HOTEL ALEXANDRA
1767 WASHINGTON STREET, BOSTON, MA

OWNER / DEVELOPER
ALEXANDRA PARTNERS, LLC
121 Charles Street South
Boston, MA 02116

ARCHITECTS
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p. 617 262 4354, f. 617 267 9667

COLLABORATING ARCHITECT
MONTE FRENCH DESIGN STUDIO
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Boston, MA 02118
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HISTORIC PRESERVATION CONSULTANT
BUILDING CONSERVATION ASSOCIATES
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SURVEY CONSULTANT
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LANDSCAPE ARCHITECTS
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CIVIL / TRAFFIC ENGINEER
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SILMAN
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p. 617 986 5110

MECHANICAL, ELECTRICAL, PLUMBING & FIRE PROTECTION ENGINEER
R.G. VANDERWEIL ENGINEERS, LLP
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Boston, MA 02210
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SELDC SET FILING 08.12.2019 cbt

SELDC DRAWING LIST	
Sheet Number	Sheet Name
0	COVER SHEET
00	DRAWING LIST
EX001	EXISTING SITE SURVEY
EX100	EXISTING BASEMENT FLOOR PLAN
EX101	EXISTING FIRST FLOOR PLAN
EX102	EXISTING SECOND FLOOR PLAN
EX103	EXISTING THIRD FLOOR PLAN
EX104	EXISTING FOURTH FLOOR PLAN
EX105	EXISTING FIFTH FLOOR PLAN
EX106	EXISTING ROOF FLOOR PLAN
EX201	EXISTING SOUTH ELEVATION
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EX210	EXISTING BUILDING SECTION LOOKING NORTH
EX211	EXISTING BUILDING SECTION LOOKING WEST
EX300	EXISTING EXTERIOR PHOTOS
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EX901	EXISTING INTERIOR PHOTOS
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A00	SYMBOLS LEGEND
A01	GENERAL NOTES
A02	GENERAL NOTES
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A04	PROPOSED STREETSCAPE PLAN
A05	PROPOSED STREETSCAPE PLAN - ENTRY ENLARGEMENT

SELDC DRAWING LIST	
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A100	LEVEL 0 FLOOR PLAN
A101	LEVEL 1 FLOOR PLAN
A102	LEVEL 2 FLOOR PLAN
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A201	PROPOSED SOUTH ELEVATION
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A204	PROPOSED WEST ELEVATION
A210	PROPOSED BUILDING SECTION LOOKING NORTH
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A220	PROPOSED ENLARGED SOUTH ELEVATION - BOTTOM
A221	PROPOSED ENLARGED SOUTH ELEVATION - TOP
A222	PROPOSED ENLARGED EAST ELEVATION - BOTTOM
A223	PROPOSED ENLARGED EAST ELEVATION - TOP
A224	PROPOSED ENLARGED NORTH ELEVATION - BOTTOM
A225	PROPOSED ENLARGED NORTH ELEVATION - TOP
A226	PROPOSED ENLARGED WEST ELEVATION - BOTTOM
A227	PROPOSED ENLARGED WEST ELEVATION - TOP
A300	PROPOSED EPS - TYPICAL TOWER CURTAIN WALL
A301	PROPOSED EPS - WEST ELEVATION
A302	PROPOSED EPS - LOWER CURTAIN WALL
A303	PROPOSED EPS - HOTEL ENTRY
A304	PROPOSED RESTAURANT ENTRY
A310	PROPOSED REPLACEMENT WINDOWS
A311	PROPOSED REPLACEMENT WINDOW SECTIONS AND DETAILS
A320	PROPOSED EXTERIOR MATERIALS AND COLOR SAMPLES
A330	RENDERING VIEW FROM SOUTHEAST
A331	RENDERING VIEW FROM NORTHEAST
A332	RENDERING VIEW FROM SOUTHWEST
A333	RENDERING OF SOUTH ELEVATION STREET VIEW
A334	RENDERING OF HOTEL AND RESTAURANT ENTRIES
A340	LIGHTING AND SIGNAGE DIAGRAM - SOUTH ELEVATION
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SELDC DRAWING LIST	
Sheet Number	Sheet Name
R100	RESTORATION - SOUTH ELEVATION
R101	RESTORATION - EAST ELEVATION
R102	RESTORATION - EAST ELEVATION
R103	RESTORATION - NORTH ELEVATION
R104	RESTORATION - WEST ELEVATION
R105	RESTORATION - RESTORED GABLE AND ROOF CRESTING
R106	RESTORATION - RESTORED STORE FRONTS
R107	RESTORATION - PHOTOGRAPHS

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HOTEL ALEXANDRA
DRAWING LIST

SCALE	PROJECT #	DATE ISSUED
	185061.00	08.12.2019

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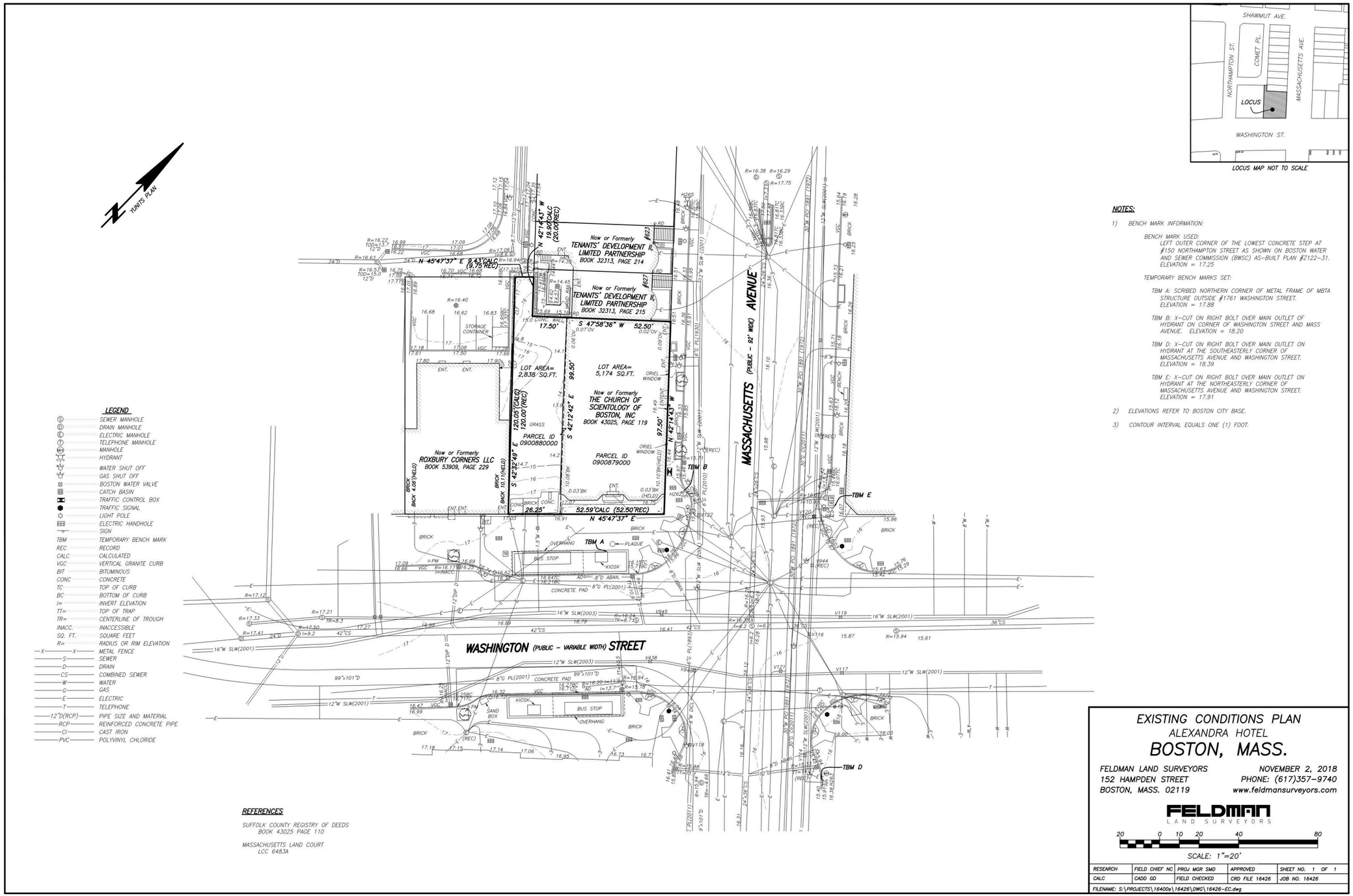

LOCUS MAP NOT TO SCALE

NOTES:

1) BENCH MARK INFORMATION:

BENCH MARK USED:
LEFT OUTER CORNER OF THE LOWEST CONCRETE STEP AT #150 NORTHAMPTON STREET AS SHOWN ON BOSTON WATER AND SEWER COMMISSION (BWSC) AS-BUILT PLAN #Z122-31. ELEVATION = 17.25

TEMPORARY BENCH MARKS SET:

TBM A: SCRIBED NORTHERN CORNER OF METAL FRAME OF MBTA STRUCTURE OUTSIDE #1761 WASHINGTON STREET. ELEVATION = 17.88

TBM B: X-CUT ON RIGHT BOLT OVER MAIN OUTLET OF HYDRANT ON CORNER OF WASHINGTON STREET AND MASS AVENUE. ELEVATION = 18.20

TBM D: X-CUT ON RIGHT BOLT OVER MAIN OUTLET ON HYDRANT AT THE SOUTHEASTERLY CORNER OF MASSACHUSETTS AVENUE AND WASHINGTON STREET. ELEVATION = 18.39

TBM E: X-CUT ON RIGHT BOLT OVER MAIN OUTLET ON HYDRANT AT THE NORTHEASTERLY CORNER OF MASSACHUSETTS AVENUE AND WASHINGTON STREET. ELEVATION = 17.91

2) ELEVATIONS REFER TO BOSTON CITY BASE.

3) CONTOUR INTERVAL EQUALS ONE (1) FOOT.

REFERENCES

SUFFOLK COUNTY REGISTRY OF DEEDS
BOOK 43025 PAGE 110

MASSACHUSETTS LAND COURT
LCC 6483A

EXISTING CONDITIONS PLAN
ALEXANDRA HOTEL
BOSTON, MASS.

FELDMAN LAND SURVEYORS
152 HAMPDEN STREET
BOSTON, MASS. 02119
NOVEMBER 2, 2018
PHONE: (617)357-9740
www.feldmansurveyors.com

FELDMAN LAND SURVEYORS

20 0 10 20 40 80

SCALE: 1"=20'

RESEARCH	FIELD CHIEF NC	PROJ MGR SMD	APPROVED	SHEET NO. 1 OF 1
CALC	CADD GD	FIELD CHECKED	CRD FILE 16426	JOB NO. 16426

FILENAME: S:\PROJECTS\16400s\16426\DWG\16426-EC.dwg

HOTEL ALEXANDRA
EXISTING SITE SURVEY

SCALE	PROJECT #	DATE ISSUED
1" = 50'-0"	185061.00	08.12.2019

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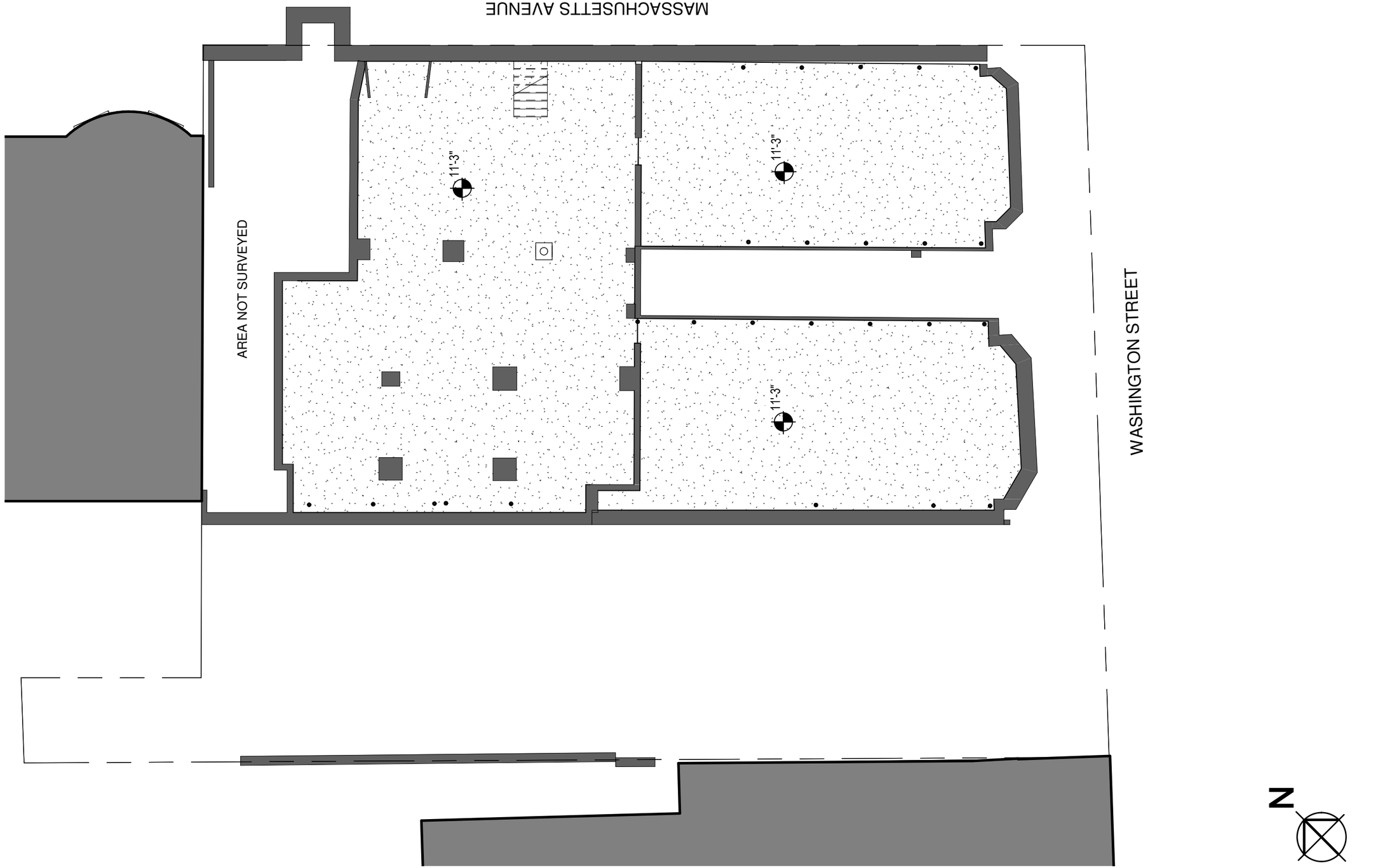
EX001



HOTEL ALEXANDRA
EXISTING BASEMENT FLOOR PLAN

0' 5' 10' 20'

SCALE	PROJECT #	DATE ISSUED
3/32" = 1'-0"	185061.00	08.12.2019

EX100

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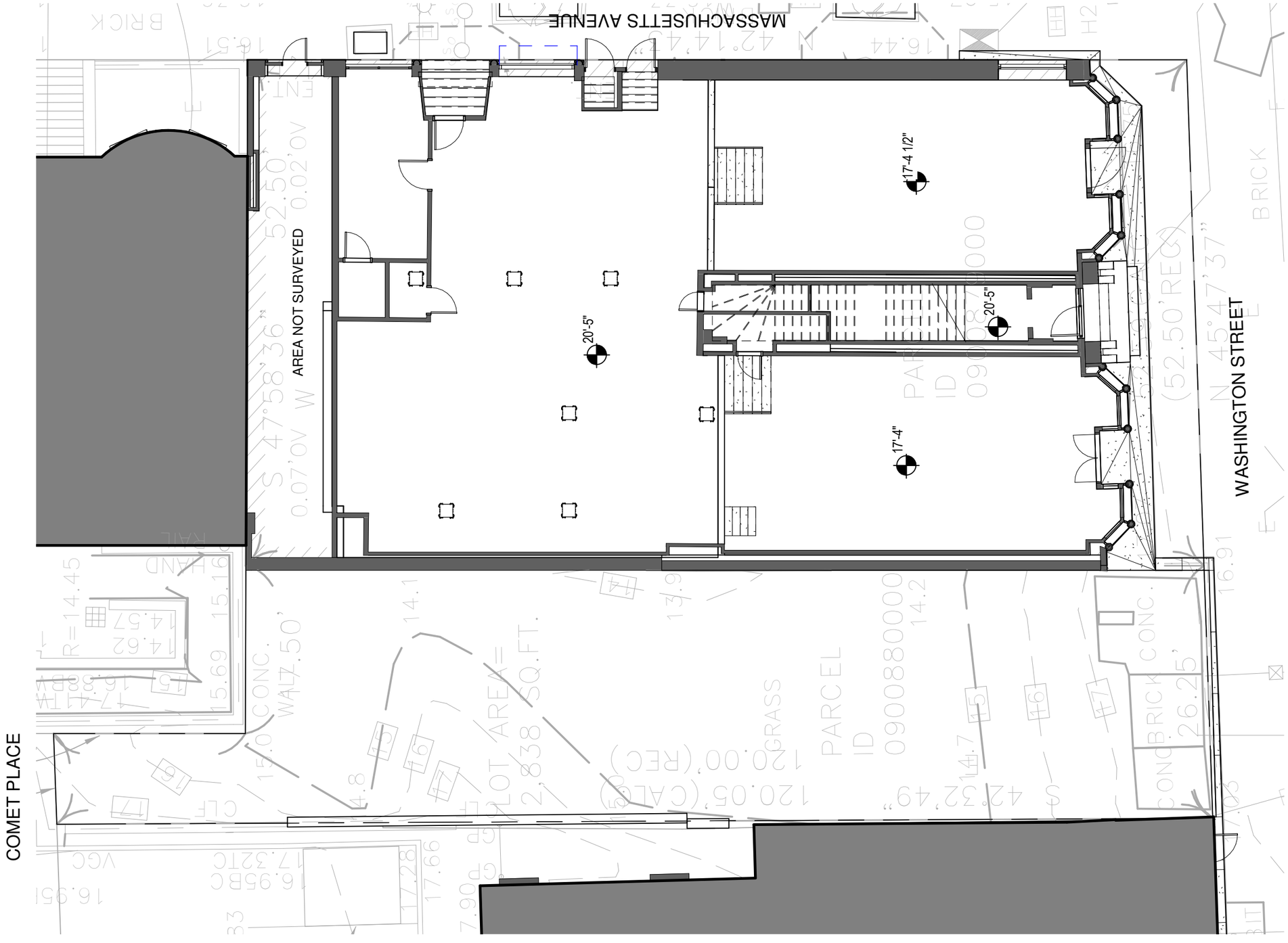

HOTEL ALEXANDRA
EXISTING FIRST FLOOR PLAN

0' 5' 10' 20'

SCALE	PROJECT #	DATE ISSUED
3/32" = 1'-0"	185061.00	08.12.2019

EX101

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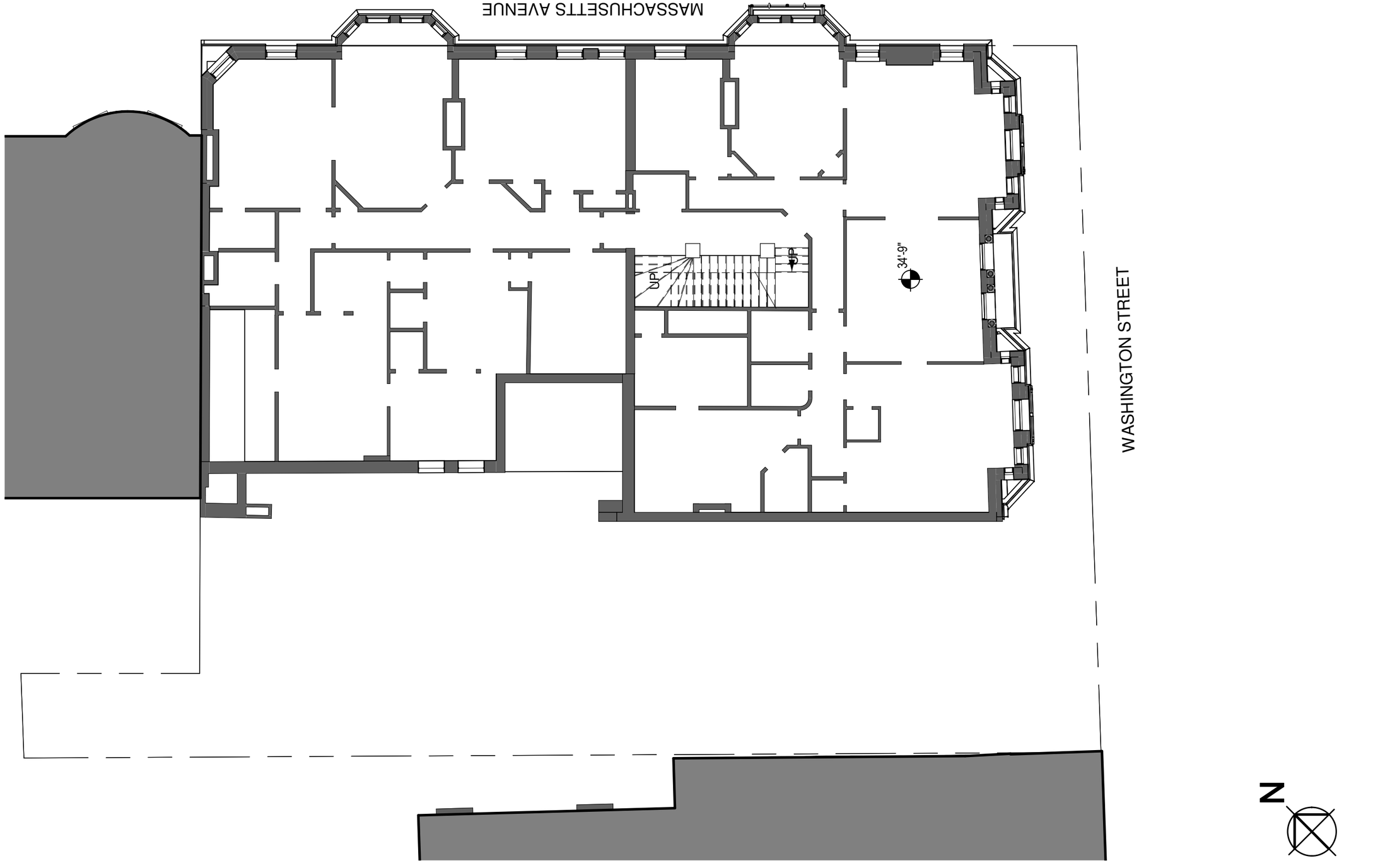

HOTEL ALEXANDRA
EXISTING SECOND FLOOR PLAN

SCALE	PROJECT #	DATE ISSUED
3/32" = 1'-0"	185061.00	08.12.2019

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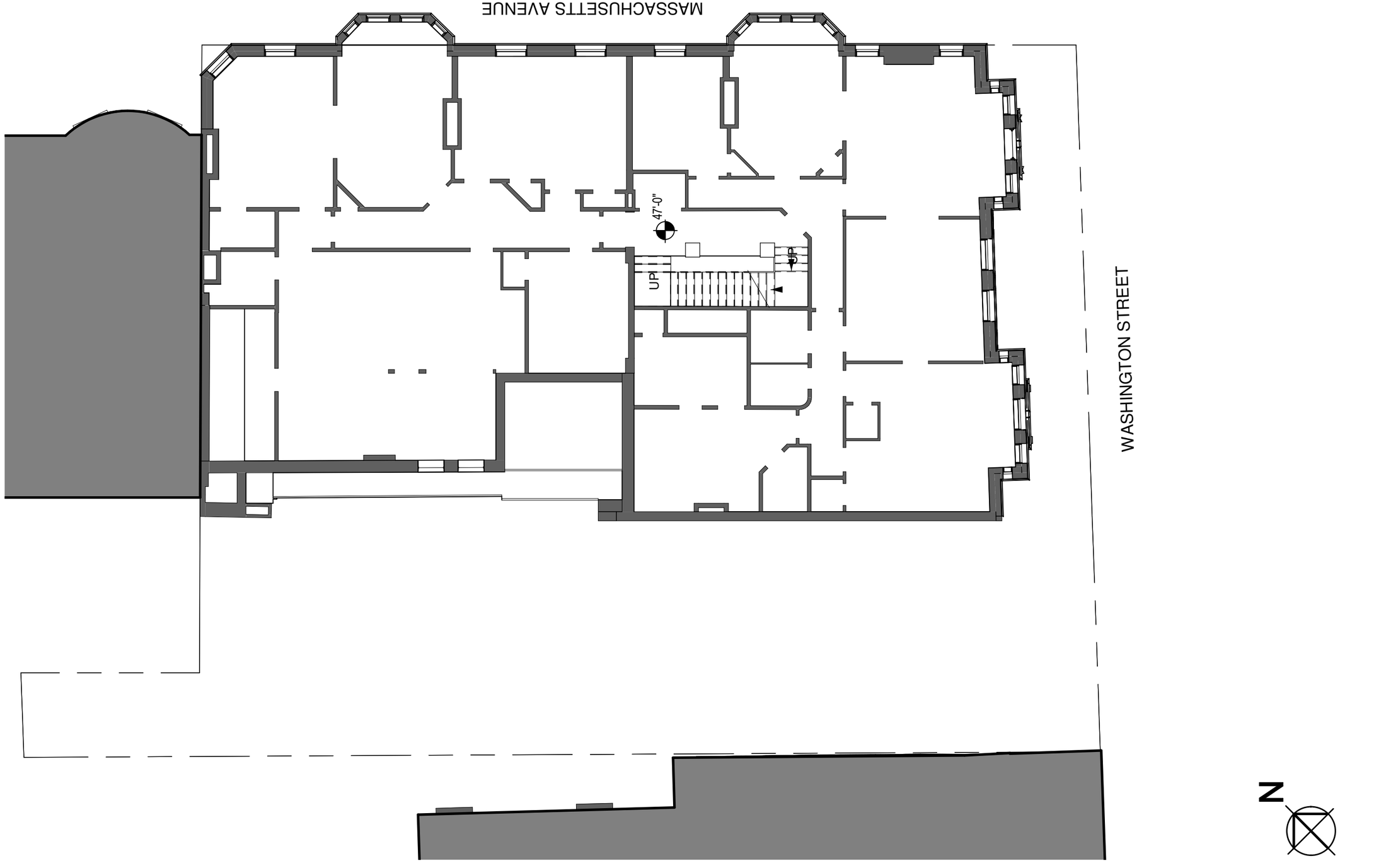
EX102



HOTEL ALEXANDRA
EXISTING THIRD FLOOR PLAN

0' 5' 10' 20'

SCALE	PROJECT #	DATE ISSUED
3/32" = 1'-0"	185061.00	08.12.2019

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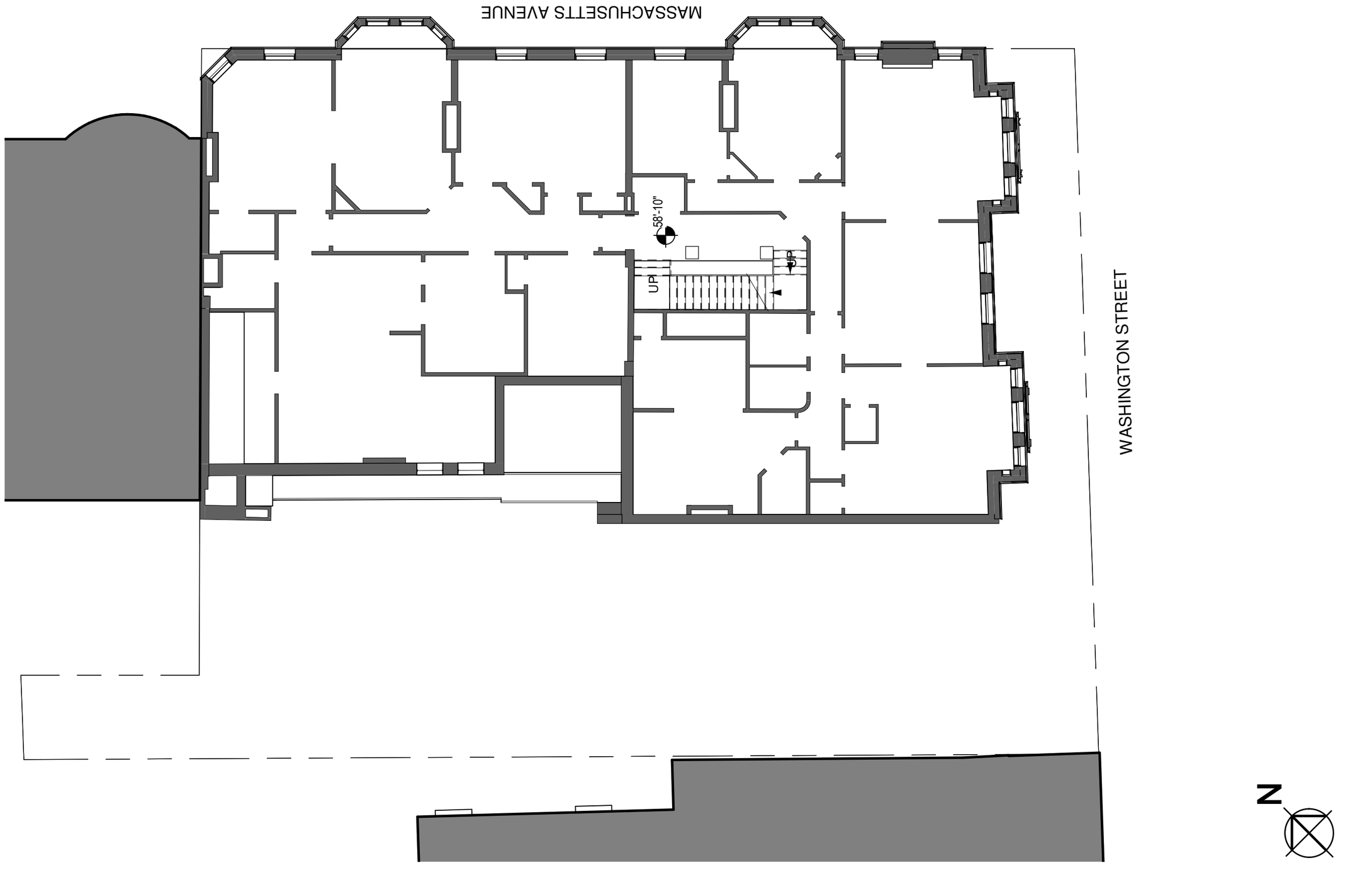

HOTEL ALEXANDRA
EXISTING FOURTH FLOOR PLAN

0' 5' 10' 20'

SCALE	PROJECT #	DATE ISSUED
3/32" = 1'-0"	185061.00	08.12.2019

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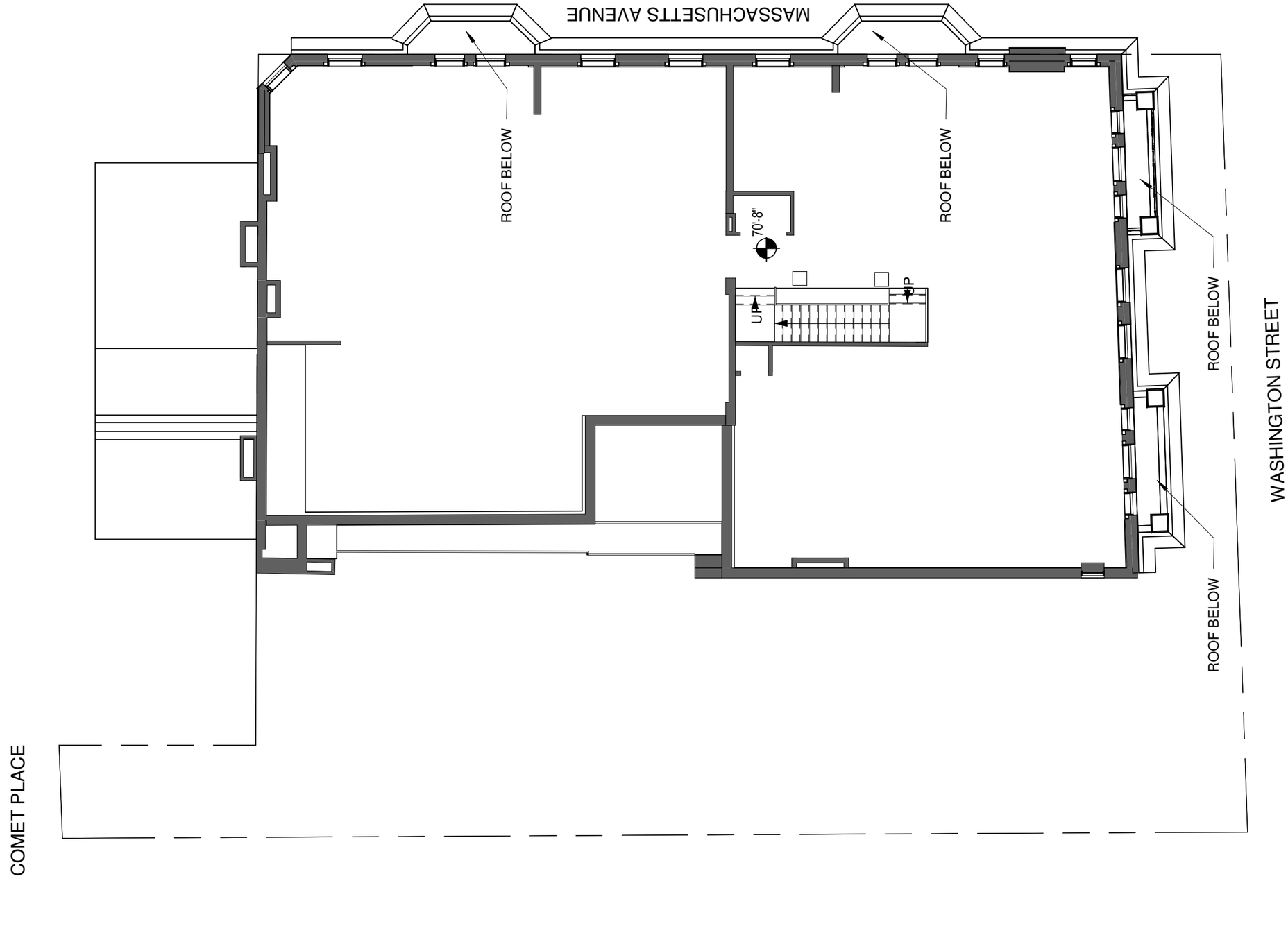
EX104



HOTEL ALEXANDRA
EXISTING FIFTH FLOOR PLAN

0' 5' 10' 20'

SCALE	PROJECT #	DATE ISSUED
3/32" = 1'-0"	185061.00	08.12.2019

EX105

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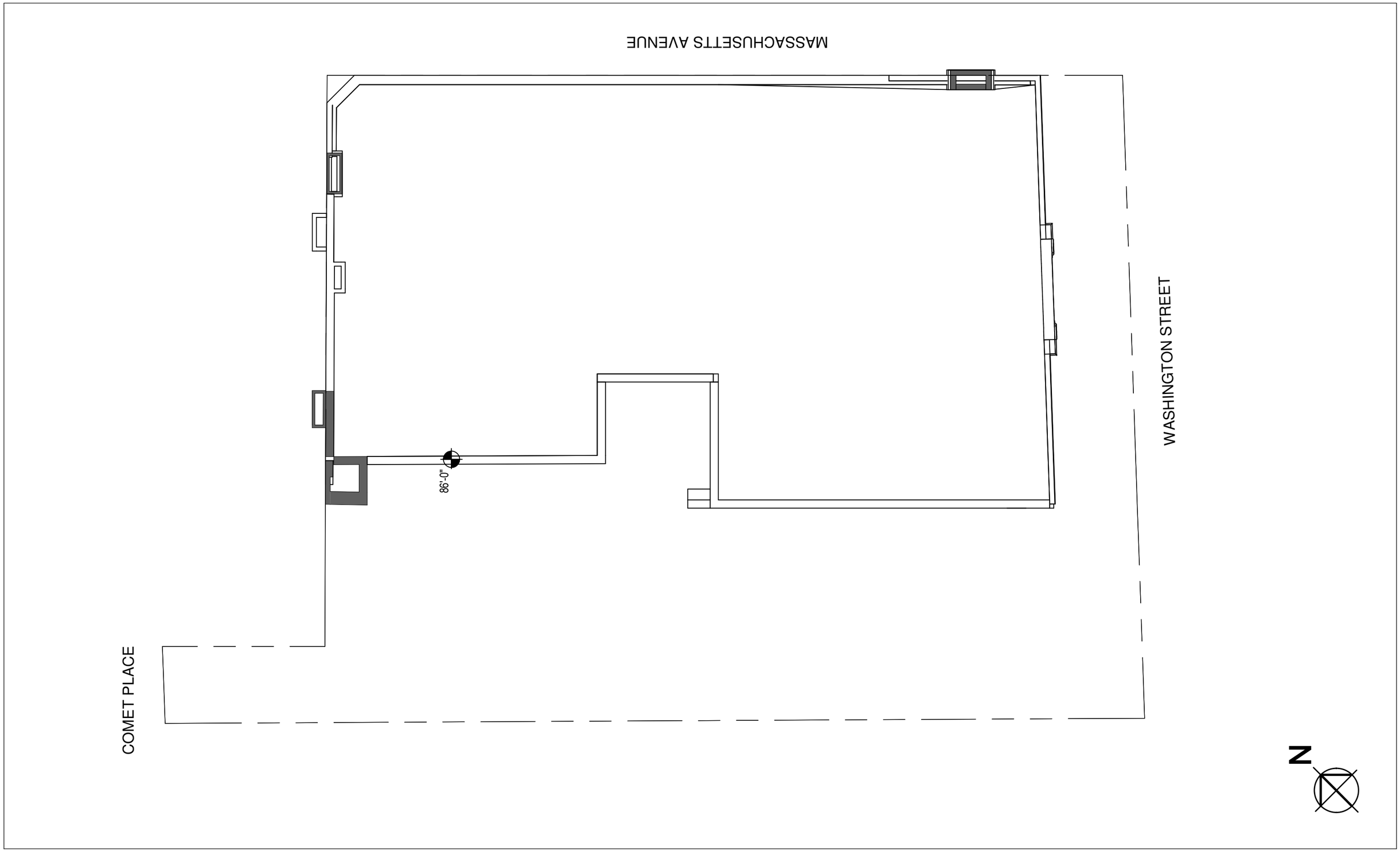

HOTEL ALEXANDRA
EXISTING ROOF FLOOR PLAN

0' 5' 10' 20'

SCALE	PROJECT #	DATE ISSUED
3/32" = 1'-0"	185061.00	08.12.2019

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EX106

HOTEL ALEXANDRA
EXISTING SOUTH ELEVATION

SCALE	PROJECT #	DATE ISSUED
1" = 10'-0"	185061.00	08.12.2019

EX201

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HOTEL ALEXANDRA
EXISTING EAST ELEVATION

SCALE	PROJECT #	DATE ISSUED
1" = 10'-0"	185061.00	08.12.2019

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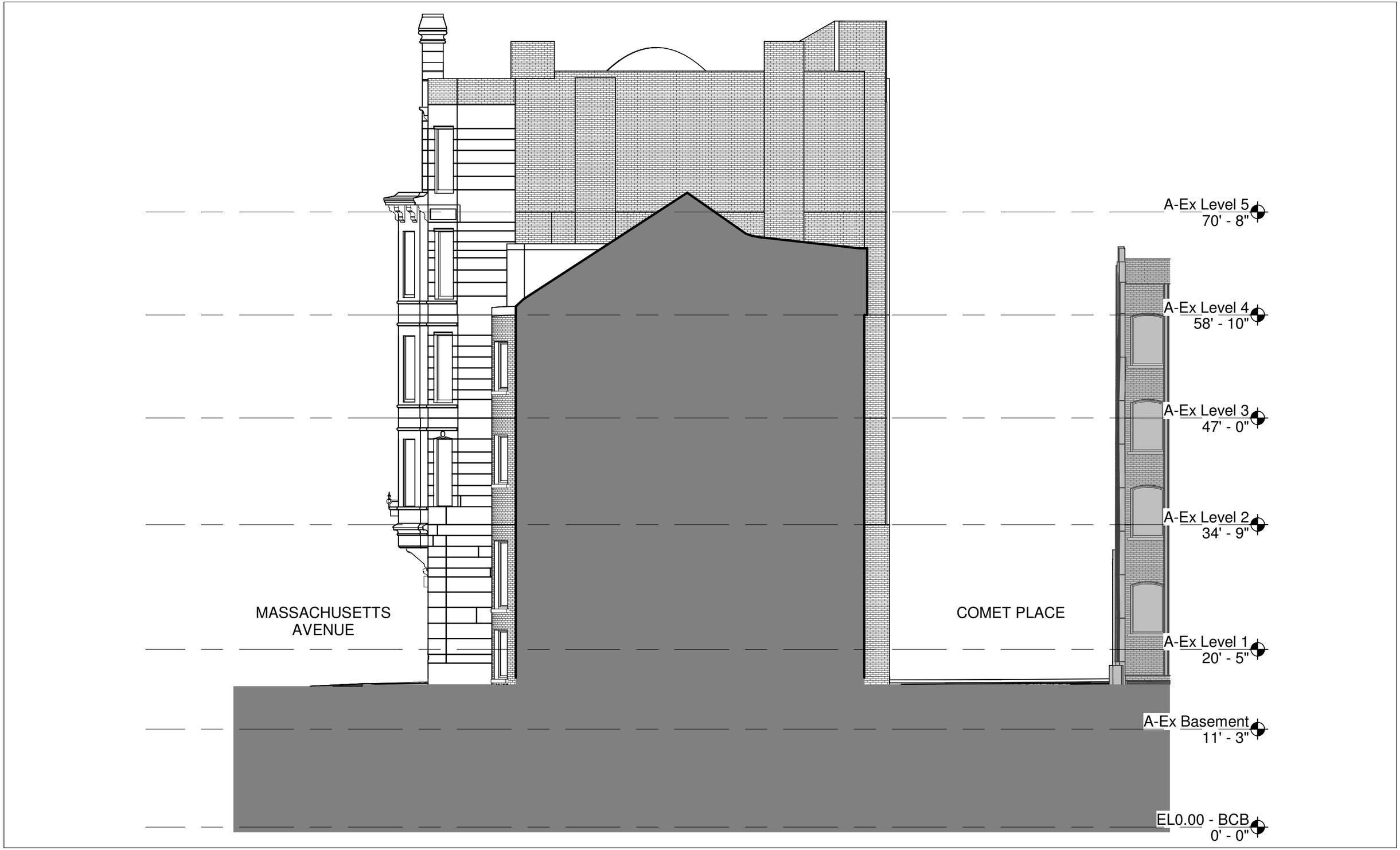
EX202



HOTEL ALEXANDRA
EXISTING NORTH ELEVATION

SCALE	PROJECT #	DATE ISSUED
1" = 10'-0"	185061.00	08.12.2019

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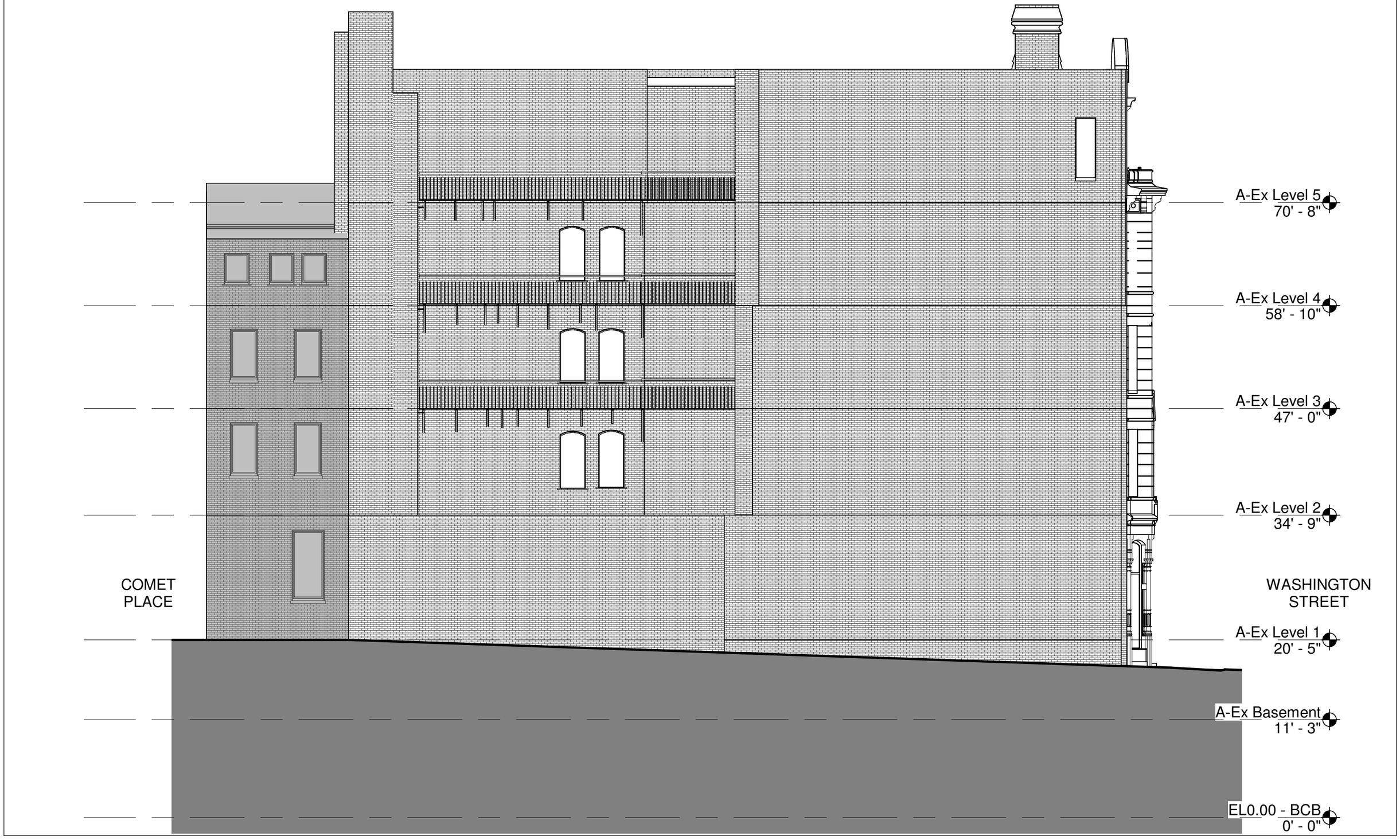
EX203



HOTEL ALEXANDRA
EXISTING WEST ELEVATION

SCALE	PROJECT #	DATE ISSUED
1" = 10'-0"	185061.00	08.12.2019

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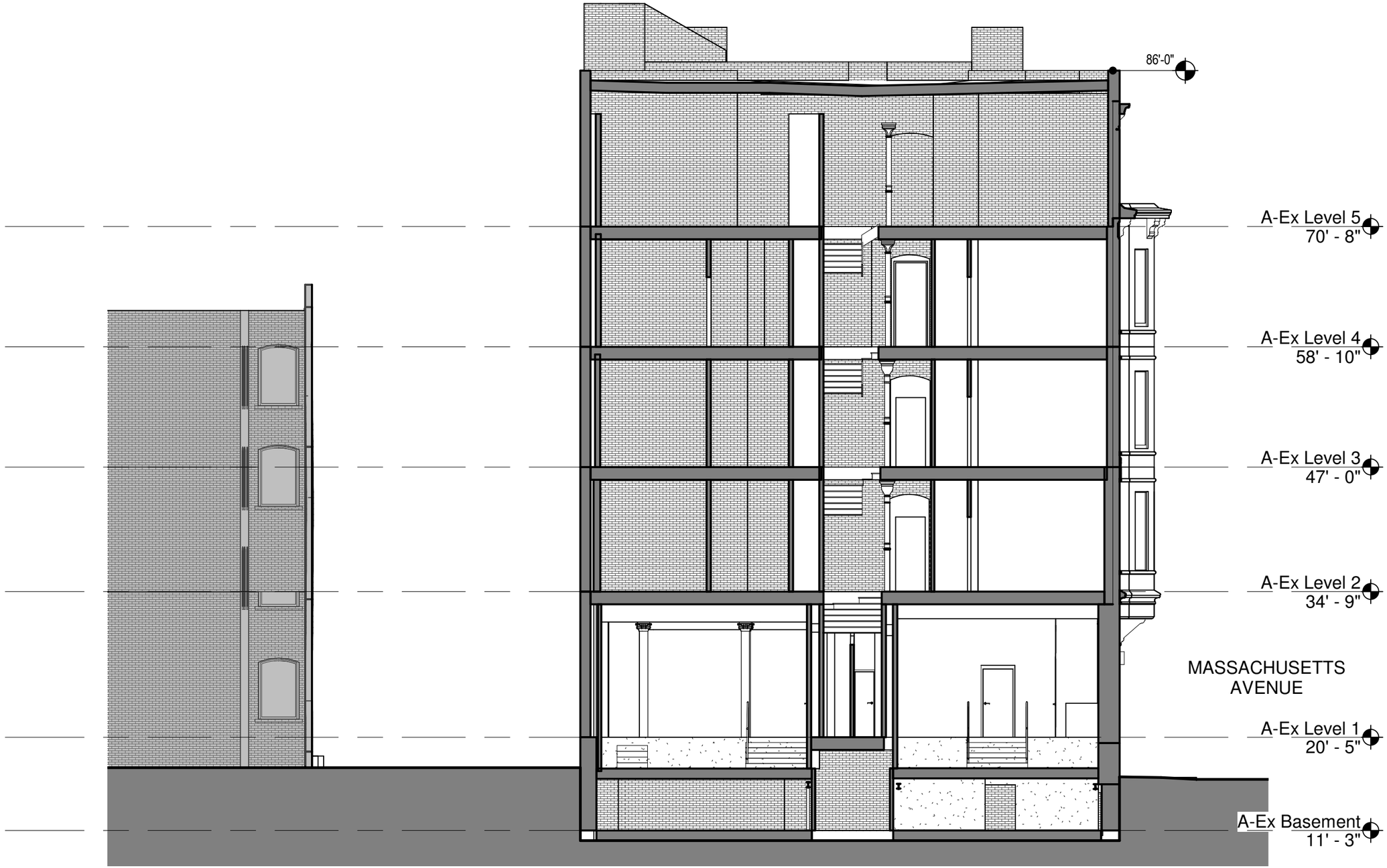
EX204



HOTEL ALEXANDRA
EXISTING BUILDING SECTION LOOKING NORTH

SCALE	PROJECT #	DATE ISSUED
1" = 10'-0"	185061.00	08.12.2019

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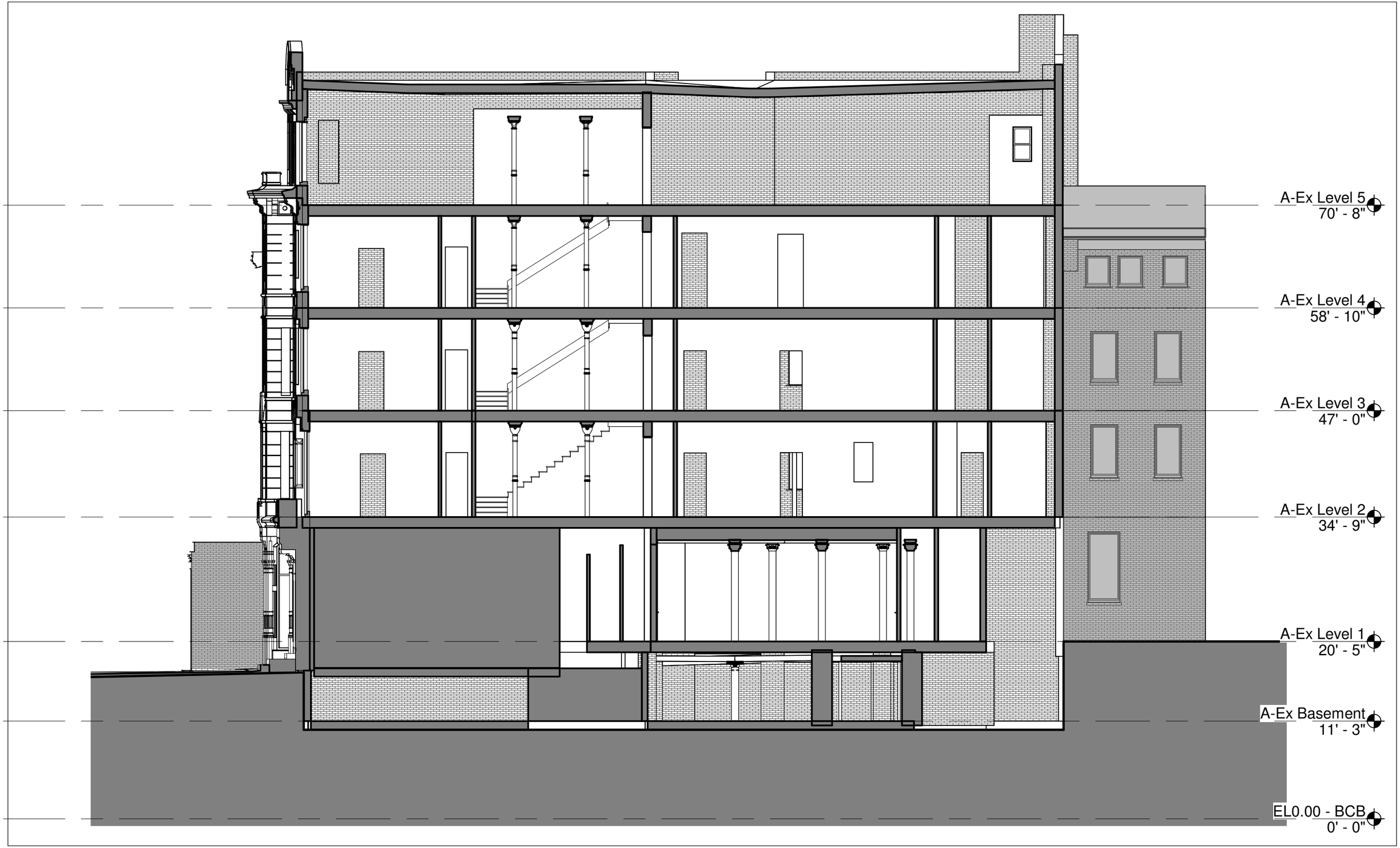
EX210



HOTEL ALEXANDRA
EXISTING BUILDING SECTION LOOKING WEST

SCALE	PROJECT #	DATE ISSUED
1" = 10'-0"	185061.00	08.12.2019

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EX211

SOUTH ELEVATION

VIEW OF SOUTHEAST CORNER

WEST ELEVATION FROM WASHINGTON STREET

VIEW OF NORTHEAST CORNER

EAST ELEVATION

HOTEL ENTRY STEPS AT SOUTH ELEVATION

CAST IRON STAIRS WITH PRISM LIGHTS

HOTEL ALEXANDRA
EXISTING EXTERIOR PHOTOS

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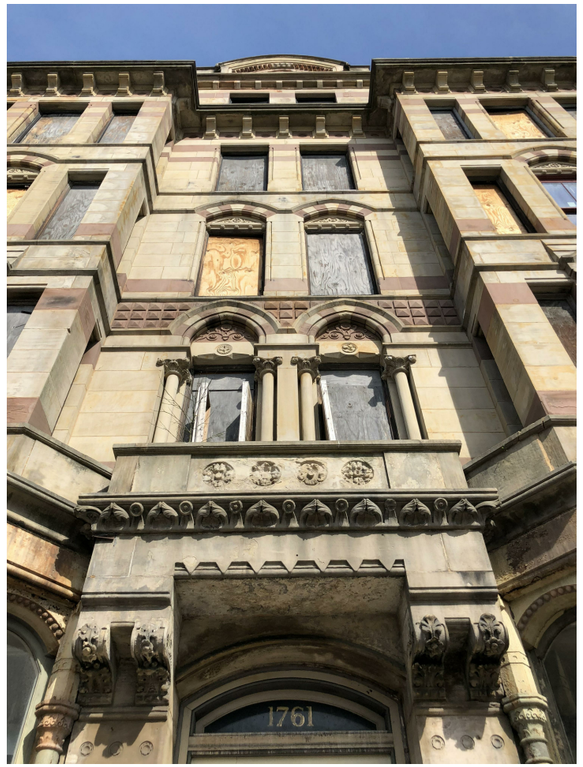
CAST IRON STOREFRONT AT SOUTH ELEVATION

BOTTOM OF CAST IRON STOREFRONT

VIEW OF WEST BAY AT SOUTH ELEVATION



VIEW OF CENTER BAY AT SOUTH ELEVATION

DETAIL AT TOP OF CAST IRON STOREFRONT

DETAIL OF STONE ABOVE ORIGINAL HOTEL ENTRANCE

CLOSE UP OF GABLE AND CORNICE AT SOUTH ELEVATION

HOTEL ALEXANDRA
EXISTING EXTERIOR PHOTOS

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EX301

EAST ELEVATION LOOKING UP AT CHIMNEY AND SOUTH ORIEL

TOP OF NORTH ORIEL AT EAST ELEVATION

STOREFRONT AND OPENINGS AT EAST ELEVATION

NON-ORIGINAL DOOR AND INFILL AT EAST ELEVATION

CHIMNEY AND SOUTH ORIEL CORNICE AT EAST ELEVATION

GRANITE BASE AND INFILLED BASEMENT WINDOWS AT EAST ELEVATION

DETAIL AT STOREFRONT

CLOSE-UP OF CAST IRON STAIR

HOTEL ALEXANDRA
EXISTING EXTERIOR PHOTOS

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	185061.00	08.12.2019

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EX302

TOP OF NORTH ELEVATION

BOTTOM OF NORTH ELEVATION

WEST ELEVATION FROM COMET PLACE

WEST ELEVATION FROM WASHINGTON STREET

HOTEL ALEXANDRA
EXISTING EXTERIOR PHOTOS

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	185061.00	08.12.2019

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EX303

CAST IRON COLUMN CAPITAL

CAST IRON COLUMN CAPITAL

GROUND FLOOR RETAIL SPACE

MARBLE ENTRY STAIRS

STONE TILE AT LEVEL 2

VIEW OF INTERIOR CORRIDOR

FIREPLACE

HOTEL ALEXANDRA
EXISTING INTERIOR PHOTOS

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	185061.00	08.12.2019

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FIRE DAMAGE AT FLOOR FRAMING

SUPPLEMENTAL BRACING AT EXTERIOR WALL

WATER DAMAGE AT CEILING

ORIGINAL DOOR

EXTERIOR AND INTERIOR WINDOWS

FRAMING AT ORIEL

NON-ORIGINAL ROOF FRAMING AND SUPPORT

HOTEL ALEXANDRA
EXISTING INTERIOR PHOTOS

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DEMOLITION & SALVAGE GENERAL NOTES

DEMOLITION NOTES

1. THERE SHALL BE A PRE-DEMOLITION CONFERENCE PRIOR TO PROCEEDING WITH THE DEMOLITION WORK ATTENDED BY REPRESENTATIVES OF THE OWNER, THE ARCHITECT, THE CONTRACTOR AND SUBCONTRACTORS, INCLUDING HAZARDOUS MATERIAL ABATEMENT SUBCONTRACTOR PARTICIPATING IN DEMOLITION ACTIVITIES.
2. REFER TO DEMOLITION SPECIFICATIONS FOR RESPONSIBILITIES AND REQUIRED SAFETY MEASURES.
3. REFER TO THE DRAWINGS AND GENERAL SALVAGE KEY NOTES FOR SALVAGED ITEMS TO BE SAVED, RE-USED, OR RETURNED TO THE OWNER.
4. IT IS ASSUMED THAT THE CONTRACTOR HAS INSPECTED THE SITE PRIOR TO BIDDING AND FAMILIARIZED HIM/HERSELF WITH THE NATURE OF DEMOLITION REQUIRED BY THIS CONTRACT AND THE CONDITIONS AND ENVIRONMENT UNDER WHICH DEMOLITION IS TO BE ACCOMPLISHED.
5. DEMOLITION DRAWINGS HAVE BEEN COMPILED FROM AVAILABLE INFORMATION AND ARE NOT INTENDED TO LIMIT THE SCOPE OF THE WORK. DEMOLITION KEY NOTES ARE INTENDED TO ASSIST THE CONTRACTOR IN UNDERSTANDING THE GENERAL TYPES OF MATERIALS TO BE REMOVED AND ARE NOT INTENDED TO LIMIT THE REMOVAL OF MISCELLANEOUS, SECONDARY, OR ACCESSORY MATERIALS.
6. ALL DRAWINGS AND SPECIFICATIONS, INCLUDING BUT NOT LIMITED TO THE ARCHITECTURAL, STRUCTURAL, PLUMBING/FIRE PROTECTION, HEATING-VENTILATING-AIR CONDITIONING, AND ELECTRICAL DRAWINGS (INCLUSIVE OF DATA, COMMUNICATIONS AND AUDIO/VISUAL), ENCOMPASS FURTHER WORK REQUIRING DEMOLITION AND REMOVAL AND ARE HEREBY INCLUDED UNDER THIS CONTRACT.
7. THE CONTRACTOR MAY ELECT TO DO ADDITIONAL DEMOLITION BEYOND THAT SPECIFIED IN ORDER TO FACILITATE THE CONTRACTOR'S WORK TO ADVANTAGE (IN THE CONTRACTOR'S SOLE OPINION). EXCESS DEMOLITION MAY BE UNDERTAKEN ONLY UPON SPECIAL REQUEST AND IS SUBJECT TO THE REVIEW AND APPROVAL OF THE ARCHITECT AND THE OWNER. NO EXCESS DEMOLITION OF HISTORICALLY SIGNIFICANT PORTIONS OF THE PROJECT IS PERMITTED. FOR EXCESS DEMOLITION PERMITTED, THE CONTRACTOR SHALL RESTORE THE EXISTING CONSTRUCTION TO THE ACCEPTABLE EQUIVALENT OF RESTORED OR AS NEW WORK MATCHING THE HISTORICAL ORIGINAL DESIGN INTENT OR NEW DESIGN INTENT AS APPLICABLE.
8. THE CONTRACTOR MAY ENCOUNTER HIDDEN OR UNCOVERED CONDITIONS NOT SHOWN ON THESE DRAWINGS, REQUIRING ADDITIONAL WORK FOR THE COMPLETION OF THIS CONTRACT. UPON DISCOVERY OF THESE CONDITIONS NOTIFY THE OWNER IMMEDIATELY AND REFER TO THE PROVISION OF THE OWNER-CONTRACTOR AGREEMENT FOR THE APPROPRIATE PROCEDURES.
9. PROTECT ABUTTING AREAS AND PUBLIC RIGHT-OF-WAYS, MAINTAINING EGRESS ROUTES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES TO ABUTTING SPACES FROM THE CONTRACTOR'S CONSTRUCTION ACTIVITIES. PREVENT TRACKING OF DUST AND CONSTRUCTION REFUSE INTO SURROUNDING PUBLIC AREAS.
10. THE CONTRACTOR IS RESPONSIBLE FOR SHORING AND BRACING AND STRUCTURAL STABILITY OF EXISTING STRUCTURE DURING DEMOLITION AND CONSTRUCTION.
11. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR ABATEMENT OF HAZARDOUS MATERIALS, INCLUDING BUT NOT LIMITED TO ASBESTOS AND LEAD PAINT, ENCOUNTERED AND DISTURBED IN ACCORDANCE WITH THE SPECIFICATIONS AND ASSESSMENT OF HAZARDOUS MATERIALS. THE GENERAL CONTRACTOR SHALL SCHEDULE ABATEMENT ACTIVITIES IN A TIMELY MANNER SO AS TO MAINTAIN ACCEPTABLE SCHEDULE AND PROGRESS OF THE WORK. ALL ABATEMENT SHALL BE CARRIED OUT IN ACCORDANCE WITH APPLICABLE LOCAL, STATE, AND FEDERAL REGULATIONS AND REQUIREMENTS. REFER TO HAZARDOUS MATERIAL TEST REPORTS AND SPECIFICATION SECTIONS FOR HAZARDOUS MATERIALS MANAGEMENT, ASBESTOS ABATEMENT, AND LEAD-BASED PAINT ABATEMENT.
12. IT IS THE INTENT OF THIS CONTRACT TO REMOVE FROM THE PROJECT AND THE SITE, AND PROPERLY DISPOSE OF ALL ASBESTOS CONTAINING MATERIALS ENCOUNTERED, UNLESS ALLOWED TO REMAIN ENCAPSULATED, OR OTHERWISE INDICATED TO BE ENCAPSULATED.
13. THE CONTRACT ASSUMES THAT ALL OF THE EXISTING PAINTED SURFACES OF THE PROJECT CONTAIN LEAD BASED PAINT AND THE CONTRACTOR IS TO ASSUME THAT HANDLING OF LEAD BASED PAINT IS REQUIRED THROUGHOUT AS PART OF THE BASIC WORK OF THIS CONTRACT. IT IS NOT THE INTENT OF THIS CONTRACT TO ABATE THE ENTIRE PROJECT OF LEAD BASE PAINT. IT IS THE INTENT OF THIS PROJECT TO HANDLE, MANAGE, AND PROPERLY DISPOSE OF EXISTING LEAD BASED PAINT AND MATERIALS TO WHICH LEAD BASED PAINT IS ADHERED WHEREVER AND WHENEVER SAID MATERIALS ARE DISTURBED BY DEMOLITION, REMOVAL, OR SURFACE PREPARATION FOR NEW WORK. MANAGE AND ABATE LEAD PAINT IN ACCORDANCE WITH APPLICABLE REGULATIONS WHEREVER AND WHENEVER THE WORK ENCOUNTERS LOOSE OR FLAKING OR FALLEN LEAD PAINT, MATERIALS WITH LEAD PAINT TO BE DEMOLISHED, CUT, PENETRATED, SANDED, STRIPPED OR OTHERWISE PREPARED OR DISTURBED. MANAGE THE WORK ENVIRONMENT FOR HEALTH SAFETY IN THE PRESENCE OF ACTIVITIES DISTURBING LEAD PAINT SURFACES. SOUND, STABLE LEAD PAINT ON SOUND SUBSTRATES TO REMAIN UNDISTURBED MAY BE ENCAPSULATED BY NEW PAINT OR FINISHES.
14. THE CONTRACTOR SHALL PROVIDE UNDER THE WORK OF THIS CONTRACT ALL SELECTIVE AND ISOLATED DEMOLITION AND CUTTING OF MASONRY AND PLASTER OR FINISH MATERIALS TO REMAIN TO FACILITATE THE ROUTING AND INSTALLATION OF NEW INFRASTRUCTURE PIPING, WIRING, AND FIXTURES. SELECTIVE CUTTING SHALL BE MINIMIZED NEAT AND PROPERLY PREPARED TO SEAMLESSLY BLEND IN NEW WORK. THE CONTRACTOR SHALL PROVIDE UNDER THIS CONTRACT ALL NECESSARY CUTTING AND PATCHING REASONABLY INFERRED BY THE NEW INFRASTRUCTURE SYSTEMS SPECIFIED OR REQUIRED, INCLUDING CLOSING AGAIN WITH LIKE REPLACEMENT CONSTRUCTION ANY MAJOR PENETRATIONS ELECTED OR NECESSARY TO FACILITATE REMOVAL OF OLD, OR INSERTION OF NEW, EQUIPMENT.
15. WHERE CONCRETE MASONRY, OR STONE WORK IS REQUIRED TO BE CUT FOR OPENINGS, CUTTING SHALL BE DONE BY ABRASIVE WHEELS, SAWS OR CORING. NO JACKHAMMERS WILL BE ALLOWED AT THESE AREAS UNLESS APPROVED BY THE ARCHITECT AND STRUCTURAL ENGINEER (SAID APPROVALS SHALL NOT CONSTITUTE ENDORSEMENT OF THE MEANS AND METHODS; MEANS AND METHODS REMAIN THE SOLE RESPONSIBILITY OF THE CONTRACTOR). AT ENDS OF CUT MASONRY TO REMAIN, REPAIR AND NEATLY SQUARE ENDS WITH TOOTHED-IN MASONRY WORK TO ADDRESS ANY VOIDS OR DAMAGE.
16. WHERE EXISTING MATERIALS ARE TO BE CUT TO ALLOW FOR ABUTTING TO OR BLENDING WITH NEW MATERIALS, ALL CUTS ARE TO BE MADE IN A NEAT AND WORKMANLIKE MANNER.
17. UNLESS OTHERWISE INDICATED FOR SALVAGE, REMOVE AND LEGALLY DISPOSE OF ALL DEMOLITION MATERIALS INCLUDING BUT NOT LIMITED TO, DEBRIS, FIXED OR MOVEABLE EQUIPMENT, PLUMBING FIXTURES, LIGHT FIXTURES, DUCTS, CONDUITS, LOOSE FINISH MATERIALS, WALLS, CEILINGS, ROOFING, OR OTHER WASTE GENERATED BY OR RESULTING FROM CONSTRUCTION ACTIVITIES OF THIS PROJECT.
18. REFER TO DEMOLITION KEY NOTES FOR FURTHER INFORMATION. GENERAL SUMMARY OF DEMOLITION SCOPE INCLUDES, BUT IS NOT LIMITED TO:
    a. REMOVAL OF EXISTING SUPERSTRUCTURE EXCEPT FOR EXTERIOR BEARING WALLS AND FOOTING AS INDICATED.
    b. REMOVAL OF EXTERIOR BRICK MASONRY WALLS AS INDICATED.
    c. REMOVAL OF INTERIOR WALLS AND PARTITIONS.
    d. REMOVAL OF INTERIOR FLOORS, FLOOR FRAMING, AND FINISHES.
    e. REMOVAL OF EXISTING ROOF AND ROOF FRAMING.
    f. REMOVAL OF EXISTING PLYWOOD INFILL AT EXTERIOR OPENINGS INCLUDING NON-ORIGINAL DOORS AND FRAMES.

SALVAGE NOTES

1. THE CONTRACTOR SHALL SELECT AND IDENTIFY SPACES WITH THE OWNER WITHIN THE BUILDING, ON SITE, AND/OR OFF-SITE FOR PROTECTIVE STORAGE OF SALVAGE MATERIAL.
2. IN CASE THE OWNER ELECTS NOT TO KEEP THE SALVAGE ITEMS NOTED, SALVAGE STOCK, UPON COMPLETION OF THE PROJECT, IS THE CONTRACTOR'S PROPERTY AND CONTRACTOR'S RESPONSIBILITY FOR REMOVAL FROM THE SITE

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DEMOLITION KEYNOTES

D1 REMOVE EXTERIOR BRICK MASONRY WALLS INCLUDING FOOTINGS. COORDINATE WITH STRUCTURAL DRAWINGS FOR TEMPORARY BRACING PRIOR TO REMOVAL.
D2 REMOVE EXISTING METAL FIRE ESCAPES AND SUPPORTS.
D3 REMOVE EXISTING PLYWOOD INFILL AT EXTERIOR OPENINGS.
D4 REMOVE EXISTING MECHANICAL EQUIPMENT AND ALL ASSOCIATED PIPING AND WIRING IN THEIR ENTIRETY BACK TO THE STREET.
D5 REMOVE EXISTING HOLLOW-METAL DOORS AND FRAMES.
D6 REMOVE EXISTING DOUBLE-HUNG WINDOW.
D7 REMOVE EXISTING NON-HISTORIC GLASS AND ALUMINUM DOORS AND FRAMES.
D8 REMOVE EXISTING ROLL-UP SHUTTER.
D9 REMOVE EXISTING METAL-CLAD ORIEL WINDOWS AND FRAMING. PRIOR TO REMOVAL, CAREFULLY DOCUMENT EXISTING DIMENSIONS AND DETAILING FOR REPRODUCTION.
D10 REMOVE EXISTING SECURITY GRILLES AT STOREFRONT
D11 REMOVE EXISTING PLYWOOD PANELS AND WOOD TRIM BELOW STOREFRONT.
D12 REMOVE EXISTING NON-ORIGINAL BRICK PARAPET.
D13 REMOVE EXISTING ROOF INCLUDING MEMBRANE ROOFING, FLASHING, SUBSTRATE, ROOF FRAMING, AND STRUCTURE.
D14 REMOVE EXISTING WOOD FLOORS INCLUDING ALL FINISH FLOORING, SUBFLOORING, AND STRUCTURE.
D15 REMOVE EXISTING STRUCTURAL FRAMING INCLUDING ALL JOISTS, BEAMS, GIRDERS, COLUMNS, PIERS, AND FOOTINGS. COORDINATE WITH STRUCTURAL DRAWINGS FOR TEMPORARY BRACING PRIOR TO REMOVAL.
D16 REMOVE EXISTING INTERIOR BRICK WALLS.
D17 REMOVE EXISTING INTERIOR PARTITIONS.
D18 REMOVE EXISTING TEMPORARY STRUCTURAL FRAMING AND SUPPORTS.
D19 REMOVE EXISTING BOILER.
D20 REMOVE EXISTING STAIRS AND STAIR FRAMING.
D21 REMOVE EXISTING ELEVATOR EQUIPMENT AND RAILS.

SALVAGE KEYNOTES

S1 REMOVE AND SALVAGE EXISTING CAST-IRON COLUMNS. STORE FOR FUTURE REINSTALLATION.
S2 REMOVE AND SALVAGE EXISTING INTERIOR WINDOWS.
S3 REMOVE AND SALVAGE EXISTING INTACT STONE FLOORING.
S4 REMOVE AND SALVAGE EXISTING DECORATIVE VENTILATION REGISTERS.
S5 REMOVE AND SALVAGE EXISTING INTERIOR DOORS, FRAME, AND TRIM.
S6 REMOVE AND SALVAGE EXISTING EXTERIOR GRANITE STEPS. STORE FOR FUTURE REINSTALLATION.
S7 REMOVE AND SALVAGE HISTORIC CAST IRON RAIL. STORE FOR REPLICATION AND FUTURE REINSTALLATION. REFER TO RESTORATION DRAWINGS FOR FURTHER INFORMATION.
S8 REMOVE & SALVAGE DECORATIVE STONE TYMPANUM FOR REBUILDING/REPLICATION. REFER TO RESTORATION DRAWINGS FOR FURTHER INFORMATION.
S9 REMOVE & SALVAGE DECORATIVE STONE PANEL ABOVE DOOR FOR REPLICATION. REFER TO RESTORATION DRAWINGS FOR FURTHER INFORMATION.
S10 REMOVE AND SALVAGE DECORATIVE SHEET METAL SPANDREL. STORE FOR FUTURE REINSTALLATION. REFER TO RESTORATION DRAWINGS FOR FURTHER INFORMATION.

HOTEL ALEXANDRA
DEMOLITION & SALVAGE KEY NOTES

SCALE	PROJECT #	DATE ISSUED
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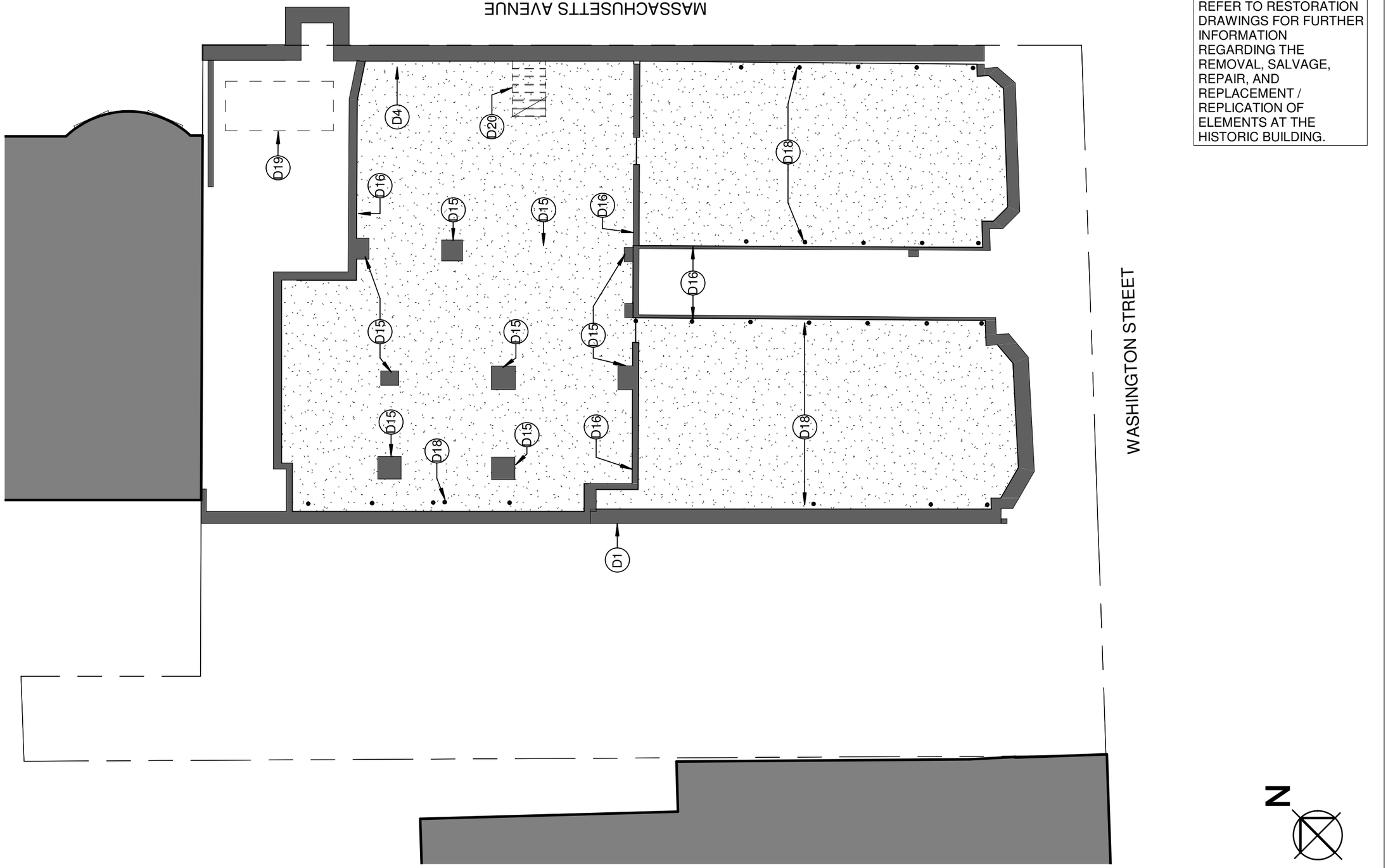
D02

NOTE:
REFER TO RESTORATION DRAWINGS FOR FURTHER INFORMATION REGARDING THE REMOVAL, SALVAGE, REPAIR, AND REPLACEMENT / REPLICATION OF ELEMENTS AT THE HISTORIC BUILDING.



HOTEL ALEXANDRA
DEMOLITION BASEMENT FLOOR PLAN

0' 5' 10' 20'

SCALE	PROJECT #	DATE ISSUED
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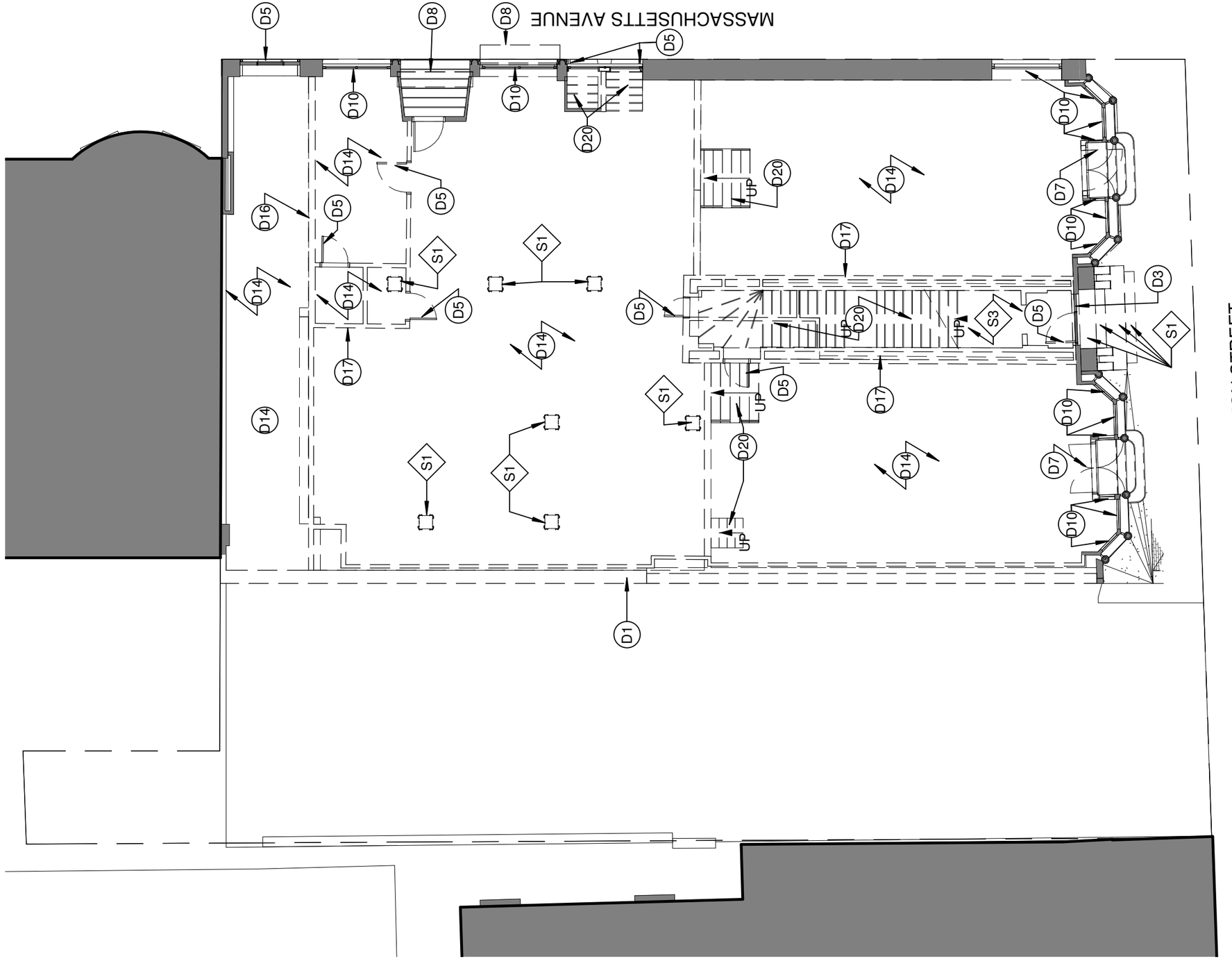

NOTE:
REFER TO RESTORATION DRAWINGS FOR FURTHER INFORMATION REGARDING THE REMOVAL, SALVAGE, REPAIR, AND REPLACEMENT / REPLICATION OF ELEMENTS AT THE HISTORIC BUILDING.

HOTEL ALEXANDRA
DEMOLITION FIRST FLOOR PLAN

0' 5' 10' 20'

SCALE	PROJECT #	DATE ISSUED
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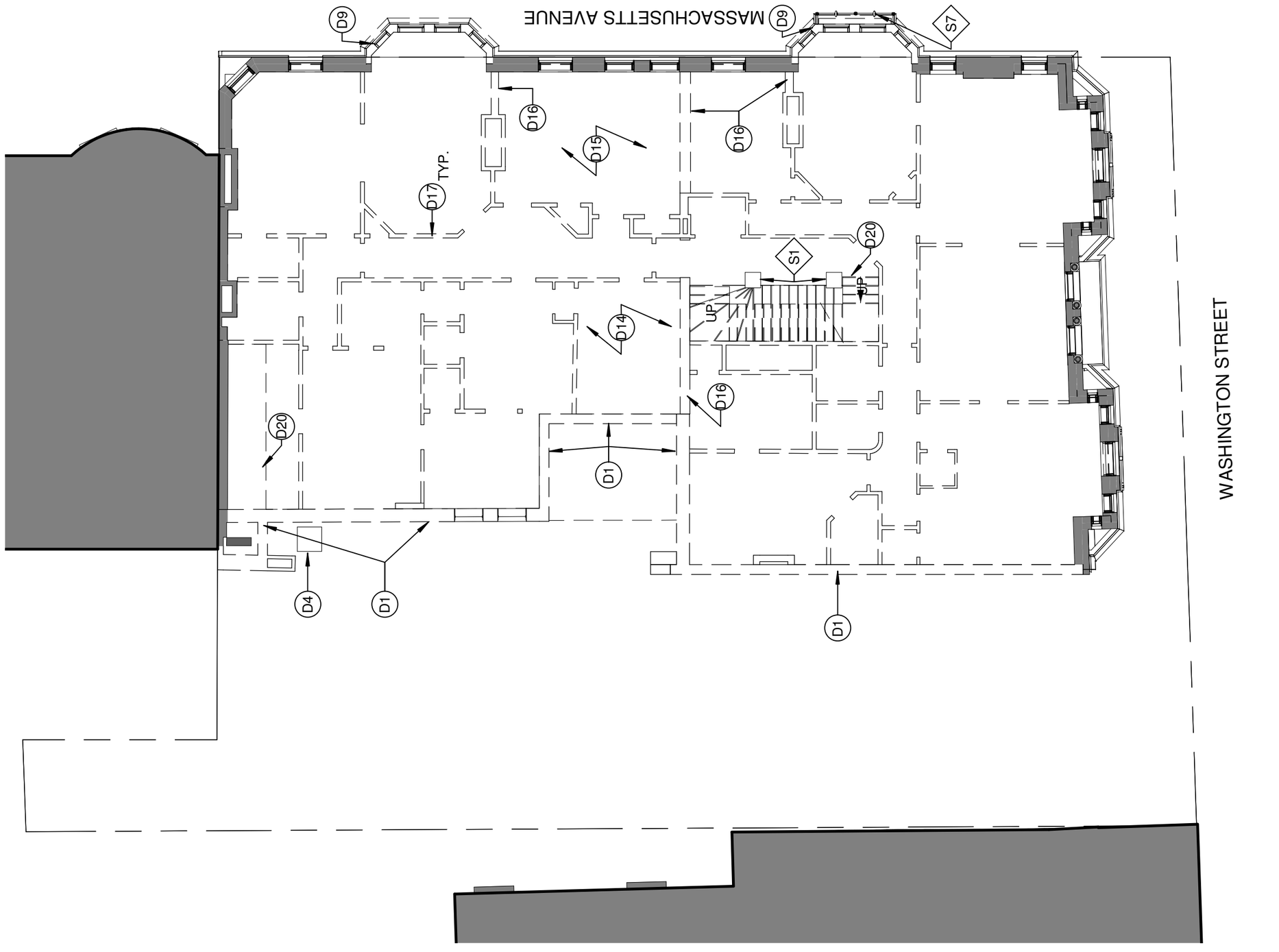

NOTE:
REFER TO RESTORATION DRAWINGS FOR FURTHER INFORMATION REGARDING THE REMOVAL, SALVAGE, REPAIR, AND REPLACEMENT / REPLICATION OF ELEMENTS AT THE HISTORIC BUILDING.

HOTEL ALEXANDRA
DEMOLITION SECOND FLOOR PLAN

0' 5' 10' 20'

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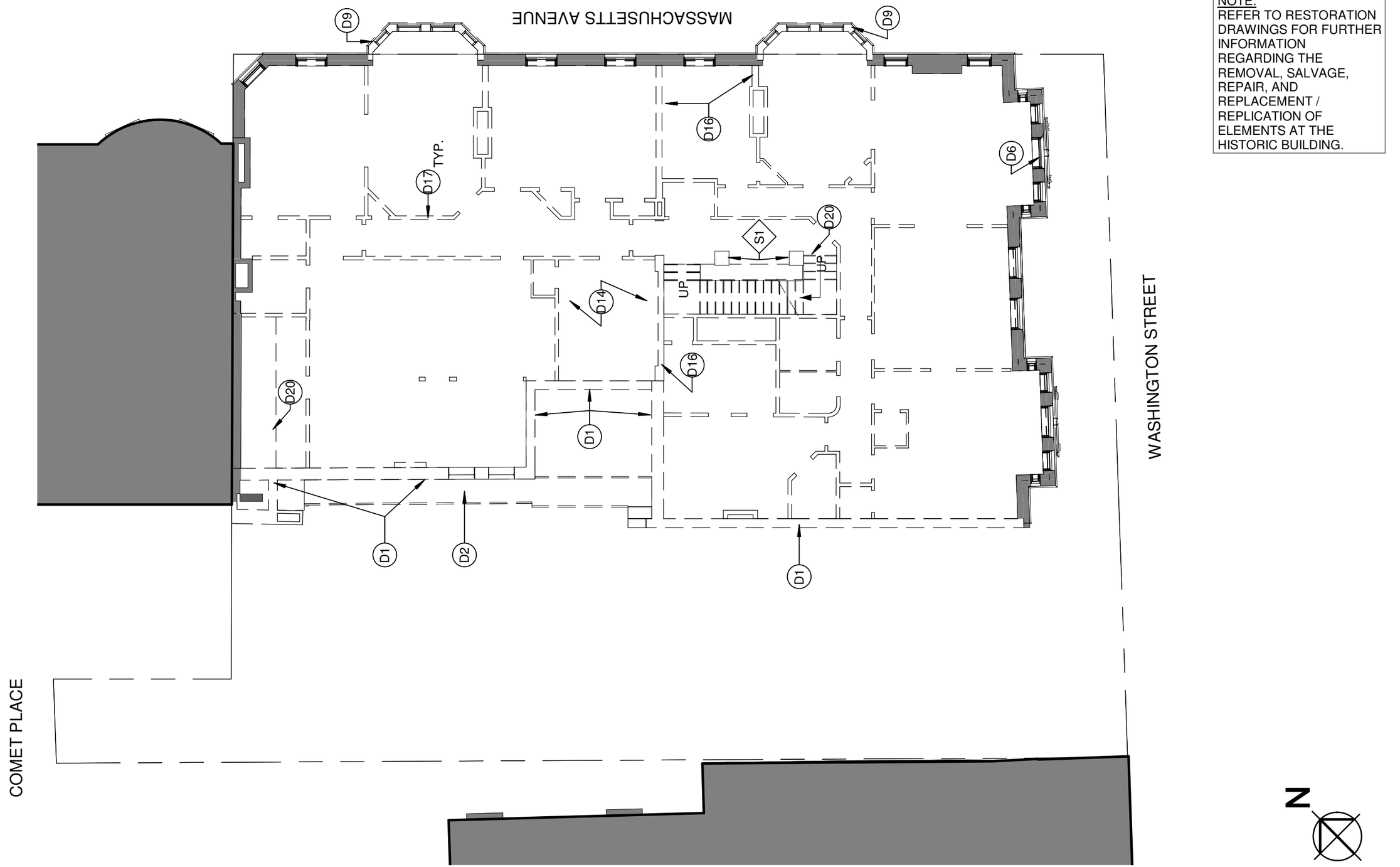

HOTEL ALEXANDRA
DEMOLITION THIRD FLOOR PLAN

0' 5' 10' 20'

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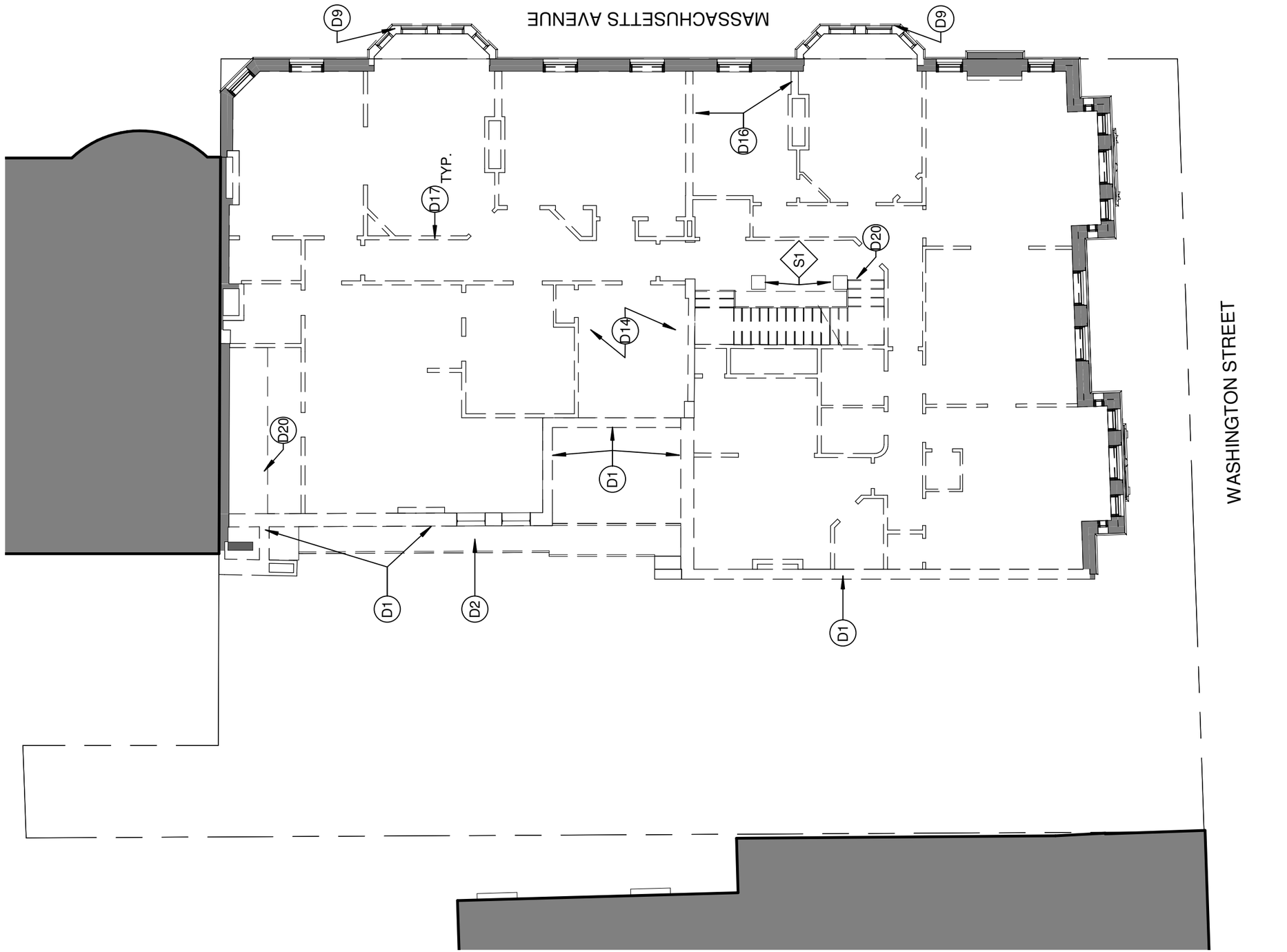
D103



NOTE:
REFER TO RESTORATION DRAWINGS FOR FURTHER INFORMATION REGARDING THE REMOVAL, SALVAGE, REPAIR, AND REPLACEMENT / REPLICATION OF ELEMENTS AT THE HISTORIC BUILDING.

HOTEL ALEXANDRA
DEMOLITION FOURTH FLOOR PLAN

0' 5' 10' 20'

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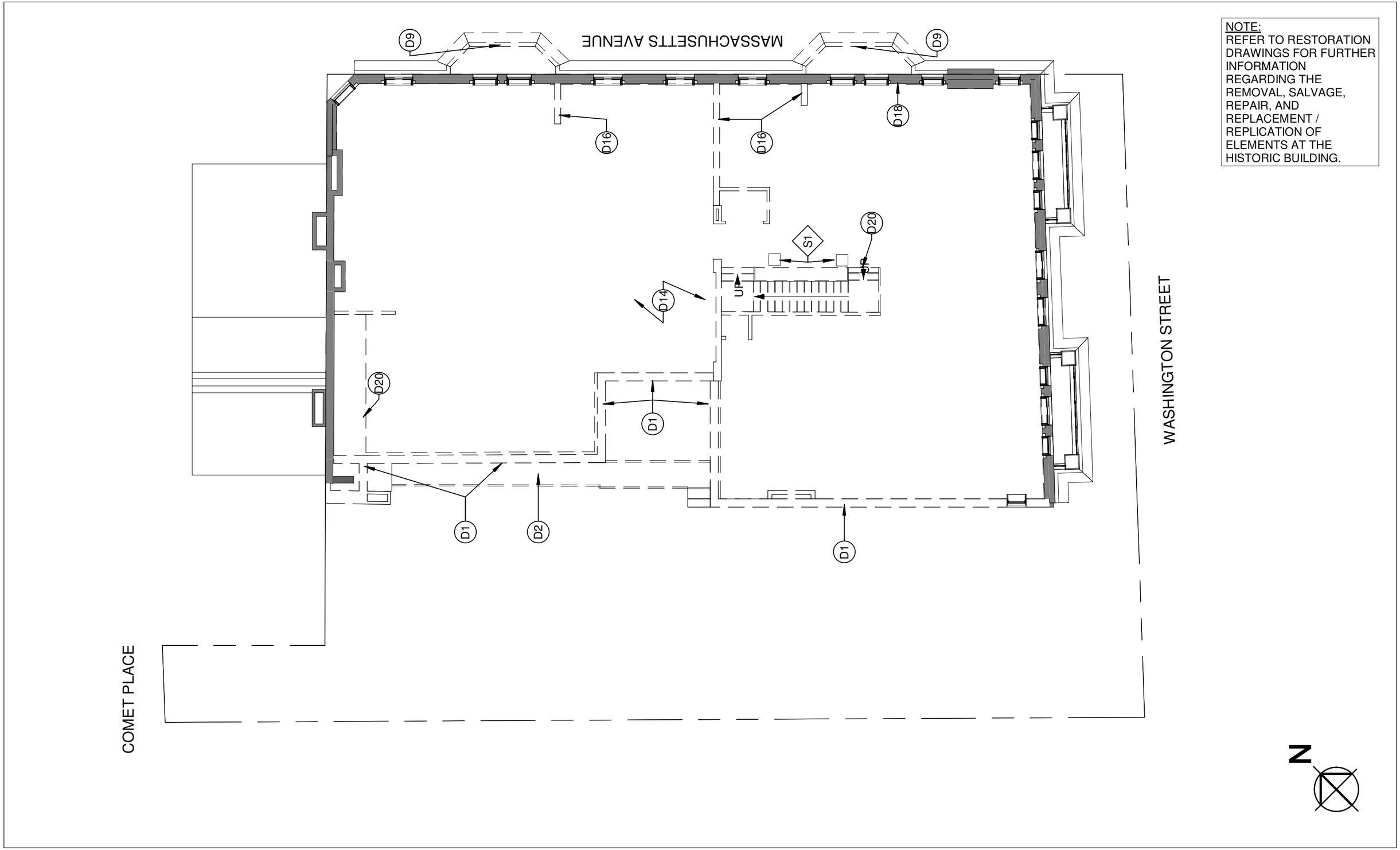

NOTE:
REFER TO RESTORATION DRAWINGS FOR FURTHER INFORMATION REGARDING THE REMOVAL, SALVAGE, REPAIR, AND REPLACEMENT / REPLICATION OF ELEMENTS AT THE HISTORIC BUILDING.

HOTEL ALEXANDRA
DEMOLITION FIFTH FLOOR PLAN

0' 5' 10' 20'

SCALE	PROJECT #	DATE ISSUED
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NOTE:
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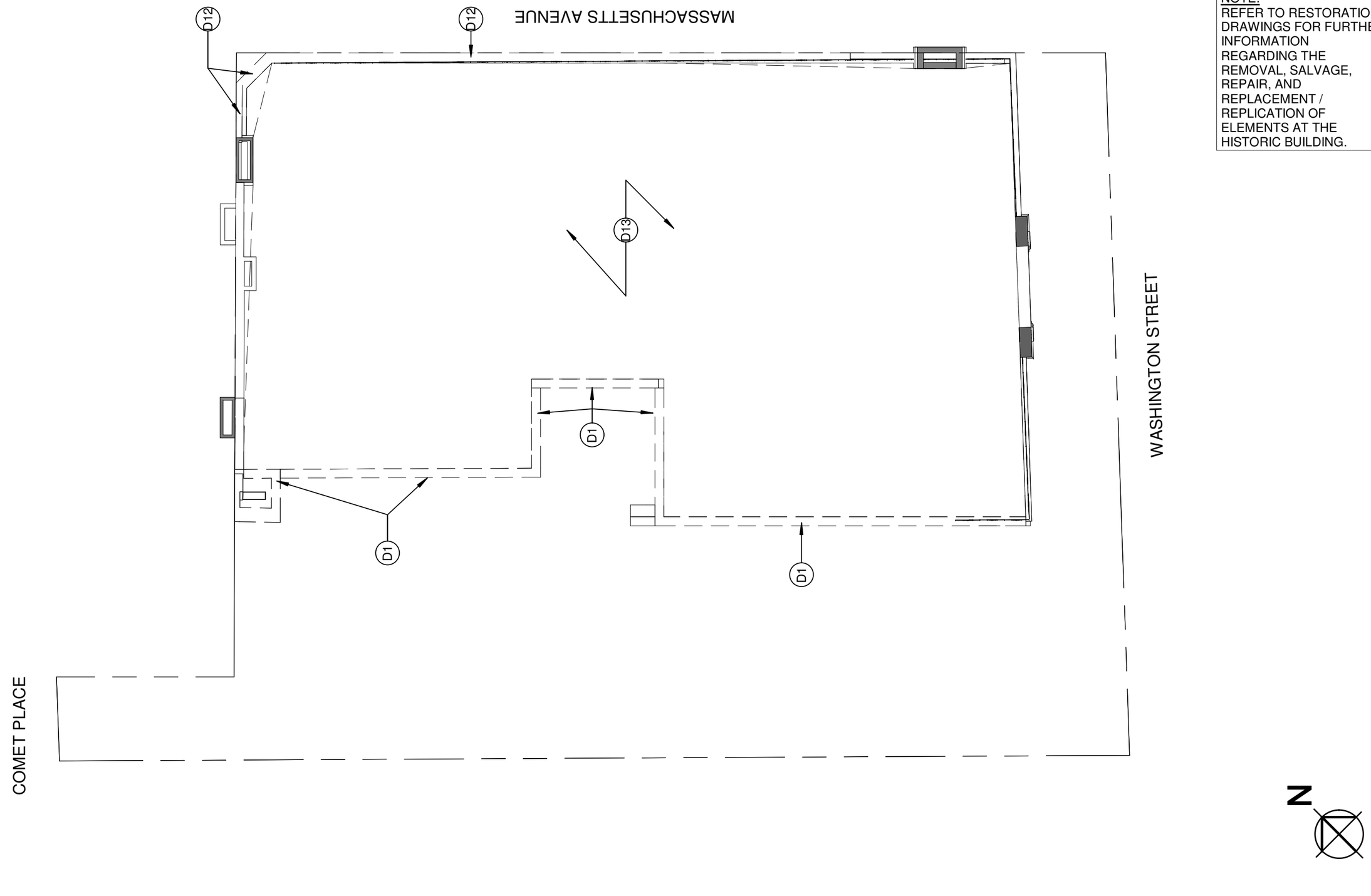

HOTEL ALEXANDRA
DEMOLITION ROOF PLAN

0' 5' 10' 20'

SCALE	PROJECT #	DATE ISSUED
As indicated	185061.00	08.12.2019

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NOTE:
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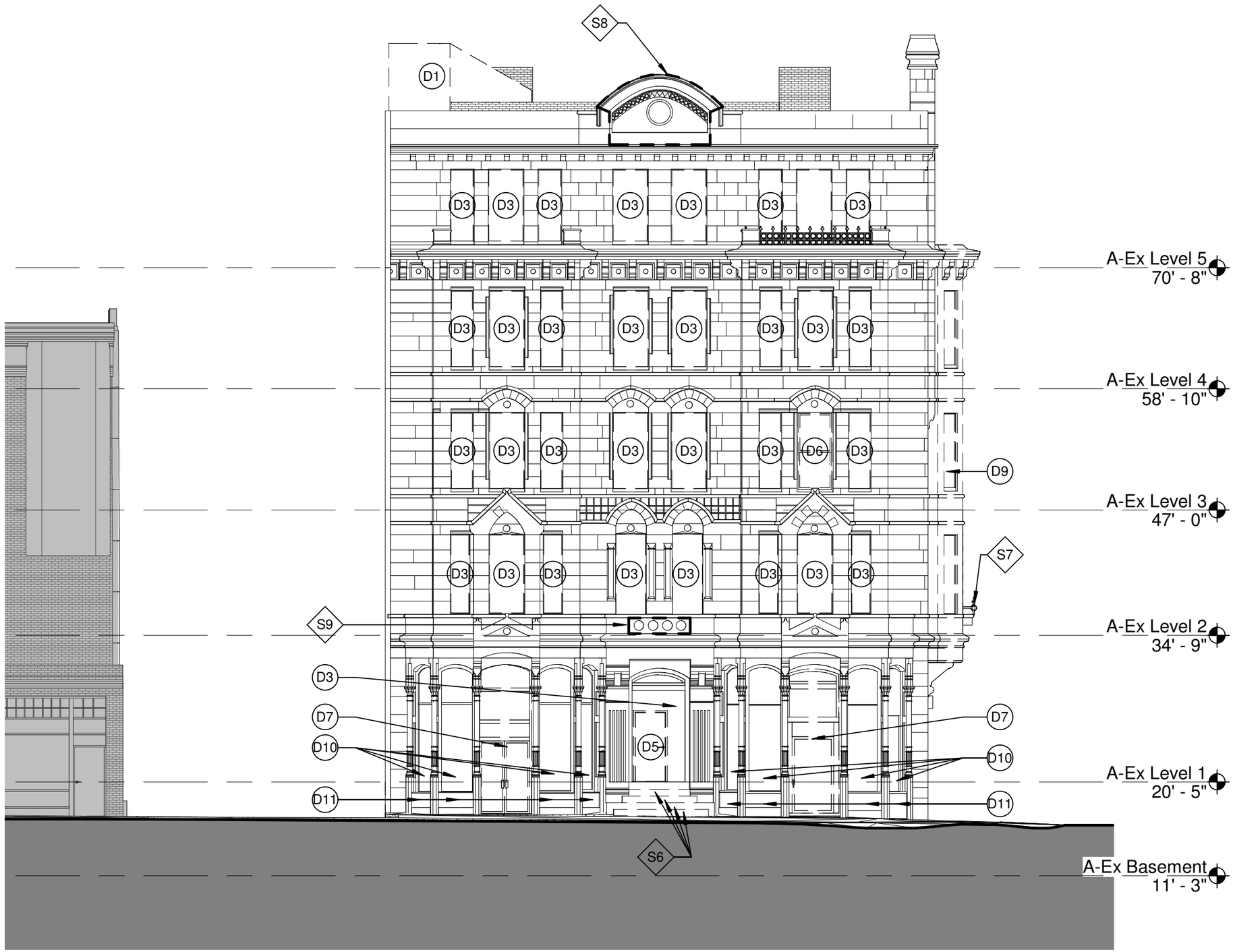

HOTEL ALEXANDRA
DEMOLITION SOUTH ELEVATION

SCALE	PROJECT #	DATE ISSUED
As indicated	185061.00	08.12.2019

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NOTE:
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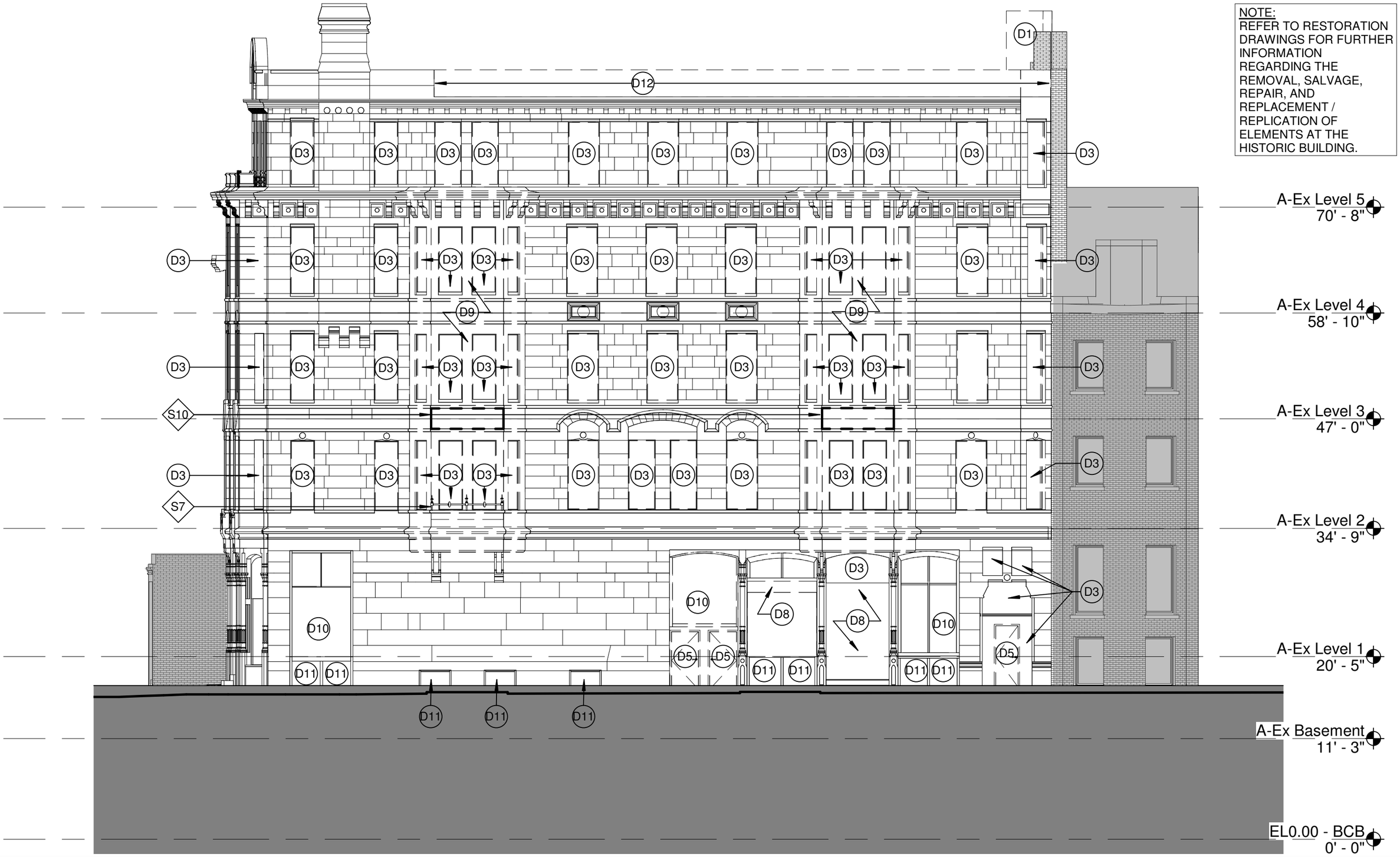

HOTEL ALEXANDRA
DEMOLITION EAST ELEVATION

SCALE	PROJECT #	DATE ISSUED
As indicated	185061.00	08.12.2019

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NOTE:
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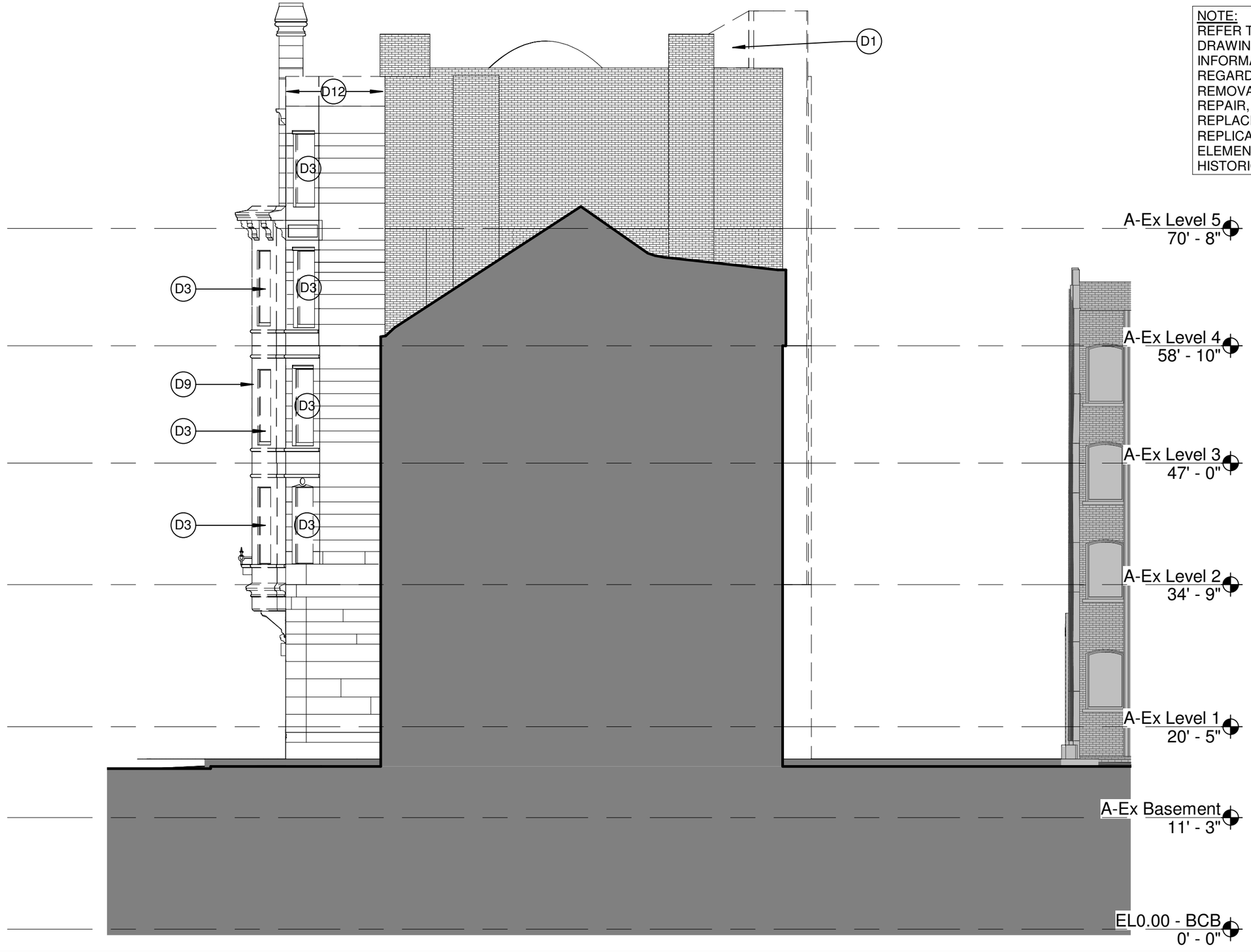

HOTEL ALEXANDRA
DEMOLITION NORTH ELEVATION

SCALE	PROJECT #	DATE ISSUED
As indicated	185061.00	08.12.2019

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D203

NOTE:
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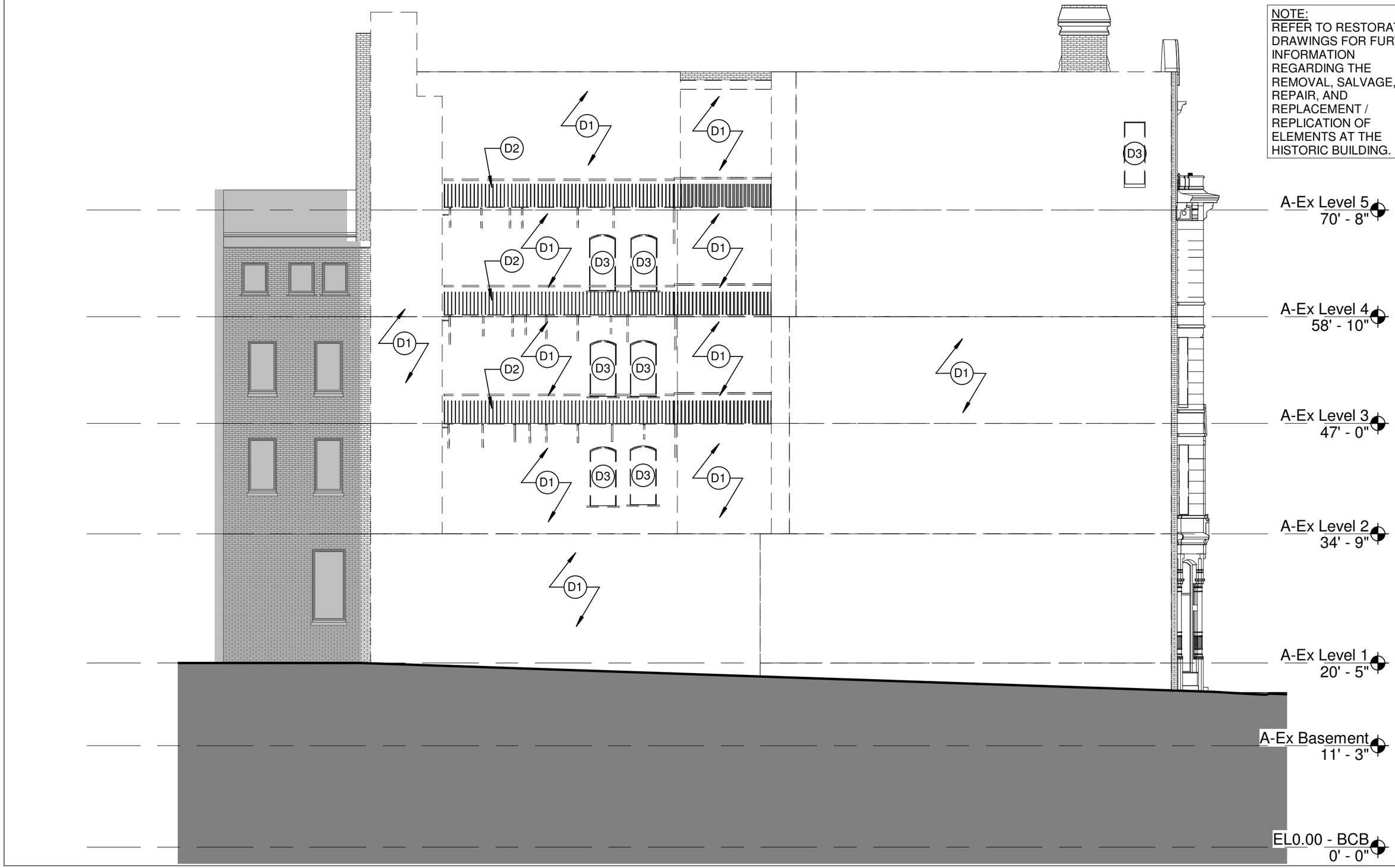

HOTEL ALEXANDRA
DEMOLITION WEST ELEVATION

SCALE	PROJECT #	DATE ISSUED
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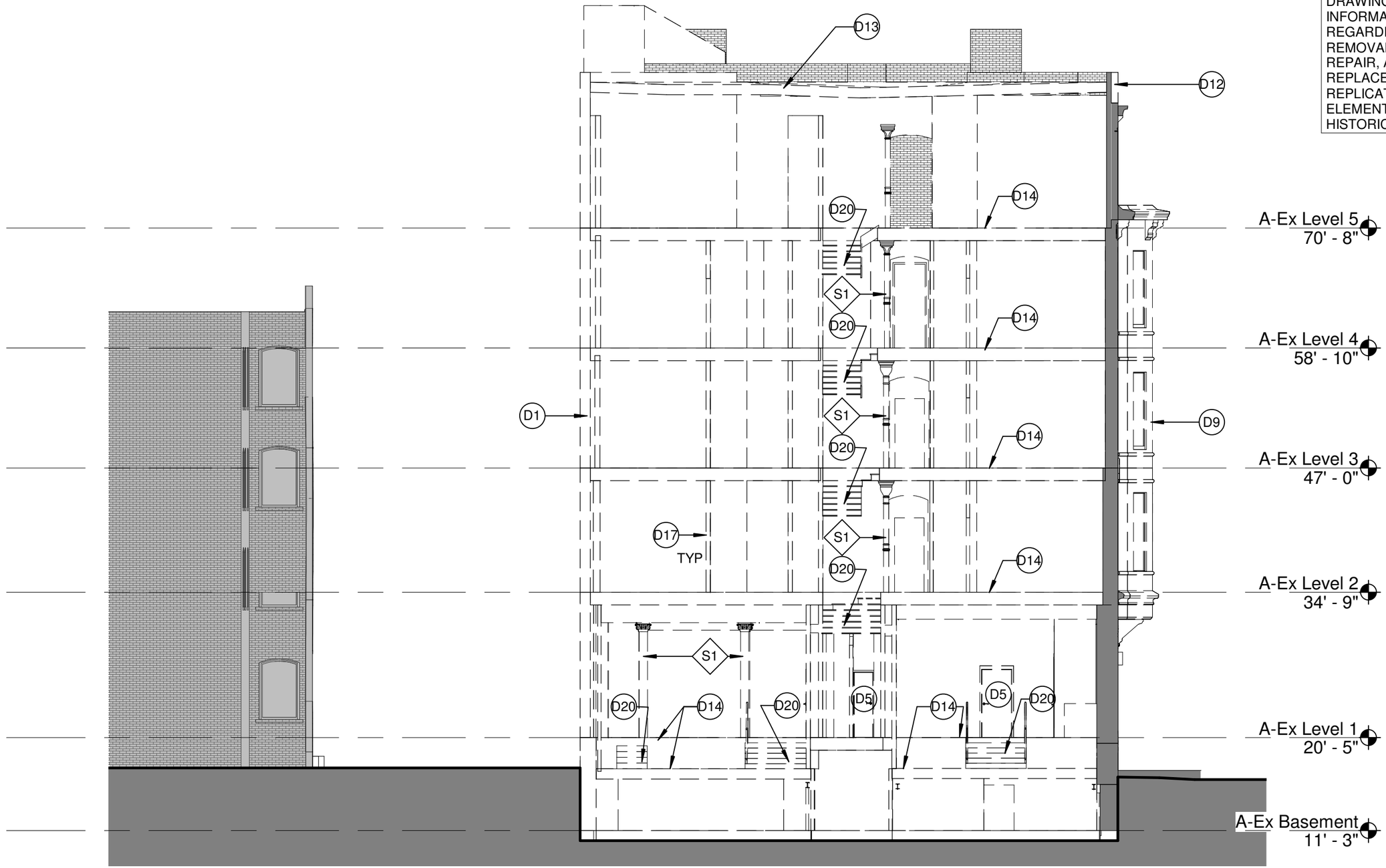

HOTEL ALEXANDRA
DEMOLITION BUILDING SECTION LOOKING NORTH

SCALE	PROJECT #	DATE ISSUED
As indicated	185061.00	08.12.2019

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D210

NOTE:
REFER TO RESTORATION DRAWINGS FOR FURTHER INFORMATION REGARDING THE REMOVAL, SALVAGE, REPAIR, AND REPLACEMENT / REPLICATION OF ELEMENTS AT THE HISTORIC BUILDING.

D13 D1 D16 D3 S1 D14 D17 TYP. D20 D16 S1 D14 D20 D16 S1 D14 D20 D16 S1 D14 S1 D14 D14

A-Ex Level 5
70' - 8"

A-Ex Level 4
58' - 10"

A-Ex Level 3
47' - 0"

A-Ex Level 2
34' - 9"

A-Ex Level 1
20' - 5"

A-Ex Basement
11' - 3"

EL0.00 - BCB
0' - 0"

HOTEL ALEXANDRA
DEMOLITION BUILDING SECTION LOOKING WEST

SCALE	PROJECT #	DATE ISSUED
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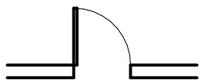
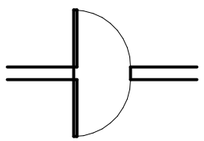
D211

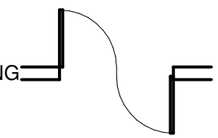
DRAFTING CONVENTIONS

DOORS


TYPICAL DOOR


PAIR


DOUBLE ACTING

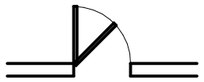

DOUBLE EGRESS


POCKET


SLIDING


ACCORDIAN


BIFOLD

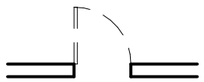

DUTCH DOOR


DARKROOM


CASED


ROLL DOWN


EXISTING TO REMAIN


EXISTING TO BE DEMOLISHED

WALL INDICATION


TYPICAL NEW CONSTRUCTION


EXISTING CONSTRUCTION


WINDOW WALL


EXISTING TO BE DEMOLISHED

CEILING INFORMATION


SUPPLY DIFFUSER


RETURN OR EXHAUST DIFFUSER


CEILING ACCESS PANEL


SPRINKLER HEAD - TYPICAL


SPRINKLER HEAD - SIDE WALL

SMOKE DETECTOR

SPEAKER

EMERGENCY LIGHT


FLUORESCENT STRIP


FLUORESCENT LIGHT


TRACK LIGHTING


INCANDESCENT LIGHT FIXTURE SURFACE MOUNTED


INCANDESCENT LIGHT FIXTURE RECESSED


INCANDESCENT LIGHT FIXTURE WALL MOUNTED


INCANDESCENT WALL WASHER


EXIT SIGN

HOTEL ALEXANDRA
SYMBOLS LEGEND

SCALE	PROJECT #	DATE ISSUED
1/8" = 1'-0"	185061.00	08.12.2019

A00

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GENERAL NOTES

1. THE EXISTING BUILDING, WHICH IS A CONTRIBUTING STRUCTURE TO THE SOUTH END LANDMARK DISTRICT, IS AN HISTORIC BUILDING OF SIGNIFICANT ARCHITECTURAL IMPORTANCE. THE WORK SHALL RESPECT THAT SIGNIFICANCE IN HIGH QUALITY. ALL PRESERVATION AND RESTORATION WORK IS TO CONFORM TO THE GUIDELINES OF THE FEDERAL SECRETARY OF THE INTERIOR'S STANDARDS FOR THE TREATMENT OF HISTORIC PROPERTIES, STANDARDS FOR REHABILITATION. THE SOUTH END LANDMARK DISTRICT COMMISSION HAS JURISDICTION.
2. THE CONTRACTOR IS TO VISIT THE SITE PRIOR TO SUBMITTING ANY BID AND PRIOR TO PROCEEDING WITH WORK, TO EXAMINE THE SITE AND ANY EXISTING ACCESSORY SPACES RELATED TO THE WORK TO ENSURE HIS/HER KNOWLEDGE OF CONDITIONS AFFECTING THE WORK AND THE ENVIRONMENT WITHIN WHICH WORK IS TO BE PERFORMED.
3. CONTRACTOR SHALL ALLOW ACCESS TO THE SITE DURING THE CONSTRUCTION PERIOD FOR OWNER'S INDEPENDENT CONTRACTORS AND CONSULTANTS FOR INSTALLATIONS INCLUDING, BUT NOT LIMITED TO, FURNISHINGS, ACCESSORY SYSTEMS AND EQUIPMENT. CONTRACTOR SHALL COORDINATE WITH AND COOPERATE WITH OWNER'S INDEPENDENT CONTRACTORS AND CONSULTANTS FOR INSTALLATIONS AND OTHER WORK NOT PART OF THIS CONTRACT.
4. ALL INDICATIONS AND NOTATIONS ON THE DRAWINGS APPLYING TO ONE AREA OR CONDITION APPLY TO OTHER SIMILAR AREAS OR SIMILAR CONDITIONS UNLESS OTHERWISE NOTED. TYPICAL DETAILS ARE REPRESENTATIVE OF DESIGN INTENT AND APPLY WITH MINOR INTERPOLATION TO SIMILAR CONDITIONS.
5. THE USE OF THE WORDS "PROVIDE" AND/OR "FURNISHED" IN CONNECTION WITH ANY ITEMS SPECIFIED MEANS, UNLESS OTHERWISE NOTED, THAT SUCH ITEMS SHALL BE FURNISHED, INSTALLED, CONNECTED AND MADE OPERATIONAL, INCLUDING ALL NECESSARY MATERIALS, LABOR, EQUIPMENT, TOOLING AND GENERAL CONDITIONS SUPPORT.
6. ALL DIMENSIONS OTHER THAN PURELY ARCHITECTURAL DIMENSIONS SHOWN ON THE ARCHITECTURAL DRAWINGS SHALL BE FIELD COORDINATED BY THE CONTRACTOR WITH THE WORK OF THE STRUCTURAL, PLUMBING, FIRE PROTECTION, MECHANICAL, ELECTRICAL, DATA/COMMUNICATIONS AND AUDIO/VISUAL TRADES, AND ANY INCONSISTENCIES REPORTED TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK.
7. CONTRACTOR SHALL VERIFY ALL PROPOSED AND EXISTING DIMENSIONS AND ELEVATIONS IN THE FIELD. CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS IN THE FIELD PRIOR TO PROCEEDING. NOTIFY THE ARCHITECT IMMEDIATELY AND BEFORE PROCEEDING WITH RELEVANT ASPECT OF THE WORK OF ANY LAYOUT CONDITION THAT IS NOT CONSISTENT WITH THE PLANS OR THAT WILL IMPAIR LAYOUTS OR ATTACHMENTS OF FINISHES. NOTIFY THE ARCHITECT OF ANY UNEXPECTED FIELD CONDITIONS PRIOR TO PROCEEDING.
8. FIELD MEASURE TO COORDINATE FIT AND FACILITATE EXPEDITED SHOP DRAWING PREPARATION FOR ALL SYSTEMS AND COMPONENTS OF THE PROJECT. THE CONTRACTOR SHALL VERIFY THE FIT OF ALL EQUIPMENT AGAINST PROPOSED AND EXISTING FIELD DIMENSIONS AS PART OF THE SHOP DRAWING AND COORDINATION DRAWING REQUIREMENTS, FOR THE BASE CONTRACT.
9. DO NOT SCALE FROM DRAWINGS. USE INDICATED OR CALCULATED DIMENSIONS AND ELEVATIONS IN THE FIELD. NOTIFY ARCHITECT IMMEDIATELY, AND BEFORE PROCEEDING WITH RELEVANT ASPECT OF THE WORK, OF ANY LAYOUT CONDITIONS THAT ARE NOT CONSISTENT WITH THE PLANS OR THAT WILL IMPAIR LAYOUT.
10. DIMENSIONING FORMAT FOR THE ARCHITECTURAL DRAWINGS IS OUTLINED AS FOLLOWS:
    a. DIMENSIONS FOR MASONRY ARE TO FACE OF MASONRY UNLESS OTHERWISE NOTED.
    b. DIMENSIONS FOR CONCRETE ARE TO FACE OF CONCRETE UNLESS OTHERWISE NOTED.
    c. DIMENSIONS FOR PLASTER FINISH ARE TO ACTUAL FACE UNLESS CENTERLINE IS INDICATED.
    d. DIMENSIONS FOR METAL STUD WALLS ARE TO FINISH FACE OF GYPSUM WALL BOARD OR PLASTER FINISH FACE UNLESS CENTERLINE IS INDICATED OR CLEAR FINISH DIMENSION IS NOTED.
    e. CRITICAL CLEAR DIMENSIONS REQUIRED ARE INDICATED AND ARE TO FINISH FACE OF WALL INCLUDING APPLIED FINISH OVER SUBSTRATE. REFER TO ELEVATIONS AND FINISH DETAILS TO COORDINATE RELATIONSHIP OF ANY FINISHES ADDED TO BASE DIMENSION.
    f. DIMENSIONS FOR FIXTURES ARE FROM FINISH FACE TO CENTERLINE OF FIXTURE UNLESS OTHERWISE NOTED.
11. AT INTERSECTION OF DISSIMILAR WALL TYPES, GYPSUM WALLBOARD OF HIGHEST RATED WALL IS TO RUN THROUGH INTERSECTION TO MAINTAIN FIRE ENCLOSURE. MAINTAIN FIRE RATING OF RATED WALLS AT INTERSECTION WITH COLUMN ENCLOSURES.
12. ALL WALLS, INCLUDING FIRE RATED WALLS, ARE TO BE CONTINUOUS FROM BASE FLOOR DECK TO UNDERSIDE OF FLOOR DECK ABOVE OR UNDERSIDE OF ROOF DECK ABOVE AS APPLICABLE.
13. GRAPHICS: THE DRAWINGS USE VARIOUS GRAPHIC DEVICES TO DISTINGUISH BETWEEN TYPES OF WORK, TYPES OF MATERIALS, AND TO DISTINGUISH BETWEEN NEW WORK AND EXISTING WORK TO REMAIN. WHERE BOLD, DARK LINEWORK IS SHOWN TOGETHER WITH SCREENED LIGHTER LINEWORK, OR OTHERWISE SIMILAR ILLUSTRATION, THE BOLD LINEWORK TYPICALLY REPRESENTS NEW WORK OR RENOVATION WORK. FOR CLARITY OF THIS DISTINCTION, FULL SIZE DRAWING SHEETS SHALL GOVERN, COMPARED TO ANY REDUCED COPIES OF THE DRAWINGS. THIS GRAPHIC CONVENTION DOES NOT LIMIT IN ANY WAY WORK REQUIRED TO BE PERFORMED FOR AREAS ILLUSTRATED WITH SCREENED LINES, AS CALLED FOR BY OTHER PARTS OF THE CONTRACT DOCUMENTS.
14. REFER TO PROJECT SPECIFICATIONS FOR: GENERAL CONTRACT REQUIREMENTS, ADDITIONAL SCOPE DEFINITION, TECHNICAL CRITERIA AND STANDARDS FOR SYSTEMS, MATERIALS, PERFORMANCE, WORKMANSHIP AND EXECUTION, REQUIREMENTS FOR SUBMITTALS AND SHOP DRAWINGS. THE SPECIFICATION AND DRAWINGS SHALL BE USED TOGETHER FOR COMPREHENSIVE UNDERSTANDING OF PROJECT REQUIREMENTS.
15. REFER ALSO TO STRUCTURAL, PLUMBING, FIRE PROTECTION, MECHANICAL, ELECTRICAL, INFORMATION TECHNOLOGY/COMMUNICATIONS AND AUDIO/VISUAL DRAWINGS, AND APPROVED SHOP DRAWINGS FOR LOCATION AND DIMENSIONS OF CHASES, INSERTS, OPENINGS, PENETRATIONS, SLEEVES, DEPRESSIONS, EMBEDMENTS, AND ATTACHMENT REQUIREMENTS FOR ALL SYSTEMS. THE CONTRACTOR IS TO COORDINATE ALL EMBEDMENTS AND PENETRATIONS AND ALL ATTACHMENT REQUIREMENTS FOR STRUCTURE, SYSTEMS, FINISHES, FIXTURES AND EQUIPMENT. SYSTEMS DRAWINGS ARE DIAGRAMMATIC IN NATURE ESTABLISHING SYSTEM INTENT AND ORGANIZATION AND RELATIVE PLACEMENT OF SYSTEM COMPONENTS. THE SPECIFICATIONS IDENTIFY ADDITIONAL DETAIL INFORMATION AND REQUIREMENTS FOR TECHNICAL STANDARDS, MATERIALS, FITTINGS, AND PERFORMANCE FOR SYSTEMS. THE CONTRACTOR'S BASE CONTRACT SERVICES INCLUDE COORDINATION DRAWINGS AND DETAIL PLANNING FOR FIT AND ROUTING BY THE CONTRACTOR'S TECHNICIANS.
16. ALL SUBCONTRACTOR TRADES, INCLUDING BUT NOT LIMITED TO, STRUCTURAL, MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, AUDIO-VISUAL, AND INFORMATION TECHNOLOGY TRADES, SHALL FULLY REVIEW AND BE FAMILIAR WITH THE ARCHITECTURAL DRAWINGS AND DOCUMENTS TO UNDERSTAND THE ARCHITECTURAL DESIGN INTENT AND ARCHITECTURAL DETAIL CONTEXT FOR THE COORDINATION, PROVISION AND INSTALLATION OF TRADE SYSTEMS WITHIN ARCHITECTURAL ELEMENTS AND THEIR LIMITATIONS. FURTHERMORE, ALL SUBCONTRACTOR TRADES ARE REQUIRED TO READ AND BE FULLY FAMILIAR WITH THE ARCHITECTURAL GENERAL NOTES, ARCHITECTURAL DEMOLITION NOTES, WHICH ARE APPLICABLE TO ALL ASPECTS OF THE PROJECT.
17. SEE STRUCTURAL DRAWINGS AND SPECIFICATIONS FOR STRUCTURAL SPACING, STRUCTURAL STEEL SIZES, REINFORCEMENT, UNIT-MASONRY REINFORCEMENT, STEEL LINTEL SIZES, RELIEVING ANGLE SIZES, AND OTHER REQUIREMENTS FOR LOAD CARRYING MEMBERS. STRUCTURAL DRAWINGS AND SPECIFICATIONS SHALL GOVERN FOR LOAD CARRYING MEMBERS. REFER TO STRUCTURAL LIMITATIONS FOR PENETRATIONS THROUGH MASONRY WALLS, METAL DECK CONSTRUCTION.
18. REFER ALSO TO DEMOLITION NOTES WHICH INCLUDE ADDITIONAL REQUIREMENTS GENERALLY APPLICABLE TO THE CONTRACTOR AND ALL TRADES FOR EXECUTION OF THE WORK, PROPERTY PROTECTION, SITE CONTROLS, OPERATIONS, CUTTING AND PATCHING, REPAIRS AND INFILL WORK, AND ABATEMENT.
19. THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION SEQUENCING, MEANS AND METHODS INCLUDING BUT NOT LIMITED TO TEMPORARY SHORING, STAGING, AND BRACING OF NEW AND EXISTING CONSTRUCTION TO MAINTAIN STRUCTURAL STABILITY FOR ALL CONDITIONS OF STATIC, DYNAMIC, GRAVITY, AND WIND LOADS DURING DEMOLITION PROCEDURES, REPAIR PROCEDURES, AND NEW CONSTRUCTION PROCEDURES THROUGHOUT THE DURATION OF THE CONSTRUCTION CONTRACT. THE CONTRACTOR IS RESPONSIBLE FOR ALL ASPECTS OF TEMPORARY SHORING INCLUDING ENGINEERING BY A PROFESSIONAL ENGINEER REGISTERED IN THE COMMONWEALTH OF MASSACHUSETTS. THE CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION-RELATED SAFETY MEASURES.

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GENERAL NOTES

20. ANY ILLUSTRATION OR DESCRIPTION OF CONSTRUCTION SEQUENCING, TEMPORARY SHORING SEQUENCE, OR TEMPORARY SHORING SYSTEM, AS SHOWN ANYWHERE IN THE CONTRACT DOCUMENTS (DRAWINGS AND/OR SPECIFICATIONS) IS PROVIDED TO THE CONTRACTOR ONLY FOR ILLUSTRATION OF A POSSIBLE METHOD OR SEQUENCE OF ACCOMPLISHING THE WORK, TO DEMONSTRATE FEASIBILITY IN PRINCIPLE ONLY, UNLESS OTHERWISE NOTED. SUCH ILLUSTRATIONS OR DESCRIPTIONS OF CONSTRUCTION SEQUENCING, STAGING, OR TEMPORARY SHORING IN THE CONTRACT DOCUMENTS ARE DEEMED SUGGESTIONS FOR CONSIDERATION ONLY BY THE CONTRACTOR AND ARE NOT ENDORSED BY THE ARCHITECT AND ARE NOT INTENDED TO DICTATE TO THE CONTRACTOR CONSTRUCTION MEANS AND METHODS OR SEQUENCING FOR THE WORK, UNLESS OTHERWISE NOTED. THE SELECTION, DETAILS AND EXECUTION OF ALL CONSTRUCTION MEANS, METHODS AND/OR SEQUENCING OF THE CONSTRUCTION WORK ARE SOLELY THE CHOICE AND RESPONSIBILITY OF THE CONTRACTOR. SUCH ILLUSTRATIONS OR DESCRIPTIONS OF CONSTRUCTION SEQUENCING OR TEMPORARY SHORING IN THE CONTRACT DOCUMENTS ARE SHOWN ONLY FOR THOSE ASPECTS OF THE WORK WHERE COMPLEXITY, UNIQUE CONDITIONS, OR GLOBAL STABILITY (AS RELATED TO THE PROJECT) WARRANT NOTICE OF VERY SPECIAL ATTENTION REQUIRED BY THE CONTRACTOR. SUCH ILLUSTRATIONS OR DESCRIPTIONS OF CONSTRUCTION SEQUENCING OR TEMPORARY SHORING IN THE CONTRACT DOCUMENTS ARE NOT TO BE INTERPRETED IN ANY WAY AS LIMITING THE WORK REQUIRING SEQUENCING OR TEMPORARY SHORING TO ONLY THOSE ASPECTS ILLUSTRATED OR DESCRIBED. AS PART OF THE BASE CONTRACT WORK, THE CONTRACTOR SHALL IDENTIFY, PLAN FOR, ENGINEER AND DETAIL, AND PROVIDE ALL CONSTRUCTION SEQUENCING, STAGING, AND TEMPORARY SHORING AS NECESSARY TO SAFELY AND SUCCESSFULLY EXECUTE ALL THE WORK ENCOUNTERED FOR THIS PROJECT.
21. LOGISTICS – THE CONTRACTOR'S ATTENTION IS CALLED TO ISSUES THAT MUST BE CONSIDERED AND ADDRESSED BY THE CONTRACTOR'S LOGISTICS.
22. ALL FINISHING IS TO BE DONE IN A NEAT AND WORKMANLIKE MANNER. REPAIR AND CORRECTIVE WORK IS TO BE BLENDED INTO ADJACENT AREAS WHICH ARE IN SOUND CONDITION FOR UNIFORM FINISHED APPEARANCE. CORRECTIVE OR REPAIR MATERIALS ARE TO MATCH EXISTING MATERIALS AS NEAR IN SIZE, SHAPE, TEXTURE AND COLOR AS APPLICABLE. THE INTENT IS TO PROVIDE WORK WHICH MATCHES THE ORIGINAL WORK AND IS "AS-NEW" IN CHARACTER AND APPEARANCE. ALL SURFACES AND MATERIALS TO BE IN "AS-NEW" CONDITION AT END OF CONSTRUCTION. CUT ALL EDGES OF MATERIALS IN A NEAT MANNER SUITABLE FOR FINISH APPEARANCE, OR NEAT MATCHING UP OF RELATED OR ADJACENT WORK. USE THE LARGEST REPAIR INSERT MATERIALS PRACTICAL; AVOID EXCESSIVE OR CUMULATIVE SMALL PIECES.
23. ALL FINISH WORK SHALL BE PROTECTED FROM DAMAGE AND CONSTRUCTION ACTIVITIES. ALL DAMAGE FROM CONTRACTOR'S CONSTRUCTION ACTIVITIES SHALL BE REPAIRED AND/OR REPLACED TO THE OWNER'S SATISFACTION BY THE CONTRACTOR AT NO COST TO THE OWNER.
24. ALL NEW FINISH MILLWORK IS TO BE PROTECTED FROM UNNECESSARY DAMAGE BY CONSTRUCTION ACTIVITIES. THE CONTRACTOR AND ALL TRADES SHALL PROTECT THE FINISH WORK FROM THEIR RESPECTIVE ACTIVITIES.
25. AVOID DAMAGING CORROSION PROTECTIVE COATINGS AND MEMBRANES, NEW OR EXISTING. UNLESS INTENDED BY DESIGN, USE FASTENING METHODS WHICH DO NOT PENETRATE COATINGS, MEMBRANES AND FLASHINGS. AVOID DAMAGING MEMBRANES, FLASHING AND PROTECTION BOARD LAYERS. SEAL UNAVOIDABLE PENETRATIONS. PROTECT MEMBRANES FROM CHEMICAL ATTACK FROM ACCIDENTAL SOLVENT SPILLS AND FROM CUTTING OR ABRASION BY TOOLS OR REMNANTS.
26. FOR THE SPECIFIC PAINT SYSTEM PRODUCTS SUBMITTED BY THE CONTRACTOR FOR USE ON THE PROJECT, THE CONTRACTOR WITH THE PAINTING SUBCONTRACTOR(S) SHALL VERIFY THE COMPATIBILITY OF THE VARIOUS PRODUCTS, CONFERRING WITH THE MANUFACTURE(S) AS NEEDED, AND FIELD TEST FOR ACCEPTABLE ADHESION TO SUBSTRATES BEFORE PROCEEDING FURTHER WITH THE WORK.
27. ISOLATE DISSIMILAR METALS AND CORROSIVE MATERIALS FROM DIRECT CONTACT BY THE USE OF NEOPRENE OR EPDM WASHERS/GASKETS OR BY OTHER SUITABLE MEANS TO ELIMINATE OPPORTUNITIES FOR GALVANIC ACTION.
28. ALL WOOD SILLS SET ON CONCRETE ARE TO BE ANCHORED WITH ANCHOR BOLTS AND PRESERVATIVE TREATED. ALL ROOF BLOCKING IS TO BE PRESSURE PRESERVATIVE TREATED.
29. ALL INTERIOR WOOD BLOCKING IS TO BE FIRE TREATED.
30. FURNISH AND INSTALL WOOD BLOCKING WITHIN WALL ASSEMBLIES TO FACILITATE THE SUPPORT AND ATTACHMENT OF ALL FIXTURES AND EQUIPMENT, ACCESSORIES, AND FIXED FURNISHINGS. ALL CONCEALED BLOCKING SHALL BE FIRE RESISTANCE TREATED.
31. PROVIDE WOOD BLOCKING WITHIN WALLS FOR ARTWORK WHERE INDICATED OR DETERMINED BY THE ARCHITECT.
32. REFER TO THE SPECIFICATIONS AND DETAILS FOR ANY FIREPROOFING REQUIREMENTS OF STEEL. ALL APPLIED FIREPROOFING IS TO CONFORM TO APPROPRIATE UL RATED TEST ASSEMBLIES.
33. ALL PIPE, CONDUIT, WIRE, AND DUCT PENETRATIONS THROUGH WALLS, FLOORS, SLABS, AND CEILING ASSEMBLIES ARE TO BE FIRESTOPPED MAINTAINING FIRE RATINGS WHERE ASSEMBLY OR COMPONENT RATING IS REQUIRED. ALL CONTROL JOINTS (VERTICAL AND HORIZONTAL) AT FIRE RATED WALLS ARE TO BE FIRE STOPPED WITH FIRE SEALANT SYSTEMS, MAINTAINING FIRE RATINGS WHERE ASSEMBLY OR COMPONENT RATING IS REQUIRED.
34. ALL PIPE, CONDUIT, WIRE, AND DUCT PENETRATIONS THROUGH MASONRY WALLS, FLOORS, SLABS, AND CEILING DECKS ARE TO BE FIRESTOPPED MAINTAINING NOMINAL TWO-HOUR FIRE RATINGS, WHETHER MASONRY WALL IS SPECIFICALLY RATED OR NOT.
35. ALL PIPE, CONDUIT, WIRE, AND DUCT PENETRATIONS THROUGH WALLS, FLOORS, AND CEILINGS ARE TO BE ACOUSTICALLY SEALED TO PREVENT THE TRANSMISSION OF NOISE.
36. PROVIDE CONTROL JOINTS IN PLASTER, GYPSUM WALLBOARD/VENEER PLASTER SYSTEMS. FURNISH TO AND REVIEW WITH THE ARCHITECT THE CONTROL JOINT LOCATION LAYOUT PRIOR TO PROCEEDING WITH THE WORK. PROVIDE CONTROL JOINTS AT CHANGES IN SUBSTRATE OR WHERE POTENTIAL EXISTS FOR DIFFERENTIAL MOVEMENT.
37. JOINT SEALERS SHALL BE INSTALLED USING A BACKER ROD TO REDUCE THE DEPTH OF THE JOINT SO THAT THE SEALANT WILL HAVE AN HOURGLASS SHAPE OF MAXIMUM DEPTH AS RECOMMENDED BY THE MANUFACTURER.
38. MOCK-UPS SHALL PROCEED ON THE BASIS OF APPROVED MATERIALS, SYSTEMS, COLORS, FINISHES AND PRODUCTS, AFTER ACCEPTANCE OF THESE FUNDAMENTAL ITEMS THROUGH THE REQUIRED SUBMITTAL PROCESS. FIELD AND SAMPLE MOCK-UPS ARE TO BE ERECTED AND MAINTAINED ON SITE FOR THE DURATION OF THE PROJECT UNLESS OTHERWISE INDICATED BY THE OWNER AND ARCHITECT. MOCK-UPS ACCEPTED AS SATISFACTORY SHALL BE REPRESENTATIVE OF THE CONSISTENT STANDARD OF DETAIL, QUALITY AND WORKMANSHIP EXPECTED THROUGHOUT THE WORK OF THESE SYSTEMS. UNACCEPTABLE OR REJECTED ASPECTS OF THE MOCK-UP ARE SUBJECT TO CORRECTION OR REPETITION BY THE CONTRACTOR, AS PART OF THE BASE SCOPE OF WORK, AT NO ADDED EXPENSE TO THE OWNER. MOCK-UPS MUST BE ACCOMPLISHED TO ACCEPTABLE STANDARD PRIOR TO PROCEEDING WITH THE PRINCIPLE WORK IN PLACE.
39. ALL MATERIALS EXPOSED TO VIEW SHALL BE PAINTED, UNLESS OTHERWISE INDICATED. EXCEPTIONS: MATERIALS WITH FACTORY FINISH OR NATURAL FINISH, OR FINISH OTHERWISE INDICATED.

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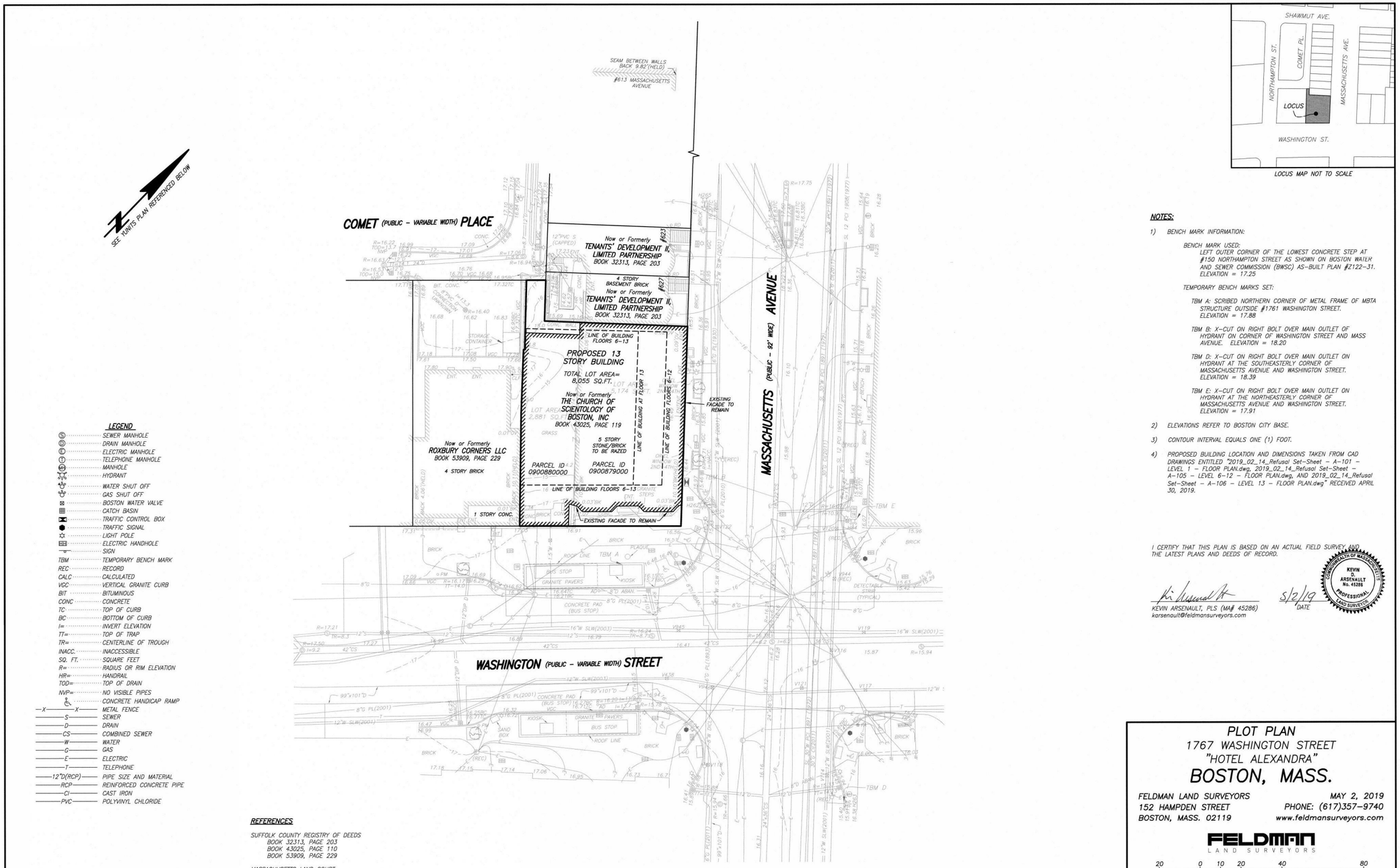

LOCUS MAP NOT TO SCALE

LEGEND

- (S) SEWER MANHOLE
- (D) DRAIN MANHOLE
- (E) ELECTRIC MANHOLE
- (T) TELEPHONE MANHOLE
- (M) MANHOLE
- HYDRANT
- WATER SHUT OFF
- GAS SHUT OFF
- BOSTON WATER VALVE
- CATCH BASIN
- TRAFFIC CONTROL BOX
- TRAFFIC SIGNAL
- LIGHT POLE
- ELECTRIC HANDHOLE
- SIGN
- TBM TEMPORARY BENCH MARK
- REC RECORD
- CALC CALCULATED
- VGC VERTICAL GRANITE CURB
- BIT BITUMINOUS
- CONC CONCRETE
- TC TOP OF CURB
- BC BOTTOM OF CURB
- I= INVERT ELEVATION
- TT= TOP OF TRAP
- TR= CENTERLINE OF TROUGH
- INACC. INACCESSIBLE
- SQ. FT. SQUARE FEET
- R= RADIUS OR RIM ELEVATION
- HR= HANDRAIL
- TOD= TOP OF DRAIN
- NVP= NO VISIBLE PIPES
- CONCRETE HANDICAP RAMP
- X X METAL FENCE
- S SEWER
- D DRAIN
- CS COMBINED SEWER
- W WATER
- G GAS
- E ELECTRIC
- T TELEPHONE
- 12"D(RCP) PIPE SIZE AND MATERIAL
- RCP REINFORCED CONCRETE PIPE
- CI CAST IRON
- PVC POLYVINYL CHLORIDE

REFERENCES

SUFFOLK COUNTY REGISTRY OF DEEDS
BOOK 32313, PAGE 203
BOOK 43025, PAGE 110
BOOK 53909, PAGE 229

MASSACHUSETTS LAND COURT
LCC 6483A

PLAN ENTITLED "STREET LINE MAP" SHEET 5-17 OF 33 PREPARED BY YUNITS ENGINEERING COMPANY DATED AUGUST 26, 1968

NOTES:

1) BENCH MARK INFORMATION:

BENCH MARK USED:
LEFT OUTER CORNER OF THE LOWEST CONCRETE STEP AT #150 NORTHAMPTON STREET AS SHOWN ON BOSTON WATER AND SEWER COMMISSION (BWSC) AS-BUILT PLAN #2122-31.
ELEVATION = 17.25

TEMPORARY BENCH MARKS SET:

TBM A: SCRIBED NORTHERN CORNER OF METAL FRAME OF MBTA STRUCTURE OUTSIDE #1761 WASHINGTON STREET.
ELEVATION = 17.88

TBM B: X-CUT ON RIGHT BOLT OVER MAIN OUTLET OF HYDRANT ON CORNER OF WASHINGTON STREET AND MASS AVENUE. ELEVATION = 18.20

TBM D: X-CUT ON RIGHT BOLT OVER MAIN OUTLET ON HYDRANT AT THE SOUTHEASTERLY CORNER OF MASSACHUSETTS AVENUE AND WASHINGTON STREET.
ELEVATION = 18.39

TBM E: X-CUT ON RIGHT BOLT OVER MAIN OUTLET ON HYDRANT AT THE NORTHEASTERLY CORNER OF MASSACHUSETTS AVENUE AND WASHINGTON STREET.
ELEVATION = 17.91

2) ELEVATIONS REFER TO BOSTON CITY BASE.

3) CONTOUR INTERVAL EQUALS ONE (1) FOOT.

4) PROPOSED BUILDING LOCATION AND DIMENSIONS TAKEN FROM CAD DRAWINGS ENTITLED "2019_02_14_Refusal Set-Sheet - A-101 - LEVEL 1 - FLOOR PLAN.dwg, 2019_02_14_Refusal Set-Sheet - A-105 - LEVEL 6-12 - FLOOR PLAN.dwg, AND 2019_02_14_Refusal Set-Sheet - A-106 - LEVEL 13 - FLOOR PLAN.dwg" RECEIVED APRIL 30, 2019.

I CERTIFY THAT THIS PLAN IS BASED ON AN ACTUAL FIELD SURVEY AND THE LATEST PLANS AND DEEDS OF RECORD.

KEVIN D. ARSENAULT No. 45286 PROFESSIONAL LAND SURVEYOR COMMONWEALTH OF MASSACHUSETTS

KEVIN ARSENAULT, PLS (MA# 45286)
karsenault@feldmansurveyors.com

5/2/19
DATE

PLOT PLAN
1767 WASHINGTON STREET
"HOTEL ALEXANDRA"
BOSTON, MASS.

FELDMAN LAND SURVEYORS
152 HAMPDEN STREET
BOSTON, MASS. 02119
PHONE: (617)357-9740
www.feldmansurveyors.com
MAY 2, 2019

FELDMAN LAND SURVEYORS

20 0 10 20 40 80
SCALE: 1"=20'

RESEARCH GD	FIELD CHIEF NC	PROJ MGR SMD	APPROVED	SHEET NO. 1 OF 1
CALC GD	CADD GD	FIELD CHECKED	CRD FILE 16426	JOB NO. 16426/A

FILENAME: S:\PROJECTS\16400s\16426\DWG\16426-PP.DWG

HOTEL ALEXANDRA
PROPOSED SITE PLAN

SCALE	PROJECT #	DATE ISSUED
1" = 50'-0"	185061.00	08.12.2019

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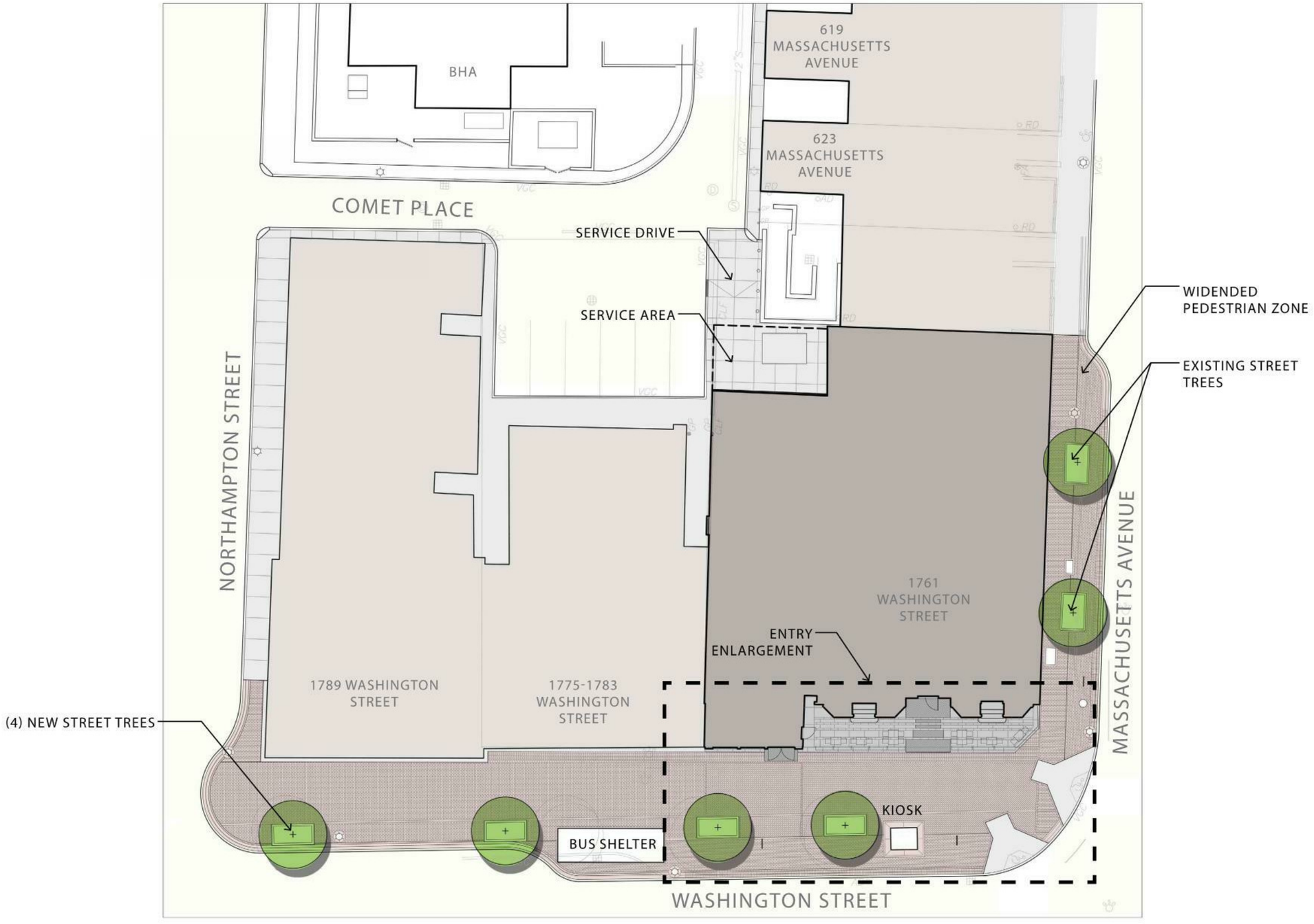
A03



1 ALEXANDRA SITE PLAN
SCALE: NTS

HOTEL ALEXANDRA
PROPOSED STREETSCAPE PLAN

SCALE	PROJECT #	DATE ISSUED
	185061.00	08.12.2019

A04

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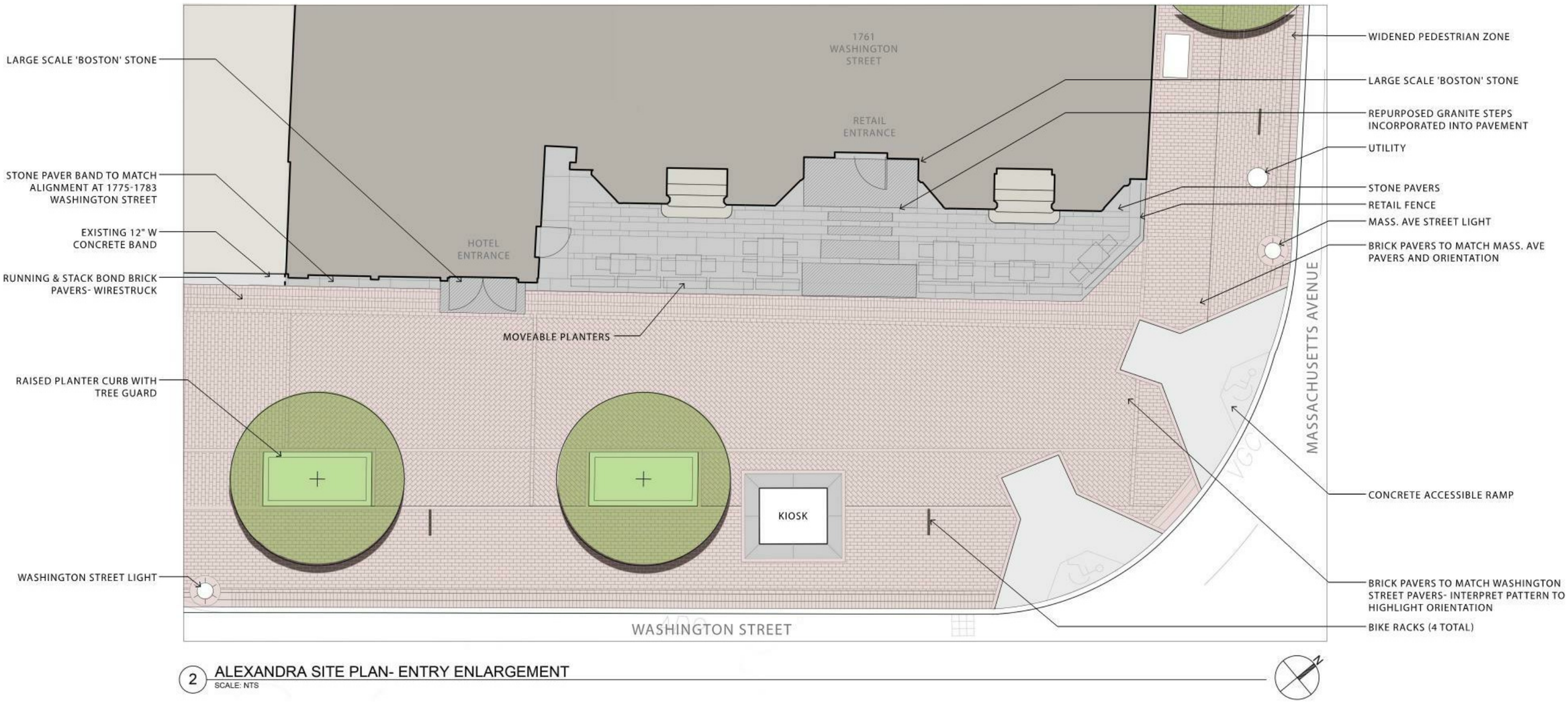

2 ALEXANDRA SITE PLAN- ENTRY ENLARGEMENT
SCALE: NTS

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HOTEL ALEXANDRA
PROPOSED STREETSCAPE PLAN - ENTRY ENLARGEMENT

SCALE	PROJECT #	DATE ISSUED
	185061.00	08.12.2019

A05

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HOTEL ALEXANDRA
LEVEL 0 FLOOR PLAN

0' 5' 10' 20'

SCALE	PROJECT #	DATE ISSUED
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A100

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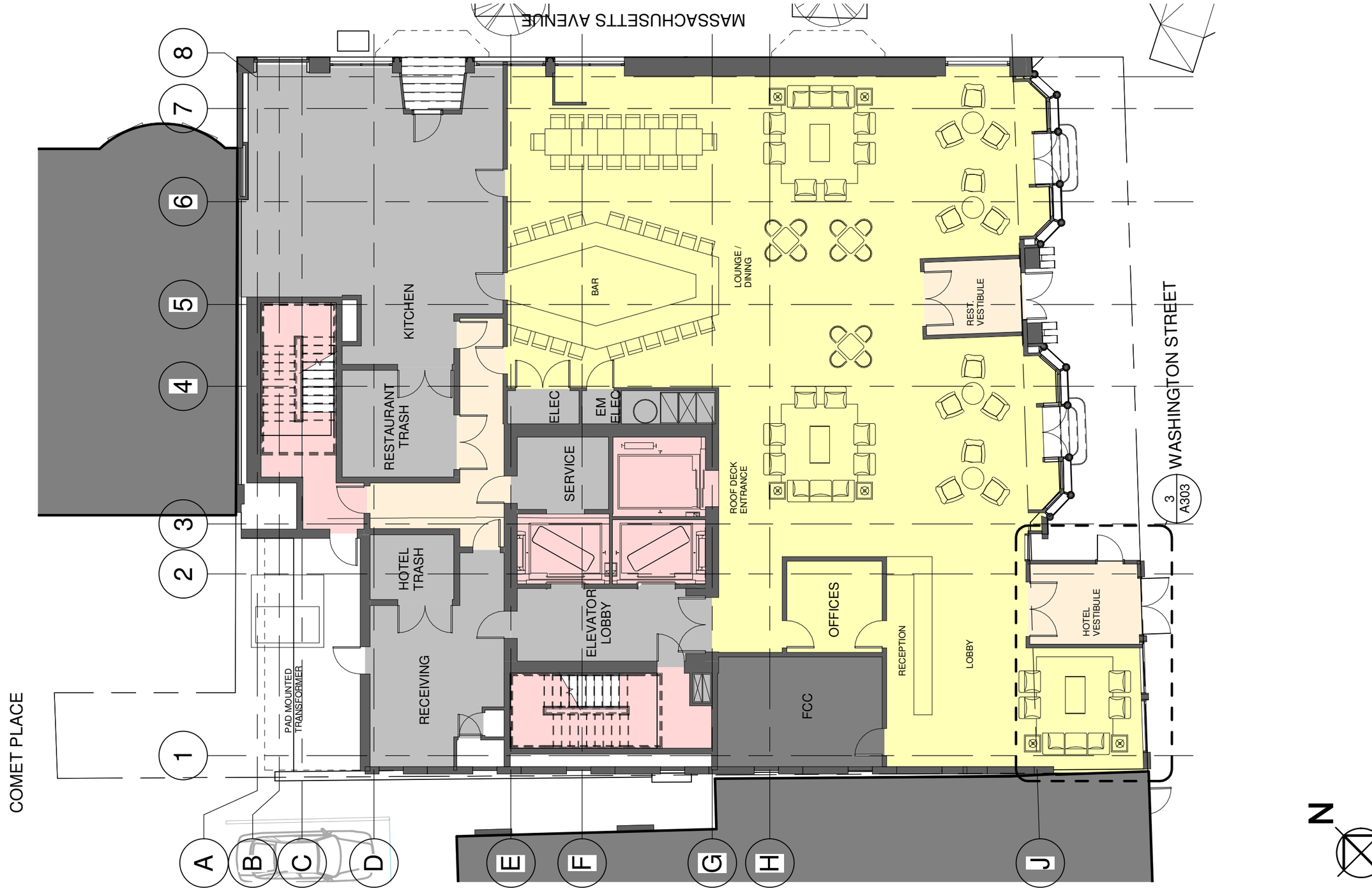

HOTEL ALEXANDRA
LEVEL 1 FLOOR PLAN

0' 5' 10' 20'

SCALE	PROJECT #	DATE ISSUED
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HOTEL ALEXANDRA
LEVEL 2 FLOOR PLAN

0' 5' 10' 20'

SCALE	PROJECT #	DATE ISSUED
3/32" = 1'-0"	185061.00	08.12.2019

A102

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HOTEL ALEXANDRA
LEVEL 3 FLOOR PLAN

0' 5' 10' 20'

SCALE	PROJECT #	DATE ISSUED
3/32" = 1'-0"	185061.00	08.12.2019

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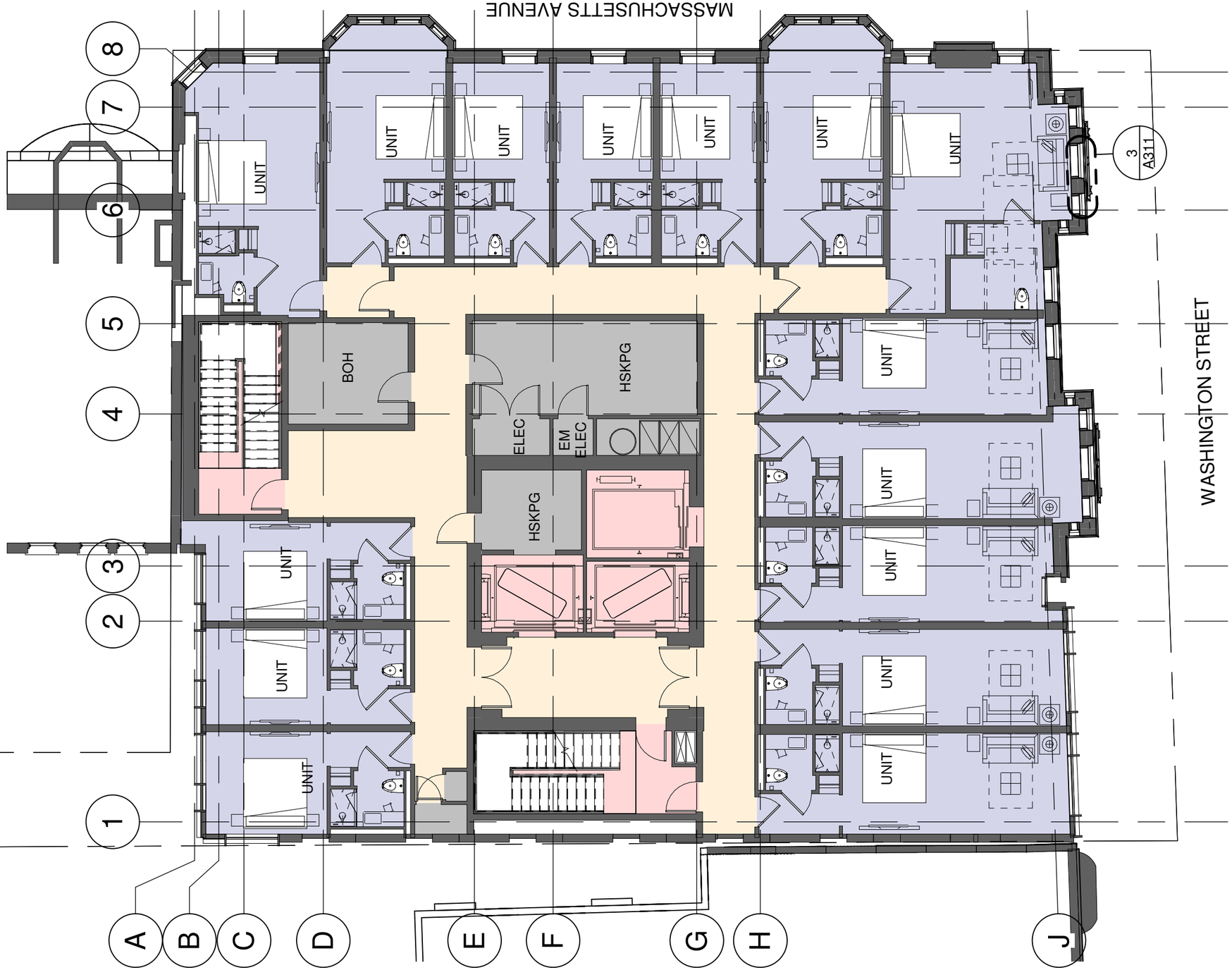

HOTEL ALEXANDRA
LEVEL 4 FLOOR PLAN

0' 5' 10' 20'

SCALE	PROJECT #	DATE ISSUED
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A104

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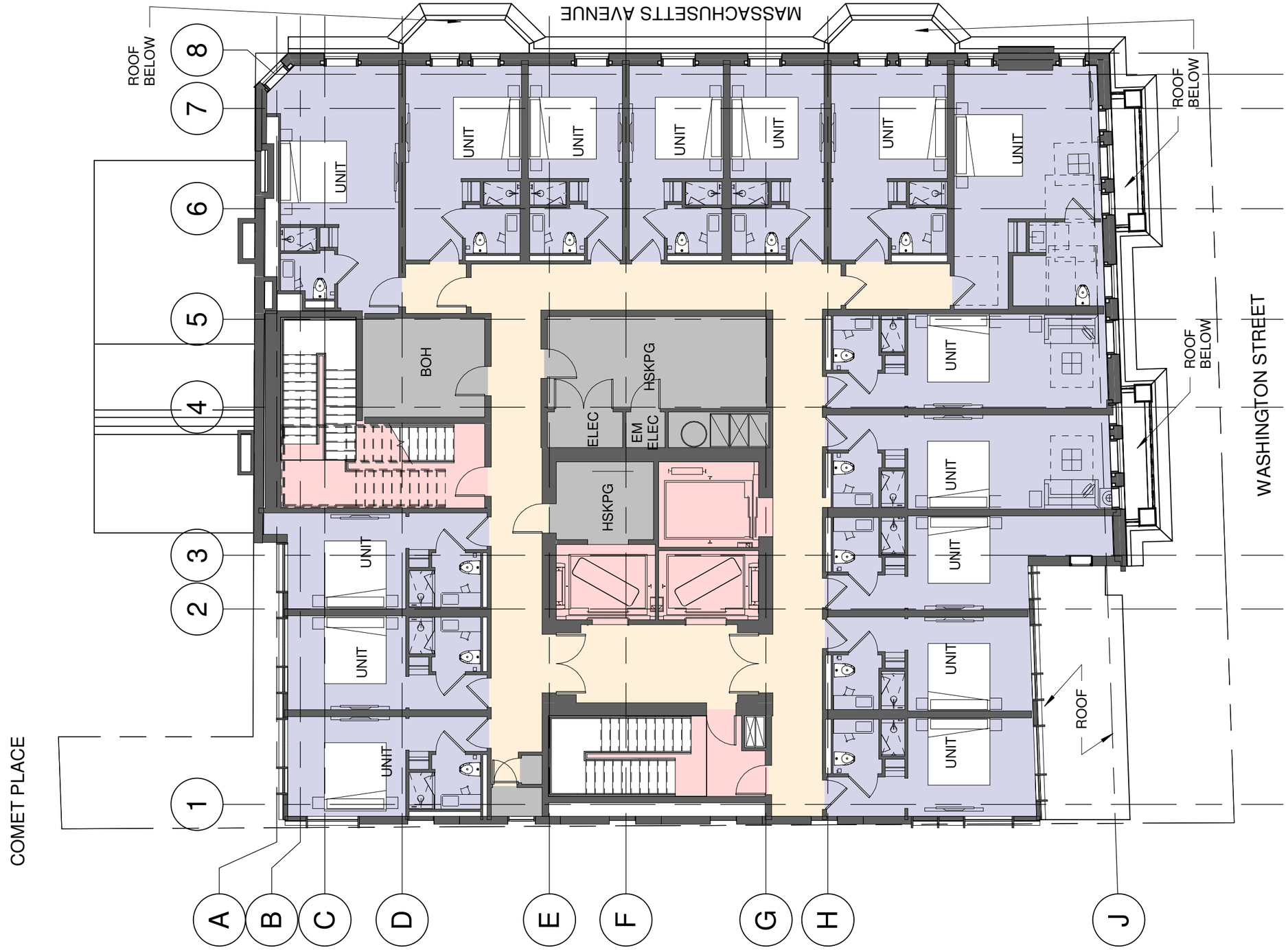

HOTEL ALEXANDRA
LEVEL 5 FLOOR PLAN

0' 5' 10' 20'

SCALE	PROJECT #	DATE ISSUED
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A105

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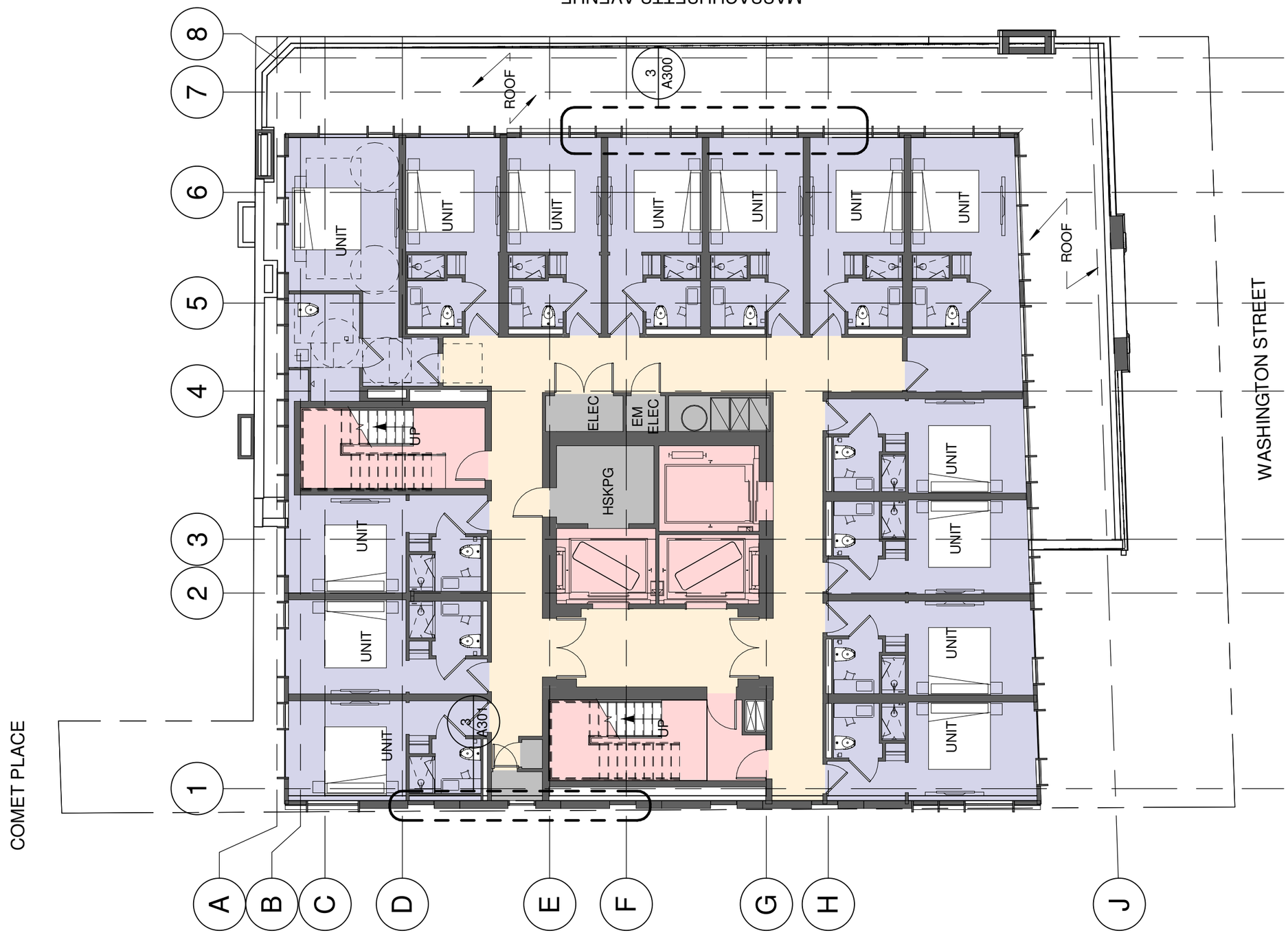

HOTEL ALEXANDRA
LEVEL 6-12 FLOOR PLAN

0' 5' 10' 20'

SCALE	PROJECT #	DATE ISSUED
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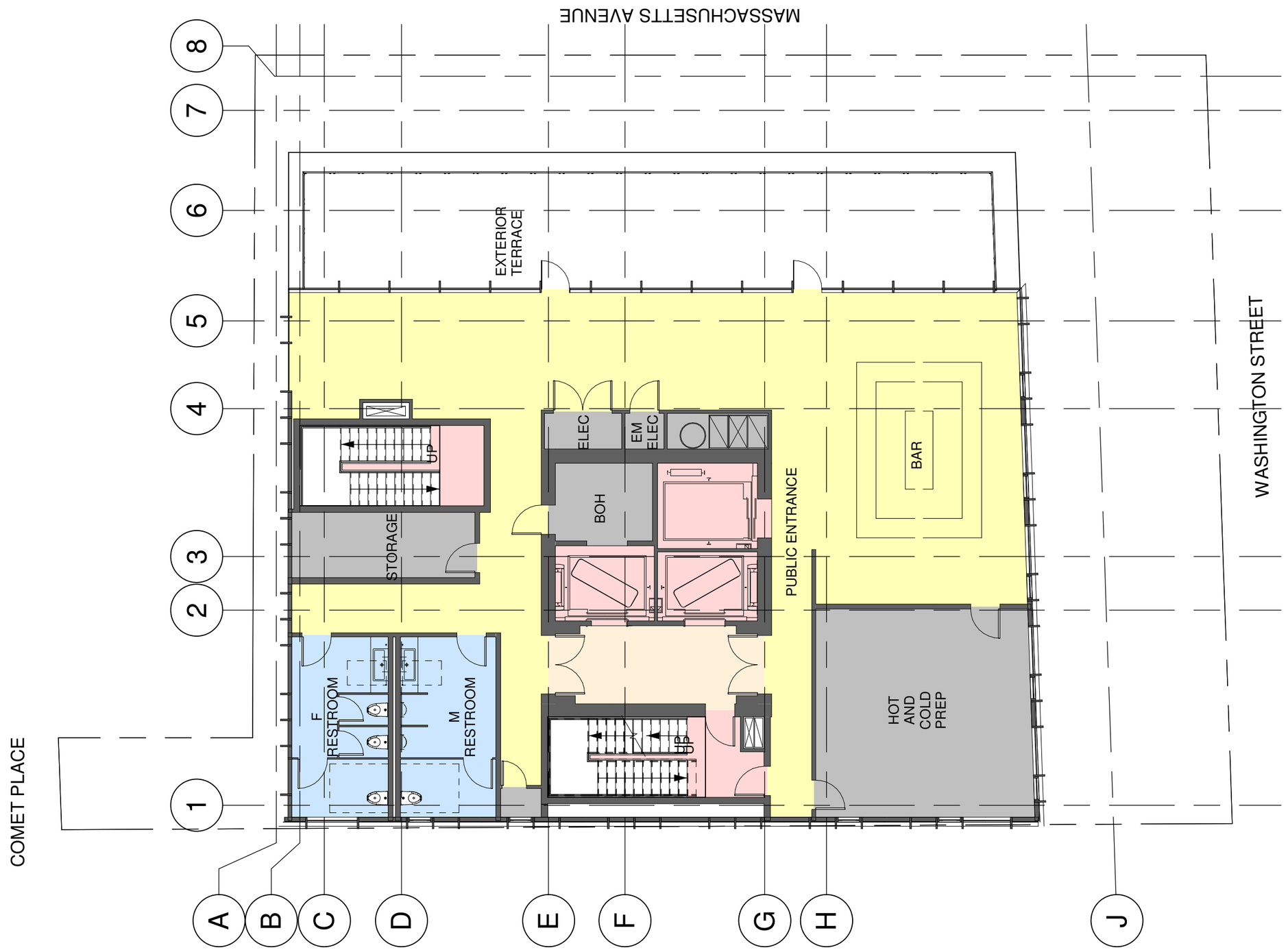

HOTEL ALEXANDRA
LEVEL 13 FLOOR PLAN

0' 5' 10' 20'

SCALE	PROJECT #	DATE ISSUED
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A107

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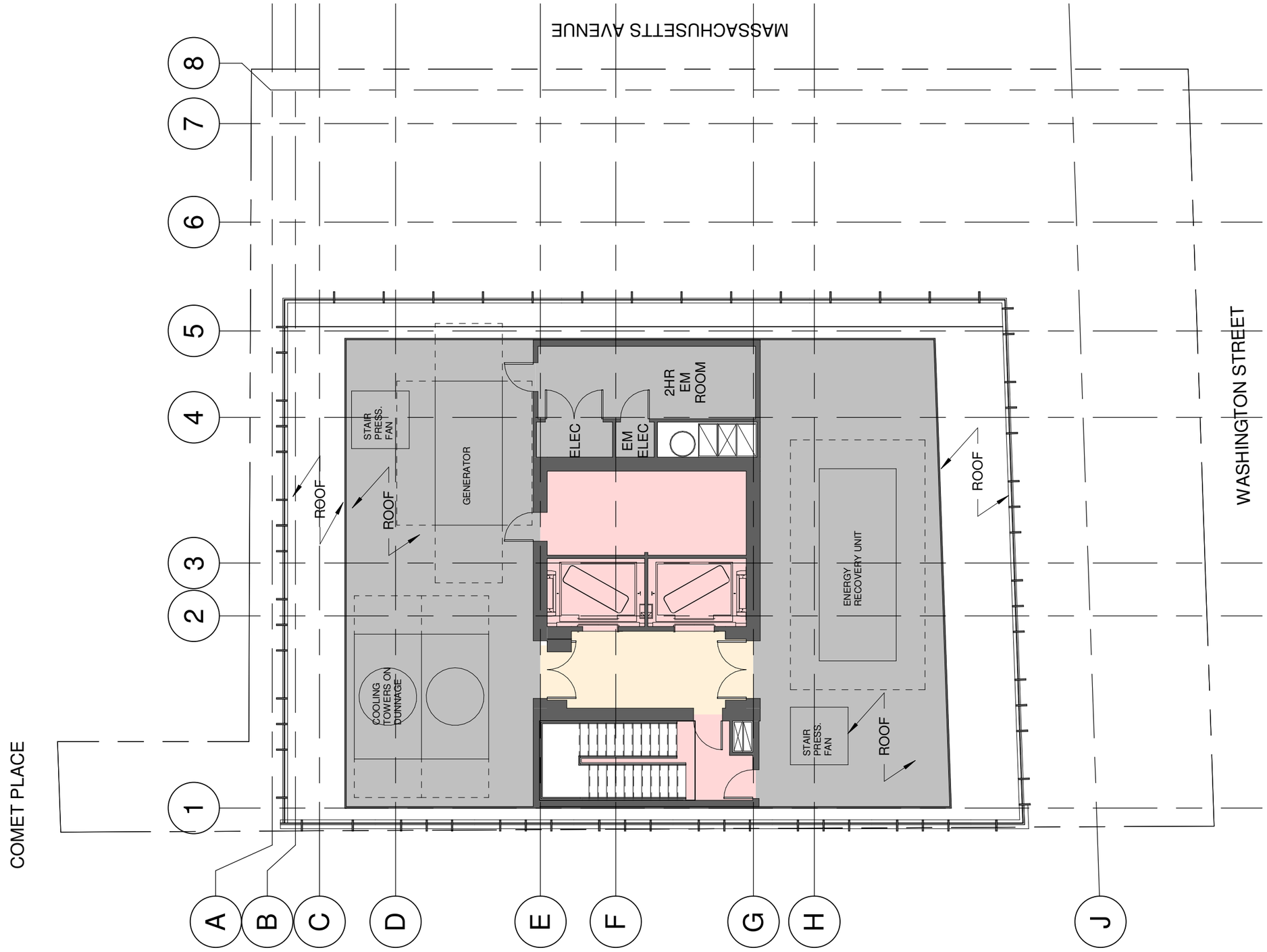

HOTEL ALEXANDRA
MECHANICAL PENTHOUSE FLOOR PLAN

0' 5' 10' 20'

SCALE	PROJECT #	DATE ISSUED
3/32" = 1'-0"	185061.00	08.12.2019

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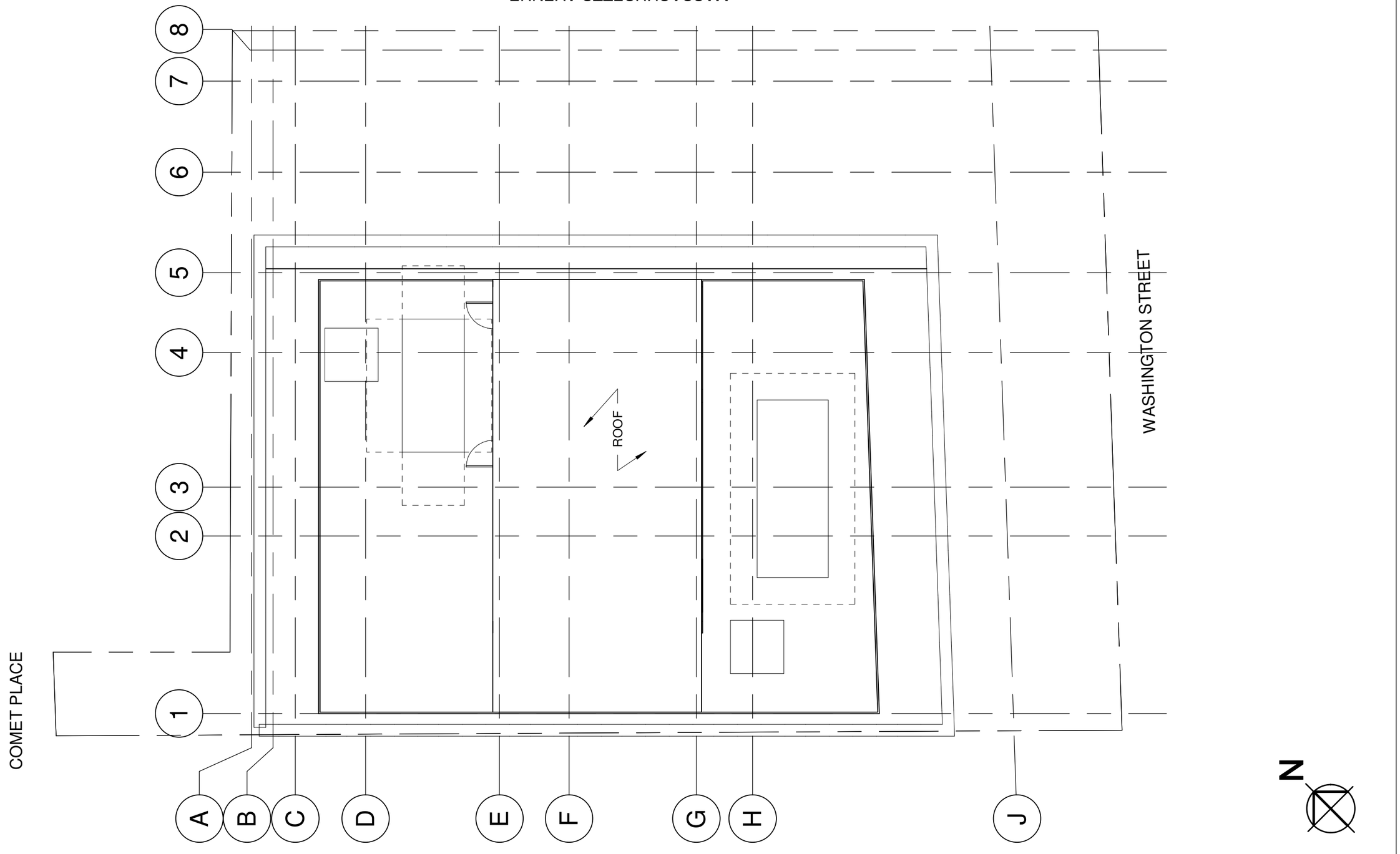

HOTEL ALEXANDRA
ROOF PLAN

0' 5' 10' 20'

SCALE	PROJECT #	DATE ISSUED
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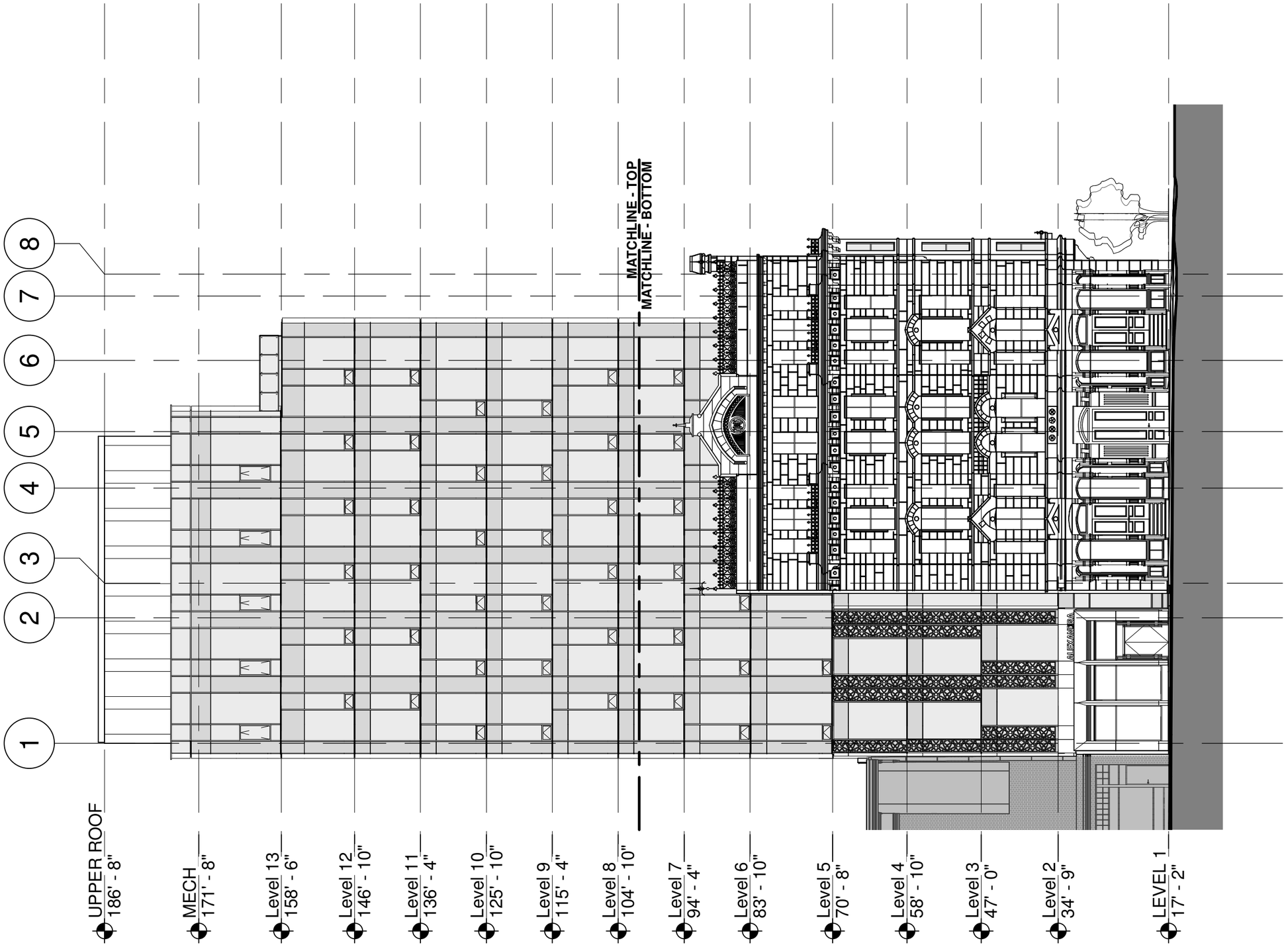
A109



HOTEL ALEXANDRA
PROPOSED SOUTH ELEVATION

SCALE	PROJECT #	DATE ISSUED
1/16" = 1'-0"	185061.00	08.12.2019

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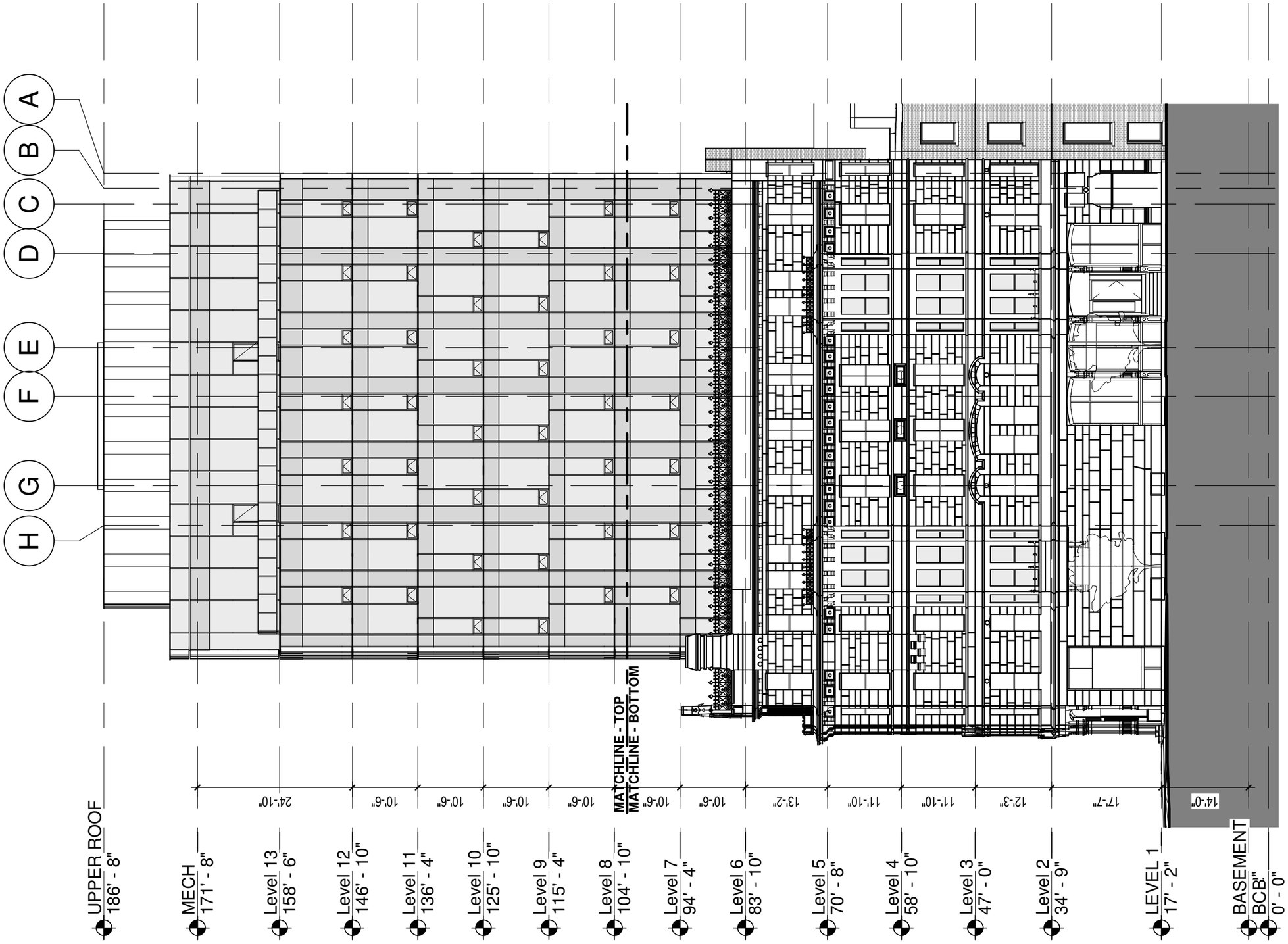
A201



HOTEL ALEXANDRA
PROPOSED EAST ELEVATION

SCALE	PROJECT #	DATE ISSUED
1/16" = 1'-0"	185061.00	08.12.2019

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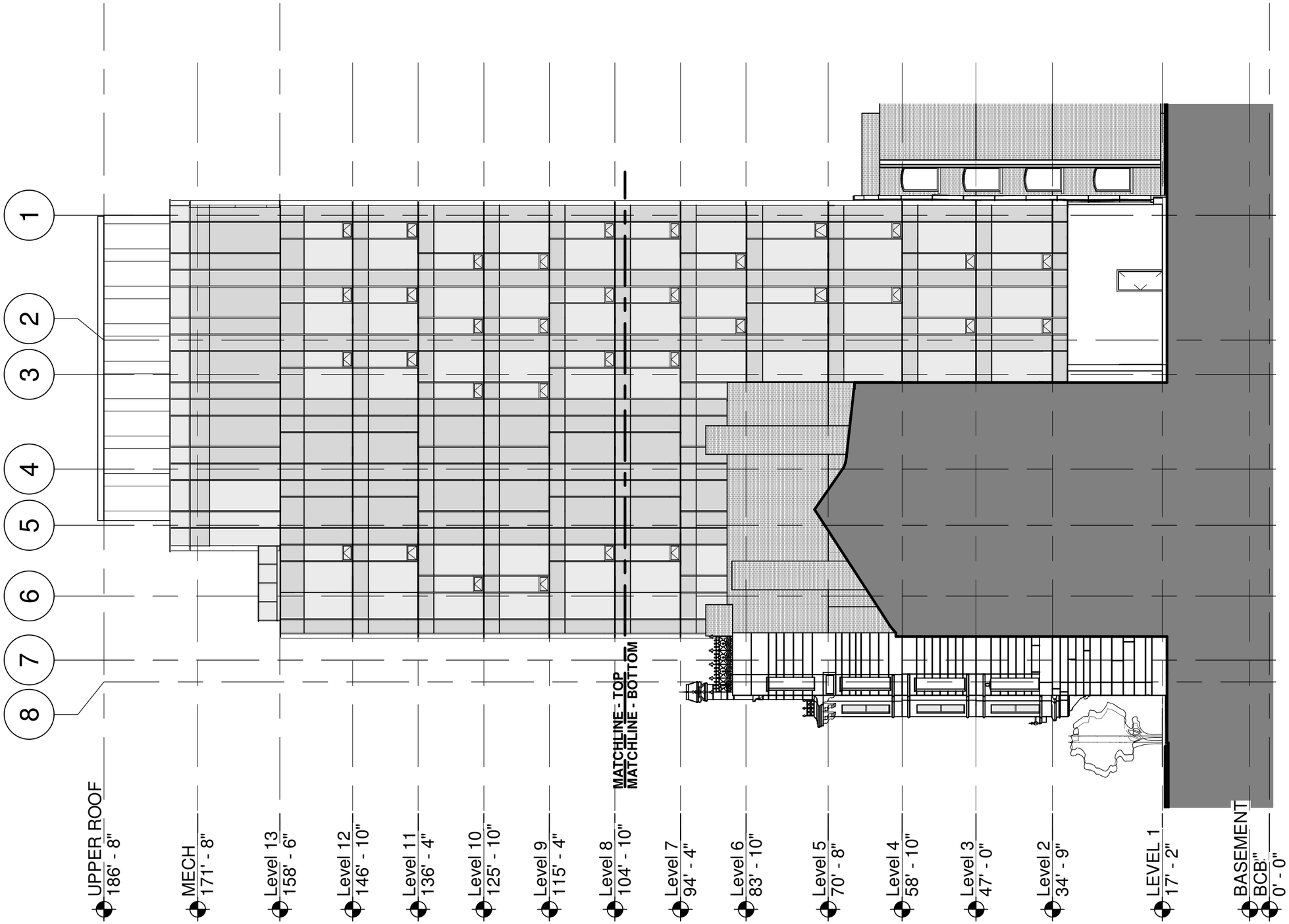
A202



HOTEL ALEXANDRA
PROPOSED NORTH ELEVATION

SCALE	PROJECT #	DATE ISSUED
1/16" = 1'-0"	185061.00	08.12.2019

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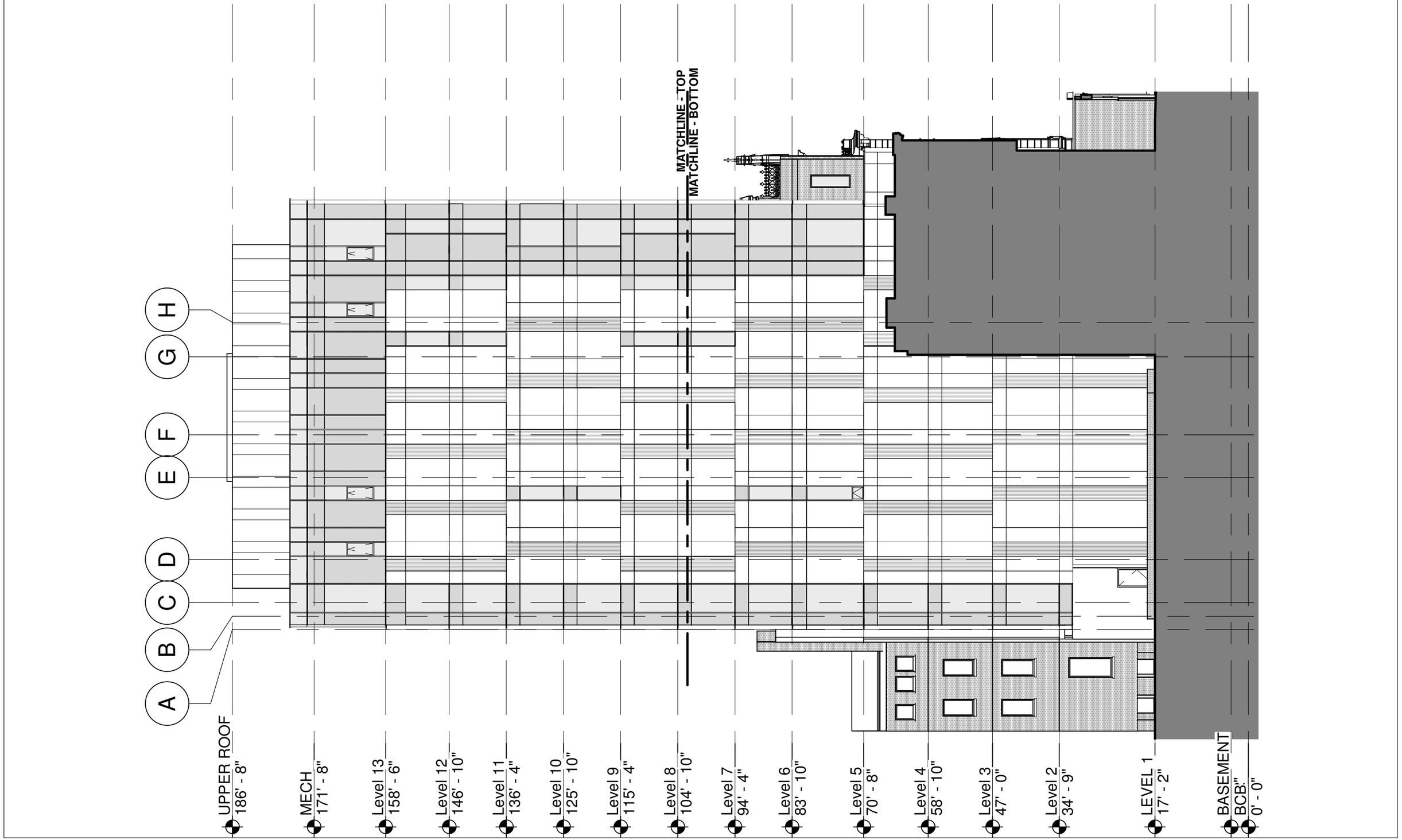
A203



HOTEL ALEXANDRA
PROPOSED WEST ELEVATION

SCALE	PROJECT #	DATE ISSUED
1/16" = 1'-0"	185061.00	08.12.2019

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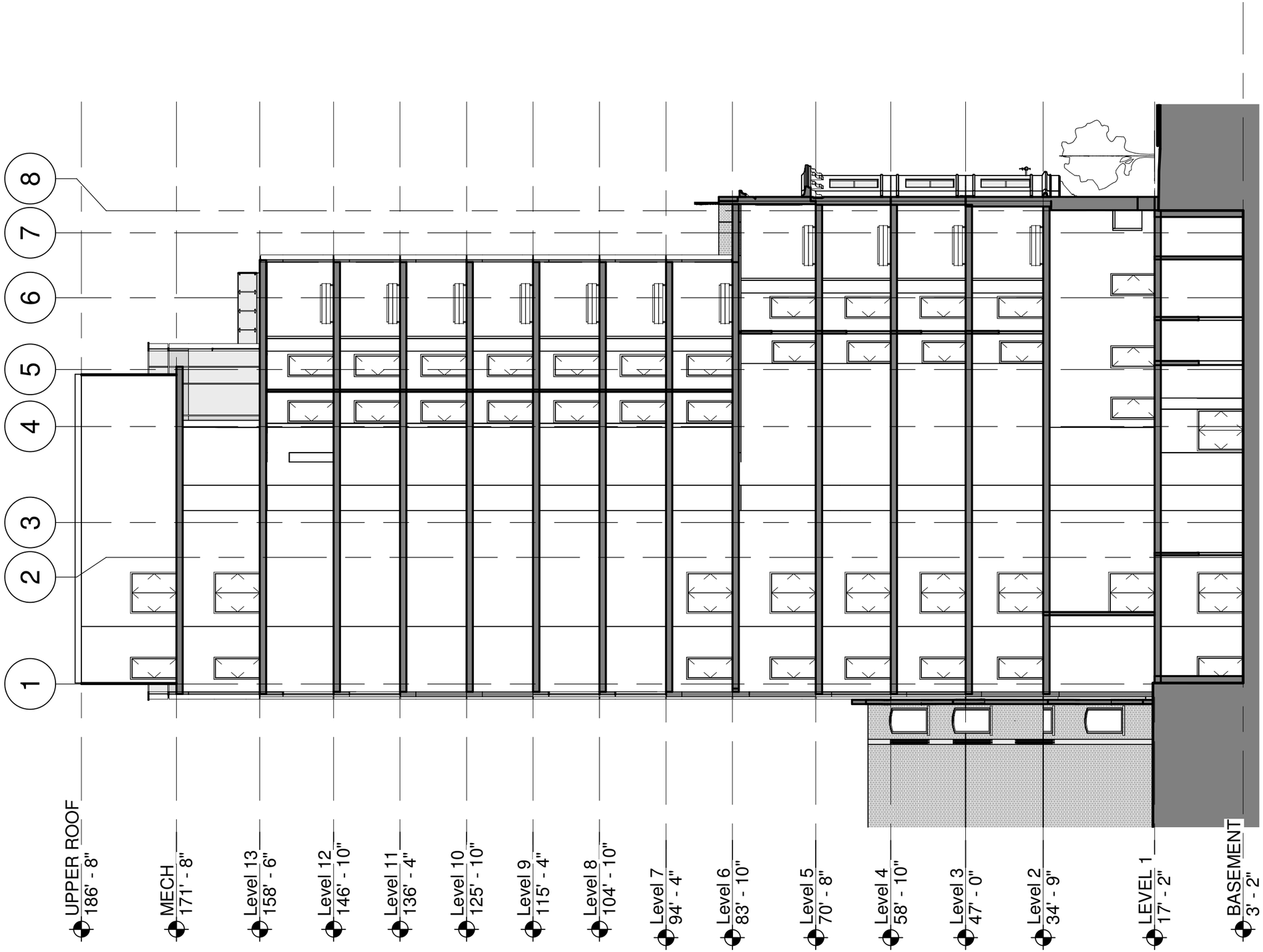
A204



HOTEL ALEXANDRA
PROPOSED BUILDING SECTION LOOKING NORTH

SCALE	PROJECT #	DATE ISSUED
1/16" = 1'-0"	185061.00	08.12.2019

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A210

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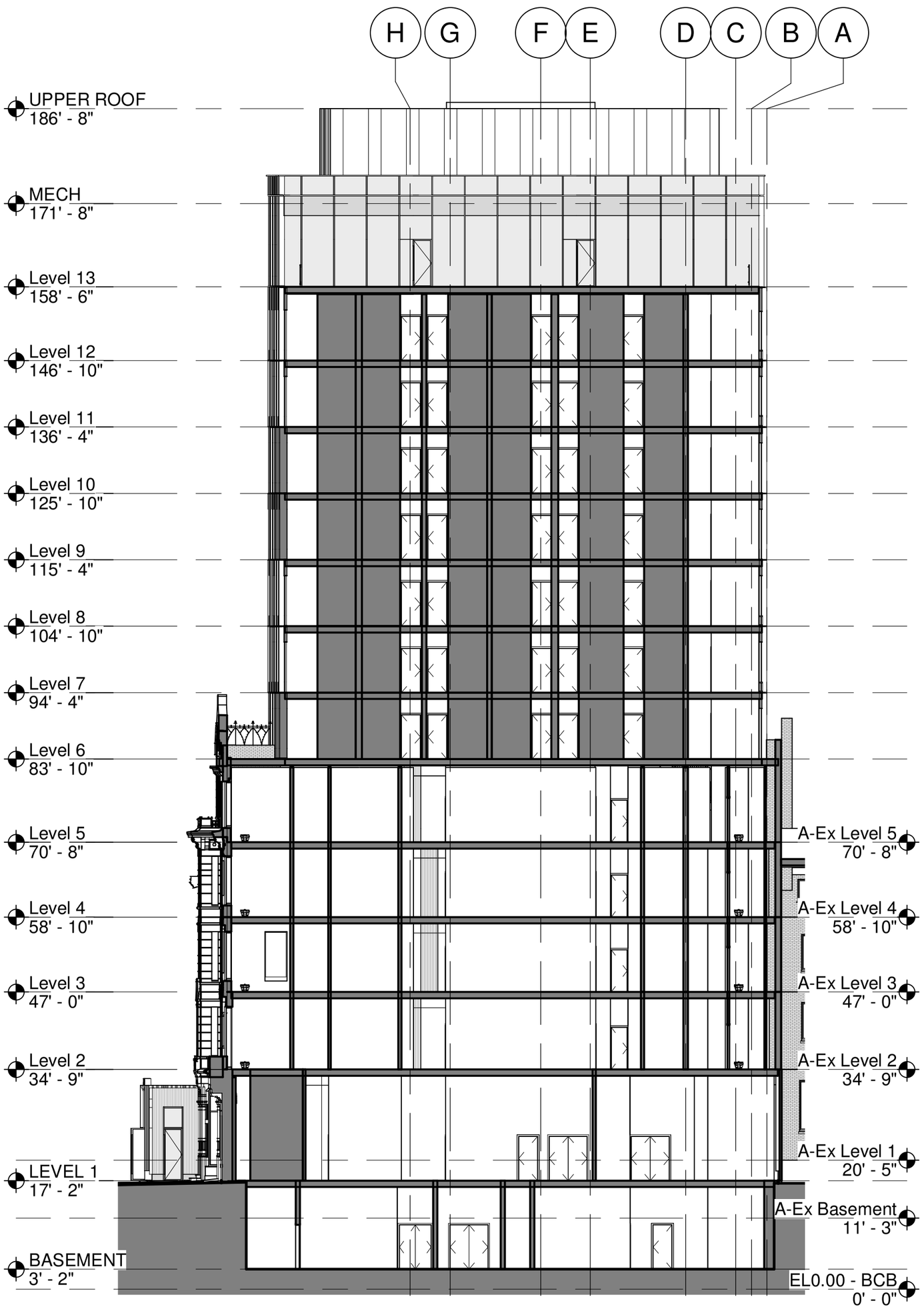
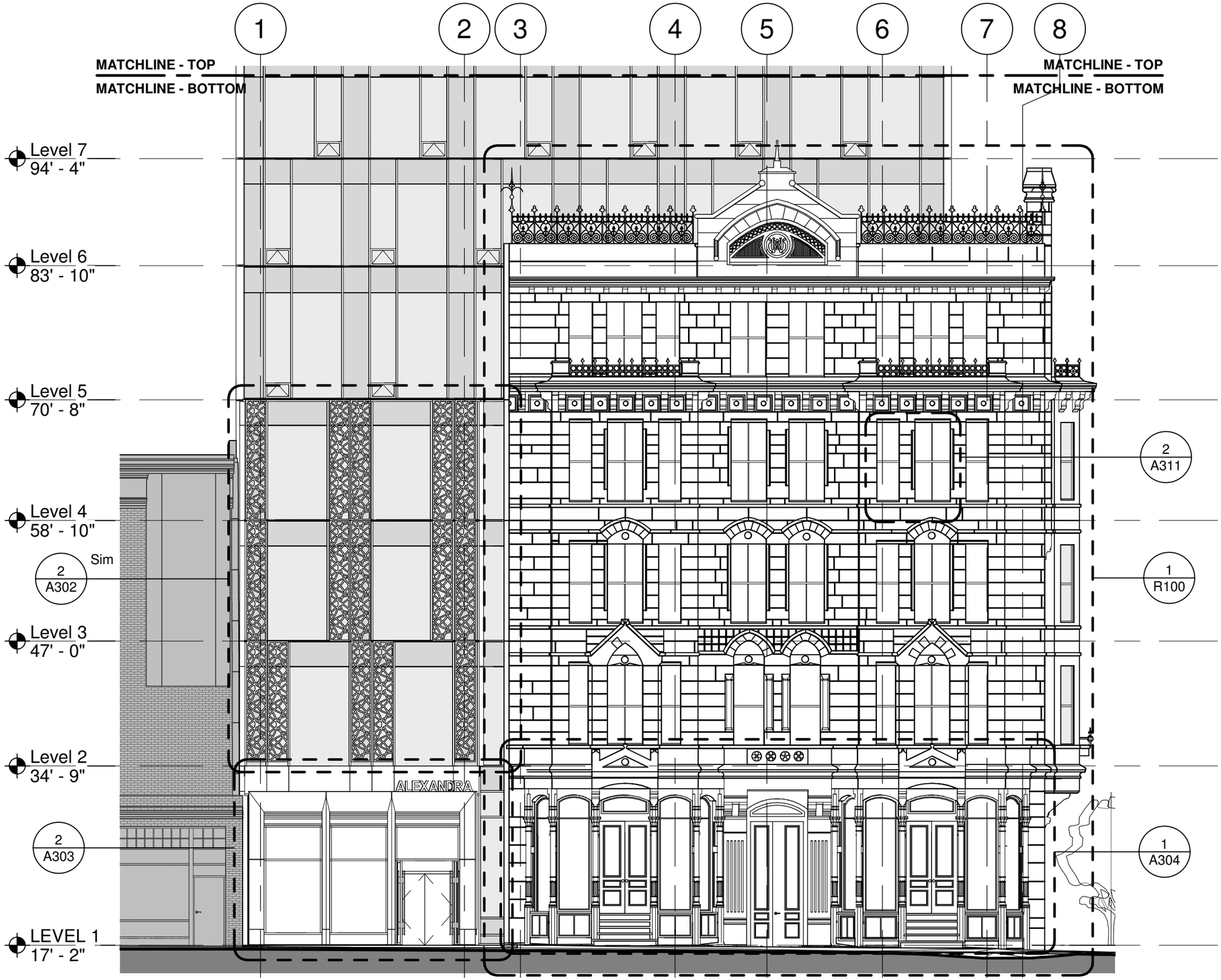
8/12/2019 9:45:12 AM



HOTEL ALEXANDRA
PROPOSED BUILDING SECTION LOOKING WEST

SCALE 1/16" = 1'-0"
PROJECT # 185061.00
DATE ISSUED 08.12.2019

A211



NOTE:
REFER TO RESTORATION DRAWINGS FOR FURTHER INFORMATION REGARDING THE REMOVAL, SALVAGE, REPAIR, AND REPLACEMENT / REPLICATION OF ELEMENTS AT THE HISTORIC BUILDING.

HOTEL ALEXANDRA
PROPOSED ENLARGED SOUTH ELEVATION - BOTTOM

SCALE	PROJECT #	DATE ISSUED
As indicated	185061.00	08.12.2019

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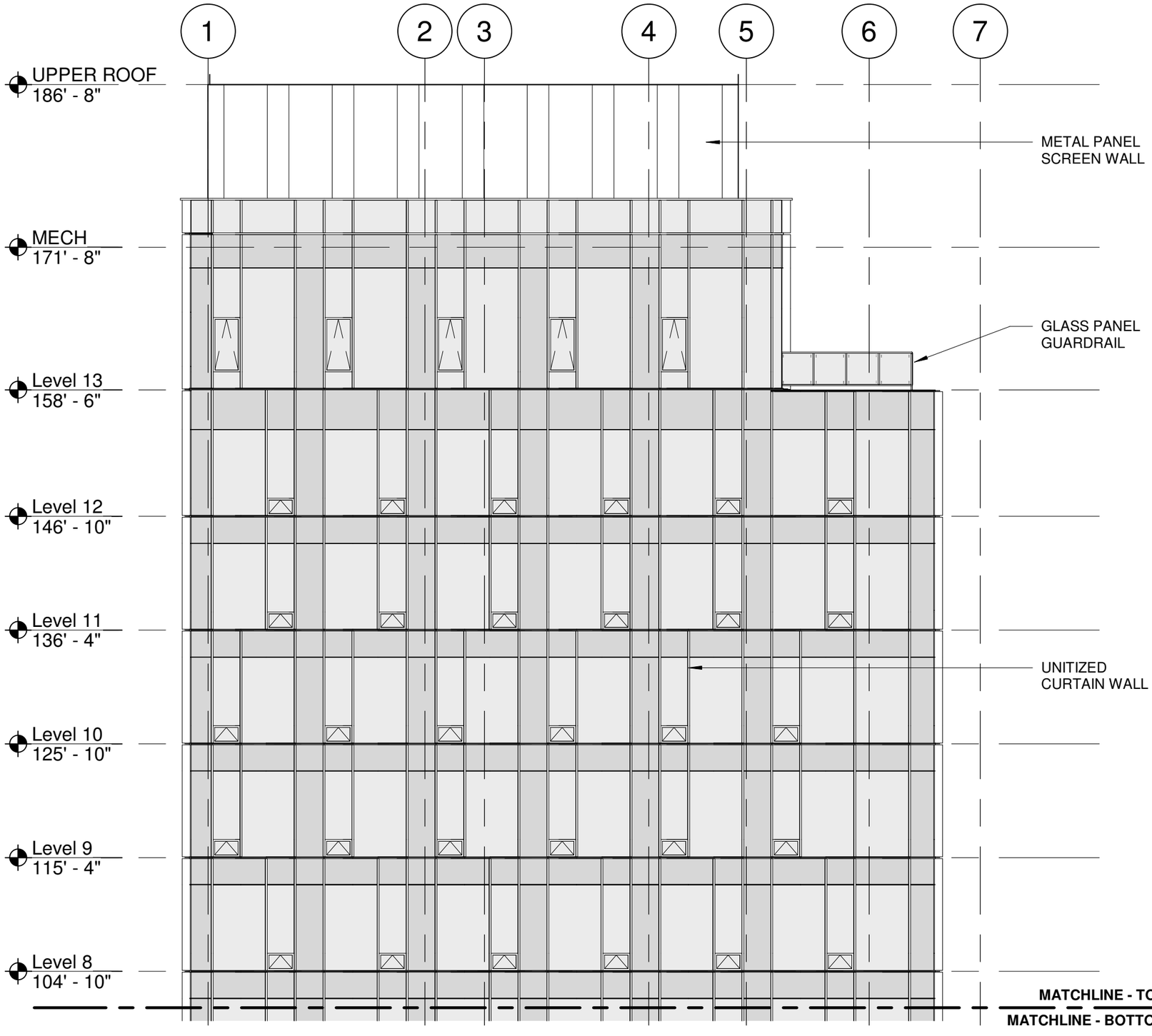
A220



HOTEL ALEXANDRA
PROPOSED ENLARGED SOUTH ELEVATION - TOP

SCALE	PROJECT #	DATE ISSUED
1" = 10'-0"	185061.00	08.12.2019

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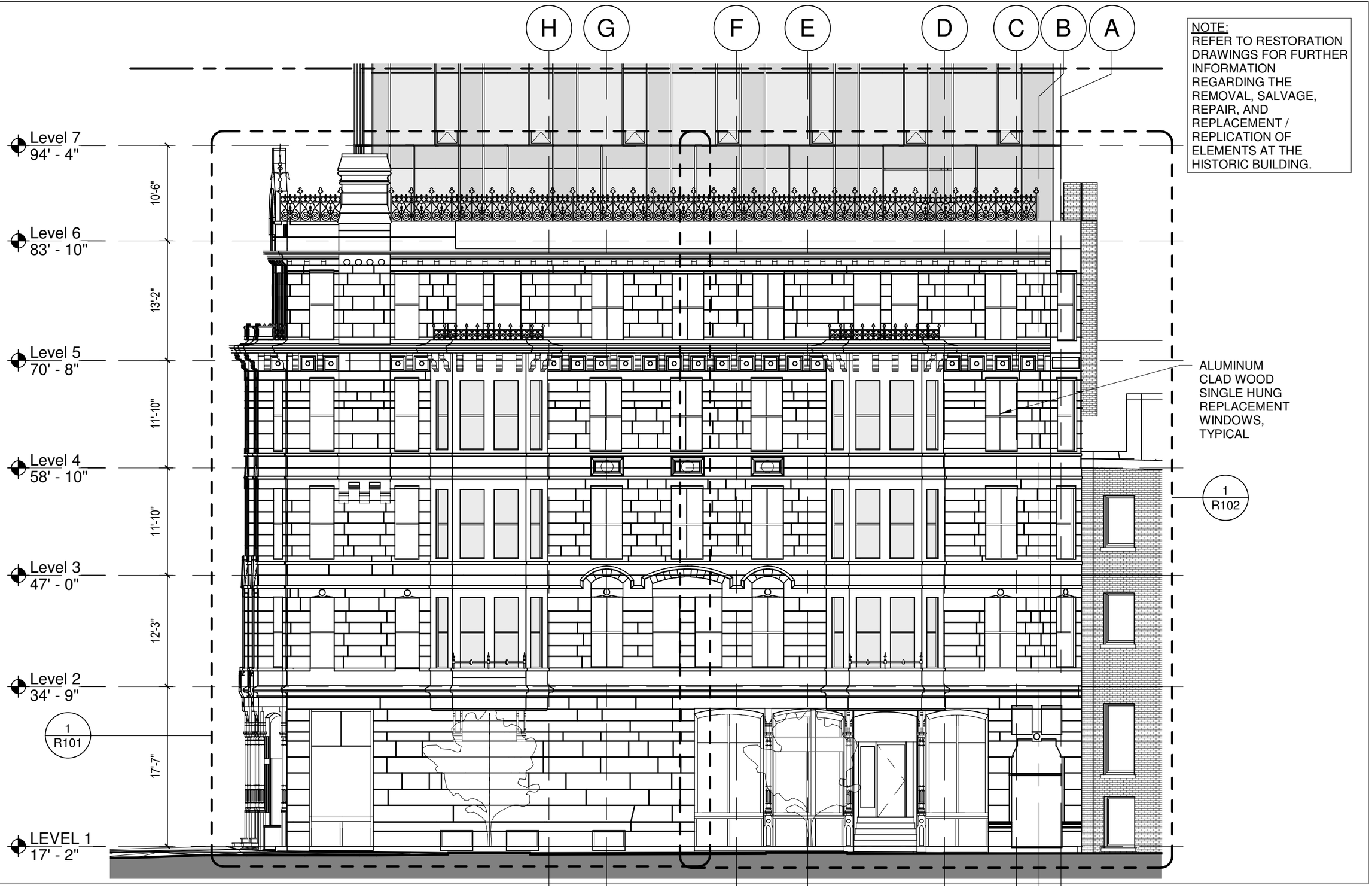
A221



HOTEL ALEXANDRA
PROPOSED ENLARGED EAST ELEVATION - BOTTOM

SCALE	PROJECT #	DATE ISSUED
As indicated	185061.00	08.12.2019

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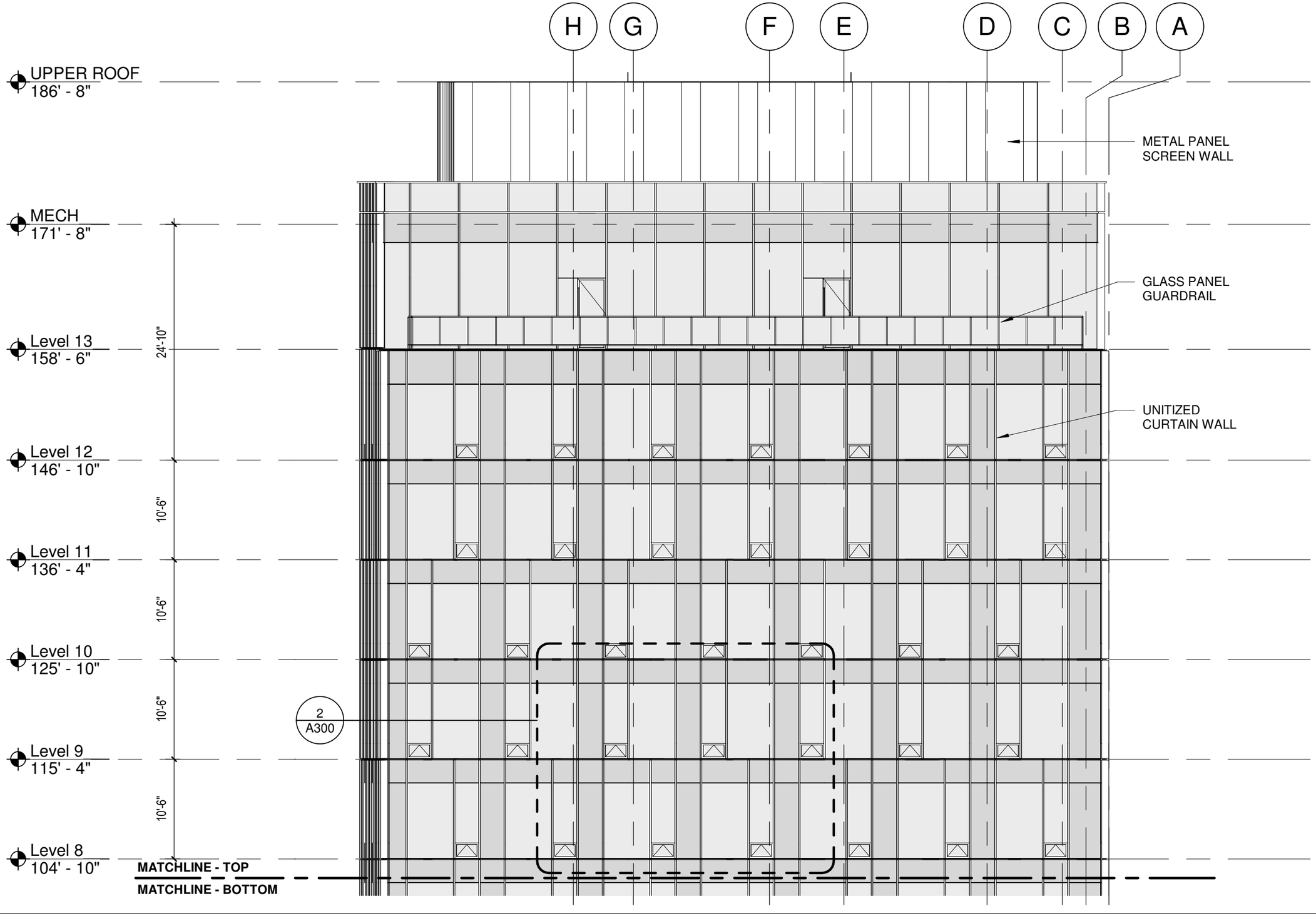
A222



HOTEL ALEXANDRA
PROPOSED ENLARGED EAST ELEVATION - TOP

SCALE	PROJECT #	DATE ISSUED
1" = 10'-0"	185061.00	08.12.2019

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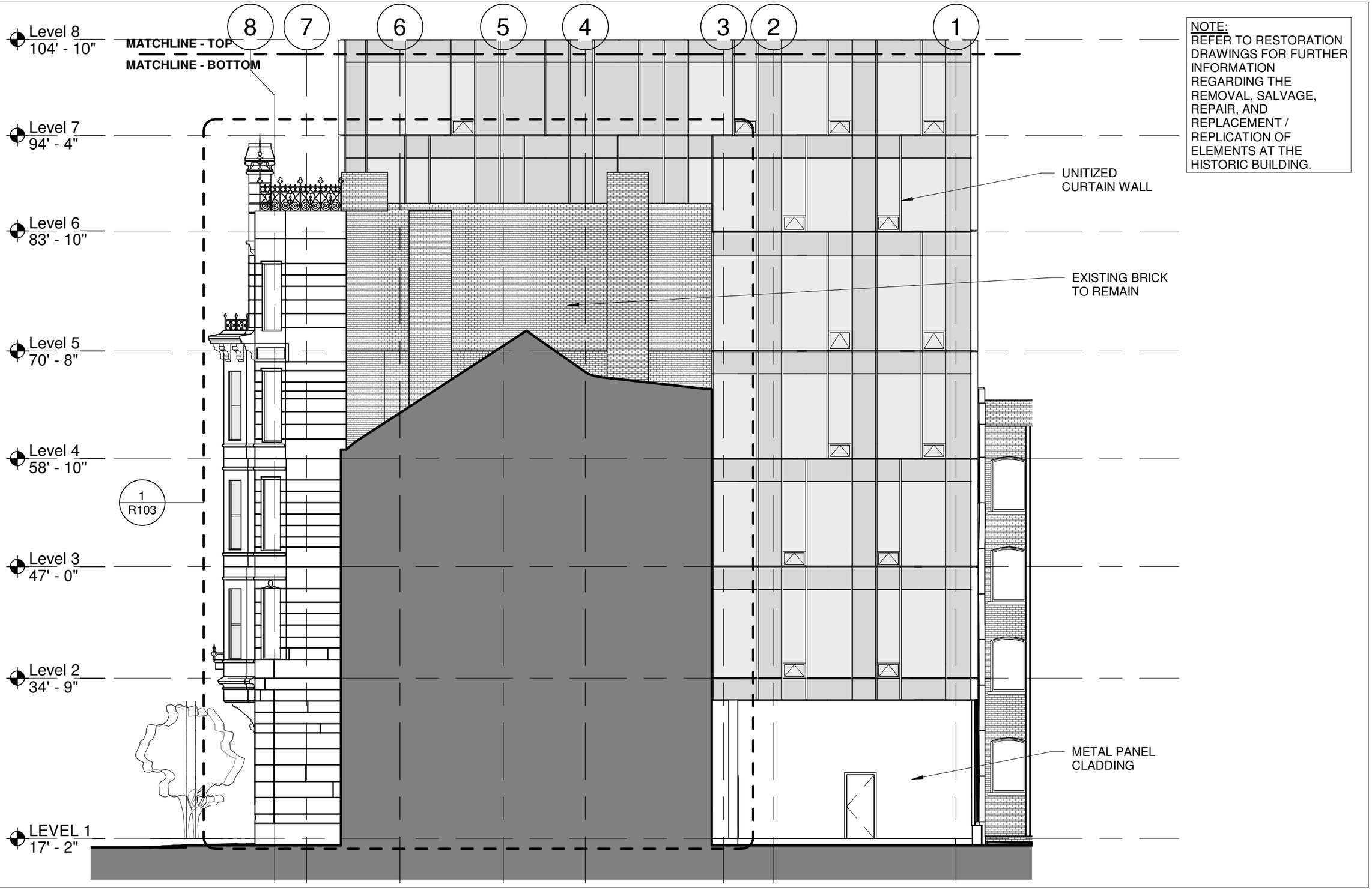
A223



HOTEL ALEXANDRA
PROPOSED ENLARGED NORTH ELEVATION - BOTTOM

SCALE	PROJECT #	DATE ISSUED
As indicated	185061.00	08.12.2019

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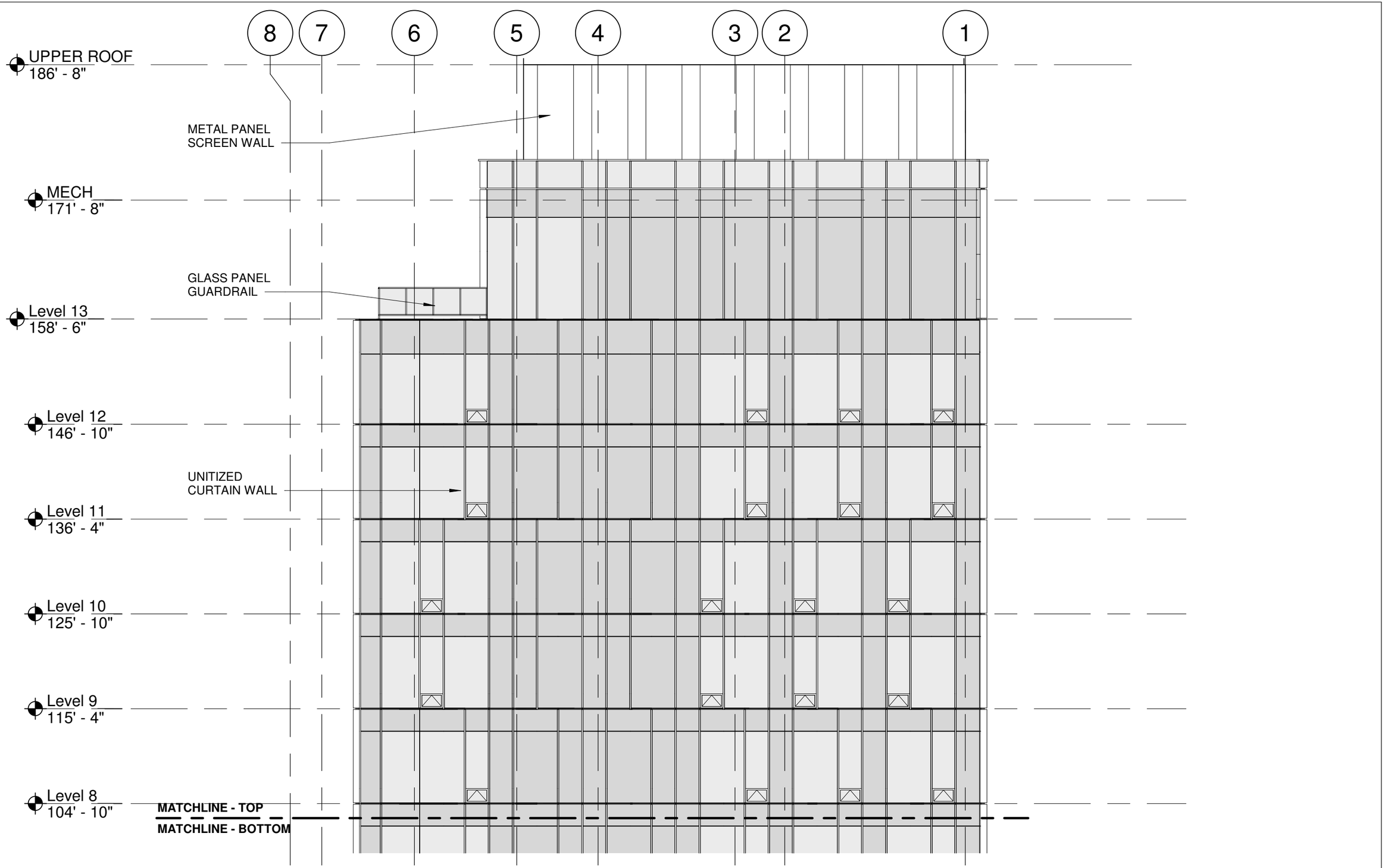
A224



HOTEL ALEXANDRA
PROPOSED ENLARGED NORTH ELEVATION - TOP

SCALE	PROJECT #	DATE ISSUED
1" = 10'-0"	185061.00	08.12.2019

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A225

A B C D E F G H

MATCHLINE - TOP
MATCHLINE - BOTTOM

NOTE:
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UNITIZED CURTAIN WALL

FACE-FASTENDED METAL PANELS

NEW BRICK TO MATCH ORIGINAL ADJACENT

NEW WINDOW TO MATCH PROPORTIONS OF ORIGINAL

Level 7
94' - 4"

Level 6
83' - 10"

Level 5
70' - 8"

Level 4
58' - 10"

Level 3
47' - 0"

Level 2
34' - 9"

LEVEL 1
17' - 2"

1 ENLARGED WEST ELEVATION - BOTTOM
1" = 10'-0"

2 ENLARGED WEST ELEVATION - PARTIAL
1" = 10'-0"

HOTEL ALEXANDRA
PROPOSED ENLARGED WEST ELEVATION - BOTTOM

SCALE	PROJECT #	DATE ISSUED
As indicated	185061.00	08.12.2019

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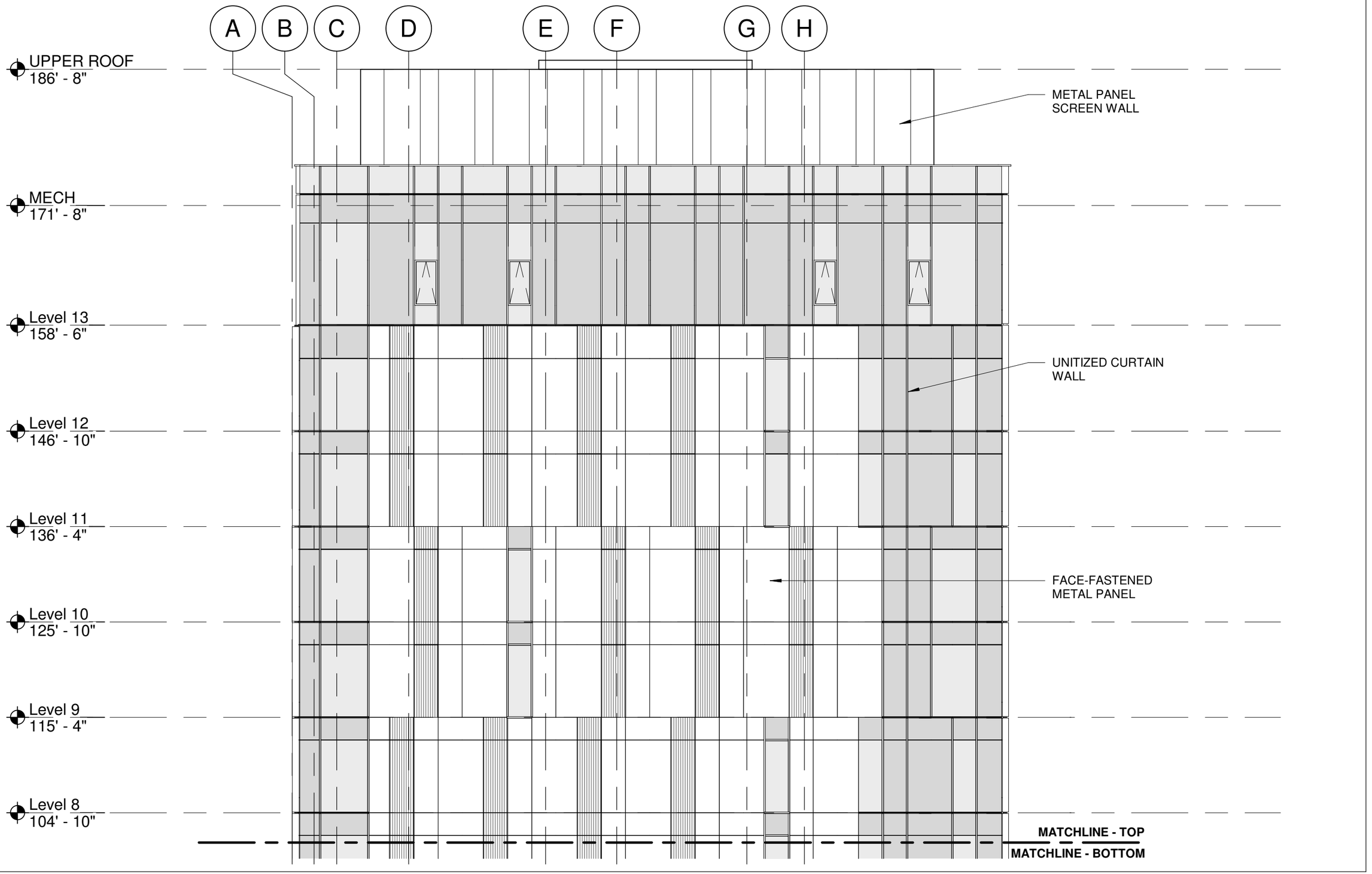
A226



HOTEL ALEXANDRA
PROPOSED ENLARGED WEST ELEVATION - TOP

SCALE	PROJECT #	DATE ISSUED
1" = 10'-0"	185061.00	08.12.2019

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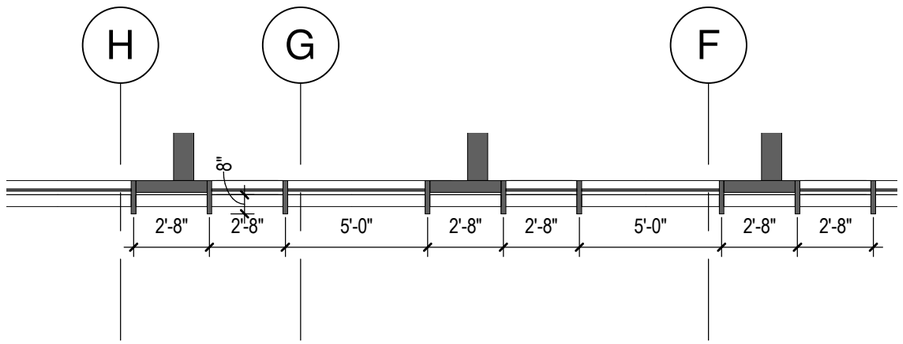
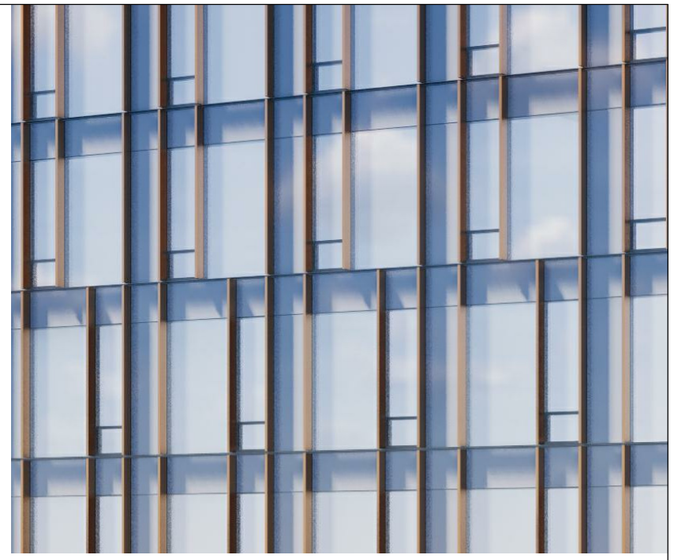
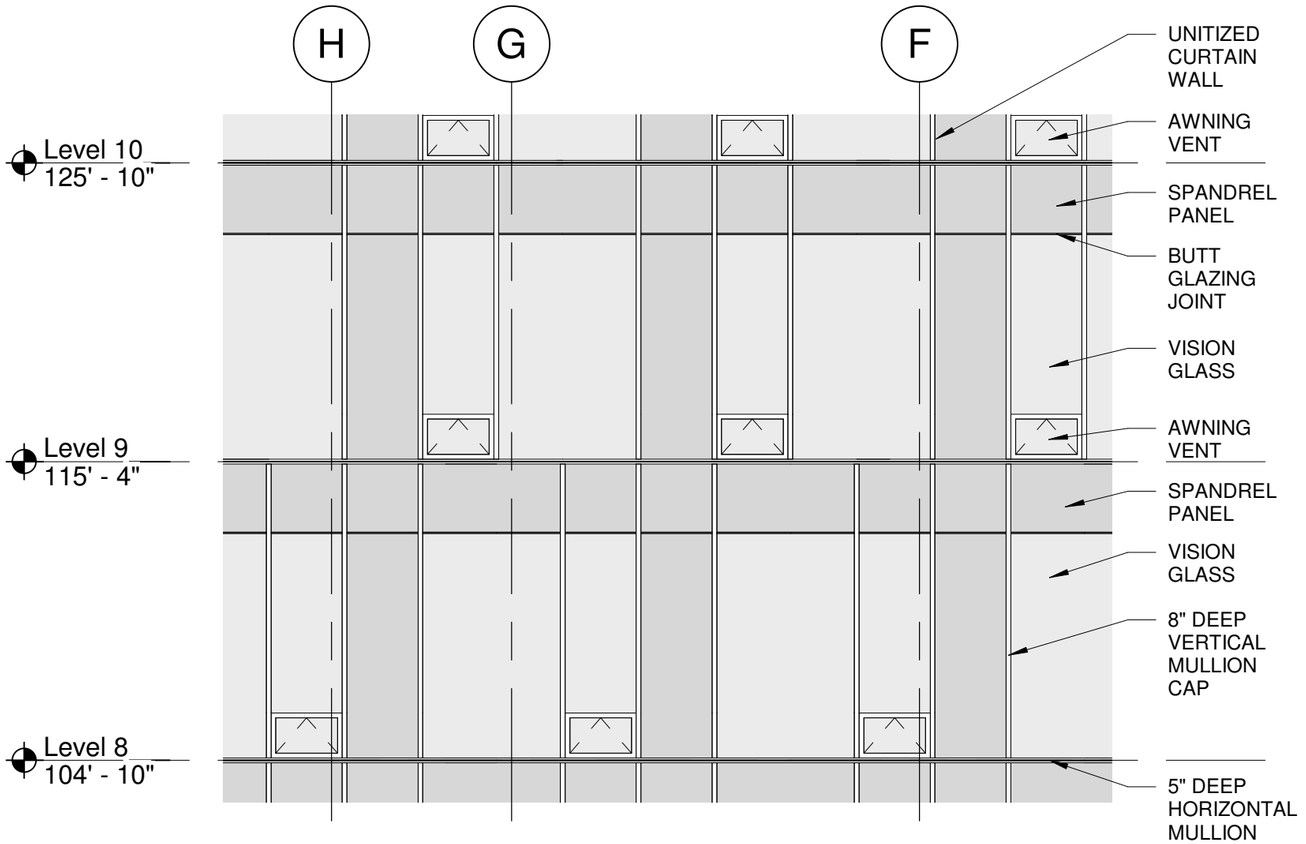
A227



3 ENLARGED PLAN - TYPICAL TOWER CURTAIN WALL

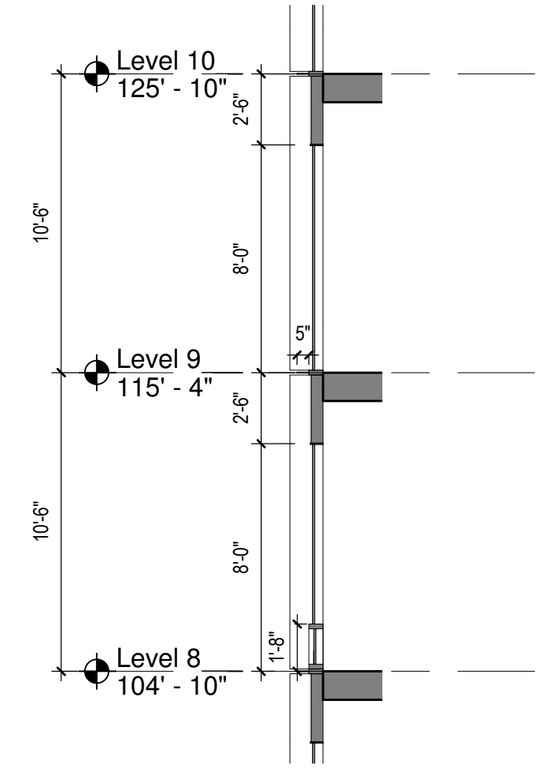
3/16" = 1'-0"





2 ENLARGED ELEVATION - TYPICAL TOWER CURTAIN WALL

3/16" = 1'-0"



1 ENLARGED WALL SECTION - TYPICAL TOWER CURTAIN WALL

3/16" = 1'-0"

HOTEL ALEXANDRA
PROPOSED EPS - TYPICAL TOWER CURTAIN WALL

SCALE	PROJECT #	DATE ISSUED
As indicated	185061.00	08.12.2019

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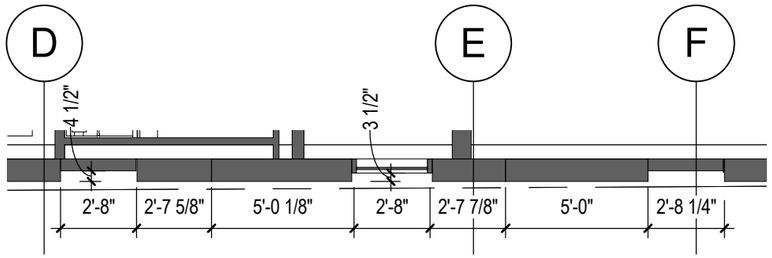
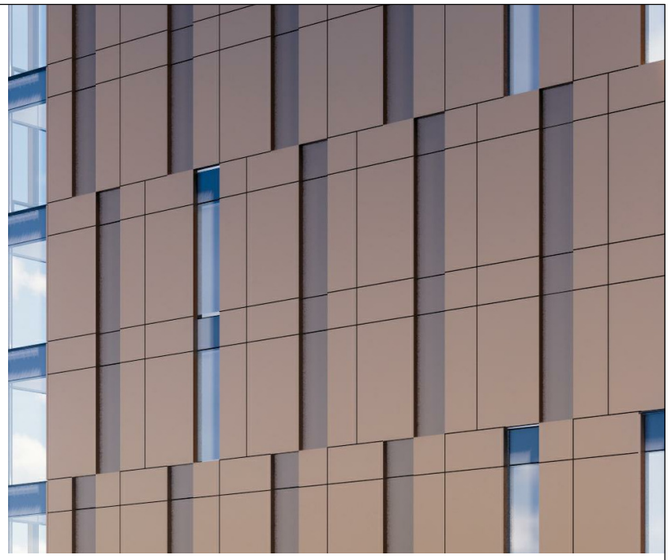
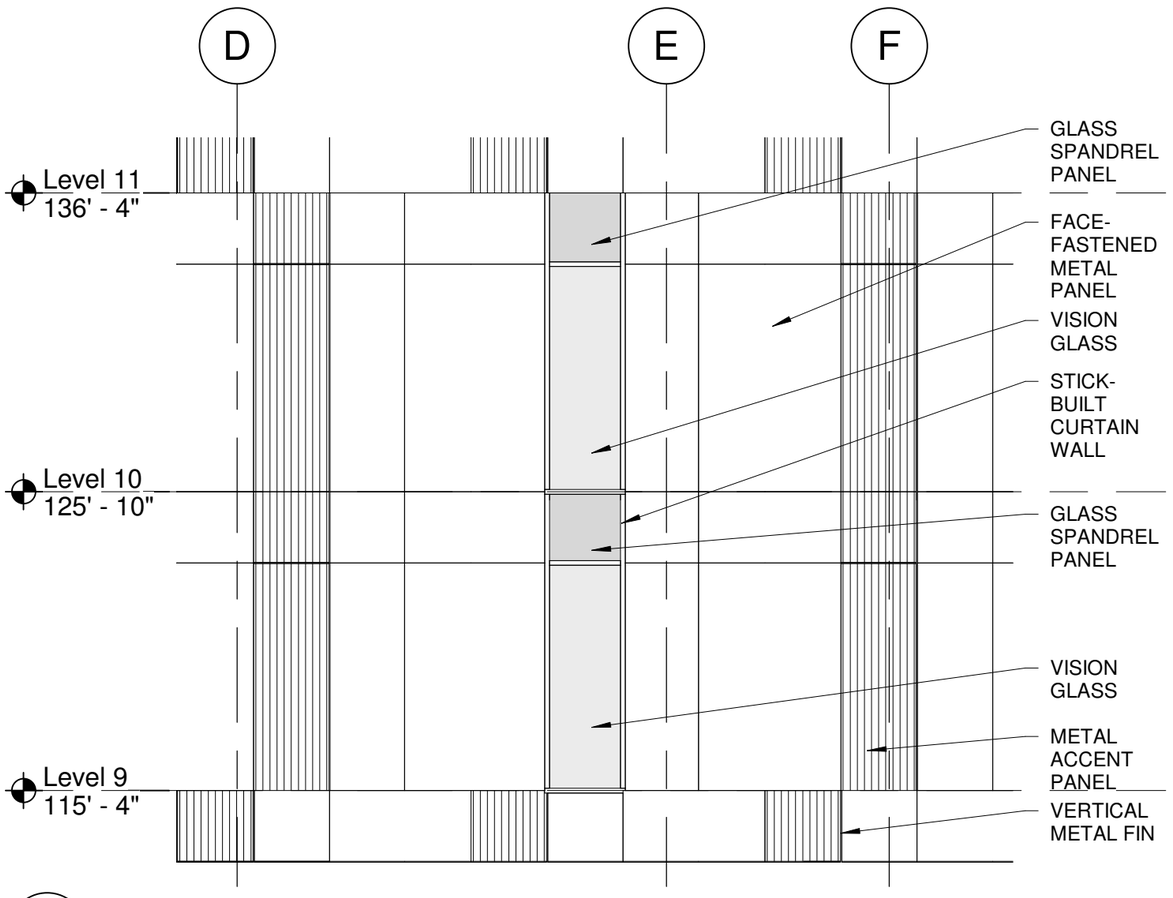
A300



3 ENLARGED PLAN - WEST ELEVATION

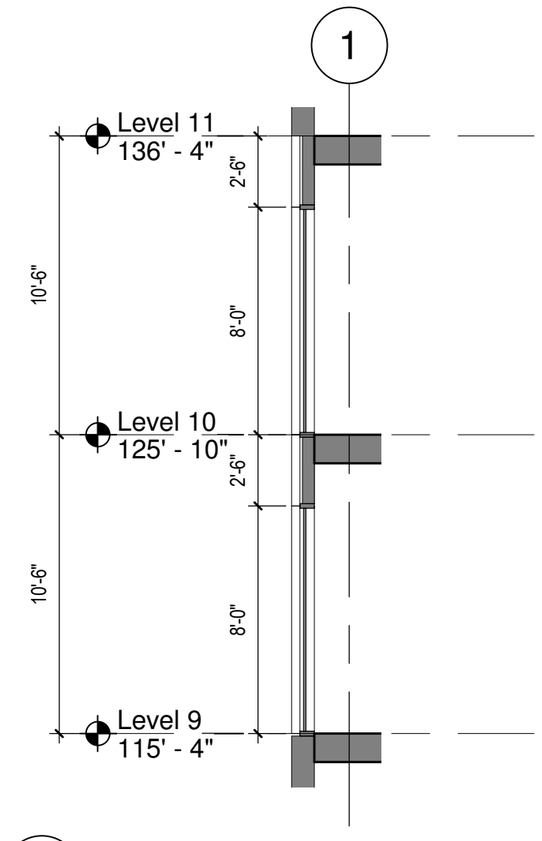
3/16" = 1'-0"





2 ENLARGED ELEVATION - WEST ELEVATION

3/16" = 1'-0"



1 ENLARGED WALL SECTION - WEST ELEVATION

3/16" = 1'-0"

HOTEL ALEXANDRA
PROPOSED EPS - WEST ELEVATION

SCALE	PROJECT #	DATE ISSUED
As indicated	185061.00	08.12.2019

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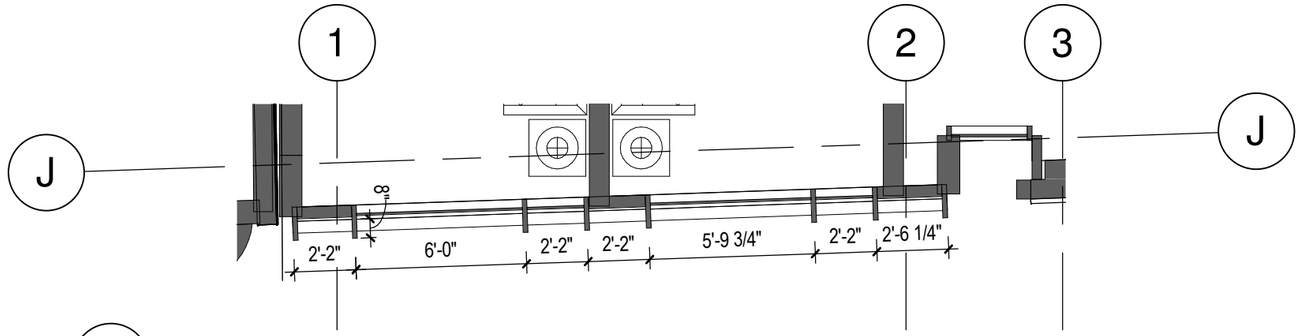
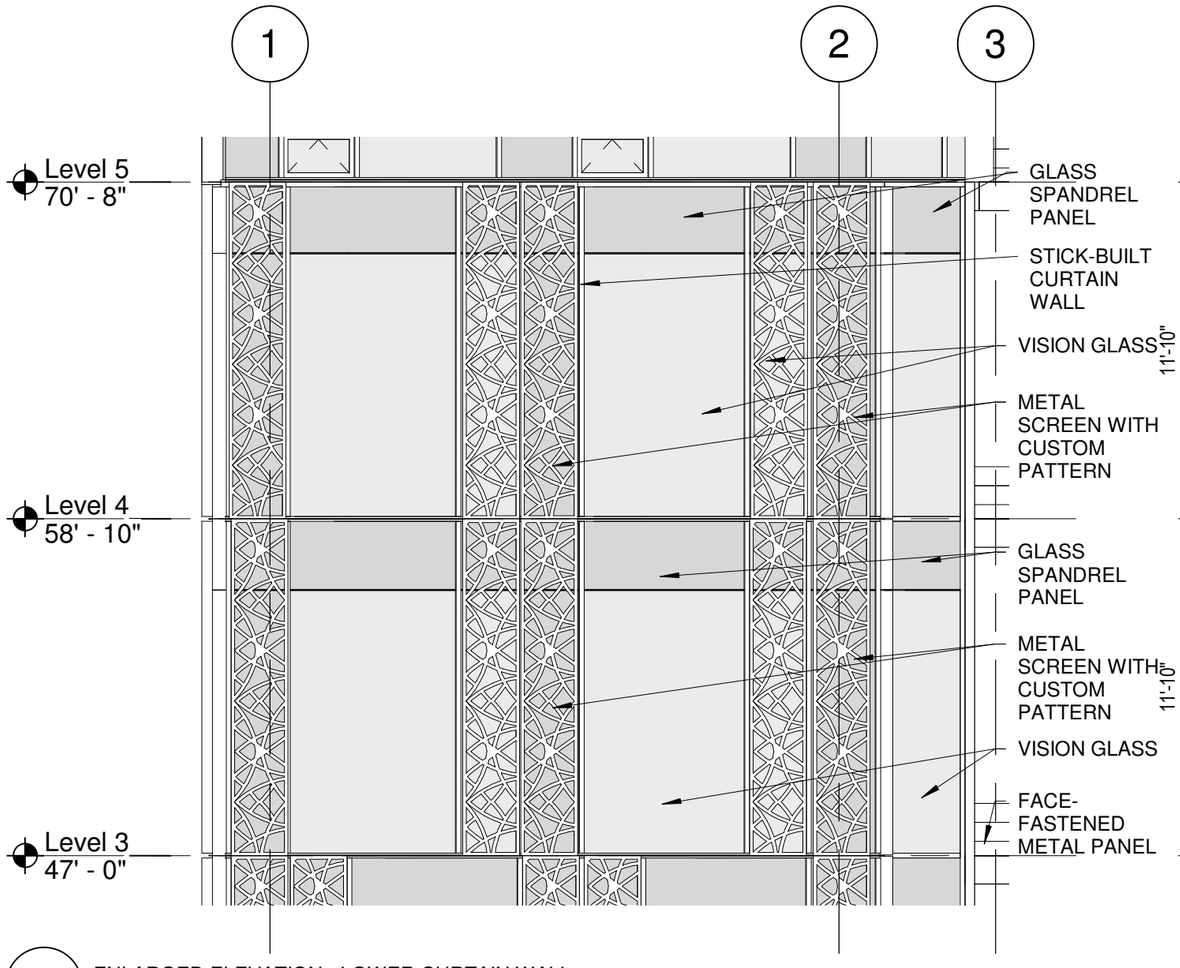
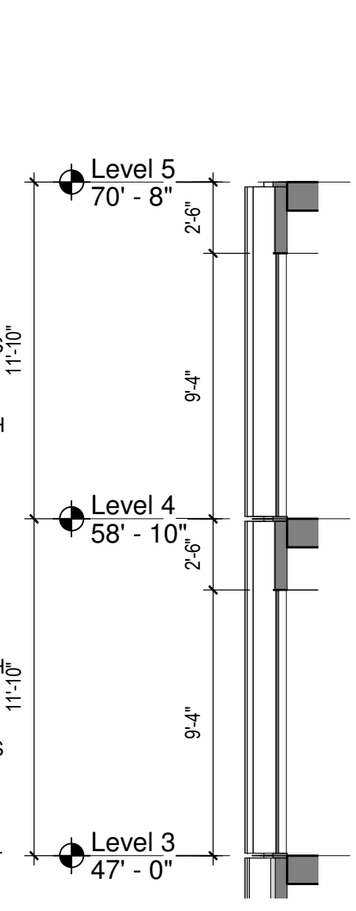
A301



3 ENLARGED PLAN - LOWER CURTAIN WALL
3/16" = 1'-0"



2 ENLARGED ELEVATION - LOWER CURTAIN WALL
3/16" = 1'-0"



1 ENLARGED WALL SECTION - LOWER CURTAIN WALL
3/16" = 1'-0"

HOTEL ALEXANDRA
PROPOSED EPS - LOWER CURTAIN WALL

SCALE	PROJECT #	DATE ISSUED
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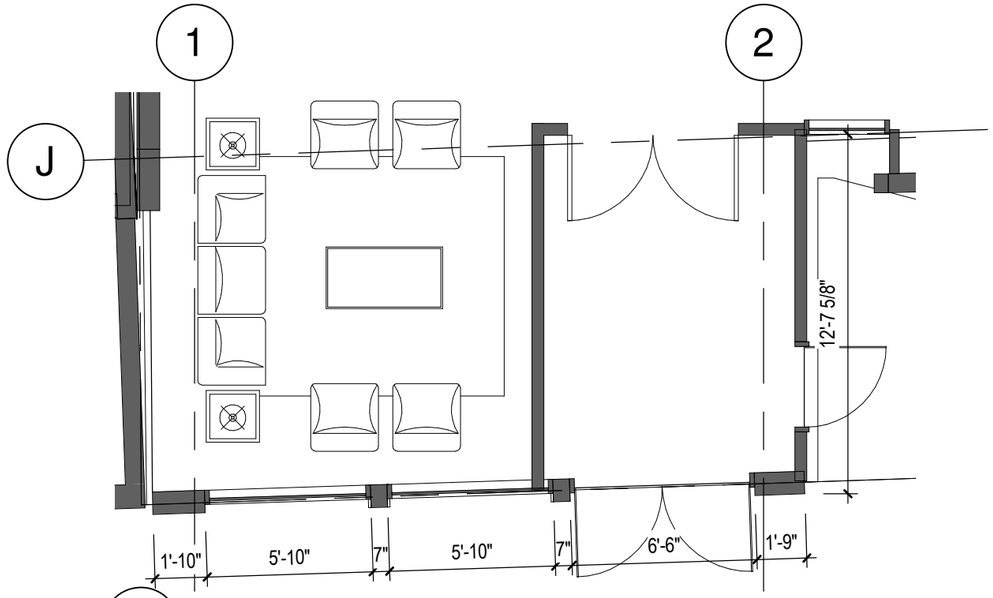
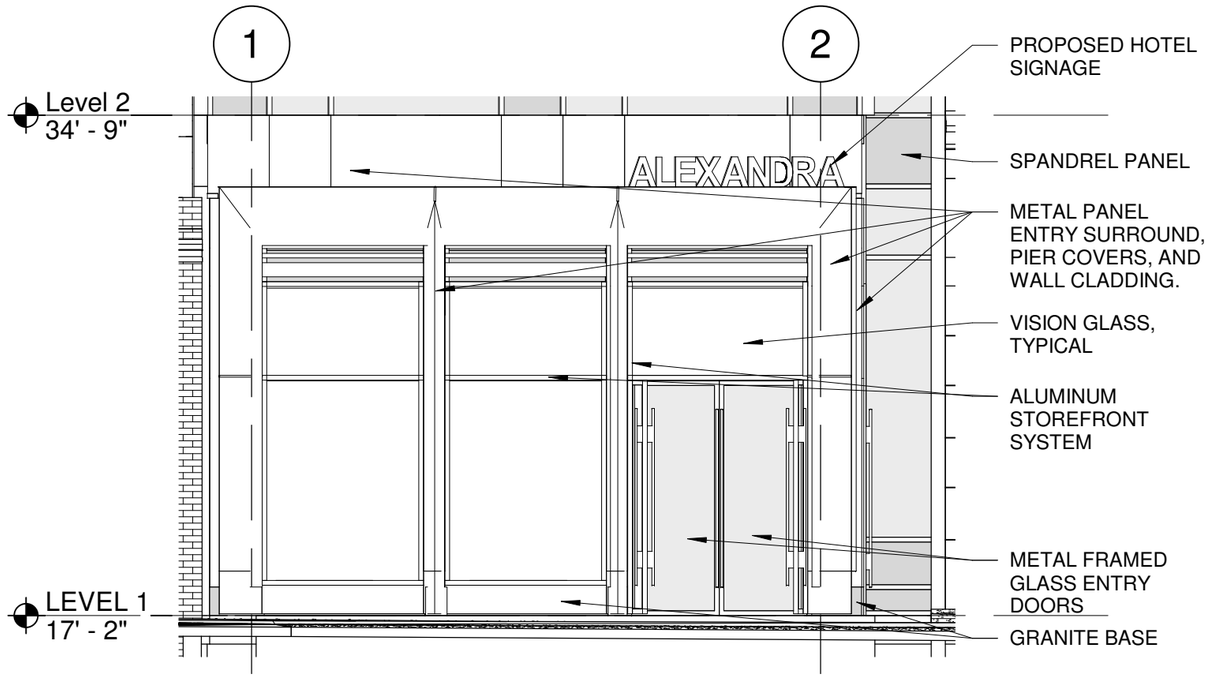
A302



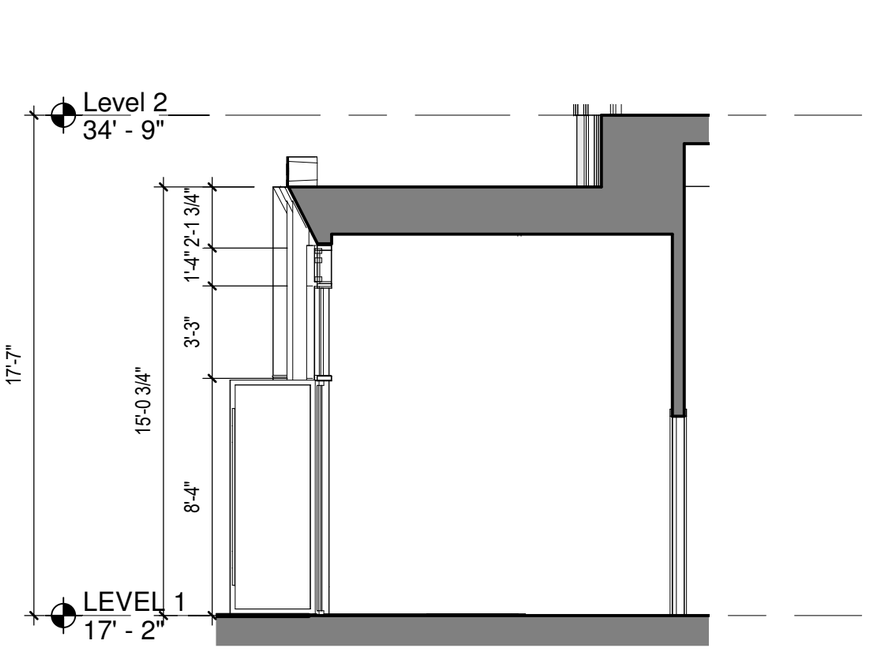
3 ENLARGED PLAN - HOTEL ENTRY

3/16" = 1'-0"



2 ENLARGED ELEVATION - HOTEL ENTRY

3/16" = 1'-0"



1 ENALRGED WALL SECTION - HOTEL ENTRY

3/16" = 1'-0"

HOTEL ALEXANDRA
PROPOSED EPS - HOTEL ENTRY

SCALE	PROJECT #	DATE ISSUED
3/16" = 1'-0"	185061.00	08.12.2019

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A303

NOTE:
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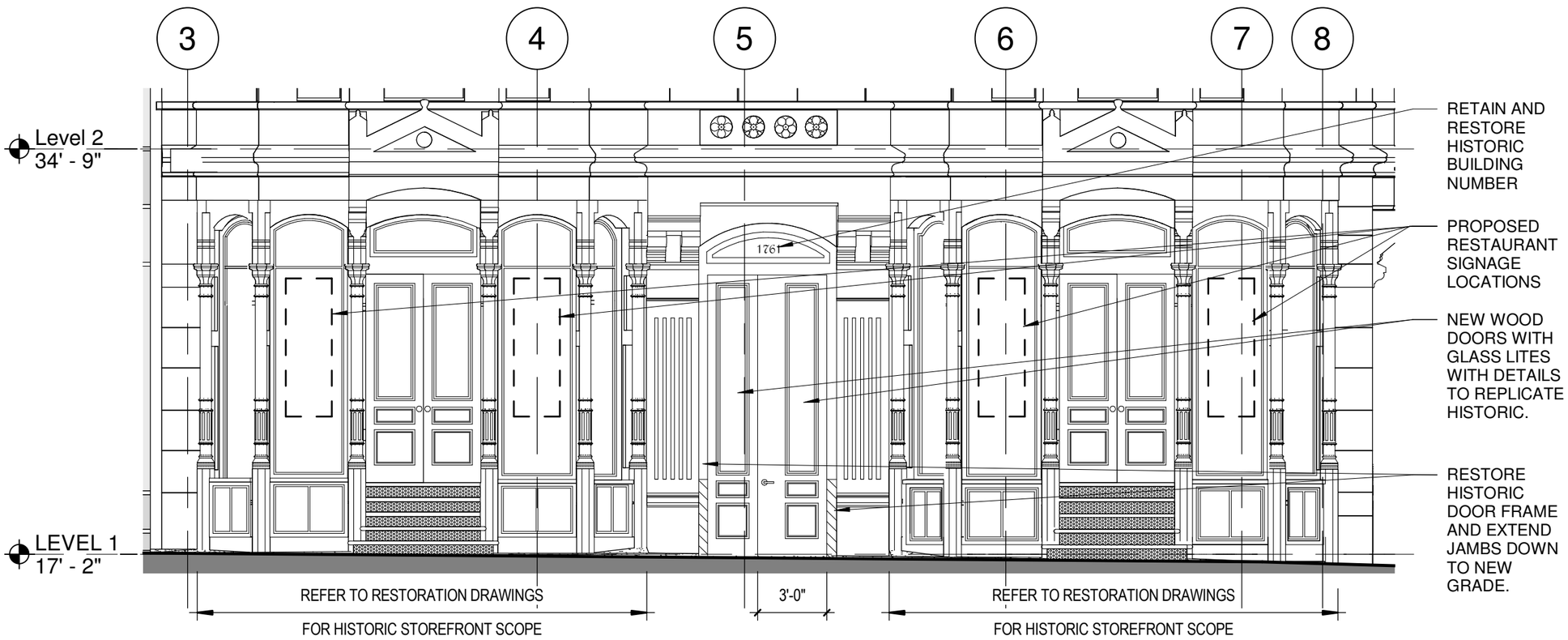

1 ENLARGED SOUTH ELEVATION - HISTORIC STOREFRONT AND RESTAURANT ENTRY
3/16" = 1'-0"

HOTEL ALEXANDRA
PROPOSED RESTAURANT ENTRY

SCALE	PROJECT #	DATE ISSUED
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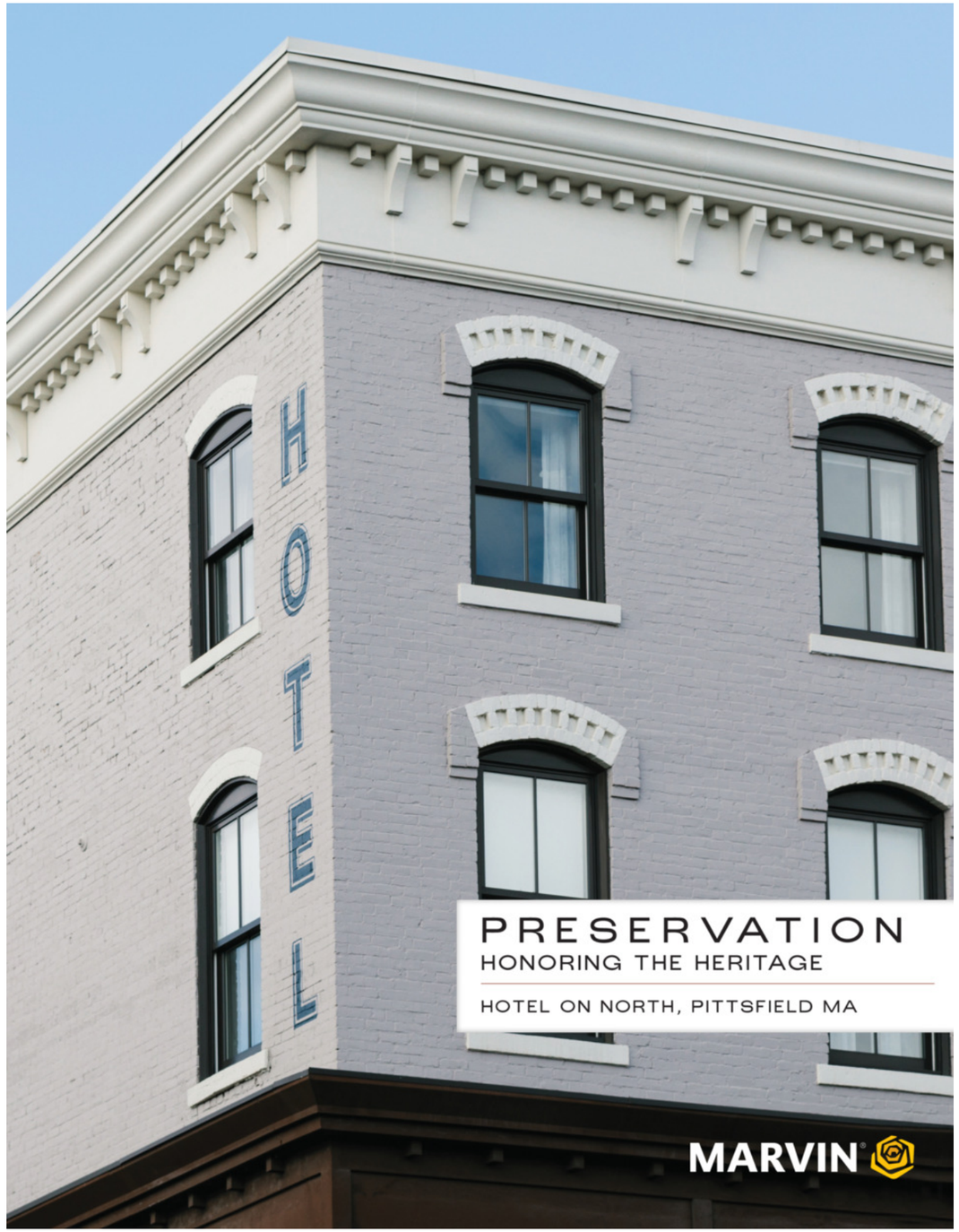
A304

ULTIMATE SINGLE HUNG NEXT GENERATION

A MODERN INNOVATION

The Marvin® Lift Lock is the next innovation in function, design, and aesthetics for the Marvin Ultimate Single Hung Next Generation Window. Now operating your window is easier than ever; the lift lock unlocks and acts as a handle for raising and lowering the bottom sash. To lock, simply close the bottom sash. Lift Lock Hardware is available with contemporary and traditional styles to complement a range of designs.

Left window shown in Pine with White painted interior finish and Traditional Lift Lock Hardware in Matte Black.
Left Window above shown in White Oak with Traditional Lift Lock Hardware in Satin Nickel.
Right window above shown in Pine with Designer Black painted interior finish and Contemporary Lift Lock Hardware in Satin Nickel.



HOTEL ALEXANDRA
PROPOSED REPLACEMENT WINDOWS

SCALE	PROJECT #	DATE ISSUED
	185061.00	08.12.2019

A310

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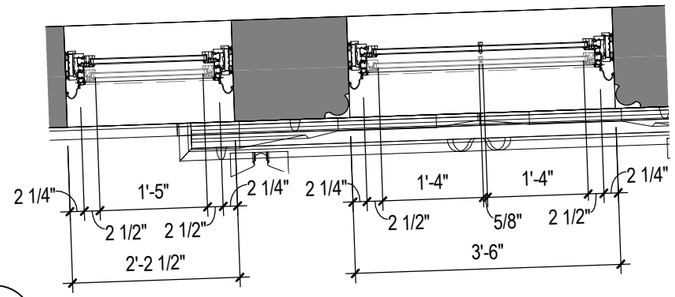
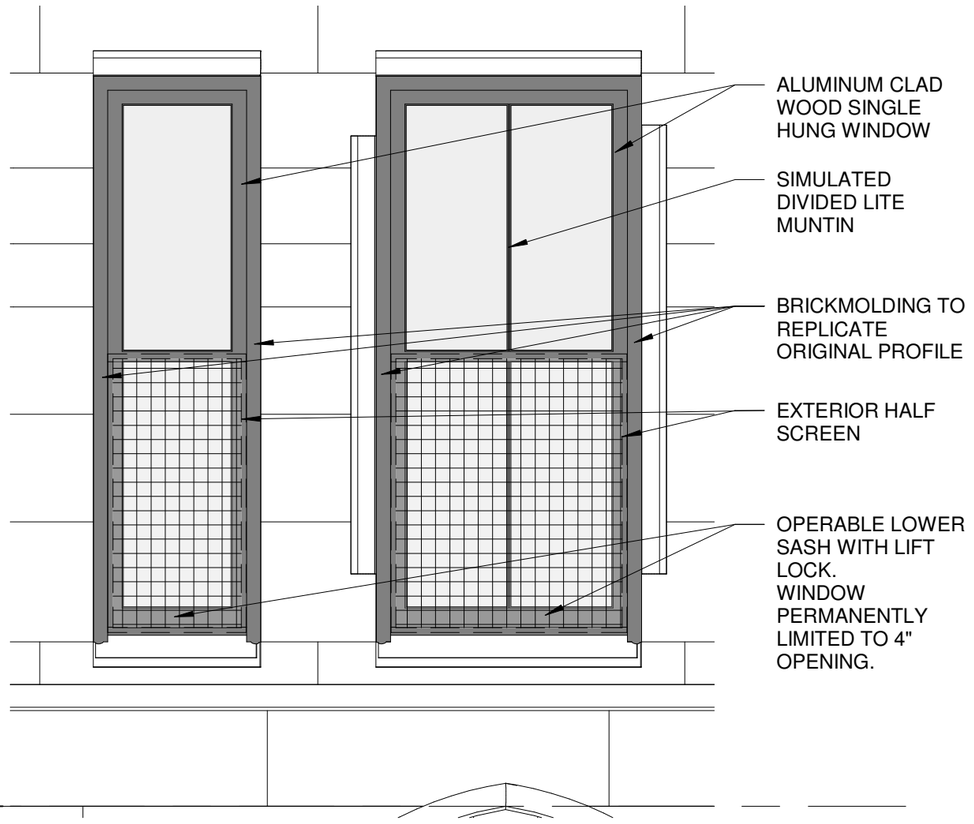


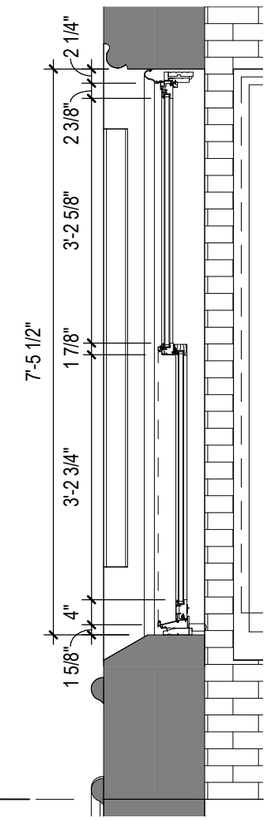
3 PROPOSED WINDOW - PLAN

1/2" = 1'-0"



2 PROPOSED WINDOW - ELEVATION

1/2" = 1'-0"



1 PROPOSED WINDOW - SECTION

1/2" = 1'-0"

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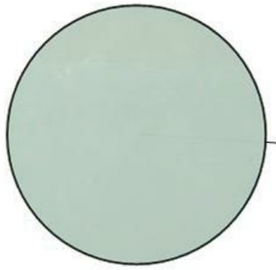
HOTEL ALEXANDRA

PROPOSED REPLACEMENT WINDOW SECTIONS AND DETAILS

SCALE	PROJECT #	DATE ISSUED
1/2" = 1'-0"	185061.00	08.12.2019

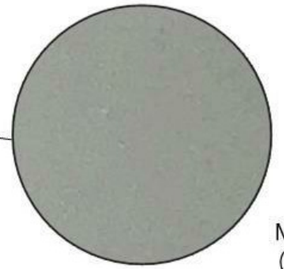
A311

• Building Materials

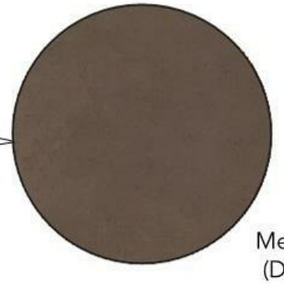


Vision glass

Spandrel glass



Metal panel
(Gray tone)



Metal panel & caps
(Dark brown tone)

Granite

• Material samples photo

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HOTEL ALEXANDRA
PROPOSED EXTERIOR MATERIALS AND COLOR SAMPLES

SCALE	PROJECT #	DATE ISSUED
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HOTEL ALEXANDRA
RENDERING VIEW FROM SOUTHEAST

SCALE	PROJECT #	DATE ISSUED
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A330

HOTEL ALEXANDRA
RENDERING VIEW FROM NORTHEAST

SCALE	PROJECT #	DATE ISSUED
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HOTEL ALEXANDRA
RENDERING VIEW FROM SOUTHWEST

SCALE	PROJECT #	DATE ISSUED
	185061.00	08.12.2019

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A332

HOTEL ALEXANDRA
RENDERING OF SOUTH ELEVATION STREET VIEW

SCALE	PROJECT #	DATE ISSUED
	185061.00	08.12.2019

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A333

HOTEL ALEXANDRA
RENDERING OF HOTEL AND RESTAURANT ENTRIES

SCALE	PROJECT #	DATE ISSUED
	185061.00	08.12.2019

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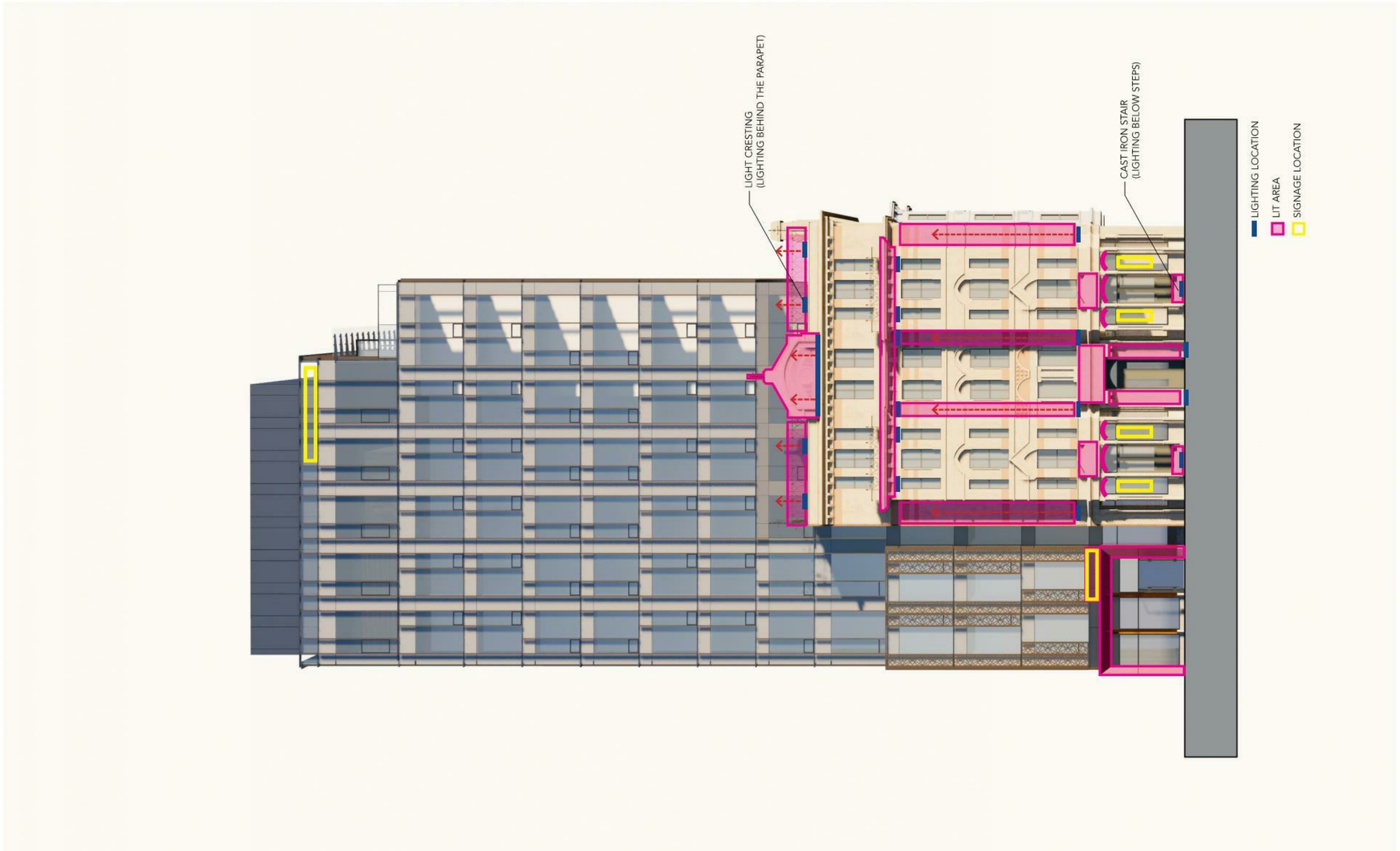
A334



HOTEL ALEXANDRA
LIGHTING AND SIGNAGE DIAGRAM - SOUTH ELEVATION

SCALE	PROJECT #	DATE ISSUED
	185061.00	08.12.2019

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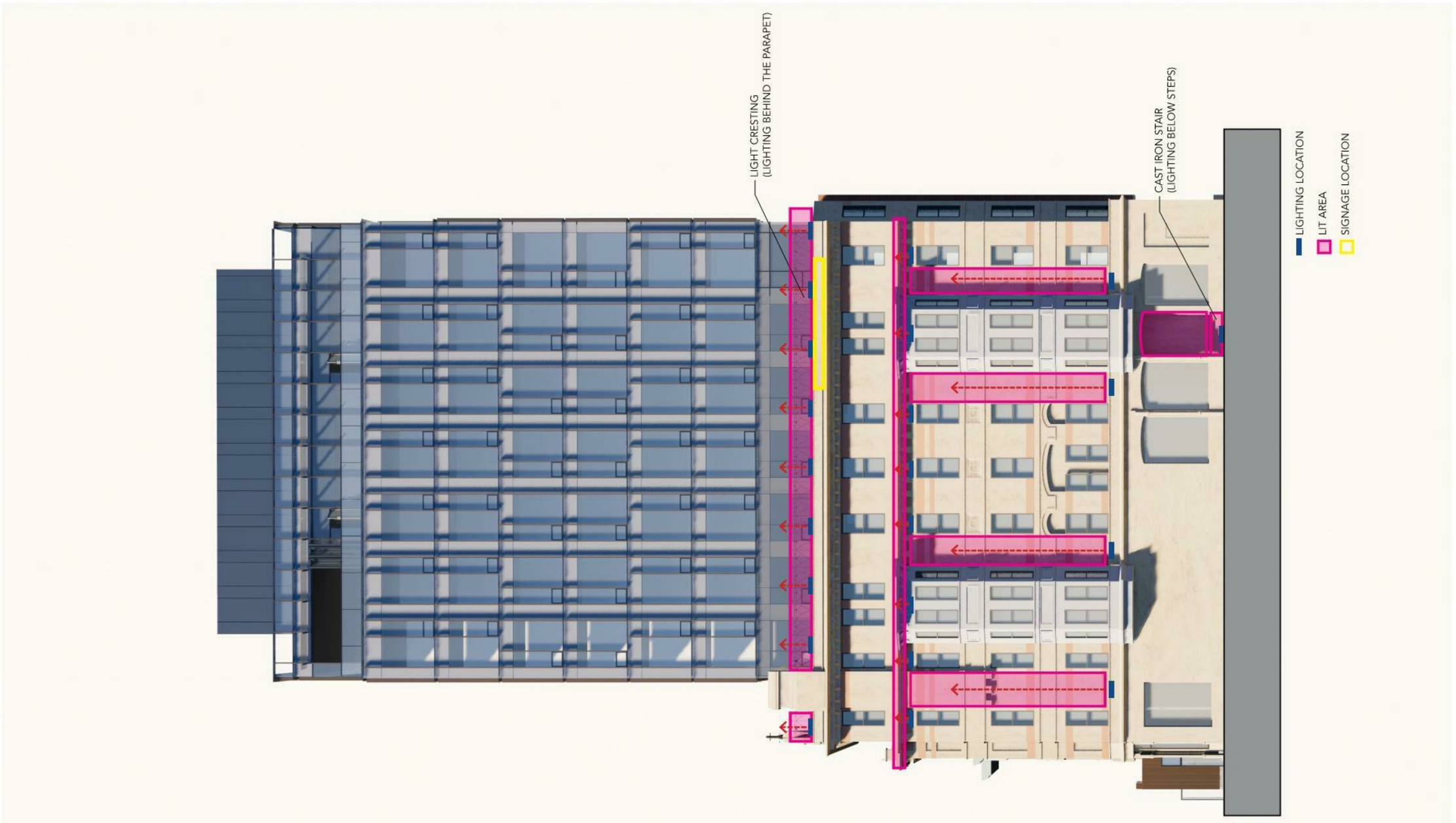

HOTEL ALEXANDRA
LIGHTING AND SIGNAGE DIAGRAM - EAST ELEVATION

SCALE	PROJECT #	DATE ISSUED
	185061.00	08.12.2019

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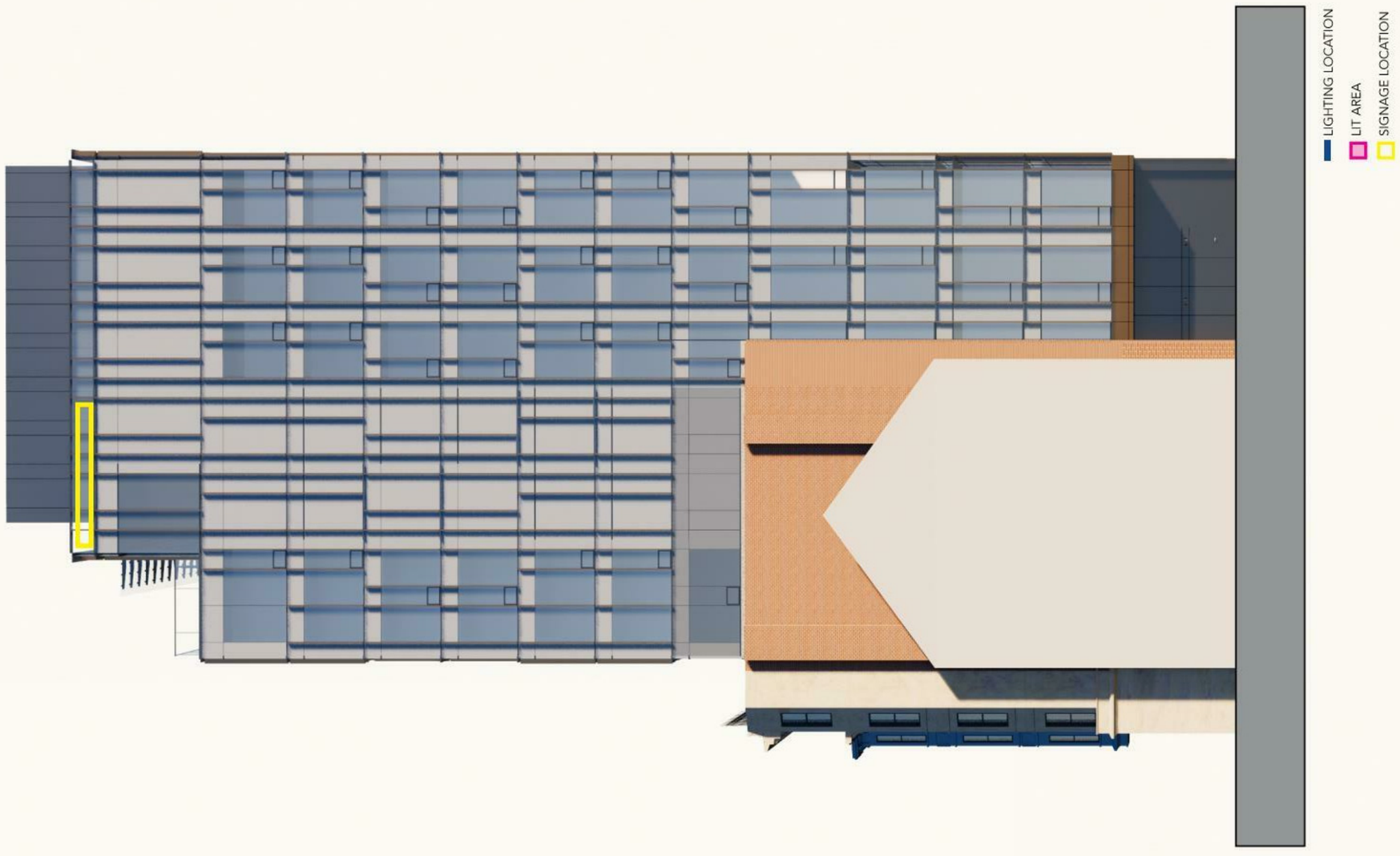

HOTEL ALEXANDRA
LIGHTING AND SIGNAGE DIAGRAM - NORTH ELEVATION

SCALE	PROJECT #	DATE ISSUED
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MASONRY RESTORATION GENERAL NOTES

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2. CLEAN 100% OF MASONRY USING DESIGNATED CHEMICAL CLEANERS AND LOW PRESSURE WATER RINSE AS DETERMINED BY FIELD TESTING. SPECAL CLEANING METHODS MAY BE REQUIRED FOR INTRICATE ORNAMENTAL STONE UNITS. METHODS FOR CLEANING WILL VARY ON DIFFERENT SURFACES DEPENDING ON THE LEVEL OF SOILING.
3. IN ADDITION TO GENERAL CLEANING REMOVE ALL METALLIC STAINING, BIOLOGICAL GROWTH, CARBON DEPOSITS, EFFLORESCENCE AND GUANO, INCLUDING AREAS NOT SPECIFICALLY NOTED ON THE DRAWINGS. ASSUME 80% OF STONE HAS SOME LEVEL OF RUST STAINING. ALL RESTORATION CLEANING SHALL BE PERFORMED PRIOR TO ALL OTHER MASONRY WORK.
4. RAKE OUT AND REPOINT 100% OF SANDSTONE, GRANITE, AND BRICK MORTAR JOINTS.
5. REMOVE ALL PINS, ANCHORS, DOWELS, AND OTHER FERROUS ELEMENTS FROM MASONRY. PATCH HOLES IN MASONRY LEFT BY REMOVAL OF FERROUS ELEMENTS UNLESS OTHERWISE INDICATED. HOLES IN STONE UNITS SHALL BE PATCHED WITH A COMPOSITE PATCHING MORTAR MATCHING ORIGINAL STONE IN COLOR AND TEXTURE. NOT ALL LOCATIONS ARE NOTED ON THE DRAWINGS, ASSUME AN ADDITIONAL 50 REMOVALS. REMOVE ANCHORS AND PATCH HOLES LEFT BY SCAFFOLDING OR SHORING ANCHORS WHEN SCAFFOLD IS REMOVED AT THE COMPLETION OF THE PROJECT. SCAFFOLDING HOLES NOT INCLUDED IN ADDITIONAL REMOVALS QUANTITY.
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SANDSTONE

- S1 REPAIR CRACK BY ROUTING AND FILLING WITH COMPOSITE PATCHING MATERIAL.
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BRICK

- B1 REPOINT BRICK JOINTS
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CAST IRON

- C1 CAST IRON RESTORATION: SANDBLAST, REPAIR AND REPAINT
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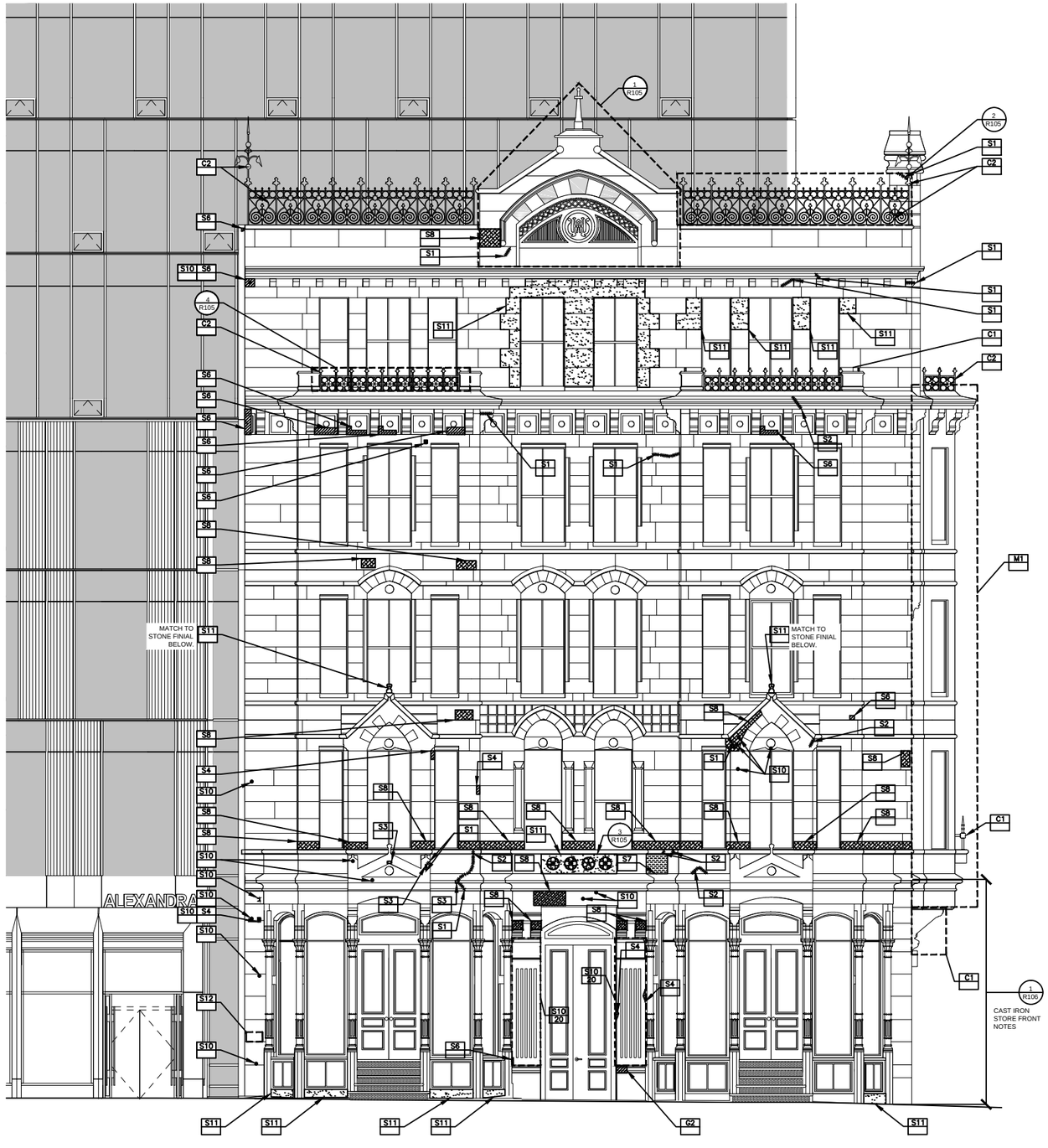

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HOTEL ALEXANDRA
SOUTH ELEVATION

0' 5' 10' 20'

SCALE	PROJECT #	DATE ISSUED
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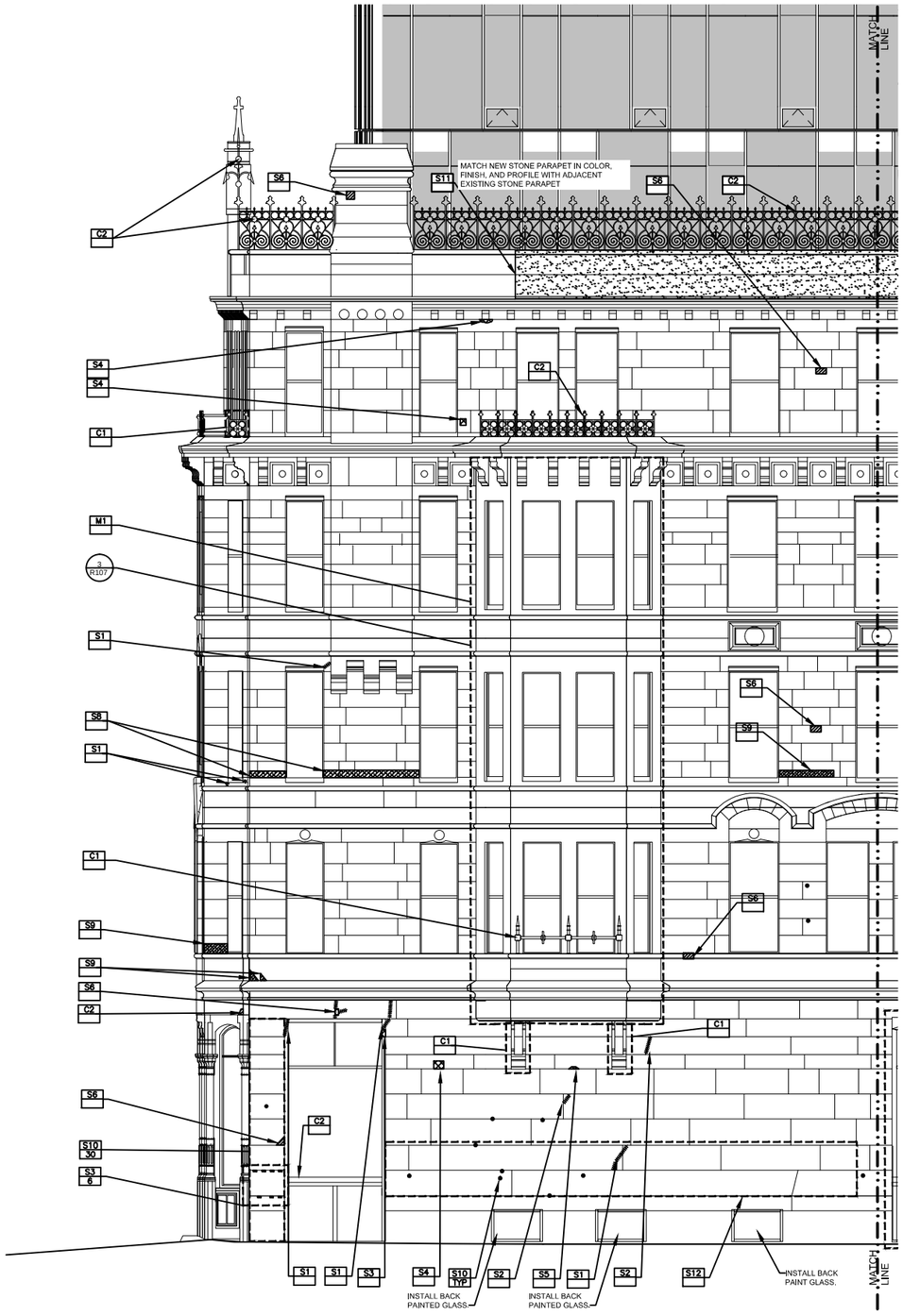
R100



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HOTEL ALEXANDRA
EAST ELEVATION

0' 5' 10' 20'

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R101

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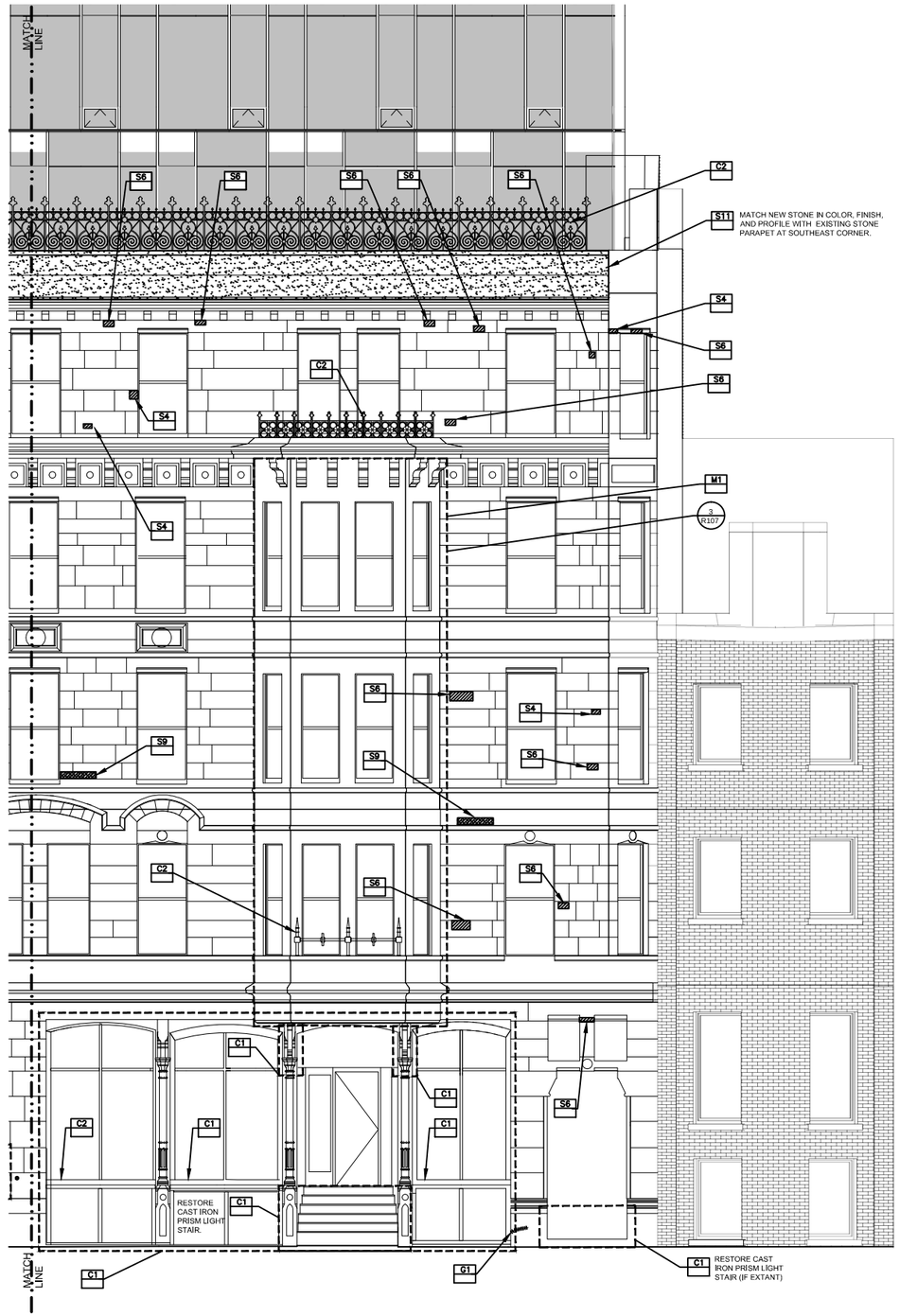

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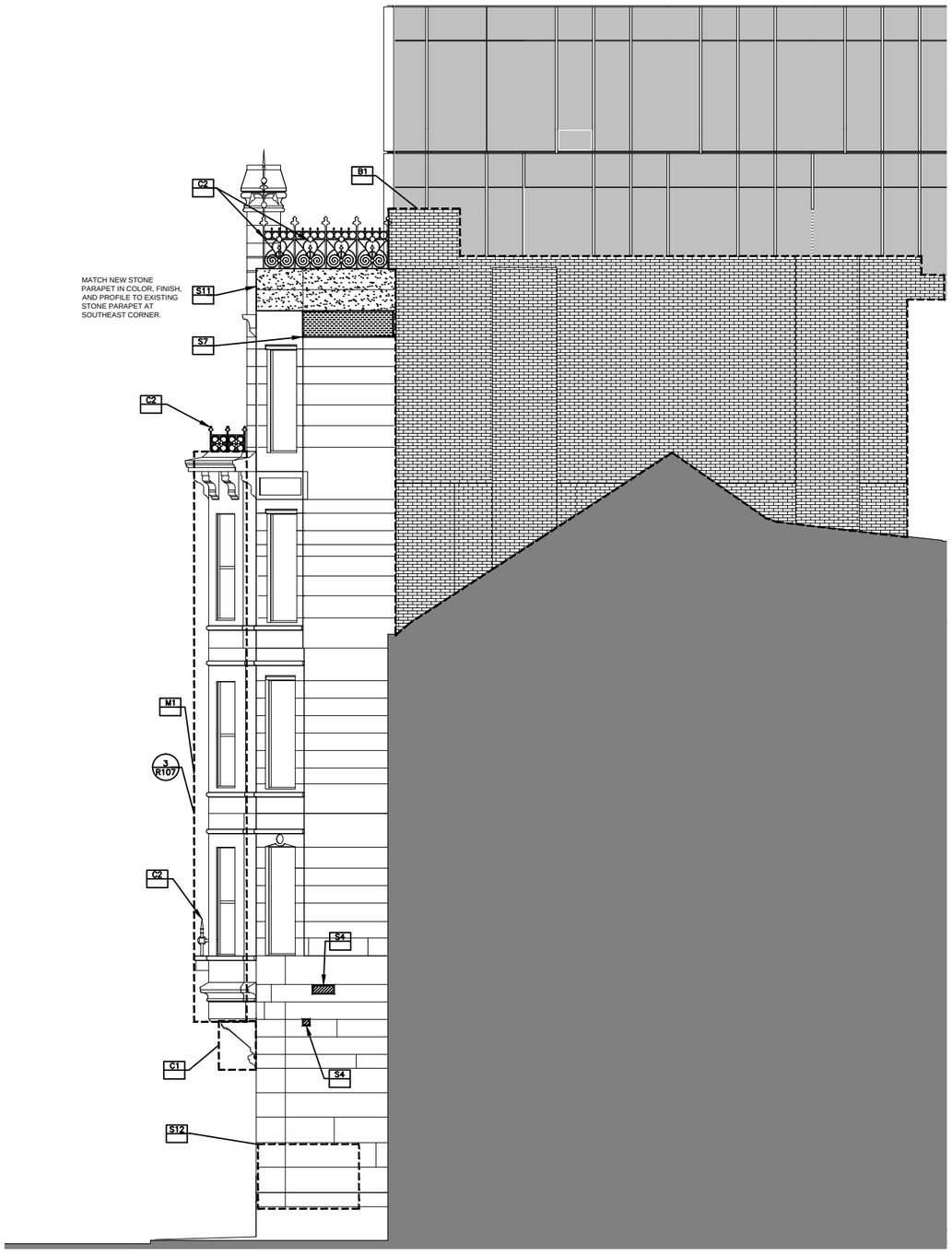

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R103

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BRICK

- B1 — REPOINT BRICK JOINTS
- B2 — INSTALL NEW BRICK TO MATCH EXISTING

CAST IRON

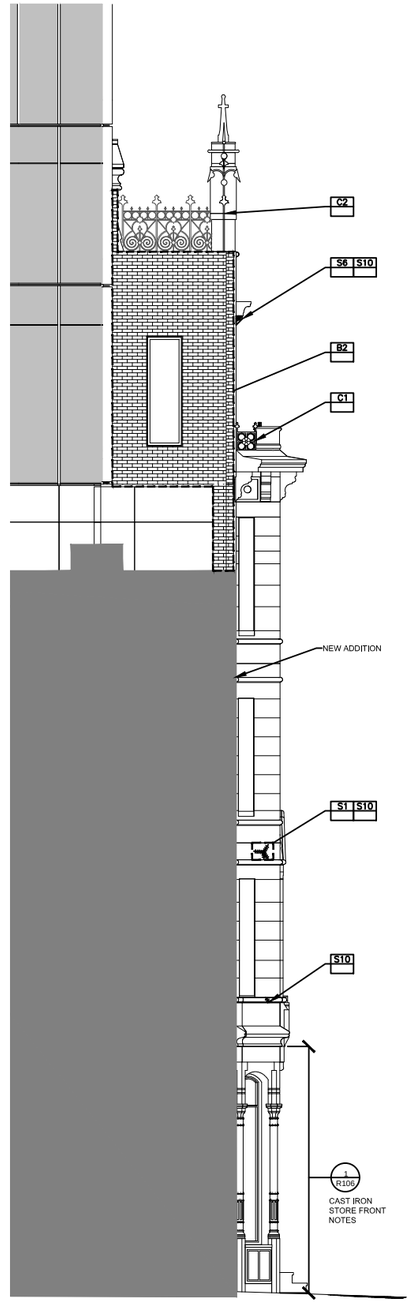
- C1 — CAST IRON RESTORATION: SANDBLAST, REPAIR AND REPAINT
- C2 — REPLICATE MISSING CAST IRON ELEMENT

SHEET METAL

- M1 — REPLACE DETERIORATED SHEET METAL BAY TO MATCH ORIGINAL.

LEGEND

- CRACK
- SURFACE SPALLS, DELAMINATION, OR EROSION
- AREA OF STONE REQUIRING DUTCHMAN REPAIR
- NEW STONE UNIT
- AREA REQUIRING PATCH REPAIR
- UNIT TO BE REMOVED AND RESET
- ABANDONED FERROUS ANCHOR TO BE REMOVED. PATCH HOLE
- REFER TO NOTE / TAG FOR SPECIFIC TREATMENT
- XX / XX — TREATMENT NOTE / QUANTITY (IF APPLICABLE)



cbt
617 262 4354 cbtarchitects.com
110 canal street boston, ma 02114
BCA
BUILDING CONSERVATION ASSOCIATES INC

HOTEL ALEXANDRA
WEST ELEVATION

0' 5' 10' 20'

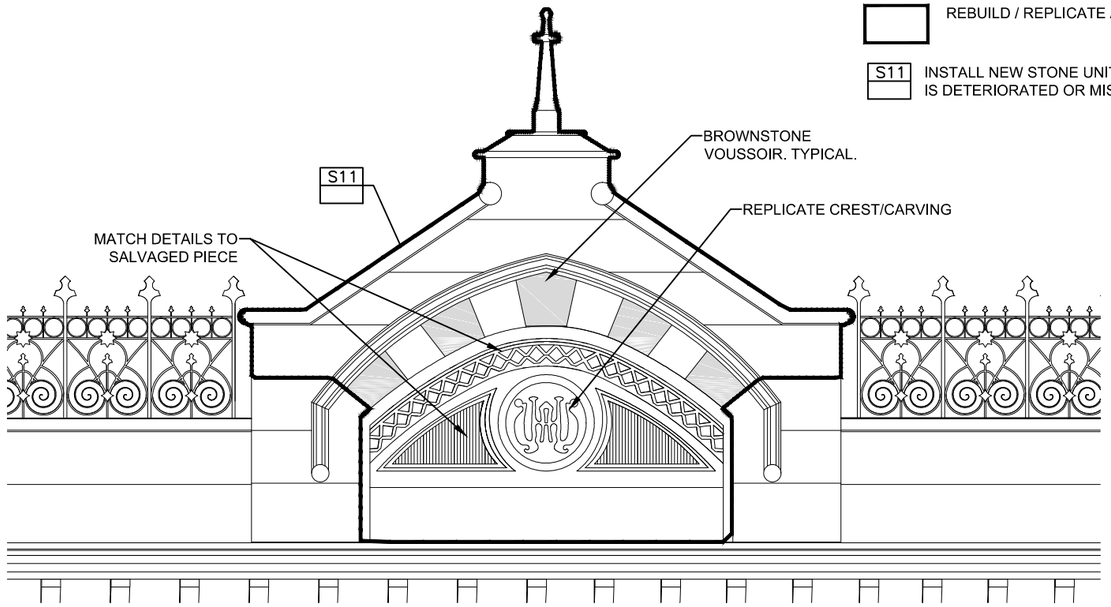
SCALE	PROJECT #	DATE ISSUED
1" = 10'-0"	185061.00	08.12.2019

R104

LEGEND

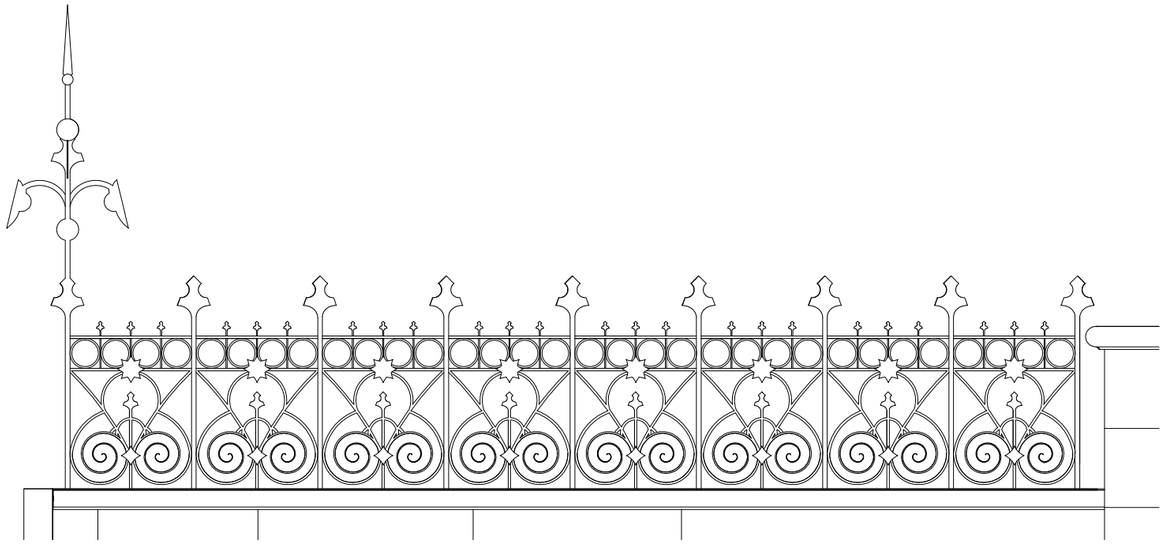
REBUILD / REPLICATE AREA

S11 INSTALL NEW STONE UNIT WHERE ORIGINAL STONE UNIT IS DETERIORATED OR MISSING



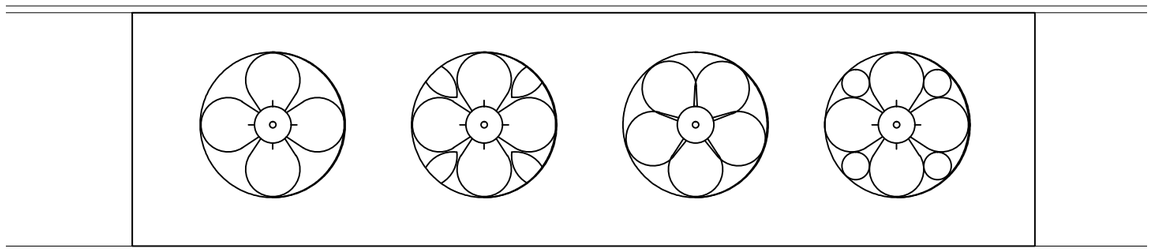
1 RECONSTRUCTED / REPLICATED GABLE

1/4" = 1'-0"



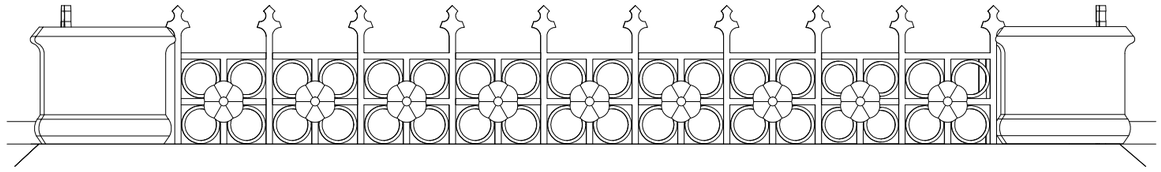
2 DETAIL OF TYPICAL NEW ROOF CRESTING AND FINIAL

3/8" = 1'-0"



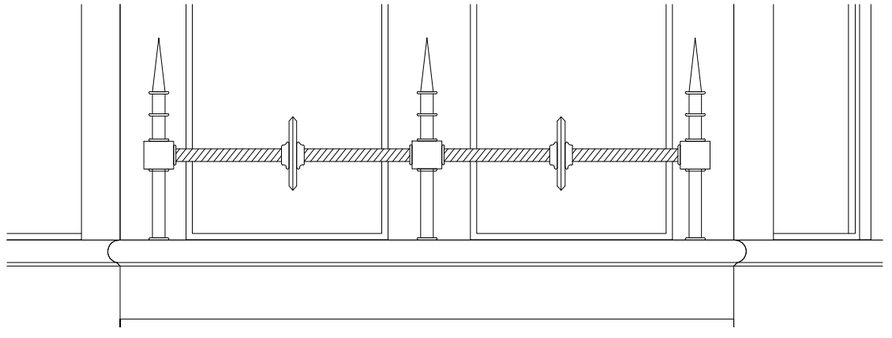
3 DETAIL OF NEW STONE UNIT ABOVE MAIN ENTERANCE WITH ORNAMENTAL CARVINGS.

1" = 1'-0"



4 DETAIL OF BALCONY CAST IRON RAIL TO BE REPLICATED

1/2" = 1'-0"



5 DETAIL OF HISTORIC CAST IRON RAIL TO BE REPLICATED

1/2" = 1'-0"

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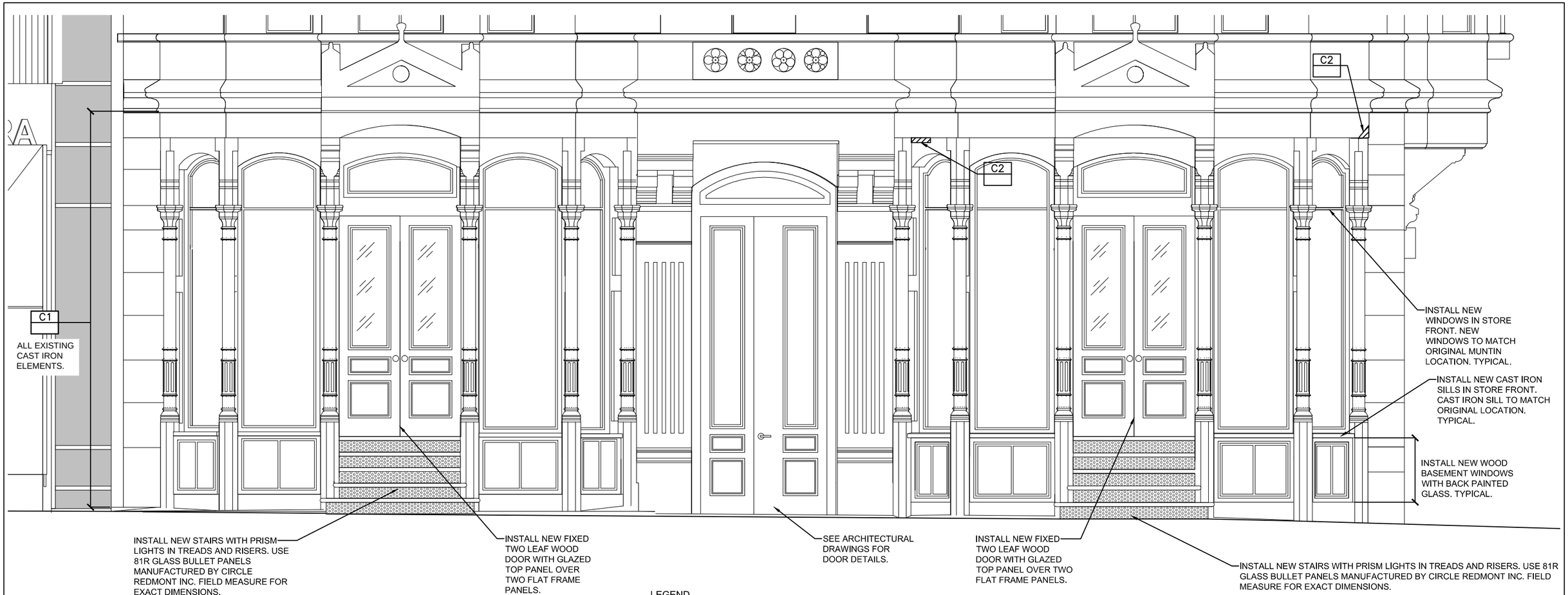
HOTEL ALEXANDRA
RESTORED GABLE AND ROOF CRESTING

SCALE	PROJECT #	DATE ISSUED
As Indicated	185061.00	08.12.2019

R105



1 RESTORED STORE FRONTS

1/4" = 1'-0"

LEGEND

C1	CAST IRON RESTORATION: SANDBLAST, REPAIR AND REPAINT
C2	REPLICATE MISSING CAST IRON ELEMENT

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HOTEL ALEXANDRA
RESTORED STORE FRONTS

SCALE	PROJECT #	DATE ISSUED
As Indicated	185061.00	08.12.2019

R106

PHOTO 1: EXISTING BALCONY CAST IRON RAIL ON THE SOUTH ELEVATION. REPLICATE EXISTING BALCONY RAIL WHERE MISSING ON SOUTH AND EAST ELEVATIONS.

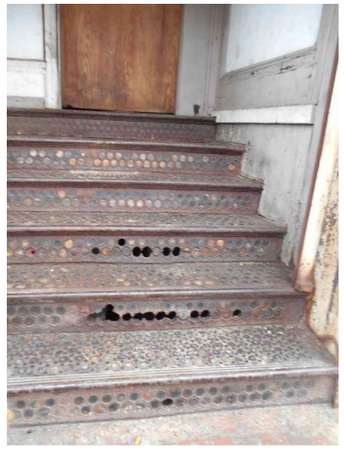

PHOTO 2: EAST ELEVATION, RESTORE CAST IRON STAIRS WITH PRISM LIGHTS

PHOTO 3: EAST ELEVATION, ORIGINAL SHEET METAL BAYS TO BE REPLICATED

PHOTO 4: EAST ELEVATION, REPLICATE EXISTING HISTORIC CAST IRON RAIL ON BALCONY ON BAY WHERE MISSING

PHOTO 5: 1899 PHOTO SHOWING STORE FRONT WITH CAST IRON STAIRS WITH PRISM LIGHTS AND DOUBLE DOORS

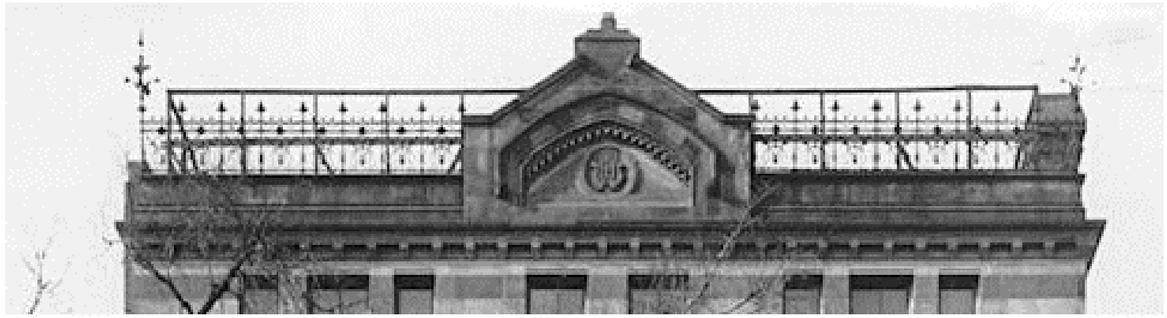

PHOTO 6: ORIGINAL CAST IRON ROOF CRESTING TO BE REPLICATED

PHOTO 7: ORIGINAL SANDSTONE GABLE DETAIL TO BE REPLICATED WHERE DETAILS ARE NOW MISSING

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HOTEL ALEXANDRA
PHOTOGRAPHS

SCALE	PROJECT #	DATE ISSUED
N/A	185061.00	08.12.2019

R107

HOTEL ALEXANDRA
1767 WASHINGTON ST BOSTON , MA

SELDC Application Documents
12 Aug 2019

ALEXANDRA PARTNERS, LLC

TCR

JBV
JB VENTURES

cbt

Table of Contents

- Historic and Archaeological Resources, Hotel Alexandra EPNF, Epsilon Associates
- Preliminary Existing Conditions Assessment, Silman Engineers
- MEP/FP Design Requirements and product cutsheets, Vanderweil Engineers

6.0 HISTORIC AND ARCHAEOLOGICAL RESOURCES

This section describes the historic and archaeological resources within and in the vicinity of the Project site and discusses potential Project-related impacts to significant historic resources.

6.1 Existing Conditions

The Project site is located within the South End Landmark District, a local historic district designated by the Boston Landmarks Commission (BLC) in 1983. The Project site is also located within the South End District, which was included in the National Register of Historic Places in 1973.

The South End of Boston was developed predominately between 1848 and 1930. The neighborhood's oldest thoroughfare, Washington Street, was laid out on the original "neck" connecting Boston's originally peninsular landmass with the Roxbury mainland. The City of Boston eventually filled the tidal marshes lining Washington Street, and in 1848 began to auction off parcels to speculative developers. As a result of this initiative, the South End became one of the most fashionable residential neighborhoods of mid-nineteenth century Boston.

Although its earliest buildings are conservative flat-fronted, gable-roofed Greek Revival rowhouses, the South End is better known for its harmonious blocks of speculator-built houses whose bow-fronted façades and mansard roofs reflect the later and more florid Italianate and Second Empire styles. Many of these line ornamental squares of varying proportions featuring cast-iron fences and fountains.

Despite changes in use and alterations to many of its buildings, the South End is today the largest remaining urban Victorian residential neighborhood in the U.S. East of its residential streets and adjacent to major rail lines, an industrial area dominated by warehouses and factory buildings was developed in the later nineteenth and early twentieth centuries; this is now a locally designated sub-district known as the South End Protection Area.

6.1.1 Historic Resources within the Project Site

A five-story building organized as four residential floors above paired ground-floor storefronts flanking a central tenant entry on the Washington Street elevation, the Hotel Alexandra's exterior is heavily detailed and, though long neglected, largely intact. Exemplifying the richly decorated, Venetian-inflected Ruskinian subtype of the High Victorian Gothic style, its façades are ornamented with pointed arches and colonettes as well as dogtooth and rosette-carved banding. At the second through fourth stories of the Washington Street elevation, box bays rest on the semi-octagonal cast-iron storefront projections of the ground floor. The roof of the right-hand bay retains its historic iron

cresting; that at the left has been missing since at least 1899. The Washington Street elevation's bays are answered on the Massachusetts Avenue façade by semi-octagonal oriels, also of cast iron, at the same levels. Long boarded over with plywood, four large storefront windows appear along Massachusetts Avenue, set flush with the elevation.

Completed in 1875 to the designs of an unknown architect, the Hotel Alexandra was built by Canaan, New Hampshire natives James and Caleb Walworth of the Walworth Manufacturing Company. As reflected by an illustrated catalogue published in 1878, this enterprise produced a vast array of wrought- and cast-iron pipes, steam and gas fittings as well as tools and supplies relating to steam and gas engineering. Founded by James Jones Walworth (1808-1896), the firm expanded in 1846 to include his younger brother Caleb Clark Walworth (1815-1894).

A gifted inventor, Caleb in 1875 received a lucrative patent for a steam radiator that eventually became the standard type in use throughout the United States. The firm occupied offices at 69 Kilby Street in downtown Boston's financial district, while its substantial manufacturing plant (or "works") was located in Cambridgeport, then a thriving industrial area. Heating technology having wide application throughout the late nineteenth century economy, the Walworths' business apparently met with great success; by the 1890s it was producing between six and seven million feet of pipe annually.

With their partnership a demonstrably profitable one, the brothers may have embarked upon the Alexandra project as an investment vehicle in a familiar setting: Caleb was for many years a resident of nearby West Newton Street while James took one of the Alexandra's eight suites. Caleb's death in 1894 was marked by the publication of his portrait on the cover of *Fibre & Fabric*, a Boston-based trade weekly, accompanied by an obituary praising his contributions to industry, his strong moral character and personal amiability. James died, at the Alexandra, two years later.

The Walworth genealogy including no female members by the name Alexandra, the building is believed to have been named for Alexandra of Denmark (1844-1925), then Princess of Wales. Although it is unknown why the Walworths chose to name their building after her, Alexandra was an internationally popular figure, admired both as a beauty and as the wife and mother of future British monarchs. By appropriating Alexandra's name, the brothers may have hoped to cast a measure of her glamour and prestige onto their property and even, perhaps, themselves. Now heavily deteriorated and barely discernible, a circular plaque below the peak of the building's Washington Street parapet is marked with the intertwined initials W, H and A, presumably for "Walworth" and "Hotel Alexandra."

In late nineteenth-century Boston, the noun 'hotel' was as often applied to buildings of multiple dwelling units as to those offering temporary lodgings to travelers. Whereas apartments had been familiar on the European continent since Roman antiquity, they were slow to find favor in an English-speaking world discomfited by the idea of multiple

households cohabitating beneath a common roof. Despite such initial uneasiness, the economic advantages of apartments offering the social equivalence of private, single-family dwellings gradually became too great to dismiss. Thus a few buildings of this kind (called 'hotels' for propriety's sake) began to appear, even in Boston.

Indeed, the first purpose-built apartment house in the U.S. was erected not in New York or Philadelphia but at the southwest corner of Boylston and Tremont streets, opposite the Common, in 1857. Known as the Hotel Pelham, this was followed in 1870 by Cummings & Sears' Hotel Boylston at the Common's southeast corner, and a year later by the Hotel Vendome at Commonwealth Avenue and Dartmouth Street in the Back Bay. Although many more such establishments were erected in the coming decades, the Hotel Alexandra remains an unusually early example of its once-pioneering type.

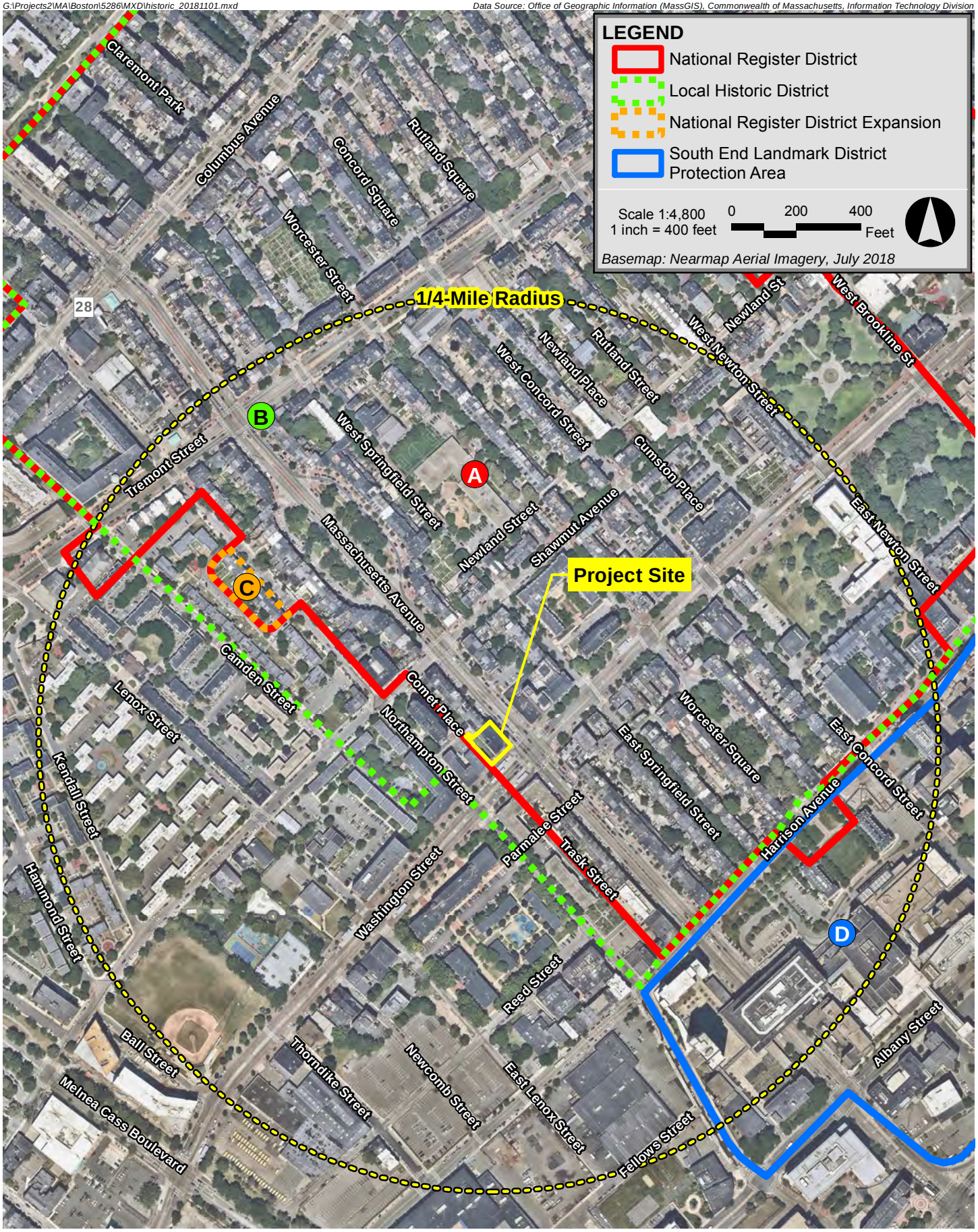
Particularly popular with childless households, including both young couples only recently married and older ones with grown children whom we might today term 'empty nesters,' Boston's residential hotels were jocularly known as homes for the "newly wed and the nearly dead." As a euphemism for apartment building, the term 'hotel' lingered until about the turn of the twentieth century, by which time any residual concerns about the inherent respectability of such dwellings had presumably evaporated.

Soon after the Walworth brothers' deaths, their former property would suffer from the construction of an elevated railway above Washington Street. A precursor of the present-day MBTA Orange Line, this line would block light and views of buildings along its route until its removal in the late 1980s. Cast, like its equally unfortunate neighbors, into permanent shadow and subjected to regular bursts of ear-splitting track noise, the Alexandra could no longer function as a desirable place of residence. As a consequence, the formerly fashionable property lapsed into more than a century of neglect from which it is only now poised to emerge.

Also within the Project site, immediately to the west of the Alexandra along Washington Street, is a vacant lot. This was occupied by a mid-nineteenth century, three-and-one-half story, bow-fronted brick rowhouse. Known as the Ivory Bean house for its original owner, the building was demolished in 2011.

6.1.2 Historic Resources in the Vicinity of the Project Site

Historic resources in the vicinity of the Project site include several historic districts, list in Table 6-1 and depicted in Figure 6-1.



Hotel Alexandra **Boston, Massachusetts**

Epsilon Associates Inc.

Figure 6-1

Historic Resources

Table 6-1 Historic Resources

Label	Historic Resource	Designation
A	South End District	NRDIS
B	South End Landmark District	LHD
C	South End District Boundary Expansion	NRDIS
D	South End Landmark District Protection Area	LHD
Designation Legend:		
NRDIS	National Register of Historic Places district	
LHD	Local Historic District	

6.1.3 Archaeological Resources on the Project Site

The Project site is a previously developed urban parcel. As confirmed on November 19, 2018, there are no known archaeological resources listed in the State and National Registers of Historic Places or included in the Inventory within the Project site.

6.2 Impacts to Historic Resources

Potential urban design and shadow impacts of the new construction on nearby historic resources were considered and are summarized below.

6.2.1 Demolition of Historic Resources

The Project involves the replacement of the Alexandra's compromised interior structural members but includes no demolition of historic resources.

6.2.2 Urban Design

The Project will save a long-threatened community asset, the historic Hotel Alexandra, which will be enlarged to include a 12-story addition. The latter will be set back from the former's original façade to underscore each structure's distinctive yet complementary architectural qualities. Juxtaposing the aesthetics of the nineteenth and twenty-first centuries, the Project will embody a virtual microcosm of the historic South End in its ongoing evolution as both a neighborhood and a hospitality district. Operating as a limited-service hotel, this will welcome visitors to its 150 guest rooms while inviting restaurant patrons to its ground-floor and rooftop restaurants.

Public-realm improvements will include the potential relocation of the Silver Line stop whose shelter now stands directly in the foreground of the Alexandra, relieving a chronic bottleneck at Washington Street's busy intersection with Massachusetts Avenue. The augmentation of street lighting and the planting of street trees along the Washington Street and Massachusetts Avenue sidewalks represent further enhancements.

6.3 Shadow Impacts

Shadow impact analyses were conducted to demonstrate the anticipated impacts from the Project. These consisted of standard shadow studies done for March 21, June 21, September 21 and December 21 at 9:00 a.m., 12:00 p.m., and 3:00 p.m., as well as at 6:00 p.m. on June 21 and September 21.

As discussed in Section 3.2, the shadow analysis for the Project demonstrates that net new shadow is limited in extent and duration, typically cast in the block containing the Project site, which is bounded by Washington Street, Massachusetts Avenue, Shawmut Avenue and Northampton Street. Shadows at 6:00 p.m. extend modestly beyond this block in a southeasterly direction and, at 3:00 p.m. on December 21, due east.

The results of these shadow studies are included in Section 3.2 and shown in Figures3.2-1 through 3.2-14.

6.4 Wind Impacts

The Project entails the construction of a 12-story development as well as the retention of the Hotel Alexandra's historic Washington Street and Massachusetts Avenue elevations. In addition, outdoor dining installations are proposed both at grade, along the building's Washington Street frontage, and at roof level. Pedestrian wind safety and comfort studies demonstrate that the Project will exert no significant wind impacts to the South End Landmark District.

Within the surrounding area, wind conditions at pedestrian level will be substantially unchanged. A modest increase in wind speeds will result in the immediate vicinity of the Project but conditions are predicted to remain suitable for a pedestrian environment. Wind conditions are anticipated to be comfortable for walking, standing and sitting along the sidewalks, benefiting both outdoor dining patrons and Silver Line passengers waiting at or alighting from the nearby bus shelter. At the Project's roof terrace, wind conditions are expected to be comfortable for sitting and standing. Walking will also be comfortable at most of the roof but for its northerly end; in that location, screening partitions or container plantings may be introduced to mitigate wind discomfort.

Silman

MEMORANDUM

Date:	February 26, 2019	Project Name:	1767 Washington Street, Boston, MA
Attention:	Nick Colavito	Silman Project #:	18565
Company:	Alexandra Partners LLC	RE:	Preliminary existing conditions assessment
From:	Mike Auren	cc:	Ben Rosenberg

Structural Engineers

111 Devonshire Street
Boston, MA 02109
617 695 6700
silman.com

The project at 1767 Washington Street (Boston, MA) is proposed to be a 13-story hotel on the site of an existing 5-story building. Silman has reviewed the progress architectural plans dated 10-10-2018 prepared by CBT and visited the site on multiple occasions. We have observed the majority of the building framing for general conditions. The following are our initial findings:

The northern quarter of the 4th and 5th floors are charred from fire damage and needs to be fully replaced. There are sporadic areas of joists with rotted ends or notched joists that require repair or replacement. The majority of the 1st floor framing is rotted and damaged from water infiltration, and has been shored from below in multiple locations. This shoring is a temporary solution only, and must be replaced with a permanent repair. The roof structure bears on a ledger supported by steel posts down to the 5th floor wood framing and must be re-supported on permanent structure designed to carry it. Both stairs are in poor to fair condition and need to be replaced. The floor sheathing is damaged or missing throughout the floors and needs to be replaced.

Structural analysis of the existing floor and column structure has not yet been performed and may indicate that floors are not capable of carrying contemporary code-mandated or programmatic loads. While it may be structurally feasible to repair or replace the existing wood floor it would likely provide significant project hardships. Based on the current plans and proposed usage for the renovated space and addition, the following considerations of other structural and non-structural aspects of the proposed project likely favors removing and replacing the full interior structure:

1. Removal of existing flooring and damaged sheathing, and installation of new sheathing, would require significant attention to construction sequencing and temporary support for installation, as well as potentially temporary bracing for remaining joists.
2. The floors are not level. Leveling existing wood floors would require shimming new flooring, pouring a leveling material that may create a load issue for the existing floors, sistering new wood framing onto existing joists to support new sheathing at a level surface, etc. This is the biggest impediment to achieving floors that support the proposed program.
3. Some of the interior wood-framed partitions, originally designed to be non-structural, have likely become de facto bearing walls due to long-term deflection of floors. Floor joists are likely bearing on these interior walls. Removal of these walls may cause additional deflection and thus serviceability issues for the affected areas.
4. Based on the current plan of a 13-story structure, the existing structure would need to support an additional 8 stories. This would require that new building foundations and new columns thread through the existing footprint of the building would be needed to support the addition. While feasible to do so in an existing building, it will require significant temporary shoring of existing floor framing and re-support of much of the framing in the central spine of the building. In addition, a new lateral force resisting system will need to be installed that will require significant adjustment and re-support of existing floor framing.
5. The stairs and the structure supporting the stairs will need to be new, and thus it may make sense to remove and replace the floor framing bays similarly supported on this structure rather than providing temporary shoring and reconnecting.
6. The rear quarters of the 4th and 5th floors need to be removed and replaced due to fire damage. The roof framing will need to be re-supported for most of its perimeter, and likely reframed if it is to act as a floor in the new scheme.
7. Based on our past experiences, this work will fall be codified as a substantial structural Level 3 alteration under the IEBC work-area method, requiring an upgrade of all existing structure to modern seismic load requirements.

Based on our initial review of the building plans, the likely code upgrade requirements and our review of the existing site conditions, our initial recommendations would be to

Silman

remove the floor framing in its entirety, retain the existing exterior street facing walls and build a contiguous new structure over the existing site and adjacent lot.

Please don’t hesitate to contact our office with any questions.

VANDERWEIL

R.G. Vanderweil Engineers, LLP
vanderweil.com
274 Summer Street
Boston, MA 02210
617.423.7423 TEL
617.423.7401 FAX

Memorandum

Date:	August 5, 2019	**Project #**:	29498.00
To:	Stephen Walnut, AIA (CBT)		
From:	Paul Van Kauwenberg, PE		
Re:	1767 Hotel Alexandra		
cc:	Alex Vanderweil, PE		

Stephen:

As requested, following is a preliminary list of the high-level MEP/FP requirements that we anticipate will be required as part of the project. If acceptable, please forward onto the general contractor for their use in preliminary pricing.

Mechanical:

Cooling/Heating System - General

- Two (2) cell remote roof mounted cooling towers - estimated total capacity 250 tons.
- Two (2) condenser water pumps - 750 GPM/Pump N+1 arrangement.
- One (1) side stream mechanical separator assembly.
- Two (2) plate and frame heat exchangers sized at 50% each total capacity 250 tons. 2 degree approach.
- Two (2) closed loop building side pumps at 750 gpm with N+1 arrangement.
- One (1) expansion tank.
- One (1) air separator.
- Two (2) natural gas condensing hot water boilers at 2,000 MBH each input. Boilers are sized based on 50/50.
- Two (2) hot water boiler pumps at 120 gpm - N+1.
- Chemical treatment for the open condensing water loop and short feeder for the closed building side loop.

Ventilation

- Central roof mount energy recovery unit at estimated 11,800 CFM.
- Vertical supply risers to provide conditioned air to the keys.
- Vertical exhaust risers serving the toilet back to the ERU's.

Memorandum

Hotel Keys

- Horizontal or vertical high riser water source heat pumps.
- Constant ventilation and toilet exhaust from the roof ERU units.
- Hotel room controller.

Stair Pressurization

- Rooftop supply fan at 8,000 CFM.
- Vertical riser from level 1 to level 14 with distribution to each stair level.

Post Fire Smoke Purge

- Rooftop exhaust fan at 5,000 CFM.

Fuel Oil

- Estimated 650 gallon UL142 storage tank.
- Duplex pumps set and distribution from level-0 to level 14.
- Remote fill station at exterior of building.

BMS System

- Central BMS DDC system to control the central plant and common areas.
- Hotel keys will be provided with room controllers - combination room temperature sensor/humidity sensor and occupancy sensor. This programmable controller will be standalone unless the hotel vender request this to be connected to the hotel registration server.

Retail

- Provided with condenser water for cooling and heating, BTU meter to be provided to meter the energy use (if lower level dining/bar or upper level bar are considered to be tenants)
- Ventilation air provided through the building ERU, this is code minimum all additional make-up air is the responsibility of the tenant.
- Allocated vertical shaft space is provided for Kitchen exhaust and make-up air.
- Tenant provides their own heat pumps and all required supplemental heating.

Electrical:

- Pad mounted utility transformer with ductbank to main electric room and fire pump room.
- Service switchboard in the main electric room.
- Distribution Panels for Mechanical, Lighting and General Power in the main electric room.

- Stacked electrical riser closet on each floor with Mechanical, Lighting and General Power branch panels on alternating floors.
- 300kW generator on the roof with adjacent Emergency Electric room housing the Emergency, Legally Required and Standby Automatic Transfer Switches and Distribution Panels.
- Staked Emergency Closet with branch circuit panels on alternating floors.
- LED lighting and digital lighting controls.

Plumbing:

- A new 4 inch domestic cold water service will be extended to the water service room at Ground Level. The water service for the high zone will be piped through a triplex vertical turbine pressure booster system consisting of three 5 hp variable speed pumps.
- The building's domestic water distribution will be divided into 2 pressure zones (each zone will consist of 7 levels). A duplex pilot-operated pressure-reducing valve will be provided for the low distribution zone to control residual water pressure within the required pressure range.
- Hot water for the building will be generated by two gas-fired storage condensing type water heaters located in a mechanical room. Each water heater will be sized at 100 percent of the design load to provide N+1 redundancy for the domestic hot water system. Each 300 gal water heater will generate ~ 1700 gal/hr of hot water at 100°F rise.
- A digital type recirculating mixing valve will be provided to maintain a temperature of 120°F within the domestic hot water distribution system.
- A primary and secondary storm water drainage system will be provided to convey storm water from roof drains, area drains and all clean waste to the site storm sewer system.
- A single pipe "Sovent" waste collection systems will be provided for the hotel portion of the project. A conventional two pipe "waste and vent" system will service plumbing fixtures in toilet rooms, hand sinks, mop receptors, sinks, floor drains in toilet rooms, kitchen areas and mechanical equipment rooms.
- Local grease interceptors will be provided in all food service areas for DW machines, 3-compartment pot sinks and any other grease producing equipment.
- A new natural gas service will be brought to the building by the utility company (National Grid) from the distribution main. A gas meter for the base building system will be provided by National Grid and will be in the utility closet with an exterior double door on the west side of the building.
- A duplex gas booster will be required if National Grid guarantees a minimum delivery gas pressure less than that required for the mechanical, plumbing and kitchen equipment on the project.

Fire Protection / Fire Alarm:

- One (1) 8" fire water service from municipal domestic/fire network.
- Electric drive fire pump on standby power sized to meet standpipe demand (100 psi at the top).
- Automatic sprinkler protection throughout.
    - Dry sprinkler protection for the loading dock.
- Automatic standpipe system in egress stairs on with risers on main landings.

- Addressable, one way voice capable fire alarm system.
  - Manual pull stations at egress stair doors and exits.
  - Smoke detection in electrical / technology rooms, hotel corridors and as required for fire safety control (elevator recall, door release, etc).
  - System smoke detectors with sounder bases in guestrooms.
  - CO detection supervised by fire alarm system local to CO producing equipment.
  - Fire protection system supervision (waterflow / tamper switches and fire pump status).
  - Duct smoke detectors and relay modules for fire/smoke damper closure and HVAC unit shutdown. Hotel corridor and guestroom FSDs will be controlled by area detection.
  - Interface with building systems for fire safety control (elevator recall, security override).
  - Interface with building stair pressurization systems (will perform all supervision / control) with manual override and status indication via smoke control panel in fire command center.
- Two-way radio enhancement system for emergency responders.

Please do not hesitate to contact us if you have any questions on the above information.

Very Truly Yours,

R.G. Vanderweil Engineers, LLP

Paul Van Kauwenberg, PE, LEED AP BD+C
Associate Principal

PVK/crl

H:\29498.00\DOC\MEMO\29498_2019_08-05_ALEXANDRA HOTEL PRELIMINARY MEPFP.DOCX

Printed Date: 08/05/2019
Job: 1767 Washington St Hotel_TC
Mark: ERU option#2
Model: RVE-180-81-30H-40D-R

RVE-180-81-30H-40D-R

Unit Performance

Design Conditions

Elevation (ft)	Summer		Winter DB (F)	Supply (CFM)	Outdoor Air (CFM)	Exhaust Air (CFM)
	DB (F)	WB (F)				
30	90.8	76.2	7.4	11,800	11,800	11,800

Unit Specifications

Weight (lb)	Cooling Type	Heating Type	Unit Installation	Unit ETL Listing	Furnace ETL Listing
10068 (+/- 10%)	Packaged DX	Indirect Gas	Outdoor	UL\cUL 1995	ANSI Z83.8 / CSA 2.6

Configuration

Outdoor Air		Exhaust Air	
Intake	Discharge	Intake	Discharge
End	Bottom	Bottom	Side

ASHRAE 90.1-2013 Compliance

	ASHRAE 90.1 Min. Efficiency	Calculated Efficiency	Compliance
ISMRE	5.2	6.59	✓

Energy Recovery Performance

	Temperature (F)						Capacity Reduction (BTU/h)
	Outdoor Air		Supply Air		Return Air		
	DB	WB	DB	WB	DB	WB	
Summer	90.8	76.2	79.7	67.5	75.0	62.5	405,684.0
Winter	7.4	7.2	50.9	43.1	72.0	55.9	554,364.0

Cooling Specifications

Type	Total Capacity (MBH)	Sensible Capacity (MBH)	Lead Compressor Type	Coil (DB/WB)		Reheat	
				EAT (F)	LAT (F)	Capacity (MBH)	LAT (F)
Packaged DX	460.4	311.2	Digital Scroll	79.7 / 67.5	55.7 / 55.1	189.7	70.6

Heating Specifications

Type	Gas Type	Input (MBH)	Output (MBH)	Temperature Rise		Turndown	Performance	
				Min (F)	Max (F)		EAT (F)	LAT (F)
Indirect Gas	NG	1,000	800	6.2	62.5	10:1	50.9	113.4

Air Performance

Type	Total Volume (CFM)	External SP (in. wg)	Total SP (in. wg)	FRPM	Fan		
					Qty	Type	Drive-Type
Supply	11,800	2	4.649	1757	2	Plenum	Direct
Exhaust	11,800	1	1.933	1746	3	Plenum	Direct

Motor Specifications

Motor	Qty	Operating Power (hp)	Size (hp)	Enclosure	Efficiency	RPM
Supply	2	6.19	7.5	ODP	PE	1800
Exhaust	3	1.77	2	ODP	PE	1800

Electrical Specifications

Power Supply	Rating (V/C/P)	MCA (A)	MOP (A)
Unit	460/60/3	110.2	125.0

CONSTRUCTION FEATURES AND ACCESSORIES

Unit	
Unit Installation - Outdoor	Std
Unit Construction - Double Wall	Std
Insulation - 2 inch 2.4# R13 foam	Std
Corrosion Resistant Fasteners	Std
Hinged Access	Std
Factory Wired Non-Fused Disconnect Switch	Std
Direct Drive Plenum Blower & Motor Assemblies	Std
Factory Wired VFDs	Std
Unit Finish - Permatector	Std
Stainless Steel Condensate Drain Pan and Connection	Std
Short Circuit Current - 5 kA	Std
Energy Recovery Device - Polymer Wheel w/ Silica Gel Desiccant	Std
Controls	
Unit Controls - Microprocessor	Std
Internally Mounted Control Center with 24 VAC control transformer(s)	Std
Network Protocol	
Supply Fan Control - Constant Volume	X
Exhaust Fan Control - Constant Volume	X
Outd/Rec. Air Damper Ctrl - Adj. Minimum OA Position	X
Economizer Control - Temperature or Enthalpy (field-selectable)	
Control Accessories	
Remote Display - w/75 ft cord	X
Supply Discharge Temp Control Sequence	
Supply Air Dirty Filter Sensing	
Airflow Monitor	
Room Thermostat - Temperature	
Phase/Brownout Protection	Std

Accessories	
Frost Control - Electric Preheater	
Recirc Air Damper	X
Outdoor Air Damper - Low Leakage	X
Roof Curb	
Supply Air Filters - 2" MERV 8	Std
Service Outlet	
Vapor Tight Lights	
Condensate Overflow Switch	
Spare Filters	
Hail Guards	X
Smoke Detectors	
Exhaust Discharge Gravity Backdraft Damper	X
Return Air Filters - 2" Aluminum	Std
Outdoor Air Filters - 2" Aluminum	Std
Furnace Control - 10:1 Modulating	X
Power Venting	Std
Warranty Options	
Unit Warranty - 1 Yr	Std
Energy Wheel Warranty - 5 Yrs Less Motor	Std
Heat Exchanger Warranty - 1 Yr (Standard)	Std
Compressor Warranty - 1 Yr (Standard)	Std

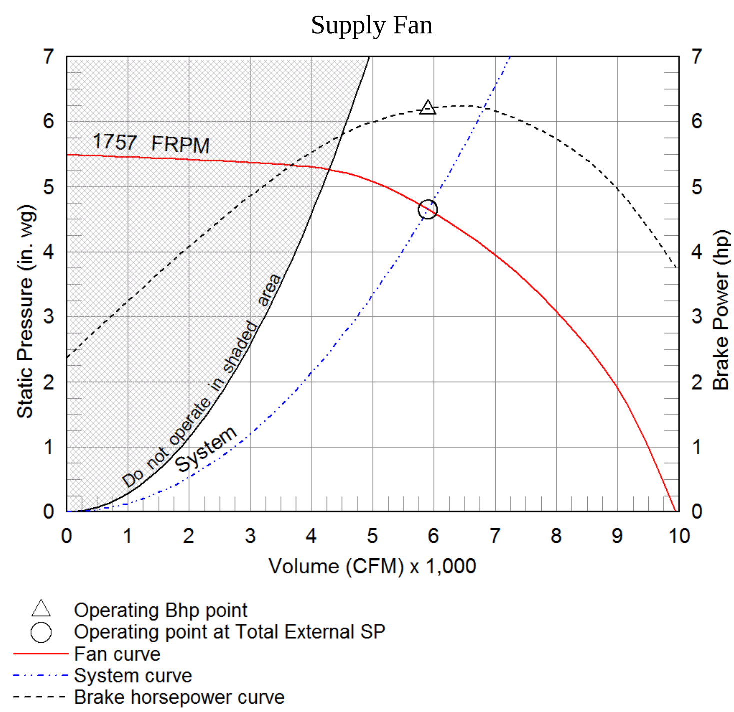
Standard Option	Std
Not Included	
Included	X

Notes
Weight does not include skid/crating and may vary by 10%.

Supply Fan Charts And Performance

Supply Fan Performance									
Total Volume (CFM)	External SP (in. wg)	Total SP (in. wg)	RPM	Operating Power (hp)	Motor		Fan		
					Qty	Size (hp)	Qty	Type	Drive-Type
11,800	2	4.649	1757	6.19	2	7.5	2	Plenum	Direct

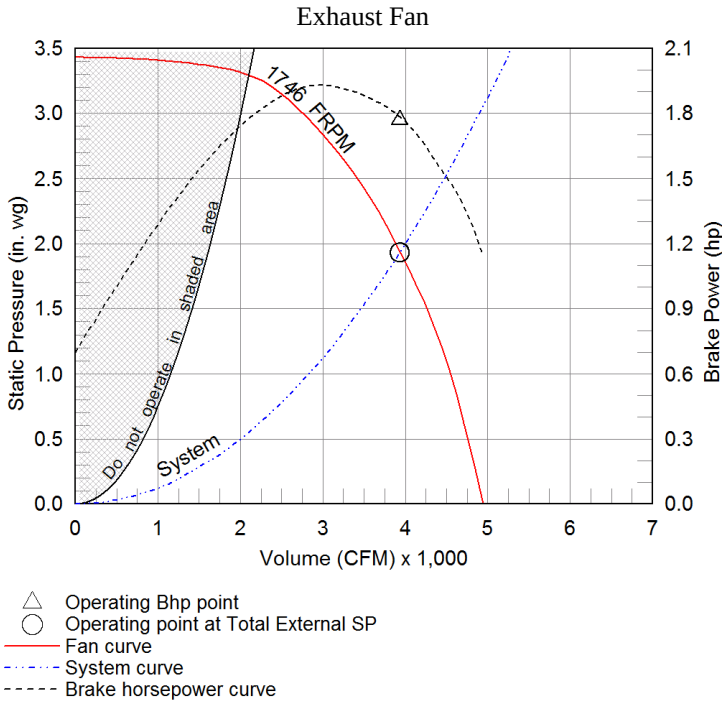
Sound Performance in Accordance with AMCA										
Sound Power by Octave Band								Lwa	dBA	Sones
62.5	125	250	500	1000	2000	4000	8000			
88	89	91	90	87	81	78	73	92	80	32



Exhaust Fan Charts And Performance

Exhaust Fan Performance									
Total Volume (CFM)	External SP (in. wg)	Total SP (in. wg)	RPM	Operating Power (hp)	Motor		Fan		
					Qty	Size (hp)	Qty	Type	Drive-Type
11,800	1	1.933	1746	1.77	3	2	3	Plenum	Direct

Sound Performance in Accordance with AMCA										
Sound Power by Octave Band								Lwa	dBA	Sones
62.5	125	250	500	1000	2000	4000	8000			
74	73	82	80	72	71	73	64	81	69	17



Cooling Performance

Cooling Specifications						
Nominal Tonnage	Entering Air (F)		Leaving Air (F)		Capacity (MBH)	
	DB	WB	DB	WB	Total	Sensible
40	79.7	67.5	55.7	55.1	460.4	311.2

Coil Information							
PDX Coil Model	Fins Per Inch	Rows Deep	Face Vel. (ft/min)	Coil PD (in. wg)	Refrigerant	Face Area (ft2)	Suction Temp (F)
DX12C06S10-40X80-RH	10	6	531.0	0.8	R410A	22.2	48.0

Compressor Details									
Lead Compressor Type	Compressor Qty	Compressor RLA (A)				Compressor LRA (A)			
		Comp. 1	Comp. 2	Comp. 3	Comp. 4	Comp. 1	Comp. 2	Comp. 3	Comp. 4
Digital Scroll	4	16.0	16.0	16.7	16.7	110	110	114	114

Unit Details
Refrigerant charges provided by the factory are approximate and may require adjustment in the field
Hermetic scroll type compressors
Compressors mounted on neoprene vibration isolation
Crankcase heater on compressor(s)
Thermostatic expansion valve
Stainless steel double sloped drain pan
Moisture-indicating sight glass
Service/charging valves
Refrigerant low pressure switch (auto reset)
Refrigerant high pressure switch (manual reset)
Liquid-Line filter drier
Digital scroll compressor

Heating Performance

Heating Specifications								
Type	Gas Type	Input (MBH)	Output (MBH)	Temperature Rise		Turndown	Performance	
				Min (F)	Max (F)		EAT (F)	LAT (F)
Indirect Gas	NG	1,000	800	6.2	62.5	10:1	50.9	113.4

Unit Details
ANSI standard Z83.8 and CSA 2.6
High Thermal efficiency
Direct spark ignition
3/4" Gas Connection
At least 6 in. wg of natural gas pressure (11 in. wg for LP) is required at the units gas connection in order to achieve maximum performance
Power Venting
24 Volt Control Power

Energy Recovery Summer Performance

Outdoor Air		Supply Air	
Dry Bulb (F)	90.8	Dry Bulb (F)	79.7
Wet Bulb (F)	76.2	Wet Bulb (F)	67.5
Enthalpy (BTU/lb)	39.5	Enthalpy (BTU/lb)	31.9

Design Air Flow Conditions

Model	OA Volume (CFM)	EA Wheel Enthalpy Recovery Ratio	EA Volume (CFM)	EA Wheel Effectiveness
RVE-180-81-30H-40D-R	11,800	66.2	11,800	67.1

Outdoor Air Cooling Reduction

OA Load w/o Energy Recovery		OA Load with Energy Recovery		Equipment Reduction (tons)
BTU/h	(tons)	(BTU/h)	(tons)	
612,774.0	51.1	207,090.0	17.3	33.8

Energy Recovery Winter Performance

Outdoor Air		Supply Air	
Dry Bulb (F)	7.4	Dry Bulb (F)	50.9
Wet Bulb (F)	7.2	Wet Bulb (F)	43.1
Enthalpy (BTU/lb)	2.1	Enthalpy (BTU/lb)	16.6

Design Air Flow Conditions

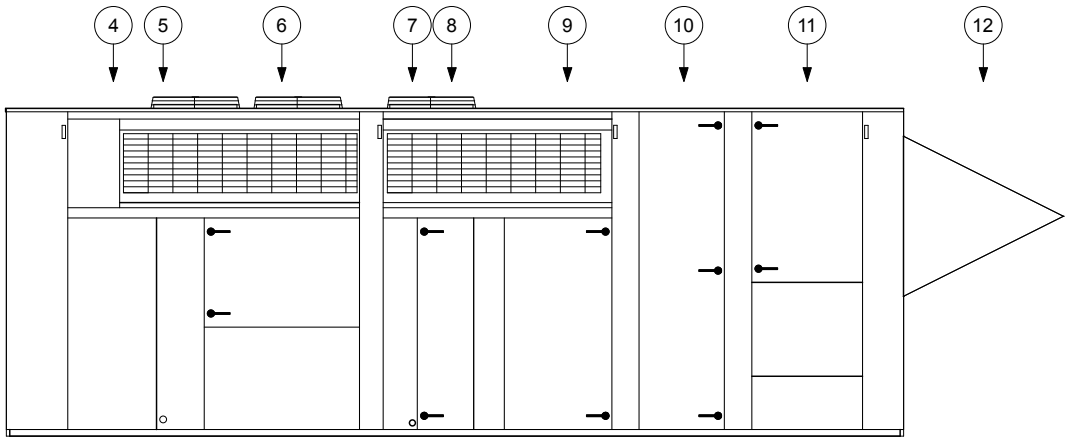
Model	OA Volume (CFM)	EA Wheel Enthalpy Recovery Ratio	EA Volume (CFM)	EA Wheel Effectiveness
RVE-180-81-30H-40D-R	11,800	67.4	11,800	68.9

Outdoor Air Heating Reduction

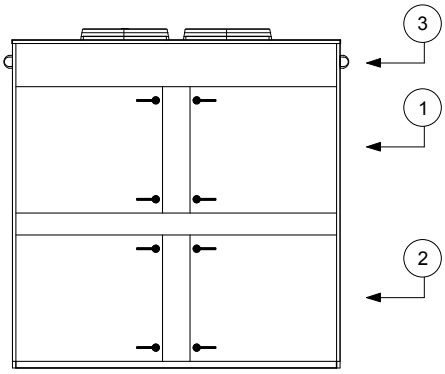
OA Load w/o Energy Recovery (BTU/h)	OA Load with Energy Recovery (BTU/h)	Equipment Reduction (BTU/h)
823,262.4	268,898.4	554,364.0

Front Drawing

Side View



Elevation



Side

1.) COMPRESSOR ACCESS DOOR

2.) ELECTRICAL & CONTROLS ACCESS DOOR

3.) LIFTING LUGS (TYP 8)

4.) HEATER ACCESS PANEL

5.) GAS CONNECTION - GAS HEAT ONLY

6.) SUPPLY FAN ACCESS DOOR

7.) CONDENSATE DRAIN CONNECTION (1.25" DIA)

8.) COOLING COIL ACCESS DOOR

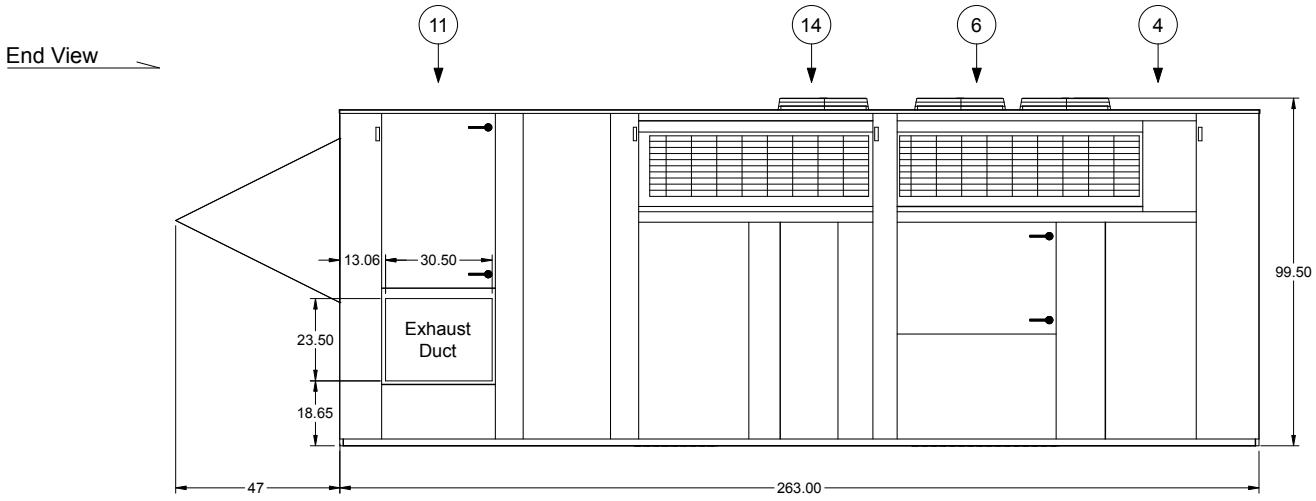
9.) SUPPLY AIR FILTER ACCESS DOOR

10.) ENERGY RECOVERY WHEEL ACCESS DOOR

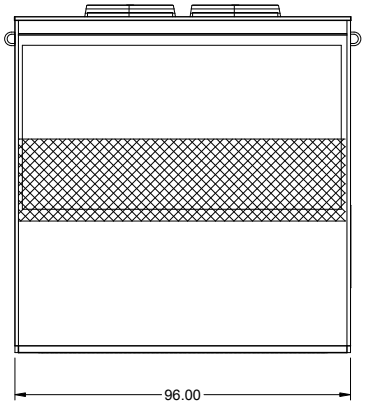
11.) OUTDOOR AIR FILTER ACCESS DOOR

12.) OUTDOOR AIR INTAKE HOOD

Reverse Drawing



Back



End

4.) HEATER ACCESS PANEL

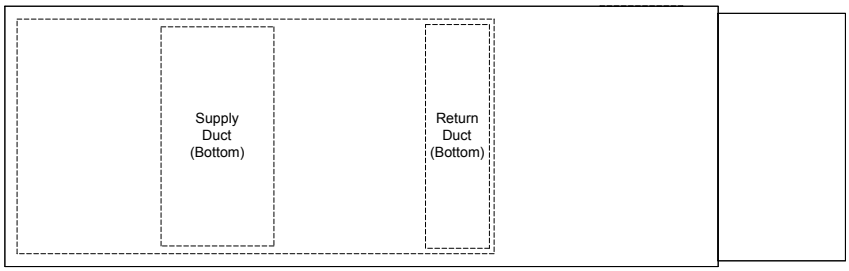
6.) SUPPLY FAN ACCESS DOOR

11.) OUTDOOR AIR FILTER ACCESS DOOR

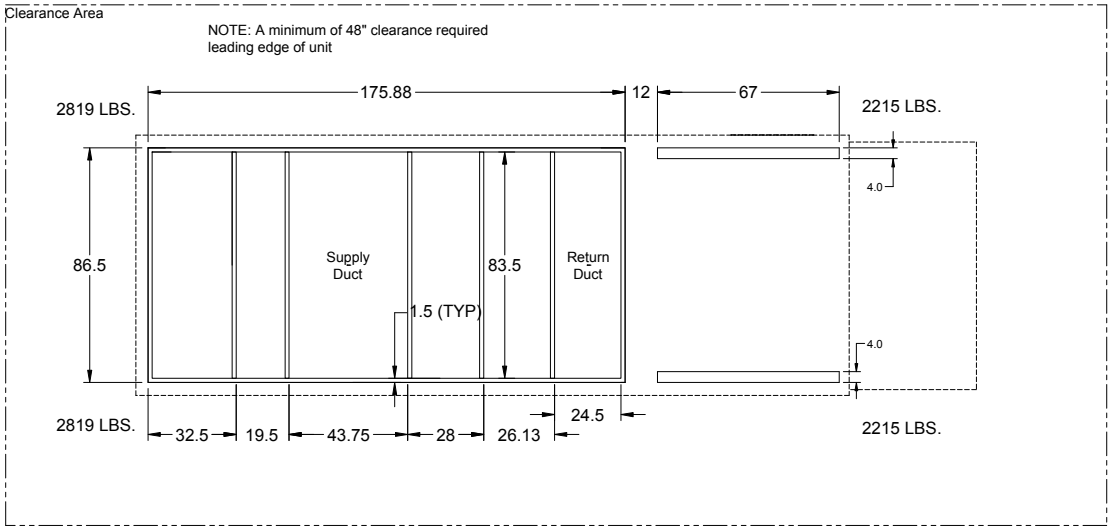
13.) EXHAUST FAN ACCESS DOOR

14.) COOLING COIL ACCESS PANEL

Top Drawing



Plan



Curb Information
Curb Provided by: Others
Curb Height: N/A

Footprint

Warranty Statement for Dedicated Outdoor Air Systems (DOAS)

Unit Warranty

Greenheck warrants the equipment to be free from defects in material and workmanship for a period of 1 year (standard) from the shipment date.

Energy Wheel Warranty

The energy recovery wheel is warranted to be free from defects in material and workmanship for a period of 5 years from the shipment date.

Heat Exchanger Extended Warranty

Greenheck warrants the stainless steel heat exchanger to be free from defects in material and workmanship for a period of 1 year from the shipment date.

Compressor Extended Warranty

Greenheck warrants the refrigerant compressor(s) to be free from defects in material and workmanship for a period of 1 year from the shipment date.

Warranty Notes

Any component which proves defective during the warranty period will be repaired or replaced at Greenheck's sole option when returned to our factory, transportation prepaid. All warranties do not include labor costs associated with troubleshooting, removal, or installation. Greenheck will not be liable for any consequential, punitive, or incidental damages resulting from use, repair, or operation of any Greenheck product. These warranties are exclusive and are in lieu of all other warranties, whether written, oral, or implied, including the warranty of merchantability and the warranty of fitness for a particular purpose. No person (including any agent or salesperson) has authority to expand Seller's obligation beyond the terms of this warranty, or to state that the performance of the product is other than that published by Seller.

As a result of our commitment to continuous improvement, Greenheck reserves the right to change specifications without notice.

UPDATE™ Version 5.11.9
Product Data: 8/3/2018 (Current)

9/18/2018 7:38:43 AM

Job Information

Selected By

Vanderweil Engineers
274 summer street
boston, ma 02210
edalton@vanderweil.com

Edward Dalton
Tel 617-556-9305

SPX Cooling Technologies Contact

R.T. Forbes Company, Inc.
1 Lummus Avenue, P.O. Box 209
Danvers, MA 01923 (USA)
rtforbesco@comcast.net

Tel 978-777-1220
Fax 978-777-1750

Cooling Tower Definition

Manufacturer	Marley	Fan Speed (100.0 %)	330 rpm
Product	NC Steel	Fan Tip Speed (100.0 %)	6220.4 fpm
Model	NC8401KLN2	Fan Motor Speed (100.0 %)	1800 rpm
Cells	1	Fan Motor Capacity per cell	5.000 Hp
Fan	6.00 ft, 7 Blades	Fan Motor Output per cell	5.000 BHp
Fans per cell	1	Fan Motor Output total	5.000 BHp
Model Group	Quiet Fan (L)		

Sound » Independently Verified

1-Cell sound data for an unobstructed environment.

Sound Pressure Level (SPL) expressed in dB (re: 20x10-6 Pa)
Sound Power Level (PWL) expressed in dB (re: 1x10-12 watts)

		Octave Band Center Frequency (Hz)								Overall
Distance	Location	63	125	250	500	1000	2000	4000	8000	dBA
5.00 ft	Air Inlet Face SPL	67	71	68	66	61	59	55	49	68
5.00 ft	Cased Face SPL	64	64	61	61	52	50	46	39	61
5.00 ft	Fan Discharge SPL	68	71	73	67	65	64	59	49	71
50.00 ft	Air Inlet Face SPL	58	58	53	51	48	45	42	37	54
50.00 ft	Cased Face SPL	60	57	55	49	45	42	35	26	52
50.00 ft	Fan Discharge SPL	61	60	65	55	52	50	45	38	60
	Tower PWL	92	90	91	84	81	78	74	68	87

Notes

- Sound levels have been independently verified by a CTI-licensed sound test agency to ensure validity and reliability of the published values.
- Measurement and analysis of the sound levels were conducted by a certified Professional Engineer in Acoustical Engineering.
- Sound pressure levels were measured and recorded on various models in the acoustic near-field and far-field locations using ANSI S1.4 Type 1 precision instrumentation.
- Sound pressure levels were measured and recorded in full conformance with CTI ATC-128 test code published by the Cooling Technology Institute (CTI).

UPDATE™ Version 5.11.9
Product Data: 8/3/2018 (Current)

9/18/2018 7:38:06 AM

Job Information

Selected By

Vanderweil Engineers
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SPX Cooling Technologies Contact

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1 Lummus Avenue, P.O. Box 209
Danvers, MA 01923 (USA)
rtforbesco@comcast.net

Tel 978-777-1220
Fax 978-777-1750

Cooling Tower Definition

Manufacturer	Marley	Fan Motor Speed	1800 rpm
Product	NC Steel	Required Fan Motor Output per cell *	3.914 BHp
Model	NC8401KLN2	Required Fan Motor Output total *	7.827 BHp
Cells	2	Fan Motor Capacity per cell	5.000 Hp
CTI Certified	Yes	Fan Motor Output per cell	5.000 BHp
Fan	6.000 ft, 7 Blades	Fan Motor Output total	10.000 BHp
Fan Speed	330 rpm, 6220.4 fpm	Air Flow per cell	46980 cfm
Fans per cell	1	Air Flow total	93970 cfm
Fill Type	MX75	Static Lift	10.425 ft
		Distribution Head Loss	0.000 ft
		ASHRAE 90.1 Performance	99.9 gpm/Hp

Model Group Quiet Fan (L)

* Required Fan Motor Output assumes VFD operation

Conditions

Tower Water Flow	750.0 gpm	Air Density In	0.07094 lb/ft³
Hot Water Temperature	95.00 °F	Air Density Out	0.07141 lb/ft³
Range	10.00 °F	Humidity Ratio In	0.01712
Cold Water Temperature	85.00 °F	Humidity Ratio Out	0.02794
Approach	7.00 °F	Wet-Bulb Temp. Out	86.68 °F
Wet-Bulb Temperature	78.00 °F	Estimated Evaporation	8.5 gpm
Relative Humidity	50.0 %	Total Heat Rejection	3736900 Btu/h
Capacity	108.0 %		

- This selection satisfies your design conditions.

Weights & Dimensions

	Per Cell	Total
Shipping Weight	3790 lb	7570 lb
Heaviest Section	3790 lb	
Max Operating Weight	7610 lb	15230 lb
Width	12'-10"	12'-10"
Length	6'-6 ¼"	13'-4"
Height	10'-2 ¼"	

Minimum Enclosure Clearance

Clearance required on air inlet sides of tower without altering performance. Assumes no air from below tower.

Solid Wall	3.6 ft
50 % Open Wall	3.0 ft

Weights and dimensions do not include options; refer to sales drawings. For CAD layouts refer to file 8401_ALN.dxf

Cold Weather Operation

Heater Sizing (to prevent freezing in the collection basin during periods of shutdown)

Heater kW/Cell	9.0	7.5	6.0	4.5	3.0
Ambient Temperature °F	-26.64	-14.92	-3.20	8.52	20.23

Picture shown may not represent actual configuration

C9 ACERT™ Sound Attenuated and Weather Protective Enclosures

U.S. Sourced
180 – 300 kW 60 Hz

Features

Robust/Highly Corrosion Resistant Construction

- Factory-installed on skid base
- Environmentally friendly, polyester powder baked paint
- Zinc plated or stainless steel fasteners
- Internally mounted-critical exhaust silencing system (sound attenuated only)
- Externally front-mounted enclosed exhaust silencing system (weather protective only)
- Designed and tested to comply with UL 2200 listed generator set package
- Compression door latches providing solid door seal

Excellent Access

- Large cable entry area for installation ease
- Accommodates side-mounted single or multiple breakers
- Two doors on both sides
- Vertically hinged allow 180° opening rotation and retention with door stays
- Lube oil and coolant drains routed to the exterior of the enclosure base

Transportability

- These enclosures are of extremely rugged construction to withstand outdoor exposure and rough handling common on many construction sites

Security and Safety

- Lockable access doors which give full access to control panel and breaker
- Cooling fan and battery charging alternator fully guarded
- Fuel fill, oil fill, and battery can only be reached via lockable access
- Externally mounted emergency stop button
- Designed for spreader bar lifting to ensure safety
- Stub-up area is rodent proof

Options

- Caterpillar yellow* or white paint
- Weather protective enclosure constructed with 14-gauge steel
- Sound attenuated Level 1 constructed with 14-gauge steel
- Sound attenuated Level 2 constructed with 14-gauge steel
- Sound attenuated enclosure constructed with 12-gauge aluminum (5052 grade)
- UL Listed 203 gallon integral fuel tank
- UL Listed 660 or 1002 gallon sub base fuel tanks
- Seismic certification per applicable building codes:
  IBC 2000, IBC 2003, IBC 2006, IBC 2009, IBC 2012, CBC 2007, CBC 2010
- IBC certification for 150 mph wind loading
- Anchoring details are site specific and are dependent on many factors such as generator set size, weight and concrete strength. IBC certification requires that the anchoring system used is reviewed and approved by a professional engineer.
- Control panel viewing window**
- Cold weather bundle. Available with SA Level 2 and Aluminum SA enclosures only

*Not available with aluminum enclosures
**Steel sound attenuated only

Enclosure Sound Pressure Levels at Standby Ratings

Enclosure Type	Standby ekW	Cooling Air Flow Rate		Ambient Capability*		(dBA) @ 7m (23 ft) at 100% Load
		m^3/min	cfm	˚C	˚F	
Sound Attenuated Level 2	300	351	12395	46	115	71
	250	351	12395	53	127	71
	200	351	12395	59	138	71
Sound Attenuated Level 1	300	351	12395	46	115	75
	250	351	12395	53	127	74
	200	351	12395	59	138	74
Weather Protective	300	516	18222	49	120	82
	250	516	18222	55	131	82
	200	516	18222	60	140	82
Aluminum Sound Attenuated	300	351	12395	46	115	73
	250	351	12395	53	127	72
	200	351	12395	59	138	72

*Cooling system performance at sea level. Consult your Cat® dealer for site specific ambient and altitude capabilities.

Enclosure Sound Pressure Levels at Prime Ratings

Enclosure Type	Prime ekW	Cooling Air Flow Rate		Ambient Capability*		(dBA) @ 7m (23 ft) at 100% Load
		m^3/min	cfm	˚C	˚F	
Sound Attenuated Level 2	275	351	12395	50	122	71
	225	351	12395	56	133	71
	180	351	12395	60	140	71
Sound Attenuated Level 1	275	351	12395	50	122	75
	225	351	12395	56	133	74
	180	351	12395	60	140	73
Weather Protective	275	516	18222	52	126	82
	225	516	18222	59	138	82
	180	516	18222	60	140	82
Aluminum Sound Attenuated	275	351	12395	46	115	72
	225	351	12395	56	133	72
	180	351	12395	60	140	72

*Cooling system performance at sea level. Consult your Cat dealer for site specific ambient and altitude capabilities.

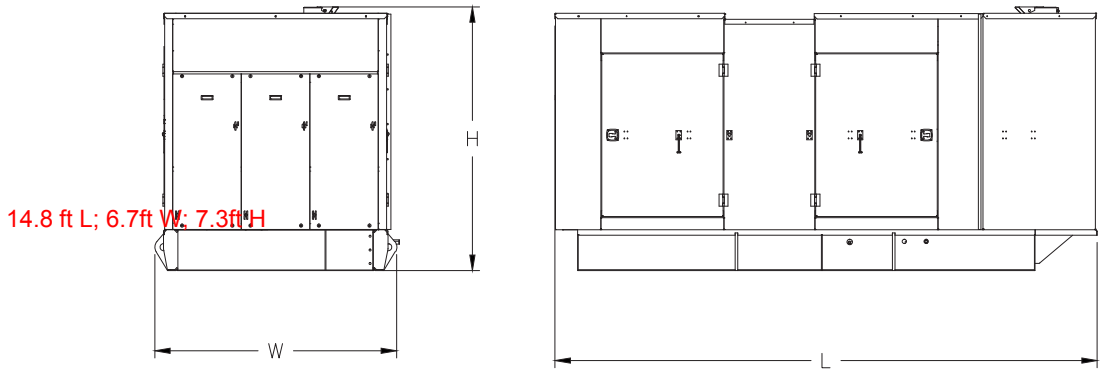
The sound pressure level data shown in the tables above is quoted as free field and is for guidance only. Actual levels produced may vary according to site conditions.

Component Weights to Calculate Package Weight

Narrow Skid		Wide Skid		Steel Enclosures						Aluminum Enclosure	
				Weather Protective		Sound Attenuated Level 1		Sound Attenuated Level 2		Sound Attenuated	
kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
219	483	468	1032	660	1455	1062	2341	1062	2341	629	1387

Enclosure Weights and Dimensions

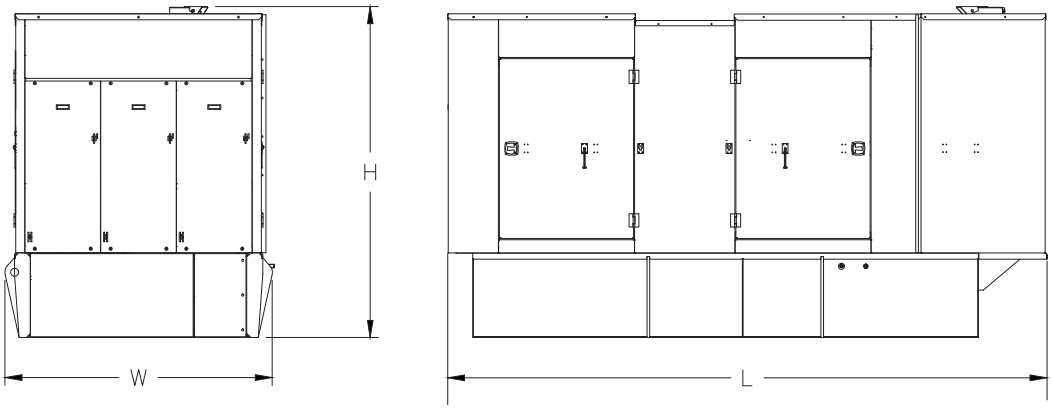
Enclosure on Skid Base



14.8 ft L; 6.7ft W; 7.3ft H

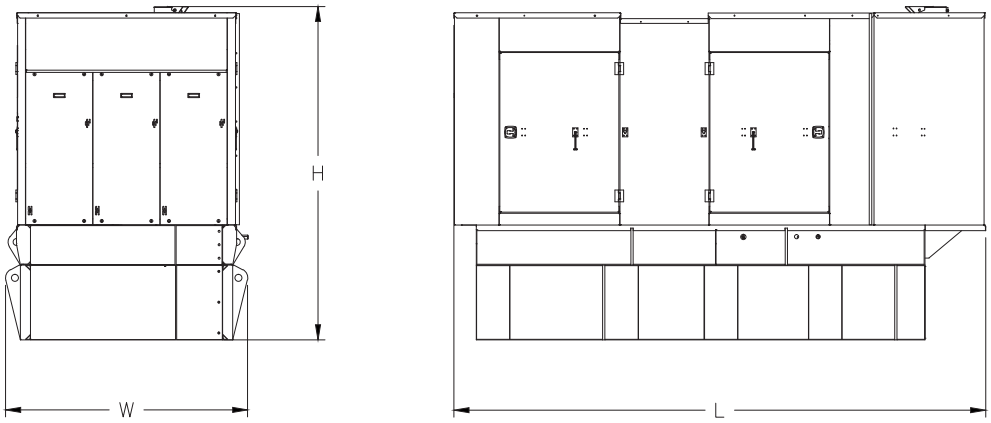
Enclosure Type	Length "L"		Width "W"		Height "H"	
	mm	in	mm	in	mm	in
Sound Attenuated	4515	177.8	2037	80.2	2196	86.5
Weather Protective	4035	158.9	2037	80.2	2142	84.3

Enclosure on a UL Listed 203 Gallon Integral Fuel Tank Base



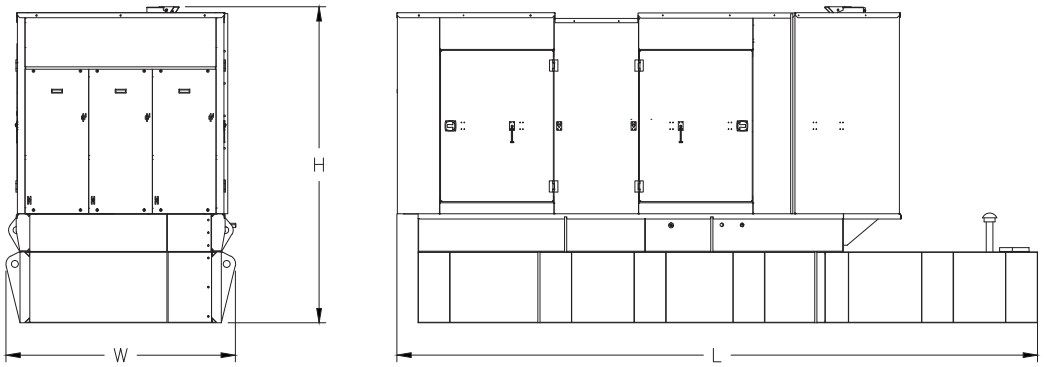
Enclosure Type	Length "L"		Width "W"		Height "H"	
	mm	in	mm	in	mm	in
Sound Attenuated	4515	177.8	2014	79.3	2492	98.1
Weather Protective	4035	158.9	2014	79.3	2438	96.0

Enclosure on a UL Listed 660 Gallon Sub-base Fuel Tank Base



Enclosure Type	Length "L"		Width "W"		Height "H"	
	mm	in	mm	in	mm	in
Sound Attenuated	4515	177.8	2056	80.9	2831	111.5
Weather Protective	4035	158.9	2056	80.9	2777	109.3

Enclosure on a UL Listed 1002 Gallon Sub-base Fuel Tank Base



Enclosure Type	Length "L"		Width "W"		Height "H"	
	mm	in	mm	in	mm	in
Sound Attenuated	5739	225.9	2056	80.9	2831	111.5
Weather Protective	5739	225.9	2056	80.9	2777	109.3

ELECTRIC POWER - Technical Spec Sheet
STANDARD

C9

300 ekW/ 375 kVA/ 60 Hz/ 1800 rpm/ 480 V/ 0.8 Power Factor

Rating Type: STANDBY

Emissions: U.S. EPA Certified for Stationary Emergency Use Only (Tier 3 Nonroad Equivalent Emission Standards)

Image shown may not reflect actual configuration

C9

300 ekW/ 375 kVA

60 Hz/ 1800 rpm/ 480 V

	Metric	English
Package Performance		
Genset Power Rating with Fan @ 0.8 Power Factor	300 ekW	
Genset Power Rating	375 kVA	
Aftercooler (Separate Circuit)	N/A	N/A
Fuel Consumption		
100% Load with Fan	86.0 L/hr	22.7 gal/hr
75% Load with Fan	66.8 L/hr	17.6 gal/hr
50% Load with Fan	51.5 L/hr	13.6 gal/hr
25% Load with Fan	33.1 L/hr	8.7 gal/hr
Cooling System[1]		
Engine Coolant Capacity	13.9 L	3.7 gal
Inlet Air		
Combustion Air Inlet Flow Rate	26.0 m³/min	916.6 cfm
Max. Allowable Combustion Air Inlet Temp	50 ° C	123 ° F
Exhaust System		
Exhaust Stack Gas Temperature	497.3 ° C	927.2 ° F
Exhaust Gas Flow Rate	69.7 m³/min	2460.9 cfm
Exhaust System Backpressure (Maximum Allowable)	10.0 kPa	40.0 in. water

Rating Type: STANDBY

Emissions: U.S. EPA Certified for Stationary Emergency Use Only (Tier 3 Nonroad Equivalent Emission Standards)

Heat Rejection		
Heat Rejection to Jacket Water	120 kW	6838 Btu/min
Heat Rejection to Exhaust (Total)	320 kW	18223 Btu/min
Heat Rejection to Aftercooler	92 kW	5239 Btu/min
Heat Rejection to Atmosphere from Engine	23 kW	1312 Btu/min
Heat Rejection to Atmosphere from Generator	22 kW	1245 Btu/min

Alternator[2]	
Motor Starting Capability @ 30% Voltage Dip	683 skVA
Current	451 amps
Frame Size	LC5014J
Excitation	SE
Temperature Rise	150 ° C

Emissions (Nominal)[3]		
NOx	2196.0 mg/Nm³	4.0 g/hp-hr
CO	115.5 mg/Nm³	0.2 g/hp-hr
HC	23.1 mg/Nm³	0.1 g/hp-hr
PM	12.7 mg/Nm³	0.0 g/hp-hr

DEFINITIONS AND CONDITIONS

1. For ambient and altitude capabilities consult your Cat dealer. Air flow restriction (system) is added to existing restriction from factory.

2. UL 2200 Listed packages may have oversized generators with a different temperature rise and motor starting characteristics. Generator temperature rise is based on a 40° C ambient per NEMA MG1-32.

3. Emissions data measurement procedures are consistent with those described in EPA CFR 40 Part 89, Subpart D & E and ISO8178-1 for measuring HC, CO, PM, NOx. Data shown is based on steady state operating conditions of 77° F, 28.42 in HG and number 2 diesel fuel with 35° API and LHV of 18,390 btu/lb. The nominal emissions data shown is subject to instrumentation, measurement, facility and engine to engine variations. Emissions data is based on 100% load and thus cannot be used to compare to EPA regulations which use values based on a weighted cycle.

Rating Type: STANDBY

Emissions: U.S. EPA Certified for Stationary Emergency Use Only (Tier 3 Nonroad Equivalent Emission Standards)

Applicable Codes and Standards:
AS1359, CSA C22.2 No100-04, UL142,UL489, UL869, UL2200,
NFPA37, NFPA70, NFPA99, NFPA110, IBC, IEC60034-1, ISO3046, ISO8528,
NEMA MG1-22,NEMA MG1-33, 2006/95/EC, 2006/42/EC, 2004/108/EC.

Note: Codes may not be available in all model configurations. Please consult your local Cat Dealer representative for availability.

STANDBY: Output available with varying load for the duration of the interruption of the normal source power. Average power output is 70% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

Ratings are based on SAE J1349 standard conditions. These ratings also apply at ISO3046 standard conditions

Fuel Rates are based on fuel oil of 35º API [16º C (60º F)] gravity having an LHV of 42 780 kJ/kg (18,390 Btu/lb) when used at 29º C (85º F) and weighing 838.9 g/liter (7.001 lbs/U.S. gal.). Additional ratings may be available for specific customer requirements, contact your Cat representative for details. For information regarding Low Sulfur fuel and Biodiesel capability, please consult your Cat dealer.

www.Cat-ElectricPower.com

Performance No.: DM8168-04

Feature Code: C09DE48

Generator Arrangement: 4490575

Date: 07/26/2017

Source Country: U.S.

Picture shown may not represent actual configuration

C9 ACERT™ Sound Attenuated and Weather Protective Enclosures

U.S. Sourced
180 – 300 kW 60 Hz

Features

Robust/Highly Corrosion Resistant Construction

- Factory-installed on skid base
- Environmentally friendly, polyester powder baked paint
- Zinc plated or stainless steel fasteners
- Internally mounted-critical exhaust silencing system (sound attenuated only)
- Externally front-mounted enclosed exhaust silencing system (weather protective only)
- Designed and tested to comply with UL 2200 listed generator set package
- Compression door latches providing solid door seal

Excellent Access

- Large cable entry area for installation ease
- Accommodates side-mounted single or multiple breakers
- Two doors on both sides
- Vertically hinged allow 180° opening rotation and retention with door stays
- Lube oil and coolant drains routed to the exterior of the enclosure base

Transportability

- These enclosures are of extremely rugged construction to withstand outdoor exposure and rough handling common on many construction sites

Security and Safety

- Lockable access doors which give full access to control panel and breaker
- Cooling fan and battery charging alternator fully guarded
- Fuel fill, oil fill, and battery can only be reached via lockable access
- Externally mounted emergency stop button
- Designed for spreader bar lifting to ensure safety
- Stub-up area is rodent proof

Options

- Caterpillar yellow* or white paint
- Weather protective enclosure constructed with 14-gauge steel
- Sound attenuated Level 1 constructed with 14-gauge steel
- Sound attenuated Level 2 constructed with 14-gauge steel
- Sound attenuated enclosure constructed with 12-gauge aluminum (5052 grade)
- UL Listed 203 gallon integral fuel tank
- UL Listed 660 or 1002 gallon sub base fuel tanks
- Seismic certification per applicable building codes:
  IBC 2000, IBC 2003, IBC 2006, IBC 2009, IBC 2012, CBC 2007, CBC 2010
- IBC certification for 150 mph wind loading
- Anchoring details are site specific and are dependent on many factors such as generator set size, weight and concrete strength. IBC certification requires that the anchoring system used is reviewed and approved by a professional engineer.
- Control panel viewing window**
- Cold weather bundle. Available with SA Level 2 and Aluminum SA enclosures only

*Not available with aluminum enclosures
**Steel sound attenuated only

Enclosure Sound Pressure Levels at Standby Ratings

Enclosure Type	Standby ekW	Cooling Air Flow Rate		Ambient Capability*		(dBA) @ 7m (23 ft) at 100% Load
		m³/min	cfm	˚C	˚F	
Sound Attenuated Level 2	300	351	12395	46	115	71
	250	351	12395	53	127	71
	200	351	12395	59	138	71
Sound Attenuated Level 1	300	351	12395	46	115	75
	250	351	12395	53	127	74
	200	351	12395	59	138	74
Weather Protective	300	516	18222	49	120	82
	250	516	18222	55	131	82
	200	516	18222	60	140	82
Aluminum Sound Attenuated	300	351	12395	46	115	73
	250	351	12395	53	127	72
	200	351	12395	59	138	72

*Cooling system performance at sea level. Consult your Cat® dealer for site specific ambient and altitude capabilities.

Enclosure Sound Pressure Levels at Prime Ratings

Enclosure Type	Prime ekW	Cooling Air Flow Rate		Ambient Capability*		(dBA) @ 7m (23 ft) at 100% Load
		m³/min	cfm	˚C	˚F	
Sound Attenuated Level 2	275	351	12395	50	122	71
	225	351	12395	56	133	71
	180	351	12395	60	140	71
Sound Attenuated Level 1	275	351	12395	50	122	75
	225	351	12395	56	133	74
	180	351	12395	60	140	73
Weather Protective	275	516	18222	52	126	82
	225	516	18222	59	138	82
	180	516	18222	60	140	82
Aluminum Sound Attenuated	275	351	12395	46	115	72
	225	351	12395	56	133	72
	180	351	12395	60	140	72

*Cooling system performance at sea level. Consult your Cat dealer for site specific ambient and altitude capabilities.

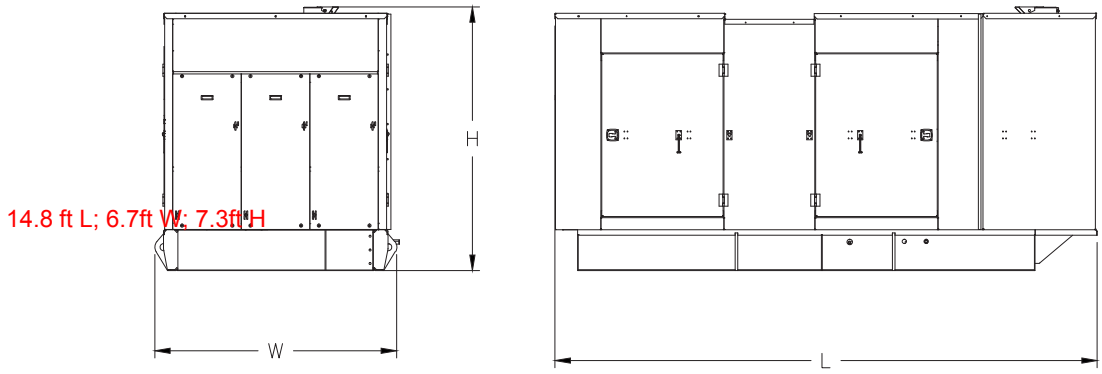
The sound pressure level data shown in the tables above is quoted as free field and is for guidance only. Actual levels produced may vary according to site conditions.

Component Weights to Calculate Package Weight

Narrow Skid		Wide Skid		Steel Enclosures						Aluminum Enclosure	
				Weather Protective		Sound Attenuated Level 1		Sound Attenuated Level 2		Sound Attenuated	
kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
219	483	468	1032	660	1455	1062	2341	1062	2341	629	1387

Enclosure Weights and Dimensions

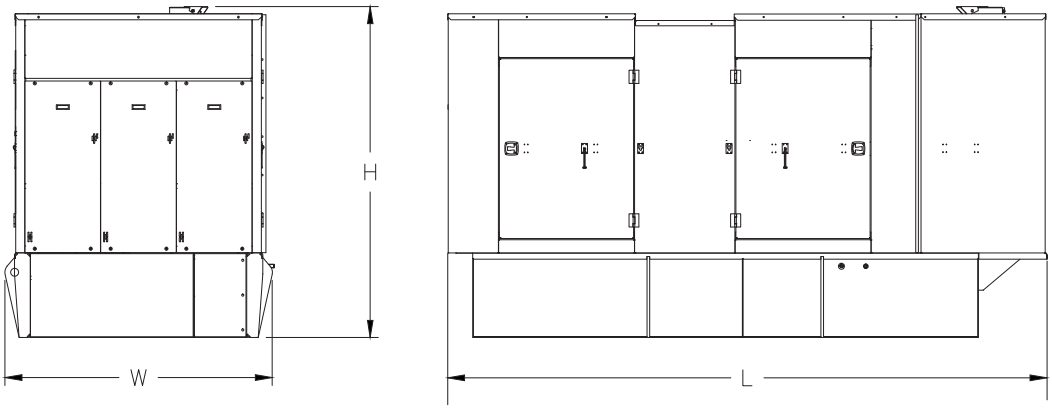
Enclosure on Skid Base



14.8 ft L; 6.7ft W; 7.3ft H

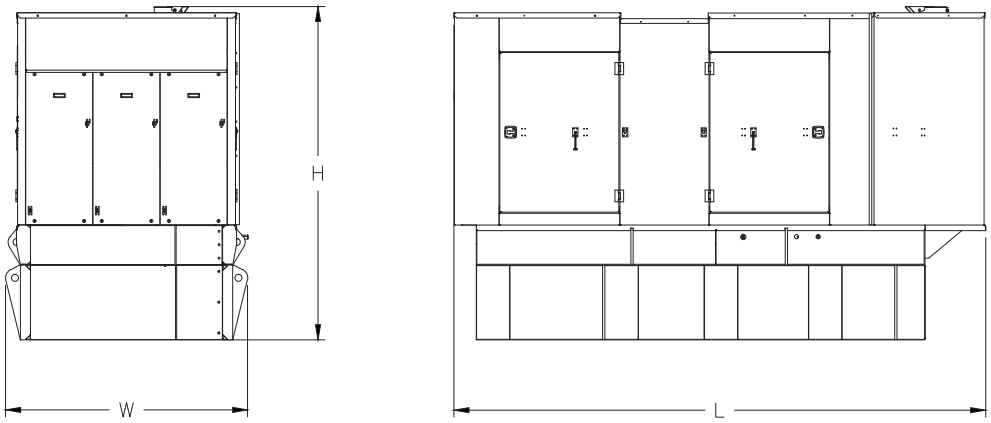
Enclosure Type	Length "L"		Width "W"		Height "H"	
	mm	in	mm	in	mm	in
Sound Attenuated	4515	177.8	2037	80.2	2196	86.5
Weather Protective	4035	158.9	2037	80.2	2142	84.3

Enclosure on a UL Listed 203 Gallon Integral Fuel Tank Base



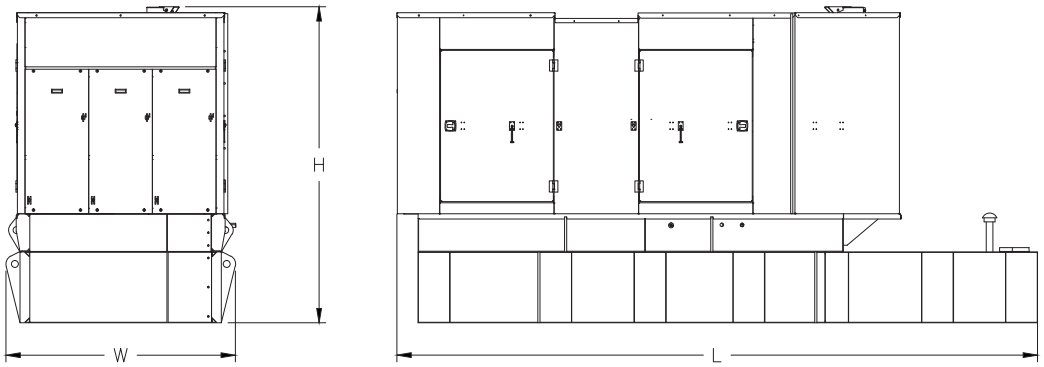
Enclosure Type	Length "L"		Width "W"		Height "H"	
	mm	in	mm	in	mm	in
Sound Attenuated	4515	177.8	2014	79.3	2492	98.1
Weather Protective	4035	158.9	2014	79.3	2438	96.0

Enclosure on a UL Listed 660 Gallon Sub-base Fuel Tank Base



Enclosure Type	Length "L"		Width "W"		Height "H"	
	mm	in	mm	in	mm	in
Sound Attenuated	4515	177.8	2056	80.9	2831	111.5
Weather Protective	4035	158.9	2056	80.9	2777	109.3

Enclosure on a UL Listed 1002 Gallon Sub-base Fuel Tank Base



Enclosure Type	Length "L"		Width "W"		Height "H"	
	mm	in	mm	in	mm	in
Sound Attenuated	5739	225.9	2056	80.9	2831	111.5
Weather Protective	5739	225.9	2056	80.9	2777	109.3

PACKAGE DATA [C09DE48]

AUGUST 13, 2018

For Help Desk Phone Numbers Click here

Feature Code:	C09DE48	**Rating Type:**	STANDBY	**Sales model Package:**	PGS300
Engine Sales Model:	C9	**Engine Arrangement Number:**	4529685	**Hertz:**	60
EKW W/F:	300.0	**Noise Reduction:**	0 dBA	**Back Pressure:**	0.0 inH2O

Engine Package Information

Engine Package Data

Package Cooling Information

Open Cooling Data

% Load	Airflow Rate scfm			Ambient Capability Sea Level (Deg F)			Ambient Capability 300 m (Deg F)			Ambient Capability 600 m (Deg F)			Ambient Capability 900 m (Deg F)		
	0 inH2O	1/2 inH2O	3/4 inH2O	0 inH2O	1/2 inH2O	3/4 inH2O	0 inH2O	1/2 inH2O	3/4 inH2O	0 inH2O	1/2 inH2O	3/4 inH2O	0 inH2O	1/2 inH2O	3/4 inH2O
100.0	22283	21188	20411	138	136	134	134	132	131	131	129	127	122	122	122
75.0	22283	21188	20411	140	140	140	140	140	140	140	140	140	140	138	136

SA Level 1 Canopy Cooling Data

% Load	Airflow Rate scfm	Ambient Capability Sea Level (Deg F)	Ambient Capability 300 m (Deg F)	Ambient Capability 600 m (Deg F)	Ambient Capability 900 m (Deg F)
100.0	12395	114	111	107	104
75.0	12395	132	129	125	122

SA Level 2 Canopy Cooling Data

% Load	Airflow Rate scfm	Ambient Capability Sea Level (Deg F)	Ambient Capability 300 m (Deg F)	Ambient Capability 600 m (Deg F)	Ambient Capability 900 m (Deg F)
100.0	12395	114	111	107	104
75.0	12395	132	129	125	122

WP Canopy - Industrial Cooling Data

% Load	Airflow Rate scfm	Ambient Capability Sea Level (Deg F)	Ambient Capability 300 m (Deg F)	Ambient Capability 600 m (Deg F)	Ambient Capability 900 m (Deg F)
100.0	18222	120	116	113	109
75.0	18222	138	134	131	127

Package Sound Information

Sound Comments :

SA Level 1 Canopy Sound Data

Distance: 3.3 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	86.7	91.6	93.2	90.0	82.0	79.2	77.0	75.3	70.8
225.0	75.0	85.6	91.3	92.3	88.9	80.9	77.8	75.6	74.0	69.2
150.0	50.0	84.7	90.6	91.7	88.1	80.3	77.1	74.5	72.5	67.1
75.0	25.0	84.3	89.4	91.4	87.7	79.9	77.0	73.9	70.8	64.5

Distance: 23.0 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	75.0	84.3	82.6	77.4	70.3	67.2	65.9	63.8	58.2
225.0	75.0	73.8	84.7	81.8	76.6	68.5	66.1	64.2	62.6	56.9
150.0	50.0	73.0	84.7	81.3	75.9	67.5	65.4	63.0	61.1	55.0
75.0	25.0	72.5	84.2	81.1	75.5	67.1	65.2	62.2	59.3	52.4

Distance: 49.2 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	69.0	78.3	76.6	71.4	64.3	61.2	59.9	57.8	52.2
225.0	75.0	67.8	78.7	75.8	70.6	62.5	60.1	58.2	56.6	50.9
150.0	50.0	67.0	78.7	75.3	69.9	61.5	59.4	57.0	55.1	49.0
75.0	25.0	66.5	78.2	75.1	69.5	61.1	59.2	56.2	53.3	46.4

SA Level 2 Canopy Sound Data

Distance: 3.3 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	83.0	88.9	90.5	85.6	78.4	76.1	73.4	70.3	66.4
225.0	75.0	82.8	87.7	90.2	85.6	78.3	75.9	73.1	69.6	65.7
150.0	50.0	82.7	86.6	89.9	85.6	78.4	75.9	73.0	68.8	64.4
75.0	25.0	82.7	85.5	89.7	85.6	78.4	76.1	73.1	68.1	62.5

Distance: 23.0 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	71.3	82.0	81.2	74.8	66.7	60.3	59.9	57.8	54.9
225.0	75.0	71.2	80.9	80.9	75.1	66.5	59.9	60.1	57.3	54.6
150.0	50.0	71.1	80.0	80.5	75.2	66.4	59.9	60.2	56.6	53.4

75.0	25.0	70.9	79.1	80.2	75.0	66.6	60.2	60.1	55.7	51.2

Distance: 49.2 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	65.3	76.0	75.2	68.8	60.7	54.3	53.9	51.8	48.9
225.0	75.0	65.2	74.9	74.9	69.1	60.5	53.9	54.1	51.3	48.6
150.0	50.0	65.1	74.0	74.5	69.2	60.4	53.9	54.2	50.6	47.4
75.0	25.0	64.9	73.1	74.2	69.0	60.6	54.2	54.1	49.7	45.2

WP Canopy - Industrial Sound Data

Distance: 3.3 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	93.1	93.5	95.4	92.8	89.9	88.0	85.2	80.3	74.8
225.0	75.0	93.0	92.3	94.9	92.4	89.2	87.6	85.8	81.1	74.9
150.0	50.0	92.8	90.9	94.3	91.9	88.8	87.5	85.8	81.3	74.5
75.0	25.0	92.5	89.4	93.5	91.4	88.6	87.6	85.2	80.9	73.6

Distance: 23.0 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	82.4	86.2	87.8	81.3	79.5	77.3	74.0	69.2	63.5
225.0	75.0	82.1	84.9	87.4	80.7	78.9	76.7	74.1	69.6	63.2
150.0	50.0	82.0	83.8	86.8	80.1	78.8	76.6	74.3	69.7	62.8
75.0	25.0	82.1	82.7	86.1	79.8	79.2	77.0	74.4	69.7	62.4

Distance: 49.2 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	76.4	80.2	81.8	75.3	73.5	71.3	68.0	63.2	57.5
225.0	75.0	76.1	78.9	81.4	74.7	72.9	70.7	68.1	63.6	57.2
150.0	50.0	76.0	77.8	80.8	74.1	72.8	70.6	68.3	63.7	56.8
75.0	25.0	76.1	76.7	80.1	73.8	73.2	71.0	68.4	63.7	56.4

WP Canopy - Critical Sound Data

Distance: 3.3 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	95.8	98.5	94.5	94.1	92.3	90.6	88.9	84.4	83.3
225.0	75.0	94.9	96.7	93.1	93.3	90.6	90.1	88.3	83.9	82.0

150.0	50.0	94.4	94.8	91.3	92.7	89.7	89.9	88.0	83.5	80.4
75.0	25.0	94.3	93.0	89.7	92.4	89.5	90.0	88.0	83.3	78.9

Distance: 23.0 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	84.2	88.9	85.4	84.7	81.7	78.0	76.1	72.0	72.7
225.0	75.0	83.4	87.0	84.3	84.3	79.5	77.9	76.1	71.4	71.2
150.0	50.0	83.2	85.2	83.1	84.0	78.2	78.3	76.5	71.2	69.4
75.0	25.0	83.4	83.8	81.9	83.7	77.7	78.9	77.0	71.3	67.7

Distance: 49.2 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	78.2	82.9	79.4	78.7	75.7	72.0	70.1	66.0	66.7
225.0	75.0	77.4	81.0	78.3	78.3	73.5	71.9	70.1	65.4	65.2
150.0	50.0	77.2	79.2	77.1	78.0	72.2	72.3	70.5	65.2	63.4
75.0	25.0	77.4	77.8	75.9	77.7	71.7	72.9	71.0	65.3	61.7

Open Exhaust Sound Data

Distance: 3.3 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	124.2	120.5	119.4	121.5	118.1	117.9	119.9	112.2	105.0
225.0	75.0	124.2	119.8	117.7	121.9	117.7	118.1	119.9	111.9	104.1
150.0	50.0	123.3	120.9	118.6	121.1	117.0	116.6	119.0	111.0	103.0
75.0	25.0	120.2	115.3	115.1	118.5	115.4	115.9	113.5	107.6	99.0

Open Mechanical Sound Data

Distance: 3.3 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	101.9	91.6	93.2	97.7	94.9	95.0	94.4	93.2	96.7
225.0	75.0	100.7	90.5	93.2	97.5	94.8	94.8	93.6	91.2	93.5
150.0	50.0	99.9	89.0	92.6	97.4	94.7	94.7	93.0	89.9	90.2
75.0	25.0	99.5	86.9	91.5	97.4	94.7	94.8	92.5	89.1	86.8

Distance: 23.0 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB

300.0	100.0	91.9	81.6	83.2	87.7	84.9	85.0	84.4	83.2	86.7
225.0	75.0	90.7	80.5	83.2	87.5	84.8	84.8	83.6	81.2	83.5
150.0	50.0	89.9	79.0	82.6	87.4	84.7	84.7	83.0	79.9	80.2
75.0	25.0	89.5	76.9	81.5	87.4	84.7	84.8	82.5	79.1	76.8

Distance: 49.2 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	85.9	75.6	77.2	81.7	78.9	79.0	78.4	77.2	80.7
225.0	75.0	84.7	74.5	77.2	81.5	78.8	78.8	77.6	75.2	77.5
150.0	50.0	83.9	73.0	76.6	81.4	78.7	78.7	77.0	73.9	74.2
75.0	25.0	83.5	70.9	75.5	81.4	78.7	78.8	76.5	73.1	70.8

PERFORMANCE DATA [C09DE48]

AUGUST 13, 2018

For Help Desk Phone Numbers Click here

Perf No: DM8168 **Change Level:** 04

General Heat Rejection Emissions Regulatory Altitude Derate Cross Reference Perf Param Ref

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SALES MODEL:	C9	**COMBUSTION:**	DI
BRAND:	CAT	**ENGINE SPEED (RPM):**	1,800
ENGINE POWER (BHP):	480	**HERTZ:**	60
GEN POWER W/O FAN (EKW):	319.0	**FAN POWER (HP):**	36.5
GEN POWER WITH FAN (EKW):	300.0	**ASPIRATION:**	TA
COMPRESSION RATIO:	16.1	**AFTERCOOLER TYPE:**	ATAAC
RATING LEVEL:	STANDBY	**AFTERCOOLER CIRCUIT TYPE:**	JW+OC, ATAAC
PUMP QUANTITY:	1	**INLET MANIFOLD AIR TEMP (F):**	120
FUEL TYPE:	DIESEL	**JACKET WATER TEMP (F):**	192.2
MANIFOLD TYPE:	DRY	**TURBO CONFIGURATION:**	SINGLE
GOVERNOR TYPE:	ELEC	**TURBO QUANTITY:**	1
CAMSHAFT TYPE:	STANDARD	**TURBOCHARGER MODEL:**	S310-1.25
IGNITION TYPE:	CI	**CERTIFICATION YEAR:**	2005
INJECTOR TYPE:	EUI	**PISTON SPD @ RATED ENG SPD (FT/MIN):**	1,759.8
REF EXH STACK DIAMETER (IN):	4		
MAX OPERATING ALTITUDE (FT):	3,281		

INDUSTRY	SUB INDUSTRY	APPLICATION
ELECTRIC POWER	STANDARD	PACKAGED GENSET

General Performance Data Top

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP
EKW	%	BHP	PSI	LB/BHP-HR	GAL/HR	IN-HG	DEG F	DEG F	IN-HG	DEG F
300.0	100	480	393	0.332	22.7	82.5	122.6	1,247.3	60.6	927.2
270.0	90	430	352	0.334	20.5	78.7	121.1	1,179.5	55.9	877.6
240.0	80	383	314	0.339	18.5	74.9	121.5	1,120.8	51.5	840.4
225.0	75	361	295	0.342	17.6	73.0	121.6	1,094.5	49.4	826.3
210.0	70	339	277	0.347	16.8	71.0	121.7	1,071.1	47.3	817.6
180.0	60	296	242	0.360	15.2	66.4	121.7	1,028.3	43.1	800.8
150.0	50	253	207	0.376	13.6	61.1	121.7	988.0	38.7	784.5
120.0	40	212	173	0.390	11.8	52.8	121.7	944.9	32.8	768.7
90.0	30	170	139	0.403	9.8	42.5	121.6	899.1	25.9	752.9
75.0	25	149	122	0.411	8.7	36.9	121.6	875.4	22.3	745.0
60.0	20	127	104	0.419	7.6	30.8	121.6	850.8	18.7	737.0
30.0	10	82.9	68	0.441	5.2	17.9	121.5	723.0	11.7	650.3

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP	WET INLET AIR VOL FLOW RATE	ENGINE OUTLET WET EXH GAS VOL FLOW RATE	WET INLET AIR MASS FLOW RATE	WET EXH GAS MASS FLOW RATE	WET EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)	DRY EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)
EKW	%	BHP	IN-HG	DEG F	CFM	CFM	LB/HR	LB/HR	FT3/MIN	FT3/MIN
300.0	100	480	83	450.8	916.6	2,460.9	3,985.8	4,144.9	872.5	798.0
270.0	90	430	80	428.0	893.4	2,306.9	3,884.5	4,028.0	848.2	780.6
240.0	80	383	76	406.4	870.9	2,173.0	3,772.3	3,902.1	821.8	760.2
225.0	75	361	74	396.1	859.8	2,109.4	3,711.7	3,835.1	806.5	747.8

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP	WET INLET AIR VOL FLOW RATE	ENGINE OUTLET WET EXH GAS VOL FLOW RATE	WET INLET AIR MASS FLOW RATE	WET EXH GAS MASS FLOW RATE	WET EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)	DRY EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)
210.0	70	339	72	386.3	846.8	2,047.1	3,649.5	3,766.9	788.0	732.2
180.0	60	296	67	367.7	814.1	1,926.8	3,499.4	3,605.2	751.6	701.1
150.0	50	253	62	350.2	772.8	1,810.5	3,315.8	3,410.8	715.5	669.7
120.0	40	212	54	321.8	707.1	1,643.7	3,018.0	3,100.6	657.9	617.9
90.0	30	170	43	282.8	623.3	1,424.8	2,642.8	2,711.5	577.7	544.3
75.0	25	149	38	260.3	576.0	1,299.8	2,434.3	2,495.5	530.5	500.6
60.0	20	127	31	235.4	524.5	1,162.9	2,209.5	2,262.9	477.8	451.6
30.0	10	82.9	18	178.8	412.8	851.2	1,728.1	1,764.7	377.1	358.8

Heat Rejection Data Top

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	REJECTION TO JACKET WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	EXHUAST RECOVERY TO 350F	FROM OIL COOLER	FROM AFTERCOOLER	WORK ENERGY	LOW HEAT VALUE ENERGY	HIGH HEAT VALUE ENERGY
EKW	%	BHP	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN
300.0	100	480	6,838	1,312	18,223	10,196	2,598	5,239	20,357	48,785	51,968
270.0	90	430	6,227	1,100	16,530	8,999	2,344	4,774	18,249	44,009	46,881
240.0	80	383	5,718	954	15,163	8,062	2,120	4,304	16,263	39,804	42,402
225.0	75	361	5,492	885	14,576	7,680	2,017	4,080	15,306	37,868	40,339
210.0	70	339	5,288	827	14,082	7,393	1,922	3,868	14,366	36,078	38,432
180.0	60	296	4,912	823	13,054	6,800	1,739	3,448	12,536	32,644	34,774
150.0	50	253	4,565	786	11,966	6,184	1,555	3,034	10,749	29,195	31,100
120.0	40	212	4,219	770	10,567	5,402	1,348	2,419	8,983	25,307	26,959
90.0	30	170	3,811	699	8,973	4,534	1,120	1,706	7,210	21,028	22,400
75.0	25	149	3,554	623	8,129	4,085	999	1,352	6,312	18,747	19,970
60.0	20	127	3,271	492	7,247	3,625	871	1,008	5,399	16,350	17,417
30.0	10	82.9	2,624	519	4,878	2,172	597	397	3,514	11,200	11,931

Emissions Data Top

Units Filter All Units ▼

RATED SPEED POTENTIAL SITE VARIATION: 1800 RPM

GENSET POWER WITH FAN ENGINE POWER		EKW BHP	300.0 480	225.0 361	150.0 253	75.0 149	30.0 82.9
PERCENT LOAD		%	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	2,032	1,047	539	288	217
TOTAL CO		G/HR	214	166	242	203	191
TOTAL HC		G/HR	50	54	81	76	65
PART MATTER		G/HR	30.2	29.7	66.7	43.9	28.4
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	2,371.7	1,572.5	1,056.2	887.0	1,244.7
TOTAL CO	(CORR 5% O2)	MG/NM3	216.0	218.7	414.7	579.4	974.9
TOTAL HC	(CORR 5% O2)	MG/NM3	43.7	62.4	119.7	182.7	276.3
PART MATTER	(CORR 5% O2)	MG/NM3	24.8	34.3	101.8	98.2	126.1
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,155	766	514	432	606
TOTAL CO	(CORR 5% O2)	PPM	173	175	332	464	780
TOTAL HC	(CORR 5% O2)	PPM	82	116	223	341	516
TOTAL NOX (AS NO2)		G/HP-HR	4.27	2.92	2.13	1.94	2.61
TOTAL CO		G/HP-HR	0.45	0.46	0.96	1.36	2.30
TOTAL HC		G/HP-HR	0.11	0.15	0.32	0.51	0.79
PART MATTER		G/HP-HR	0.06	0.08	0.26	0.29	0.34
TOTAL NOX (AS NO2)		LB/HR	4.48	2.31	1.19	0.64	0.48
TOTAL CO		LB/HR	0.47	0.37	0.53	0.45	0.42
TOTAL HC		LB/HR	0.11	0.12	0.18	0.17	0.14
PART MATTER		LB/HR	0.07	0.07	0.15	0.10	0.06

RATED SPEED NOMINAL DATA: 1800 RPM

GENSET POWER WITH FAN ENGINE POWER	EKW BHP	300.0 480	225.0 361	150.0 253	75.0 149	30.0 82.9
PERCENT LOAD	%	100	75	50	25	10
TOTAL NOX (AS NO2)	G/HR	1,881	970	499	267	201

GENSET POWER WITH FAN		**EKW**	**300.0**	**225.0**	**150.0**	**75.0**	**30.0**
ENGINE POWER		**BHP**	**480**	**361**	**253**	**149**	**82.9**
PERCENT LOAD		**%**	**100**	**75**	**50**	**25**	**10**
TOTAL CO		G/HR	115	89	129	109	102
TOTAL HC		G/HR	26	29	43	40	35
TOTAL CO2		KG/HR	225	175	135	86	51
PART MATTER		G/HR	15.5	15.2	34.2	22.5	14.6
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	2,196.0	1,456.1	978.0	821.3	1,152.5
TOTAL CO	(CORR 5% O2)	MG/NM3	115.5	117.0	221.7	309.8	521.3
TOTAL HC	(CORR 5% O2)	MG/NM3	23.1	33.0	63.3	96.7	146.2
PART MATTER	(CORR 5% O2)	MG/NM3	12.7	17.6	52.2	50.4	64.7
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,070	709	476	400	561
TOTAL CO	(CORR 5% O2)	PPM	92	94	177	248	417
TOTAL HC	(CORR 5% O2)	PPM	43	62	118	180	273
TOTAL NOX (AS NO2)		G/HP-HR	3.95	2.70	1.98	1.79	2.42
TOTAL CO		G/HP-HR	0.24	0.25	0.51	0.73	1.23
TOTAL HC		G/HP-HR	0.06	0.08	0.17	0.27	0.42
PART MATTER		G/HP-HR	0.03	0.04	0.14	0.15	0.18
TOTAL NOX (AS NO2)		LB/HR	4.15	2.14	1.10	0.59	0.44
TOTAL CO		LB/HR	0.25	0.20	0.29	0.24	0.22
TOTAL HC		LB/HR	0.06	0.06	0.09	0.09	0.08
TOTAL CO2		LB/HR	496	387	297	189	112
PART MATTER		LB/HR	0.03	0.03	0.08	0.05	0.03
OXYGEN IN EXH		%	9.2	11.2	12.6	13.6	15.0
DRY SMOKE OPACITY		%	0.3	0.4	1.0	0.8	0.8
BOSCH SMOKE NUMBER			0.07	0.20	0.90	0.76	0.68

Regulatory Information Top

EPA TIER 3 **2005 - 2010**

GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 89 SUBPART D AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.

Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
U.S. (INCL CALIF)	EPA	NON-ROAD	TIER 3	CO: 3.5 NOx + HC: 4.0 PM: 0.20

EPA EMERGENCY STATIONARY **2011 - ----**

GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 60 SUBPART IIII AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE EMERGENCY STATIONARY REGULATIONS.

Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
U.S. (INCL CALIF)	EPA	STATIONARY	EMERGENCY STATIONARY	CO: 3.5 NOx + HC: 4.0 PM: 0.20

Altitude Derate Data Top

ALTITUDE CORRECTED POWER CAPABILITY (BHP)

AMBIENT OPERATING TEMP (F)	30	40	50	60	70	80	90	100	110	120	130	140	NORMAL
ALTITUDE (FT)													
0	480	480	480	480	480	477	474	465	452	433	412	395	478
1,000	480	480	480	480	477	475	470	457	441	422	402	386	476
2,000	480	480	479	477	474	470	463	446	427	410	392	376	473
3,000	480	478	475	470	463	457	449	434	418	403	386	370	464
4,000	475	469	463	456	450	444	436	422	407	391	374	358	453
5,000	462	456	449	442	436	430	422	408	393	377	360	343	442
6,000	449	442	435	428	422	416	408	394	379	362	346	329	430
7,000	434	428	421	414	408	402	394	379	364	348	332	315	418
8,000	420	413	406	400	394	387	380	365	350	334	318	302	406
9,000	405	398	392	385	379	373	365	350	335	320	305	289	394
10,000	390	384	377	371	365	359	352	337	322	307	293	278	382
11,000	376	369	363	357	351	345	339	334	320	305	291	277	370
12,000	361	355	348	342	337	331	326	320	315	303	288	270	357
13,000	347	340	334	329	323	318	312	307	302	290	274	257	345
14,000	332	326	321	315	310	304	299	294	289	276	261	246	333
15,000	319	313	307	302	297	291	286	282	276	263	249	235	322

Cross Reference Top

Test Spec	Setting	Engine Arrangement	Engineering Model	Engineering Model Version	Start Effective Serial Number	End Effective Serial Number
0K6616		2531644	GS279	-	S9L00001	
4150068	PP5547	3950369	GS279	-	S9P00001	
4150068	PP5547	4529865	GS857	LS	S9P00001	

Performance Parameter Reference Top

Parameters Reference: DM9600 - 10

PERFORMANCE DEFINITIONS

PERFORMANCE DEFINITIONS DM9600

APPLICATION: Engine performance tolerance values below are representative of a typical production engine tested in a calibrated dynamometer test cell at SAE J1995 standard reference conditions. Caterpillar maintains ISO9001:2000 certified quality management systems for engine test Facilities to assure accurate calibration of test equipment. Engine test data is corrected in accordance with SAE J1995. Additional reference material SAE J1228, J1349, ISO 8665, 3046-1:2002E, 3046-3:1989, 1585, 2534, 2288, and 9249 may apply in part or are similar to SAE J1995. Special engine rating request (SERR) test data shall be noted.

PERFORMANCE PARAMETER TOLERANCE FACTORS: Power +/- 3% Torque +/- 3% Exhaust stack temperature +/- 8% Inlet airflow +/- 5% Intake manifold pressure-gage +/- 10% Exhaust flow +/- 6% Specific fuel consumption +/- 3% Fuel rate +/- 5% Specific DEF consumption +/- 3% DEF rate +/- 5% Heat rejection +/- 5% Heat rejection exhaust only +/- 10% Heat rejection CEM only +/- 10%
Heat Rejection values based on using treated water.
Torque is included for truck and industrial applications, do not use for Gen Set or steady state applications.
On C7 - C18 engines, at speeds of 1100 RPM and under these values are provided for reference only, and may not meet the tolerance listed.
These values do not apply to C280/3600. For these models, see the tolerances listed below.

C280/3600 HEAT REJECTION TOLERANCE FACTORS: Heat rejection +/- 10% Heat rejection to Atmosphere +/- 50% Heat rejection to Lube Oil +/- 20% Heat rejection to Aftercooler +/- 5%

TEST CELL TRANSDUCER TOLERANCE FACTORS: Torque +/- 0.5% Speed +/- 0.2% Fuel flow +/- 1.0% Temperature +/- 2.0 C degrees Intake manifold pressure +/- 0.1 kPa
OBSERVED ENGINE PERFORMANCE IS CORRECTED TO SAE J1995 REFERENCE AIR AND FUEL CONDITIONS.

REFERENCE ATMOSPHERIC INLET AIR FOR 3500 ENGINES AND SMALLER SAE J1228 AUG2002 for marine engines, and J1995 JAN2014 for other engines, reference atmospheric pressure is 100 KPA (29.61 in hg), and standard temperature is 25deg C (77 deg F) at 30% relative humidity at the stated aftercooler water temp, or inlet manifold temp.
FOR 3600 ENGINES Engine rating obtained and presented in accordance with ISO 3046/1 and SAE J1995 JANJAN2014 reference atmospheric pressure is 100 KPA (29.61 in hg), and standard temperature is 25deg C (77 deg F) at 30% relative humidity and 150M altitude at the stated aftercooler water temperature.

MEASUREMENT LOCATION FOR INLET AIR TEMPERATURE Location for air temperature measurement air cleaner inlet at stabilized operating conditions.

REFERENCE EXHAUST STACK DIAMETER The Reference Exhaust Stack Diameter published with this dataset is only used for the calculation of Smoke Opacity values displayed in this dataset. This value does not necessarily represent the actual stack diameter of the engine due to the variety of exhaust stack adapter options available. Consult the price list, engine order or general dimension drawings for the actual stack diameter size ordered or options available.

REFERENCE FUEL DIESEL Reference fuel is #2 distillate diesel with a 35API gravity; A lower heating value is 42,780 KJ/KG (18,390 BTU/LB) when used at 29 deg C (84.2 deg F), where the density is 838.9 G/Liter (7.001 Lbs/Gal).
GAS Reference natural gas fuel has a lower heating value of 33.74 KJ/L (905 BTU/CU Ft). Low BTU ratings are based on 18.64 KJ/L (500 BTU/CU FT) lower heating value gas. Propane ratings are based on 87.56 KJ/L (2350 BTU/CU Ft) lower heating value gas.

ENGINE POWER (NET) IS THE CORRECTED FLYWHEEL POWER (GROSS) LESS EXTERNAL AUXILIARY LOAD Engine corrected gross output includes the power required to drive standard equipment; lube oil, scavenge lube oil, fuel transfer, common rail fuel, separate circuit aftercooler and jacket water pumps. Engine net power available for the external (flywheel) load is calculated by subtracting the sum of auxiliary load from the corrected gross flywheel out put power. Typical auxiliary loads are radiator cooling fans, hydraulic pumps, air compressors and battery charging alternators. For Tier 4 ratings additional Parasitic losses would also include Intake, and Exhaust Restrictions.

ALTITUDE CAPABILITY Altitude capability is the maximum altitude above sea level at standard temperature and standard pressure at which the engine could develop full rated output power on the current performance data set.
Standard temperature values versus altitude could be seen on TM2001.
When viewing the altitude capability chart the ambient temperature is the inlet air temp at the compressor inlet.
Engines with ADEM MEUI and HEUI fuel systems operating at conditions above the defined altitude capability derate for atmospheric pressure and temperature conditions outside the values defined, see TM2001.
Mechanical governor controlled unit injector engines require a setting change for operation at conditions above the altitude

defined on the engine performance sheet. See your Caterpillar technical representative for non standard ratings.

REGULATIONS AND PRODUCT COMPLIANCE TMI Emissions information is presented at 'nominal' and 'Potential Site Variation' values for standard ratings. No tolerances are applied to the emissions data. These values are subject to change at any time. The controlling federal and local emission requirements need to be verified by your Caterpillar technical representative.
Customer's may have special emission site requirements that need to be verified by the Caterpillar Product Group engineer.

EMISSIONS DEFINITIONS: Emissions : DM1176

HEAT REJECTION DEFINITIONS: Diesel Circuit Type and HHV Balance : DM9500

HIGH DISPLACEMENT (HD) DEFINITIONS: 3500: EM1500

RATING DEFINITIONS: Agriculture : TM6008
Fire Pump : TM6009
Generator Set : TM6035
Generator (Gas) : TM6041
Industrial Diesel : TM6010
Industrial (Gas) : TM6040
Irrigation : TM5749
Locomotive : TM6037
Marine Auxiliary : TM6036
Marine Prop (Except 3600) : TM5747
Marine Prop (3600 only) : TM5748
MSHA : TM6042
Oil Field (Petroleum) : TM6011
Off-Highway Truck : TM6039
On-Highway Truck : TM6038

SOUND DEFINITIONS: Sound Power : DM8702
Sound Pressure : TM7080

Date Released : 7/7/15

PERFORMANCE DATA [C09DE48]

AUGUST 13, 2018

For Help Desk Phone Numbers Click here

Perf No: DM8168 **Change Level:** 04

General Heat Rejection Emissions Regulatory Altitude Derate Cross Reference Perf Param Ref

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SALES MODEL:	C9	**COMBUSTION:**	DI
BRAND:	CAT	**ENGINE SPEED (RPM):**	1,800
ENGINE POWER (BHP):	480	**HERTZ:**	60
GEN POWER W/O FAN (EKW):	319.0	**FAN POWER (HP):**	36.5
GEN POWER WITH FAN (EKW):	300.0	**ASPIRATION:**	TA
COMPRESSION RATIO:	16.1	**AFTERCOOLER TYPE:**	ATAAC
RATING LEVEL:	STANDBY	**AFTERCOOLER CIRCUIT TYPE:**	JW+OC, ATAAC
PUMP QUANTITY:	1	**INLET MANIFOLD AIR TEMP (F):**	120
FUEL TYPE:	DIESEL	**JACKET WATER TEMP (F):**	192.2
MANIFOLD TYPE:	DRY	**TURBO CONFIGURATION:**	SINGLE
GOVERNOR TYPE:	ELEC	**TURBO QUANTITY:**	1
CAMSHAFT TYPE:	STANDARD	**TURBOCHARGER MODEL:**	S310-1.25
IGNITION TYPE:	CI	**CERTIFICATION YEAR:**	2005
INJECTOR TYPE:	EUI	**PISTON SPD @ RATED ENG SPD (FT/MIN):**	1,759.8
REF EXH STACK DIAMETER (IN):	4		
MAX OPERATING ALTITUDE (FT):	3,281		

INDUSTRY	SUB INDUSTRY	APPLICATION
ELECTRIC POWER	STANDARD	PACKAGED GENSET

General Performance Data Top

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP
EKW	%	BHP	PSI	LB/BHP-HR	GAL/HR	IN-HG	DEG F	DEG F	IN-HG	DEG F
300.0	100	480	393	0.332	22.7	82.5	122.6	1,247.3	60.6	927.2
270.0	90	430	352	0.334	20.5	78.7	121.1	1,179.5	55.9	877.6
240.0	80	383	314	0.339	18.5	74.9	121.5	1,120.8	51.5	840.4
225.0	75	361	295	0.342	17.6	73.0	121.6	1,094.5	49.4	826.3
210.0	70	339	277	0.347	16.8	71.0	121.7	1,071.1	47.3	817.6
180.0	60	296	242	0.360	15.2	66.4	121.7	1,028.3	43.1	800.8
150.0	50	253	207	0.376	13.6	61.1	121.7	988.0	38.7	784.5
120.0	40	212	173	0.390	11.8	52.8	121.7	944.9	32.8	768.7
90.0	30	170	139	0.403	9.8	42.5	121.6	899.1	25.9	752.9
75.0	25	149	122	0.411	8.7	36.9	121.6	875.4	22.3	745.0
60.0	20	127	104	0.419	7.6	30.8	121.6	850.8	18.7	737.0
30.0	10	82.9	68	0.441	5.2	17.9	121.5	723.0	11.7	650.3

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP	WET INLET AIR VOL FLOW RATE	ENGINE OUTLET WET EXH GAS VOL FLOW RATE	WET INLET AIR MASS FLOW RATE	WET EXH GAS MASS FLOW RATE	WET EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)	DRY EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)
EKW	%	BHP	IN-HG	DEG F	CFM	CFM	LB/HR	LB/HR	FT3/MIN	FT3/MIN
300.0	100	480	83	450.8	916.6	2,460.9	3,985.8	4,144.9	872.5	798.0
270.0	90	430	80	428.0	893.4	2,306.9	3,884.5	4,028.0	848.2	780.6
240.0	80	383	76	406.4	870.9	2,173.0	3,772.3	3,902.1	821.8	760.2
225.0	75	361	74	396.1	859.8	2,109.4	3,711.7	3,835.1	806.5	747.8

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP	WET INLET AIR VOL FLOW RATE	ENGINE OUTLET WET EXH GAS VOL FLOW RATE	WET INLET AIR MASS FLOW RATE	WET EXH GAS MASS FLOW RATE	WET EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)	DRY EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)
210.0	70	339	72	386.3	846.8	2,047.1	3,649.5	3,766.9	788.0	732.2
180.0	60	296	67	367.7	814.1	1,926.8	3,499.4	3,605.2	751.6	701.1
150.0	50	253	62	350.2	772.8	1,810.5	3,315.8	3,410.8	715.5	669.7
120.0	40	212	54	321.8	707.1	1,643.7	3,018.0	3,100.6	657.9	617.9
90.0	30	170	43	282.8	623.3	1,424.8	2,642.8	2,711.5	577.7	544.3
75.0	25	149	38	260.3	576.0	1,299.8	2,434.3	2,495.5	530.5	500.6
60.0	20	127	31	235.4	524.5	1,162.9	2,209.5	2,262.9	477.8	451.6
30.0	10	82.9	18	178.8	412.8	851.2	1,728.1	1,764.7	377.1	358.8

Heat Rejection Data Top

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	REJECTION TO JACKET WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	EXHUAST RECOVERY TO 350F	FROM OIL COOLER	FROM AFTERCOOLER	WORK ENERGY	LOW HEAT VALUE ENERGY	HIGH HEAT VALUE ENERGY
EKW	%	BHP	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN
300.0	100	480	6,838	1,312	18,223	10,196	2,598	5,239	20,357	48,785	51,968
270.0	90	430	6,227	1,100	16,530	8,999	2,344	4,774	18,249	44,009	46,881
240.0	80	383	5,718	954	15,163	8,062	2,120	4,304	16,263	39,804	42,402
225.0	75	361	5,492	885	14,576	7,680	2,017	4,080	15,306	37,868	40,339
210.0	70	339	5,288	827	14,082	7,393	1,922	3,868	14,366	36,078	38,432
180.0	60	296	4,912	823	13,054	6,800	1,739	3,448	12,536	32,644	34,774
150.0	50	253	4,565	786	11,966	6,184	1,555	3,034	10,749	29,195	31,100
120.0	40	212	4,219	770	10,567	5,402	1,348	2,419	8,983	25,307	26,959
90.0	30	170	3,811	699	8,973	4,534	1,120	1,706	7,210	21,028	22,400
75.0	25	149	3,554	623	8,129	4,085	999	1,352	6,312	18,747	19,970
60.0	20	127	3,271	492	7,247	3,625	871	1,008	5,399	16,350	17,417
30.0	10	82.9	2,624	519	4,878	2,172	597	397	3,514	11,200	11,931

Emissions Data Top

Units Filter All Units ▼

RATED SPEED POTENTIAL SITE VARIATION: 1800 RPM

GENSET POWER WITH FAN ENGINE POWER		EKW BHP	300.0 480	225.0 361	150.0 253	75.0 149	30.0 82.9
PERCENT LOAD		%	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	2,032	1,047	539	288	217
TOTAL CO		G/HR	214	166	242	203	191
TOTAL HC		G/HR	50	54	81	76	65
PART MATTER		G/HR	30.2	29.7	66.7	43.9	28.4
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	2,371.7	1,572.5	1,056.2	887.0	1,244.7
TOTAL CO	(CORR 5% O2)	MG/NM3	216.0	218.7	414.7	579.4	974.9
TOTAL HC	(CORR 5% O2)	MG/NM3	43.7	62.4	119.7	182.7	276.3
PART MATTER	(CORR 5% O2)	MG/NM3	24.8	34.3	101.8	98.2	126.1
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,155	766	514	432	606
TOTAL CO	(CORR 5% O2)	PPM	173	175	332	464	780
TOTAL HC	(CORR 5% O2)	PPM	82	116	223	341	516
TOTAL NOX (AS NO2)		G/HP-HR	4.27	2.92	2.13	1.94	2.61
TOTAL CO		G/HP-HR	0.45	0.46	0.96	1.36	2.30
TOTAL HC		G/HP-HR	0.11	0.15	0.32	0.51	0.79
PART MATTER		G/HP-HR	0.06	0.08	0.26	0.29	0.34
TOTAL NOX (AS NO2)		LB/HR	4.48	2.31	1.19	0.64	0.48
TOTAL CO		LB/HR	0.47	0.37	0.53	0.45	0.42
TOTAL HC		LB/HR	0.11	0.12	0.18	0.17	0.14
PART MATTER		LB/HR	0.07	0.07	0.15	0.10	0.06

RATED SPEED NOMINAL DATA: 1800 RPM

GENSET POWER WITH FAN ENGINE POWER	EKW BHP	300.0 480	225.0 361	150.0 253	75.0 149	30.0 82.9
PERCENT LOAD	%	100	75	50	25	10
TOTAL NOX (AS NO2)	G/HR	1,881	970	499	267	201

GENSET POWER WITH FAN		**EKW**	**300.0**	**225.0**	**150.0**	**75.0**	**30.0**
ENGINE POWER		**BHP**	**480**	**361**	**253**	**149**	**82.9**
PERCENT LOAD		**%**	**100**	**75**	**50**	**25**	**10**
TOTAL CO		G/HR	115	89	129	109	102
TOTAL HC		G/HR	26	29	43	40	35
TOTAL CO2		KG/HR	225	175	135	86	51
PART MATTER		G/HR	15.5	15.2	34.2	22.5	14.6
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	2,196.0	1,456.1	978.0	821.3	1,152.5
TOTAL CO	(CORR 5% O2)	MG/NM3	115.5	117.0	221.7	309.8	521.3
TOTAL HC	(CORR 5% O2)	MG/NM3	23.1	33.0	63.3	96.7	146.2
PART MATTER	(CORR 5% O2)	MG/NM3	12.7	17.6	52.2	50.4	64.7
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	1,070	709	476	400	561
TOTAL CO	(CORR 5% O2)	PPM	92	94	177	248	417
TOTAL HC	(CORR 5% O2)	PPM	43	62	118	180	273
TOTAL NOX (AS NO2)		G/HP-HR	3.95	2.70	1.98	1.79	2.42
TOTAL CO		G/HP-HR	0.24	0.25	0.51	0.73	1.23
TOTAL HC		G/HP-HR	0.06	0.08	0.17	0.27	0.42
PART MATTER		G/HP-HR	0.03	0.04	0.14	0.15	0.18
TOTAL NOX (AS NO2)		LB/HR	4.15	2.14	1.10	0.59	0.44
TOTAL CO		LB/HR	0.25	0.20	0.29	0.24	0.22
TOTAL HC		LB/HR	0.06	0.06	0.09	0.09	0.08
TOTAL CO2		LB/HR	496	387	297	189	112
PART MATTER		LB/HR	0.03	0.03	0.08	0.05	0.03
OXYGEN IN EXH		%	9.2	11.2	12.6	13.6	15.0
DRY SMOKE OPACITY		%	0.3	0.4	1.0	0.8	0.8
BOSCH SMOKE NUMBER			0.07	0.20	0.90	0.76	0.68

Regulatory Information Top

EPA TIER 3 **2005 - 2010**

GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 89 SUBPART D AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.

Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
U.S. (INCL CALIF)	EPA	NON-ROAD	TIER 3	CO: 3.5 NOx + HC: 4.0 PM: 0.20

EPA EMERGENCY STATIONARY **2011 - ----**

GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 60 SUBPART IIII AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE EMERGENCY STATIONARY REGULATIONS.

Locality	Agency	Regulation	Tier/Stage	Max Limits - G/BKW - HR
U.S. (INCL CALIF)	EPA	STATIONARY	EMERGENCY STATIONARY	CO: 3.5 NOx + HC: 4.0 PM: 0.20

Altitude Derate Data Top

ALTITUDE CORRECTED POWER CAPABILITY (BHP)

AMBIENT OPERATING TEMP (F)	30	40	50	60	70	80	90	100	110	120	130	140	NORMAL
ALTITUDE (FT)													
0	480	480	480	480	480	477	474	465	452	433	412	395	478
1,000	480	480	480	480	477	475	470	457	441	422	402	386	476
2,000	480	480	479	477	474	470	463	446	427	410	392	376	473
3,000	480	478	475	470	463	457	449	434	418	403	386	370	464
4,000	475	469	463	456	450	444	436	422	407	391	374	358	453
5,000	462	456	449	442	436	430	422	408	393	377	360	343	442
6,000	449	442	435	428	422	416	408	394	379	362	346	329	430
7,000	434	428	421	414	408	402	394	379	364	348	332	315	418
8,000	420	413	406	400	394	387	380	365	350	334	318	302	406
9,000	405	398	392	385	379	373	365	350	335	320	305	289	394
10,000	390	384	377	371	365	359	352	337	322	307	293	278	382
11,000	376	369	363	357	351	345	339	334	320	305	291	277	370
12,000	361	355	348	342	337	331	326	320	315	303	288	270	357
13,000	347	340	334	329	323	318	312	307	302	290	274	257	345
14,000	332	326	321	315	310	304	299	294	289	276	261	246	333
15,000	319	313	307	302	297	291	286	282	276	263	249	235	322

Cross Reference Top

Test Spec	Setting	Engine Arrangement	Engineering Model	Engineering Model Version	Start Effective Serial Number	End Effective Serial Number
0K6616		2531644	GS279	-	S9L00001	
4150068	PP5547	3950369	GS279	-	S9P00001	
4150068	PP5547	4529865	GS857	LS	S9P00001	

Performance Parameter Reference Top

Parameters Reference: DM9600 - 10

PERFORMANCE DEFINITIONS

PERFORMANCE DEFINITIONS DM9600

APPLICATION: Engine performance tolerance values below are representative of a typical production engine tested in a calibrated dynamometer test cell at SAE J1995 standard reference conditions. Caterpillar maintains ISO9001:2000 certified quality management systems for engine test Facilities to assure accurate calibration of test equipment. Engine test data is corrected in accordance with SAE J1995. Additional reference material SAE J1228, J1349, ISO 8665, 3046-1:2002E, 3046-3:1989, 1585, 2534, 2288, and 9249 may apply in part or are similar to SAE J1995. Special engine rating request (SERR) test data shall be noted.

PERFORMANCE PARAMETER TOLERANCE FACTORS: Power +/- 3% Torque +/- 3% Exhaust stack temperature +/- 8% Inlet airflow +/- 5% Intake manifold pressure-gage +/- 10% Exhaust flow +/- 6% Specific fuel consumption +/- 3% Fuel rate +/- 5% Specific DEF consumption +/- 3% DEF rate +/- 5% Heat rejection +/- 5% Heat rejection exhaust only +/- 10% Heat rejection CEM only +/- 10%
Heat Rejection values based on using treated water.
Torque is included for truck and industrial applications, do not use for Gen Set or steady state applications.
On C7 - C18 engines, at speeds of 1100 RPM and under these values are provided for reference only, and may not meet the tolerance listed.
These values do not apply to C280/3600. For these models, see the tolerances listed below.

C280/3600 HEAT REJECTION TOLERANCE FACTORS: Heat rejection +/- 10% Heat rejection to Atmosphere +/- 50% Heat rejection to Lube Oil +/- 20% Heat rejection to Aftercooler +/- 5%

TEST CELL TRANSDUCER TOLERANCE FACTORS: Torque +/- 0.5% Speed +/- 0.2% Fuel flow +/- 1.0% Temperature +/- 2.0 C degrees Intake manifold pressure +/- 0.1 kPa
OBSERVED ENGINE PERFORMANCE IS CORRECTED TO SAE J1995 REFERENCE AIR AND FUEL CONDITIONS.

REFERENCE ATMOSPHERIC INLET AIR FOR 3500 ENGINES AND SMALLER SAE J1228 AUG2002 for marine engines, and J1995 JAN2014 for other engines, reference atmospheric pressure is 100 KPA (29.61 in hg), and standard temperature is 25deg C (77 deg F) at 30% relative humidity at the stated aftercooler water temp, or inlet manifold temp.
FOR 3600 ENGINES Engine rating obtained and presented in accordance with ISO 3046/1 and SAE J1995 JANJAN2014 reference atmospheric pressure is 100 KPA (29.61 in hg), and standard temperature is 25deg C (77 deg F) at 30% relative humidity and 150M altitude at the stated aftercooler water temperature.

MEASUREMENT LOCATION FOR INLET AIR TEMPERATURE Location for air temperature measurement air cleaner inlet at stabilized operating conditions.

REFERENCE EXHAUST STACK DIAMETER The Reference Exhaust Stack Diameter published with this dataset is only used for the calculation of Smoke Opacity values displayed in this dataset. This value does not necessarily represent the actual stack diameter of the engine due to the variety of exhaust stack adapter options available. Consult the price list, engine order or general dimension drawings for the actual stack diameter size ordered or options available.

REFERENCE FUEL DIESEL Reference fuel is #2 distillate diesel with a 35API gravity; A lower heating value is 42,780 KJ/KG (18,390 BTU/LB) when used at 29 deg C (84.2 deg F), where the density is 838.9 G/Liter (7.001 Lbs/Gal).
GAS Reference natural gas fuel has a lower heating value of 33.74 KJ/L (905 BTU/CU Ft). Low BTU ratings are based on 18.64 KJ/L (500 BTU/CU FT) lower heating value gas. Propane ratings are based on 87.56 KJ/L (2350 BTU/CU Ft) lower heating value gas.

ENGINE POWER (NET) IS THE CORRECTED FLYWHEEL POWER (GROSS) LESS EXTERNAL AUXILIARY LOAD Engine corrected gross output includes the power required to drive standard equipment; lube oil, scavenge lube oil, fuel transfer, common rail fuel, separate circuit aftercooler and jacket water pumps. Engine net power available for the external (flywheel) load is calculated by subtracting the sum of auxiliary load from the corrected gross flywheel out put power. Typical auxiliary loads are radiator cooling fans, hydraulic pumps, air compressors and battery charging alternators. For Tier 4 ratings additional Parasitic losses would also include Intake, and Exhaust Restrictions.

ALTITUDE CAPABILITY Altitude capability is the maximum altitude above sea level at standard temperature and standard pressure at which the engine could develop full rated output power on the current performance data set.
Standard temperature values versus altitude could be seen on TM2001.
When viewing the altitude capability chart the ambient temperature is the inlet air temp at the compressor inlet.
Engines with ADEM MEUI and HEUI fuel systems operating at conditions above the defined altitude capability derate for atmospheric pressure and temperature conditions outside the values defined, see TM2001.
Mechanical governor controlled unit injector engines require a setting change for operation at conditions above the altitude

defined on the engine performance sheet. See your Caterpillar technical representative for non standard ratings.

REGULATIONS AND PRODUCT COMPLIANCE TMI Emissions information is presented at 'nominal' and 'Potential Site Variation' values for standard ratings. No tolerances are applied to the emissions data. These values are subject to change at any time. The controlling federal and local emission requirements need to be verified by your Caterpillar technical representative.
Customer's may have special emission site requirements that need to be verified by the Caterpillar Product Group engineer.

EMISSIONS DEFINITIONS: Emissions : DM1176

HEAT REJECTION DEFINITIONS: Diesel Circuit Type and HHV Balance : DM9500

HIGH DISPLACEMENT (HD) DEFINITIONS: 3500: EM1500

RATING DEFINITIONS: Agriculture : TM6008
Fire Pump : TM6009
Generator Set : TM6035
Generator (Gas) : TM6041
Industrial Diesel : TM6010
Industrial (Gas) : TM6040
Irrigation : TM5749
Locomotive : TM6037
Marine Auxiliary : TM6036
Marine Prop (Except 3600) : TM5747
Marine Prop (3600 only) : TM5748
MSHA : TM6042
Oil Field (Petroleum) : TM6011
Off-Highway Truck : TM6039
On-Highway Truck : TM6038

SOUND DEFINITIONS: Sound Power : DM8702
Sound Pressure : TM7080

Date Released : 7/7/15

PACKAGE DATA [C09DE48]

AUGUST 13, 2018

For Help Desk Phone Numbers Click here

Feature Code:	C09DE48	**Rating Type:**	STANDBY	**Sales model Package:**	PGS300
Engine Sales Model:	C9	**Engine Arrangement Number:**	4529685	**Hertz:**	60
EKW W/F:	300.0	**Noise Reduction:**	0 dBA	**Back Pressure:**	0.0 inH2O

Engine Package Information

Engine Package Data

Package Cooling Information

Open Cooling Data

% Load	Airflow Rate scfm			Ambient Capability Sea Level (Deg F)			Ambient Capability 300 m (Deg F)			Ambient Capability 600 m (Deg F)			Ambient Capability 900 m (Deg F)		
	0 inH2O	1/2 inH2O	3/4 inH2O	0 inH2O	1/2 inH2O	3/4 inH2O	0 inH2O	1/2 inH2O	3/4 inH2O	0 inH2O	1/2 inH2O	3/4 inH2O	0 inH2O	1/2 inH2O	3/4 inH2O
100.0	22283	21188	20411	138	136	134	134	132	131	131	129	127	122	122	122
75.0	22283	21188	20411	140	140	140	140	140	140	140	140	140	140	138	136

SA Level 1 Canopy Cooling Data

% Load	Airflow Rate scfm	Ambient Capability Sea Level (Deg F)	Ambient Capability 300 m (Deg F)	Ambient Capability 600 m (Deg F)	Ambient Capability 900 m (Deg F)
100.0	12395	114	111	107	104
75.0	12395	132	129	125	122

SA Level 2 Canopy Cooling Data

% Load	Airflow Rate scfm	Ambient Capability Sea Level (Deg F)	Ambient Capability 300 m (Deg F)	Ambient Capability 600 m (Deg F)	Ambient Capability 900 m (Deg F)
100.0	12395	114	111	107	104
75.0	12395	132	129	125	122

WP Canopy - Industrial Cooling Data

% Load	Airflow Rate scfm	Ambient Capability Sea Level (Deg F)	Ambient Capability 300 m (Deg F)	Ambient Capability 600 m (Deg F)	Ambient Capability 900 m (Deg F)
100.0	18222	120	116	113	109
75.0	18222	138	134	131	127

Package Sound Information

Sound Comments :

SA Level 1 Canopy Sound Data

Distance: 3.3 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	86.7	91.6	93.2	90.0	82.0	79.2	77.0	75.3	70.8
225.0	75.0	85.6	91.3	92.3	88.9	80.9	77.8	75.6	74.0	69.2
150.0	50.0	84.7	90.6	91.7	88.1	80.3	77.1	74.5	72.5	67.1
75.0	25.0	84.3	89.4	91.4	87.7	79.9	77.0	73.9	70.8	64.5

Distance: 23.0 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	75.0	84.3	82.6	77.4	70.3	67.2	65.9	63.8	58.2
225.0	75.0	73.8	84.7	81.8	76.6	68.5	66.1	64.2	62.6	56.9
150.0	50.0	73.0	84.7	81.3	75.9	67.5	65.4	63.0	61.1	55.0
75.0	25.0	72.5	84.2	81.1	75.5	67.1	65.2	62.2	59.3	52.4

Distance: 49.2 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	69.0	78.3	76.6	71.4	64.3	61.2	59.9	57.8	52.2
225.0	75.0	67.8	78.7	75.8	70.6	62.5	60.1	58.2	56.6	50.9
150.0	50.0	67.0	78.7	75.3	69.9	61.5	59.4	57.0	55.1	49.0
75.0	25.0	66.5	78.2	75.1	69.5	61.1	59.2	56.2	53.3	46.4

SA Level 2 Canopy Sound Data

Distance: 3.3 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	83.0	88.9	90.5	85.6	78.4	76.1	73.4	70.3	66.4
225.0	75.0	82.8	87.7	90.2	85.6	78.3	75.9	73.1	69.6	65.7
150.0	50.0	82.7	86.6	89.9	85.6	78.4	75.9	73.0	68.8	64.4
75.0	25.0	82.7	85.5	89.7	85.6	78.4	76.1	73.1	68.1	62.5

Distance: 23.0 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	71.3	82.0	81.2	74.8	66.7	60.3	59.9	57.8	54.9
225.0	75.0	71.2	80.9	80.9	75.1	66.5	59.9	60.1	57.3	54.6
150.0	50.0	71.1	80.0	80.5	75.2	66.4	59.9	60.2	56.6	53.4

75.0	25.0	70.9	79.1	80.2	75.0	66.6	60.2	60.1	55.7	51.2

Distance: 49.2 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	65.3	76.0	75.2	68.8	60.7	54.3	53.9	51.8	48.9
225.0	75.0	65.2	74.9	74.9	69.1	60.5	53.9	54.1	51.3	48.6
150.0	50.0	65.1	74.0	74.5	69.2	60.4	53.9	54.2	50.6	47.4
75.0	25.0	64.9	73.1	74.2	69.0	60.6	54.2	54.1	49.7	45.2

WP Canopy - Industrial Sound Data

Distance: 3.3 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	93.1	93.5	95.4	92.8	89.9	88.0	85.2	80.3	74.8
225.0	75.0	93.0	92.3	94.9	92.4	89.2	87.6	85.8	81.1	74.9
150.0	50.0	92.8	90.9	94.3	91.9	88.8	87.5	85.8	81.3	74.5
75.0	25.0	92.5	89.4	93.5	91.4	88.6	87.6	85.2	80.9	73.6

Distance: 23.0 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	82.4	86.2	87.8	81.3	79.5	77.3	74.0	69.2	63.5
225.0	75.0	82.1	84.9	87.4	80.7	78.9	76.7	74.1	69.6	63.2
150.0	50.0	82.0	83.8	86.8	80.1	78.8	76.6	74.3	69.7	62.8
75.0	25.0	82.1	82.7	86.1	79.8	79.2	77.0	74.4	69.7	62.4

Distance: 49.2 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	76.4	80.2	81.8	75.3	73.5	71.3	68.0	63.2	57.5
225.0	75.0	76.1	78.9	81.4	74.7	72.9	70.7	68.1	63.6	57.2
150.0	50.0	76.0	77.8	80.8	74.1	72.8	70.6	68.3	63.7	56.8
75.0	25.0	76.1	76.7	80.1	73.8	73.2	71.0	68.4	63.7	56.4

WP Canopy - Critical Sound Data

Distance: 3.3 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	95.8	98.5	94.5	94.1	92.3	90.6	88.9	84.4	83.3
225.0	75.0	94.9	96.7	93.1	93.3	90.6	90.1	88.3	83.9	82.0

150.0	50.0	94.4	94.8	91.3	92.7	89.7	89.9	88.0	83.5	80.4
75.0	25.0	94.3	93.0	89.7	92.4	89.5	90.0	88.0	83.3	78.9

Distance: 23.0 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	84.2	88.9	85.4	84.7	81.7	78.0	76.1	72.0	72.7
225.0	75.0	83.4	87.0	84.3	84.3	79.5	77.9	76.1	71.4	71.2
150.0	50.0	83.2	85.2	83.1	84.0	78.2	78.3	76.5	71.2	69.4
75.0	25.0	83.4	83.8	81.9	83.7	77.7	78.9	77.0	71.3	67.7

Distance: 49.2 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	78.2	82.9	79.4	78.7	75.7	72.0	70.1	66.0	66.7
225.0	75.0	77.4	81.0	78.3	78.3	73.5	71.9	70.1	65.4	65.2
150.0	50.0	77.2	79.2	77.1	78.0	72.2	72.3	70.5	65.2	63.4
75.0	25.0	77.4	77.8	75.9	77.7	71.7	72.9	71.0	65.3	61.7

Open Exhaust Sound Data

Distance: 3.3 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	124.2	120.5	119.4	121.5	118.1	117.9	119.9	112.2	105.0
225.0	75.0	124.2	119.8	117.7	121.9	117.7	118.1	119.9	111.9	104.1
150.0	50.0	123.3	120.9	118.6	121.1	117.0	116.6	119.0	111.0	103.0
75.0	25.0	120.2	115.3	115.1	118.5	115.4	115.9	113.5	107.6	99.0

Open Mechanical Sound Data

Distance: 3.3 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	101.9	91.6	93.2	97.7	94.9	95.0	94.4	93.2	96.7
225.0	75.0	100.7	90.5	93.2	97.5	94.8	94.8	93.6	91.2	93.5
150.0	50.0	99.9	89.0	92.6	97.4	94.7	94.7	93.0	89.9	90.2
75.0	25.0	99.5	86.9	91.5	97.4	94.7	94.8	92.5	89.1	86.8

Distance: 23.0 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB

300.0	100.0	91.9	81.6	83.2	87.7	84.9	85.0	84.4	83.2	86.7
225.0	75.0	90.7	80.5	83.2	87.5	84.8	84.8	83.6	81.2	83.5
150.0	50.0	89.9	79.0	82.6	87.4	84.7	84.7	83.0	79.9	80.2
75.0	25.0	89.5	76.9	81.5	87.4	84.7	84.8	82.5	79.1	76.8

Distance: 49.2 Feet

EKW W/F	% LOAD	OVERALL SOUND DB(A)	OBCF 63HZ DB	OBCF 125HZ DB	OBCF 250HZ DB	OBCF 500HZ DB	OBCF 1000HZ DB	OBCF 2000HZ DB	OBCF 4000HZ DB	OBCF 8000HZ DB
300.0	100.0	85.9	75.6	77.2	81.7	78.9	79.0	78.4	77.2	80.7
225.0	75.0	84.7	74.5	77.2	81.5	78.8	78.8	77.6	75.2	77.5
150.0	50.0	83.9	73.0	76.6	81.4	78.7	78.7	77.0	73.9	74.2
75.0	25.0	83.5	70.9	75.5	81.4	78.7	78.8	76.5	73.1	70.8

POWER VT® Plus Condensing Water Heater

AquaPLEX® STORAGE TANK (UNLINED DUPLEX ALLOY)

TANK SERIES 300 Gallon ■ 1000 to 2000 MBH

Domestic water heater DWH-1 (total of 2)

MODEL	BTU INPUT	GPH RECOVERY (thermal efficiency)		SHIPPING WEIGHT (LBS.)	OPERATING WEIGHT (LBS.)
		70° to 140°F ①	40° to 140°F ②		
100 SLX 300A-PVIF	999,000	1645 (96%)	1158 (96.5%)	2280	3865
150 LX 300A-PVIF	1,500,000	2470 (96%)	1737 (96.5%)	2280	3865
180 LX 300A-PVIF	1,800,000	2964 (96%)	2085 (96.5%)	2280	3865
200 LX 300A-PVIF	2,000,000	3293 (96%)	2317 (96.5%)	2280	3865

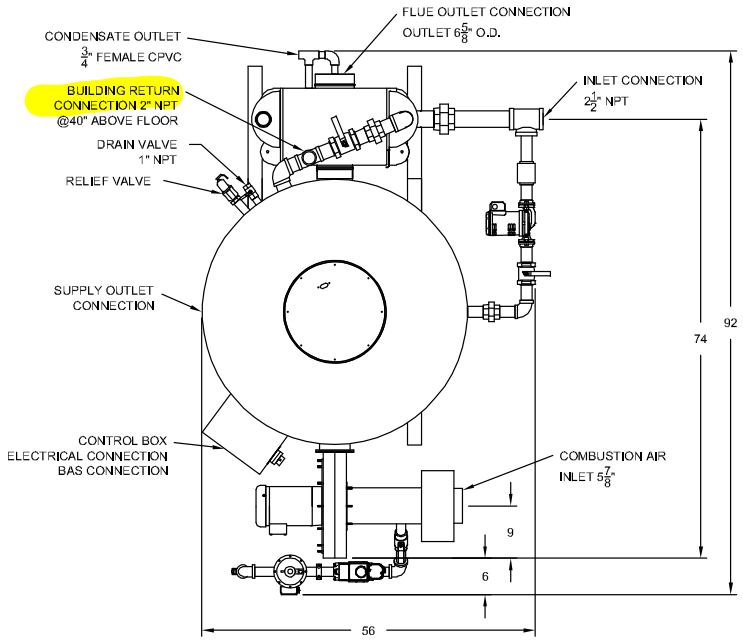
① Recoveries and thermal efficiency derived from DOE 10 CFR 431 testing requirements (ANSI Z21.10.3 @ 70°F to 140°F)

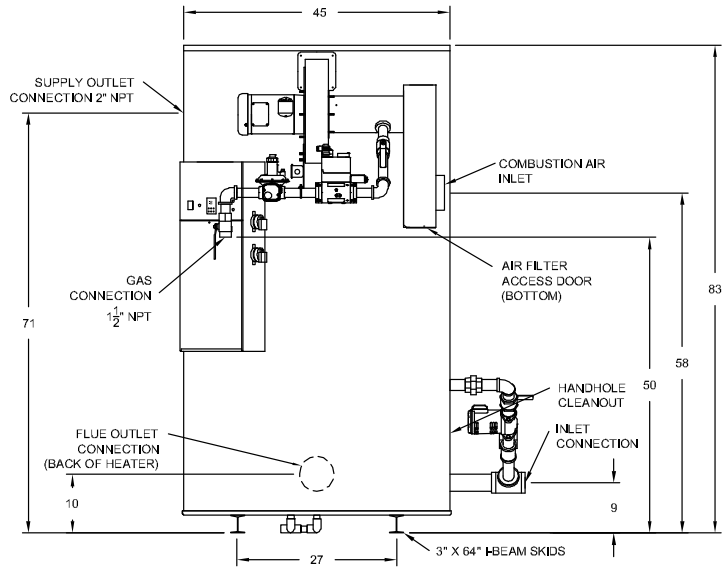
② Recoveries and thermal efficiency based upon 40°F entering water temperature at full fire

Dimensions are in inches unless otherwise specified.

For standard and optional equipment, see form PV 8005.

Intertek HLW U





Standard Electrical

120V, 1Ø, 60 Hz., 15 amp circuit

Venting

Use a 6" CPVC vent or use an ETL, UL, ULC or CSA listed single or double wall 6" stainless steel or listed Polypropylene Category IV venting system, minimum distance 5 eq. feet, maximum distance 100 eq. feet.
Longer vents, ETL listed with larger diameters, see I&M.

Inlet Combustion Air

Up to 100 eq. ft. using 6" PVC or galvanized vent pipe.
Longer lengths, ETL listed with larger diameters, see I&M.

Gas Pressure - Natural

Minimum inlet flow pressure: 4.5" W.C.
Maximum static pressure: 14" W.C.
For < 4.5"W.C., consult factory.
For LP option, consult factory.

Minimum Service Clearances

18" from sides,
24" from front and top

Emissions

< 20 ppm NOx

PVI Industries, LLC
Engineered Water Heating Solutions®
www.pvi.com
Fort Worth, TX ▪ 800-784-8326

Fulton®

ENDURA

ULTRA HIGH EFFICIENCY CONDENSING BOILERS

750 K – 2.0 MM BTU/HR

GREATER THAN THE SUM OF ITS PARTS

Designed for variable primary flow hydronic heating, Endura™ condensing boilers provide quiet and reliable operation in a compact vertical firetube platform.

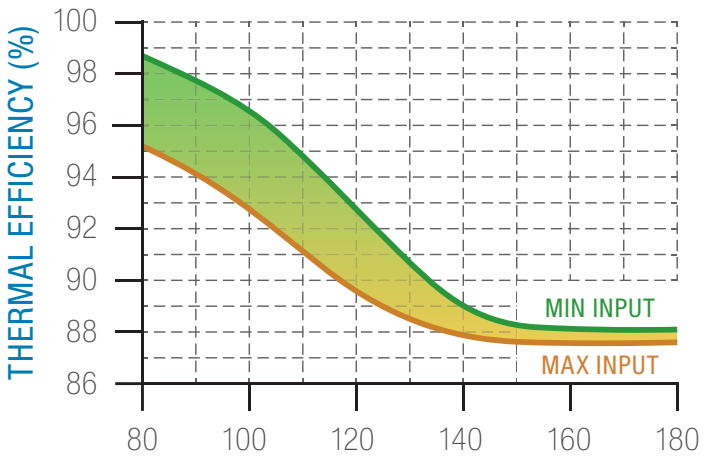
The highly-engineered construction is built to last with thicker, higher-strength materials, and a premium fit and finish reflecting Fulton's paramount quality.

▲ *Three Endura boilers are integrated directly into a primary-only variable flow installation to provide building heat.*

INDUSTRY LEADING EFFICIENCIES

- ULTRA-HIGH EFFICIENCIES UP TO 99%
- FULLY MODULATING BURNER
- LOW NOX EMISSIONS OF <20 PPM
- AHRI CERTIFIED

THERMAL EFFICIENCY
VS. RETURN WATER TEMPERATURE



ROBUST DESIGN, COMPACT FOOTPRINT
Our compact design enables Endura boilers to fit through a standard door and requires only one-inch of side clearance between boilers.

SIMPLE TO INSTALL AND MAINTAIN
Latched cabinet panels detach in seconds, providing easy access for commissioning and maintenance; complete service can be performed through the front, top, and rear.

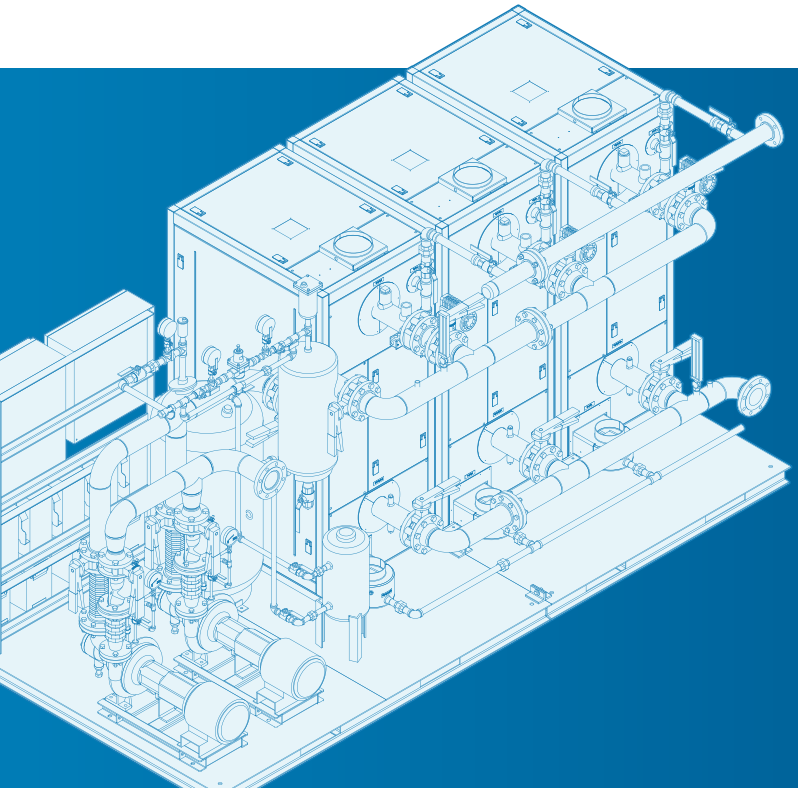
APPLICATION FLEXIBILITY
With no minimum water temperatures, flexible venting capabilities and full capacity with 4"WC gas pressure, Endura boilers are a perfect choice for both new and retrofit building heat applications.

INTUITIVE TOUCHSCREEN CONTROL
Integrated lead/lag for up to 8 boilers optimizes energy savings with parallel modulation and outdoor air temperature reset. Extensive control capabilities also includes pump control, trending data, and BMS integration through Modbus; BACnet or LonWorks configurable.

BETTER BY DESIGN

Endura boilers are built on a proven heat exchanger platform engineered and manufactured by Fulton. The design features rugged welded construction and a high-mass pressure vessel.

- **Fully Duplex Stainless Steel heat exchanger** has 19% greater strength and a 23% reduction in thermal expansion compared to conventional 316L used by the competition.
- Fully wetted three-pass firetube design operates with lower stresses and therefore greater durability.
- Corrugated flue pipes increase surface area and turbulence, enhancing fuel-saving efficiencies.
- The high water volume counter-flow design is exceptionally tolerant of varying and sometime unpredictable applications; **a zero flow condition will not harm the boiler**.

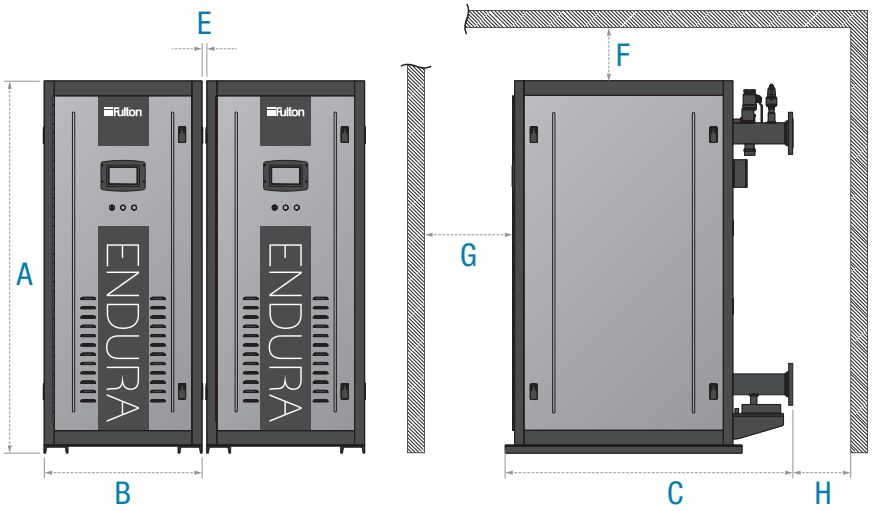


DESIGNED FOR VARIABLE PRIMARY FLOW

Variable primary flow is a simplified piping method which enhances temperature control, reduces design complexity, and maximizes efficiencies by delivering the lowest temperature water directly to the boiler with no blending.

- NO DEDICATED BOILER PUMP REQUIRED
- SMALLER PLANT FOOTPRINTS
- REDUCED COST OF INSTALLATION

MODEL:	EDR	750	1000	1500	2000
SPECIFICATIONS					
Input Capcity	MMBTU/Hr	0.75	1	1.5	2
Water Content	Gal	50	50	104	102
Dry Weight	LBS	1,430	1,430	2,260	2,360
Operating Weight	LBS	1,848	1,848	3,128	3,210
AHRI Thermal Efficiency	1	97.1%	95.3%	93.5%	93.7%
DIMENSIONS					
(A) Overall Boiler Height	IN	67.75	67.75	80	80
(B) Overall Boiler Width	IN	28	28	33.9	33.9
(C) Overall Boiler Depth	IN	49.75	49.75	60.6	60.6



CLEARANCES		
(E) Side	IN	1
(F) Top	IN	18
(G) Front	IN	36
(H) Rear	IN	24

NOTE: *All specifications and dimensions are approximate and for reference only. Fulton practices continuous product improvement and reserves the right to change specifications and/or dimensions without notice. Graphics contained in this brochure may not be representative of actual product.*

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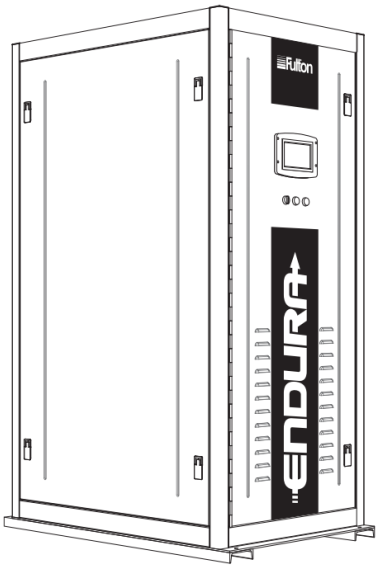
Technical Data

Endura Hydronic Condensing Boilers

Models: EDR-750, EDR-1000, EDR-1500, EDR-2000



Standard Features and Devices

- Duplex Stainless Steel Firetube Heat Exchanger
- Fully Condensing Ultra-High Efficiency Design
- Suitable for Variable Primary Arrangements
- 160 PSIG Maximum Allowable Working Pressure
- 210°F Maximum Allowable Working Temperature
- Factory Recommended Maximum Setpoint 190°F
- Fully Modulating Natural Gas Operation
- Direct Spark Ignition
- Dual Element Supply Water Temperature Sensor
- Return Water Temperature Sensor
- Low Water Cut Off Probe with Manual Reset
- NEMA 1 Enclosure Electrical Control Panel
- Low NOx Emissions <20 ppm
- Combustion Air Intake Filter
- Integral Lock Up Type Regulator
- Ventless Gas Train Utilizing Vent Limiters
- Safety Interlock Contacts for External Device
- Monitoring Dry Contacts (Status, Demand, Alarm)
- Remote Boiler Enable Contacts
- Emergency Stop (E-Stop) Contacts

Control Capabilities

- Fulton SOLA Flame Safeguard, Temperature and Lead/Lag Controller
- Large 7” HD Color Touch-Screen Display
- Integrated Cascade Up to 8 Boilers
- Modbus Communication Protocol
- Outdoor Air Temperature Reset with Automatic Warm Weather Shutdown (Requires OAT Sensor Kit)
- Accept 4-20 mA Remote Setpoint Signal
- Motorized Isolation Valve Control for Variable Primary Systems
- DHW Pump Start/Stop Signal
- Boiler Pump Start/Stop Signal
- Flue Gas Exhaust Temperature Monitoring
- Indirect Domestic Hot Water Priority (Requires Indirect DHW Sensor)
- Frost Protection

Listings & Compliance

- ASME Section IV Code, “H” Stamp
- ETL Approved to the UL-795 Standard
- CSD-1 & CSA Controls and Fuel Train
- XL GAPS Compliant, Supersedes IRI
- FM Compliant Fuel Train Components
- AHRI Certified to BTS-2000
- SCAQMD Certified
- TCEQ Compliant
- Control Panel Wired in a UL 508 Facility

Trim Kit Items (Loose)

- ASME Safety Relief Valve (60, 100, 125, 160 PSIG Options)
- Pressure & Temperature Gauge
- Installation and Operation Manual
- Touch Up Spray Paint

Field Installed Optional Devices

- ☐ 0-10VDC to 4-20mA Signal Converter
- ☐ BACnet Integration Gateway
- ☐ LonWorks Integration Gateway
- ☐ Second Low Water Cut Off Probe
- ☐ Fused External Disconnect
- ☐ Supply Water Header Temperature Sensor
- ☐ Outdoor Air Temperature (OAT) Sensor Kit
- ☐ Indirect Domestic Hot Water (DHW) Sensor
- ☐ Mechanical Aquastat (Auxiliary High Limit)
- ☐ Multiple Boiler Condensate Drain Trap
- ☐ Single Boiler Condensate Drain Trap
- ☐ Condensate pH Neutralization Kit
- ☐ PVC/CPVC Exhaust Adapter Kit

Information provided in this document is based on standard boiler configurations. Alternate or custom configurations may result in deviations. Due to continuous product improvement, Fulton reserves the right to change specifications and/or dimensions without notice.

Fulton Heating Solutions, Inc.
6288 Running Ridge Road, Syracuse, NY 13212
Phone: (315) 298-8510

Capacities

(Applies to elevations up to 2,000 ft)

Endura Model		EDR-750	EDR-1000	EDR-1500	EDR-2000
Rated Input at High Fire	**BTU/hr**	**750,000**	**1,000,000**	**1,500,000**	**2,000,000**
	kW	*220*	*293*	*440*	*586*
Minimum Input at Low Fire	**BTU/hr**	**150,000**	**200,000**	**300,000**	**400,000**
	kW	*44*	*59*	*88*	117
Rated Output (BTS-2000)	**BTU/hr**	**728,250**	**953,000**	**1,402,500**	**1,874,000**
	Boiler HP	21.8	28.5	41.9	56.0
	kW	*213*	*279*	*411*	*549*
AHRI Thermal Efficiency	**%**	**97.1**	**95.3**	**93.5**	**93.7**

Connection Sizes

(Reference End Assembly Drawing for Connection Type)

Endura Model		EDR-750	EDR-1000	EDR-1500	EDR-2000
Boiler Supply Water Outlet	**inches**	**2**	**2**	**4**	**4**
	mm	*50.8*	*50.8*	*101.6*	*101.6*
Boiler Return Water Inlet	**inches**	**2**	**2**	**4**	**4**
	mm	*50.8*	*50.8*	*101.6*	*101.6*
Flue Gas Condensate Drain	**inches**	**1**	**1**	**1**	**1**
	mm	*25.4*	*25.4*	*25.4*	*25.4*
Boiler Pressure Vessel Drain	**inches**	**1**	**1**	**3/4**	**3/4**
	mm	*25.4*	*25.4*	*19.1*	*19.1*
Gas Train Inlet	**inches**	**1**	**1**	**1-1/2**	**1-1/2**
	mm	*25.4*	*25.4*	*38.1*	*38.1*
Combustion Air Inlet (ID)	**inches**	**6**	**6**	**8**	**8**
	mm	*152.4*	*152.4*	*203.2*	*203.2*
Flue Gas Exhaust (ID)	**inches**	**6**	**6**	**6**	**8**
	mm	*152.4*	*152.4*	*152.4*	*203.2*

Fuel Requirements

(At rated input, *Canada 14"WC Max)

Endura Model		EDR-750	EDR-1000	EDR-1500	EDR-2000
Natural Gas Consumption (1,000 BTU/FT³)	**SCFH**	**750**	**1,000**	**1,500**	**2,000**
	M³/hr	*21.2*	*28.3*	*42.5*	*56.7*
Minimum Natural Gas Pressure	**in W.C.**	**4**	**4**	**4**	**4**
	kPa	*1*	*1*	*1*	*1*
Maximum Natural Gas Pressure*	**in W.C.**	**28**	**28**	**28**	**28**
	kPa	*7*	*7*	*7*	*7*

Fuel Requirements

(At rated input, *Canada 14"WC Max)

Endura Model		EDR-750	EDR-1000	EDR-1500	EDR-2000
Propane Consumption (2,500 BTU/FT³)	**SCFH**	**300**	**400**	**600**	**800**
	M³/hr	*8.5*	*11.3*	*17.0*	*22.7*
Minimum Propane Pressure	**in W.C.**	**7**	**7**	**7**	**7**
	kPa	*1.74*	*1.74*	*1.74*	*1.74*
Maximum Propane Pressure*	**in W.C.**	**28**	**28**	**28**	**28**
	kPa	*7*	*7*	*7*	*7*

Notes:

- Endura boilers are factory tested on Natural Gas. Field configured to Propane during commissioning by an authorized service provider.
- Burner turndown ratio of 4:1 for Propane operation.
- Propane-fired operation is suitable for use with HD5 grade Liquid Petroleum Gases conforming to ASTM D1835-82 only.

Electrical Requirements

(Applies to standard configuration)

Endura Model		EDR-750	EDR-1000	EDR-1500	EDR-2000
Electrical Supply	volts	120	120	120	120
	Ø	1	1	1	1
	Hz	*60*	*60*	*60*	*60*
Full Load Amps (FLA)	Amps	10	10	20	20
Minimum Circuit Size (MCA)	Amps	20	20	25	25
SCCR	Amps	5,000	5,000	5,000	5,000

Weights and Volume

(Typical for standard equipment)

Endura Model		EDR-750	EDR-1000	EDR-1500	EDR-2000
Dry Weight	lbs	1,430	1,430	2,260	2,360
	kg	*649*	*649*	*1,025*	*1,070*
Operating Weight	lbs	1,848	1,848	3,128	3,210
	kg	*838*	*838*	*1,419*	*1,456*
Shipping Weight	lbs	1,660	1,660	2,600	2,700
	kg	*753*	*753*	*1,179*	*1,225*
Pressure Vessel Water Volume	Gallons	50	50	104	102
	Liters	*189*	*189*	*394*	*386*

Water/Flow Requirements

(Specifications apply to 100% water systems)

Endura Model		EDR-750	EDR-1000	EDR-1500	EDR-2000
Typical Flow Rate at Rated Output 20°F ΔT	**GPM**	**73**	**95**	**140**	**187**
	LPM	*276*	*360*	*530*	*708*
Water Side Pressure Drop at Rated Output 20°F ΔT	**PSI**	**0.5**	**0.7**	**0.8**	**1.5**
	kPa	*3.5*	*4.8*	*5.5*	*10.3*
Maximum Delta-T	**°F**	**100**	**100**	**100**	**100**
	°C	*44.4*	*44.4*	*44.4*	*44.4*
Minimum Flow Rate (See Note)	**GPM**	**N/A**	**N/A**	**N/A**	**N/A**
	LPM	*N/A*	*N/A*	*N/A*	*N/A*
Maximum Flow Rate (See Note)	**GPM**	**N/A**	**N/A**	**N/A**	**N/A**
	LPM	*N/A*	*N/A*	*N/A*	*N/A*

Note: A low or zero flow situation will not harm the heat exchanger or pressure vessel, however the system will require proper flow to heat the building and prevent nuisance high limit trips at the boiler.

Venting Requirements

Endura Model		EDR-750	EDR-1000	EDR-1500	EDR-2000
Combustion Air Intake Flow Rate	**SCFM**	**153**	**203**	**305**	**407**
Flue Gas Exhaust Flow Rate	**SCFM**	**165**	**220**	**330**	**440**
	ACFM	*203*	*271*	*407*	*543*
Minimum Allowable Draft Pressure	**in WC**	**-0.04**	**-0.04**	**-0.04**	**-0.04**
	kPa	*-0.025*	*-0.025*	*-0.025*	*-0.025*
Maximum Allowable Draft Pressure	**in WC**	**+1.50**	**+1.50**	**+1.50**	**+1.50**
	kPa	*+0.374*	*+0.374*	*+0.374*	*+0.374*

Note: Reference the Installation and Operation Manual for complete venting requirements including certifications, temperatures, materials, common combustion air intake, and common flue gas exhaust requirements. Data based on Natural Gas operation.

Emissions

Endura Model		EDR-750	EDR-1000	EDR-1500	EDR-2000
NO_x	ppm	< 20	< 20	< 20	< 20
CO_2	%	8.0 - 10	8.0 - 10	8.0 - 10	8.0 - 10
Volatile Organic Compounds (VOCs)	lb/hr	0.0041	0.0055	0.0083	0.0110
	kg/hr	*0.0019*	*0.0025*	*0.0038*	*0.0050*
CO	ppm	< 50	< 50	< 50	< 50

Notes:

- NO_x and CO are stated at a 3% O_2 correction.
- Will vary based on site specific factors and operating parameters.
- Calculations based on EPA PM10 AP42 standard.
- Emissions data is typical for standard natural gas operation. Emissions are not guaranteed on fuels other than standard natural gas.
- Site specific conditions will determine the appropriate CO_2 settings for each application.
- Jacket losses: 0.2% of output at maximum capacity, IAW ASHRAE Standard 103-2007.

Minimum Clearances

(Local codes may supersede Fulton requirements)

Endura Model		EDR-750	EDR-1000	EDR-1500	EDR-2000
Front	inches	36	36	36	36
	mm	*914*	*914*	*914*	*914*
Rear	inches	24	24	24	24
	mm	*610*	*610*	*610*	*610*
Top	inches	18	18	18	18
	mm	*457*	*457*	*457*	*457*
Sides	inches	1	1	1	1
	mm	*25*	*25*	*25*	*25*

Model: USF-322-BI

Backward Inclined Single Width Blower

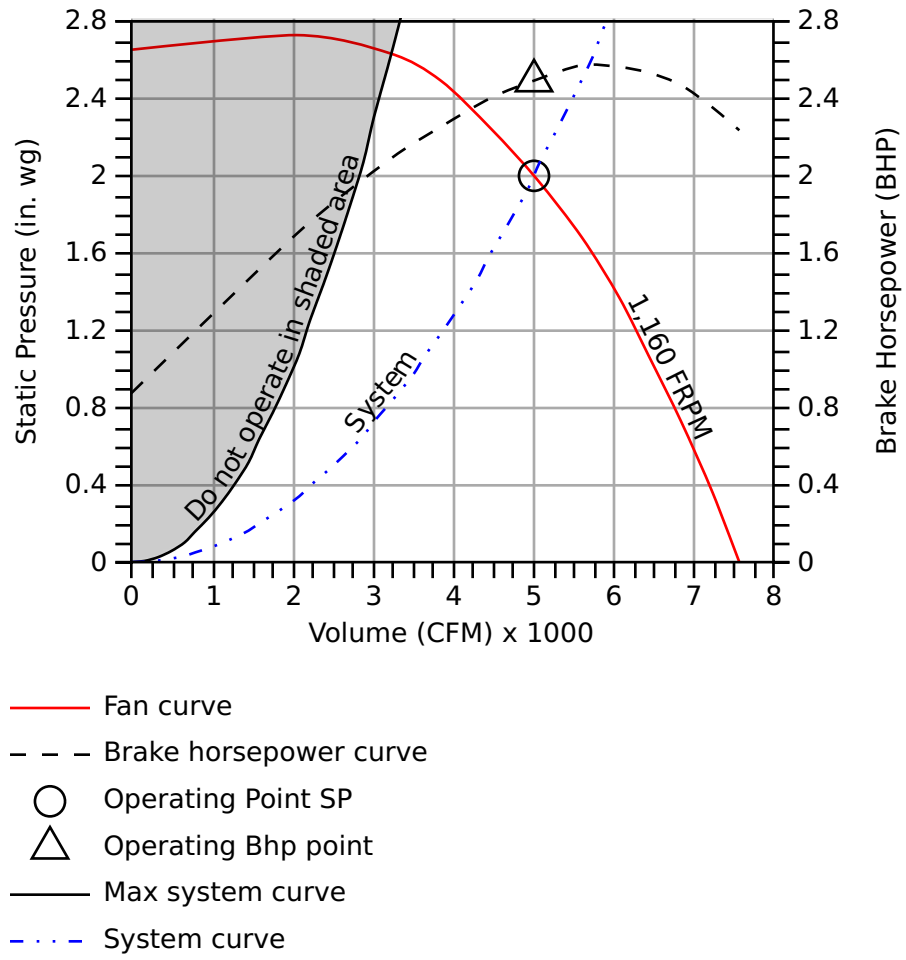
Standard Construction Features: Galvanized Steel scroll (optional painted), PermaLock seam (optional welded seam). Centrifugal backward inclined steel wheel. Steel inlet cone. Belt driven motor mounted out of the air stream.
Certifications/special requirements: Emergency Smoke Control

Fan Configuration	
Arrangement	10
Discharge position	TH
Wheel rotation	CW
Fan material	Steel
Drive type	Belt

Performance	
Requested Volume (CFM)	5,000
Actual Volume (CFM)	5,000
Total External SP (in. wg)	2
Fan RPM	1,160
Drive Loss (%)	7
Operating Power (bhp)	2.5
Startup Power (bhp)	2.5
Air Stream Temp (F)	70
Start-up Temp (F)	70
Air Density (lbs/ft^3)	0.075
Elevation (ft)	40
Static Efficiency (%)	68
Outlet Velocity (ft/min)	1,754

Motor	
Enclosure	ODP
Size (hp)	3
V/C/P	460/60/3
NEC FLA (Amps)	4.8

FLA - based on tables 150 or 148 of National Electric Code 2002. Actual motor FLA may vary, for sizing thermal overload, consult factory.

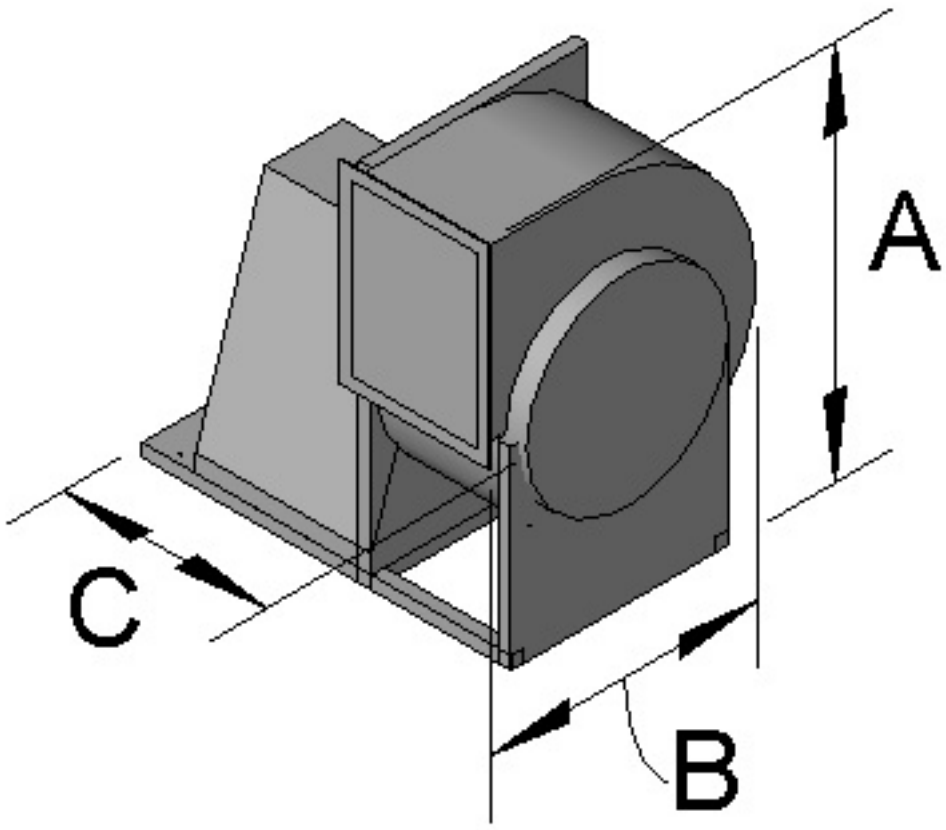


Sound

	Octave Bands (hz)								LwA	dBA	Sones
	62.5	125	250	500	1000	2000	4000	8000			
Inlet	90	89	87	82	78	73	68	63	84	73	23

Greenheck Fan Corporation certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program.Performance certified is for installation type B: Free inlet, Ducted outlet.Power rating (BHP/kW) includes transmission losses.Performance ratings do not include the effects of appurtenances (accessories).The sound power level ratings shown are in decibels, referred to 10^-12 watts calculated per AMCA Standard 301. The A-weighted sound ratings shown have been calculated per AMCA International Standard 301. Values shown are for inlet Lwi, LwiA, and outlet Lwo, LwoA sound power levels for installation type B: free inlet, ducted outlet. Outlet ratings include the effects of duct end correction. dBA levels are not licensed by AMCA International. The AMCA Certified Ratings Seal for Sound applies to inlet Lwi, LwiA and outlet Lwo, LwoA ratings only.

Dimensions and Weights		
Label	**Value**	**Description**
-	433	Weight w/o accessories (lbs)
A	50	Overall Height (in)
B	39	Overall Width (in)
C	47	Overall Length (in)
-	28	Inlet Diameter (in)
-	18 x 24	Outlet Size (W x H) (in)



Wheel rotation is defined as being viewed from the drive side.

*All dimensions are in inches.

Job Name: USF-324-BI Cut Sheet
Tag: MK-1
Quantity: 1
Printed Date: August 5, 2019

Model: USF-324-BI

Backward Inclined Single Width Blower

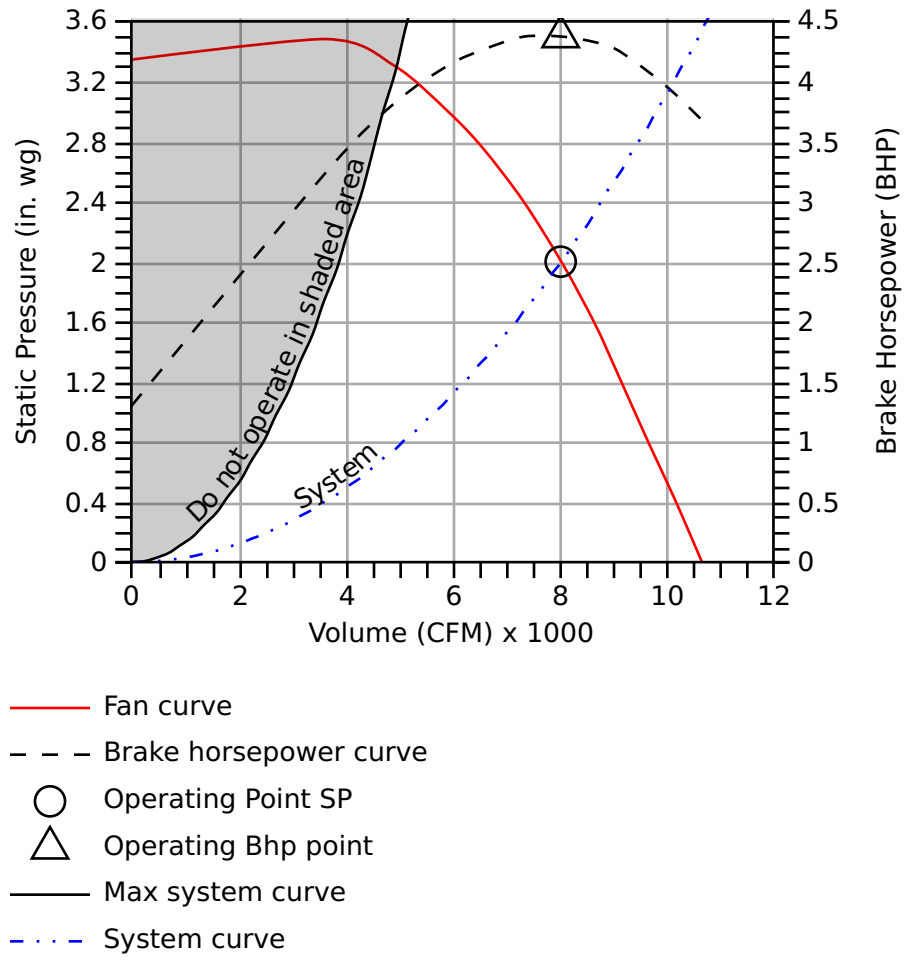
Standard Construction Features: Galvanized Steel scroll (optional painted), PermaLock seam (optional welded seam). Centrifugal backward inclined steel wheel. Steel inlet cone. Belt driven motor mounted out of the air stream.
Certifications/special requirements: Emergency Smoke Control

Fan Configuration	
Arrangement	10
Discharge position	TH
Wheel rotation	CW
Fan material	Steel
Drive type	Belt

Performance	
Requested Volume (CFM)	8,000
Actual Volume (CFM)	8,000
Total External SP (in. wg)	2
Fan RPM	1,202
Drive Loss (%)	6
Operating Power (bhp)	4.4
Startup Power (bhp)	4.4
Air Stream Temp (F)	70
Start-up Temp (F)	70
Air Density (lbs/ft^3)	0.075
Elevation (ft)	40
Static Efficiency (%)	61
Outlet Velocity (ft/min)	2,319

Motor	
Enclosure	ODP
Size (hp)	5
V/C/P	460/60/3
NEC FLA (Amps)	7.6

FLA - based on tables 150 or 148 of National Electric Code 2002. Actual motor FLA may vary, for sizing thermal overload, consult factory.



Sound

	Octave Bands (hz)								LwA	dBA	Sones
	62.5	125	250	500	1000	2000	4000	8000			
Inlet	87	87	92	84	79	77	71	66	87	76	26

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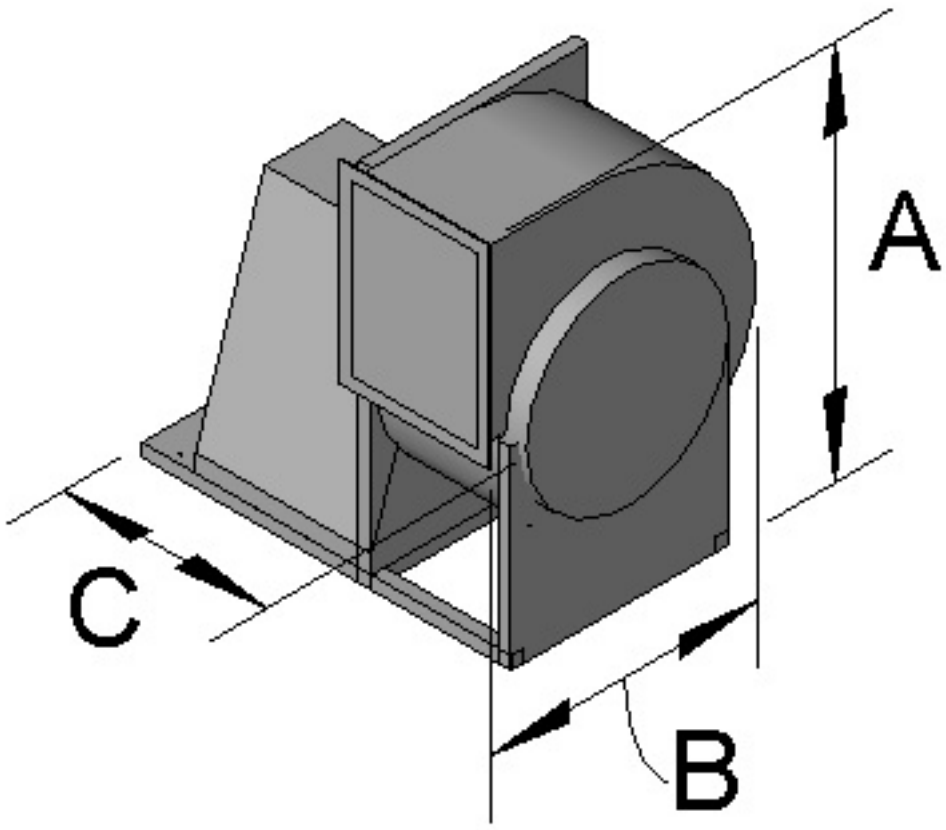
Dimensions and Weights		
Label	**Value**	**Description**
-	557	Weight w/o accessories (lbs)
A	55	Overall Height (in)
B	43	Overall Width (in)
C	51	Overall Length (in)
-	31	Inlet Diameter (in)
-	19 x 26	Outlet Size (W x H) (in)



Wheel rotation is defined as being viewed from the drive side.

*All dimensions are in inches.