Code Consultants Professional Engineers PC
215 West 40th Street, 15th Floor, New York, NY 10018


Facade Maintenance Consultant
Entek Engineering LLC
166 Ames Street, Hackensack, NJ 07601

Wind Tunnel Consultant
Rowan Williams Davies & Irwin Inc.
650 Woodlawn Road West, Guelph, Ontario, Canada N1K 1B6

Key Plan:



Seal & Signature:



Warning: It is a violation of the New York State Architecture Law, §93.5(b) for any person, unless they are acting under the direction of a Licensed Architect, to alter this item in any way.

Project No.: 207150
Date: 30 JAN 2015
Scale: 1/32" = 1'-0"
File No.: EN-202

Issue/Revision Table:
1. 30 JAN 2015 ISSUED FOR BUILDING PERMIT
No. Date Description
Sheet Name:

**BUILDING
ELEVATIONS -
FACADE
PERFORMANCE**

Project No.: 207150
Date: 30 JAN 2015
Scale: 1/32" = 1'-0"
File No.: EN-202

B-SCAN Sheet No.: **EN-202.00**
Sheet No.: **EN-202**
Page No.: 30



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375 Ninth Avenue, New York, NY 10001
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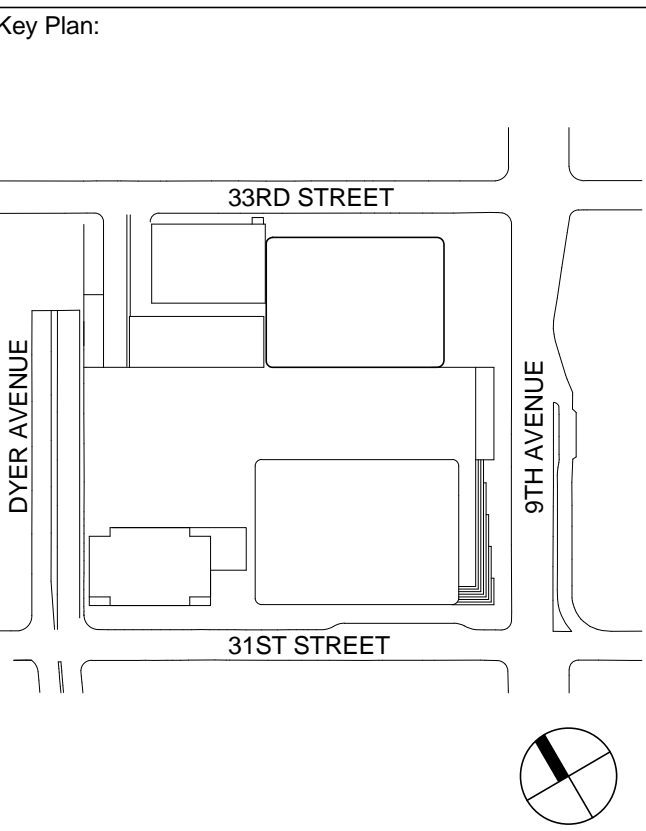
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Ontario, Canada N1K 1B6

Professional Engineer Seal for Charles Michael Bell, License No. 079322, State of New York.



Seal & Signature:

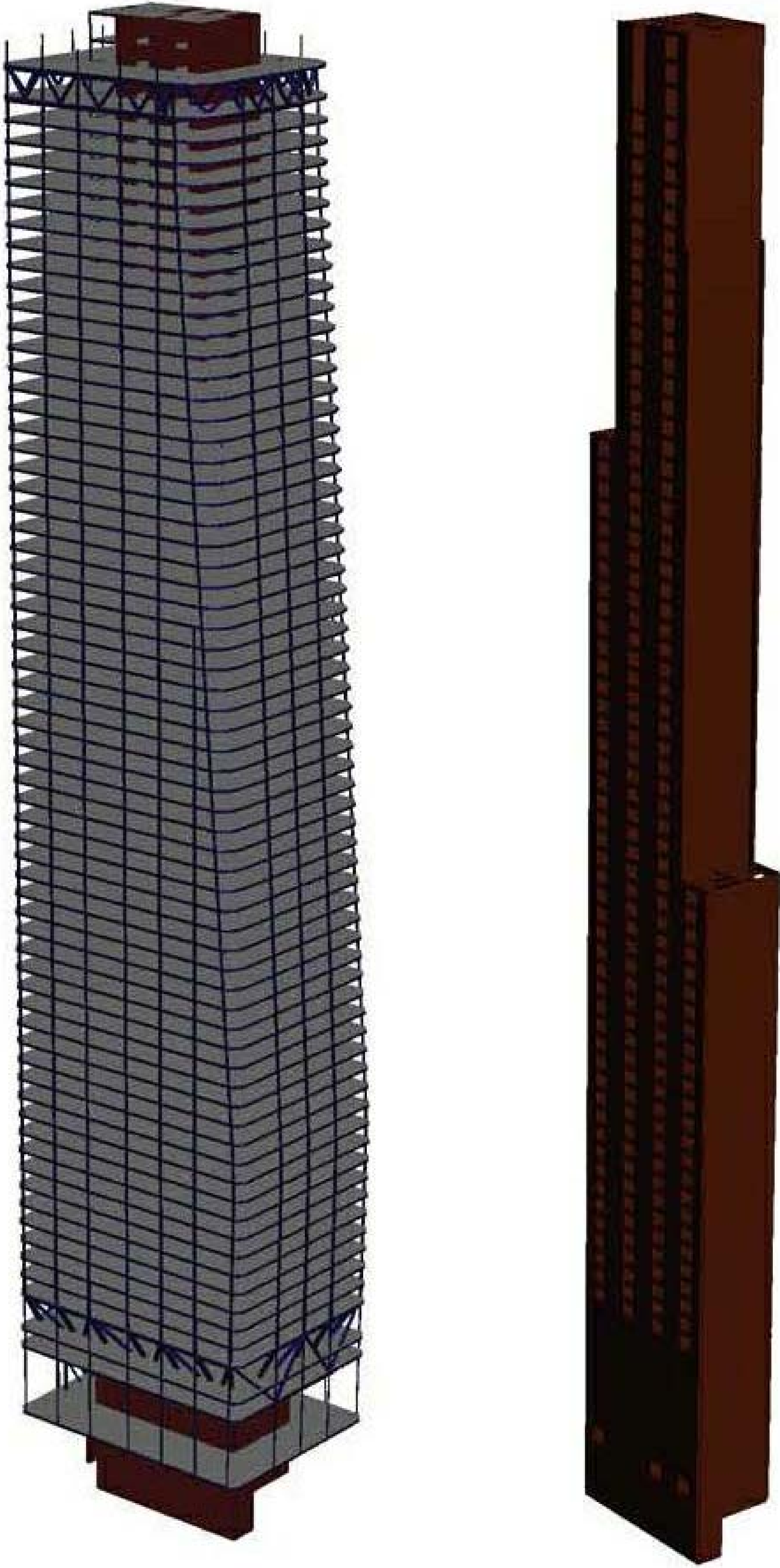
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Project No.: 211157
Date: 20 JUN 2014
Scale: 1/8"=1'-0"

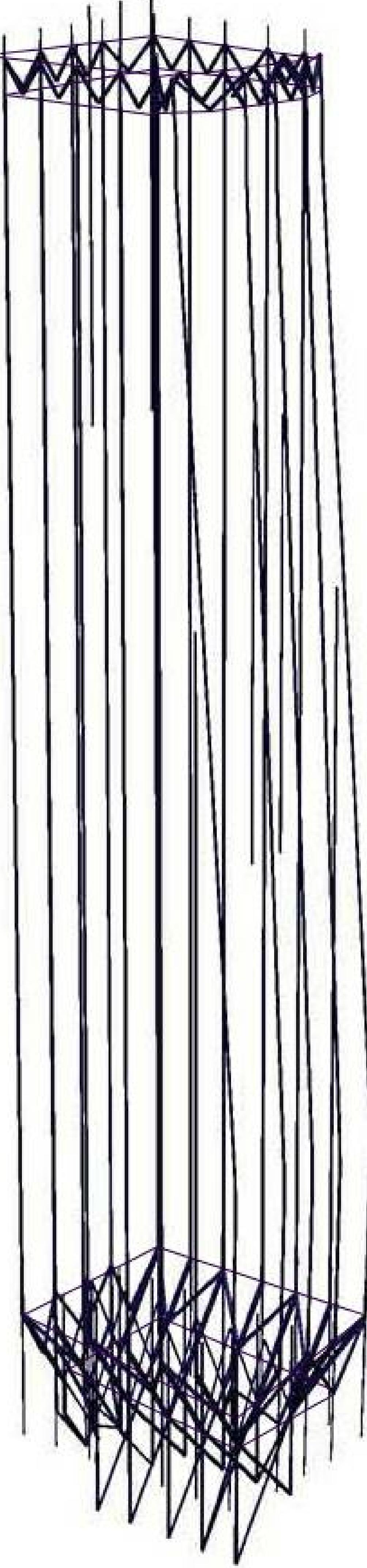
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S-001.00
Sheet No.:
S-001

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Page No.: 1 of 90

STRUCTURAL DRAWINGS		
DOB Sheet Number	DRAWING NAME	SCALE
S-001.00	STRUCTURAL SYSTEMS DRAWING AND SHEET LIST	NTS
S-002.00	TYPICAL STRUCTURAL SYMBOLS AND ABBREVIATIONS	NTS
S-003.00	EXCAVATION AND FOUNDATION NOTES	NTS
S-004.00	STRUCTURAL CONCRETE NOTES	NTS
S-005.00	STRUCTURAL STEEL AND METAL DECK NOTES	NTS
S-010.00	LOADING DIAGRAMS	NTS
S-011.00	LOADING DIAGRAMS	NTS
S-050.00	OVERALL LEVEL B PLAN	NTS
S-051.00	OVERALL GROUND FLOOR PLAN	NTS
S-092.00	FOUNDATION LOWER PLAN (TRACK LEVEL)	1/8"=1'-0"
S-093.00	FOUNDATION UPPER PLAN	1/8"=1'-0"
S-094.00	CELLAR B1 PITS FLOOR FRAMING PLAN	1/8"=1'-0"
S-095.00	CELLAR B1 FLOOR FRAMING PLAN - PART A	1/8"=1'-0"
S-096.00	CELLAR B1 FLOOR FRAMING PLAN - PART B	1/8"=1'-0"
S-097.00	CELLAR B FLOOR FRAMING PLAN - PART A	1/8"=1'-0"
S-098.00	CELLAR B FLOOR FRAMING PLAN - PART B	1/8"=1'-0"
S-100.00	GROUND FLOOR FRAMING PLAN - LOBBY - PART A	1/8"=1'-0"
S-101.00	GROUND FLOOR FRAMING PLAN - LOBBY - PART B	1/8"=1'-0"
S-102.00	2ND FLOOR FRAMING PLAN	1/8"=1'-0"
S-103.00	3RD FLOOR FRAMING PLAN	1/8"=1'-0"
S-104.00	4TH FLOOR FRAMING PLAN - MECHANICAL	1/8"=1'-0"
S-105.00	5TH FLOOR FRAMING PLAN - MECHANICAL MEZZANINE	1/8"=1'-0"
S-106.00	6TH FLOOR FRAMING PLAN - LOW-RISE	1/8"=1'-0"
S-116.00	16TH FLOOR FRAMING PLAN - TYPICAL LOW-RISE	1/8"=1'-0"
S-131.00	31ST FLOOR FRAMING PLAN - MID-RISE	1/8"=1'-0"
S-137.00	37TH FLOOR FRAMING PLAN - TYPICAL MID-RISE	1/8"=1'-0"
S-153.00	53RD FLOOR FRAMING PLAN - HIGH-RISE	1/8"=1'-0"
S-159.00	59TH FLOOR FRAMING PLAN - TYPICAL HIGH-RISE	1/8"=1'-0"
S-168.00	68TH FLOOR FRAMING PLAN - MECHANICAL	1/8"=1'-0"
S-169.00	68TH FLOOR FRAMING PLAN - MECHANICAL MEZZANINE	1/8"=1'-0"
S-170.00	ROOF FRAMING PLAN - MECHANICAL PENTHOUSE	1/8"=1'-0"
S-171.00	ROOF FRAMING PLAN	1/8"=1'-0"
S-201.00	TOWER ELEVATIONS	AS NOTED
S-202.00	TOWER ELEVATIONS	AS NOTED
S-203.00	TOWER SECTIONS	AS NOTED
S-204.00	TOWER SECTIONS	AS NOTED
S-301.00	CORE WALL CONT. FOOTING SECTIONS & DETAILS	AS NOTED
S-302.00	CORE WALL CONT. FOOTINGS SECTIONS & DETAILS	AS NOTED
S-307.00	SPREAD FOOTING SCHEDULE, SECTIONS & DETAILS	AS NOTED
S-310.00	WEST PERIMETER COLUMN FOUNDATION SECTIONS & DETAILS	AS NOTED
S-311.00	WEST PERIMETER COLUMN FOUNDATION SECTIONS & DETAILS	AS NOTED
S-315.00	FOUNDATION WALL ELEVATIONS	AS NOTED
S-316.00	FOUNDATION WALL SECTIONS & DETAILS	AS NOTED
S-317.00	FOUNDATION WALL SECTIONS & DETAILS	AS NOTED
S-318.00	FOUNDATION WALL SECTIONS & DETAILS	AS NOTED
S-325.00	SLAB-ON-GRADE SECTIONS & DETAILS	AS NOTED
S-340.00	REINFORCED CONCRETE CORE WALL SCHEDULE, SECTIONS & DETAILS	AS NOTED
S-341.00	TYPICAL REINFORCED CONCRETE WALL DETAILS	AS NOTED
S-342.00	CORE WALL REINFORCEMENT LAYOUT	AS NOTED
S-343.00	CORE WALL REINFORCEMENT LAYOUT	AS NOTED
S-344.00	CORE WALL REINFORCEMENT LAYOUT	AS NOTED
S-345.00	CORE WALL REINFORCEMENT LAYOUT	AS NOTED
S-346.00	CORE WALL REINFORCEMENT LAYOUT	AS NOTED
S-347.00	CORE WALL REINFORCEMENT LAYOUT	AS NOTED
S-348.00	CORE WALL REINFORCEMENT LAYOUT	AS NOTED
S-349.00	CORE WALL REINFORCEMENT LAYOUT	AS NOTED
S-350.00	CORE WALL REINFORCEMENT LAYOUT	AS NOTED
S-351.00	CORE WALL REINFORCEMENT LAYOUT	AS NOTED
S-352.00	CORE WALL REINFORCEMENT LAYOUT	AS NOTED
S-353.00	CORE WALL REINFORCEMENT LAYOUT	AS NOTED
S-354.00	CORE WALL REINFORCEMENT LAYOUT	AS NOTED
S-355.00	LINK BEAM SCHEDULES, SECTIONS & DETAILS	AS NOTED
S-356.00	LINK BEAM SECTION AND DETAILS	AS NOTED
S-360.00	CORE WALL ELEVATIONS ALONG LINE 3	AS NOTED
S-361.00	CORE WALL ELEVATIONS ALONG LINE 5	AS NOTED
S-362.00	CORE WALL ELEVATIONS ALONG LINE C	AS NOTED
S-363.00	CORE WALL ELEVATIONS ALONG LINE D	AS NOTED
S-364.00	CORE WALL ELEVATIONS ALONG LINE E	AS NOTED
S-365.00	CORE WALL ELEVATIONS ALONG LINE F	AS NOTED
S-366.00	CORE WALL ELEVATIONS ALONG LINE G	AS NOTED
S-367.00	CORE WALL ELEVATIONS ALONG LINE 4	AS NOTED
S-368.00	CORE WALL ELEVATIONS WITHIN SERVICE CORE BETWEEN LINES D & E	AS NOTED
S-370.00	REINFORCED CONCRETE BEAM SCHEDULE, SECTIONS & DETAILS	AS NOTED
S-375.00	REINFORCED CONCRETE SLAB SCHEDULE, SECTIONS & DETAIL	AS NOTED
S-401.00	STRUCTURAL STEEL COLUMN SCHEDULE, SECTIONS & DETAILS	AS NOTED
S-402.00	STRUCTURAL STEEL COLUMN SCHEDULE, SECTIONS & DETAILS	AS NOTED
S-405.00	KICKER COLUMNS AT CORE LINES C TO F - SCHEDULES, ELEVATIONS, SECTIONS & DETAILS	AS NOTED
S-406.00	KICKER COLUMNS AT CORE LINE G - SCHEDULES, ELEVATIONS, SECTIONS & DETAILS	AS NOTED
S-407.00	KICKER COLUMNS AT CORE LINE 3 & 5 SCHEDULES, ELEVATIONS, SECTIONS & DETAILS	AS NOTED
S-408.00	KICKER COLUMN AT LINE B - SCHEDULE, ELEVATIONS, SECTIONS & DETAILS	AS NOTED
S-409.00	COLUMNS & DIAGONALS ON LINE A BELOW LEVEL 6 - SECTIONS & DETAILS	AS NOTED
S-410.00	KICKER COLUMN SECTIONS & DETAILS	AS NOTED
S-411.00	COLUMNS & DIAGONALS EAST OF LINE J BELOW LEVEL 1 - SECTIONS & DETAILS	AS NOTED
S-415.00	LOWER BELT TRUSS SCHEDULES, SECTIONS & DETAILS	AS NOTED
S-416.00	UPPER BELT TRUSS SCHEDULES, SECTIONS & DETAILS	AS NOTED
S-417.00	BELT TRUSS SECTIONS & DETAILS	AS NOTED
S-420.00	TYPICAL STRUCTURAL STEEL SECTIONS & DETAILS	AS NOTED
S-421.00	TYPICAL STRUCTURAL STEEL SECTIONS & DETAILS	AS NOTED
S-422.00	RETAIL SECTIONS	AS NOTED
S-501.00	METAL DECK SLAB SCHEDULES, SECTIONS & DETAILS	AS NOTED



OVERALL STRUCTURAL SYSTEM



REINFORCED CONCRETE CORE WALLS



STEEL COLUMNS, "KICKERS" & BELT TRUSSES

COMPOSITE DECK & STEEL FLOOR FRAMING

STRUCTURAL SYSTEM DESCRIPTION

A. FOUNDATIONS

1. Foundation System

The primary foundation system for the North Tower is a series of continuous reinforced concrete footings on rock supporting the Tower's central reinforced concrete core walls. These footings are excavated in the underlying rock beginning near the Track Level of the site. The nominal rock capacity at Track Level is 40 to 60TSP. The footings under the core will be embedded into the sound rock to enhance the allowable strength increases per the NYC Building Code. A significant number of rock anchor tie-downs will be required primarily under the north and south continuous footings of the core to resist the overturning forces from the applied wind loads. In addition to the continuous footings under the core, a mega column foundation will be constructed on the west face of the Tower to take the load from the perimeter columns which "kick" in from the north, south and west sides towards the middle of each face. These foundations are constructed near the B Level and occur just behind the existing retaining wall and Platform support structure.

B. SUPERSTRUCTURE

1. Gravity System

The North Tower will consist of seventy-one stories above grade and one below-grade level. Height above Plaza Level is currently anticipated to be approximately 995'. Typical floor-to-floor heights in the office floors will be 13'-6". The eastern face of the building curves back to the west over the height of the Tower leading to a smaller floor plan at the top.

The gravity system will utilize reinforced concrete slab on composite metal deck supported by structural steel floor beams and girders outside of the core wall system and one-way reinforced concrete beams and slabs within the core area. The floor beams and girders will frame to either perimeter columns, spandrel beams or the concrete core at the center of the building. The column elements will be rolled shapes where possible. Built-up structural steel column shapes will likely be required in the lower portions of the building where loads are the highest. The majority of exterior columns along grid line 1 and 7 will "kick back" to the concrete core below level 6. The mechanical floor will have in-plane bracing to take out the tension forces. Additional bracing is utilized below level 6 along grid line A and B, to take the shear force due to unbalanced live load cases. With all the gravity loads transferred back to the core, the uplift due to wind or seismic is also reduced. At the two major mechanical levels, structural steel belt trusses are used which aid in equalizing the columns loads. The belt trusses will also provide system redundancy for progressive collapse mitigation.

2. Lateral System

The lateral system will be a ductile reinforced concrete core system. The flange wall thickness varies from 54" to 24", and the web wall thickness varies from 24" to 18". The core wall concrete strength is 10000 psi at the lower portion and 8000 psi at upper portion for all the walls. The core walls are currently designed for wind loads based on the Wind Tunnel testing results from the 50% DD model extrapolated by SOM to the new height. Revised wind tunnel loads are pending.

PRELIMINARY STRUCTURAL QUANTITIES			
Gross Building Area (not including Slab-on-Grade)		1,934,000 sf (within Tower footprint)	
STRUCTURAL CONCRETE			
Foundations	Concrete Rebar	3200 cy 370 tons	0.04 c/sf 0.38 psf
Core Walls/Link Beams Below Level 6	Concrete Rebar	9500 cy 1580 tons	0.13 c/sf 1.63 psf
Core Walls/Link Beams Above Level 6	Concrete Rebar	29100 cy 4200 tons	0.41 c/sf 4.34 psf
Composite Deck Slab	Concrete Rebar	20350 tons 650 tons	0.28 c/sf 0.67 psf
Core Beams & Slabs	Concrete Rebar	6300 cy 580 tons	0.09 c/sf 0.60 psf
Total Quantity	Concrete Rebar	68450 cy 10210 tons	0.96 c/sf 10.56 psf
STRUCTURAL STEEL			
Columns Above Level 6		5600 tons	5.79 psf
Kicker Columns, Lower Belt Trusses, & Diagonals Below Level 6 (Including Embedded Steel)		4200 tons	4.34 psf
Upper Belt Trusses and Outrigger Trusses		1200 tons	1.24 psf
Floor Beams & Girders		7500 tons	7.76 psf
Embedded Steel in Link Beams		400 tons	0.41 psf
Connections		1700 tons	1.76 psf
Misc.		240 tons	0.25 psf
Total Quantity		20840 tons	21.55 psf

NOTES:

- The quantities given are anticipated and only include materials required for the primary structural system within the footprint of the tower. The quantities above exclude exterior cladding support, miscellaneous mechanical support framing, stairs, window washing framing, elevator framing, cooling tower framing, secondary services framing and framing for entrance canopies. Removable steel work required for temporary building stability or shoring during construction is also excluded. These quantities exclude additional concrete required for MEP pads, architectural curbs, pit walls, and additional reinforcement bar required for slab openings.
- The above quantities do include progressive collapse based on project security recommendations and direction from Brookfield.
- The above quantities do not include the structural components outside the footprint of the tower as documented in the structural drawings.
- The above quantities do not include seismic special detailing or blast requirements, if required.
- The above quantities do not include rock tie-downs.
- The above quantities do not include slab-on-grade.
- The baseline structure has been designed to accommodate the security criteria developed for this project which is more stringent than that currently required by NYC code.

This alternative would base the design on the approach outlined in the NYC code. The following preliminary tonnage savings are expected:

- Structural Steel Columns = 1900 tons (including connection allowances)
- Structural Steel Kicker Columns, Belt Trusses and Outrigger Trusses = 1400 tons (including connection allowances)



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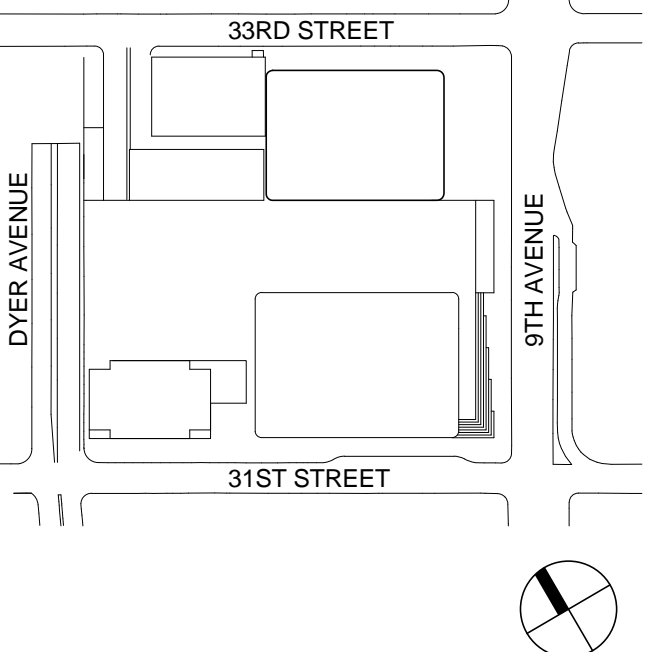
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Key Plan:



Seal & Signature:

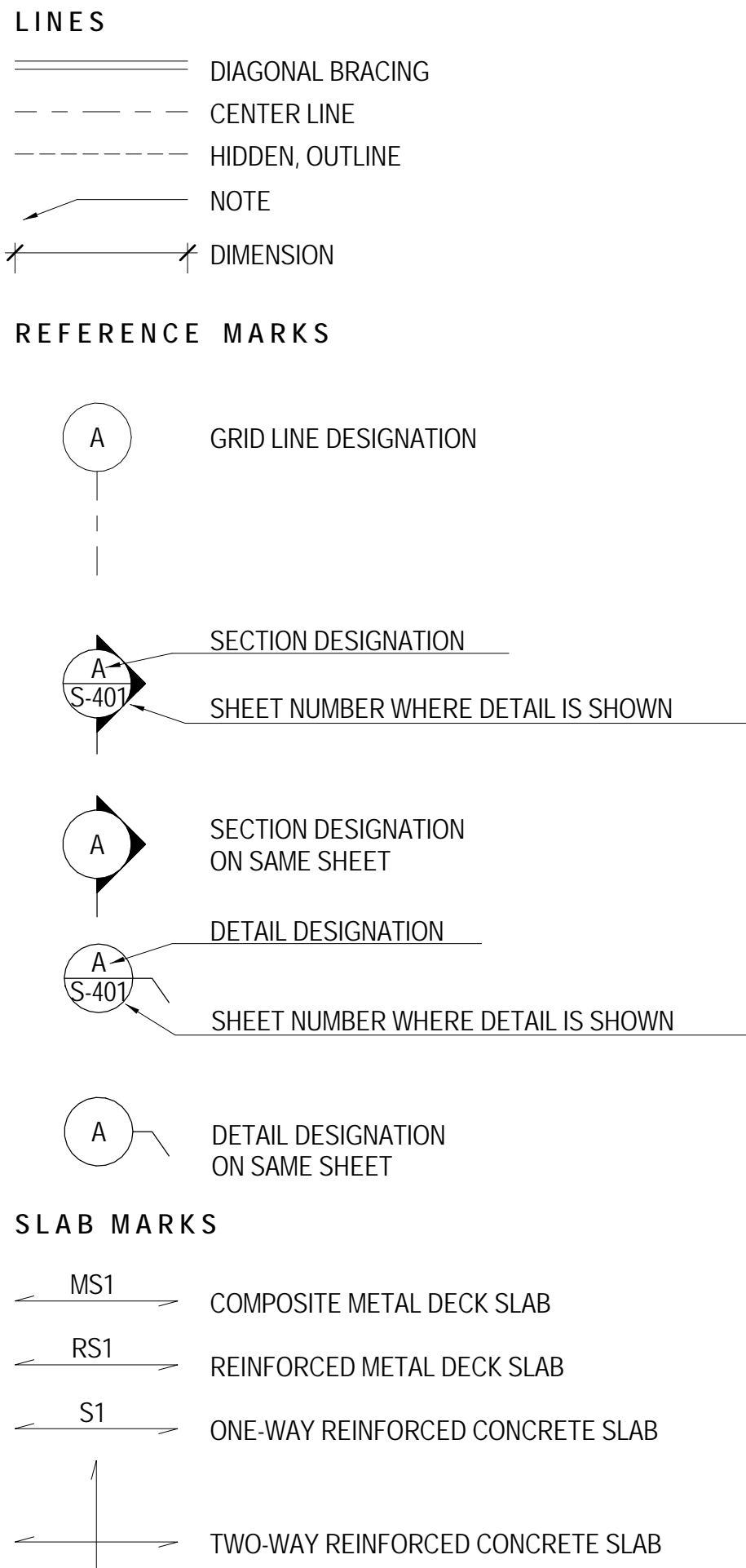
PRELIMINARY
NOT FOR CONSTRUCTION

6	20 JUN 2014	ISSUED FOR FOUNDATION BID
5	20 JUN 2014	ISSUED FOR FOUNDATION PERMIT
4	20 DEC 2013	ISSUED FOR FOUNDATION PERMIT
3	15 NOV 2013	ISSUED FOR 30% PROGRESS PRICING
2	12 JUL 2013	ISSUED FOR 90% DESIGN DEVELOPMENT
1	19 MAR 2012	ISSUED FOR RECONCILIATION

No. Date Description
Sheet Name:

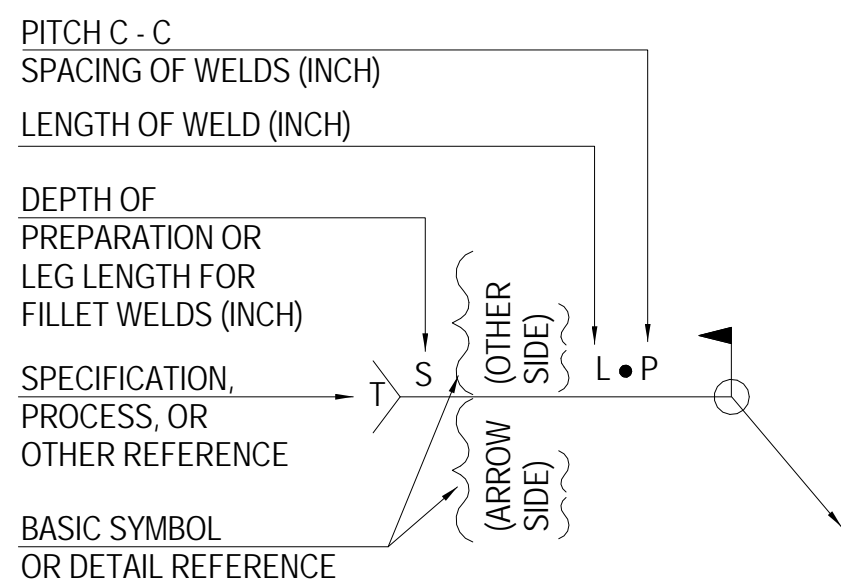
TYPICAL
STRUCTURAL
SYMBOLS AND
ABBREVIATIONS

Project No.:	B-SCAN Sheet No.:
211157	S-002.00
Date:	20 JUN 2014
Scale:	Sheet No.:
12" = 1'-0"	S-002
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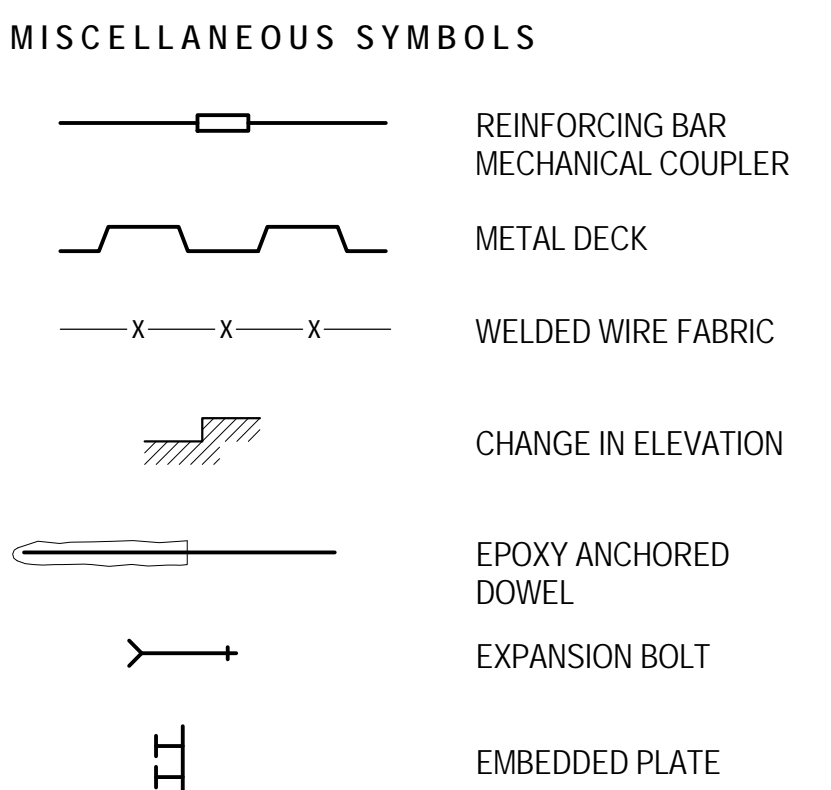
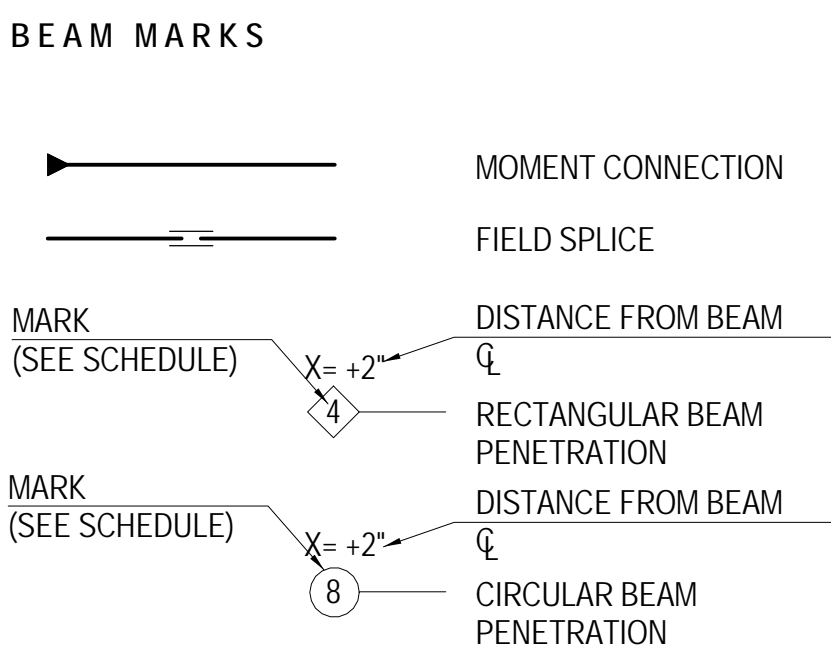
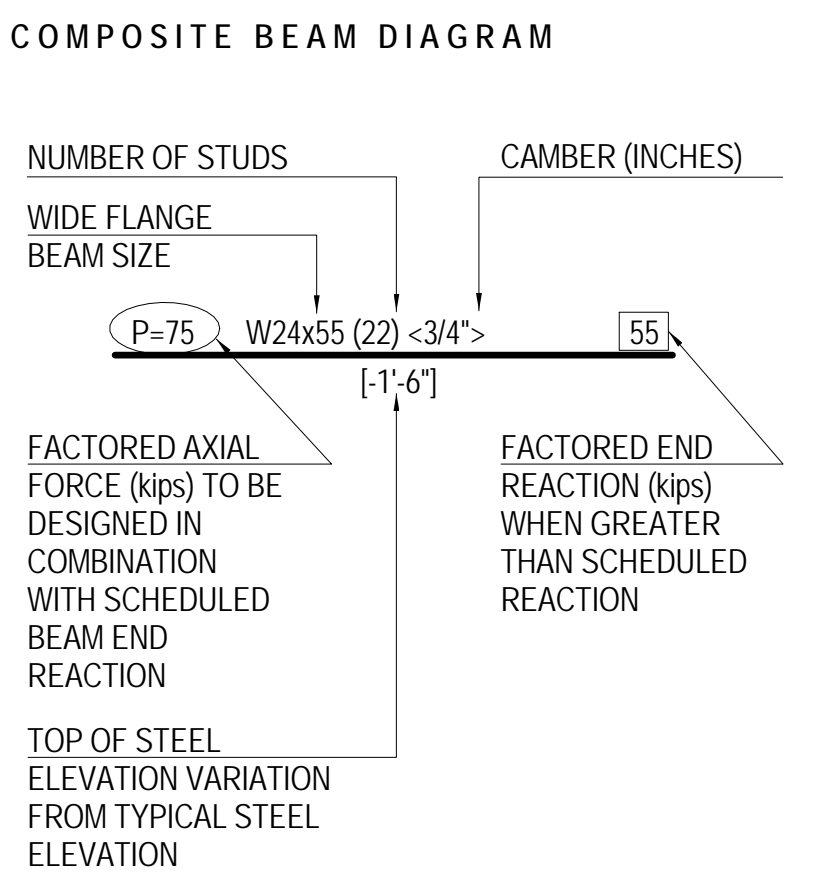
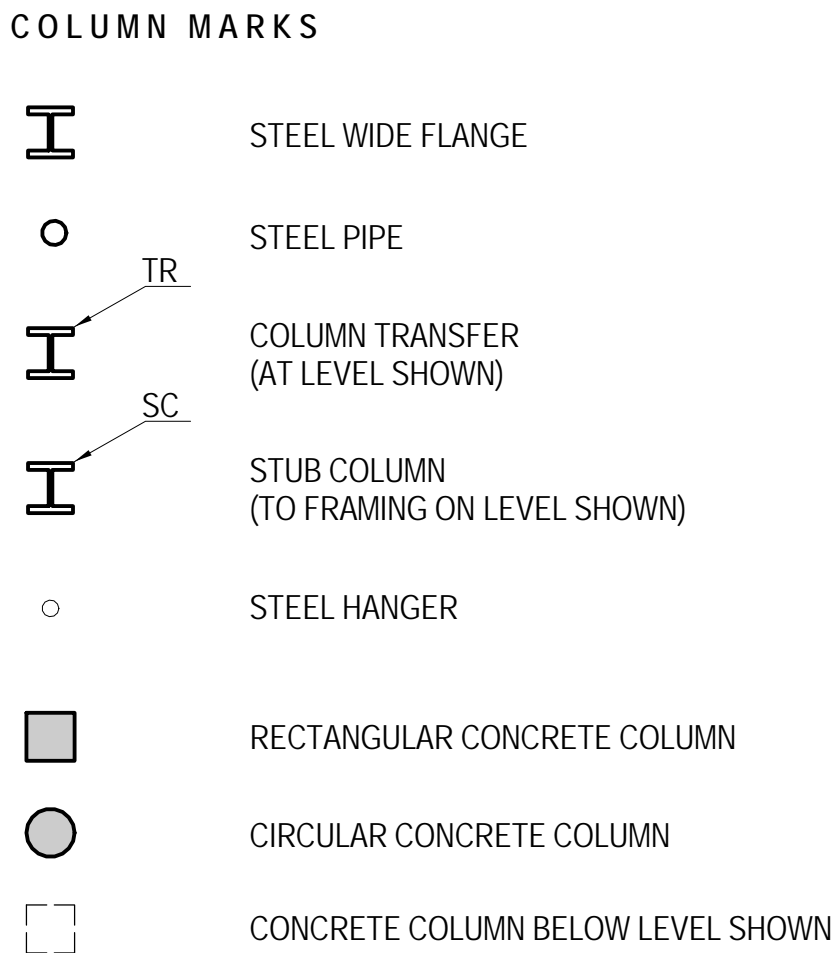
WELDED JOINT SYMBOLS

BASIC SYMBOLS				
BACK	FILLET	PLUG SLOT	GROOVE OR BUTT	
SUPPLEMENTARY SYMBOLS				
BACKING	WELD AROUND	FIELD WELD	CONTOUR FLUSH	CONVEX



PAINT SYSTEM IDENTIFICATION

II	INTERIOR EXPOSED STRUCTURAL STEEL WITH INTUMESCENT FIREPROOFING
IP	INTERIOR EXPOSED STRUCTURAL STEEL WITHOUT INTUMESCENT FIREPROOFING
EP	EXTERIOR EXPOSED STRUCTURAL STEEL
EC	EPOXY BARRIER COATING SYSTEM



ABBREVIATIONS

ACI	=	AMERICAN CONCRETE INSTITUTE
AESS	=	ARCHITECTURALLY EXPOSED STRUCTURAL STEEL
AISC	=	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AISI	=	AMERICAN IRON AND STEEL INSTITUTE
APPROX	=	APPROXIMATE, APPROXIMATELY
ARCH	=	ARCHITECT, ARCHITECTURAL
ASCE	=	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASTM	=	AMERICAN SOCIETY OF CIVIL ENGINEERS
AWS	=	AMERICAN WELDING SOCIETY
B/	=	BOTTOM OF
C-C	=	CENTER-TO-CENTER
CONC	=	CONCRETE
CONT	=	CONTINUOUS
CU	=	CUBIC
DEG	=	DEGREE
DIA	=	DIAMETER
DIAG	=	DIAGONAL
EA	=	EACH
EW, EF	=	EACH WAY, EACH FACE
EOS	=	EDGE OF SLAB
E	=	ELEVATOR SHAFT
EL	=	ELEVATION
EXT	=	EXTERIOR
FDN	=	FOUNDATION
FTG	=	FOOTING
GA	=	GAUGE, GAGE
GALV	=	GALVANIZED
HORIZ	=	HORIZONTAL
HP	=	HIGH POINT
HSS	=	HOLLOW STRUCTURAL SHAPE
IBC	=	INTERNATIONAL BUILDING CODE
INT	=	INTERIOR
KIPS	=	THOUSANDS OF POUNDS
KLF	=	KIPS PER LINEAL FOOT
KSF	=	KIPS PER SQUARE FOOT
KSI	=	KIPS PER SQUARE INCH
LB(S)	=	POUND(S)
LOC	=	LOCATION
LLV	=	LONG LEG VERTICAL
LLH	=	LONG LEG HORIZONTAL
LWT	=	LIGHTWEIGHT
M	=	MECHANICAL SHAFT
MAX	=	MAXIMUM
MEZZ	=	MEZZANINE
MIN	=	MINIMUM
MISC	=	MISCELLANEOUS
NTS	=	NOT TO SCALE
NWT	=	NORMAL WEIGHT
O.C.	=	ON CENTER
OPP.	=	OPPOSITE
PERP	=	PERPENDICULAR
PL	=	PLATE
PLF	=	POUNDS PER LINEAL FOOT
PSF	=	POUNDS PER SQUARE FOOT
PSI	=	POUNDS PER SQUARE INCH
REQD	=	REQUIRED
REV	=	REVISION, REVISED
S	=	STAIR OPENING
S.C.	=	SLIP-CRITICAL
SCHED	=	SCHEDULE
SECT	=	SECTION
SHT	=	SHEET
SIM	=	SIMILAR
SPEC	=	SPECIFICATION
S.S.	=	STAINLESS STEEL
STRUC	=	STRUCTURE, STRUCTURAL
T/	=	TOP OF
TYP.	=	TYPICAL
U.N.O.	=	UNLESS NOTED OTHERWISE
V.I.F.	=	VERIFY IN FIELD
W/	=	WITH
W/O	=	WITHOUT
W.P.	=	WORK POINT
W.W.F.	=	WELDED WIRE FABRIC

GENERAL EXCAVATION NOTES

1. THE GENERAL EXCAVATION PROGRAM, INCLUDING METHODS, SEQUENCES, PROTECTION OF EXCAVATION SURFACES, ETC., SHALL BE THE COMPLETE AND SOLE RESPONSIBILITY OF THE CONTRACTOR. SOIL RETENTION SYSTEMS WILL BE REQUIRED IN ALL THE NON-ROCK EXCAVATION ZONES, ESPECIALLY ADJACENT TO ROADWAYS AND RAILROAD TRACKS. EXCAVATION-RETENTION SYSTEM DESIGN, INSTALLATION, MAINTENANCE, AND REMOVAL SHALL ALSO BE THE COMPLETE AND SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL PROVIDE ALL MEASURES AND PRECAUTIONS NECESSARY TO PREVENT DAMAGE AND MINIMIZE SETTLEMENT OF EXISTING OR NEW CONSTRUCTION INSIDE OR OUTSIDE THE PROJECT LIMITS. ANY DAMAGE TO NEW OR EXISTING CONSTRUCTION, INSIDE OR OUTSIDE OF THE PROJECT LIMITS, CAUSED BY EXCAVATION TECHNIQUES OR MOVEMENTS OF THE ANY SOIL RETENTION SYSTEM IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. WHEN EXCAVATION IS NEAR THE TRACKS, RAILROAD PROTECTION IS REQUIRED. WHEN EXCAVATION IS NEAR THE TRACKS, SUPPORT OF THE TRACKS IS REQUIRED.
2. THE CONTRACTOR SHALL RETAIN A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF NEW YORK ACCEPTABLE TO THE ENGINEER-OF-RECORD TO DESIGN AND INSPECT THE ROCK EXCAVATION PROGRAM AND ANY EXCAVATION-RETENTION SYSTEM COMPONENTS, INCLUDING ALL MEASURES REQUIRED TO SUPPORT, EITHER PERMANENTLY OR TEMPORARILY, ADJACENT FOUNDATIONS, BUILDINGS, RAILROAD TRACKS, STREETS, PROPERTIES, SIDEWALKS, AND UTILITIES. THESE MEASURES INCLUDE UNDERPINNING, ROCK BOLTING, SHOTCRETING, TIEBACKS, SHEETING, AND SHORING.
3. THE ROCK EXCAVATION PROGRAM AND ANY EXCAVATION-RETENTION SYSTEMS SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH THE GEOTECHNICAL DESIGN PARAMETERS AND SOIL PRESSURES AS INDICATED IN THE GEOTECHNICAL EXPLORATION REPORT. REFER TO NOTE #19 BELOW.
4. SLOT OR LINE DRILL AS REQUIRED.
5. PLUG ALL SLEEPS & LENSES IN ROCK WITH GROUT AS REQUIRED.
6. BLASTING OPERATIONS SHALL COMPLY WITH ALL LOCAL & STATE LAWS, RULES AND REGULATIONS. ALL BLASTING OPERATIONS SHALL COMPLY WITH AMTRAK BLASTING SPECIFICATIONS.
7. BLASTING OPERATIONS SHALL COMPLY WITH THE RECOMMENDATIONS OF THE OWNERS BLAST CONSULTANT. ESPECIALLY WITH REGARD TO COORDINATING TIMING AND EFFECTS OF BLASTING WITH EXISTING RAILROAD OPERATIONS. ALL BLASTING OPERATIONS SHALL COMPLY WITH AMTRAK BLASTING SPECIFICATIONS.
8. AFTER CONCRETE HAS BEEN PLACED, BLASTING SHALL NOT OCCUR WITHIN A 50-FOOT RADIUS UNLESS WRITTEN PERMISSION IS OBTAINED FROM THE ENGINEER-OF-RECORD. ALL BLASTING OPERATIONS SHALL COMPLY WITH AMTRAK BLASTING SPECIFICATIONS.
9. THE CONTRACTOR SHALL COORDINATE ALL GENERAL EXCAVATION WORK AND ALL ELEMENTS OF ANY SOIL RETENTION SYSTEMS WITH ALL ELEMENTS OF THE PERMANENT BUILDINGS.
10. PRIOR TO ANY GENERAL EXCAVATION OR INSTALLATION OF ELEMENTS OF ANY SOIL RETENTION SYSTEM, THE CONTRACTOR SHALL ESTABLISH A GRID OF SURVEY POINTS AROUND THE PERIMETER OF THE AREA TO BE EXCAVATED, INCLUDING POINTS UP TO 200 FEET BEYOND THE PERIMETER AND POINTS ON ADJACENT EXISTING STRUCTURES TO REMAIN. THESE POINTS SHALL BE SURVEYED FOR VERTICAL AND HORIZONTAL MOVEMENT AT FREQUENT INTERVALS DURING ACTUAL EXCAVATION, AND CONTINUED DURING EACH SUBSEQUENT PHASE OF THE WORK, AND SUBMITTED TO THE ARCHITECT FOR INFORMATION. MONITORING POINTS WILL ALSO BE REQUIRED ON ALL RAILROAD TRACKS THAT HAVE ANY EXCAVATION OR DOWATERING ADJACENT TO THEM. A DETAILED MONITORING PROGRAM SHALL BE PREPARED AND SUBMITTED TO THE RAILROADS AS WELL AS THE RESULTS OF THE MONITORING PROGRAM.
11. EXCAVATION WORK SHALL BE BASED UPON ENGINEERED DRAWINGS PREPARED BY THE CONTRACTOR INCLUDING PLANS AND SECTIONS OF EXCAVATION SEQUENCES. THE EXCAVATION SEQUENCES SHALL BE CONTROLLED TO MATCH THE REQUIREMENTS OF ALL NEW AND EXISTING CONSTRUCTION WORK.
12. THE GENERAL EXCAVATION ACROSS THE SITE SHALL NOT EXTEND DEEPER THAN THE SLAB-ON-GRADE GRANULAR FILL SUBGRADE ELEVATION. THE DEEPER EXCAVATIONS FOR GRADE BEAMS, SPREAD FOOTINGS, PITS, ETC., SHALL BE EXCAVATED ON AN INDIVIDUAL, LOCALIZED BASIS DOWN FROM THE SLAB-ON-GRADE SUBGRADE.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF ANY STRUCTURAL COMPONENTS WHICH ARE TO RESIST TEMPORARY LOADS AS PART OF THE CONTRACTOR'S EXCAVATION-RETENTION PROGRAM.
14. EXCAVATION BELOW THE SLAB LEVEL REQUIRED FOR PITS SHALL BE RETAINED BY LOCALIZED EXCAVATION-RETENTION SYSTEMS, AS MAY BE NECESSARY, BASED ON THE CONTRACTOR'S DESIGN USING APPROPRIATE EARTHROCK AND HYDRAULIC PRESSURES AS INDICATED IN THE GEOTECHNICAL EXPLORATION REPORT, AND OTHER CONSTRUCTION LOADING.
15. THE CONTRACTOR SHALL PROVIDE POSITIVE PROTECTION (MATS/SHEET COVERINGS), FOR ALL EXCAVATION FACES, TO PROTECT FACES FROM INSTABILITY AND DETERIORATION DUE TO RAIN, WIND OR SNOW/ICE.
16. THE CONTRACTOR SHALL PROVIDE SURFACE DRAINAGE CHANNELS AND SUMPS AND SUMP PUMPS TO PROTECT ALL EXCAVATIONS FROM FLOODING. FLOODING OF ANY EXCAVATION AFTER APPROVAL OF ANY SUBGRADE WILL BE CAUSE FOR THE COMPLETE REPREPARATION AND APPROVAL OF THE SUBGRADE, INCLUDING REMOVAL OF CONCRETE MUD SLABS, IF ANY EXIST. NO DISCHARGE OF ANY DEWATERING OPERATION IS TO BE MADE ONTO AMTRAK PROPERTY. IF THE CONTRACTOR DISCHARGES ANY WATER INTO EXISTING STORMWATER FACILITIES ON AMTRAK, THEN THE CONTRACTOR IS TO PROVIDE PROOF THAT THE SYSTEM CAN HANDLE THE FLOWS. UPON THE COMPLETION OF THE DEWATERING, THE CONTRACTOR IS TO CLEAN PIPES OF ALL DEBRIS THAT HAS ACCUMULATED AS A RESULT OF THE DEWATERING OPERATION.
17. AFTER COMPLETION OF EACH EXCAVATION PHASE, IN EACH AREA, THE SITE SHALL BE DEWATERED, AS REQUIRED, BEFORE (OR AS) THE EXCAVATION PROCEEDS. THE CONTRACTOR SHALL PROVIDE ALL CONSTRUCTION AND EQUIPMENT FOR THE DEWATERING SYSTEM INCLUDING, BUT NOT LIMITED TO, TRENCHES, SUMPS, DEWATERING WELLS, WELL POINTS, OBSERVATION WELLS, PUMPING SYSTEM, DISPOSAL LOCATION, SETTLING BASINS, MAINTENANCE AND EMERGENCY BACK-UP EQUIPMENT, ETC. AT ALL TIMES, THE DEWATERING SYSTEM SHALL MAINTAIN THE WATER LEVEL A MINIMUM OF 3 FEET BELOW THE DEEPEST FOUNDATION SUBGRADE. THE DEWATERING SYSTEM SHALL BE MAINTAINED UNTIL ALL LOWER LEVEL AND GROUND FLOOR SLABS, PERIMETER WALLS AND WATERPROOFING ARE INSTALLED AND THE PERMANENT BUILDING DRAINAGE SYSTEM IS FULLY OPERATIONAL.
18. THE OWNER'S SOIL TESTING AGENCY SHALL REVIEW AND CONTINUOUSLY MONITOR THE EXCAVATION, DEWATERING AND SOIL RETENTION SYSTEMS. THE CONTRACTOR SHALL INSTALL AND CONTINUOUSLY SURVEY: (A) VERTICAL AND HORIZONTAL MOVEMENTS OF THE TOP OF THE SOIL RETENTION SYSTEM; (B) BENCH MARKS ADJACENT TO AND AWAY FROM THE SITE PERIMETER FOR VERTICAL AND HORIZONTAL MOVEMENTS; (C) INCLINOMETERS INSTALLED ALONG THE PERIMETER OF THE EXCAVATION, PRIOR TO THE START OF EXCAVATION; AND (D) OBSERVATION WELLS FOR MONITORING WATER LEVELS BELOW GROUND SURFACE. REFER TO FINAL SOIL CONSULTANT'S REPORT FOR MONITORING REQUIREMENTS.
19. ALL WORK IS SUBJECT TO CONTROLLED INSPECTION AS REQUIRED BY THE NEW YORK CITY BUILDING CODE.
20. A GEOTECHNICAL EXPLORATION REPORT, INCLUDING SOIL AND ROCK BORING DATA, HAS BEEN PREPARED BY MUESER RUTLEDGE CONSULTING ENGINEERS, 14 PENN PLAZA, 225 WEST 34TH STREET, NEW YORK, NY 10122.
21. FOR ADDITIONAL REQUIREMENTS, SEE SPECIFICATIONS.

312300	EXCAVATION & FILL
312316.26	ROCK EXCAVATION
312319	CONSTRUCTION DEWATERING
312313	ROCK GROUTING
315100	EXCAVATION SUPPORT AND PROTECTION
316813	ROCK FOUNDATION ANCHORS
334619	UNDERSLAB DRAINAGE PIPING
071000	FOUNDATION WATERPROOFING

22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF ANY STRUCTURAL COMPONENTS WHICH ARE TO RESIST TEMPORARY LOADS AS PART OF THE CONTRACTOR'S EXCAVATION-RETENTION PROGRAM.

GENERAL FOUNDATION NOTES

1. FOUNDATION DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE NEW YORK CITY BUILDING CODE LATEST EDITION, EXCEPT AS VARIANCES ARE OBTAINED.
2. THE GEOTECHNICAL REPORT BY MRCE CONTAINING BORING AND TEST PIT INFORMATION IS PROVIDED FOR INFORMATION.
3. THE FOUNDATION OF THE BUILDING CONSISTS OF:
 - LARGE "MEGA COLUMN" FOUNDATION WALL
 - SPREAD FOOTINGS
 - STRIP FOOTINGS
4. FOOTINGS AND GRADE BEAMS SHALL BE FOUNDED UPON UNDISTURBED, NATURAL ROCK SUBGRADE WITH A MINIMUM ALLOWABLE BEARING CAPACITY OF 20 TSF TO 40 TSF AS INDICATED ON THE DRAWINGS. THE BOTTOM OF THE FOOTING ELEVATIONS AND ROCK BEARING CAPACITIES AS SHOWN ON THE DRAWINGS ARE ESTIMATED FROM THE ROCK BORING DATA. FINAL EXACT BEARING ELEVATIONS SHALL BE FIELD DETERMINED AND ROCK BEARING CAPACITIES VERIFIED BY THE OWNERS SOIL TESTING LABORATORY DURING CONSTRUCTION.
5. THE ROCK SUBGRADE FOR ALL FOOTINGS, GRADE BEAMS, AND SLABS SHALL BE INSPECTED AND APPROVED BY THE OWNERS TESTING AGENCY IMMEDIATELY PRIOR TO PLACING FOUNDATION CONCRETE OR CONCRETE MUD SLABS.
6. ALL ORGANIC AND/OR OTHER UNSUITABLE MATERIALS SHALL BE REMOVED FROM FOUNDATION AND SLAB SUBGRADES AND BACKFILL AREAS, AND THEN BACKFILLED WITH LEAN CONCRETE (f_c=2000 psi).
7. PROVIDE TEMPORARY BRACING FOR ALL BASEMENT WALLS, IN ACCORDANCE WITH THE GEOTECHNICAL DESIGN PARAMETERS AND SOIL PRESSURES AS INDICATED IN THE GEOTECHNICAL EXPLORATION REPORT. UNTIL THE GROUND FLOOR AND LOWER LEVEL SLABS HAVE BEEN PLACED, AND THE CONCRETE HAS ATTAINED FULL DESIGN STRENGTH.
8. NO MUD SLABS, FOOTINGS OR STRUCTURAL SLABS SHALL BE PLACED INTO OR AGAINST SUBGRADES CONTAINING FREE WATER, FROST OR ICE. SHOULD WATER OR FROST ENTER A FOOTING/MUD SUBSTRUCTURAL SLAB EXCAVATION AFTER SUBGRADE APPROVAL, THE SUBGRADE SHALL BE RESPECTED BY THE OWNERS SOIL TESTING AGENCY AFTER REMOVAL OF WATER, FROST, OR ICE.
9. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY MEASURES TO PREVENT ANY WATER, FROST, OR ICE FROM PENETRATING ANY FOOTING OR STRUCTURAL MUD SLAB SUBGRADE BEFORE AND AFTER PLACING OF CONCRETE, AND UNTIL SUCH SUBGRADES ARE FULLY PROTECTED BY THE PERMANENT BUILDING STRUCTURE.
10. ALL SLAB AND FOOTING MUD SLABS SHALL BE THOROUGHLY CLEANED IMMEDIATELY PRIOR TO CONCRETE PLACEMENT.
11. THE CONCRETE FOR EACH ISOLATED OR COMBINED FOOTING SHALL BE PLACED IN ONE (1) CONTINUOUS POUR.
12. SLABS ON-GRADE SHALL BE PLACED OVER A CONTINUOUS VAPOR BARRIER OVER A MINIMUM OF 8" COMPACTED GRANULAR MATERIAL.
13. SEE PLUMBING AND CIVIL DRAWINGS FOR UNDERFLOOR AND PERIMETER WALL DRAINAGE SYSTEMS, AND SPECIAL GRANULAR FILL MATERIALS FOR SUCH DRAINAGE SYSTEMS.
14. SEE ARCHITECTURAL DRAWINGS FOR ALL WATERPROOFING AND DAM PROOFING DETAILS.
15. ELEVATIONS ON THE FOUNDATION PLANS ARE GIVEN RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAV88). FOR REFERENCE, 0.0' NAV88 = 301.675' PENN RAIL ROAD TUNNELS DATUM.

GEOTECHNICAL ASSUMPTIONS:

1. ALL FOUNDATION DESIGNS ARE BASED ON RECOMMENDATIONS PROVIDED BY MRCE PRIOR TO THE FINAL GEOTECHNICAL REPORT AND ON THE FINAL GEOTECHNICAL REPORT TITLED "FOUNDATION DESIGN RECOMMENDATIONS, 5TH AVENUE DEVELOPMENT, NEW YORK, NEW YORK" DATED JUNE 10,2008, EXCEPT AS NOTED IN ITEM 3 BELOW.
2. THE TOP 1'-0" OF ROCK BELOW BALLAST IS ASSUMED TO BE TOO FRACTURED TO PROVIDE RESISTANCE TO LOAD.
3. ALLOWABLE ROCK BEARING CAPACITY AT TRACK LEVEL HAS BEEN ASSUMED TO BE 60 TSF. THIS IS TO BE VERIFIED BY ADDITIONAL BORINGS BY MRCE.
4. ALLOWABLE ROCK BEARING CAPACITY NEAR LEVEL B1 HAS BEEN ASSUMED TO BE 40 TSF.
5. AN ALLOWABLE ROCK BEARING CAPACITY INCREASE OF 10% PER FOOT OF EMBEDMENT INTO ROCK (BEYOND THE FIRST FOOT) UP TO A 100% INCREASE HAS BEEN ASSUMED IN MOST CASES REGARDLESS OF THE ELEVATION OF THE ROCK.
6. FOR TENSION RESISTANCE, UNIT WEIGHT OF BUOYANT ROCK ASSUMED TO BE 100 pcf.
7. LATERAL LOADS APPLIED TO THE TOPS OF FOOTINGS BY THE STRUCTURE ARE ASSUMED TO BE TRANSFERRED TO THE ROCK ENTIRELY THROUGH FRICTION ON THE SIDE AND BOTTOM OF THE FOOTING AND PASSIVE PRESSURE RESISTANCE OF THE ROCK AGAINST THE FOOTING.
8. TENSION CAPACITY BASED ON A FAILURE CONE OF 45° FROM THE BOTTOM OF THE CAISSON SHAFT.
9. B/FRICTIONLESS CAISSON SHAFT ELEVATIONS INDICATED ON THE DRAWINGS HAVE BEEN BASED UPON THE FOLLOWING:
 - THE ASSUMPTION PROVIDED BY MRCE THAT NO ADDITIONAL SURCHARGE LOAD MAY BE APPLIED TO THE EXISTING ROCK BOLTED RETAINING WALLS.
 - THE ASSUMPTION PROVIDED BY MRCE OF A 1:2 INFLUENCE LINE EXTENDING FROM THE INTERFACE OF THE WALL AND THE ROCK AT THE BOTTOM OF THE EXISTING RETAINING WALL.
 - ASSUMED LOCATION OF THE EXISTING RETAINING WALL BASED UPON SURVEY DATA PROVIDED BY MEDINA.
10. ADDITIONAL ROCK BOLTS INTO THE EXISTING RETAINING WALL ARE ASSUMED TO BE ADDED AS REQUIRED.
11. THE TOP OF FOOTING ELEVATION ARE GENERALLY ASSUMED TO MATCH THE TOP OF SOUND ROCK ELEVATION.
12. T/FOUNDATION ELEVATIONS INDICATED ON THE DRAWINGS HAVE BEEN BASED UPON THE FOLLOWING INFORMATION:
 - TRAIL PROFILE AND OFFSET FROM TRAIL TO T/ROCK SHOWN ON "TERMINAL STATION WEST, TYPICAL SECTIONS, CONTRACT DRAWING NO. 2112B" DATED FEBRUARY 1906 WITH REVISIONS ON SEPT. 20, 1907 AND NOV. 15, 1909 FOR THE PENNSYLVANIA, NEW YORK AND LONG ISLAND RAILROAD COMPANY.
 - FOUNDATION AND DRAINAGE CONFLICT ANALYSIS PERFORMED BY TURNER AND EVALUATED BY PARSONS BRINCKERHOFF RECEIVED BY SOM ON 24 APRIL, 2008.
 - T/SOUND ROCK ELEVATIONS PROVIDED BY MRCE IN THE FINAL GEOTECHNICAL REPORT.



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NORTH TOWER

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Client

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Architecture/Structural Engineering

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Civil Engineering
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MEP Engineering
Jaros Baum & Bolles
80 Pine Street, New York, NY 10005

Vertical Transportation
Edgett Williams Consulting Group, Inc.
102 East Bliffedale Ave. Suite 1, Mill Valley, California 94041

Sustainable Design
Viridian Energy & Environmental
50 Washington Street, Norwalk, CT 06854

Geo-Technical Engineering
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Landscape Consultant
Field Operations
475 10th Avenue, New York, NY 10018

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Cerami & Associates
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Wilson, Uhrig & Associates, Inc.
65 Broadway, Suite 401, New York, NY 10006

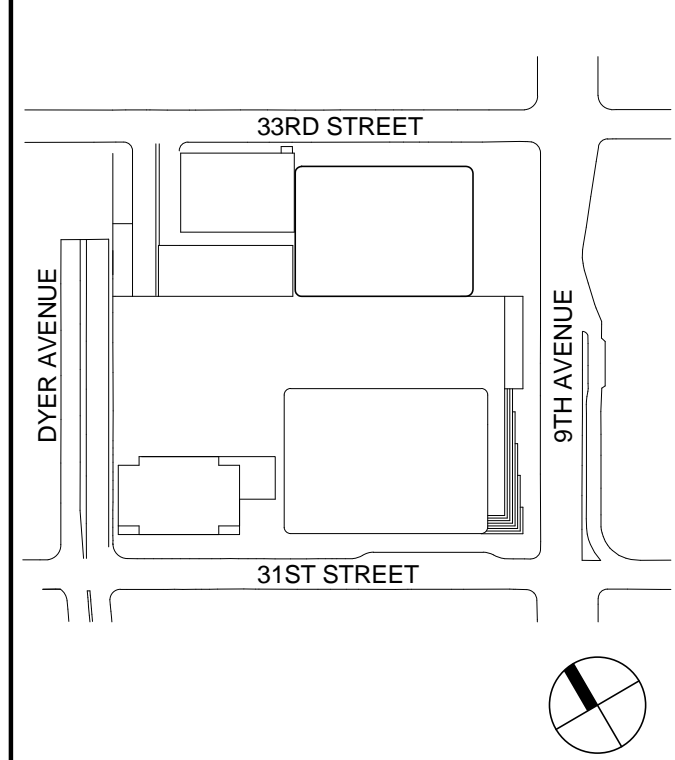
Code Consultant
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Facade Maintenance Consultant
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Wind Tunnel Consultant
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Key Plan:



- CONCRETE NOTES
- A. GENERAL
1. SHOP DRAWINGS FOR FORMWORK AND REINFORCING SHALL BE APPROVED PRIOR TO FORMWORK CONSTRUCTION OR REINFORCING FABRICATION AND PLACEMENT.
 2. IN ADDITION TO CAMBERS SHOWN, CAMBER FORMWORK TO COMPENSATE FOR DEFLECTION OF FORMS UNDER THE WET WEIGHT OF CONCRETE AS REQUIRED TO ACHIEVE THE SPECIFIED TOLERANCES.
 3. SLAB ON GRADE THICKNESSES SHALL BE FIVE (5) INCHES FOR SIDEWALKS, SIX (6) INCHES FOR BASEMENT AND PLAZA SLABS, EIGHT (8) INCHES FOR AUTOMOBILE DRIVEWAY AREAS, AND TEN (10) INCHES FOR TRUCK TRAFFIC AREAS, UNLESS NOTED OTHERWISE.
 4. CONCRETE BEAMS AND SLABS SHALL NOT BE SLEEVED, BOXED OUT OR HAVE THEIR REINFORCING INTERRUPTED EXCEPT AS SHOWN ON THE STRUCTURAL DRAWINGS.
 5. EXPOSED CONCRETE CORNERS SHALL HAVE 3/4 INCH CHAMFERS UNLESS NOTED OTHERWISE.
 6. REFER TO ARCHITECTURAL DRAWINGS FOR THE TYPE, SIZE AND LOCATION OF FLOOR FINISHES, FLOOR DEPRESSIONS AND CURBS.
 7. REFER TO ARCHITECTURAL DRAWINGS FOR WATERPROOFING AND DAMPROOFING REQUIREMENTS.
 8. PROVIDE SLEEVES AND BLOCKOUTS AS SHOWN ON THE APPROVED HVAC, ELECTRICAL, FIRE PROTECTION AND PLUMBING SHOP DRAWINGS IN ACCORDANCE WITH THE STRUCTURAL DETAILS.
 9. INSERTS AND EMBEDMENTS SHALL BE ANCHORED SECURELY AND POSITIONED SO THAT THEY WILL BE FLUSH WITH THE FINISHED CONCRETE SURFACE TO A TOLERANCE OF 1/8 INCH, UNLESS NOTED OTHERWISE.
 10. PERFORM AND SUBMIT INSTRUMENT SURVEYS OF ALL FINISHED REINFORCED CONCRETE AND STEEL DECK CONCRETE SLAB SURFACES. CONDUCT SURVEYS IMMEDIATELY BOTH BEFORE AND AFTER REMOVAL OF FORMWORK AND/OR SHORING SYSTEMS.
 11. REFER TO SPECIFICATION SECTION 031000, "CONCRETE FORMWORK," SECTION 032000, "CONCRETE REINFORCEMENT," AND SECTION 033000, "CAST-IN-PLACE CONCRETE" FOR ADDITIONAL REQUIREMENTS.
 12. REFER TO "STATEMENT OF SPECIAL INSPECTIONS" FOR SPECIAL INSPECTION REQUIREMENTS AND THE SPECIFICATIONS FOR THE REQUIRED PROGRAM OF TESTING AND INSPECTIONS. PROVIDE MATERIAL TESTS, DATA AND ACCESS AS REQUIRED TO FACILITATE SPECIAL INSPECTIONS AND OWNER MONITORING.

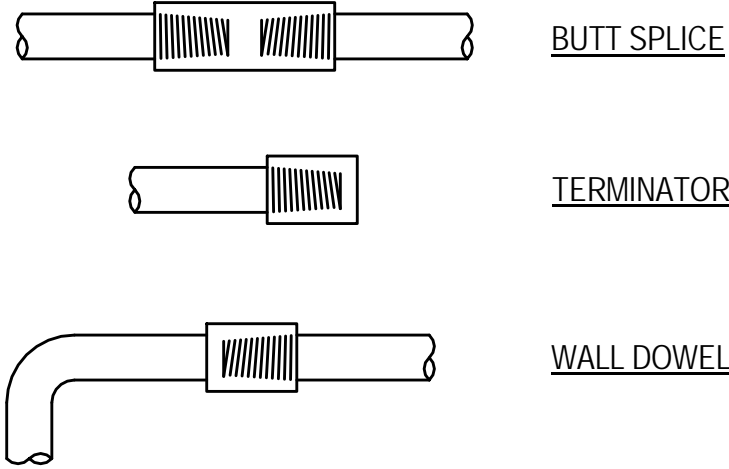
- B. CONCRETE
1. CAST-IN-PLACE CONCRETE SHALL BE OF THE TYPES AND MINIMUM 28-DAY COMPRESSIVE STRENGTHS AND MAXIMUM WATER-CEMENT RATIOS AS SHOWN IN THE CONCRETE MATERIAL SCHEDULE.
 2. ALL CONCRETE SHALL CONTAIN A WATER-REDUCING OR HIGH-RANGE WATER-REDUCING, PLASTICIZING ADMIXTURE.
 3. CONCRETE PERMANENTLY EXPOSED TO WEATHER SHALL CONTAIN AN APPROVED AIR-ENTRAINING ADMIXTURE.
 4. CONCRETE ELEMENTS WITH A LEAST CROSS-SECTIONAL DIMENSION GREATER THAN 48 INCHES SHALL BE CONSIDERED TO BE "MASS CONCRETE."

- C. REINFORCING
1. MATERIALS:
 - a. REINFORCING BARS: ASTM A615, ASTM A706 (WELDABLE REBAR) GRADE 60.
 - b. WELDED WIRE FABRIC (WWF): ASTM A185.
 - c. STRUCTURAL MACRO FIBERS: ASTM C1116, MIN. 2 INCH LENGTH.
 - d. ANCHOR RODS: ASTM A1559 UNLESS NOTED OTHERWISE.
 2. CONCRETE REINFORCEMENT SHALL BE DETAILED, FABRICATED, LABELED, SUPPORTED, SPACED IN FORMS, AND SECURED IN PLACE IN ACCORDANCE WITH THE PROCEDURES AND REQUIREMENTS OUTLINED IN THE LATEST EDITIONS OF THE "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE," ACI 318, AND THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES," ACI 315.
 3. REINFORCING SPLICES SHALL CONFORM TO THE REQUIREMENTS OF ACI 318, BUT NOT LESS THAN 36 BAR DIAMETERS, UNLESS NOTED OTHERWISE.
 4. WELDED WIRE FABRIC SPLICES SHALL BE LAPPED EIGHT (8) INCHES AND TIED SECURELY.
 5. MACRO FIBERS AT A DOSAGE RATE OF 4 LB/CU YARD MAY BE SUBSTITUTED FOR WELDED WIRE FABRIC IN STEEL DECK SLABS AND FILL CONCRETE OVER STRUCTURAL SLABS. SLABS WITH MACRO FIBERS SHALL HAVE #3 BY 2'-0" AT 12 INCHES ON CENTER AT CONSTRUCTION JOINTS IN ADDITION TO THE REINFORCING BARS SHOWN.
 6. MECHANICAL COUPLERS SHALL BE USED WHERE NOTED AND OTHERWISE AT THE CONTRACTOR'S OPTION. COUPLERS SHALL DEVELOP IN TENSION 125% OF THE BAR STRENGTH UNLESS NOTED OTHERWISE.
 7. DOWELS SHALL MATCH THE SIZE AND NUMBER OF MAIN REINFORCING, UNLESS NOTED OTHERWISE.
 8. FIELD WELDING OR BENDING OF REINFORCING IS NOT PERMITTED EXCEPT WHERE SHOWN ON THE DRAWINGS OR OTHERWISE APPROVED.
 9. MINIMUM REINFORCING, UNLESS NOTED OTHERWISE:
 - a. WALLS AND STRUCTURAL SLABS: #4 AT 12" EACH WAY, EACH FACE.
 - b. SLABS ON GRADE: 1 LAYER 6X6 - W2.9XW2.9 WWF.
 - c. FILLS/WEAR SLABS: 1 LAYER 6X6 - W1.4XW1.4 WWF.
 - d. MEP EQUIPMENT PADS: 1 LAYER 6X6 - W4.0XW4.0 WWF.
 10. MINIMUM REINFORCING FOR EXTERIOR AND VEHICLE TRAFFIC SLABS ON GRADE, GALVANIZED OR EPOXY COATED UNLESS NOTED OTHERWISE:
 - a. SIDEWALKS, PLAZAS: 1 LAYER 4X4 - W2.9XW2.9 WWF.
 - b. AUTO TRAFFIC AREAS: 1 LAYER 4X4 - W6.0XW6.0 WWF.
 - c. TRUCK TRAFFIC AREAS: 1 LAYER 4X4 - W7.0XW7.0 WWF.
 11. BAR SUPPORTS SHALL BE GALVANIZED OR EPOXY COATED. BAR SUPPORTS IN CONTACT WITH EXPOSED SURFACES SHALL ALSO BE PLASTIC TIPPED.
 12. SLAB-ON-GRADE REINFORCING SHALL BE SUPPORTED BY CONCRETE BLOCKS.

- D. CONSTRUCTION JOINTS:
1. CONSTRUCTION JOINTS IN ALL WALLS, SLABS AND BEAMS SHALL NOT BE FURTHER APART THAN 90 FEET IN ANY DIRECTION.
 2. CONSTRUCTION JOINTS SHALL BE WIRE BRUSHED, CLEANED AND MOISTENED IMMEDIATELY PRIOR TO PLACING NEW CONCRETE.
 3. PLACE SLABS ON GRADE IN STRIP POURS OF A MAXIMUM WIDTH OF 15 FEET WITH A MINIMUM OF 24 HOURS BETWEEN ADJACENT POURS.
 4. SLABS ON GRADE STRIP POURED SLABS SHALL HAVE SAWCUT CONTROL JOINTS AT 15'-0" CENTERS IN EACH DIRECTION AT THE FOLLOWING MAXIMUM CENTERS, UNLESS SHOWN OTHERWISE:
 - a. 4 INCH SLAB: 10 FEET.
 - b. 5 INCH SLAB: 12 FEET.
 - c. 6 INCH OR GREATER SLAB: 15 FEET.
 5. CONSTRUCTION JOINTS IN STEEL DECK SLABS SHALL BE LOCATED A MINIMUM OF 18 INCHES FROM ANY BEAM LINE.
 6. PROVIDE SHEAR KEYS AT ALL BEAM, REINFORCED SUSPENDED SLAB, GRADE BEAM, MAT AND FOUNDATION WALL CONSTRUCTION JOINTS. REFER TO STEEL DECK DETAILS FOR REQUIREMENTS AT STEEL DECK SLABS. REFER TO DETAILS FOR SLAB-ON-GRADE AND SLAB ON METAL DECK CONSTRUCTION JOINT REQUIREMENTS.
 7. CONSTRUCTION JOINTS SHALL BE LOCATED ONLY IN ACCORDANCE WITH APPROVED SHOP DRAWINGS.
 8. ALLOW A MINIMUM OF THREE (3) HOURS BETWEEN PLACEMENT OF CONCRETE FOR COLUMNS, WALLS OR PIERS AND PLACEMENT OF CONCRETE ON THE ADJACENT FLOOR.
- E. ELECTRICAL CONDUIT
1. CONDUIT SHALL BE STEEL OR RIGID PLASTIC ONLY.
 2. MAXIMUM CONDUIT DIAMETER IS 1/6 THE SLAB DEPTH.
 3. CONDUIT SHALL BE LOCATED IN THE CENTER 1/3 OF THE SLAB AND AS SHOWN IN THE STEEL DECK DETAILS.
 4. CLEAR DISTANCE BETWEEN CONDUITS SHALL BE 3 TIMES THE CONDUIT DIAMETER.
 5. CONDUIT SHALL BE SECURELY TIED TO REINFORCING TO PREVENT DISPLACEMENT DURING CONCRETE PLACEMENT.
 6. CONDUIT SHALL BE PLACED ONLY IN ACCORDANCE WITH SHOP DRAWINGS APPROVED BY THE STRUCTURAL ENGINEER.

- F. CURING AND SEALING
1. PROVIDE APPROVED CURING COMPOUND AND SEALER FOR THE TOP SURFACE OF ALL SLAB WORK, UNLESS NOTED OTHERWISE.
 2. PROVIDE APPROVED CURING COMPOUND, SEALER, AND HARDENER FOR ALL SLABS IN M.E.P. AND STORAGE AREAS, UNLESS NOTED OTHERWISE.
 3. MOIST CURE PARKING SLABS FOR A MINIMUM OF 7 DAYS.
 4. MOIST CURE CONCRETE FILLS AND TOPPINGS PLACED OVER STRUCTURAL SLABS.
 5. CURE FORMED CONCRETE IN FORMS OR PROVIDE APPROVED CURING COMPOUND.
- G. DRILLED IN ANCHORS AND REINFORCING BARS
1. DRILLED IN EXPANSION ANCHORS, ADHESIVE ANCHORS AND GROUTED BARS MAY BE USED ONLY WHERE SHOWN ON THE DRAWINGS.
 2. DRILLED IN BARS SHALL BE ADHESIVE ANCHORED UNLESS NOTED OTHERWISE.
 3. CONDUCT A PRE-CONSTRUCTION CONFERENCE AT LEAST 14 DAYS PRIOR TO INSTALLATION OF ANCHORS TO VERIFY MATERIALS AND PROCEDURES. CONFERENCE SHALL BE ATTENDED BY REPRESENTATIVES OF THE MANUFACTURER, INSTALLER, CONTRACTOR AND ARCHITECT.
 4. ADHESIVE ANCHORED BARS SHALL BE INSTALLED BY TRAINED PERSONNEL IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND THE INSTALLATION SHALL BE MONITORED AND APPROVED BY THE MANUFACTURER'S REPRESENTATIVE.

LENTION MECHANICAL SPLICES



NOTE: USE LENTION MECHANICAL SPLICES OR MECHANICAL SPLICES THAT MEET OR EXCEED STRENGTH OF EQUIVALENT LENTION SPLICE.

CONCRETE MATERIALS SCHEDULE

LOCATION	COMPRESSIVE STRENGTH (28 DAY U.N.C.)	MAX. SIZE AGGREGATE	SUPPLEMENTARY MATERIALS	MAXIMUM W/C RATIO	AIR CONTENT
STRIP FOOTINGS	8,000 PSI @ 28 DAYS	1"	FLY ASH AND/OR SLAG	0.45	3% MAXIMUM
SHEAR WALLS	10,000 PSI 8,000 PSI @ 56 DAYS 6,000 PSI @ 28 DAYS	3/4"	FLY ASH AND/OR SLAG SILICA FUME REQUIRED FOR F/C ≥ 10,000 PSI	0.30 (10 KSI) 0.45 (6 TO 9 KSI)	3% TO 5% MAXIMUM
BASEMENT WALLS	5,000 PSI	3/4"		0.50	3% MAXIMUM
SLABS AND BEAMS	5,000 PSI	3/4"		0.50	3% MAXIMUM
EXPOSED TO FREEZING	5,000 PSI @ 28 DAYS	3/4"		0.45	4.5% TO 7.5%
SLABS ON STEEL DECK	4,000 PSI @ 28 DAYS	3/4"	MACRO FIBERS	0.50	3% MAXIMUM
TIGHT POURS	COORDINATE W/ELEMENTS	3/8"	COORDINATE W/ELEMENT	COORDINATE W/ELEMENT	3% MAXIMUM
TOPPING/FILL SLABS	4,000 PSI @ 28 DAYS	3/4"	MACRO FIBERS FLY ASH AND/OR SLAG	0.40	3% INTERIOR 3% TO 7% EXTERIOR

NOTES:

1. ALL CONCRETE NORMAL WEIGHT UNLESS NOTED OTHERWISE.

TENSION DEVELOPMENT LENGTH AND CLASS 'A' TENSION LAP SPLICE LENGTH

BAR SIZE	f _c = 4000 psi				f _c = 5000 psi				f _c = 6000 psi				f _c = 7000 psi				f _c = 8000 psi				f _c = 10000 psi			
	TOP BARS		OTHER BARS		TOP BARS		OTHER BARS		TOP BARS		OTHER BARS		TOP BARS		OTHER BARS		TOP BARS		OTHER BARS		TOP BARS		OTHER BARS	
	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2
#3	19	28	15	22	17	25	13	19	15	23	12	18	14	21	12	16	13	20	12	15	12	18	12	14
#4	25	37	19	29	22	33	17	26	20	31	16	24	19	28	15	22	18	26	14	20	16	24	12	18
#5	31	47	24	36	28	42	22	32	25	38	20	29	24	35	18	27	22	33	17	25	20	30	15	23
#6	37	56	29	43	33	50	26	38	31	46	24	35	28	42	22	33	26	40	20	30	24	35	18	27
#7	54	81	42	63	49	73	37	56	44	66	34	51	41	61	32	47	38	58	30	44	34	51	27	40
#8	62	93	48	71	55	83	43	64	51	76	39	58	47	70	36	54	44	66	34	51	39	59	30	45
#9	70	105	54	81	63	94	48	72	57	85	44	66	53	79	41	61	49	74	38	57	44	66	34	51
#10	79	118	61	91	70	105	54	81	64	96	49	74	59	89	46	69	56	83	43	64	50	75	38	57
#11	87	131	67	101	78	117	60	90	71	107	55	82	66	99	51	76	62	93	48	71	55	83	43	64
#14	105	157	81	121	94	140	72	108	86	128	66	99	79	119	61	91	74	111	57	85	66	99	51	76
#18	139	209	107	161	125	187	96	144	114	171	88	131	106	158	81	122	98	148	76	114	88	132	68	102

NOTES:

1. TABULATED TENSION DEVELOPMENT LENGTHS ARE GIVEN IN INCHES, AND ARE CALCULATED FOR REINFORCEMENT CONFORMING TO ASTM A615 GRADE 60 AS PER THE REQUIREMENTS OF ACI 318 (2005).
2. CASES 1 AND 2 DEPEND UPON CONCRETE COVER AND THE CENTER-TO-CENTER SPACING OF THE BARS, DEFINED AS FOLLOWS:
 - CASE 1: CLEAR SPACING AT LEAST ONE (1) BAR DIAMETER
CLEAR COVER AT LEAST ONE (1) BAR DIAMETER
STIRRUPS OR TIES THROUGHOUT THE DEVELOPMENT LENGTH NOT LESS THAN THE CODE MINIMUM
OR
CLEAR SPACING AT LEAST TWO (2) BAR DIAMETERS
CLEAR COVER AT LEAST ONE (1) BAR DIAMETER
 - CASE 2: ALL OTHER CASES
3. TOP BARS ARE DEFINED AS HORIZONTAL BARS WITH MORE THAN 12 INCHES OF CONCRETE CAST BELOW THE BARS.
4. TABULATED TENSION DEVELOPMENT LENGTHS HAVE BEEN CALCULATED WITH RESPECT TO NORMALWEIGHT CONCRETE. FOR LIGHTWEIGHT CONCRETE, MULTIPLY THE TABULATED VALUES BY 1.3.
5. FOR EPOXY COATED BARS, MULTIPLY THE TABULATED VALUES BY ONE OF THE FOLLOWING FACTORS:
 - 1.5 FOR EPOXY COATED BARS WITH COVER LESS THAN 3 BAR DIAMETERS, OR CLEAR SPACING LESS THAN 6 BAR DIAMETERS
 - 1.2 FOR ALL OTHER EPOXY COATED BARS
6. LAP SPLICE LENGTHS (ACI 12.15.1) ARE MULTIPLES OF TENSION DEVELOPMENT LENGTHS:
 - CLASS A – 1.0 LD, WHERE 50% OR LESS BARS ARE LAP SPLICED AT A SECTION FOR A DISTANCE EQUAL TO THE REQUIRED LAP SPLICE LENGTH, OR
 - CLASS B – 1.3 LD, AT ALL OTHER LOCATIONS.
7. ALL ADJACENT LAP SPLICES IN SLAB-ON-GRADE SHALL BE STAGGERED BY A MINIMUM DISTANCE EQUAL TO THE REQUIRED LAP SPLICE LENGTH.
8. USE MECHANICAL SPLICE FOR #14 AND #18 BAR SIZES.

MINIMUM CONCRETE COVER

CONCRETE SURFACE EXPOSURE	MINIMUM CONCRETE CLEAR COVER
FOOTINGS/CAISSONS	3"
CORE WALLS/SUBTRESS WALLS	1"
SLAB - ON - GRADE	2"
SLABS	3/4"
BEAMS	1 1/2"
COLUMNS	1 1/2"
SLAB ON COMPOSITE DECK	3/4"
FOUNDATION WALLS	2" O.F./1" I.F.

COMPRESSION LAP SPLICE LENGTH AND COMPRESSION DEVELOPMENT LENGTH

BAR SIZE	COMPRESSION LAP SPLICE	COMPRESSION DEVELOPMENT LENGTH					
		f _c = 4000 psi	f _c = 5000 psi	f _c = 6000 psi	f _c = 7000 psi	f _c = 8000 psi	f _c = 10000 psi
#3	12	8	8	8	8	8	8
#4	15	10	9	9	9	9	9
#5	19	12	12	12	12	12	12
#6	23	15	14	14	14	14	14
#7	27	17	16	16	16	16	16
#8	30	19	18	18	18	18	18
#9	34	22	21	21	21	21	21
#10	39	25	23	23	23	23	23
#11	43	27	26	26	26	26	26
#14	SEE NOTE 2	33	31	31	31	31	31
#18	SEE NOTE 2	43	41	41	41	41	41

NOTES:

1. TABULATED COMPRESSION DEVELOPMENT LENGTHS AND COMPRESSION LAP SPLICES ARE GIVEN IN INCHES, AND ARE CALCULATED FOR REINFORCEMENT CONFORMING TO ASTM A615 GRADE 60 AS PER THE REQUIREMENTS OF ACI 318-05.
2. USE MECHANICAL SPLICE FOR #14 AND #18 BAR SIZES.



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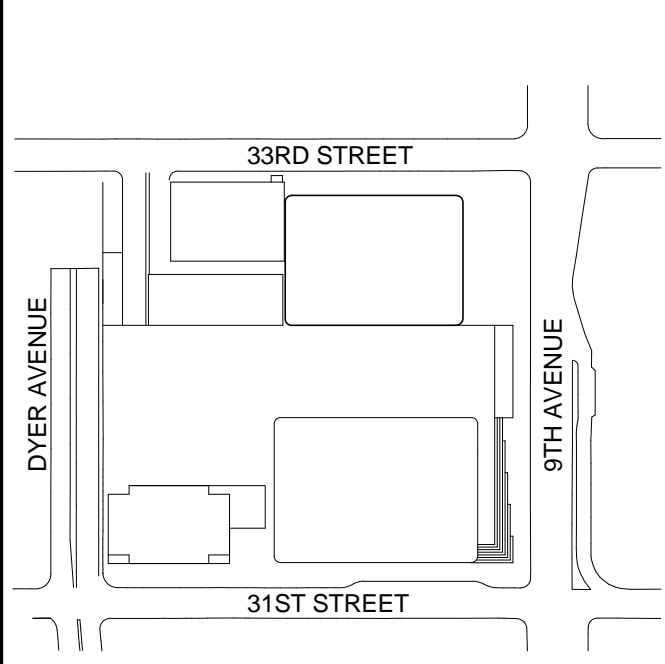
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Key Plan:



Seal & Signature

PRELIMINARY
NOT FOR CONSTRUCTION

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Date: 20 JUN 2014

Scale: 1/2" = 1'-0"

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STRUCTURAL
CONCRETE
NOTES

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STRUCTURAL STEEL NOTES

A. GENERAL

1. ALL DETAILING, FABRICATION AND ERECTION SHALL CONFORM TO AISC (LRFD) SPECIFICATIONS AND CODES, LATEST EDITION.

2. ALL WELDING WORK SHALL CONFORM TO THE AWS D1.1 "STRUCTURAL WELDING CODE - STEEL," LATEST EDITION, AND SHALL BE PERFORMED BY AWS CERTIFIED WELDERS.

3. ALL STEEL BEAM SIZES FOLLOWED BY A NUMBER IN PARENTHESES, (XX), ARE COMPOSITE BEAMS WITH SHEAR STUDS. SEE "STRUCTURAL METAL DECK NOTES" FOR ADDITIONAL INFORMATION.

4. COMPOSITE BEAMS ARE NOT REQUIRED TO BE SHORED, UNLESS NOTED OTHERWISE.

5. THERE SHALL BE NO FIELD CUTTING OF STRUCTURAL STEEL MEMBERS FOR THE WORK OF OTHER TRADES WITHOUT PRIOR REVIEW BY THE ARCHITECT.

6. ALL STRUCTURAL STEEL SHALL BE FIREPROOFED TO ATTAIN THE APPLICABLE FIRE RATING REQUIRED BY CODE WITH UL APPROVED SPRAYED-ON CEMENTIOUS FIREPROOFING MATERIALS. SEE THE ARCHITECTURAL DRAWINGS FOR SPECIFIC FIREPROOFING REQUIREMENTS. ALL STEEL SURFACES ENCASED IN CONCRETE, ELEVATOR GUIDE BEAMS, AND PENTHOUSE ROOF FRAMING DO NOT REQUIRE SPRAY FIREPROOFING.

7. AFTER FABRICATION AND JUST PRIOR TO SITE APPLICATION OF SPRAY-ON FIREPROOFING, ALL STEEL SHALL BE CLEANED OF ALL RUST, LOOSE MILL SCALE AND OTHER FOREIGN MATERIALS. PRIMING AND PAINTING OF THE STRUCTURAL STEEL WILL NOT BE REQUIRED EXCEPT FOR STEEL WHICH IS PERMANENTLY EXPOSED.

8. ALL ELEVATIONS ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAV88) FOR REFERENCE 0.0 NAV88 = 301.75 PENN RAIL ROAD TUNNELS DATUM

9. SEE SPECIFICATION SECTION 05120, "STRUCTURAL STEEL," FOR ADDITIONAL REQUIREMENTS NOT NOTED HEREIN.

B. MATERIALS

1. STRUCTURAL STEEL GRADES SHALL BE AS FOLLOWS:

BUILT-UP STEEL COLUMNS: ASTM A572 Gr. 50
FLOOR BEAMS: ASTM A992 - GRADE 50
W14 COLUMNS, HANGERS, & BRACED FRAME DIAGONALS: ASTM A913 - GRADE 45
W12, W24, W26, W36 COLUMNS: ASTM A992 - GRADE 50
W1 DIAGONALS: ASTM A992 - GRADE 50
CONNECTIONS, PLATES: ASTM A572 - GRADE 50
ANGLES: ASTM A36 - GRADE 36
WELDING: E70XX ELECTRODES

2. ALL STRUCTURAL STEEL TUBING SHALL BE ASTM A500, GRADE B, UNLESS NOTED OTHERWISE.

3. ALL STRUCTURAL STEEL PIPE SHALL BE ASTM A53, TYPE E, GRADE B, UNLESS NOTED OTHERWISE.

4. ALL BOLTS, NUT AND WASHERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A325 OR A490.

C. CONNECTIONS

1. ALL CONNECTIONS, EXCEPT FOR THOSE CONNECTIONS COMPLETELY DESIGNED ON THE DRAWINGS, SHALL BE DESIGNED AND DETAILED BY THE FABRICATOR. DETAILING SHALL BE PERFORMED USING RATIONAL ENGINEERING DESIGN AND STANDARD PRACTICE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE GENERAL DETAILS SHOWN ON THE DRAWINGS ARE CONCEPTUAL ONLY AND DO NOT INDICATE THE REQUIRED NUMBER OF BOLTS OR WELD SIZES, UNLESS SPECIFICALLY NOTED. THE CONTRACTOR SHALL SUBMIT ENGINEERING CALCULATIONS AND CONNECTION DETAIL DRAWINGS FOR EACH CONNECTION TYPE. MEMBER SIZE, AND REACTION INDICATED ON THE DRAWINGS FOR REVIEW BY THE ARCHITECT PRIOR TO THE SUBMITTAL OF THE STRUCTURAL STEEL SHOP DRAWINGS. AFTER REVIEW BY THE ARCHITECT, THESE DETAIL DRAWINGS SHALL BE UTILIZED AS THE STANDARD FOR FABRICATION AND SHOP DRAWING DETAILING. THE DESIGN CALCULATIONS SHALL BE PREPARED AND SEALED BY A QUALIFIED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW YORK.

2. ALL CONNECTIONS, UNLESS NOTED OTHERWISE, SHALL BE SIMPLE SHEAR CONNECTIONS UTILIZING "SHORT-SLOTTED" HOLES AND HIGH-STRENGTH BOLTS IN BEARING-TYPE CONNECTIONS WITH THREADS EXCLUDED FROM THE SHEAR PLANE. THE CONNECTION CAPACITIES SHALL BE AS SHOWN IN NOTE C5 BELOW, OR AS NOTED ON THE STRUCTURAL FRAMING PLANS.

3. BEAM-TO-COLUMN CONNECTIONS SHALL BE MOMENT CONNECTED WHERE SHOWN ON THE DRAWINGS. THE WEB SHEAR CONNECTION FOR THESE MEMBERS SHALL UTILIZE SINGLE SHEAR PLATE SLIP-CRITICAL TYPE CONNECTIONS WITH HIGH-STRENGTH BOLTS WITH THREADS EXCLUDED FROM THE SHEAR PLANE FOR THE CAPACITIES SHOWN IN NOTE C5 BELOW.

4. ALL BOLTS SHALL BE FULLY TORQUED FOR BOTH SLIP CRITICAL AND BEARING TYPE CONNECTIONS.

5. MINIMUM SERVICE END REACTIONS (ASD) FOR STANDARD ROLLED SHAPES:

W36 160 kips W16 40 kips C18 35 kips
W33 135 kips W14 30 kips C15 30 kips
W30 115 kips W12 20 kips C12 10 kips
W27 85 kips W10 15 kips C10 10 kips
W24 75 kips W8 10 kips C9,C8 6 kips
W21 60 kips W6 10 kips C7,C6 6 kips
W18 50 kips W5 10 kips

ANY MEMBERS WITH END REACTIONS EXCEEDING THE VALUES LISTED ABOVE ARE INDICATED ON THE PLANS, EITHER WITH BOXED END REACTIONS OR IN TABULAR FORM.

6. THE MINIMUM NUMBER OF BOLTS PER CONNECTION SHALL BE TWO (2) 3/4 INCH DIAMETER, A325 BOLTS.

7. MINIMUM FILLET WELD SIZES SHALL COMPLY WITH THE AISC SPECIFICATION REQUIREMENTS, BUT SHALL NOT BE LESS THAN 1/4 INCH, UNLESS NOTED OTHERWISE.

D. DETAILING AND FABRICATION

1. THE CONTRACTOR SHALL SUBMIT DETAILED, ENGINEERED, COORDINATED AND CHECKED SHOP DRAWINGS FOR ALL STRUCTURAL STEEL TO THE ARCHITECT FOR REVIEW PRIOR TO THE START OF FABRICATION AND/OR ERECTION.

2. ALL BEAMS SHALL BE FABRICATED WITH THE NATURAL CAMBER UP. PROVIDE ADDITIONAL CAMBERS AS INDICED IN BRACKETS -<XX> ON THE STRUCTURAL DRAWINGS. FOR CANTILEVERS, CAMBER SHALL BE MEASURED AT THE FREE END.

3. ALL SIMPLE SHEAR CONNECTIONS SHALL BE CAPABLE OF END ROTATION AS PER THE REQUIREMENTS OF AISC SPECIFICATION, CHAPTER J1.2, "SIMPLE CONNECTIONS."

4. ALL BEAMS FRAMING INTO NEW CONCRETE WALLS SHALL BE DETAILED TO SUIT THE HORIZONTAL FIELD TOLERANCES

E. ERECTION

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONTROL OF ALL ERECTION PROCEDURES AND SEQUENCES, ESPECIALLY WITH RELATION TO TEMPERATURE DIFFERENTIALS, ERECTION TOLERANCES, AND WITH RESPECT TO STRUCTURAL STEEL FRAMING INTO REINFORCED CONCRETE WALLS.

2. SURVEY THE TOPS OF ALL COLUMNS AT EACH LEVEL. RECORD X, Y & Z - COORDINATES MEASURED CONSISTANTLY FROM AN ESTABLISHED BENCHMARK. PROVIDE A COPY OF THE SURVEY DATA TO THE ARCHITECT AND STRUCTURAL ENGINEER WITHIN TWO DAYS OF THE COMPLETION OF EACH SURVEY.

3. ALL ERECTION PROCEDURES, DESIGNS AND CALCULATIONS SHALL BE PERFORMED BY THE CONTRACTOR'S QUALIFIED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW YORK. ANY REVIEW OF SUCH CALCULATIONS AND/OR DRAWINGS BY THE ARCHITECT WILL BE SOLELY LIMITED TO ANY EFFECTS ON THE INTEGRITY OF THE PERMANENT PRIMARY STRUCTURE.

4. ALL ADDITIONAL STEEL REQUIRED BY THE CONTRACTOR FOR ERECTION PURPOSES AND SITE ACCESS OF STOCKPILED MATERIALS SHALL BE PROVIDED AT NO COST TO THE OWNER. ALL SUCH ADDITIONAL STEEL SHALL BE REMOVED BY THE CONTRACTOR UNLESS APPROVED BY THE OWNER IN WRITING.

5. THE CONTRACTOR SHALL SUBMIT A METHODS STATEMENT FOR ALL STRUCTURAL STEEL/METAL DECK ERECTION PROGRAMS.

F. NON-SELF-SUPPORTING STEEL FRAMES

THE STEEL STRUCTURE (COMPRISED OF GRAVITY COLUMNS, FLOOR BEAMS, FLOOR BRACING, BRACED FRAMES AND MOMENT FRAMES) IS A NON SELF-SUPPORTING FRAME. THE FLOOR DIAPHRAGM (METAL DECK AND HARDENED CONCRETE SLAB TOPPING) AND R/C CONCRETE WALLS ARE REQUIRED TO PROVIDE STABILITY AND STRENGTH TO RESIST THE LOADS FOR WHICH THE FRAME IS DESIGNED. THE CONTRACTOR SHALL PROVIDE AND INSTALL TEMPORARY SUPPORT AS NECESSARY UNTIL THE COMPLETE STRUCTURE IS ERECTED.

G. TESTING AND INSPECTION

TESTING AND INSPECTION OF BOTH SHOP AND FIELD STRUCTURAL STEEL FABRICATION AND ERECTION WORK, INCLUDING WELDED AND BOLTED CONNECTIONS, SHALL BE AS FOLLOWS:

1. ALL STRUCTURAL STEEL FABRICATION AND ERECTION SHALL BE VISUALLY INSPECTED.

2. ALL WELDERS SHALL BE AWS CERTIFIED.

3. ALL WELDS SHALL BE AWS/AISC PREQUALIFIED.

4. ALL WELDS SHALL BE VISUALLY INSPECTED PER AWS D1.1. WELD MEASUREMENTS SHALL BE PERFORMED FOR 15% OF ALL WELDS ON A RANDOM BASIS.

5. MAGNETIC PARTICLE TESTING IN ACCORDANCE WITH ASTM E709 SHALL BE PERFORMED FOR A MINIMUM OF:

A. 10% OF ALL FILLET WELDS CHOSEN AT RANDOM, FINAL PHASE ONLY.

B. 100% OF TENSION MEMBER CONNECTION WELDS (I.E., HANGER CONNECTION PLATES, ETC.) FOR ROOT AND FINAL PASSES.

6. ULTRASONIC TESTING IN ACCORDANCE WITH AWS D1.1 SHALL BE PERFORMED FOR A MINIMUM OF:

A. 100% OF ALL FULL PENETRATION WELDS.

B. 20% OF ALL COLUMN SPICE WELDS, CHOSEN AT RANDOM.

7. ULTRASONIC TESTING AND VISUAL INSPECTION IN ACCORDANCE WITH ASTM A435 SHALL BE UTILIZED TO VERIFY BASE MATERIALS FOR LAMINATIONS, INCLUSIONS, AND OTHER DISCONTINUITIES AS FOLLOWS:

A. ALL STRUCTURAL STEEL PLATES GREATER THAN 1 1/2" THICK USED FOR THE CAISSON CORE STEEL, FOR THE CAISSON CAP TRANSFER GIRDERS, AND FOR THE DIAGONAL JOINT ASSEMBLIES w/ THE BEAMS IN THE CONTINUOUS CAISSON CAPS PRIOR TO FABRICATION.

B. ALL COLUMN FLANGES AND WEBS WITHIN STRUCTURAL SHAPE GROUPS 4 AND 5 AS DEFINED BY AISC LOCATED AT MOMENT CONNECTIONS. TEST AREA IS DEFINED AS 6" ABOVE AND BELOW BEAM FLANGE CONNECTION.

C. ALL GUSSET PLATES USED IN X-BRACED FRAMES GREATER THAN 1 1/2" THICK.

D. ALL COLUMN FLANGES IN COLUMNS WITH GUSSET PLATES ATTACHED TO BOTH FLANGES. TEST AREA IS DEFINED AS 6" AT 2'-0" INTERVALS.

8. ALL BOLTED CONNECTIONS SHALL BE VISUALLY INSPECTED AND TESTED WITH A CALIBRATED TORQUE WRENCH TO VERIFY A MINIMUM OF 25% OF BOLTS IN EACH CONNECTION (2 BOLTS PER CONNECTION MINIMUM).

9. THE REQUIRED CONTACT SURFACE CONDITIONS OF ALL SHEAR CONNECTIONS SHALL BE VISUALLY INSPECTED IMMEDIATELY PRIOR TO BEAM ERECTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL REMEDIAL WORK REQUIRED TO CONTACT SURFACES.

10. THE OWNER'S STRUCTURAL STEEL TESTING SHALL PERFORM ALL FIELD INSPECTION AND TESTING AS OUTLINED ABOVE, AND MONITOR THE CONTRACTOR'S INSPECTION AND TESTING OUTLINED ABOVE FOR ALL SHOP WORK. IF THE CONTRACTOR'S QUALITY CONTROL PROGRAM IS NOT AISC CERTIFIED, THE CONTRACTOR SHALL ENGAGE AN APPROVED STRUCTURAL STEEL TESTING LABORATORY, ACCEPTABLE TO THE OWNER, WHO SHALL PERFORM ALL SHOP TESTING AND INSPECTION.

11. THE STRUCTURAL STEEL FABRICATOR AND ERECTOR SHALL SCHEDULE ALL WORK TO ALLOW THE ABOVE INSPECTION AND TESTING REQUIREMENTS TO BE COMPLETED.

STRUCTURAL STEEL PAINTING

1. ALL STRUCTURAL STEEL SHALL BE CLEANED AND PAINTED AS REQUIRED BY THE TECHNICAL SPECIFICATIONS.

2. ALL STRUCTURAL STEEL TO RECEIVE SPRAYED-ON FIREPROOFING AND/OR TO BE ENCASED IN CONCRETE DOES NOT REQUIRE PAINTING UNLESS NOTED OTHERWISE.

3. THE FOLLOWING STRUCTURAL STEEL ELEMENTS REQUIRE CLEANING AND PAINTING SYSTEMS:

A. ELEVATOR SEPARATOR BEAMS: CLEANED, PRIMED

B. NON-FIREPROOFED, INTERIOR STRUCTURAL STEEL: CLEANED, PRIMED; FIELD PAINTED (1 COAT)

STRUCTURAL METAL DECK NOTES

1. ALL METAL DECK SHALL BE FABRICATED FROM STEEL TYPE ASTM A446, GRADE A, HAVING A MINIMUM YIELD STRENGTH OF 40,000 PSI. ALL FLOOR DECKING SHALL BE HOT-DIPPED GALVANIZED, OR PHOSPHATIZED AND PAINTED. ALL DECKING AT ROOF LEVELS, PARKING/VEHICULAR LEVELS, LOADING DOCK/FREIGHT AREAS, AND SIDEWALK AREAS SHALL BE HOT-DIPPED GALVANIZED. ALL INSULATED METAL ROOF DECKING SHALL BE FORMED WITH TELESCOPED ENDS TO ALLOW ENDS OF SHEETS TO BE LAPPED A MINIMUM OF 2 INCHES.

2. ALL METAL DECK SHALL BE DESIGNED FOR THE SPAN AND LOADING CONDITIONS SHOWN ON THE STRUCTURAL DRAWINGS AND IN THE METAL DECK SCHEDULE. NONCELLULAR METAL DECK SHALL BE PROVIDED IN ALL AREAS, UNLESS NOTED OTHERWISE.

3. METAL DECK SECTION PROPERTIES SHALL BE COMPUTED IN ACCORDANCE WITH THE AISI "SPECIFICATION FOR THE DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS", LATEST EDITION, UNLESS NOTED OTHERWISE.

4. THE MINIMUM GAGE OF ALL METAL DECK SHALL BE 18 GAGE WHEN THE CONCRETE TOPPING SLAB THICKNESS IS LESS THAN OR EQUAL TO 4 1/2" AND 16 GAGE WHEN CONCRETE TOPPING SLAB THICKNESS IS GREATER THAN 4 1/2".

5. THE METAL DECK CONTRACTOR SHALL SUBMIT, TO THE ARCHITECT FOR REVIEW, STRUCTURAL ENGINEERING CALCULATIONS, PREPARED AND SEALED BY A QUALIFIED PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NEW YORK, PROVIDE PUBLISHED MANUFACTURERS' DATA, AND INDEPENDENTLY CERTIFIED LOAD TEST DATA, VERIFYING THAT THE METAL DECK AND RELATED DECK ACCESSORIES SATISFY THE SPECIFIED LOADING AND DEFLECTION REQUIREMENTS FOR THE SPANS INDICATED ON THE DRAWINGS.

6. THE CONTRACTOR SHALL PROVIDE DETAILED, COORDINATED AND CHECKED SHOP DRAWINGS INDICATING LOCATION, GAGE AND SIZE OF EACH PIECE OF DECKING AND RELATED ACCESSORIES. THE DRAWINGS SHALL CLEARLY SHOW WELDING DETAILS TO STRUCTURAL FRAMING ELEMENTS, SIDE LAP CONNECTION DETAILS, DECK OPENING/EDGE CLOSURES, AND WHERE REQUIRED, SUPPLEMENTARY DECK AND/OR CLOSURE REINFORCING.

7. ALL NON-CELLULAR COMPOSITE METAL DECK SHALL HAVE WIDE RIBS SUITABLE FOR SHEAR STUD PLACEMENT WHERE STUDS ARE REQUIRED. THE CONFIGURATION OF THE METAL DECK SHALL BE SUCH AS TO DEVELOP THE FULL HORIZONTAL SHEAR VALUE OF THE STUD FOR THE PARTICULAR METAL DECK-SLAB CONFIGURATION PER THE AISC SPECIFICATIONS, LATEST EDITION, AND AS REQUIRED BY NOTE 17C HEREIN.

8. ALL DECKING SHALL BE WELDED TO STRUCTURAL STEEL BY QUALIFIED WELDERS USING PRE-QUALIFIED PROCEDURES. THE TECHNICAL SPECIFICATIONS ESTABLISH A PROCEDURE FOR PRE-QUALIFICATION OF THE PLUG WELDING OF THE STEEL DECKING TO THE STRUCTURAL STEEL FOR THE PARTICULAR GAGES USED. PRIOR TO THE START OF ERECTION OF THE STEEL DECK, EACH WELDER SHALL BE QUALIFIED USING THIS PROCEDURE AS WITNESSED BY THE OWNER'S TESTING LABORATORY.

9. ALL METAL DECK SHALL BE WELDED AT 12 INCHES MAXIMUM ON CENTER TO THE SUPPORTING STEEL WITH A 3/4 INCH DIAMETER PLUG WELD. SIDE LAPS SHALL BE FASTENED AT 30 INCHES MAXIMUM ON CENTER.

10. THE METAL DECK SHALL BE DESIGNED TO BE UNSHORED AND CONTINUOUS OVER A MINIMUM OF THREE (3) SPANS IN THE DIRECTION INDICATED. METAL DECKING FOR SINGLE AND DOUBLE SPANS, IF REQUIRED, SHALL ALSO SATISFY THE SPECIFIED LOAD AND DEFLECTION REQUIREMENTS, NOTED HEREIN.

11. THE METAL DECK SHALL BE DESIGNED FOR AN ASSUMED SUITABLE CONSTRUCTION LIVE LOAD TAKING INTO CONSIDERATION THE PARTICULAR METHOD OF CONCRETE PLACEMENT TO BE USED ON THE PROJECT. SPAN AND LOAD CONDITIONS INDICATED BY THE SUPPORTING FRAMEWORK, OPENINGS, AND ACTUAL DECK PIECE SIZES UTILIZED. THE ASSUMED CONSTRUCTION LIVE LOAD SHALL NOT BE LESS THAN 20 PSF. THE CONTRACTOR SHALL NOT EXCEED THE ASSUMED CONSTRUCTION DESIGN LIVE LOAD WITHOUT FIRST TAKING ALL NECESSARY SAFETY PRECAUTIONS SUCH AS SHORING, ETC. ADDITIONALLY, FOLLOW ALL APPLICABLE CITY, LOCAL AND AISI REQUIREMENTS FOR TEMPORARY CONSTRUCTION LOADINGS, IF MORE STRINGENT.

12. COMPOSITE METAL DECK DESIGN CRITERIA: (CELLULAR AND NON-CELLULAR DECKS)

A. METAL DECK: (CONSTRUCTION LOADS ONLY)

1A. MAXIMUM DECK DEFLECTION FOR CONCRETE WET WEIGHT SHALL BE LESS THAN OR EQUAL TO L/240, BUT NOT TO EXCEED 1/2"; COMPUTED EITHER ON A SINGLE SPAN BASIS, OR ON LOADING ONLY ONE (1) SPAN FOR MULTIPLE SPAN CONDITIONS.

2A. MAXIMUM STRESS IN DECK FOR CONCRETE WET WEIGHT AND CONSTRUCTION LOADS SHALL BE LESS THAN OR EQUAL TO 0.6 Fy (Fy = YIELD STRESS) COMPUTED ON A SINGLE SPAN BASIS, OR ON LOADING TWO ADJACENT SPANS FOR MULTIPLE SPAN CONDITIONS.

3A. ALLOW FOR AN AVERAGE OF 5 PSF WET CONCRETE WEIGHT FOR CONCRETE LEVELING (AS PER SPECIFICATIONS) IN ADDITION TO THE SPECIFIED SLAB THICKNESS, FOR STRESS AND DEFLECTION CALCULATIONS.

4A. PROVIDE DECK SHORING, IF REQUIRED, TO MEET THE CONDITIONS OF ITEMS NO. 1, 2, AND 3 ABOVE.

5A. ALL FORM DECKS, FOR REINFORCED CONCRETE SLABS, SHALL BE DESIGNED FOR THE SAME CRITERIA STATED IN ITEMS NOS. 1, 2, 3, AND 4 ABOVE.

B. COMPOSITE METAL DECK SLAB: (FINAL DESIGN LOAD)

1B. THE DECK SHALL DEVELOP FULL COMPOSITE ACTION FOR IMPOSED LOADS AS SHOWN IN THE DECK SCHEDULE.

2B. MAXIMUM DEFLECTION UNDER SUPERIMPOSED LOAD SHALL BE LESS THAN OR EQUAL TO L/360.

3B. MAXIMUM STRESS IN DECK FOR TOTAL LOAD USING APPROPRIATE NON-COMPOSITE AND COMPOSITE PROPERTIES SHALL BE LESS THAN OR EQUAL TO 0.75 FY.

4B. MAXIMUM ALLOWABLE STRESS IN CONCRETE SHALL BE AS PER ACI 318, LATEST EDITION.

5B. THE COMPOSITE DECK SHALL BE DESIGNED ON THE BASIS OF OBTAINING A MINIMUM FACTOR OF SAFETY OF 2 FOR THE TOTAL SUPERIMPOSED LOAD ON A SINGLE SPAN BASIS. TEST RESULTS SHALL BE FURNISHED TO SUBSTANTIATE THE FACTOR OF SAFETY.

16. SHEAR STUDS:

A. ALL SHEAR STUD PLACEMENT DIAGRAM SHOWN REPRESENT IDEALIZED CONDITIONS, AND ACTUAL FRAMING CONFIGURATIONS MAY REQUIRE ADDITIONAL MODIFICATIONS AND INTERPRETATIONS.

B. THE CONTRACTOR SHALL SUBMIT CHECKED SHOP DRAWINGS INDICATING THE SHEAR STUD LAYOUT, INCLUDING SIZE, SPACING AND GROUPING, FOR EACH BEAM.

C. THE NUMBER OF STUDS PER BEAM AS SHOWN ON THE DRAWINGS INCLUDES REDUCTIONS BASED ON RIB WIDTH, NUMBER OF STUDS PER CELL, DECK RIB ORIENTATION, AND SLAB THICKNESS AS PER AISC SPECIFICATIONS FOR COMPOSITE CONSTRUCTION, LATEST EDITION. THE ASSUMED ALLOWABLE HORIZONTAL SHEAR DESIGN VALUE (ASD) FOR A NOMINAL 3/4"-DIA. x 6" LONG STUD IS 10.5 KIPS PER STUD FOR NON-CELLULAR DECK WITH LIGHTWEIGHT CONCRETE AND 12.5 KIPS PER STUD FOR NON-CELLULAR DECK WITH NORMAL WEIGHT CONCRETE. THE ASSUMED DECK NOMINAL RIB HEIGHT IS 3". AND THE ASSUMED AVERAGE CONCRETE RIB WIDTH IS 6". THE METAL DECK CONTRACTOR SHALL SUBMIT LOAD TEST DATA VERIFYING THE HORIZONTAL SHEAR CAPACITY OF SHEAR STUDS FOR DIFFERENT DECK TYPES AND CELL CONFIGURATIONS, AS DETAILED ON THE SHOP DRAWINGS. IF ANY OF THE ASSUMPTIONS LISTED ABOVE ARE VIOLATED, THE METAL DECK CONTRACTOR SHALL SUBMIT STRUCTURAL DESIGN CALCULATIONS, PREPARED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF NEW YORK, BASED ON THE DETAILED SHOP DRAWINGS. PROVIDE ALL EXTRA STUDS AS MAY BE REQUIRED TO ACHIEVE THE TOTAL HORIZONTAL SHEAR CAPACITY.

D. MAXIMUM SPACING OF STUDS SHALL BE 12" ON CENTER.

E. SHEAR STUDS SHALL BE EITHER WELDED DIRECTLY TO STRUCTURAL STEEL ELEMENTS AT LOCATIONS WITHOUT DECK OR WELDED TYPE THROUGH THE METAL DECK BY PREQUALIFIED METHODS. IF THROUGH DECK WELDING IS UNFEASIBLE, THE STUDS SHALL BE INSTALLED IN PRE-PUNCHED HOLES IN THE METAL DECK. THE CONTRACTOR SHALL ESTABLISH SPECIFIC WELDING REQUIREMENTS FOR EACH THICKNESS OF FRAMING ELEMENT AND/OR GAGE OF METAL DECK.

17. THE OWNER'S TESTING LABORATORY SHALL INSPECT AND TEST ALL METAL DECK AND SHEAR STUD INSTALLATION WORK. SEE TECHNICAL SPECIFICATION SECTION 05310, "STEEL DECK" FOR ADDITIONAL TESTING AND INSPECTION REQUIREMENTS.

18. CONDUIT SHALL NOT BE PLACED IN STRUCTURAL SLABS.

19. ALL ELEVATIONS ARE REFERENCED TO A LOCAL SITE DATUM, WHERE Z = 0'-0" = 44'-6" BOROUGH OF MANHATTAN DATUM (2.75' ABOVE NATIONAL GEODETIC SURVEY VERTICAL DATUM OF 1929; MEAN SEA LEVEL, SANDY HOOK, NEW JERSEY).

20. SEE SPECIFICATION SECTION 05310, "STEEL DECK", FOR ADDITIONAL REQUIREMENTS.



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Key Plan:



Seal & Signature

PRELIMINARY
NOT FOR CONSTRUCTION

6 20 JUN 2014 ISSUED FOR FOUNDATION BID
5 20 JUN 2014 ISSUED FOR FOUNDATION PERMIT
4 20 DEC 2013 ISSUED FOR FOUNDATION PERMIT
3 15 NOV 2013 ISSUED FOR 50% PROGRESS PRICING
2 12 JUL 2013 ISSUED FOR 90% DESIGN DEVELOPMENT
1 18 MAR 2012 ISSUED FOR RECONCILIATION

No. Date Description
Sheet Name

STRUCTURAL
STEEL AND
METAL DECK
NOTES

Project No.: 211157
Date: 20 JUN 2014
Scale: 1/2" = 1'-0"
File No.: S-005
B-SCAN Sheet No.:
S-005-00
Sheet No.:
S-005
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