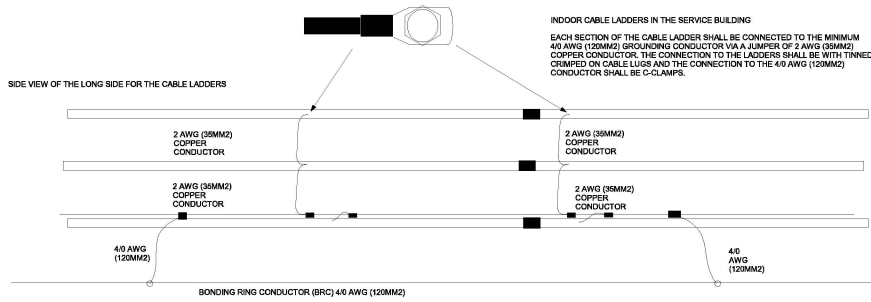
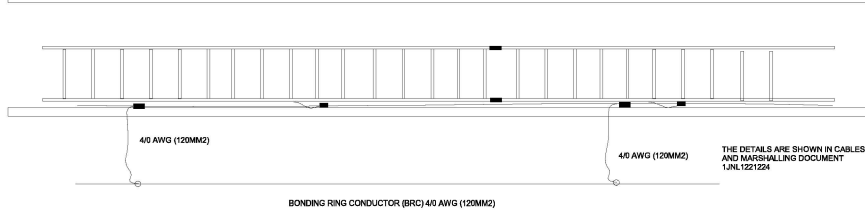


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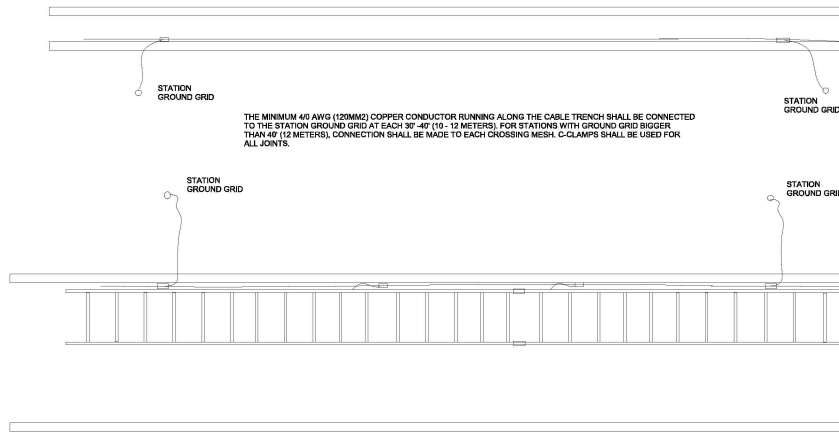
THE MINIMUM 4/0 AWG (120MM²) COPPER CONDUCTOR RUNNING ALONG THE CABLE LADDERS SHALL BE CONNECTED TO THE STATION GROUND GRID AT EACH 30'-40' (10 - 12 METERS).

TOP VIEW OF THE CABLE LADDER



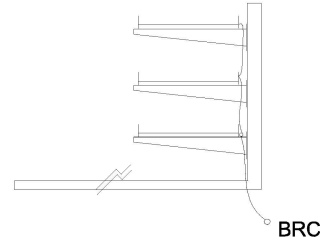
1 CABLE TRENCH WITHIN BUILDING GROUND DETAIL
E-614.00 N.T.S

REPRESENTING ONLY 1 TRENCH AS AN EXAMPLE.



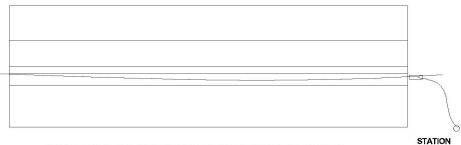
2 CABLE TRENCH GROUNDING DETAIL
E-614.00 N.T.S

SIDE VIEW OF THE SHORT SIDE FOR THE CABLE LADDERS



THE GROUNDING CONDUCTOR SHALL BE INSTALLED ON THE OUTSIDE OF THE CABLE TRAY USING METALLIC TIE WRAPS IF THE GROUNDING CONDUCTOR IS INSTALLED ON THE TRAY ITSELF THEN A CLEARANCE OF AT LEAST 4" (100MM) TO CABLES IS REQUIRED.

ROAD CROSSING WITH CONDUITS



ROAD CROSSING WITH CONDUITS



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Kiewit
478 Chestnut Ridge Rd # 2
Woodcliff Lake, NJ 07877

Hitachi Energy
901 Main Campus Drive
Raleigh, North Carolina 27606

PROJECT
CHPE
Champion Hydropower Express
Astoria HVDC Converter Station
31-45 20th Avenue, Astoria, Queens NY 11105
Block #650 - Lot #310 - BIN #4624437

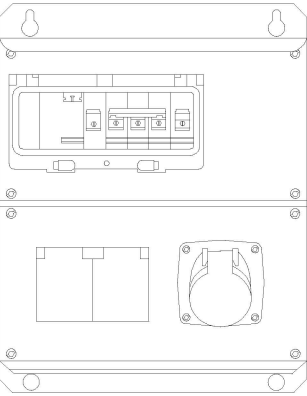
TYPICAL CABLE TRAY GROUNDING DETAILS 2

STATE OF NEW YORK
JAMES B. COVATTA
REGISTERED PROFESSIONAL ENGINEER

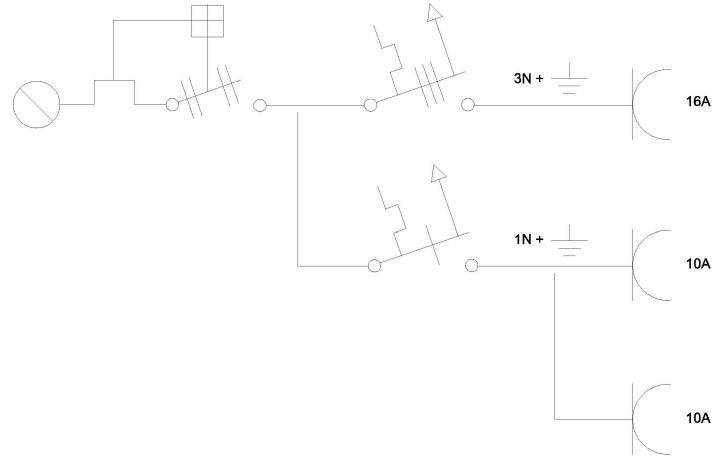
DATE: 12/13/2022
PROJECT NO: 169121
DRAWING BY: N.W.J.
CHECKED BY: D.DUJAN
DRAWING NO:

E-614.00

CADD FILE NO:
AUTOCAD VERSION: 2018



FRONT PICTURES



WIRING DIAGRAM

1 MODULAR COMBI DETAILS
E-615.00 N.T.S.

ISSUED FOR PERMIT

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REV	DESCRIPTION	DATE	CHK BY	DATE
B	100% SUBMISSION	12/13/2022	D. DALGAN	
A	INTERIM SUBMISSION	09/13/2022	D. DALGAN	

Kiewit
478 Chestnut Ridge Rd # 2, Woodcliff Lake, NJ 07877

Hitachi Energy
801 Main Campus Drive, Raleigh, North Carolina 27606

PROJECT
CHPE
Champlain Hudson PowerExpress
Astoria HVDC Converter Station
31-45 20th Avenue, Astoria, Queens NY 11105
Block #650 - Lot #310 - BIN #4624437

TYPICAL MODULAR COMBI DETAILS



DATE: 12/13/2022
PROJECT NO: 169121
DRAWING BY: N.W.J.
CHECKED BY: D.DALGAN
DRAWING NO:
E-615.00
CADD FILE NO:
AUTOCAD FILE NO: E-615.00.dwg

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LIGHTNING PROTECTION NOTES:

- ALL MATERIALS SHOWN ARE MANUFACTURED BY HEARY BROS. LIGHTNING PROTECTION CO., INC. T. 716-941-6141 EMAIL: sales@hearybros.com
- THE LIGHTNING PROTECTION SYSTEM AS SHOWN ON DRAWING HAS BEEN DESIGNED IN ACCORDANCE WITH UL96A & NFPA-780 LIGHTNING PROTECTION SYSTEM STANDARDS.
- CONDUCTORS SHALL MAINTAIN A HORIZONTAL OR DOWNWARD COURSE, FREE FROM "U" OR "V" (DOWN AND UP) POCKETS.
- NO BEND OF CONDUCTOR SHALL FORM AN ANGLE OF LESS THAN 90° NOR SHALL HAVE A RADIUS OF BEND LESS THAN 8".
- AIR TERMINALS SHALL BE SPACED EVERY 20'-0" MAXIMUM AROUND THE ROOF PERIMETER AND/OR ALONG ROOF RIDGES. AIR TERMINALS SHALL BE LOCATED WITHIN 2'-0" OF OUTSIDE CORNERS.
- AIR TERMINALS SHALL BE SPACED EVERY 50'-0" MAXIMUM IN CENTER ROOF AREAS.
- ACTUAL JOBSITE CONDITIONS MAY REQUIRE SLIGHT ALTERATIONS IN AIR TERMINAL, DOWN CONDUCTOR AND GROUND ROD LOCATIONS.
- BARE COPPER MATERIALS SHALL NOT BE INSTALLED ON ALUMINUM OR GALVALUM SURFACES, AND ALUMINUM MATERIALS SHALL NOT BE INSTALLED ON COPPER SURFACES.
- ALL LIGHTNING PROTECTION CONDUCTORS SHALL BE FASTENED EVERY 3'-0" MAX.
- ALL BOLTS ON BOLT-PRESSURE CONNECTORS SHALL BE TORQUED AT 150 IN-LB.
- ALL CONNECTIONS MUST BE USED WITH UL LISTED CABLE OF SAME METAL TYPE.
- METALLIC BODIES OF INDUCTANCE SITUATED WITHIN 6'-0" OF A LIGHTNING CONDUCTOR OR ANOTHER BONDED METAL BODY SHALL BE INTERCONNECTED TO THE LIGHTNING CONDUCTOR SYSTEM, UNLESS INHERENTLY GROUNDED.
- BOND ALL LARGE METAL BODIES TO THE MAIN LIGHTNING PROTECTION CONDUCTOR. (I.E.; EXHAUST FANS, ROOF VENTS, METAL COOLING TOWERS, HVAC UNITS, LADDERS, RAILINGS, ANTENNAS, SKYLIGHTS, METAL STACKS AND ANY OTHER LARGE METAL BODY WHOSE HEIGHT EXCEEDS THAT OF THE AIR TERMINAL IN USE, UNLESS PROTECTED BY HIGHER ROOF ELEVATIONS).
- CONNECTIONS TO GROUND RODS SHALL BE MADE AT A POINT NOT LESS THAN 1'-0" BELOW FINISHED GRADE AND 2'-0" AWAY FROM FOUNDATION WALL.
- BOND TO WATERLINES (DOMESTIC & FIRE).
- A LIGHTNING ARRESTOR, PROTECTOR OR ANTENNA DISCHARGE UNIT SHALL BE INSTALLED ON EACH ELECTRIC AND TELEPHONE SERVICE AND RADIO AND TELEVISION ANTENNA LEAD-IN BY THE ELECTRICAL CONTRACTOR, IN ACCORDANCE WITH NFPA-70.
- TRANSIENT VOLTAGE SURGE SUPPRESSION (TVSS) OF SERVICES SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR. (I.E. COMPUTERS, COPIERS, TELEPHONE, ETC.).
- PROVIDE UL MASTER LABEL CERTIFICATION UPON COMPLETION OF INSTALLATION.

LIGHTNING PROTECTION MATERIALS LIST

SYMBOL	DESCRIPTION	QUANTITY / PART NUMBER
---	COPPER LIGHTNING PROTECTION MAIN CONDUCTOR	#CCHB-17-14
---	COPPER LIGHTNING PROTECTION SECONDARY CABLE*	CCHB-#6
	COPPER CABLE FASTENERS (TO FASTEN COPPER CABLE)	CFHB-72, 66, 64,
⊗	3/8"x12" COPPER AIR TERMINAL AND ADHESIVE BASE	CAHB-308, CBHB-23D
	3/8"x18" COPPER AIR TERMINAL AND VERTICAL BASE (AT VENTS)	CAHB-309, CBHB-22
	THRU-ROOF ROD	SNHB-95D
	*SECONDARY BONDING (USE SECONDARY BONDING CABLE #CCHB-#6):	
	*FLASHING CONNECTOR	CNHB-44D
	*METAL VENT PIPE CONNECTOR	CNHB-42XD
	*METAL ROOF DRAIN / GUTTER CONNECTOR	CNHB-160D
	BONDING PLATE (AT RTU & FANS)	PPHB-54D
	BONDING PLATE (TO BASE OF STEEL AT EACH DOWNLEAD)	PPHB-54D
	PIPE CLAMP (ANTENNAS, RAILINGS, ETC.)	PMHB-103D
	CABLE CONNECTOR	CNHB-44D
	STRAIGHT SPLICER	CRHB-26
	CROSSOVER CABLE CONNECTOR	CMHB-57XXX
	WATERLINE CONNECTOR (FIRE WATER & DOMESTIC WATER)	CMHB-97D
---	3/4"x10'-0" COPPERBOND GROUND ROD	BY OTHERS
	GROUND ROD CONNECTOR	CSHB-57D
---	4/0 COPPER GROUND LOOP	BY OTHERS

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A	INTERIM SUBMISSION	NJW/J	DJL/DZAN	09/13/2022
REV	DESCRIPTION	DATE	DATE	DATE

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

Hitachi Energy 881 Main Campus Drive Raleigh, North Carolina 27606

PROJECT

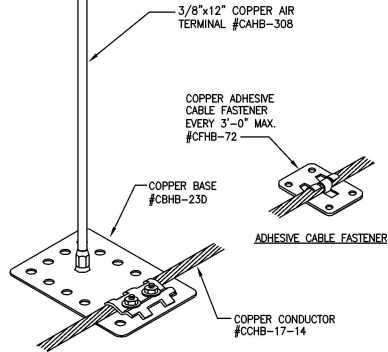
CHPE
Champlain Hudson Power Express

Astoria HVDC Converter Station
31-45 26th Avenue, Astoria, Queens NY 11105
Block #850 • Lot #310 • BIN #4624437

**LIGHTNING PROTECTION NOTES
LIGHTNING PROTECTION
SYSTEM REQUIREMENTS**

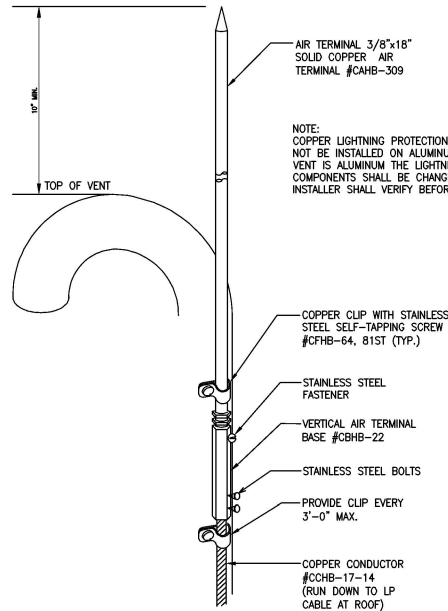
DATE: 13/12/2022
PROJECT NO: 188123
DRAWING BY: E.WATTS
CHECKED BY: D.DUZAN
DRAWING NO: **E-616.00**
CADD FILE NO: _____ OF ##

INSTALLER NOTE:
DO NOT INSTALL BARE COPPER LIGHTNING PROTECTION EQUIPMENT ON ALUMINUM OR GALVALUM SURFACES. NOTIFY LPS MANUFACTURER BEFORE SHIPMENT OF MATERIALS TO ENSURE COMPATIBLE EQUIPMENT IS PROVIDED (ALUMINUM NOT COPPER).



NOTE:
ADHESIVE COMPOUND SHALL BE PROVIDED BY OTHERS—ELEC. CONTR. SHALL COORDINATE. THE ADHESIVE COMPOUND SHALL BE COMPATIBLE WITH THE ROOFING SYSTEM.

1 ADHESIVE TYPE AIR TERMINAL
E-617.00 N.T.S.



NOTE:
COPPER LIGHTNING PROTECTION COMPONENTS SHALL NOT BE INSTALLED ON ALUMINUM SURFACES. IF THE VENT IS ALUMINUM THE LIGHTNING PROTECTION COMPONENTS SHALL BE CHANGED TO ALUMINUM. INSTALLER SHALL VERIFY BEFORE SHIPMENT.

2 AIR TERMINAL AT VENT
E-617.00 N.T.S.

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A	INTERIM SUBMISSION	N/WJ	DJ/DJZAN	09/13/2022
REV	DESCRIPTION	DATE	DATE	DATE

Kiewit 470 Chemical Ridge Rd # 2, Woodcliff Lake, NJ 07077

Hitachi Energy 891 Main Campus Drive Raleigh, North Carolina 27606

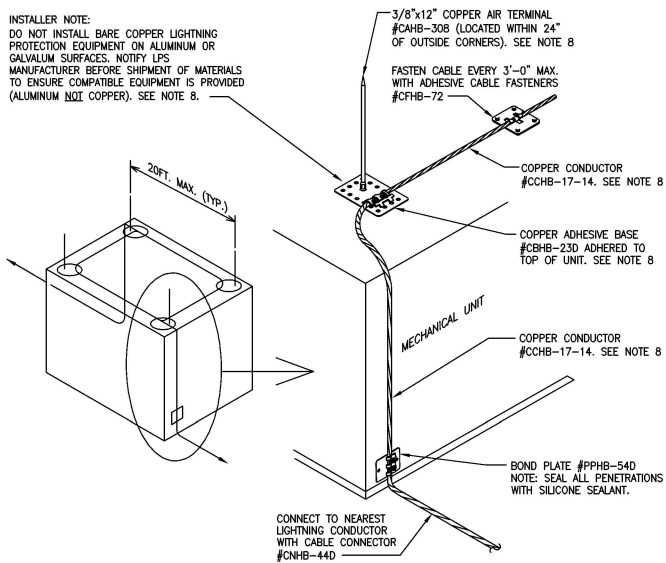
PROJECT **CHPE** Champlain Hudson Power Express

Astoria HVDC Converter Station
31-45 26th Avenue, Astoria, Queens NY 11105
Block #850 • Lot #310 • BIN #4624437

AIR TERMINAL DETAILS

DATE: 13/12/2022
PROJECT NO: 188121
DRAWING BY: E.WATTS
CHECKED BY: D.JUZAN
DRAWING NO: **E-617.00**
CADD FILE NO: _____ OF ##

INSTALLER NOTE:
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1 LIGHTNING PROTECTION AT ROOF TOP UNIT
E-618.00 N.T.S

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A	INTERIM SUBMISSION	09/13/2022

470 Cherril Ridge Rd # 2, Woodcliff Lake, NJ 07077

801 Main Campus Drive, Raleigh, North Carolina 27606

PROJECT

CHPE

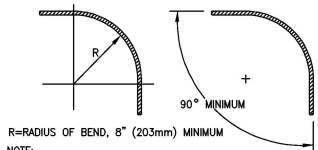
Champlain Hudson Power Express

Astoria HVDC Converter Station

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

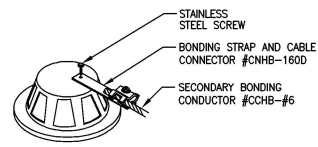
ROOF LIGHTNING PROTECTION DETAILS

	DATE: 12/12/2022 PROJECT NO: 188121 DRAWING BY: E. MATTIS CHECKED BY: E. DULZAN DRAWING NO: E-618.00 CAD FILE NO: _____ OF #
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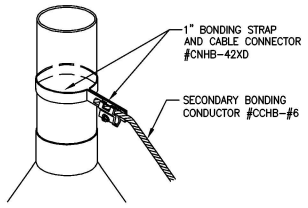
NOTE:
 - LP CONDUCTOR SHALL REMAIN IN A HORIZONTAL OR DOWN-WARD PATH AVOIDING "U" & "V" POCKETS (DOWN & UP).
 - NO BEND OF A CONDUCTOR SHALL FORM AN INCLUDED ANGLE OF LESS THAN 90° OR HAVE A RADIUS OF BEND LESS THAN 8".

1 8" MIN. RADIUS BEND IN CABLE
 E-619.00 N.T.S.

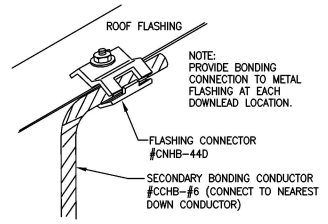


BOND TO ROOF DRAINS AND SMALL VENTS WHEN LOCATED WITHIN 6'-0" OF LIGHTNING CONDUCTOR OR OTHER GROUNDED METAL BODIES. TO BE DETERMINED AT JOB SITE.

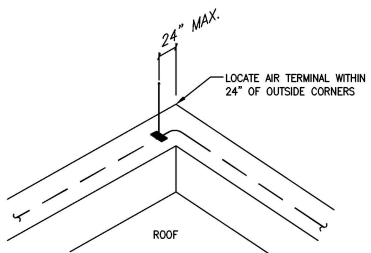
2 BONDING LUG (METAL ROOF DRAINS)
 E-619.00 N.T.S.



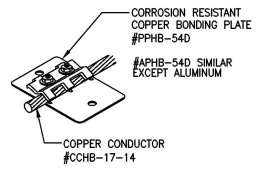
3 BONDING STRAP (METAL VENT PIPES)
 E-619.00 N.T.S.



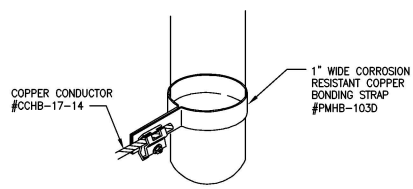
4 FLASHING CONNECTOR
 E-619.00 N.T.S.



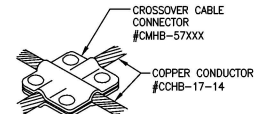
5 AIR TERMINALS SHALL BE LOCATED WITHIN 24" OF OUTSIDE CORNERS
 E-619.00 N.T.S.



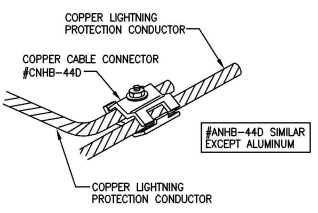
6 BONDING PLATE
 E-619.00 N.T.S.



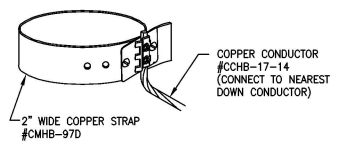
7 PIPE CLAMP (RAILINGS, ANTENNAS, ETC.)
 E-619.00 N.T.S.



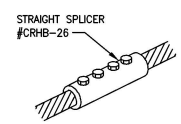
8 CROSSOVER CABLE CONNECTOR
 E-619.00 N.T.S.



9 CABLE CONNECTOR
 E-619.00 N.T.S.



10 WATERLINE BONDING STRAP
 E-619.00 N.T.S.



11 STRAIGHT SPLICER
 E-619.00 N.T.S.

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NO.	DESCRIPTION	DATE
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A	INTERIM SUBMISSION	N.WU D.DUZAN 09/13/2022
REV		

Kiewit 470 Chatham Ridge Rd # 2, Woodcliff Lake, NJ 07877

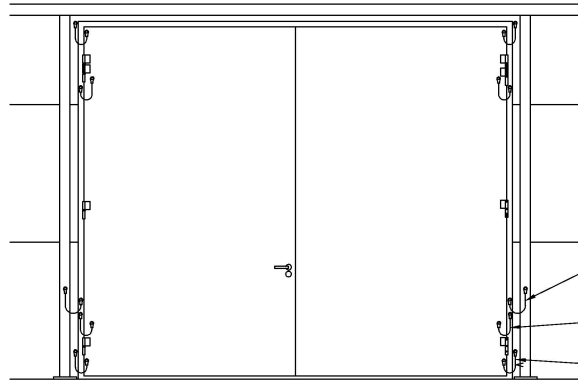
Hitachi Energy 801 Main Campus Drive Raleigh, North Carolina 27606

PROJECT **CHPE**
 Champlain Hudson Power Express
Astoria HVDC Converter Station
 31-45 26th Avenue, Astoria, Queens NY 11105
 Block #850 • Lot #310 • BIN #4624437

LIGHTNING PROTECTION DETAILS

DATE 12/12/2022
 PROJECT NO 180121
 DRAWING BY E.WATTS
 CHECKED BY D.DUZAN
 DRAWING NO **E-619.00**
 CAD FILE NO # 09

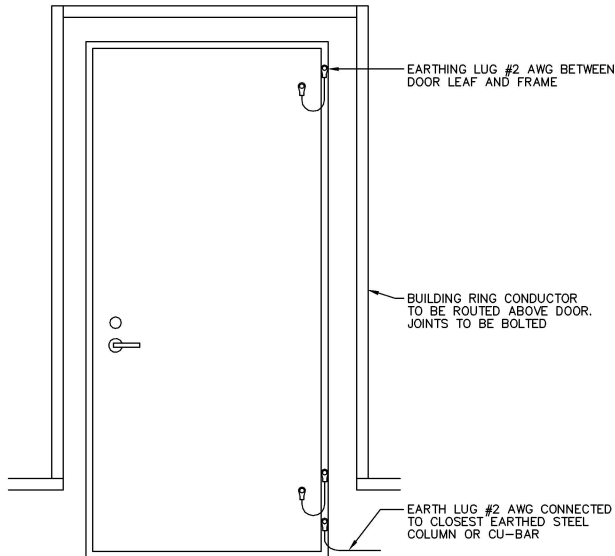
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NOTE:
LENGTH OF APERTURES
AROUND DOORS SHALL
BE MAXIMUM 13'

- EARTH LUG #2 AWG CONNECTED TO CLOSEST EARTHED STEEL COLUMN OR CU-BAR
- EARTHING LUG #2 AWG BETWEEN DOOR LEAF AND FRAME
- EMC/RFI JUMPER #2 AWG TO ENSURE CONNECTION BETWEEN DOOR LEAF AND CLADDING. MAXIMUM DISTANCE 4m BETWEEN CONNECTION POINTS.

1 DOUBLE DOOR MAX 12x12'
E-620.00 N.T.S



EARTHING LUG #2 AWG BETWEEN DOOR LEAF AND FRAME

BUILDING RING CONDUCTOR TO BE ROUTED ABOVE DOOR. JOINTS TO BE BOLTED

EARTH LUG #2 AWG CONNECTED TO CLOSEST EARTHED STEEL COLUMN OR CU-BAR

2 PERSONNEL DOOR MAX 6'x8'
E-620.00 N.T.S

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A	INTERIM SUBMISSION	N/W/J	DJ/DZ/AN	09/13/2022
REV		DESCRIPTION	DATE	

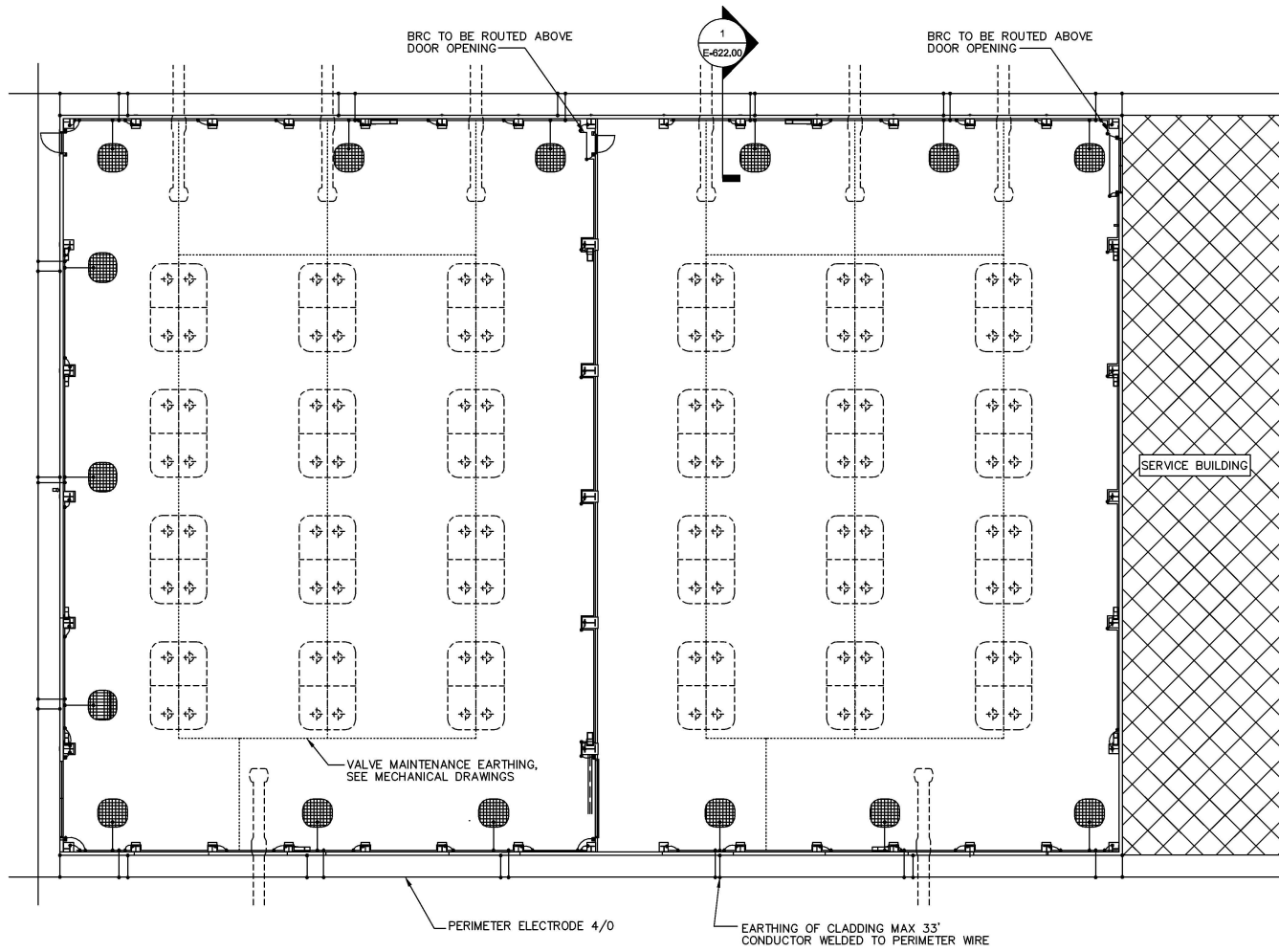
Kiewit
470 Chatham Ridge Rd # 2, Woodcliff Lake, NJ 07077

Hitachi Energy
801 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

CONVERTER BUILDING DOOR GROUNDING DETAILS

	DATE	12/12/2022
	PROJECT NO.	188121
	DRAWING BY	E. J. MATTIS
	CHECKED BY	D. J. DZAN
	DRAWING NO.	E-620.00
SCALE	AS SHOWN	
CADD FILE NO.		OF #



1 EARTHING BUILDING
E-621.00
N.T.S.

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SUITE 1604
New York, NY 10001

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REV	DESCRIPTION	DATE
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A	INTERIM SUBMISSION	09/13/2022

Kiewit
470 Chatham Ridge Rd # 2,
Woodcliff Lake, NJ 07077

Hitachi Energy
881 Main Campus Drive
Raleigh, North Carolina 27606

PROJECT

CHPE

Champlain Hudson
Power Express

Astoria HVDC
Converter Station

31-45 26th Avenue, Astoria, Queens NY 11105
Block #850 • Lot #310 • BIN #4624437

VALVE HALL
GROUNDING DETAILS

DATE: 13/12/2022

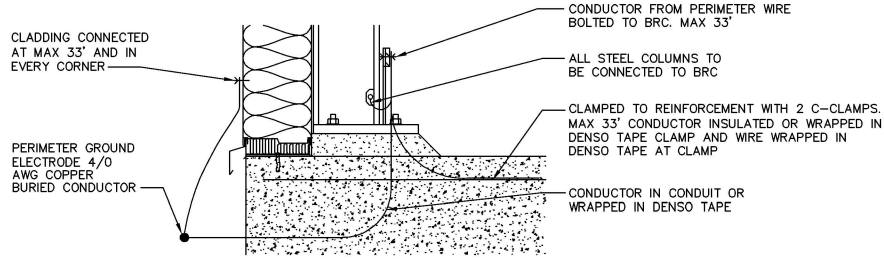
PROJECT NO: 188121

DRAWING BY: E. MATTS

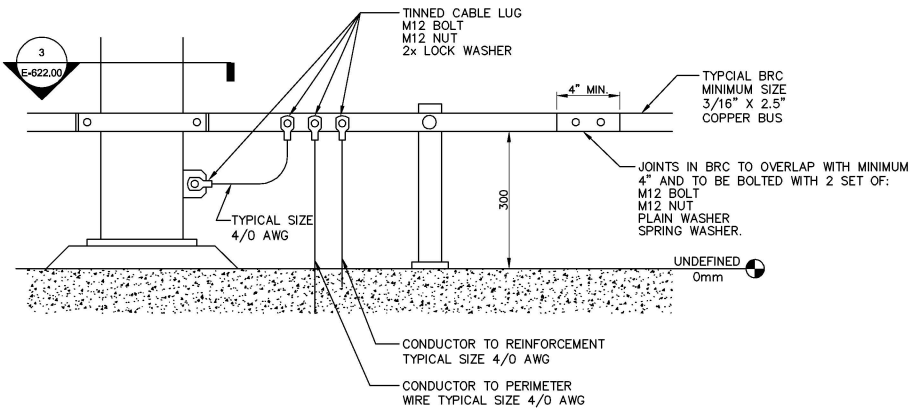
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DRAWING NO: E-621.00

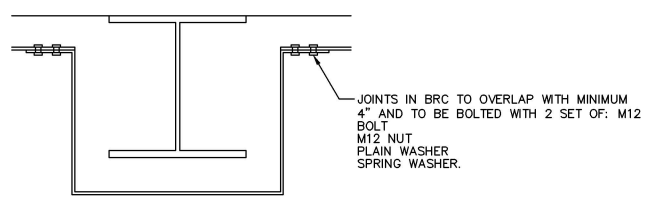
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1 BONDING DETAIL
E-622.00 N.T.S.



2 BUILDING RING CONDUCTOR
E-622.00 N.T.S.



3 BRC COLUMN INTERFACE
E-622.00 N.T.S.

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REV	DESCRIPTION	DATE
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A	INTERIM SUBMISSION	09/13/2022

470 Chestnut Ridge Rd # 2, Woodcliff Lake, NJ 07077

801 Main Campus Drive, Raleigh, North Carolina 27606

PROJECT

CHPE

Champlain Hudson Power Express

Astoria HVDC Converter Station

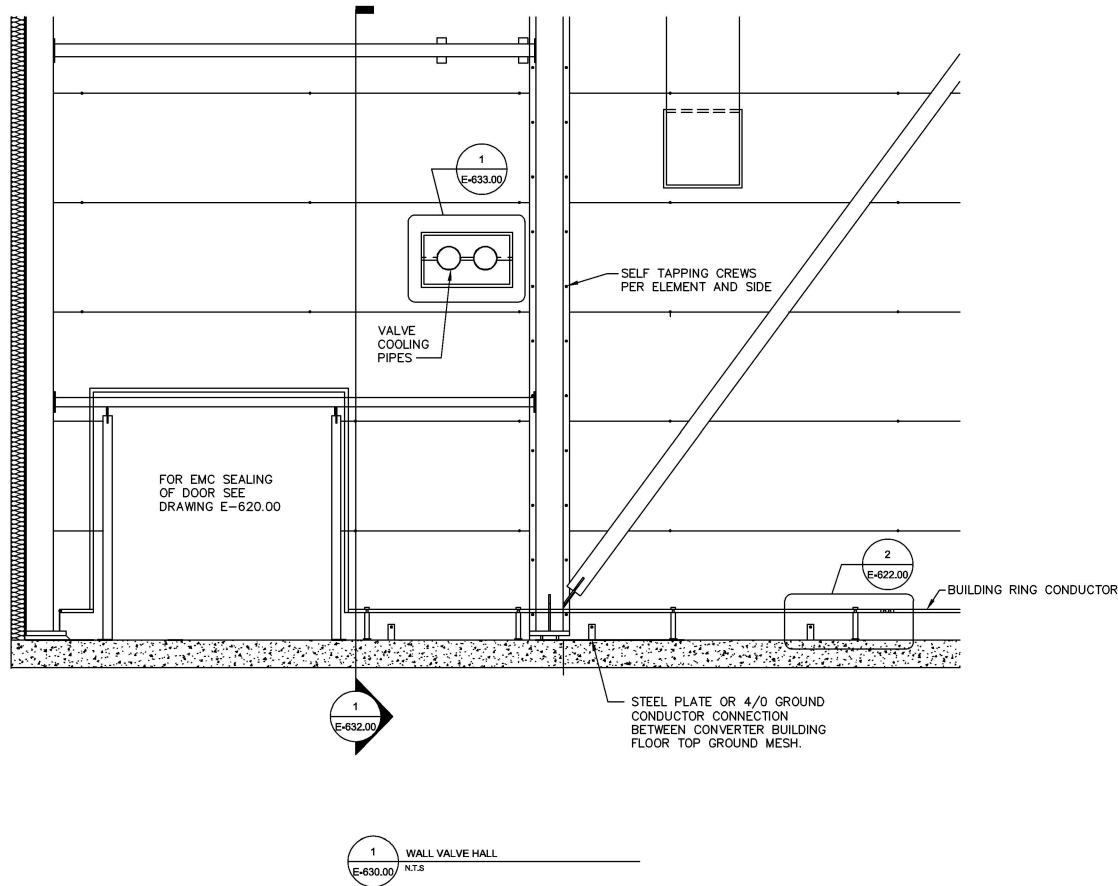
31-45 26th Avenue, Astoria, Queens NY 11105
Block #850 • Lot #310 • BIN #4624437

CONVERTER BUILDING BRC GROUNDING DETAILS

DATE: 13/12/2022
PROJECT NO: 188121
DRAWING BY: E. MATTS
CHECKED BY: E. UZGAN
DRAWING NO: E-622.00
CADD FILE NO: _____

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A	INTERIM SUBMISSION	N.WU	D.DUZAN	09/13/2022
REV		DATE	BY	DATE

Kiewit 470 Chemical Ridge Rd # 2, Woodcliff Lake, NJ 07077

Hitachi Energy 801 Main Campus Drive, Raleigh, North Carolina 27606

PROJECT

CHPE
Champlain Hudson Power Express

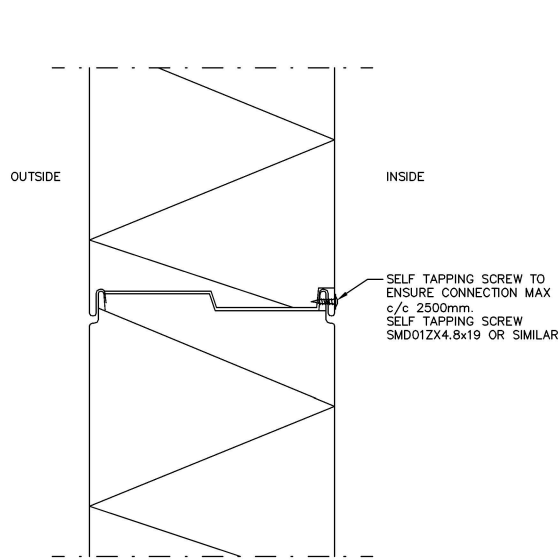
Astoria HVDC Converter Station
31-45 26th Avenue, Astoria, Queens NY 11105
Block #850 • Lot #310 • BIN #4624437

CONVERTER BUILDING GROUNDING DETAILS

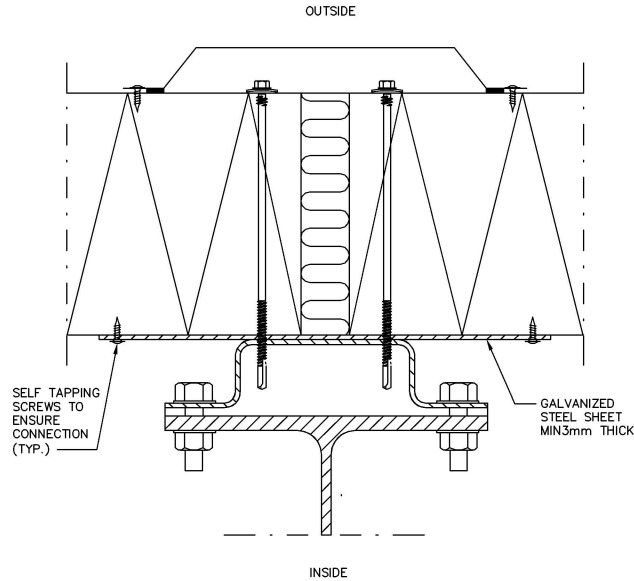
DATE: 12/12/2022
PROJECT NO: 188123
DRAWING BY: M.ENERPSON
CHECKED BY: D.DUZAN
DRAWING NO: **E-630.00**
CADD FILE NO: _____ OF ##

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1 WALL VALVE HALL
E-631.00 N.T.S



2 PANEL JOINT COLUMN
E-631.00 N.T.S

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REV	DESCRIPTION	DRAWN BY	CHECK BY	DATE

Kiewit 470 Chestnut Ridge Rd # 2, Woodcliff Lake, NJ 07077

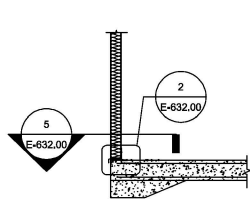
Hitachi Energy 881 Main Campus Drive Raleigh, North Carolina 27606

PROJECT **CHPE**
Champlain Hudson Power Express
Astoria HVDC Converter Station
31-45 26th Avenue, Astoria, Queens NY 11105
Block #850 • Lot #310 • BIN #4624437

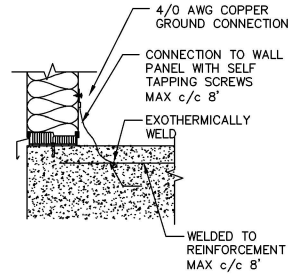
VALVE HALL WALL DETAILS

DATE 13/12/2022
PROJECT NO 188123
DRAWING BY MENERPSON
CHECKED BY DJ/DZ/AN
DRAWING NO **E-631.00**
CADD FILE NO _____ OF # _____

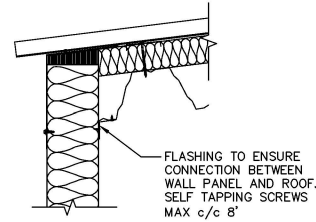
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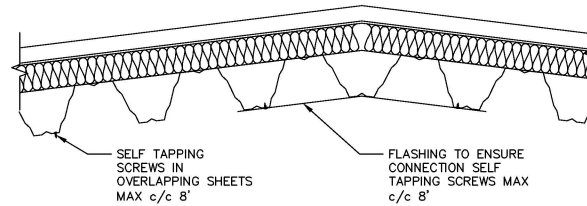
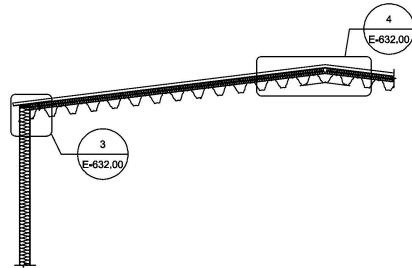
1 WALL SECTION
 E-632.00 N.T.S



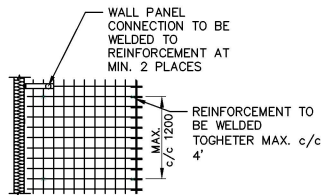
2 SLAB WALL DETAIL
 E-632.00 N.T.S



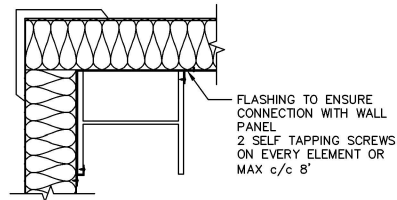
3 ROOF DETAIL EAVES
 E-632.00 N.T.S



4 ROOF RIDGE DETAIL
 E-632.00 N.T.S



5 PLAN DETAIL OF REINFORCEMENT
 E-632.00 N.T.S



6 WALL CORNER
 E-632.00 N.T.S

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A	INTERIM SUBMISSION	09/13/2022

Kiewit 470 Chestnut Ridge Rd # 2, Woodcliff Lake, NJ 07877

Hitachi Energy 881 Main Campus Drive Raleigh, North Carolina 27606

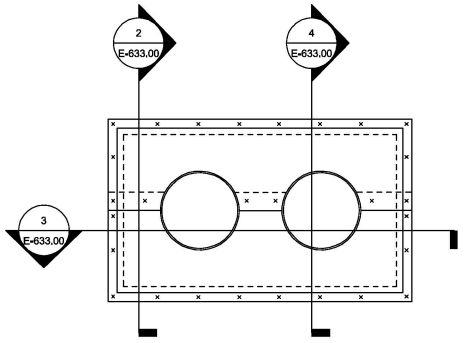
PROJECT **CHPE** Champlain Hudson Power Express

Astoria HVDC Converter Station

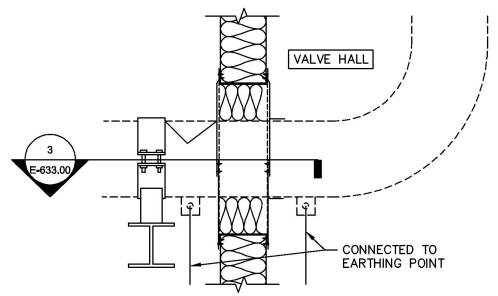
31-45 26th Avenue, Astoria, Queens NY 11105
 Block #850 • Lot #310 • BIN #4624437

CONVERTER BUILDING WALL & ROOF DETAILS

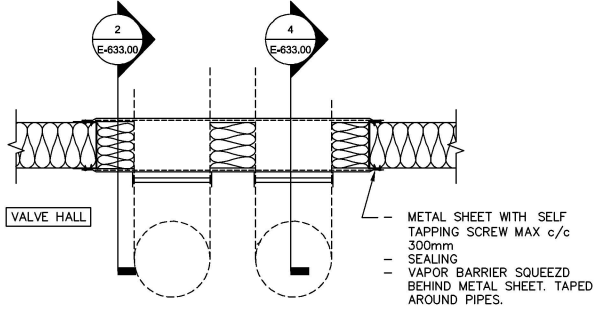
DATE 12/12/2022
 PROJECT NO 188123
 DRAWING BY MENERPSON
 CHECKED BY E.JULIAN
 DRAWING NO **E-632.00**
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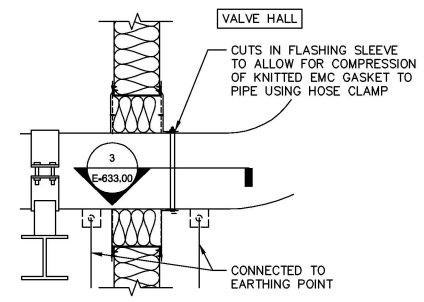
1 FRONT VIEW
E-633.00 N.T.S.



2 VERTICAL SECTION
E-633.00 N.T.S.



3 HORIZONTAL
E-633.00 N.T.S.



4 VERTICAL SECTION THROUGH PIPE
E-633.00 N.T.S.

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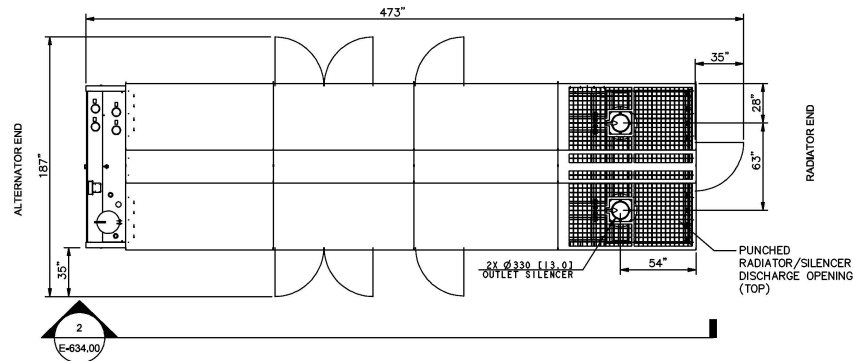
Kiewit 470 Chestnut Ridge Rd # 2, Woodcliff Lake, NJ 07877
Hitachi Energy 881 Main Campus Drive Raleigh, North Carolina 27606

PROJECT
CHPE
Champlain Hudson Power Express
Astoria HVDC Converter Station
31-45 26th Avenue, Astoria, Queens NY 11105
Block #850 • Lot #310 • BIN #4624437

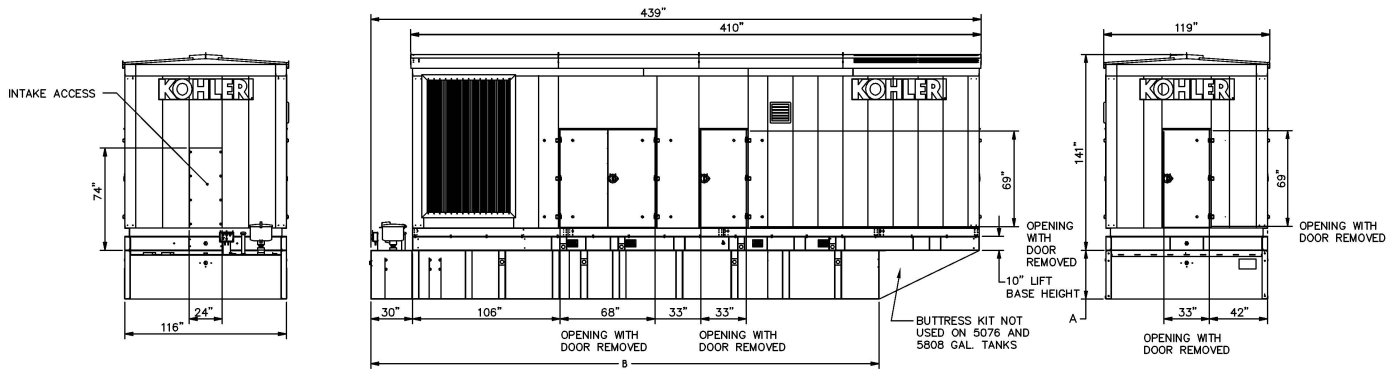
VALVE HALL PIPE DETAILS

DATE: 12/12/2022
PROJECT NO: 188123
DRAWING BY: MENERSON
CHECKED BY: D.DUZAN
DRAWING NO: E-633.00
CADD FILE NO: OF #:

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1 DIESEL GENERATOR DETAIL
E-634.00 N.T.S.



2 DIESEL GENERATOR SIDE DETAIL
E-634.00 N.T.S.

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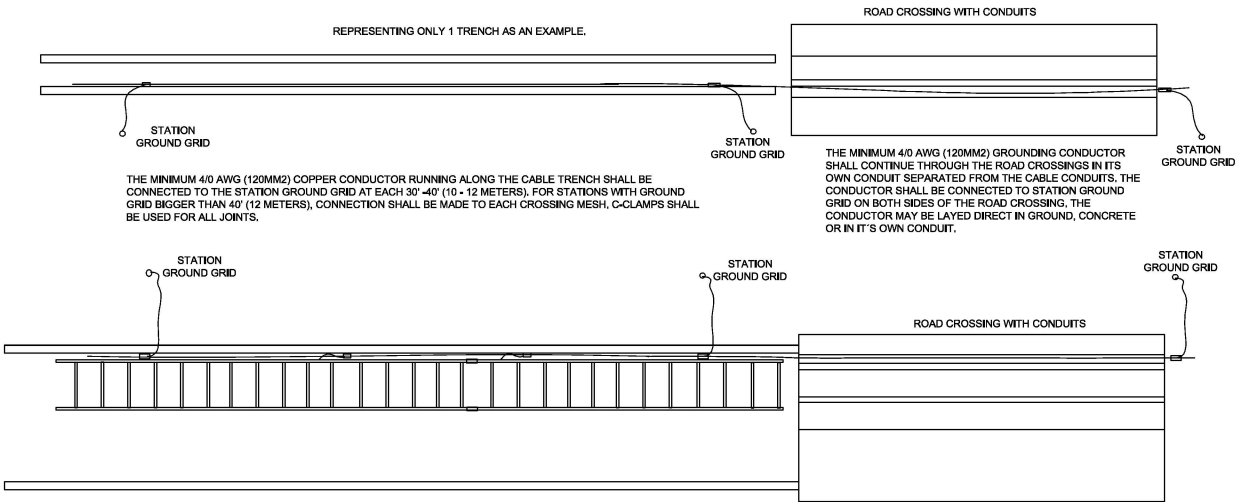
B	100% SUBMISSION	AJK/WR	DJ/DZ/AN	13/12/2022
A	INTERNAL SUBMISSION	N.W.U.	DJ/DZ/AN	09/13/2022
REV	DESCRIPTION	DRAWN BY	CHECKED BY	DATE

Kiewit 470 Chestnut Ridge Rd # 2, Woodcliff Lake, NJ 07877
Hitachi Energy 881 Main Campus Drive Raleigh, North Carolina 27606

PROJECT **CHPE** Champlain Hudson Power Express
Astoria HVDC Converter Station
 31-45 26th Avenue, Astoria, Queens NY 11105
 Block #850 • Lot #310 • BIN #4624437

DIESEL GENERATOR DETAILS

DATE	13/12/2022
PROJECT NO.	188121
DRAWING BY	E.WATTS
CHECKED BY	DJUZAN
DRAWING NO.	E-634.00
CADD FILE NO.	
OF	02



1 GROUNDING OF CABLE TRENCH
E-635.00 N.T.S

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D	100% SUBMISSION	A-CHIAN	DJULIAN	12/12/2022
A	INTERIM SUBMISSION	N.WU	DJULIAN	09/13/2022

REV	DESCRIPTION	DATE	CHK BY	DATE

470 Chestnut Ridge Rd # 2, Woodcliff Lake, NJ 07877

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

CABLE TRENCH GROUNDING DETAILS

DATE: 12/12/2022

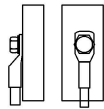
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DRAWING BY: X.WU

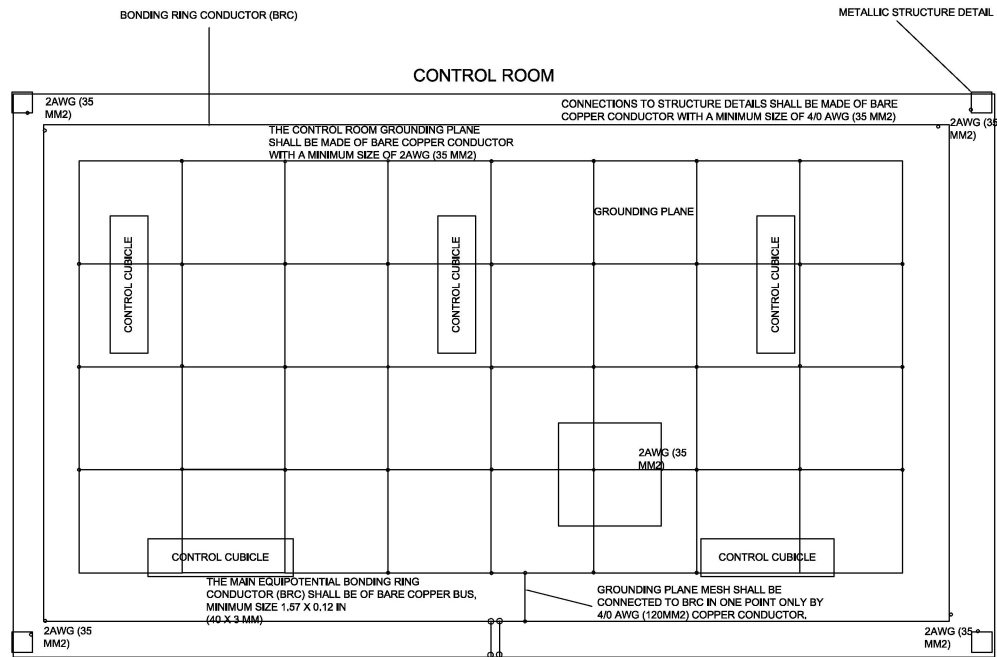
CHECKED BY: DJULIAN

DRAWING NO: E-635.00

CADD FILE NO: of 00



CONNECTIONS OF COPPER CONDUCTOR TO STEEL STRUCTURES SHALL BE MADE WITH TINNED CRIMPED-ON CABLE LUGS



CONNECTION TO THE COMMON BONDING NETWORK (CBN) BY MEANS OF 2 PARALLEL BARE COPPER WIRES OF MINIMUM SIZE 4/0 AWG (120MM2) GROUNDING THE CONTROL ROOM AT THE MAIN ENTRANCE OF CABLES.



ALL JOINTS SHALL BE MADE WITH C-CLAMPS

1 CONTROL ROOM GROUNDING DETAIL
E-636.00 NT.S

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REV	DESCRIPTION	DATE
B	100% SUBMISSION	12/12/2022
A	INTERIM SUBMISSION	09/13/2022

Kiewit 470 Chestnut Ridge Rd # 2, Woodcliff Lake, NJ 07877	Hitachi Energy 801 Main Campus Drive Raleigh, North Carolina 27606
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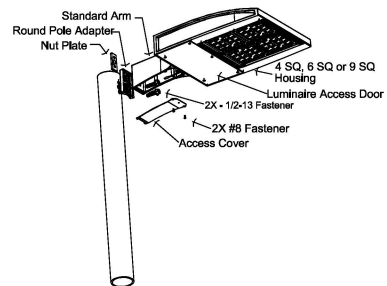
PROJECT

CHPE
Champlain Hudson Power Express

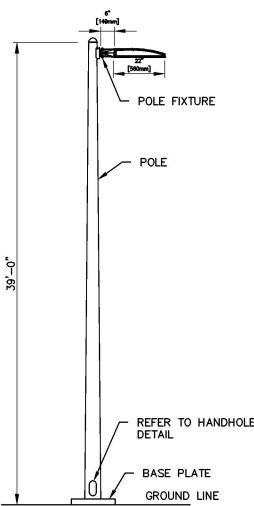
Astoria HVDC Converter Station
31-45 20th Avenue, Astoria, Queens NY 11105
Block #650 - Lot #310 - BIN #4624437

CONTROL ROOM GROUNDING DETAILS

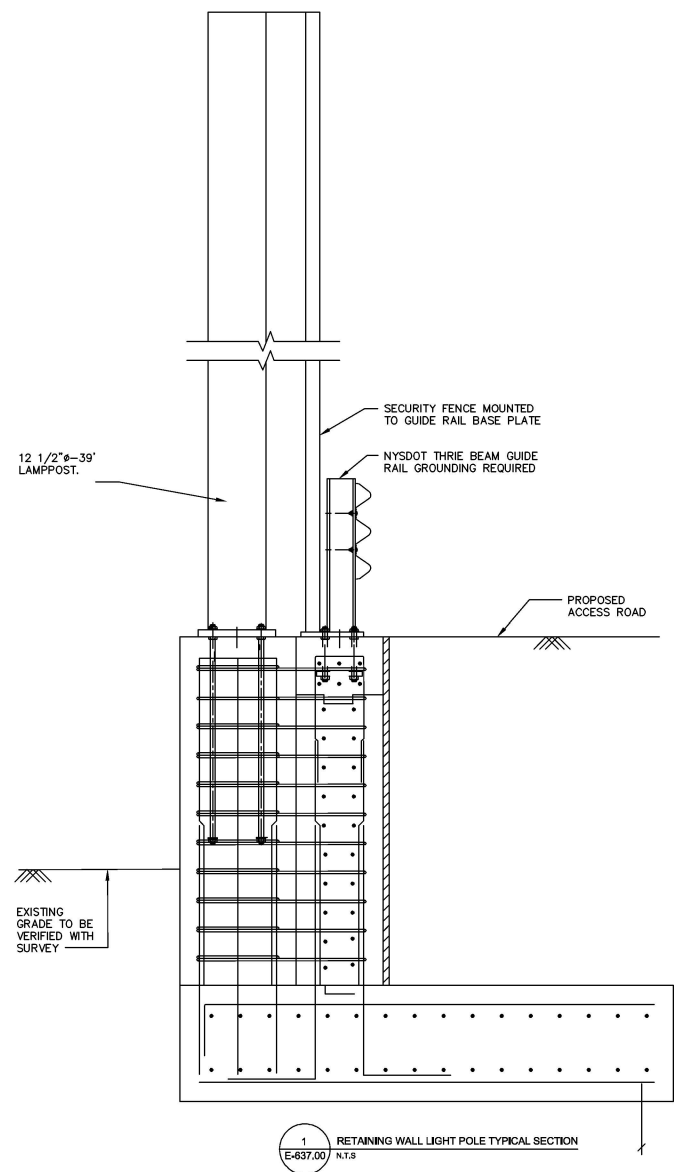
	DATE: 12/12/2022
	PROJECT NO: 109121
	DRAWING BY: XLR
	CHECKED BY: DULZIAN
	DRAWING NO: E-636.00
	CADD FILE NO: /#



3 LIGHT FIXTURE MOUNTING DETAIL
E-637.00 N.T.S.



2 SINGLE PIECE STEEL POLE SHAFT
E-637.00 N.T.S.



1 RETAINING WALL LIGHT POLE TYPICAL SECTION
E-637.00 N.T.S.

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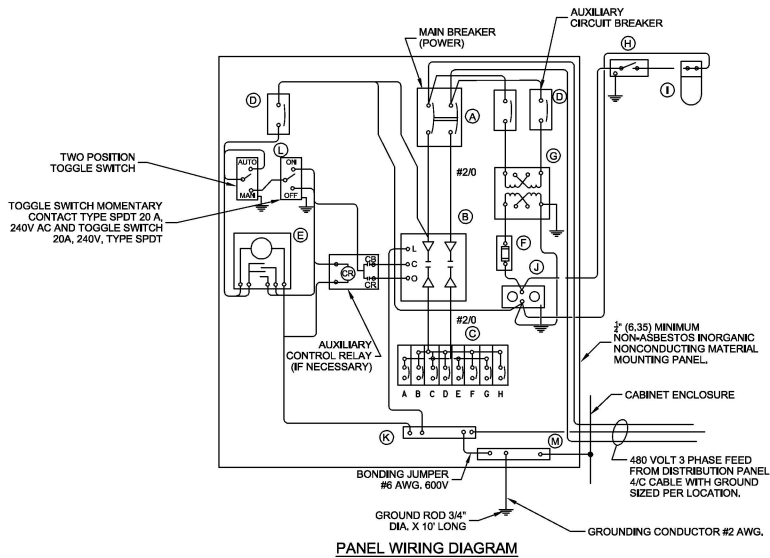
Kiewit 470 Chestnut Ridge Rd # 2, Woodcliff Lake, NJ 07877

Hitachi Energy 881 Main Campus Drive Raleigh, North Carolina 27606

PROJECT **CHPE** Champlain Hudson Power Express
Astoria HVDC Converter Station
31-45 26th Avenue, Astoria, Queens NY 11105
Block #850 • Lot #310 • BIN #4624437

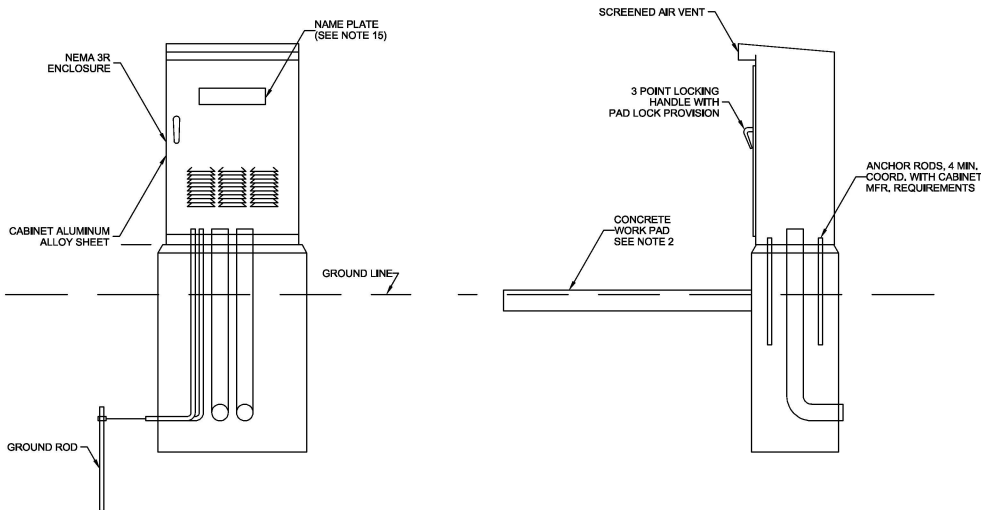
LIGHT POLE FOUNDATION & MOUNTING DETAILS

DATE: 13/12/2022
PROJECT NO: 188121
DRAWING BY: E. SWARTZ
CHECKED BY: D. DULZAN
DRAWING NO: **E-637.00**
CADD FILE NO: _____ OF #F: _____



PANEL WIRING DIAGRAM

1 PANEL WIRING DIAGRAM
E-607.00
N.T.S.



BILL OF MATERIAL		
ITEM	QUANTITY	DESCRIPTION
A	1	MAIN CIRCUIT BREAKER, 3 POLE, 600 VOLT 100 AMP. FRAME, 100 AMP. NON-INTERCHANGEABLE TRIP INTERRUPTING RATING NEMA-22000 AMP. AT 480 VOLT.
B	1	REMOTE CONTROL SWITCH, ELECTRICALLY OPERATED, MECHANICALLY HELD, 3 POLE, SINGLE THROW, 100 AMP. 600 VOLTS CONTROL CIRCUIT 240 VOLT.
C	8	CIRCUIT BREAKERS, 1 POLE, 100 AMP. FRAME, 50 AMP. NON-INTERCHANGEABLE TRIP INTERRUPTING RATING NEMA-10,000 AMP. AT 240V
D	2	CONTROL CIRCUIT-CIRCUIT BREAKER, 1 POLE, 240 V, 100 AMP. FRAME, 15 AMP. NON-INTERCHANGEABLE TRIP INTERRUPTING RATING NEMA-5000 AMP. AT 240 V
E	1	ASTRONOMIC MICROPROCESSOR-BASED 2-CHANNEL CONTROLLER (TIME SWITCH)
F	1	20 AMP, 120 VOLT FUSE
G	1	1.5 KVA, SINGLE PHASE, ENCAPSULATED TRANSFORMER 240 X 480 / 120 X 240 VOLT, 60 Hz
H	1	SPST 20A SWITCH ON DOOR, TO TURN LIGHT ON WHEN DOOR IS OPEN.
I	1	INCANDESCENT LIGHTING FIXTURE ENCLOSED AND GASKETED WITH 60 WATT, 120 V. LAMP
J	1	20 AMP, 120 VOLT, DUPLEX RECEPTACLE, GFCI
K	1	COPPER GROUND BUS 1#4" (6.35) X 1" (25.4) X 12" (304.8mm) LONG MOUNTED ON PANEL WITH LUGS AND 4 SPARE LUGS
L	1	TOGGLE SWITCHES MOUNTED IN 4" (101.6) X 4" (101.6 mm) BOX
M	1	COPPER GROUND BUS 1#4" (6.35) X 1" (25.4) X 12" (304.8mm) LONG MOUNTED ON PANEL WITH LUGS AND SPARE LUGS

NOTES:

- FOUNDATION SIZE SHALL BE COORDINATED WITH CABINET SIZE AND MFR.
- IN FRONT OF CONTROL CABINET DOOR, REMOVE VEGETATION AND 2" (50.8mm) TOP SOIL. LEVEL THE AREA AND ON TOP, PLACE LENGTHWISE PARALLEL TO CONTROL CABINET, A CONCRETE PAD 35" (914.4mm) X 60" (1524mm) X 4" (101mm) MIN. SIZE, THE COST OF LABOR AND MATERIALS ARE INCLUDED IN THE COST OF THE CONTROLLER.
- DOOR SHALL BE CONSTRUCTED FROM SAME TYPE OF MATERIAL AND THICKNESS AS CABINET.
- DOOR SHALL BE EQUIPPED WITH THREE POINT LATCHING MECHANISM WITH NYLON ROLLERS AT TOP THE BOTTOM.
- DOOR HINGE SHALL BE A HEAVY GAUGE CONTINUOUS HINGE WITH A 1/4" (6.35mm) DIA. STAINLESS STEEL HINGE PIN.
- ALL EXTERNAL HARDWARE SHALL BE STAINLESS STEEL.
- CONTROL WIRING TO BE #12 AWG, 600V, TYPE "SIS" GRAY SWITCH BOARD WIRE, STRANDED COPPER.
- CABINETS SHALL BE PRIMED AND PAINTED AS SPECIFIED.
- THE HEADS OF CONNECTOR SCREWS SHALL BE PAINTED WHITE FOR NEUTRAL BAR CONNECTION AND GREEN FOR GROUND BAR CONNECTORS.
- ALL WIRING WITHIN THE CABINET SHALL BE COLOR CODED AS INDICATED, R = RED BL = BLUE W = WHITE B = BLACK Y = YELLOW G = GREEN
- PROVIDE SEALING GROMMETS FOR ALL OPEN WIRING EXTENDED FROM DEVICES IN BOXES OR CABINETS WITHIN THE CONTROL CABINET.
- ALL WIRING SHALL BE NEATLY DRESSED AND SUPPORTED.
- THE CONTROLLER SHALL BE CONSTRUCTED TO U.L. STD. 508 AND BEAR THE U.L. LABEL "ENCLOSED INDUSTRIAL CONTROL PANEL".
- 12" (304.8 mm) x 16" (406.4 mm) STAINLESS STEEL EXTERIOR NAMEPLATE SHALL BE ENGRAVED TO "STATE OF NEW YORK LIGHTING CONTROLS" UNLESS OTHERWISE SPECIFIED.

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B	INTERNAL SUBMISSION	13/12/2022

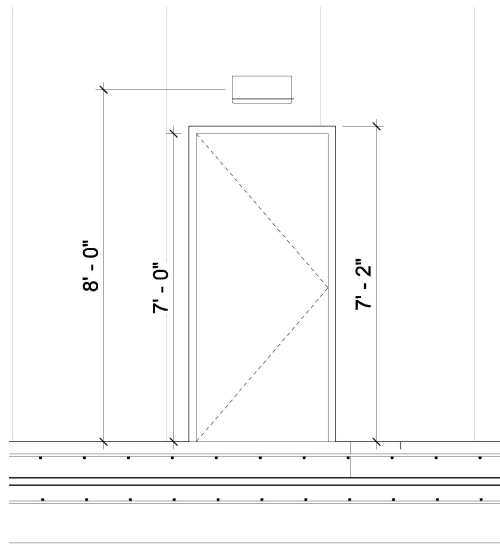
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Hitachi Energy 881 Main Campus Drive Raleigh, North Carolina 27606

PROJECT **CHPE** Champlain Hudson Power Express
Astoria HVDC Converter Station
31-45 26th Avenue, Astoria, Queens NY 11105
Block #850 • Lot #310 • BIN #4624437

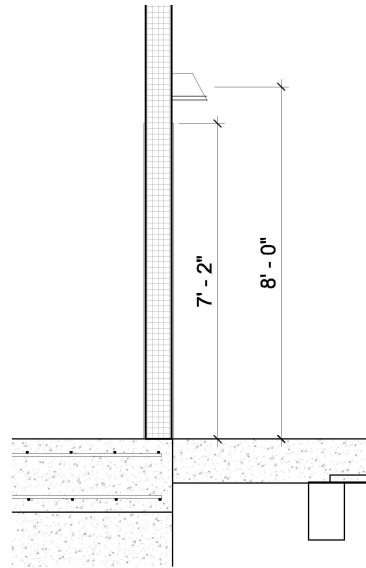
LIGHTING CONTROLLER DETAILS

DATE	13/12/2022
PROJECT NO.	188123
DRAWING BY	E. MATTS
CHECKED BY	E. DULZAN
DRAWING NO.	E-638.00
CADD FILE NO.	
OF #	

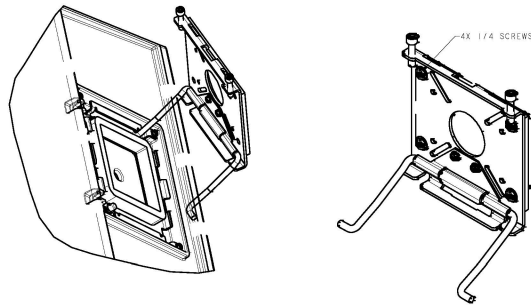
ISSUED FOR PERMIT



1 WALLPACK MOUNTING FRONT
3/4" = 1'-0"



2 WALLPACK MOUNTING SIDE
3/4" = 1'-0"



3 WALLPACK MOUNTING PLATE
N.T.S

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REV	DESCRIPTION	E. WATTS	D. DAZAN	12/19/2022
A	100% SUBMISSION			

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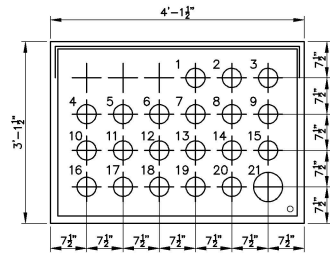
PROJECT

Champlain Hudson Power-Express

Astoria HVDC Converter Station
31-45 20th Avenue, Astoria, Queens NY 11105
Block #650 - Lot #310 - BIN #4624437

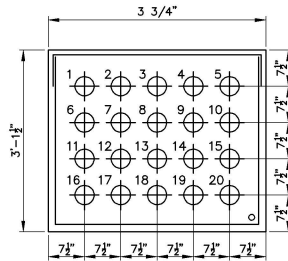
WALLPACK MOUNTING DETAILS

	<p>DATE: 12/19/2022</p> <p>PROJECT NO: 159121</p> <p>DRAWING BY: Author</p> <p>CHECKED BY: Designer</p> <p>DRAWING NO: E-639.00</p> <p>CADD FILE NO: AutoCAD 2013 - 12/19/2022 11:43:46 AM</p>
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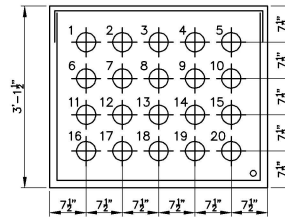
5 DUCT BANK SECTION
E-641.00 N.T.S

DUCT DESIGNATION	DUCT ID
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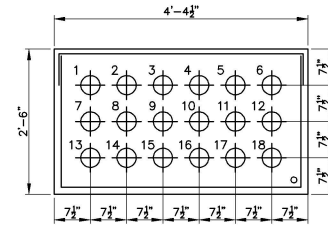
6 DUCT BANK SECTION
E-641.00 N.T.S

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E-641.00 N.T.S

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B	100% SUBMISSION	AJK/WH	DJ/DZ/AN	13/12/2022
A	INTERIM SUBMISSION	N/W/J	DJ/DZ/AN	09/13/2022
REV	DESCRIPTION	DATE	DATE	DATE

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Hitachi Energy 881 Main Campus Drive Raleigh, North Carolina 27606

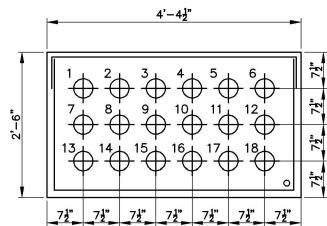
PROJECT

CHPE
Champlain Hudson Power Express

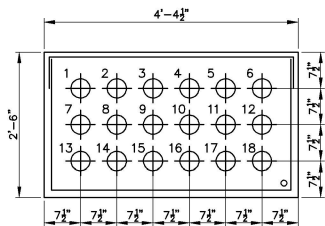
Astoria HVDC Converter Station
31-45 26th Avenue, Astoria, Queens NY 11105
Block #850 • Lot #310 • BIN #4624437

DUCT BANK & CABLE TRAY SECTION DETAILS 2

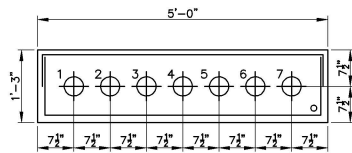
DATE 13/12/2022
PROJECT NO 180121
DRAWINGS BY XLB/J
CHECKED BY DJ/DZ/AN
DRAWING NO E-641.00
CADD FILE NO
OF 88



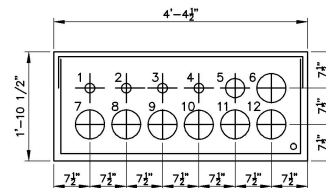
9 DUCT BANK SECTION
E-642.00 N.T.S



10 DUCT BANK SECTION
E-642.00 N.T.S



11 DUCT BANK SECTION
E-642.00 N.T.S



12 DUCT BANK SECTION
E-642.00 N.T.S

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B	100% SUBMISSION	A.KIWI	D.DUZAN	13/12/2022
A	INTERIM SUBMISSION	N.WU	D.DUZAN	09/13/2022
REV		DATE		

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PROJECT

CHPE
Champlain Hudson Power Express

Astoria HVDC Converter Station
31-45 26th Avenue, Astoria, Queens NY 11105
Block #850 • Lot #310 • BIN #4624437

DUCT BANK & CABLE TRAY SECTION DETAILS 3

	DATE: 13/12/2022
	PROJECT NO: 180121
	DRAWING BY: X.L.B.
	CHECKED BY: E.DUZAN
	DRAWING NO: E-642.00
	CADD FILE NO: _____ OF #F: _____

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