APPENDIX C.16

CASE 10-T-0139

SITE PLANS AND CONSTRUCTION DRAWINGS

ELECTRICAL DRAWINGS

ASTORIA HVDC CONVERTER STATION

SEGMENT 22

CHPE
Champlain Hudson Power Express

ASTORIA HVDC CONVERTER STATION

ELECTRICAL PACKAGE

SCOPE OF WORK

LIGHTING AND LIGHTNING CONTROL SYSTEMS FOR THE FOLLOWING:
1. SITE LIGHTING
2. CONVERTER & SERVICE BUILDINGS
3. MVS, STORAGE AND RELAY ENCLOSURES

ELECTRICAL POWER AND DISTRIBUTION TO SUPPORT MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS OF EACH OF THE BUILDINGS AND ENCLOSURES LISTED ABOVE.

INCOMING SERVICE, MAIN DISTRIBUTION SWITCHGEAR, CONVERSION PROCESS EQUIPMENT AND POWER IS DESIGNED BY HITACHI. GENERATOR PLANS, (GENERATOR LOAD SIZING IS BY HITATCHI). MAIN DISTRIBUTION TIE AND MAIN BREAKER TRANSFER SCHEME IS DESIGNED BY HITACHI.

CABLE TRENCHES AND UNDERGROUND DUCT BANK. HITACHI TO PROVIDE CABLE POINT TO POINT FOR THE CABLES

GROUNDING SYSTEM FOR SITE, BUILDINGS AND EQUIPMENT.

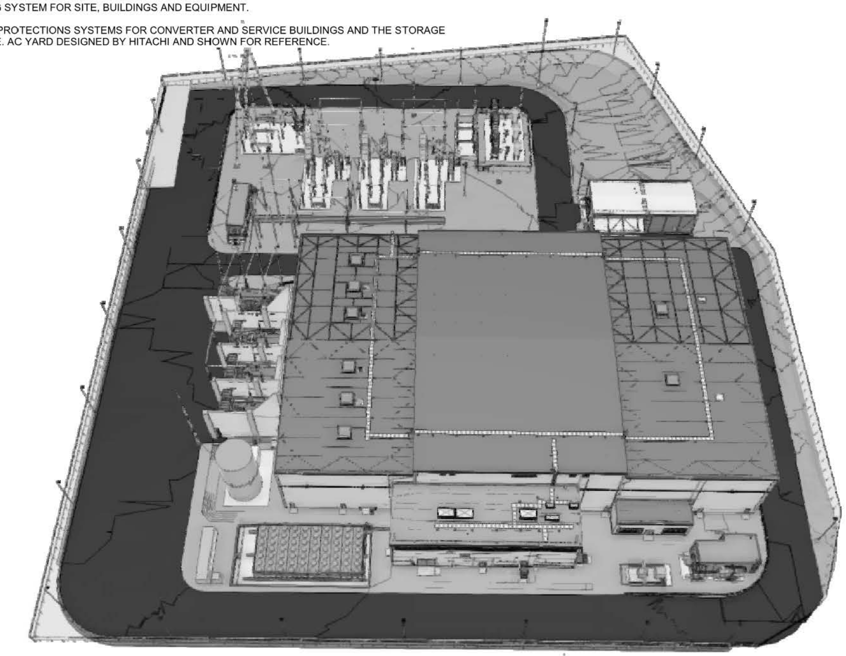
LIGHTNING PROTECTIONS SYSTEMS FOR CONVERTER AND SERVICE BUILDINGS AND THE STORAGE ENCLOSURE. AC YARD DESIGNED BY HITACHI AND SHOWN FOR REFERENCE.

FLOOD ZONE DESIGN CERTIFICATION:

THE EXISTING PROPERTY IS IN THE SPECIAL FLOOD HAZARD AREA (SFHA), ZONE AE PER EFFECTIVE 2015 FLOOD INSURANCE RATE MAP(FIRM). THIS IS TO CONFIRM THAT THE PROPOSED INSTALLATION IS IN COMPLIANCE WITH THE REQUIREMENTS SET FORTH IN APPENDIX Q OF THE NYC BUILDING CODE.

NYC ENERGY CODE COMPLIANCE:

STATEMENT: TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGEMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE NEW YORK CITY ENERGY CONSERVATION CODE. PROPOSED WORK MEETS THE GUIDELINES AND INSTRUCTIONS OUTLINED IN THE 2020 NYC ECC CHAPTER 4.



1 T-001.00 OVERALL SITE VIEW
N.T.S.

WARNING - IT IS A VIOLATION, OF THE NEW YORK STATE EDUCATION LAW, SECTION 7209.2, FOR ANY PERSON, UNLESS SHE OR HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR REGISTERED ARCHITECT, TO ALTER THIS DOCUMENT IN ANY WAY. IF ALTERED, THE ALTERING PERSON SHALL COMPLY WITH THE REQUIREMENTS OF NEW YORK EDUCATION LAW, SECTION 7209.2.

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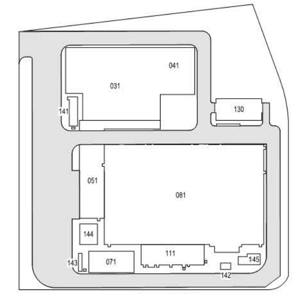

KEY PLAN
N.T.S.

PLAN NORTH
N

Engineering and Land Surveying, P.C.
370 7th Avenue
SUITE 1604
New York, NY 10001

SOWINSKI SULLIVAN
ARCHITECTURE + ENGINEERING
25 Mohawk Avenue
Sparta, NJ 07871

REV	DESCRIPTION	DRW BY	CHK BY	DATE
B	FINAL SUBMISSION	VSP	EK	12/12/2022
A	INTERIM SUBMISSION	VSP	EK	09/13/2022

Kiewit
470 Chestnut Ridge Rd # 2,
Woodcliff Lake, NJ 07677

Hitachi Energy
901 Main Campus Drive
Raleigh, North Carolina 27606

PROJECT
CHPE
Champlain Hudson Power Express

Astoria HVDC Converter Station
31-45 20th Avenue, Astoria, Queens NY 11105
Block #850 - Lot #310 - BIN #4624437

COVER SHEET

STATE OF NEW YORK
HESHAM H. ELBARAWY
089921
LICENSED PROFESSIONAL ENGINEER

Digitally signed by Hesham.Elbarawy
Date: 2022.12.22 10:56:57-05'00'

DATE	12/12/2022
PROJECT NO	10521
DRAWING BY	S.KILFEATHER
CHECKED BY	D.DUZAN
DRAWING NO	T-001.00

"C:\Users\Sean.Kilfeather\ACCDocs\Hitachi Energy\CHPE.E NU Astoria\WIP_Kiewit3D\01_GEN\COVER SHEETS\T-001.00 - COVER SHEET - SITE ELECTRICAL PACKAGE.0001.rvt

ELECTRICAL GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE SPECIFICATIONS, DRAWINGS AND THE 2011 NYC ELECTRICAL CODE.
2. READ THE SPECIFICATIONS AND REVIEW DRAWINGS OF ALL DIVISIONS OF WORK. COORDINATE THIS WORK WITH ALL OTHER DIVISIONS OF WORK AND ALL SUBCONTRACTORS WITH A COMPLETE SET OF DOCUMENTS.
3. DRAWINGS REPRESENT THE GENERAL SCOPE OF THE WORK. REVIEW THE GENERAL NOTES, SPECIFICATIONS, AND PLANS FOR ADDITIONAL REQUIREMENTS THAT MAY NOT BE SPECIFICALLY CALLED OUT IN THIS PORTION OF THE CONSTRUCTION DOCUMENTS.
4. THE CONTRACT DRAWINGS ARE DIAGRAMMATIC IN NATURE, AND NOT EVERY PULL BOX, DETAIL, OR EXACT LOCATION OF EQUIPMENT OR CONDUIT IS SHOWN. EXISTING CONDITIONS SHALL BE VERIFIED IN THE FIELD PRIOR TO COMMENCING ANY FABRICATION, ORDERING ANY MATERIAL, OR PERFORMING ANY WORK.
5. UNLESS SPECIFICALLY DIMENSIONED, LOCATIONS OF EQUIPMENT AND RACEWAYS ARE APPROXIMATE. THE CONTRACTOR SHALL ESTABLISH THE EXACT LOCATIONS IN THE FIELD TO CLEAR ALL OBSTACLES.
6. CONDUITS, JUNCTION BOXES, AND OTHER ELECTRICAL EQUIPMENT INSTALLED SHALL NOT INTERFERE WITH THE OPERATION OF DOORS, CABINETS, OTHER EQUIPMENT, ETC.
7. ALL CONDUIT PENETRATIONS THROUGH FIRE RATED WALLS AND FLOORS SHALL BE SEALED WITH A LISTED FIRESTOP SYSTEM RESISTANT SEALANT. ALL NEW FLOORS AND WALLS REQUIRED AS PART OF THIS PROJECT SHALL BE SEALED IN ACCORDANCE WITH THE FIRE-RATING AS INDICATED ON THE ARCHITECTURAL DRAWINGS.
8. MINIMUM WIRE SIZE #12 AWG, MINIMUM CONDUIT SIZE 3/4" FOR POWER CIRCUITS ONLY.
9. CONDUIT SIZE AND CABLE SIZE/TYPE INDICATED ON DRAWINGS AND SCHEDULES ARE APPLICABLE TO ENTIRE LENGTH OF BRANCH CIRCUIT UNLESS OTHERWISE NOTED.
10. EXPANSION COUPLINGS SHALL BE USED WITHIN 1' OF ALL STRUCTURAL EXPANSION JOINTS.
11. LSZH FLEXIBLE CONDUIT SHALL BE USED FOR CONNECTIONS OF MOTORS AND OTHER DEVICES THAT WOULD REQUIRE ADJUSTMENT OR REPLACEMENT OR WHERE A RIGID CONNECTION IS NOT PRACTICAL. THE LENGTH FOR THIS APPLICATION SHALL BE KEPT TO A MINIMUM.
12. INSTALL CONDUIT PARALLEL AND PERPENDICULAR TO WALLS WHERE APPLICABLE WITH A NEAT APPEARANCE.
13. PULL BOXES SHALL BE SIZED, FURNISHED AND INSTALLED AS REQUIRED BY THE NEC. PROVIDE PULL BOXES OR PULL TYPE CONDULETS AS REQUIRED TO CONFORM TO NEC. DETERMINE WHETHER TO USE A SINGLE PULL BOX, GROUP OF PULL BOXES, OR PULLING CONDULETS BASED ON ACTUAL FIELD CONDITIONS.
14. MOUNTING HEIGHTS FOR LIGHTS SHALL BE TO THE BOTTOM OF THE FIXTURE AFF. MOUNTING HEIGHTS FOR ELECTRICAL EQUIPMENT SHALL BE TO THE CENTER OF THE DEVICE AFF UNLESS OTHERWISE NOTED.
15. MATERIAL AND EQUIPMENT SHALL BE NEW AND UL APPROVED AND SHALL MEET NEMA, ANSI, IEEE & NEC REQUIREMENTS FOR INTENDED SERVICE. MATERIAL AND INSTALLATION SHALL MEET REQUIREMENTS OF NATIONAL AND LOCAL ELECTRICAL CODES.
18. FIELD VERIFY EXACT LOCATION, MOUNTING AND ELECTRICAL REQUIREMENTS OF ALL LIGHT FIXTURES. COORDINATE ALL WORK WITH OTHER TRADES AND CONTRACTORS PRIOR TO INSTALLATION. FOR LIGHT FIXTURES TO BE INSTALLED BENEATH MECHANICAL DUCTWORK, PROVIDE SUFFICIENT SUPPORT HARDWARE FOR INDEPENDENT SUPPORT FROM BUILDING STRUCTURE ABOVE.
17. PROVIDE ALL MOUNTING AND SUPPORT HARDWARE FOR LIGHT FIXTURES TO MEET SPECIFIED MOUNTING HEIGHTS.
18. CEILING MOUNTED OCCUPANCY SENSORS INSTALLED IN TILE CEILINGS SHALL BE CENTERED WITHIN THE ACOUSTICAL TILE. SENSORS SHALL NOT BE INSTALLED IN TILE DIRECTLY ADJACENT TO AN HVAC DIFFUSER.
19. ALL LIGHTING CONTROL INCLUDING PHOTOCELL, OCCUPANCY SENSOR, AND LIGHTING CONTROL PANEL SETTINGS SHALL BE COORDINATED WITH THE OWNER PRIOR TO COMPLETION OF WORK. ALL CONTROLS SHALL BE TESTED AND FULLY COMMISSIONED. COORDINATE ALL LIGHTING CONTROL LOCATIONS WITH OWNER PRIOR TO ROUGH-IN.
20. COORDINATE SETTINGS AND ADJUST SENSORS WHEREVER NECESSARY FOR PROPER LIGHTING CONTROL IN ALL SPACES. REFER TO SPECIFICATIONS FOR MORE INFORMATION. ALL CEILING MOUNTED OCCUPANCY SENSORS SHALL NOT BE INSTALLED WITHIN FOUR FEET OF ANY CEILING MOUNTED PROJECTOR PROVIDED BY OWNER.
21. WALL AND CEILING MOUNTED EXIT SIGNS SHOWN ABOVE SINGLE AND DOUBLE DOORS SHALL BE CENTERED WITH DOOR(S).
22. REFER TO MECHANICAL EQUIPMENT SCHEDULES FOR ELECTRICAL SCOPE OF WORK IN ADDITION TO WORK SHOWN ON ELECTRICAL DRAWINGS.
23. VERIFY REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH SHOP DRAWING SUBMITTALS PRIOR TO ROUGH-IN AND ORDERING OF ELECTRICAL EQUIPMENT. NOTIFY ENGINEER OF ANY CONFLICT BETWEEN EQUIPMENT SUBMITTALS AND ELECTRICAL DRAWINGS. COORDINATE LOCATIONS OF ALL DISCONNECT SWITCHES, VFD'S AND STARTERS WITH MECHANICAL CONTRACTOR AND VERIFY THAT CODE REQUIRED CLEARANCES ARE PROVIDED.
24. ALL BRANCH CIRCUITING IS SHOWN SCHEMATICALLY. ALL BRANCH CIRCUITS ARE TO BE FIELD ROUTED, WITH BEST ROUTING PATHS DETERMINED IN THE FIELD.
25. CABLE RACEWAYS WITHIN THE CONVERTER BUILDING SHALL BE NON-MAGNETIC METALLIC TYPE. ENCLOSED TRAYS SHALL BE USED IN AREAS WITH HIGH MAGNETIC FIELDS SUCH AS THE REACTOR HALL.
26. JUNCTION BOXES AND ELECTRICAL EQUIPMENT IN CONVERTER BUILDING SHOULD BE OF NONMETALLIC MATERIAL.
27. ROXTEC MULTI CABLE TANSIT (MCT) SHALL BE USED WHEN AT BUILDING ENTRIES AND PASSING THROUGH WALLS OF DIFFERENT EMC ZONES.
28. ALL LIGHT FIXTURES SHALL BE LED WITH A NON-MAGNETIC METALLIC ENCLOSURE UNLESS OTHERWISE SPECIFIED.

GROUNDING GENERAL NOTES:

1. A SEPARATE GROUNDING CONDUCTOR SHALL BE INSTALLED IN ALL CONDUITS AND RACEWAYS.
2. ALL ELECTRICAL EQUIPMENT, LIGHTS, BOXES, RACEWAYS, AND ALL METAL OBJECTS WITHIN THE STATION SHALL BE BONDED TO THE STATIONS GROUNDING SYSTEM.
3. ELECTRICAL EQUIPMENT AND DEVICES SHALL BE BONDED AND GROUNDED ACCORDING TO NEC ARTICLE 250, HITACHI GROUNDING GUIDELINES, SPECIFICATIONS AND DETAILS. WHEN IN CONFLICT USE THE MOST STRINGENT METHOD.
4. PROVIDE A CODE SIZED GREEN EQUIPMENT GROUNDING CONDUCTOR FOR ALL LINE VOLTAGE CIRCUITS, SIZED PROPORTIONALLY FOR CONDUCTORS UPSIZED FOR VOLTAGE DROP.
5. GROUNDING FOR JUNCTION BOXES, CABLE RACEWAYS, AUXILIARY AND CONTROL ROOMS SHALL BE INSTALLED PER HITACHI GROUNDING INSTRUCTIONS.
6. A 4/0 BARE COPPER GROUNDING ELECTRODE SHALL BE BURIED 2' BELOW GRADE TO CREATE A GROUND MESH FOR THE SITE.
7. EACH BUILDING AND LARGE FOUNDATION SHALL BE ENCIRCLED BY A 4/0 PERIMETER ELECTRODE ENCIRCLING THE BUILDING OR FOUNDATION.
8. GROUND RODS SHALL BE COPPER CLAD STEEL. MINIMUM DIAMETER 3/4". DEPTH PER PLANS. ALL GROUND RODS SHALL BE INSTALLED 2' BELOW GRADE.
9. WITHIN THE CONVERTER BUILDING, ALL METALLIC COMPONENTS SHALL BE BONDED TO THE BUILDING RING CONDUCTOR (BRC) LOCATED IN EACH HALL. ALL CABLE TRAYS, FIXTURES, BOXES, DOORS, MECHANICAL CONNECTIONS OR JOINTS REQUIRE A COPPER BONDING STRAP TO MAINTAIN CONDUCTANCE ACROSS DEVICES.
10. A BUILDING RING CONDUCTOR (BRC) SHALL ENCIRCLE THE INTERIOR OF EACH HALL IN THE CONVERTER BUILDING. THE COMMON WALL BETWEEN VALVE HALLS SHALL SHARE A COMMON BOX.
    A. THE BRC SHALL BE A MINIMUM 3/16" BY 1 5/8" COPPER BUS BAR.
    B. THE BRC SHALL BE INSTALLED APPROXIMATELY 1" AFF AT LEAST 1" FROM STEEL WALLS AND ATTACHED WITH AN INSULATOR TO ISOLATE BRC FROM THE STEEL WALLS.
    C. FOR EXTERIOR WALLS THE BRC SHALL BE BONDED WITH A 4/0 COPPER ELECTODE TO THE BUILDING'S PERIMETER ELECTRODE AT INTERVALS NOT EXCEEDING 33'.
    D. FOR INTERIOR WALLS OF CONVERTER BUILDING, THE BRC SHALL BE BONDED WITH A 4/0 COPPER ELECTRODE TO THE BRC ON THE OTHER SIDE OF THE WALL AT INTERVALS NOT EXCEEDING 33'.
11. CONNECTION BETWEEN GROUNDING CONDUCTORS AND APPARATUS/STRUCTURE REQUIREMENTS.
    A. CONNECTIONS BELOW GROUND AND IN CONCRETE SHALL BE EXOTHERMICALLY WELDED.
    B. CONNECTIONS TO MAIN CIRCUIT APPARATUS STEEL STRUCTURES AND GROUND TERMINALS SHALL BE BOLTED WITH TWO-HOLE TINNED COPPER CABLE LUGS. TRANSITION WASHERS SHALL BE USED WHEN CONNECTING TO ALUMINUM GROUND TERMINALS.
    C. BONDING CONNECTIONS TO APPARATUS/STRUCTURES NOT PART OF THE MAIN CIRCUIT (COOLING TOWERS, FENCES, GANTRIES, LIGHTNING TOWERS, BUILDING STEEL STRUCTURES ETC.) CAN BE MADE WITH ONE-HOLE CABLE LUGS IF TWO-HOLE CABLE LUGS ARE NOT SUITABLE FOR THE CONNECTION.
    D. CONNECTIONS TO THE ALUMINUM SHEET IN THE REACTOR HALL SHALL BE MADE WITH ALUMINUM BRACKETS, WELDED TO THE ALUMINUM SHEET. THE SIZE OF THE BRACKET SHALL BE MIN. 100X100X10 MM (4X4X0.4", WIDTH X HEIGHT X THICKNESS), NOTE THAT THE BRACKET NEEDS TO BE LARGE ENOUGH TO FIT A TWO-HOLE CABLE LUG.
    E. ABOVE GROUND CONNECTIONS BETWEEN RISERS SHALL BE MADE WITH C-CLAMPS.
    F. ABOVE GROUND CONNECTIONS BETWEEN RISERS AND COPPER BARS SHALL BE MADE WITH TWO-HOLE CABLE LUGS.
    G. ABOVE GROUND CONNECTIONS BETWEEN COPPER BARS SHALL BE WELDED OR BOLTED WITH TWO BOLTS AND THE BARS SHALL OVERLAP MIN. TWO TIMES THE WIDTH OF THE BAR. THE ONLY EXCEPTION IS FOR PERPENDICULAR CONNECTIONS BETWEEN COPPER BARS (FOR EXAMPLE, CONNECTIONS BETWEEN THE BRC AND FLOOR COPPER BARS). THESE CONNECTIONS SHALL BE WELDED OR BOLTED WITH ONE BOLT AND THE OVERLAP SHALL BE EQUAL TO THE WIDTH OF THE BAR.
12. LIGHTNING TOWERS SHALL BE GROUNDED CONNECTING 2 RISERS ON OPPOSITE SIDES OF THE RISER. ONE OF THE RISERS SHALL BE CONNECTED TO A GROUND ROD NEXT TO THE FOUNDATION. BOTH THE GROUND ROD AND OTHER RISER SHALL BE CONNECTED TO THE SITE'S GROUND MESH.
13. GANTRIES SHALL BE GROUNDED CONNECTING EACH LEG WITH ONE RISER. ONE OF THE RISERS SHALL BE CONNECTED TO A GROUND ROD NEXT TO THE FOUNDATION. BOTH THE GROUND ROD AND OTHER RISER SHALL BE CONNECTED TO THE SITE'S GROUND MESH.
14. FENCE LIGHT POLES, HANDRAILS, AND GUARDRAILS:
    A. A 4/0 PERIMETER ELECTRODE SHALL BE INSTALLED 2' BELOW GRADE AROUND STATION PERIMETER AT OR NEAR PROPERTY LINE AT LEAST 3' FROM FENCE, GUARDRAIL, OR LIGHT POLE, WHICHEVER IS CLOSER.
    B. WITHIN THE PERIMETER FENCE A SECOND PERIMETER ELECTRODE SHALL BE INSTALLED NEAR THE FENCE AS SHOWN IN PLANS.
    C. EVERY LIGHT POLE SHALL BE BONDED TO THE GROUND MESH.
    D. EVERY OTHER FENCE POST SHALL BE BONDED TO THE GROUND MESH.
    E. GUARDRAIL STEEL POST SHALL BE BONDED TO GROUND MESH AT INTERVALS NOT TO EXCEED 33'. IF GUARDRAIL IS NOT CONTINUOUS, EACH SECTION SHALL BE BONDED TO GROUND SEPERATELY.
    F. HANDRAIL STEEL POST SHALL BE BONDED TO GROUND MESH AT INTERVALS NOT TO EXCEED 33'. IF GUARDRAIL IS NOT CONTINUOUS, EACH SECTION SHALL BE BONDED TO GROUND SEPERATELY.
15. REFER TO DRAWINGS E-610.00 TO E-614.00 FOR GROUNDING DETAILS. ADDITIONAL DISCIPLINE SPECIFIC GROUNDING DETAILS ARE INCLUDED IN INDIVIDUAL DISCIPLINES.

SHEET #	SHEET TITLE
T-001.00	COVER SHEET
E-001.00	ELECTRICAL ABBREVIATIONS & GENERAL NOTES
E-002.00	ELECTRICAL ABBREVIATIONS & GENERAL NOTES
E-004.00	ELECTRICAL SYMBOLS
E-005.00	OVERALL SITE PLAN
E-100.00	SITE LIGHTING
E-101.00	SITE LIGHTING PLAN 1 OF 4
E-102.00	SITE LIGHTING PLAN 2 OF 4
E-103.00	SITE LIGHTING PLAN 3 OF 4
E-104.00	SITE LIGHTING PLAN 4 OF 4
E-105.00	XFMR BAY ELECTRICAL PLAN
E-106.00	SITE LIGHTNING PROTECTION PLAN
E-108.00	SITE DUCTBANK PLAN
E-109.00	MVS ENCLOSURE AREA DUCTBANK PLAN
E-121.00	SERVICE BUILDING 1ST FLOOR LIGHTING PLAN
E-122.00	SERVICE BUILDING 2ND FLOOR LIGHTING PLAN
E-123.00	SERVICE BUILDING 1ST FLOOR POWER PLAN
E-124.00	SERVICE BUILDING 2ND FLOOR POWER PLAN
E-125.00	SERVICE BUILDING 1ST FLOOR HVAC POWER PLAN
E-126.00	SERVICE BUILDING 2ND FLOOR HVAC POWER PLAN
E-127.00	SERVICE BUILDING 1ST FLOOR GROUNDING PLAN
E-128.00	SERVICE BUILDING 2ND FLOOR GROUNDING PLAN
E-132.00	SITE GROUNDING PLAN
E-140.00	CONVERTER BUILDING DC HALL LIGHTING PLAN (1 OF 2)
E-141.00	CONVERTER BUILDING DC HALL LIGHTING PLAN (2 OF 2)
E-142.00	CONVERTER BUILDING VALVE HALL LIGHTING PLAN (1 OF 2)
E-143.00	CONVERTER BUILDING VALVE HALL LIGHTING PLAN (2 OF 2)
E-144.00	CONVERTER BUILDING REACTOR HALL LIGHTING PLAN (1 OF 2)
E-145.00	CONVERTER BUILDING REACTOR HALL LIGHTING PLAN (2 OF 2)
E-148.00	CONVERTER BUILDING DC HALL DEVICE POWER PLAN (1 OF 2)
E-149.00	CONVERTER BUILDING DC HALL DEVICE POWER PLAN (2 OF 2)
E-150.00	CONVERTER BUILDING VALVE HALL POWER PLAN (1 OF 2)
E-151.00	CONVERTER BUILDING VALVE HALL POWER PLAN (2 OF 2)
E-152.00	CONVERTER BULDING REACTOR HALL POWER PLAN (1 OF 2)
E-153.00	CONVERTER BULDING REACTOR HALL POWER PLAN (2 OF 2)
E-156.00	CONVERTER BUILDING DC HALL DEVICE GROUNDING PLAN (1 OF 2)
E-157.00	CONVERTER BUILDING DC HALL DEVICE GROUNDING PLAN (2 OF 2)
E-158.00	CONVERTER BUILDING VALVE HALL GROUNDING PLAN (1 OF 2)
E-159.00	CONVERTER BUILDING VALVE HALL GROUNDING PLAN (2 OF 2)
E-160.00	CONVERTER BULDING REACTOR HALL GROUNDING PLAN (1 OF 2)
E-161.00	CONVERTER BULDING REACTOR HALL GROUNDING PLAN (2 OF 2)
E-162.00	TRANSFORMER BAYS GROUNDING PLAN
E-163.00	COOLING AREA WATER TOWER GROUNDING PLAN
E-165.00	CONVERTER AND SERVICE BUILDING ROOF LIGHTNING PROTECTION PLAN
E-166.00	STORAGE ENCLOSURE AND WATER TOWER LIGHTNING PROTECTION PLAN
E-170.00	STORAGE ENCLOSURE LIGHTING PLAN
E-171.00	STORAGE ENCLOSURE POWER PLAN
E-172.00	STORAGE ENCLOSURE HVAC POWER PLAN
E-173.00	STORAGE ENCLOSURE GROUNDING PLAN
E-175.00	MVS & AC RELAY ENCLOSURES LIGHTING PLAN
E-176.00	MVS & AC RELAY ENCLOSURES POWER PLAN
E-177.00	MVS & AC RELAY ENCLOSURES HVAC POWER PLAN
E-178.00	HVAC & MVS & AUXILIARY TRANSFORMER ENCLOSURES GROUNDING PLAN
E-179.00	AC YARD GROUNDING PLAN (1 OF 3)
E-180.00	AC YARD GROUNDING PLAN (2 OF 3)
E-181.00	AC YARD GROUNDING PLAN (3 OF 3)
E-300.00	BUILDING SMALL POWER & LIGHTING SINGLE LINE DIAGRAM
E-301.00	CONVERTER BUILDING MECH. VENT. & FIRE PUMP SINGLE LINE
E-310.00	PANELBOARD SCHEDULES-1
E-311.00	PANELBOARD SCHEDULES-2
E-312.00	PANELBOARD SCHEDULES-3
E-313.00	PANELBOARD SCHEDULES-4
E-330.00	LIGHT FIXTURE SCHEDULE
E-400.00	TYPICAL DETAILS
E-401.00	FARADAY CAGE DETAILS
E-502.00	GROUNDING AND BONDING AT FENCE AND GATE DETAILS
E-510.00	GROUNDING DETAILS
E-511.00	GROUNDING DETAILS
E-600.00	POLE WIRING DETAILS
E-610.00	TYPICAL CONTROL ROOM GROUNDING DETAILS
E-611.00	TYPICAL CONTROL ROOM GROUNDING DETAILS 2
E-612.00	TYPICAL JUNCTION BOX GROUNDING DETIALS
E-613.00	TYPICAL CABLE TRAY GROUNDING DETAILS
E-614.00	TYPICAL CABLE TRAY GROUNDING DETAILS 2
E-615.00	TYPICAL MODULAR COMBI DETAILS
E-616.00	LIGHTING PROTECTION DETAILS
E-617.00	TYPICAL DETAIL 1(AIR TERMINAL)
E-618.00	TYPICAL DETAIL 2 (LIGHTNING PROTECTION GROUNDING)
E-619.00	TYPICAL DETAIL 3 (MISC)
E-620.00	TYPICAL DETAIL 4 (DOOR)
E-621.00	TYPICAL DETAIL 5 (EARTHING)
E-622.00	CONVERTER BUILDING BRC GROUNDING DETAILS
E-630.00	TYPICAL DETAIL 7 (WALL)
E-631.00	TYPICAL DETAIL 8
E-632.00	TYPICAL DETAIL 9
E-633.00	TYPICAL DETAILS 10
E-634.00	GENERATOR TYPICAL DETAIL
E-635.00	TYPICAL DETAILS
E-636.00	TYPICAL DETAILS
E-637.00	LIGHT POLE FOUNDATION & MOUNTING DETAILS
E-638.00	LIGHTING CONTROLLER DETAILS
E-639.00	WALLPACK MOUNTING DETAILS
E-640.00	DUCT BANK & CABLE TRAY SECTION DETAILS 1
E-641.00	DUCT BANK & CABLE TRAY SECTION DETAILS 2
E-642.00	DUCT BANK & CABLE TRAY SECTION DETAILS 3
E-643.00	DUCT BANK & CABLE TRAY SECTION DETAILS 4
E-650.00	MULTIPLE CABLE TRANSIT DETAILS 1
E-651.00	MULTIPLE CABLE TRANSIT DETAILS 2
E-652.00	MULTIPLE CABLE TRANSIT DETAILS 3
E-653.00	MULTIPLE CABLE TRANSIT DETAILS 4
E-654.00	MULTIPLE CABLE TRANSIT DETAILS 5
E-660.00	CABLE & CONDUIT SCHEDULE
E-670.00	CONVENTION & EQUIPMENT SCHEDULE
E-699.00	DISCONNECTOR WITH GROUND SWITCH - GROUNDING

ISSUED FOR PERMIT

WARNING - IT IS A VIOLATION, OF THE NEW YORK STATE EDUCATION LAW, SECTION 7209.2, FOR ANY PERSON, UNLESS SHE OR HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR REGISTERED ARCHITECT, TO ALTER THIS DOCUMENT IN ANY WAY. IF ALTERED, THE ALTERING PERSON SHALL COMPLY WITH THE REQUIREMENTS OF NEW YORK EDUCATION LAW, SECTION 7209.2.

Engineering and Land Surveying, P.C.
370 7th Avenue
SUITE 1604
New York, NY 10001

SOWINSKI SULLIVAN
ARCHITECTURE & ENGINEERING
25 Mohawk Avenue
Sparta, NJ 07871

REV	DESCRIPTION	DRW BY	CHK BY	DATE
B	100% SUBMISSION	E.WATTS	D.DUZAN	12/1/2022
A	INTERIM SUBMISSION	N.WU	D.DUZAN	09/13/22

Kiewit
470 Chestnut Ridge Rd # 2,
Woodcliff Lake, NJ 07677

Hitachi Energy
901 Main Campus Drive
Raleigh, North Carolina 27606

PROJECT

CHPE
Champlain Hudson Power Express

Astoria HVDC Converter Station

31-45 20th Avenue, Astoria, Queens NY 11105
Block #850 - Lot #310 - BIN #4624437

ELECTRICAL ABBREVIATIONS & GENERAL NOTES

Digitally signed by Kevin N. Elwahh
Date: 2022.12.12 10:54:48 -05'00'

DATE	12/12/2022
PROJECT NO	105121
DRAWING BY	N.WU
CHECKED BY	D.DUZAN
DRAWING NO	E-001.00
CADD FILE NO	Autodesk Docs://CHPE Astoria/CH-105-111-08-M3-E-001.rvt

12/21/2022 10:48:33 AM

ELECTRICAL STANDARD ABBREVIATIONS

A AMPS (AMPERES)
AC ABOVE COUNTER
ACC AIR COOLED CONDENSER
ADA AMERICANS WITH DISABILITIES ACT
ADJ ADJUSTABLE
AF AMPS FUSE
AFC ABOVE FINISHED CEILING
AFCI ARC FAULT CIRCUIT INTERRUPTER
AFF ABOVE FINISHED FLOOR
AFG ABOVE FINISHED GRADE
AHJ AUTHORITY HAVING JURISDICTION
AHU AIR HANDLING UNIT
AIC AMPS INTERRUPTING CURRENT
AL ALUMINUM
ALCR AUTOMATIC LOAD CONTROL RELAY
ALT ALTERNATIVE
APPROX APPROXIMATELY
ARC ALUMINUM RIGID CONDUIT
ARCH ARCHITECTURAL
AS AMPS SWITCH
AT AMPS TRIP
ATL ACROSS THE LINE
ATS AUTOMATIC TRANSFER SWITCH
AUX AUXILIARY
AV AUDIO VISUAL
AVG AVERAGE
AWG AMERICAN WIRE GAUGE

B BOILER
BAS BUILDING AUTOMATION SYSTEM
BFF BELOW FINISHED FLOOR
BFG BELOW FINISHED GRADE
BKR BREAKER
BLDG BUILDING
BOS BOTTOM OF STRUCTURE
BRC BONDING RING CONDUCTOR

C CONDUIT, CONTACTOR, CELCIUS
CAT CATEGORY
CATV CABLE TELEVISION
CCTV CLOSED CIRCUIT TELEVISION
CFL COMPACT FLUORESCENT LAMP
CH CHILLER
CKT CIRCUIT
CLG CEILING
CMP COMMUNICATIONS PLENUM CABLE
CMR COMMUNICATIONS RISER CABLE
CMU CONCRETE MASONRY UNIT
COL COLUMN
CONC CONCRETE
COORD COORDINATE
CP CONDENSATE PUMP
CT COOLING TOWER, CURRENT TRANSFORMER
CTR CENTER
CU COPPER
CUH CABINET UNIT HEATER
CVD CUMULATIVE VOLTAGE DROP

D DIMMER
DDC DIRECT DIGITAL CONTROL
DEG DEGREES
DEMO DEMOLISH
DH DEHUMIDIFIER
DIA DIAMETER
DIM DIMENSION
DIV DIVISION
DN DOWN
DPDT DOUBLE-POLE DOUBLE THROW
DS DAYLIGHT SENSOR
DWG DRAWING

E EAST
EBB ELECTRIC BASEBOARD
EC ELECTRICAL CONTRACTOR
EF EXHAUST FAN
EFF EFFICIENCY
EH EXHAUST HOOD
ELEV ELEVATION
ELV ELECTRONIC LOW VOLTAGE
EM EMERGENCY
EMI ELECTROMAGNETIC INTERFERENCE
EMS EMERGENCY MANAGEMENT SYSTEM
EMT ELECTRICAL METALLIC TUBING
EQ EQUAL
EQP EQUIPMENT
ETR EXISTING TO REMAIN
EUH ELECTRIC UNIT HEATER
EWC ELECTRIC WATER COOLER
EXTG EXISTING

F FAHRENHEIT
FACP FIRE ALARM CONTROL PANEL
FBO FURNISHED BY OTHERS
FC FOOTCANDLES
FCA FAULT CURRENT AMPS
FCU FAN COIL UNIT
FD FIRE DAMPER
FF FINISHED FLOOR
FFA FROM FLOOR ABOVE
FFB FROM FLOOR BELOW
FLA FULL LOAD AMPS
FLR FLOOR
FMC FLEXIBLE METAL CONDUIT
FPM FEET PER MINUTE
FPS FEET PER SECOND
FSD FIRE/SMOKE DAMPER
FT FEET
FVNR FULL VOLTAGE NON-REVERSING

G GROUND
GALV GALVANIZED
GC GENERAL CONTRACTOR
GFCI GROUND FAULT CIRCUIT INTERRUPTER
GFR GROUND FAULT RELAY
GND GROUND
GRC GALVANIZED RIGID CONDUIT (STEEL)
GYP GYPSUM BOARD

H HUMIDIFIER
HID HIGH INTENSITY DISCHARGE
HOA HAND-OFF AUTOMATIC
HP HORSE POWER, HEAT PUMP
HT HEAT TRACE
HVAC HEATING VENTILATION AND AIR CONDITIONING
HZ HERTZ

IFH INFRARED HEATER
IG ISOLATED GROUND
IMC INTERMEDIATE METAL CONDUIT

J JUNCTION BOX

K KEYED
KCMIL 1000 CIRCULAR MILS
KK KIRK KEY
KV KILOVOLT
KVA KILOVOLT AMP
KVAR KILOVOLT AMP REACTIVE
KW KILOWATT
KWH KILOWATT-HOUR

LED LIGHT EMITTING DIODE
LF LINEAR FEET
LFMC LIQUID-TIGHT FLEXIBLE METAL CONDUIT
LRA LOCKED ROTOR AMPS

M MOTOR, METER
MAU MAKE-UP AIR UNIT
MAX MAXIMUM
MCA MINIMUM CIRCUIT AMPACITY
MCB MAIN CIRCUIT BREAKER
MCC MOTOR CONTROL CENTER
MCT MULTICABLE TRANSITS
MDP MAIN DISTRIBUTION PANEL
MFR MANUFACTURER
MIN MINIMUM
MISC MISCELLANEOUS
MLO MAIN LUGS ONLY
MOCP MAXIMUM OVERCURRENT PROTECTION
MOD MOTOR OPERATED DAMPER
MSWB MAIN SWITCHBOARD

N NORTH
N/A NOT APPLICABLE
NC NORMALLY CLOSED, NOISE CRITERIA
NEC NATIONAL ELECTRICAL CODE
NERC CIP NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION CRITICAL INFRASTRUCTURE PROTECTION
NF NON-FUSED
NFPA NATIONAL FIRE PROTECTION ASSOCIATION
NIC NOT IN CONTRACT
NL NIGHT LIGHT
NO NORMALLY OPEN, NUMBER
NOM NOMINAL
NTS NOT TO SCALE
NYC NEW YORK CITY

OC ON CENTER
OFCI OWNER FURNISHED CONTRACTOR INSTALLED
OLP OVERLOAD PROTECTION
OS OCCUPANCY SENSOR
OSHA OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

P POLE, PUMP, PILOT LIGHT
PC PHOTOCELL
PDU POWER DISTRIBUTION UNIT
PH PHASE
PLBG PLUMBING
PNLBD PANELBOARD
POE POWER OVER ETHERNET
PROVIDE FURNISH AND INSTALL
PVC POLYVINYL CHLORIDE

QTY QUANTITY

RCP REFLECTED CEILING PLAN
RCPT RECEPTACLE
RE REFERENCE
REF ROOF EXHAUST FAN
REQ REQUIREMENT
REV REVISION
RF RETURN FAN
RLA RUNNING LOAD AMPS
RMC RIGID METAL CONDUIT
RNC RIGID NON-METALLIC CONDUIT
RTU ROOFTOP UNIT

S SOUTH
S/S STAINLESS STEEL
SD SMOKE DAMPER, SMOKE DETECTOR
SF SUPPLY FAN
SIM SIMILAR
SPD SURGE PROTECTION DEVICE
SPDT SINGLE-POLE DOUBLE-THROW
SPEC SPECIFICATION
SPST SINGLE-POLE SINGLE-THROW
SQ SQUARE
SQFT SQUARE FEET
ST SHUNT TRIP
STD STANDARD
SWBD SWITCHBOARD

TBD TO BE DETERMINED
TEMP TEMPERATURE
TFA TO FLOOR ABOVE
TFB TO FLOOR BELOW
TLC COMBINATION TRANSFORMER & LOAD CENTER
TGB TELECOMMUNICATIONS GROUND BAR/BUS
TMGB TELECOM MAIN GROUND BAR/BUS
TR TAMPER-RESISTANT
TV TELEVISION
TVSS TRANSIENT VOLTAGE SURGE SUPPRESSION
TX TRANSFORMER
TYP TYPICAL

U/F UNDERFLOOR
U/G UNDERGROUND
UH UNIT HEATER
UL UNDERWRITERS LABORATORIES
UNO UNLESS NOTED OTHERWISE
UPS UNINTERRUPTED POWER SUPPLY

V VOLTS
VA VOLT-AMPERES
VAV VARIABLE AIR VOLUME
VD VOLTAGE DROP
VDC VOLTAGE DIRECT CURRENT
VFD VARIABLE FREQUENCY DRIVE

W WIRE, WEST
W/ WITH
W/O WITHOUT
WAP WIRELESS ACCESS POINT
WH WATER HEATER
WP WEATHERPROOF
WR WEATHER-RESISTANT

XFMR TRANSFORMER
XP EXPLOSION PROOF

POUNDS OR NUMBER
& AND
@ AT
± PLUS OR MINUS

CODES AND STANDARDS

1. U.L. UNDERWRITERS LABORATORIES - APPLICABLE STANDARDS
2. 2011 NYC ELECTRICAL CODE, BASED ON 2008 NEC WITH AMENDMENTS.
3. NFPA 101 - LIFE SAFETY CODE (2008)
4. NATIONAL ELECTRIC SAFETY CODE (NESC)
5. ANSI/IES RE-1 OFFICE LIGHTING
6. ANSI/RP-7 INDUSTRIAL LIGHTING
7. NFPA 780 - LIGHTNING PROTECTION
8. NFPA 20: STANDARD FOR INSTALLATION OF STATIONARY PUMPS OF FIRE PROTECTION (2019)

ILLUMINATION AREA	TARGET (FC)
OUTDOORS	
Cooling Tower	5
Transformer Bays	5
AC Yard	5
AC Filter	5
Roadways	3
SERVICE BUILDING	
Battery Room A	20
Battery Room B	20
Auxiliary Power Room	20
I/O Room	50
Control Room 1	50
Control Room 2	50
Operator Room	50
UMD Battery	20
Valve Cooling Room	20
Maintenance Storage/Garage	20
MCC Room	20
Climate Room 1	20
Climate Room 2	20
Workshop, Spare Parts Storage	20
CONVERTER BUILDING	
Valve Hall (Positive)	15
Valve Hall (Negative)	15
DC Hall	15
Reactor Hall	15
Outdoor Buildings	
Storage Enclosure (Interior)	10
Storage Enclosure (Exterior)	2
Relay Enclosure	50
MVS Enclosure	20

DEFINITIONS

1. BONDING RING CONDUCTOR (BRC) - A COPPER BUS BAR THAT ENCIRCLES ROOMS WITHIN CONVERTER BUILDING FOR BONDING EQUIPMENT, BUILDING, AND MISC METALLIC COMPONENTS TO WITHIN THE BUILDING.
2. GROUND ELECTRODES - HORIZONTAL CONDUCTORS MADE OF COPPER, BURIED AT A DEPTH OF 2' (0.61m).
3. GROUND MESH - GROUND ELECTRODES CROSSING AT 90 DEGREE ANGLE AND BONDED AT EACH INTERSECTION.
4. PERIMETER ELECTRODES - HORIZONTAL CONDUCTORS MADE OF COPPER, ENCIRCLING BUILDINGS AND LARGE FOUNDATIONS AT A DISTANCE OF 3' 4" (1m) AND BURIED AT A DEPTH OF 2' (0.61m).

LIGHTING NOTES

1. THE FACILITY IS A UTILITY POWER PLANT. LIGHTING LEVELS FOLLOW HITCACHI REQUIREMENTS FOR MAINTENANCE AND SECURITY. SEE TABLE FOR TARGET VALUES.
2. OCCUPANCY SENSORS FOR INTERIOR LIGHTING SHALL INCLUDE MANUAL CONTROLS TO TURN LIGHTS OFF.
3. ALL LIGHTING SHALL BE LED.
4. OUTDOOR LIGHTING SHALL BE DARK SKY COMPLIANT:
   STORAGE ENCLOSURE 0.39W/SQ.FT.
   RELAY ENCLOSURE 0.35W/SQ.FT.
   MVS ENCLOSURE XX.W/SQ.FT.
   CONVERTER BUILDINGS XX.W/SQ.FT.
   SERVICE BUILDING XX.W/SQ.FT.

CABLE NAMING CONVENTION:
CABLE DESIGNATION - CABLE CLASSIFICATION NUMBER - CABLE DISCIPLINE - BUILDING NUMBER (WHERE CABLE STARTS) - CABLE NUMBER (3 DIGITS)

CONDUIT NAMING CONVENTION:
CONDUIT DESIGNATION - CABLE CLASSIFICATION NUMBER - CABLE DISCIPLINE - BUILDING NUMBER (WHERE CABLE STARTS) - CABLE NUMBER (3 DIGITS)

		Example	CA-K1-P-111-100
			C-K1-P-111-100

DESIGNATION		CABLE CLASSIFICATION NUMBER	CABLE TYPE	CABLE DISCIPLINE		BUILDING NUMBER			Cable Number
CABLE	CA	K0	POWER CABLE > 1000V	P	POWER	020	SITE WORKS/COMMON		STARTING FROM 100
CONDUIT	C	K1	POWER CABLE < 1000V	L	LIGHTING	031	AC AREA		
CABLE TRAY	T	K2	CONTROL AND SIGNAL CABLES	M	MECHANICAL	051	TRANSFORMER AREA		
		K3	CURRENT AND VOLTAGE MEASURING CABLES	PL	PLUMBING	071	VALVE COOLING AREA		
		K5	FIBER OPTIC CABLES	C	CONTROL	081	CONVERTER BUILDING		
		K6	COMMUNICATION CABLES WITHIN THE CONTROL ROOM	CM	COMMUNICATION	111	SERVICE BUILDING		
				HE	HITACHI	130	STORAGE BUILDING		
				F	FIRE ALARM	141	AUXILIARY BUILDINGS	INCLUDING RELAYS, MVS BLDG, AND DIESEL GENERATOR	
				S	SECURITY				

EQUIPMENT NAMING CONVENTION:
EQUIPMENT ABBR. - BUILDING NUMBER - HE/KIEWIT REF NUMBER(IF AVAILABLE)

EXAMPLE		EQUIPMENT ABBREVIATION		BUILDING NUMBER		
	SWBD-111-X3.N2	SWBD	SWITCHBOARD	020	SITE WORKS/COMMON	
		SWGR	SWITCHGEAR	031	AC AREA	
		DS	DISCONNECT SWITCH	051	TRANSFORMER AREA	
		PNL	PANELBOARD	071	VALVE COOLING AREA	
		ATS	AUTOMATIC TRANSFER SWITCH	081	CONVERTER BUILDING	
		XFMR	TRANSFORMER	111	SERVICE BUILDING	
		LCC	LIGHTING CONTROL CABINET	130	STORAGE BUILDING	
		LC	LOAD CENTER	141	AUXILIARY BUILDINGS	INCLUDING RELAYS, MVS BLDG, AND DIESEL GENERATOR
		GEN	GENERATOR			
		FP	FIRE PUMP			

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ISSUED FOR PERMIT

K Engineering and Land Surveying, P.C.
370 7th Avenue
SUITE 1604
New York, NY 10001

SOWINSKI SULLIVAN ARCHITECTURE+ENGINEERING
25 Mohawk Avenue
Sparta, NJ 07871

REV	DESCRIPTION	DRW BY	CHK BY	DATE
B	100% SUBMISSION	E.WATTS	D.DUZAN	12/12/22
A	INTERIM SUBMISSION	N.WU	D.DUZAN	09/13/22

Kiewit
470 Chestnut Ridge Rd # 2,
Woodcliff Lake, NJ 07677

Hitachi Energy
901 Main Campus Drive
Raleigh, North Carolina 27606

PROJECT

CHPE Champlain Hudson Power Express

Astoria HVDC Converter Station

31-45 20th Avenue, Astoria, Queens NY 11105
Block #850 - Lot #310 - BIN #4624437

ELECTRICAL ABBREVIATIONS & GENERAL NOTES

STATE OF NEW YORK · HESHAM H. ELBARAWY · LICENSED PROFESSIONAL ENGINEER · 091921

Digitally signed by Hesham.Elbarawy
Date: 2022.12.22 10:57:01 -05'00'

DATE	12/12/2022
PROJECT NO	105121
DRAWING BY	N.WU
CHECKED BY	D.DUZAN
DRAWING NO	E-002.00
CADD FILE NO	Autodesk Docs://CHPE Astoria/CHA-KIE-111-00-M3-E-001.rvt

ANNOTATION

- CONNECTION POINT OF NEW WORK TO EXISTING
- CONTINUATION MARK
- 1 / E100 — DETAIL REFERENCE. UPPER LINE INDICATES DETAIL NUMBER. LOWER LINE INDICATES SHEET NUMBER.
- (1) — PLAN NOTE CALLOUT
- 1 — REVISION CALLOUT
- 146 — MECHANICAL EQUIPMENT DESIGNATION

ELECTRICAL EQUIPMENT

- ELECTRICAL PANELBOARD - SURFACE MOUNT
- ELECTRICAL PANELBOARD - FLUSH MOUNT
- ELECTRICAL SWITCHBOARD OR MOTOR CONTROL CENTER
- ELECTRICAL DISTRIBUTION TRANSFORMER
- ELECTRICAL LOAD CENTER, SINGLE PHASE
- 100/3/70 — DISCONNECT SWITCH, WHERE DESIGNATION EXAMPLE "100/3/10" DENOTES "SWITCH AMPACITY/POLES/FUSE AMPACITY" IN LIEU OF FUSE AMPACITY, NF=NON-FUSED, OR CB=CIRCUIT BREAKER (ENCLOSED).
- 30/3/20/1 — COMBINATION DISCONNECT SWITCH AND MOTION STARTER, WHERE DESIGNATION EXAMPLE "30/3/20/1" DENOTES "SWITCH AMPACITY/POLES/FUSE AMPACITY/NEMA STARTER SIZE". IN LIEU OF FUSE AMPACITY, NF=NON-FUSED, OR CB=CIRCUIT BREAKER (ENCLOSED) MCP = MOTOR CIRCUIT PROTECTOR
- 1,3P — MOTOR STARTER, WHERE DESIGNATION EXAMPLE "1,3P" DENOTES "NEMA STARTER SIZE, POLLS"
- GROUNDING BAR
- VFD — VARIABLE FREQUENCY DRIVE

CIRCUITING AND CONDUIT

CIRCUIT HOMERUN: PNL-111-X3.N2.1-10,12,14
- PANELBOARD NAME
- BREAKER NUMBER(S). COMMAS INDICATE A COMMON MULTIPLE POLE CIRCUIT BREAKER.

- CONDUIT - ABOVE GROUND
- CONDUIT - UNDERGROUND/UNDERSLAB
- CONDUIT - CONTROL WIRING
- CONDUIT CAP
- CONDUIT TURNING DOWN
- CONDUIT TURNING UP
- CONNECTION OR TERMINATION POINT
- STINGER

WIRING DEVICES

- JUNCTION BOX - ROUND
- JUNCTION BOX - SQUARE
- MULTI-SERVICE FLOORBOX
- POKE-THRU DEVICE
- MULTI-OUTLET SURFACE RACEWAY

GENERAL RECEPTACLE TYPES:
- SIMPLEX - WALL MOUNTED, NEMA 5-20R UNO
- DUPLEX - WAL MOUNTED, NEMA 5-20R UNO
- DOUBLE DUPLEX - WALL MOUNTED, NEMA 5-20R UNO
- SPECIAL TYPE - WALL MOUNTED, NEMA TYPE AS NOTED
- TWISTLOCK - WALL MOUNTED, NEMA TYPE AS NOTED
- WELDING RECEPTACLE WITH DISCONNECT SWITCH
- DUPLEX - WALL MOUNTED, NEMA 6-20R UNO
- PC — COMPUTER DUPLEX - WALL MOUNTED, NEMA 5-20R UNO

VARIATIONS OF GENERAL RECEPTACLE TYPES:
(NOTE: VARIATIONS MAY BE COMBINED)
- WALL MOUNTED
- RECEPTACLE INSTALLED IN FLOORBOX
- MC — MODULAR COMBI - WALL MOUNTED

GFCI — RECEPTACLE DESIGNATIONS ARE AS FOLLOWS:
- AC - ABOVE COUNTER, 6" ABOVE COUNTER OR BACKSPLASH
- E - EMERGENCY POWER
- GFCI - GROUND FAULT CIRCUIT INTERRUPTER TYPE
- IG - ISOLATED GROUND
- S - SWITCHED
- TR - TAMPER-RESISTANT
- WP - WEATHERPROOF COVER
- WR - WEATHER-RESISTANT
- XP - EXPLOSION-PROOF

- PUSHBUTTON CONTROL SYSTEM - MOMENTARY
- PUSHBUTTON CONTROL STATION - HAND-OFF-AUTO, UP/STOP/DOWN, OR FORWARD/STOP/REVERSE
- EMERGENCY SHUTOFF MUSHROOM-TYPE PUSHBUTTON
- SINGLE POLE SINGLE THROW (SPST) WALL SWITCH
- 3 — WALL SWITCH DESIGNATIONS ARE AS FOLLOWS:
  - a - LOWER CASE LETTERS USED TO DIFFERENTIATE SWITCHES IN SPACES WITH MULTI-LEVEL SWITCHING SCHEMES
  - 2 - TWO POLE
  - 3 - THREE-WAY
  - 4 - FOUR-WAY
  - D - DIMMER
  - K - KEYED
  - LV - LOW VOLTAGE
  - MS - MOTOR RATED
  - OS - OCCUPANCY SENSOR (REFER TO OCCUPANCY SENSOR SCHEDULE)
  - P - PILOT LIGHT
  - WP - WEATHERPROOF COVER
  - WR - WEATHER-RESISTANT
  - XP - EXPLOSION-PROOF
- A — OCCUPANCY SENSOR - CEILING MOUNT, 360 DEGREE COVERAGE (REFER TO OCCUPANCY SENSOR SCHEDULE)
- A — OCCUPANCY SENSOR - CEILING MOUNT, AISLE COVERAGE (REFER TO OCCUPANCY SENSOR SCHEDULE)
- A — OCCUPANCY SENSOR - ADJUSTABLE CEILING OR WALL MOUNT (REFER TO OCCUPANCY SENSOR SCHEDULE)
- P — OCCUPANCY SENSOR POWER PACK (REFER TO OCCUPANCY SENSOR SCHEDULE)
- RC# — ROOM CONTROLLER (REFER TO OCCUPANCY SENSOR SCHEDULE) # MEANS NUMBER OF RELAYS
- DRC# — DIMMING ROOM CONTROL (REFER TO OCCUPANCY SENSOR SCHEDULE) # MEANS NUMBER OF RELAYS
- C — CONTACTOR
- PC — PHOTOCELL
- TS — TIMESWITCH
- DISCONNECT SWITCH

LIGHTING

A / NL a — LIGHT FIXTURE DESIGNATIONS:
"A" - FIXTURE TYPE (SEE LIGHT FIXTURE SCHEDULE)
NL - NIGHT LIGHT
"a" - LABEL OF SWITCH OR LIGHTING CONTROL ZONE CONTROLLING FIXTURE

- TROFFER LIGHT FIXTURE (RECESSED, SURFACE OR PENDANT)
- LINEAR STRIP FIXTURE
- DOWNLIGHT FIXTURE
- WALL WASHER FIXTURE
- WALL MOUNTED FIXTURE
- EXTERIOR POLE MOUNTED FIXTURE
- STANCHION MOUNTED FIXTURE
- FLOODLIGHT
- LIGHTING TRACK WITH TRACK HEADS
- OUTDOOR LIGHTING CONTROL CABINET

- FIXTURE SUPPLIED BY EMERGENCY POWER SOURCE (EMERGENCY BATTERY PACK, INVERTER, GENERATOR, UPS, ETC.)
- LINEAR STRIP FIXTURE
- DOWNLIGHT FIXTURE
- WALL WASHER FIXTURE
- WALL MOUNTED FIXTURE
- EXIT SIGN - CEILING MOUNT, ARROWS AND FACES AS INDICATED
- EXIT SIGN - WALL MOUNT, ARROWS AND FACES AS INDICATED
- COMBINATION EMERGENCY LIGHTING UNIT AND EXIT SIGN - WALL MOUNT, ARROWS AND FACES AS INDICATED
- EMERGENCY LIGHTING UNIT - CEILING MOUNTED - E1
- EMERGENCY LIGHTING UNIT - REMOTE HEADS - E2
- EMERGENCY LIGHTING UNIT - WALL MOUNTED - E3

ONE-LINE DIAGRAM

- 100A 3P NEMA 3R — NON-FUSED DISCONNECT SWITCH. SWITCH AMPACITY, NUMBER OF POLES AND ENCLOSURE RATINGS AS INDICATED
- 100AS 3P 70AF NEMA 3R — FUSED DISCONNECT SWITCH SWITCH AMPACITY, NUMBER OF POLES, FUSE AMPACITY AND ENCLOSURE RATING AS INDICATED
- 250AF 3P 225AT NEMA 3R — CIRCUIT BREAKER FRAME AMPACITY, NUMBER OF POLES, TRIP RATING/SETTING AND ENCLOSURE RATING AS INDICATED
- 100AS 3P 80AF NEMA 3 NEMA 3R — COMBINATION STARTER/FUSED DISCONNECT. SWITCH AMPACITY, NUMBER OF POLES, FUSE AMPACITY, STARTER RATING AND ENCLOSURE RATING AS INDICATED
- 150AF 3P 90AT NEMA 3 NEMA 3R — COMBINATION STARTER/CIRCUIT BREAKER BREAKER FRAME AMPACITY, NUMBER OF POLES, BREAKER TRIP RATING/SETTING, STARTER RATING AND ENCLOSURE RATING AS INDICATED
- VFD — VARIABLE FREQUENCY DRIVE
- 1Z-LVD-LPL-111 — PANELBOARD NAME AS INDICATED
- 104 — FEEDER TYPE (REFER TO FEEDER SCHEDULE)
- DIGITAL VOLTMETER AMMETER — DIGITAL METER
- GFR — GROUND FAULT RELAY
- KK — KIRK KEY INTERLOCK
- ST — SHUNT TRIP

- TX1 75KVA 480V.3PH.3W 208Y/120V.3DIA., 4W PAD MOUNTED — TRANSFORMER, WITH NAME, KVA RATING, PRIMARY VOLTAGE, SECONDARY VOLTAGE AND MOUNTING AS INDICATED
- TX1 75KVA 480V.3PH.3W 208Y/120V.3DIA., 4W K-13 PAD MOUNTED — SHIELDED TRANSFORMER, WITH NAME, KVA RATING, PRIMARY VOLTAGE, SECONDARY VOLTAGE, K-RATING AND MOUNTING AS INDICATED
- GENERATOR 150EKW/187.5KVA 480Y/277V,3PH,4W — GENERATOR, NON-SEPARATELY DERIVED SOURCE. LOAD CAPACITY RATINGS, VOLTAGE RATING AND INTEGRAL CIRCUIT BREAKER RATINGS AS INDICATED.
- GENERATOR 150EKW/187.5KVA 480Y/277V,3PH,4W — GENERATOR, SEPARATELY DERIVED SOURCE, LOAD CAPACITY RATINGS, VOLTAGE RATING AND INTEGRAL CIRCUIT BREAKER RATINGS AS INDICATED.
- ATS-1 200A 3P — AUTOMATIC TRANSFER SWITCH. NAME, AMPACITY AND NUMBER OF POLES AS INDICATED.
- M — MOTOR
- DH-1 20KW — ELECTRIC HEATING LOAD
- 5 HP CWP-1 — MOTOR. HORSEPOWER AND ASSOCIATED EQUIPMENT AS INDICATED.
- NORMALLY CLOSED CONTACT (NC)
- NORMALLY OPEN CONTACT (NO)
- CURRENT TRANSFORMER
- GROUND CONNECTION
- GROUND ROD
- SPD — SURGE PROTECTION DEVICE
- 10 KVA OWNER EQUIP. — BLOCK LOAD (KVA OR KW)

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Engineering and Land Surveying, P.C.
370 7th Avenue
SUITE 1604
New York, NY 10001

SOWINSKI SULLIVAN ARCHITECTURE & ENGINEERING
25 Mohawk Avenue
Sparta, NJ 07871

REV	DESCRIPTION	DRW BY	CHK BY	DATE
B	100% SUBMISSION	S.KILFEATHER	D.DUZAN	12/22/22
A	INTERIM SUBMISSION	N.WU	D.DUZAN	09/13/22

Kiewit
470 Chestnut Ridge Rd # 2,
Woodcliff Lake, NJ 07677

Hitachi Energy
901 Main Campus Drive
Raleigh, North Carolina 27606

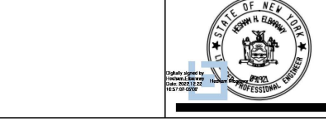
PROJECT

CHPE Champlain Hudson Power Express

Astoria HVDC Converter Station

31-45 20th Avenue, Astoria, Queens NY 11105
Block #850 - Lot #310 - BIN #4624437

ELECTRICAL SYMBOLS



DATE	12/12/2022
PROJECT NO	105121
DRAWING BY	N.WU
CHECKED BY	D.DUZAN
DRAWING NO	E-004.00
CADD FILE NO	Autodesk Docs://CHPE Astoria/CH-105-111-00-M3-E-001.rvt

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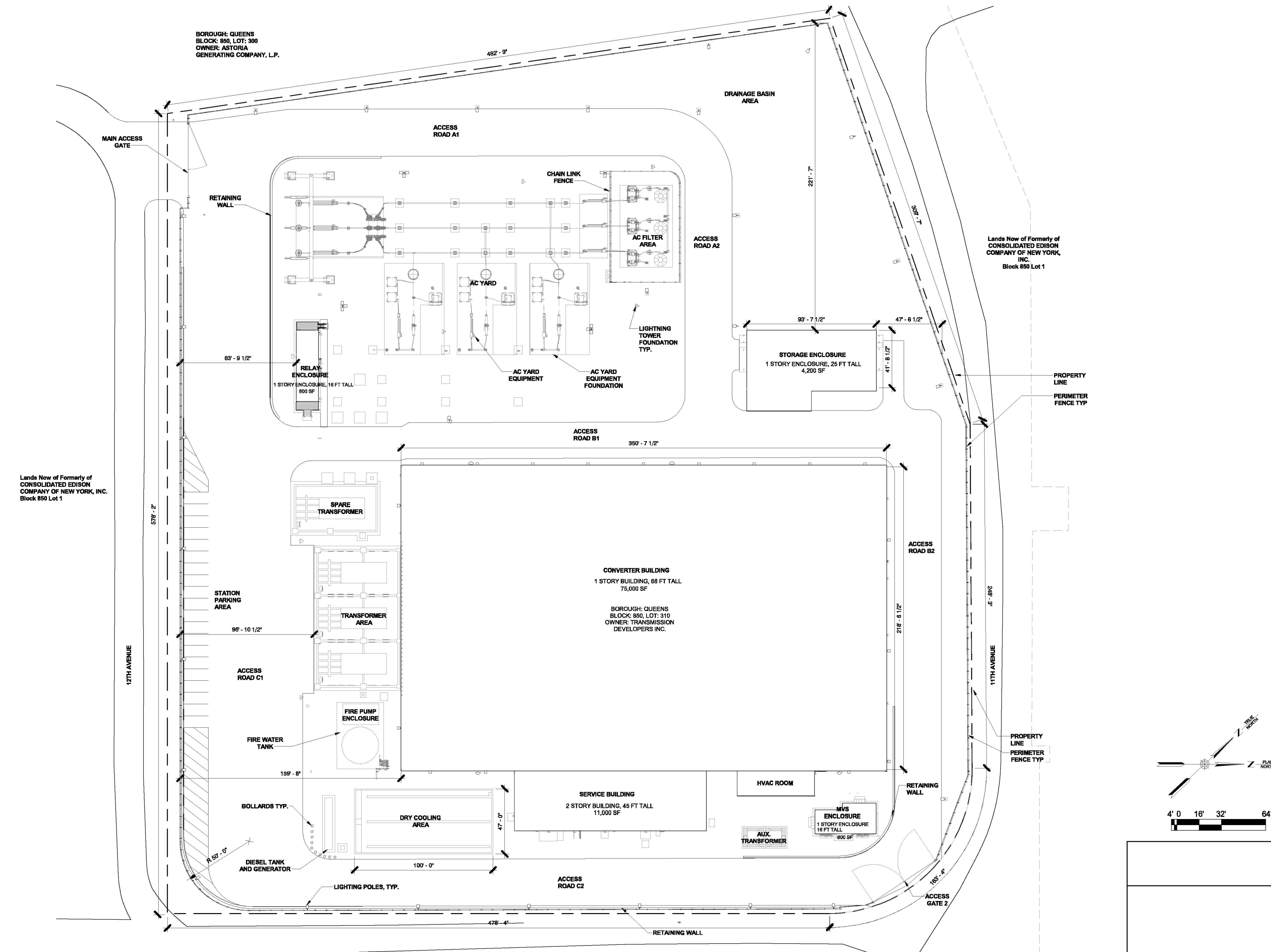
BOROUGH: QUEENS
BLOCK: 850, LOT: 300
OWNER: ASTORIA
GENERATING COMPANY, L.P.
482' - 9"
DRAINAGE BASIN
AREA
MAIN ACCESS
GATE
ACCESS
ROAD A1
CHAIN LINK
FENCE
RETAINING
WALL
AC FILTER
AREA
ACCESS
ROAD A2
AC YARD
221' - 7"
Lands Now of Formerly of
CONSOLIDATED EDISON
COMPANY OF NEW YORK,
INC.
Block 850 Lot 1
LIGHTNING
TOWER
FOUNDATION
TYP.
93' - 7 1/2"
47' - 6 1/2"
83' - 9 1/2"
RELAY
ENCLOSURE
1 STORY ENCLOSURE, 16 FT TALL
800 SF
STORAGE ENCLOSURE
1 STORY ENCLOSURE, 25 FT TALL
4,200 SF
41' - 6 1/2"
AC YARD
EQUIPMENT
AC YARD
EQUIPMENT
FOUNDATION
PROPERTY
LINE
PERIMETER
FENCE TYP
ACCESS
ROAD B1
350' - 7 1/2"
Lands Now of Formerly of
CONSOLIDATED EDISON
COMPANY OF NEW YORK, INC.
Block 850 Lot 1
SPARE
TRANSFORMER
578' - 2"
ACCESS
ROAD B2
CONVERTER BUILDING
1 STORY BUILDING, 68 FT TALL
75,000 SF
BOROUGH: QUEENS
BLOCK: 850, LOT: 310
OWNER: TRANSMISSION
DEVELOPERS INC.
STATION
PARKING
AREA
98' - 10 1/2"
TRANSFORMER
AREA
218' - 6 1/2"
249' - 3"
12TH AVENUE
11TH AVENUE
ACCESS
ROAD C1
FIRE PUMP
ENCLOSURE
FIRE WATER
TANK
PROPERTY
LINE
PERIMETER
FENCE TYP
159' - 8"
SERVICE BUILDING
2 STORY BUILDING, 45 FT TALL
11,000 SF
HVAC ROOM
RETAINING
WALL
BOLLARDS TYP.
DRY COOLING
AREA
47' - 0"
MVS
ENCLOSURE
1 STORY ENCLOSURE
16 FT TALL
800 SF
AUX.
TRANSFORMER
R 50' - 0"
DIESEL TANK
AND GENERATOR
100' - 0"
ACCESS
ROAD C2
LIGHTING POLES, TYP.
165' - 4"
ACCESS
GATE 2
476' - 4"
RETAINING WALL
TRUE
NORTH
PLAN
NORTH
4' 0
16'
32'
64'

Lands Now of Formerly of
CONSOLIDATED EDISON
COMPANY OF NEW YORK,
INC.
Block 850 Lot 1

1
E-005.00
SITE OVERALL PLAN
1/32" = 1'-0"

WARNING - IT IS A VIOLATION, OF THE NEW YORK STATE EDUCATION LAW, SECTION 7209.2, FOR ANY PERSON, UNLESS SHE OR HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR REGISTERED ARCHITECT, TO ALTER THIS DOCUMENT IN ANY WAY. IF ALTERED, THE ALTERING PERSON SHALL COMPLY WITH THE REQUIREMENTS OF NEW YORK EDUCATION LAW, SECTION 7209.2.

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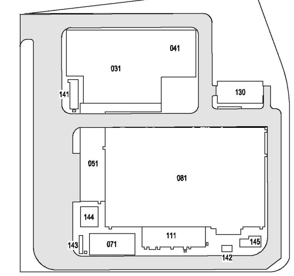


KEY PLAN
N.T.S.

PLAN NORTH

Engineering and Land Surveying, P.C.
370 7th Avenue
SUITE 1604
New York, NY 10001

SOWINSKI SULLIVAN
ARCHITECTURE+ENGINEERING
25 Mohawk Avenue
Sparta, NJ 07871

REV	DESCRIPTION	DRW BY	CHK BY	DATE
A	100% SUBMISSION	E.WATTS	D.DUZAN	12/12/2022

Kiewit
470 Chestnut Ridge Rd # 2,
Woodcliff Lake, NJ 07677

Hitachi Energy
901 Main Campus Drive
Raleigh, North Carolina 27606

PROJECT
CHPE
Champlain Hudson Power Express

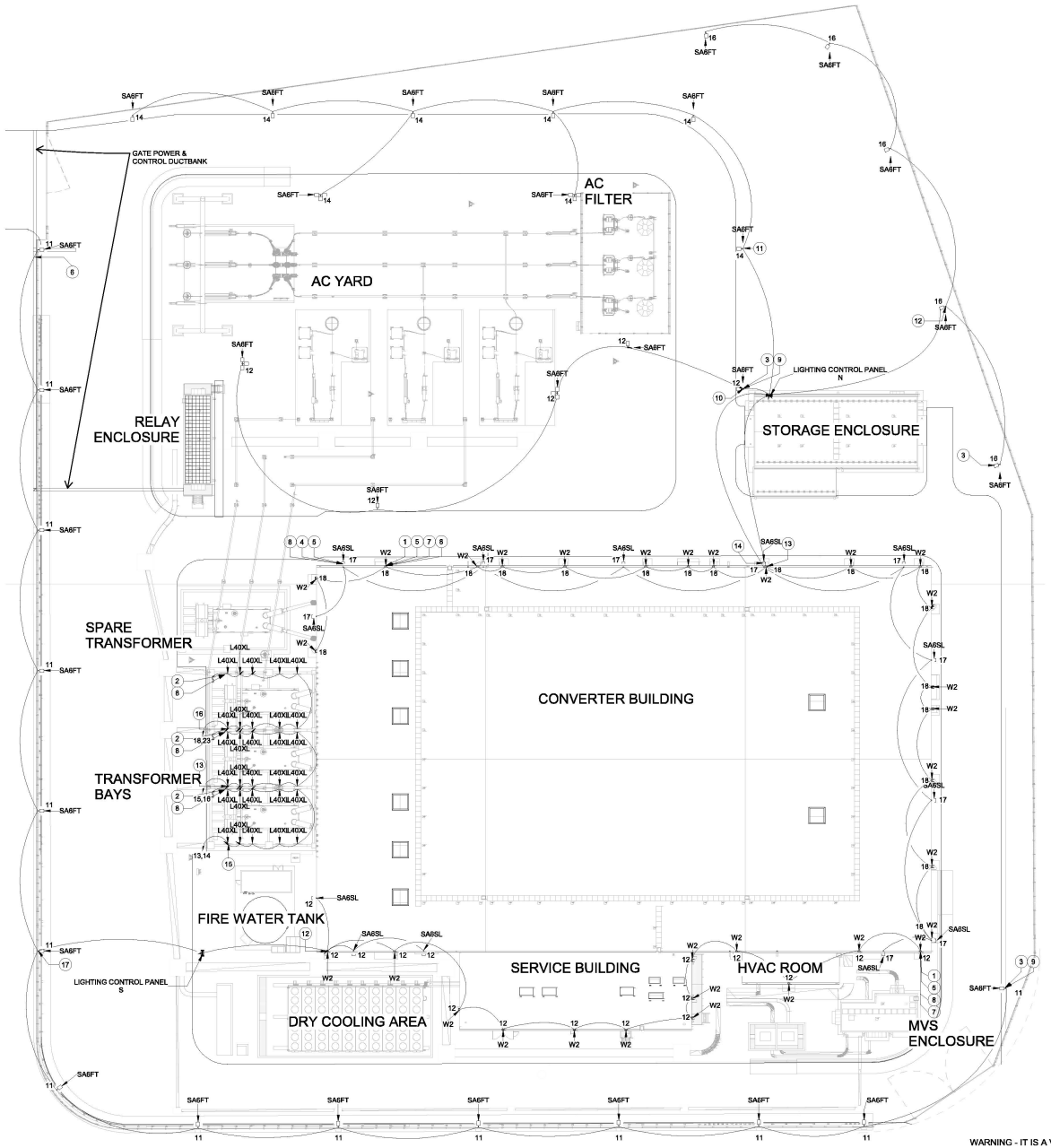
Astoria HVDC Converter Station

31-45 20th Avenue, Astoria, Queens NY 11105
Block #850 - Lot #310 - BIN #4624437

OVERALL SITE PLAN

STATE OF NEW YORK
HESHAM H. ELGHAMRY
PROFESSIONAL ENGINEER

DATE	12/12/2022
PROJECT NO	105121
DRAWING BY	Author
CHECKED BY	Designer
DRAWING NO	E-005.00
CADD FILE NO	



1 SITE LIGHTING PLAN
E-100.00 1" = 30'-0"

ELECTRICAL GENERAL NOTES

1. REFER TO SHEET E-001.00 FOR GENERAL NOTES.
2. REFER TO SHEET E-100.00 FOR OVERALL SITE LIGHTING PLAN.
3. REFER TO SHEET E-330.00 FOR LIGHT FIXTURE SCHEDULE.

ELECTRICAL KEYNOTES

1 EMERGENCY EXIT WALL PACKS TO BE MOUNTED 1' ABOVE DOOR FRAME.
2 TRANSFORMER BAY LIGHTS TO BE MOUNTED 20' AND 30' AFF TO BAY SIDES.
3 AREA LIGHTING FIXTURES TO BE MOUNTED 40' AFF ON POLES.
4 AREA LIGHTING FIXTURES TO BE MOUNTED 40' AFF ON BUILDING WALLS.
5 EXTERIOR BUILDING LIGHTING TO BE CONNECTED USING CONDUIT ATTACHED TO BUILDING EXTERIOR.
6 HYDROELECTRICALLY ACTUATED SLIDING SECURITY GATE. POWER SHALL BE FED FROM THE RELAY BUILDING.
7 EMERGENCY LIGHTING TO BE INSTALLED ABOVE THE EXITS AND TO BE POWERED BY AN EMERGENCY CIRCUIT.
8 WEATHERPROOF EXTERIOR PHOTOCELL FOR CONTROL OF EXTERIOR BUILDING-MOUNTED LIGHTING. PROVIDE WEATHERPROOF JUNCTION BOX MOUNTED TO EXTERIOR FACADE APPROXIMATELY 12" BELOW EAVE HEIGHT. MOUNT PHOTOCELL TO JUNCTION BOX AND AIM NORTH. COORDINATE FINAL LOCATION WITH OTHER DISCIPLINES TO PREVENT OBSTRUCTIONS TO PHOTOCELL SENSOR LINE OF SIGHT IN THE IMMEDIATE VICINITY. REFER TO DETAIL 2 THIS SHEET FOR MORE INFORMATION.
9 LIGHTS TO BE PLACED AT THE EDGE OF THE ACCESS ROAD AND MOUNTED ON RETAINING WALL WHEREVER POSSIBLE.
10 2#4+#8G IN 1" RMC FROM HOMERUN TO LAST FIXTURE.
11 2#2+#8G IN 1" RMC FROM HOMERUN TO LAST FIXTURE.
12 2#8+#8G IN 3/4" RMC FROM HOMERUN TO LAST FIXTURE.
13 2#10+#10G IN 3/4" RMC FROM HOMERUN TO LAST FIXTURE.
14 2#4+#8G IN 1" RMC FROM HOMERUN TO FIRST FIXTURE, THEN 2#6+#8G TO LAST FIXTURE.
15 2#10+#10G IN 3/4" RMC FROM HOMERUN TO FIRST FIXTURE, THEN 2#12+#10G TO LAST FIXTURE.
16 2#8+#8G IN 3/4" RMC FROM HOMERUN TO FIRST FIXTURE, THEN 2#12+#8G TO LAST FIXTURE.
17 2#1+#6G IN 1-1/4" RMC FROM HOMERUN TO LAST FIXTURE.

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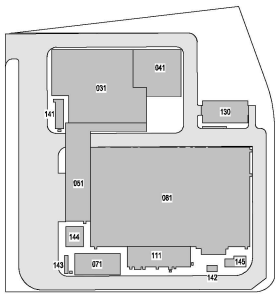


KEY PLAN N.T.S.

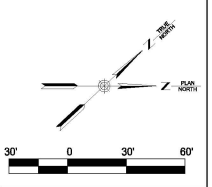
Engineering and Land Surveying, P.C.
370 7th Avenue
SUITE 1604
New York, NY 10001

SOWINSKI SULLIVAN
ARCHITECTURE ENGINEERING
25 Mohawk Avenue
Sparta, NJ 07871

REV	DESCRIPTION	DRW BY	CHK BY	DATE
B	100% SUBMISSION	E.WATTS	D.DUZAN	12/12/2022
A	INTERIM SUBMISSION	N.WU	D.DUZAN	06/13/2022

Kiewit
470 Chestnut Ridge Rd # 2,
Woodcliff Lake, NJ 07677

Hitachi Energy
901 Main Campus Drive
Raleigh, North Carolina 27606



PROJECT

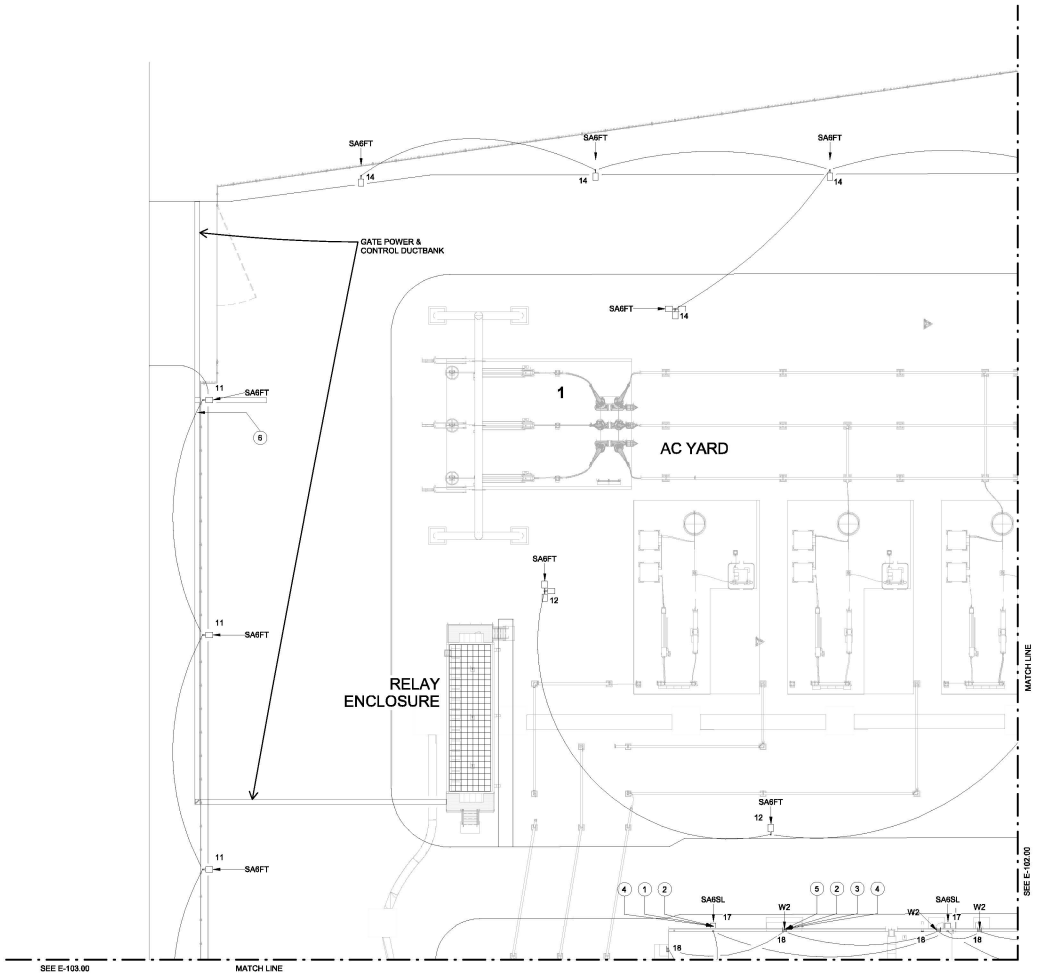
CHPE Champlain Hudson Power Express

Astoria HVDC Converter Station
31-45 20th Avenue, Astoria, Queens NY 11105
Block #850 - Lot #310 - BIN #4624437

SITE LIGHTING PLAN

DATE	12/12/2022
PROJECT NO	105121
DRAWING BY	E.WATTS
CHECKED BY	D.DUZAN
DRAWING NO	E-100.00
CADD FILE NO	Autodesk Docs://CHPE Astoria/CH-105-DS-08-M-E-001.rvt

12/21/2022 11:37:29 AM



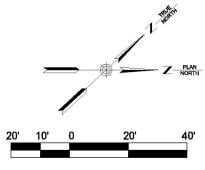
1 E-101.00 SITE LIGHTING - 1 OF 4
1" = 20'-0"

ELECTRICAL GENERAL NOTES

1. REFER TO SHEET E-001.00 FOR GENERAL NOTES.
2. REFER TO SHEET E-100.00 FOR OVERALL SITE LIGHTING PLAN.
3. REFER TO SHEET E-330.00 FOR LIGHT FIXTURE SCHEDULE.

ELECTRICAL KEYNOTES

1 AREA LIGHTING FIXTURES TO BE MOUNTED 40' AFF ON BUILDING WALLS.
2 EXTERIOR BUILDING LIGHTING TO BE CONNECTED USING CONDUIT ATTACHED TO BUILDING EXTERIOR.
3 EMERGENCY LIGHTING TO BE INSTALLED ABOVE THE EXITS AND TO BE POWERED BY AN EMERGENCY CIRCUIT.
4 WEATHERPROOF EXTERIOR PHOTOCELL FOR CONTROL OF EXTERIOR BUILDING-MOUNTED LIGHTING. PROVIDE WEATHERPROOF JUNCTION BOX MOUNTED TO EXTERIOR FACADE APPROXIMATELY 12" BELOW EAVE HEIGHT. MOUNT PHOTOCELL TO JUNCTION BOX AND AIM NORTH. COORDINATE FINAL LOCATION WITH OTHER DISCIPLINES TO PREVENT OBSTRUCTIONS TO PHOTOCELL SENSOR LINE OF SIGHT IN THE IMMEDIATE VICINITY. REFER TO DETAIL 2 THIS SHEET FOR MORE INFORMATION.
5 EMERGENCY EXIT WALL PACKS TO BE MOUNTED 1' ABOVE DOOR FRAME.
6 HYDROELECTRICALLY ACTUATED SLIDING SECURITY GATE. POWER SHALL BE FED FROM THE RELAY BUILDING.



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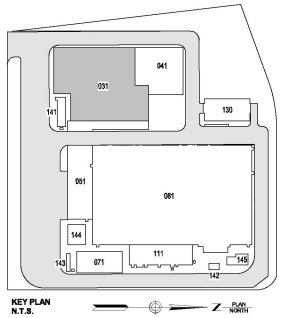


Engineering and Land Surveying, P.C.
370 7th Avenue
SUITE 1604
New York, NY 10001

SOWINSKI SULLIVAN
ARCHITECTURE & ENGINEERING
25 Mohawk Avenue
Sparta, NJ 07871

REV	DESCRIPTION	DRW BY	CHK BY	DATE
B	100% SUBMISSION	E.WATTS	D.DUZAN	12/12/2022
A	INTERIM SUBMISSION	N.WU	D.DUZAN	06/13/2022

Kiewit
470 Chestnut Ridge Rd # 2,
Woodcliff Lake, NJ 07677

Hitachi Energy
901 Main Campus Drive
Raleigh, North Carolina 27606

PROJECT

CHPE Champlain Hudson Power Express

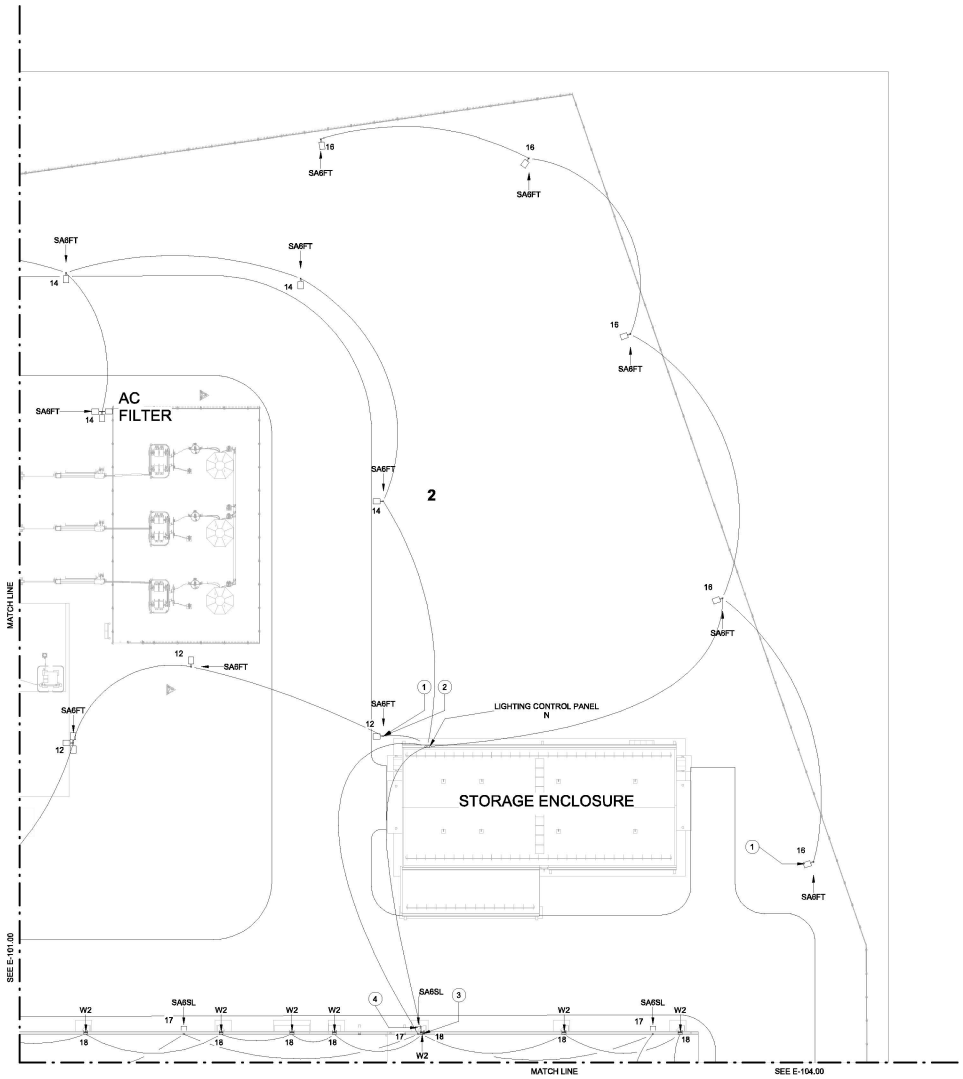
Astoria HVDC Converter Station

31-45 20th Avenue, Astoria, Queens NY 11105
Block #850 - Lot #310 - BIN #4624437

SITE LIGHTING PLAN 1 OF 4

DATE	12/12/2022
PROJECT NO	105121
DRAWING BY	E.WATTS
CHECKED BY	D.DUZAN
DRAWING NO	E-101.00
CADD FILE NO	Autodesk Docs://CHPE-HVC-DS-08-MEP-001.rvt

12/21/2022 11:38:24 AM



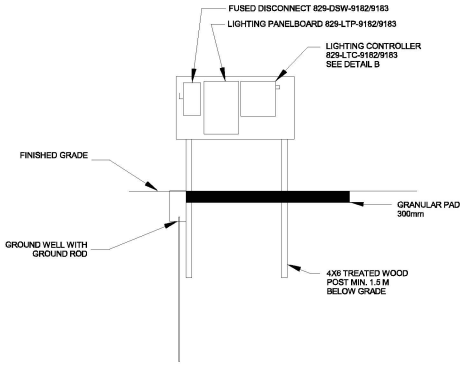
1 E-102.00 SITE LIGHTING - 2 OF 4
1" = 20'-0"

ELECTRICAL GENERAL NOTES

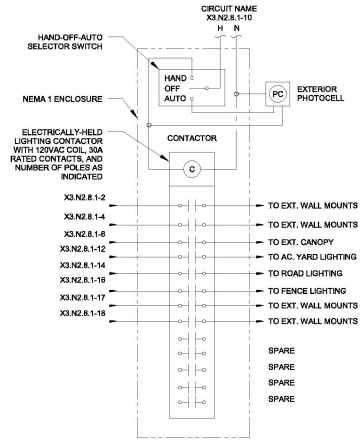
1. REFER TO SHEET E-001.00 FOR GENERAL NOTES.
2. REFER TO SHEET E-100.00 FOR OVERALL SITE LIGHTING PLAN.
3. REFER TO SHEET E-330.00 FOR LIGHT FIXTURE SCHEDULE.

ELECTRICAL KEYNOTES

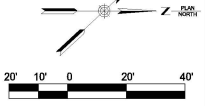
1 AREA LIGHTING FIXTURES TO BE MOUNTED 40' AFF ON POLES.
2 LIGHTS TO BE PLACED AT THE EDGE OF THE ACCESS ROAD AND MOUNTED ON RETAINING WALL WHEREVER POSSIBLE.
3 2#10+#10G IN 3/4" RMC FROM HOMERUN TO LAST FIXTURE.
4 2#4+#8G IN 1" RMC FROM HOMERUN TO FIRST FIXTURE, THEN 2#6+#8G TO LAST FIXTURE.



1 E-102.00 LIGHTING CONTROLLER DETAILS
N.T.S.



3 E-102.00 EXTERIOR LIGHTING N CONTROL DETAIL
12" = 1'-0"



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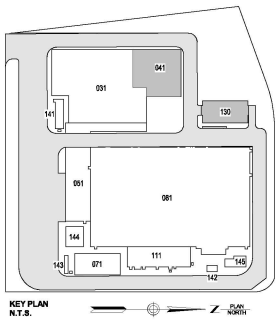

Engineering and Land Surveying, P.C.
370 7th Avenue
SUITE 1604
New York, NY 10001

SOWINSKI SULLIVAN
ARCHITECTURE & ENGINEERING
25 Mohawk Avenue
Sparta, NJ 07871

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B	100% SUBMISSION	E.WATTS	D.DUZAN	12/12/2022
A	INTERIM SUBMISSION	N.WU	D.DUZAN	06/13/2022

Kiewit
470 Chestnut Ridge Rd # 2,
Woodcliff Lake, NJ 07677

Hitachi Energy
901 Main Campus Drive
Raleigh, North Carolina 27606

PROJECT
CHPE
Champlain Hudson Power Express

Astoria HVDC Converter Station
31-45 20th Avenue, Astoria, Queens NY 11105
Block #850 - Lot #310 - BIN #4624437

SITE LIGHTING PLAN 2 OF 4

DATE	12/12/2022
PROJECT NO	105121
DRAWING BY	E.WATTS
CHECKED BY	D.DUZAN
DRAWING NO	E-102.00
CADD FILE NO	Autodesk Docs://CHPE AutoCAD Architecture 2021/E-102.00 SITE LIGHTING PLAN 2 OF 4.rvt

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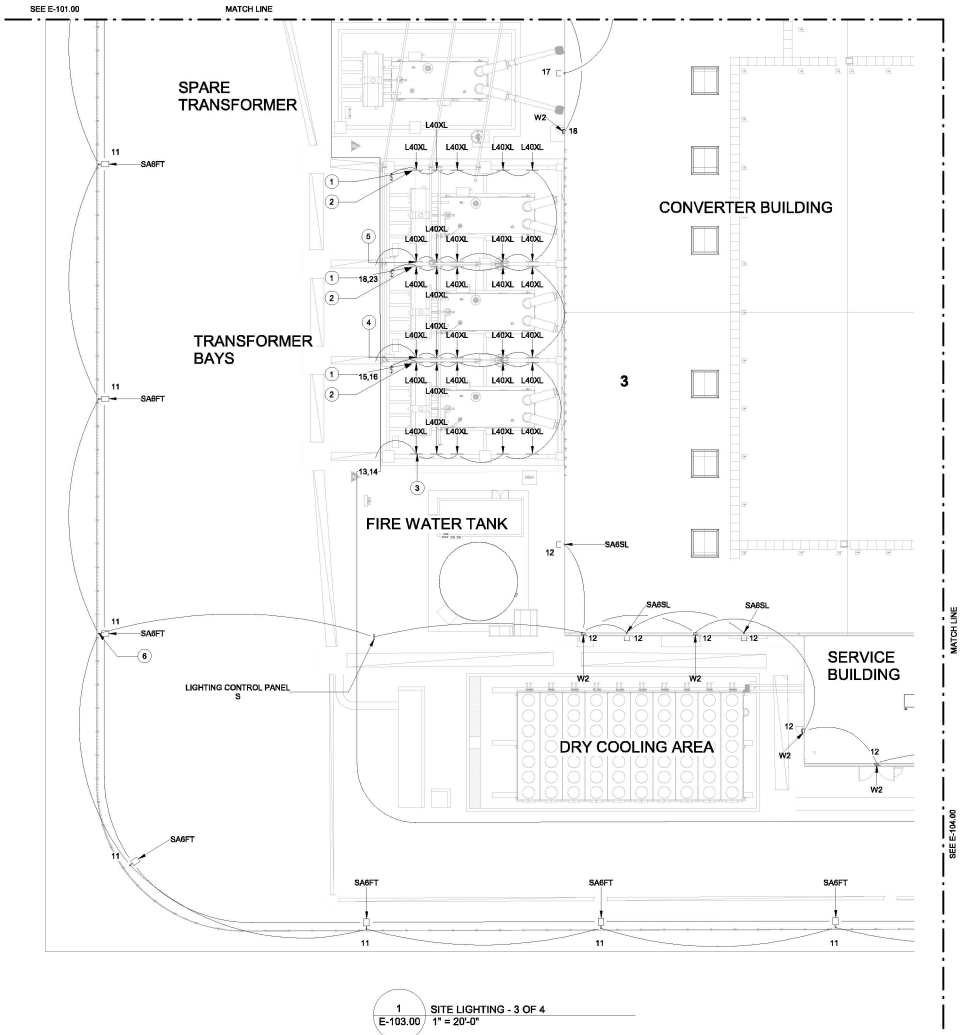
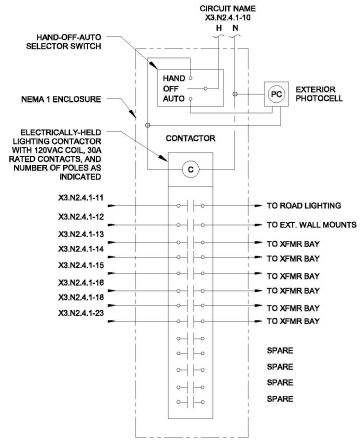


1 E-103.00 SITE LIGHTING - 3 OF 4
1" = 20'-0"



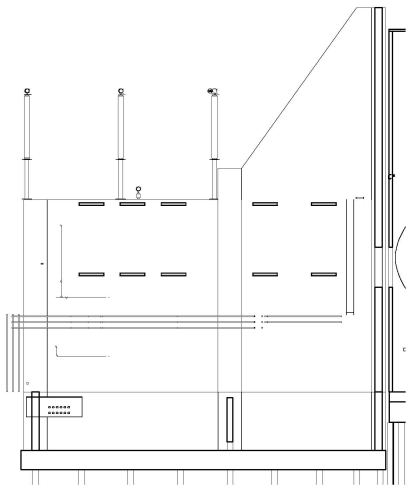
3 EXTERIOR LIGHTING S CONTROL DETAIL
NTS

ELECTRICAL GENERAL NOTES

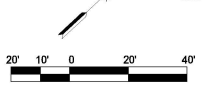
1. REFER TO SHEET E-001.00 FOR GENERAL NOTES.
2. REFER TO SHEET E-100.00 FOR OVERALL SITE LIGHTING PLAN.
3. REFER TO SHEET E-330.00 FOR LIGHT FIXTURE SCHEDULE.

ELECTRICAL KEYNOTES

1 TRANSFORMER BAY LIGHTS TO BE MOUNTED 20' AND 30' AFF TO BAY SIDES.
2 WEATHERPROOF EXTERIOR PHOTOCELL FOR CONTROL OF EXTERIOR BUILDING-MOUNTED LIGHTING. PROVIDE WEATHERPROOF JUNCTION BOX MOUNTED TO EXTERIOR FACADE APPROXIMATELY 12" BELOW EAVE HEIGHT. MOUNT PHOTOCELL TO JUNCTION BOX AND AIM NORTH. COORDINATE FINAL LOCATION WITH OTHER DISCIPLINES TO PREVENT OBSTRUCTIONS TO PHOTOCELL SENSOR LINE OF SIGHT IN THE IMMEDIATE VICINITY. REFER TO DETAIL 2 THIS SHEET FOR MORE INFORMATION.
3 2#10+#10G IN 3/4" RMC FROM HOMERUN TO FIRST FIXTURE, THEN 2#12+#10G TO LAST FIXTURE.
4 2#10+#10G IN 3/4" RMC FROM HOMERUN TO LAST FIXTURE.
5 2#8+#8G IN 3/4" RMC FROM HOMERUN TO FIRST FIXTURE, THEN 2#12+#8G TO LAST FIXTURE.
6 2#1+#6G IN 1-1/4" RMC FROM HOMERUN TO LAST FIXTURE.



2 E-103.00 XFMR BAY ELEVATION
1" = 10'-0"



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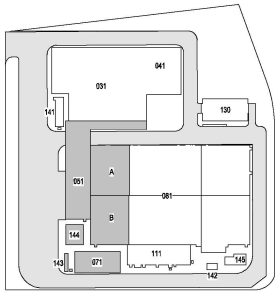

Engineering and Land Surveying, P.C.
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New York, NY 10001

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ARCHITECTURE & ENGINEERING
25 Mohawk Avenue
Sparta, NJ 07871

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B	100% SUBMISSION	E.WATTS	D.DUZAN	12/12/2022
A	INTERIM SUBMISSION	N.WU	D.DUZAN	06/13/2022

Kiewit
470 Chestnut Ridge Rd # 2,
Woodcliff Lake, NJ 07677

Hitachi Energy
901 Main Campus Drive
Raleigh, North Carolina 27606

PROJECT

CHPE
Champlain Hudson Power Express

Astoria HVDC Converter Station

31-45 20th Avenue, Astoria, Queens NY 11105
Block #850 - Lot #310 - BIN #4624437

SITE LIGHTING PLAN 3 OF 4

DATE	12/12/2022
PROJECT NO	105121
DRAWING BY	E.WATTS
CHECKED BY	D.DUZAN
DRAWING NO	E-103.00
CADD FILE NO	Autodesk Docs://CHPE Astoria/CHPE-KIE-DRG-00-M3-E-001.rvt

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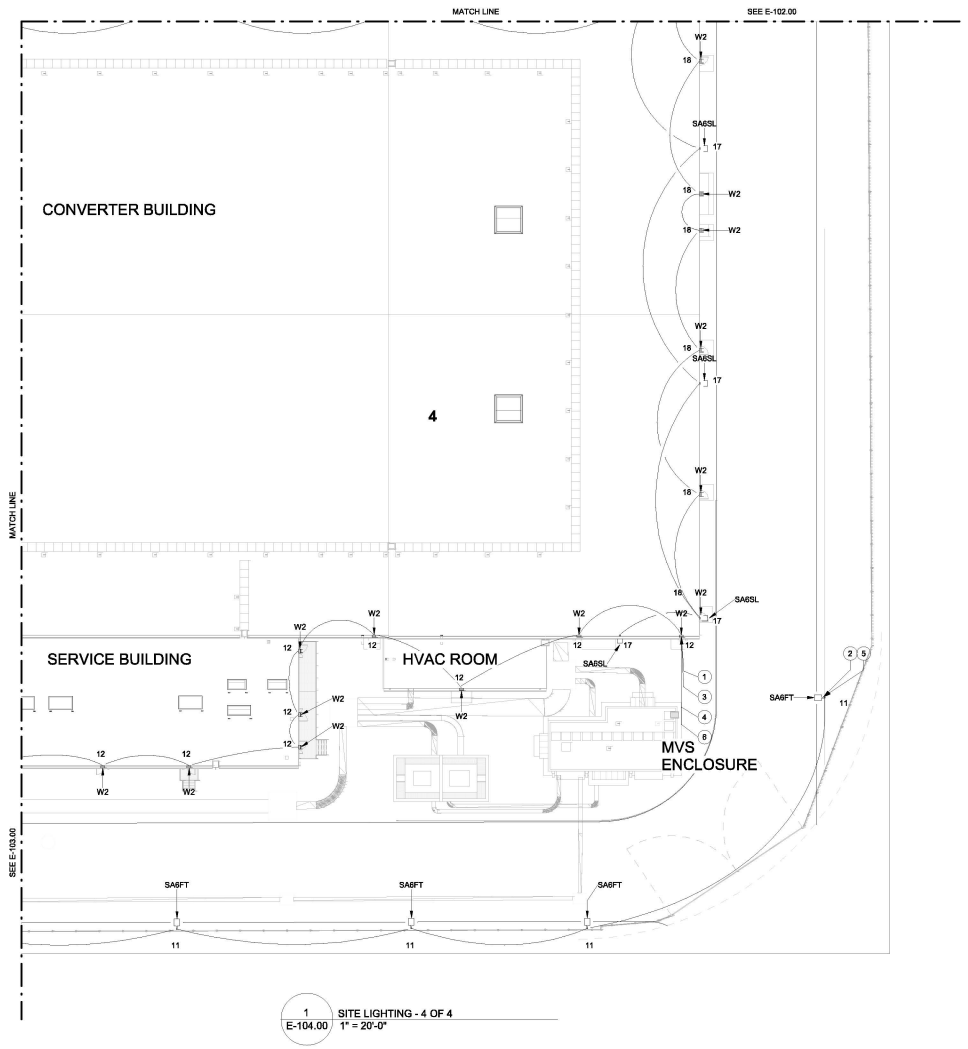


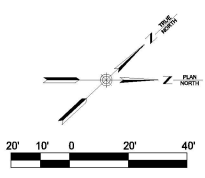
1 E-104.00 SITE LIGHTING - 4 OF 4
1" = 20'-0"

ELECTRICAL GENERAL NOTES

1. REFER TO SHEET E-001.00 FOR GENERAL NOTES.
2. REFER TO SHEET E-100.00 FOR OVERALL SITE LIGHTING PLAN.
3. REFER TO SHEET E-330.00 FOR LIGHT FIXTURE SCHEDULE.

ELECTRICAL KEYNOTES

1 EMERGENCY EXIT WALL PACKS TO BE MOUNTED 1' ABOVE DOOR FRAME.
2 AREA LIGHTING FIXTURES TO BE MOUNTED 40' AFF ON POLES.
3 EXTERIOR BUILDING LIGHTING TO BE CONNECTED USING CONDUIT ATTACHED TO BUILDING EXTERIOR.
4 WEATHERPROOF EXTERIOR PHOTOCELL FOR CONTROL OF EXTERIOR BUILDING-MOUNTED LIGHTING. PROVIDE WEATHERPROOF JUNCTION BOX MOUNTED TO EXTERIOR FACADE APPROXIMATELY 12" BELOW EAVE HEIGHT. MOUNT PHOTOCELL TO JUNCTION BOX AND AIM NORTH. COORDINATE FINAL LOCATION WITH OTHER DISCIPLINES TO PREVENT OBSTRUCTIONS TO PHOTOCELL SENSOR LINE OF SIGHT IN THE IMMEDIATE VICINITY. REFER TO DETAIL 2 THIS SHEET FOR MORE INFORMATION.
5 LIGHTS TO BE PLACED AT THE EDGE OF THE ACCESS ROAD AND MOUNTED ON RETAINING WALL WHEREVER POSSIBLE.
6 EMERGENCY LIGHTING TO BE INSTALLED ABOVE THE EXITS AND TO BE POWERED BY AN EMERGENCY CIRCUIT.



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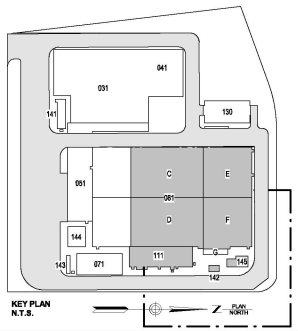

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New York, NY 10001

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PROJECT
CHPE
Champlain Hudson Power Express

Astoria HVDC Converter Station

31-45 20th Avenue, Astoria, Queens NY 11105
Block #850 - Lot #310 - BIN #4624437

SITE LIGHTING PLAN 4 OF 4

DATE	12/12/2022
PROJECT NO	105121
DRAWING BY	E.WATTS
CHECKED BY	D.DUZAN
DRAWING NO	E-104.00
CADD FILE NO	Autodesk Docs://CHPE Astoria/CHPE-KIEC-DRG-08-M3-E-001.rvt

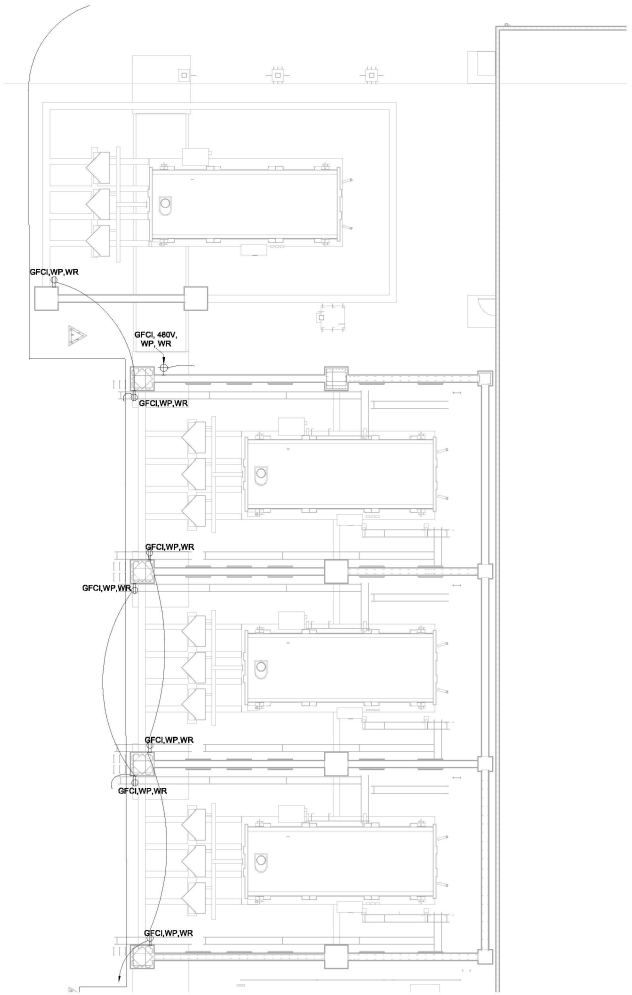
12/21/2022 11:40:59 AM

ELECTRICAL GENERAL NOTES

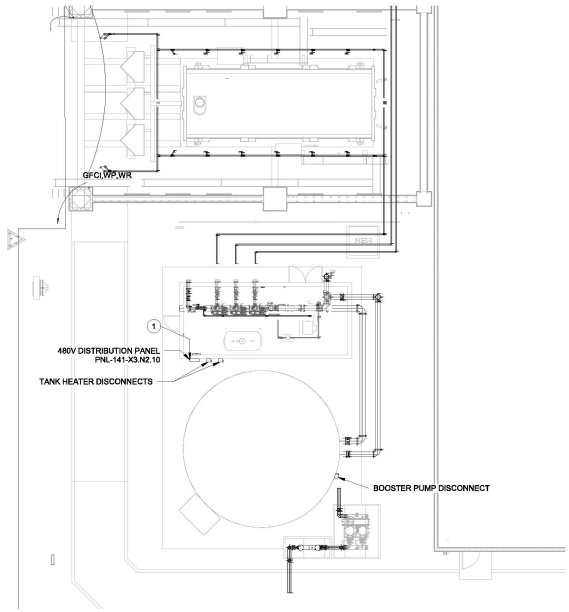
1. REFER TO SHEET E-001.00 FOR GENERAL NOTES.
2. REFER TO SHEET E-100.00 FOR OVERALL SITE LIGHTING PLAN.
3. REFER TO SHEET E-330.00 FOR LIGHT FIXTURE SCHEDULE.

ELECTRICAL KEYNOTE

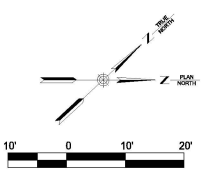
1. CONNECT 480 VOLT POWER FEED TO FIRE PUMP SKID. ALL LIGHTING, HEATING, AND RECEPTACLES WILL BE SUPPLIED AND POWERED AS PART OF THE SKID.



1 / E-105.00 XFMR BAY POWER PLAN
1" = 10'-0"



2 / E-105.00 FIRE PUMP POWER PLAN
1" = 10'-0"



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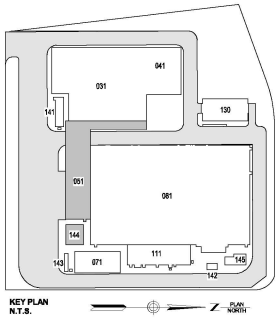

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370 7th Avenue
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ARCHITECTURE & ENGINEERING
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REV	DESCRIPTION	DRW BY	CHK BY	DATE
B	100% SUBMISSION	E.WATTS	D.DUZAN	12/12/2022
A	INTERIM SUBMISSION	N.WU	D.DUZAN	06/13/2022

Kiewit
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Hitachi Energy
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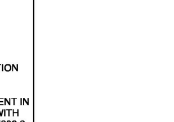
Block #850 - Lot #310 - BIN #4624437

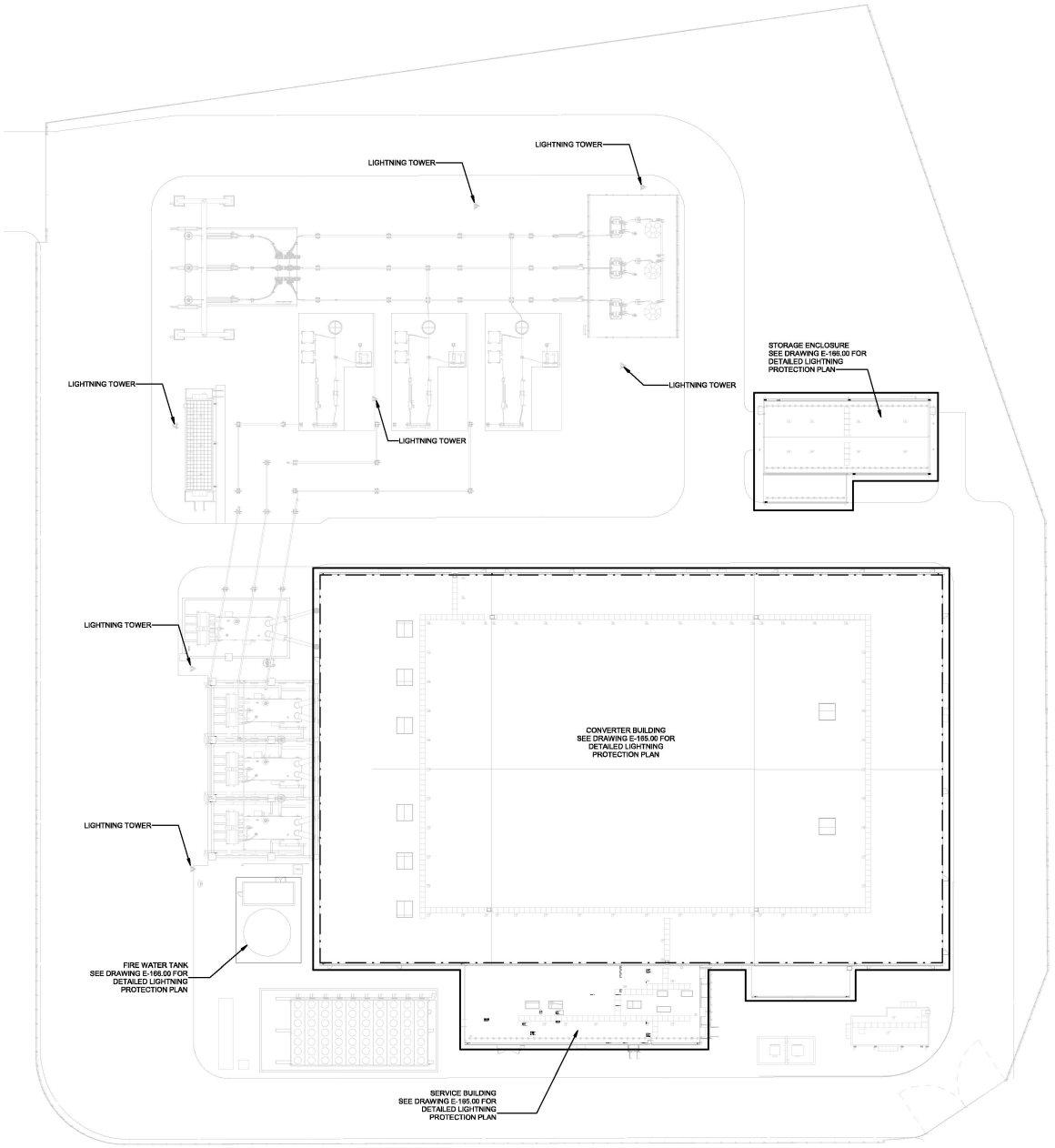
XFMR BAY ELECTRICAL PLAN



Digitally signed by Henry H. Elsway
Date: 2022.12.12 16:37:54 -05'00'

DATE	12/12/2022
PROJECT NO	105121
DRAWING BY	E.WATTS
CHECKED BY	D.DUZAN
DRAWING NO	E-105.00
CADD FILE NO	Autodesk Docs://CHPE Astoria/CHPE-KIEC-DRG-00-M3-E-001.rvt

12/21/2022 11:41:40 AM



1 / E-106.00 SITE LIGHTNING PROTECTION PLAN
1" = 30'-0"

ELECTRICAL GENERAL NOTES

1. REFER TO SHEET E-001.00 FOR GENERAL NOTES.
2. REFER TO SHEET E-100.00 FOR OVERALL SITE LIGHTING PLAN.
3. REFER TO SHEET E-330.00 FOR LIGHT FIXTURE SCHEDULE.

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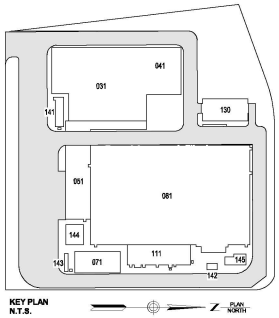

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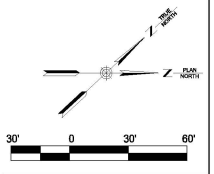

PROJECT

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Block #850 - Lot #310 - BIN #4624437

SITE LIGHTNING PROTECTION PLAN

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Date: 2022.12.12 16:37:10 -05'00'

DATE	12/12/2022
PROJECT NO	105121
DRAWING BY	A.KHABSOULLINE
CHECKED BY	D.DUZAN
DRAWING NO	E-106.00
CADD FILE NO	Autodesk Docs://CHPE Astoria/CH-105-DS-08-M-E-001.rvt

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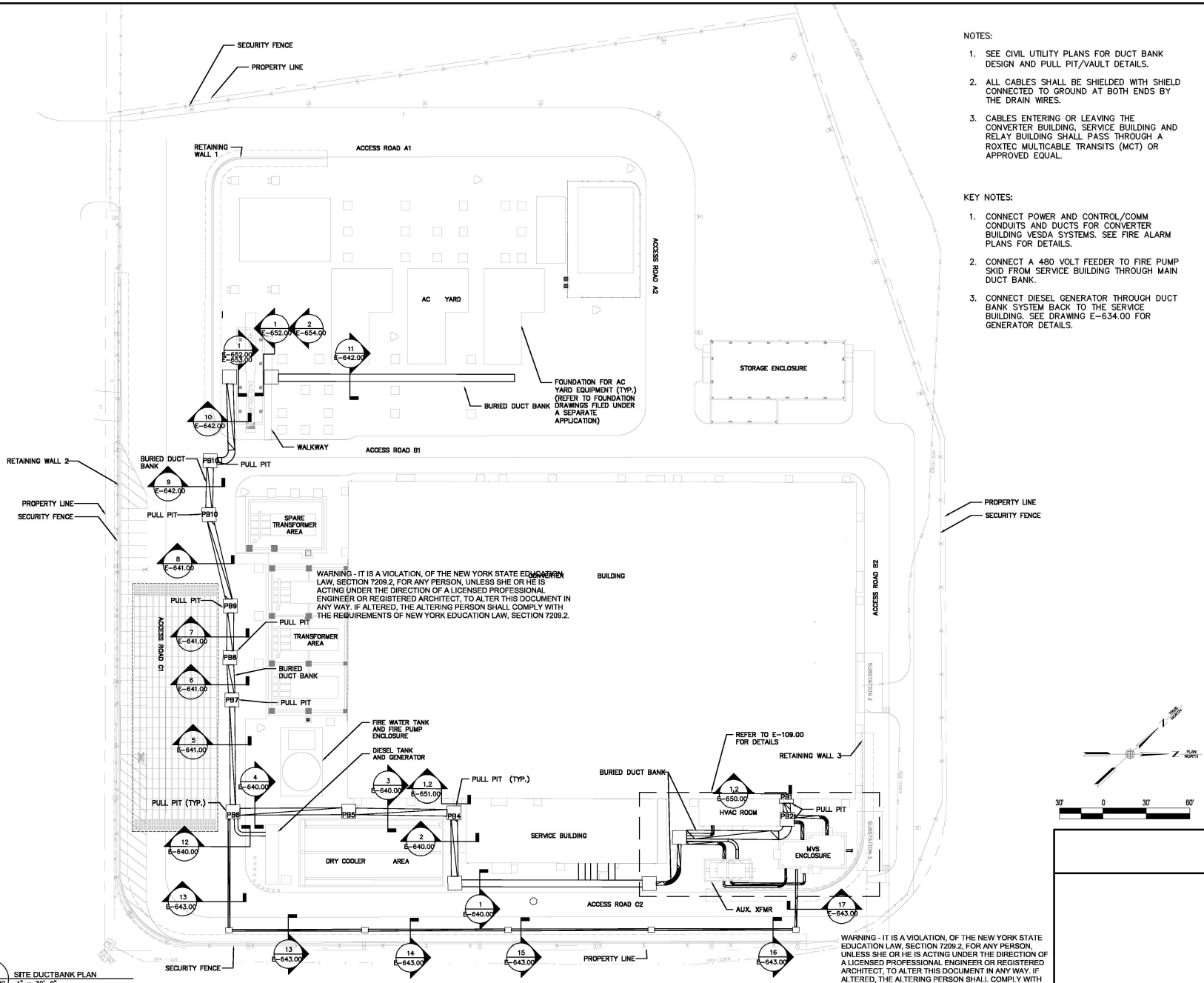


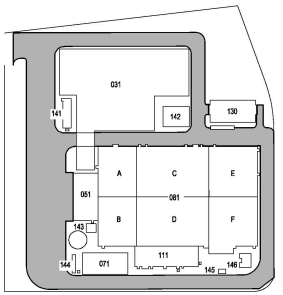
1 / E-108.00 SITE DUCTBANK PLAN
1" = 30'-0"

NOTES:

1. SEE CIVIL UTILITY PLANS FOR DUCT BANK DESIGN AND PULL PIT/VAULT DETAILS.
2. ALL CABLES SHALL BE SHIELDED WITH SHIELD CONNECTED TO GROUND AT BOTH ENDS BY THE DRAIN WIRES.
3. CABLES ENTERING OR LEAVING THE CONVERTER BUILDING, SERVICE BUILDING AND RELAY BUILDING SHALL PASS THROUGH A ROXTEC MULTICABLE TRANSITS (MCT) OR APPROVED EQUAL.

KEY NOTES:

1. CONNECT POWER AND CONTROL/COMM CONDUITS AND DUCTS FOR CONVERTER BUILDING VESDA SYSTEMS. SEE FIRE ALARM PLANS FOR DETAILS.
2. CONNECT A 480 VOLT FEEDER TO FIRE PUMP SKID FROM SERVICE BUILDING THROUGH MAIN DUCT BANK.
3. CONNECT DIESEL GENERATOR THROUGH DUCT BANK SYSTEM BACK TO THE SERVICE BUILDING. SEE DRAWING E-634.00 FOR GENERATOR DETAILS.



KEY PLAN N.T.S.

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PROJECT

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Astoria HVDC Converter Station

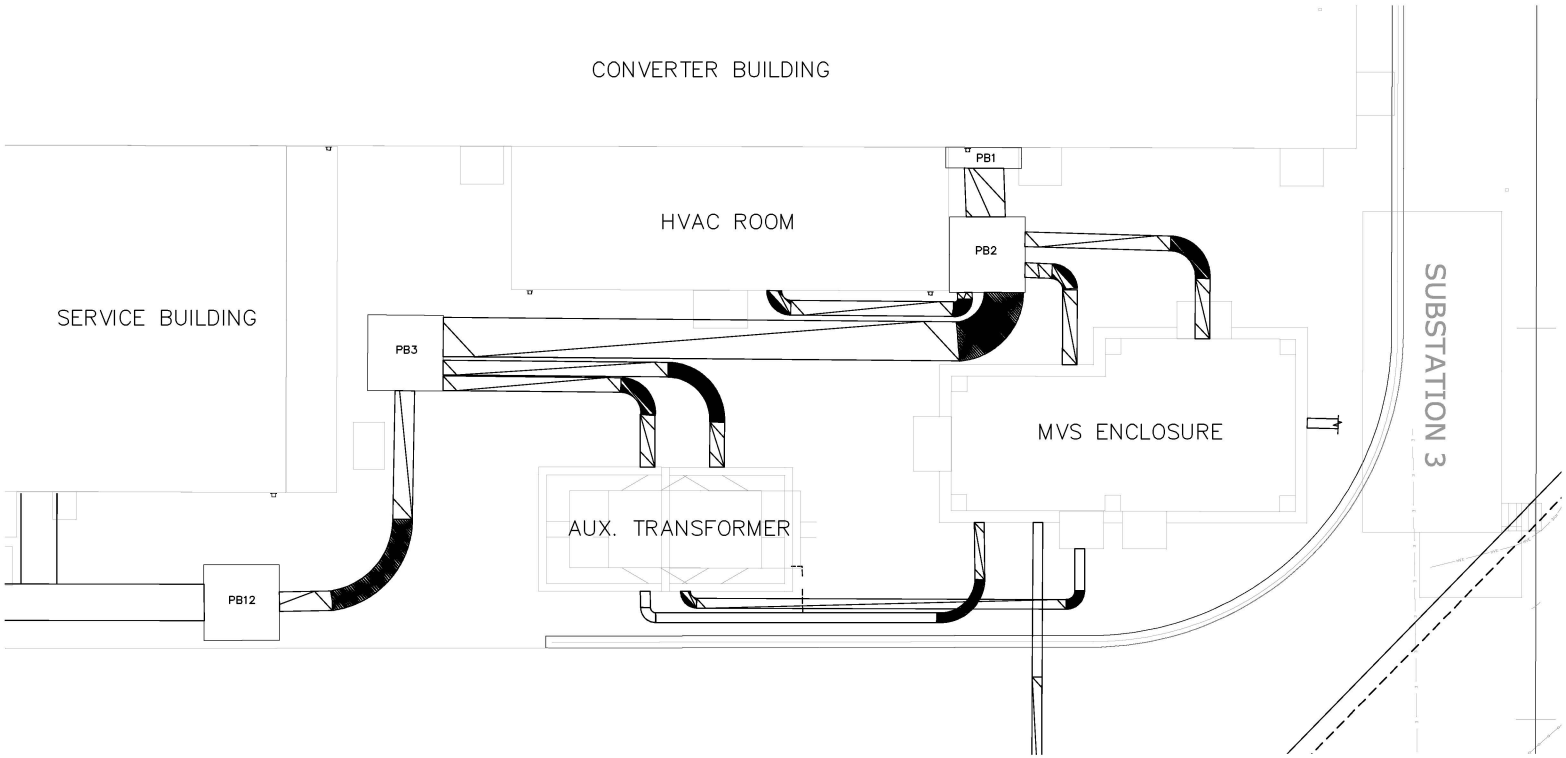
31-45 20th Avenue, Astoria, Queens NY 11105
Block #850 - Lot #310 - BIN #4624437

SITE DUCTBANK PLAN

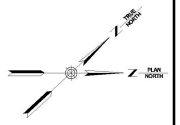
DATE	12/12/2022
PROJECT NO	105121
DRAWING BY	XJ/EJ
CHECKED BY	D.DUZAN
DRAWING NO	E-108.00
CADD FILE NO	of ##

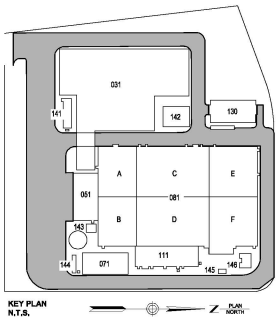
NOTE:

1. DUCTBANK LAYOUTS AND CABLE LIST ARE UNDER DEVELOPMENT. REFER TO E-640 TO E-653 FOR TYPICAL SECTIONS.



1 E-109.00 MVS ENCLOSURE DUCTBANK PLAN N.T.S





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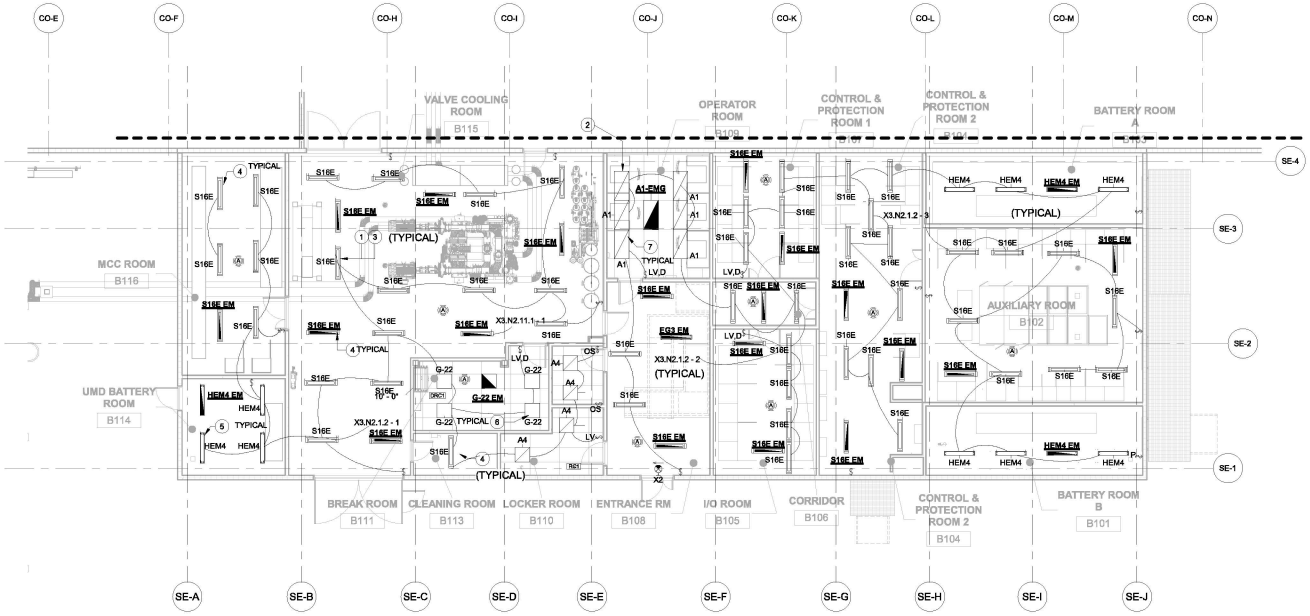
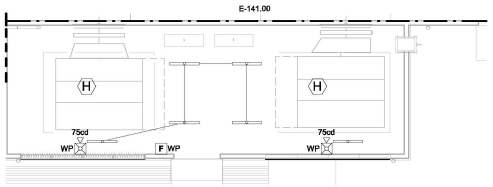
MVS ENCLOSURE DUCTBANK PLAN

DATE	12/12/2022
PROJECT NO	105121
DRAWING BY	XJIU
CHECKED BY	D.DUZAN
DRAWING NO	E-109.00
CADD FILE NO	of ##



1 E-121.00 LIGHTING PLAN LEVEL 1
1/8" = 1'-0"



2 E-121.00 HVAC ROOM LIGHTING
1/8" = 1'-0"

ELECTRICAL GENERAL NOTES

1. REFER TO SHEET E-001 FOR GENERAL NOTES.
2. REFERENCE SHEET E-400.00 FOR LIGHT FIXTURE SCHEDULE.
3. ALL INTERIOR CIRCUITS SHALL BE 2#12+#12G IN 3/4" EMT UNLESS NOTED OTHERWISE OR EXPOSED TO DAMAGE. ALL EXTERIOR CONDUIT SHALL BE #12+#12G IN RMC UNLESS NOTED OTHERWISE.
4. ALL 1ST FLOOR SERVICE BUILDING EMERGENCY LIGHTS SHALL BE FED FROM CIRCUIT:X3.N2.11.1-1.
5. ALL 2ND FLOOR SERVICE BUILDING EMERGENCY LIGHTS SHALL BE FED FROM CIRCUIT: X3.N2.11.1-2.

ELECTRICAL KEYNOTES

1 INSTALL S16 LED FIXTURES SUSPENDED FROM CEILING 12' 3" AFF (9' 3" ABOVE RAISED FLOOR).
2 INSTALL A1 RECESSED 2X4 FIXTURES MOUNTED IN DROP CEILING
3 MECHANICAL AND DUCTWORK ARE STILL BEING FINALIZED, LIGHT LOCATIONS ARE SUBJECT TO CHANGE.
4 INSTALL NEW S16 LINEAR FIXTURES SUSPENDED FROM CEILING 11' AFF.
5 INSTALL NEW HEM4 LINEAR FIXTURES SUSPENDED FROM CEILING 13' AFF.
6 INSTALL NEW G-22 RECESSED 2X2 FIXTURES IN DROP CEILING.
7 INSTALL NEW A-1 RECESSED 2X2 FIXTURES IN DROP CEILING.

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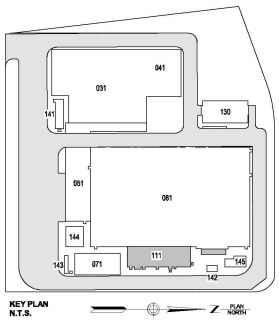

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A	INTERIM SUBMISSION	N.WU	D.DUZAN	09/13/22

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PROJECT

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Astoria HVDC Converter Station

31-45 20th Avenue, Astoria, Queens NY 11105
Block #850 - Lot #310 - BIN #4624437

SERVICE BUILDING 1ST FLOOR LIGHTING PLAN

DATE	12/12/2022
PROJECT NO	105121
DRAWING BY	F. WATTS
CHECKED BY	D.DUZAN
DRAWING NO	E-121.00
CADD FILE NO	Autodesk Docs://CHPE Astoria/CH-105-111-00-M3-E-001.rvt

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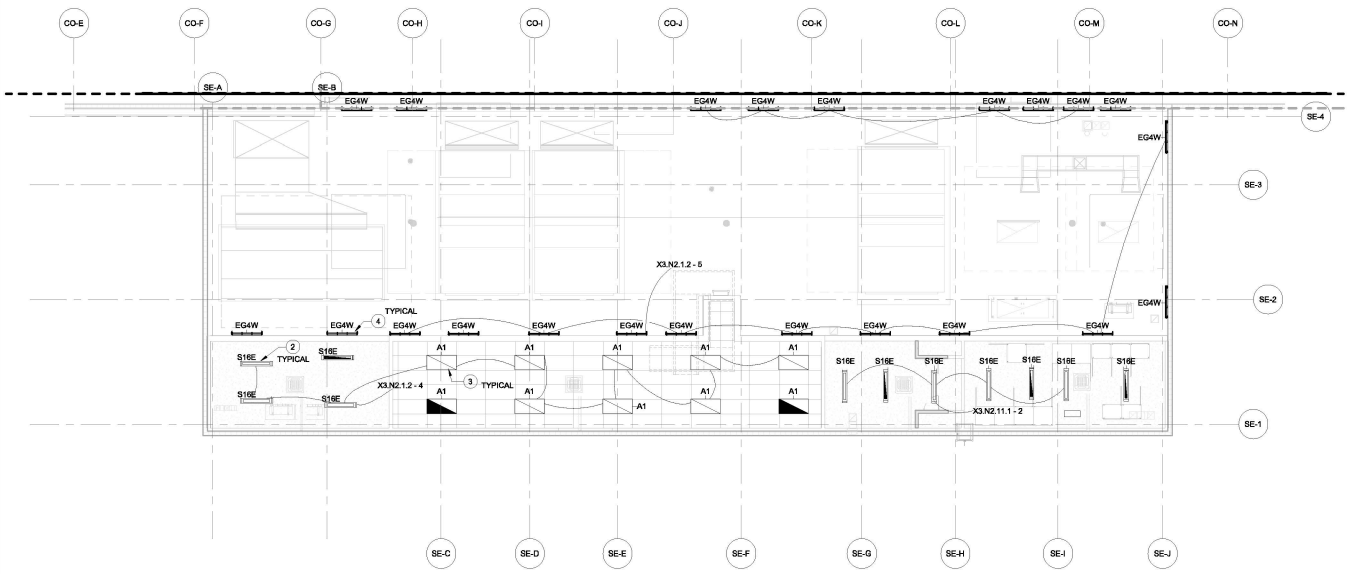
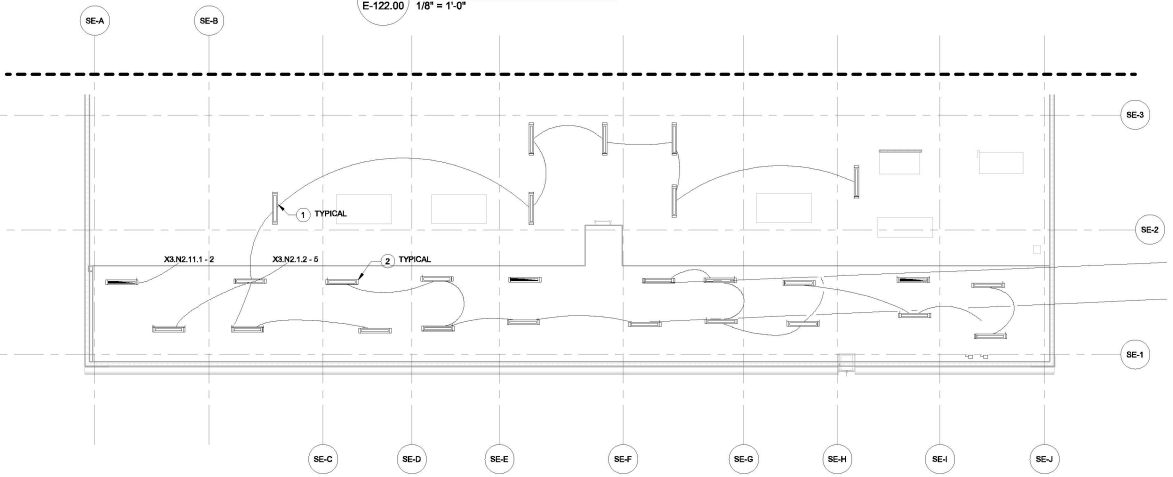


1 E-122.00 LIGHTING PLAN LEVEL 2
1/8" = 1'-0"



2 E-122.00 LIGHTING PLAN LEVEL 2 EQUIPMENT PLATFORM
1/8" = 1'-0"

ELECTRICAL GENERAL NOTES

1. REFER TO SHEET E-001 FOR GENERAL NOTES.
2. REFERENCE SHEET E-400.00 FOR LIGHT FIXTURE SCHEDULE.
3. ALL INTERIOR CIRCUITS SHALL BE 2#12+#12G IN 3/4" EMT UNLESS NOTED OTHERWISE OR EXPOSED TO DAMAGE. ALL EXTERIOR CONDUIT SHALL BE #12+#12G IN RMC UNLESS NOTED OTHERWISE.
4. ALL 1ST FLOOR SERVICE BUILDING EMERGENCY LIGHTS SHALL BE FED FROM CIRCUIT:X3.N2.11.1-1.
5. ALL 2ND FLOOR SERVICE BUILDING EMERGENCY LIGHTS SHALL BE FED FROM CIRCUIT: X3.N2.11.1-2.

ELECTRICAL KEYNOTES

1 INSTALL NEW S16 LINEAR FIXTURES SUSPENDED FROM CEILING 24'-9" AFF.
2 INSTALL NEW S16 LINEAR FIXTURES SUSPENDED FROM CEILING 9'-6"AFF.
3 INSTALL NEW A-1 RECESSED 2X2 FIXTURES IN DROP CEILING.
4 INSTALL NEW EG4 CYLINDER FIXTURES MOUNTED TO WALL 7' AFF.

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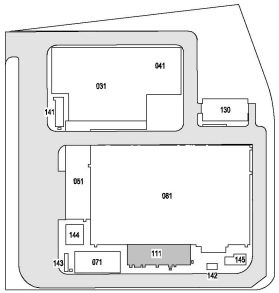

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A	INTERIM SUBMISSION	N.WU	D.DUZAN	09/13/22

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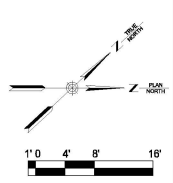

PROJECT

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Astoria HVDC Converter Station
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Block #850 - Lot #310 - BIN #4624437

SERVICE BUILDING 2ND FLOOR LIGHTING PLAN

DATE	12/12/2022
PROJECT NO	105121
DRAWING BY	S.KILFEATHER
CHECKED BY	D.DUZAN
DRAWING NO	E-122.00
CADD FILE NO	Autodesk Docs://CHPE Astoria/CH-105-111-00-M3-E-001.rvt

STATE OF NEW YORK
KEVIN K. ELSBURY
PROFESSIONAL ENGINEER

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