APPENDIX C.20

CASE 10-T-0139

SITE PLANS AND CONSTRUCTION DRAWINGS

MECHANICAL DRAWINGS – CONVERTER AND SERVICE BUILDING ASTORIA HVDC CONVERTER STATION - SEGMENT 22

ASTORIA HVDC CONVERTER STATION CONVERTER AND SERVICE BUILDING MECHANICAL PACKAGE

SCOPE OF WORK

THE MECHANICAL SCOPE OF WORK INCLUDES HEATING, VENTILATION COOLING, AIR CONDITIONING, AND BUILDING CONTROLS, (WHERE REQUIRED) FOR THE FOLLOWING AREAS AS SUBJECT TO THE REQUIREMENTS AND PERFORMANCE CRITERIA PROVIDED IN THE PRELIMINARY PERFORMANCE SPECIFICATION:

- 1. CONVERTER BUILDING
- 2. DC HALL 3. REACTOR HALL
- 4. VALVE HALL
- 5. SERVICE BUILDING

SPECIAL INSPECTION AND **PROGRESS INSPECTIONS:**

FOLLOWING SPECIAL AND PROGRESS INSPECTIONS SHALL BE PERFORMED PER NYC BUILDING CODE 2022. NOTIFY ARCHITECT, ENGINEER AND OWNER FOR SPECIAL INSPECTIONS AT LEAST 72 HOURS BEFORE THE SPECIAL INSPECTION WORK STARTS.

SPECIAL INSPECTIONS		
INSPECTION AND TEST	CODE / SECTION	
MECHANICAL SYSTEMS	BC 1704.16	
HEATING SYSTEMS	BC 1704.25	
EMERGENCY & STAND BY POWER SYSTEMS (GENERATORS)	BC 1704.31	
FIRE RESISTANT PENETRATIONS AND JOINTS	BC 1704.26	
ALUMINUM WELDING	BC 1704.28	
SEISMIC ISOLATION SYSTEMS	BC 1704.8	
PROGRESS INSPECTIONS		
INSPECTION AND TEST	CODE / SECTION	
INSPECTION AND TEST ENERGY CODE COMPLIANCE INSPECTIONS	CODE / SECTION BC 110.3.5	
INSPECTION AND TEST ENERGY CODE COMPLIANCE INSPECTIONS FINAL	CODE / SECTION BC 110.3.5 28-116.2.4.2 BC 110.5	
INSPECTION AND TEST ENERGY CODE COMPLIANCE INSPECTIONS FINAL VENTILATION AND AIR DISTRIBUTION SYSTEM	CODE / SECTION BC 110.3.5 28-116.2.4.2 BC 110.5 IB2	
INSPECTION AND TEST ENERGY CODE COMPLIANCE INSPECTIONS FINAL VENTILATION AND AIR DISTRIBUTION SYSTEM SHUTOFF DAMPERS	CODE / SECTION BC 110.3.5 28-116.2.4.2 BC 110.5 IB2 IIB2	
INSPECTION AND TEST ENERGY CODE COMPLIANCE INSPECTIONS FINAL VENTILATION AND AIR DISTRIBUTION SYSTEM SHUTOFF DAMPERS METERING	CODE / SECTION BC 110.3.5 28-116.2.4.2 BC 110.5 IB2 IIB2 IC1, IIC1	
INSPECTION AND TEST ENERGY CODE COMPLIANCE INSPECTIONS FINAL VENTILATION AND AIR DISTRIBUTION SYSTEM SHUTOFF DAMPERS METERING ELECTRICAL MOTORS AND ELEVATORS	CODE / SECTION BC 110.3.5 28-116.2.4.2 BC 110.5 IB2 IIB2 IC1, IIC1 IIC6	

THIS PROJECT REQUIRES COMMISSIONING AND A PRELIMINARY COMMISSIONING REPORT CERTIFICATION WILL BE PROVIDED PRIOR TO SIGN-OFF.





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.





FL FLOOD

- FL-1. THE SITE IS DEFINED AS A ZONE (NON-COASTAL).
- FL-2. BASE FLOOD ELEVATION, BFE, = 13 FEET NAVD 88.
- FL-3. RECOMMENDED FREE BOARD BY THE 2022 NYCBC-APPENDIX G IS 2.0 FEET.
- FL-4. RECOMMENDED DESIGN FLOOD ELEVATION, DFE = 15 FEET NAVD 88.
- FL-5. THE STRUCTURE IS NOT SUBJECTED TO HYDRODYNAMIC LOADS.

DESIGN ELEVATION / DEPTH	FEET IN NAVD 88
DESIGN BASE FLOOD ELEVATION	13.0
FINISH FLOOR ELEVATION	15.0
SEA LEVEL RISE	NOT CONSIDERED



DRAWING LIS

SHEET NUMBER

M-001.00	COVER SHEET
M-002-00	SHEET INDEX
M-003.00	OVERALL HVAC SITE PLAN
M-004.00	HVAC GENERAL NOTES, S
M-100.00	CONVERTER AND SERVICE
M-101.00	CONVERTER BUILDING - RI
M-102.00	CONVERTER BUILDING - RI
M-103.00	CONVERTER BUILDING- VA
M-104.00	CONVERTER BUILDING VA
M-105.00	CONVERTER BUILDING DC
M-106.00	CONVERTER BUILDING - D
M-107.00	SERVICE BUILDING LEVEL
M-108.00	SERVICE BUILDING HVAC
M-111.00	CONVERTER BUILDING - H
M-112.00	SERVICE BUILDING - HVAC
M-200.00	HVAC - SEQUENCES OF OF
M-201.00	HVAC - CONTROL DIAGRAM
M-202.00	HVAC - CONTROL DIAGRAM
M-300.00	CONVERTER BUILDING HV
M-301.00	CONVERTER BUILDING HV
M-302.00	CONVERTER BUILDING HV
M-400.00	SERVICE BUILDING HVAC -
M-401.00	SERVICE BUILDING HVAC -
M-500.00	CONVERTER BUILDING HV
M-600.00	HVAC - DETAILS
M-601.00	HVAC - DETAILS
M-602.00	HVAC - DETAILS
M-603.00	HVAC - DETAILS
M-604.00	HVAC - DETAILS
M-605.00	HVAC - DETAILS
M-606.00	HVAC - DETAILS
M-700.00	HVAC - SCHEDULES
M-701.00	HVAC - SCHEDULES
M-702.00	HVAC - SCHEDULES
M-705.00	HVAC - BUILDING MANAGE
EN-100.00	ENERGY COMPLIANCE - MI
EN-200.00	ENERGY COMPLIANCE - MI
EN-300.00	ENERGY COMPLIANCE - MI
EN-400.00	ENERGY COMPLIANCE - MI

SHEET NAME	
1	
YMBOLS, LEGENDS & ABBREVIATIONS	
E BUILDING OVERALL HVAC FLOOR PLAN	
FACTOR HALL HVAC PLAN- AREA B	
LVE HALL HVAC PLAN- AREA C	
LVE HALL 2 - HVAC PLAN- AREA D	
HALL HVAC PLAN - AREA E	
C HALL - HVAC PLAN - AREA F	
VAC ROOF PLAN	
ROOF PLAN	
PERATION	
AC - SECTIONS	
AC - SECTIONS	
FIRST FLOOR - PIPING PLAN	
SECOND FLOOR - PIPING PLAN	
AC - AIR FLOW DIAGRAM	
CHANICAL 1	
ECHANICAL 2	
ECHANICAL 3	
ECHANICAL 4	

Engineering and Land Surveying, P.C. 370 7th Avenue **SUITE 1604** New York, NY 10001 SOW 25 Mohawk Avenue Sparta, NJ 07871 CONFIDENTIAL THESE DRAWINGS ARE CONFIDENTIAL IN NATURE. ANY MISUSE OR UNAUTHORIZED DISTRIBUTION OF THE DRAWINGS CONTAINED HEREIN WILL BE A VIOLATION OF THIS CONFIDENTIALITY REQUIREMENT AND SUBJECT THE VIOLATOR TO LIABILITY. REVIEW OF THESE MATERIALS BY RECEIPT SHALL CONSTITUTE ACCEPTANCE OF THESE TERMS AND THE TERMS OF ANY UNDERLYING CONFIDENTIALITY AGREEMENT WE MAY HAVE EXCLUDED IN OBTAINING THIS INFORMATION FROM A THIRD PARTY. IF THE RECIPIENT IS NOT IN AGREEMENT WITH THE OBLIGATION OF CONFIDENTIALITY THEN THE DRAWINGS SHALL BE RETURNED TO THE ORIGINATOR. 12-12-22 09-13-22 B FINAL SUBMISSION WP SD AZ A INTERIM SUBMISSION WP REV DESCRIPTION DRW BY CHK BY DATE Hitachi Energy 470 Chestnut Ridge Rd # 2, Woodcliff Lake, NJ 07677 901 Main Campus Drive Raleigh, North Carolina 27606 CHPE PROJECT Champlain Hudson Power Express Astoria HVDC **Converter Station** 31-45 20th Avenue, Astoria, Queens NY 11105 Block #850 - Lot #310 - BIN #4624437 SHEET INDEX DATE 12/12/2022 PROJECT NO 105121







4' 0 16' 32'





-PROPERTY LINE -PERIMETER FENCE TYP

HVAC GENERAL NOTES

- THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF DUCTWORK, REFRIGERANT PIPING AND EQUIPMENT. DO NOT SCALE DRAWINGS. THE EXACT LOCATION AND ROUTING OF EQUIPMENT DUCTWORK, REFRIGERANT PIPING, ETC., UNLESS SPECIFICALLY DIMENSIONED ON THE DRAWINGS, SHALL BE DETERMINED IN THE FIELD. MAKE REASONABLE MODIFICATIONS IN THE INSTALLATION SO ALL DUCTWORK FITS PROPERLY AND EQUIPMENT CAN BE SERVICED.
- MATERIALS AND EQUIPMENT SHALL BE NEW AND INSTALLED AS INDICATED ON THE DRAWINGS AND/OR SPECIFICATIONS. THEY SHALL BE INSTALLED PLUMB, LEVEL AND TRUE-TO-LINE WITH ADJACENT WORK WHERE INSTALLATION METHODS ARE NOT SPECIFICALLY COVERED BY THE DRAWINGS AND/OR SPECIFICATION, FIRST CLASS TRADE PRACTICES AND MANUFACTURER'S INSTRUCTIONS AND **RECOMMENDATIONS SHALL GOVERN.**
- CAREFULLY EXAMINE ALL ARCHITECTURAL, STRUCTURAL, PLUMBING, HVAC, FIRE PROTECTION, AND ELECTRICAL DRAWINGS PERTAINING TO CONSTRUCTION. COOPERATE WITH OTHER TRADES IN LOCATING DUCTWORK. REFRIGERANT PIPING, EQUIPMENT. ETC. IN ORDER TO AVOID CONFLICT WITH OTHER TRADE'S WORK. NO CLAIM FOR COSTS WILL BE ALLOWED FORE RELOCATING EQUIPMENT, REFRIGERANT PIPING, DUCTWORK, ETC. WHICH INTERFERES WITH OTHER TRADE'S WORK.
- FABRICATION AND INSTALLATION OF DUCTWORK SHALL BE IN ACCORDANCE WITH SMACNA HVAC DUCT CONSTRUCTION STANDARDS NYC MECHANICAL CODE AND APPLICABLE NFPA STANDARDS.
- 5. ALL DUCT SIZES SHOWN ARE INSIDE CLEAR DIMENSIONS.
- PROVIDE AIR TURNING VANES IN ALL SQUARE ELBOWS.
- REFER TO TYPICAL DETAILS FOR REFRIGERANT PIPING AND INSTALLATION OF EQUIPMENT.
- 8. FURNISH ALL LABOR, MATERIAL, TOOLS, AND EQUIPMENT TO INSTALL ALL HVAC SYSTEMS AS INDICATED ON THESE DRAWINGS.
- 9. ARRANGE AND PAY FOR MECHANICAL PERMITS AND INSPECTIONS AS REQUIRED BY LOCAL ORDINANCES.
- 10. DELIVER MATERIALS TO PROJECT IN GOOD CONDITION. STORE MATERIALS OFF OF GROUND AND PROTECT FROM WEATHER AND THE ELEMENTS.
- 11. VERIFY DIMENSIONS IN THE FIELD. VERIFY STRUCTURAL DETAILS BEFORE INSTALLING DUCTWORK. NO EXTRA COMPENSATION WILL BE CONSIDERED BECAUSE OF DIFFERENCED BETWEEN ACTUAL MEASURED DIMENSIONS AND THOSE INDICATED ON THE DRAWINGS.
- 12. ALL PENETRATIONS THROUGH WALLS SHALL BE PROVIDED WITH PROPERLY SIZED SLEEVES. SEAL ALL PIPE SLEEVES WITH APPROPRIATE CAULKING, ALL SIX (6) INCH AND SMALLER PIPE PENETRATIONS THROUGH FIRE RATED WALLS AND/OR FLOORS SHALL BE INSTALLED IN ACCORDANCE WITH APPROPRIATE 3M FIRESTOP SYSTEM (OR APPROVED EQUAL). ALL PIPING SLEEVES SHALL BE SCHEDULE 40, CARBON STEEL, ASTM A53, GRADE B.
- 13. ANY CUTTING OR PATCHING OF NEW SURFACES THAT IS REQUIRED SHALL BE REPLACED WITH MATERIAL OF THE SAME QUALITY AND THICKNESS AS THE EXISTING SURFACE. ANY DAMAGES TO EXISTING MATERIALS SHALL BE REPAIRED OR REPLACED TO MATCH EXISTING.
- 14. ALL DUCTWORK SHALL BE IDENTIFIED AFTER INSULATION WITH PLASTIC DUCT SIGNAGE/MARKERS. THESE MARKERS SHALL BE THE MANUFACTURER'S STANDARD LAMINATED PLASTIC IN THE FOLLOWING COLOR CODES INDICATING BACKGROUND COLOR THEN LETTER COLOR:
 - BLUE / WHITE: SUPPLY AIR RED / WHITE: RETURN AIR
- GREEN / WHITE: OUTSIDE AIR / INTAKE AIR
- YELLOW / BLACK: RELIEF AIR / EXHAUST AIR
- 15. ENGAGE AN INDEPENDENT TESTING, ADJUSTING AND BALANCING (TAB) AGENT CERTIFIED BY EITHER AABC OR NEBB FOR ALL TESTING, ADJUSTING AND BALANCING. SEE THE TAB SPECIFICATION FOR MORE INFORMATION.
- 16. ALL MECHANICAL EQUIPMENT, REFRIGERANT PIPING AND DUCTWORK SHALL BE RESTRAINED TO RESIST SEISMIC FORCES PER THE LOCALE AS DICTATED BY THE LOCAL AND STATE AUTHORITIES. RESTRAINTS SHALL MAINTAIN EQUIPMENT, REFRIGERANT PIPING AND DUCTWORK IN A CAPTIVE POSITION. RESTRAINT DEVICES SHALL BE DESIGNED AND SELECTED TO MEET THE SEISMIC AS DEFINED IN THE LATEST ISSUE OF THE STATE BUILDING CODE OR LOCAL JURISDICTION BUILDING CODE.
- 17. THE FINAL START-UP OF ALL HVAC EQUIPMENT SUPERVISED AND MONITORED BY A FACTORY AUTHORIZED TECHNICIAN.

GENERAL REQUIREMENTS:

- ALL WORK, MATERIALS AND WORKMANSHIP SHALL BE PERFORMED IN STRICT ACCORDANCE WITH, AND CONFORM WITH ALL FEDERAL, STATE AND LOCAL CODES, ORDINANCES, RULES AND REGULATIONS, SPECIFICATIONS AND RECOMMENDED PRACTICES OF THE MANUFACTURERS AND THE APPROPRIATE APPLICABLE STANDARDS. WHERE SUCH CODES, RULES AND REGULATIONS ARE AT VARIANCE WITH THE PLANS AND NOTES, SAID CODES, RULES AND REGULATIONS, ETC. SHALL TAKE PRECEDENCE OVER THE PLANS AND NOTES
- ALL WORK SHOWN ON THESE DRAWINGS SHALL COMPLY WITH ALL APPLICABLE BUILDING CODES AND REGULATIONS. ALL REQUIRED INSPECTIONS NECESSARY TO PERFORM WORK AND SERVICES HEREIN NOTED OR INDICATED ON THE DRAWINGS, APPROVALS AND PERMITS SHALL BE OBTAINED AND PAID FOR.
- ALL WORK SHALL BE EXECUTED IN A NEAT AND ORDERLY MANNER WITH THE LEAST POSSIBLE NOISE, DUST, OR DISTURBANCE TO ADJACENT SITES OR BUILDINGS. PROVIDE PROTECTION FOR THE GENERAL PUBLIC AND CONSTRUCTION WORKERS IN AND AROUND THE CONSTRUCTION SITE.
- THE BUILDING SHALL REMAIN ACCESSIBLE TO THE OWNER AT ALL TIMES.
- CONSTRUCTION AREA SHALL BE THOROUGHLY CLEANED PRIOR, DURING AND AFTER CONSTRUCTION.
- SUBMITTALS SHALL BE IN COMPLIANCE WITH CONTRACT REQUIREMENTS AND ACTUAL FIELD CONDITIONS. SPECIAL PRECAUTIONS SHALL BE TAKEN BY THE CONTRACTOR SO THAT EQUIPMENT AND ITS INSTALLATION WILL NOT EFFECT ANY 8. OF THE FOLLOWING: EGRESS TO AND FROM THE BUILDING; FIRE SAFETY, OR CREATE A FIRE HAZARD; STRUCTURAL SAFETY OF THE BUILDING; ACCUMULATION OF DUST AND DEBRIS. THE CONTRACTOR SHALL LEAVE THE SITE BROOM CLEAN EACH DAY. THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE.

N.Y.C. BUILDING DEPARTMENT NOTES

- 1. SYSTEMS SHALL COMPLY WITH 2022 NYC BUILDING CODE. 2. MATERIALS, EQUIPMENT, ASSEMBLIES, FORMS AND METHODS OF CONSTRUCTION SHALL BE APPROVED FOR INSTALLATION PER NYC **BUILDING CODE 2022**
- 3. SPECIAL INSPECTIONS SHALL BE PREFORMED BY CERTIFIED SPECIAL INSPECTIONS AGENCY & SHALL BE FILED WITH THE DEPARTMENT OF BUILDINGS, AS REQUIRED BY N.Y.C. BUILDING CODE. ALL MECHANICAL EQUIPMENT SHALL COMPLY WITH 2020 ENERGY CONSERVATION CONSTRUCTION CODE OF NY CITY, AND WITH THE NYC BUILDING CODE.
- EQUIPMENT SHALL BE INSPECTED AND TESTED PER NYC BUILDING CODE 2022. EQUIPMENT WORK PERMIT SHALL BE PER NYC BUILDING CODE 2022 AND OBTAINED BY THE CONTRACTOR.
- EQUIPMENT USE PERMIT (EUP) SHALL BE OBTAINED AS PER NYC BUILDING CODE 2022. THE DUCT SYSTEM AND ALL COMPONENTS THERETO SHALL COMPLY WITH NYC BUILDING CODE 2022.
- 3. DUCTWORK SYSTEMS SHALL BE CONSTRUCTED WITH PROVISIONS FOR ACCESS AND INSPECTION IN ACCORDANCE WITH NYC BUILDING CODE 2022.







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ACCU ACU AD ADA ADJ AF AFC AFF AFG AHJ AHU AP APPROX ARCH AS AT ATL AVG BMS BCO BD BFF BFG BLDG BOD BOP BOS BTU BTUH ΒV CAT CAV CC CD CFM CHV COND CP CPVC CS CTR CU CUH D DB DDC DEG DIA DN DSD DTG DWG DX FA EAT FFF EG F.I ELEV ΕM ESP EUH EXH

EQUIPMENT SUBMITTAL NOTE:

ALL COORDINATED SUBMITTALS OF ALL HVAC INSTALLATION SHALL BE SUBMITTED FOR REVIEW. THIS SHALL BE DONE BEFORE THE INSTALLATION OF ANY PIPING / DUCTWORK OR EQUIPMENT. THE SUBMITTAL SHALL INCLUDE PIPE / DUCT ROUTING, SIZES, ELEVATIONS, THE DRAWINGS SHALL CONTAIN ALL THE INFORMATION NECESSARY FOR THE PROPER INSTALLATION OF THE JOB. THE SUBMITTAL SHALL BE COORDINATED WITH OTHER TRADES OR EQUIPMENT THAT MIGHT AFFECT THE INSTALLATION. THE DRAWINGS SHALL BE SUBMITTED AT A MIN. 3/8" SCALE OR AT A SCALE THAT IS EASILY LEGIBLE. THE DESIGN DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC AND ARE NOT INTENDED TO BE USED AS A SUBMITTAL. THEREFORE A COPY OF THE DESIGN DRAWING IS NOT ACCEPTABLE AS A SUBMITTAL. REFER TO SUBMITTAL PROCEDURES SPECIFICATION SECTION FOR ADDITIONAL INFORMATION. THE GENERAL CONTRACTOR SHALL SUBMIT A COORDINATED SUBMITTAL WHICH INCLUDES ALL THE TRADES. THIS INCLUDES GENERAL CONSTRUCTION, ELECTRICAL HVAC, PLUMBING & STRUCTURAL TRADES. ALL CONFLICTS MUST BE IDENTIFIED ON THE COORDINATED SUBMITTAL

FAN PROPELLER OR

COIL, COOLING REFRIGERANT

VANEAXIAL

COIL, HEATING

FILTER, PREFILTER

AIR MONITOR STATION

(THROWAWAY)

FILTER, FINAL

DOOR LOUVER

FILTER

LOUVER

(ELECTRIC)

 $\Box H$

SHEET NOTES:

- REQUIREMENTS. FILED UNDER SEPARATE APPLICATION.

- REQUIREMENTS. FILED UNDER SEPARATE APPLICATION.
- REQUIREMENTS. FILED UNDER SEPARATE APPLICATION.

- AND REQUIREMENTS. FILED UNDER SEPARATE APPLICATION.
- HVAC SYMBOLS SUPPLY AIF \searrow UNDER POS RECTANGULAR FAN, CENTRIFUGAL DAMPER, SHUT-OFF (CONDITION \otimes \otimes ROUND **TURNING T RESPECTI** FAN CENTRIFUGAL WITH INLET VALVES

) Ø	DAMPER, CONTROL				
(a) (a) (a) (a)	BACKDRAFT DAMPER	\bigcirc	RECTANGULAR ROUND	\bigcirc	RETURN A DUCT, AIR PRESSURE AIR) TURNI
Μ	DAMPER ACTUATOR				RESPECTIV
	UNIT HEATER, HORIZONTAL DISCHARGE		RECTANGULAR		
-\->	FLOW ARROW (DIRECT)	\bigotimes	ROUND	\bigotimes	TOWARD/A
-\->	FLOW ARROW (INDIRECT)		24"X12"		RECTANGU FIRST NUM
T	THERMOSTAT		0		
TT	TEMPERATURE TRANSMITTER	र		DIA	ROUND DU DIMENSION
H	HUMIDISTAT)"X20" ⇔	OVAL DUC
F	FREEZESTAT				
\frown				12"¥24"	RECTANG

STATIC PRESSURE SENSOR (P)

HVAC EMERGENCY SHUTOFF

QUANTITY **RETURN AIR** REHEAT COIL REFLECTED CEILING PLAN RETURN FAN **RETURN GRILLE** RELATIVE HUMIDITY RELIEF HOOD RUNNING LOAD AMP **RELIEF AIR RIGID METAL CONDU REVOLUTIONS PER** MINUTE

STAINLESS STEEL SUPPLY AIR SUCTION DIFFUSER SMOKE DAMPER SMOKE DETECTOR SUPPLY FAN SUPPLY AIR GRILLE SHUT OFF VALVE SPECIFICATION SQUARE SQUARE FEET STANDARD

ROOFTOP UNIT

TANK THERMOSTAT TEMPERATURE AND PRESSURE TRANSFER AIR TO BE DETERMINED TEMPERATURE TO FLOOR ABOVE TO FLOOR BELOW TRANSFER GRILLE TOP OF BEAM TOP OF CONCRETE TOP OF PIPE TOP OF SLAB TRAP PRIMER TOTAL STATIC

PRESSURE TIGHT TO STRUCTURE TYPICAL

UNDERFLOOR UNDERGROUND UNIT HEATER UNDERWRITERS LABORATORIES UNIT VENTILATOR

VOLTS, VENTLINE, VALVE VARIABLE AIR VOLUME VOLUME DAMPER VARIABLE FREQUENCY

VENT THRU ROOF WITH WITHOUT WET BULB WATER GAUGE WATER HEATER WEATHERPROOF

WEATHER-RESISTANT EXPLOSION PROOF

POUND OR NUMBER AND АΤ

PLUS OR MINUS

REFERENCE SYMBOLS

DETAIL REFERENCE TOP DESIGNATES DETAIL NUMBER BOTTOM DESIGNATES SHEET NUMBER

SECTION REFERENCE TOP DESIGNATES SECTION NUMBER BOTTOM DESIGNATES SHEET NUMBER

ELEVATION SYMBOL

EQUIPMENT NAME AND NUMBER

PLAN NOTE NUMBER

REVISION NUMBER

REFRIGERANT PIPING

WRF REFRIGERANT SUCTION AND LIQUID PIPE

STANDARD ABBREVIATIONS

	F
AIR COMPRESSOR	FAT
AIR COOLED CONDENSING UNIT	FBO
AIR CONDITIONING UNIT	FC FCU
AMERICANS WITH DISABILITIES ACT	FCV
ADJUSTABLE	FD
ABOVE FINISHED FLOOR	FFB
ABOVE FINISHED GRADE	FLA
	FLR FPI
ALUMINUM	FPM
ACCESS PANEL	FPS
APPROXIMATELY	FSD FT
AIR SEPARATOR	
	GAL
ACROSS THE LINE AVERAGE	GALV GC
//VEI///OE	GPH
BUILDING MANAGEMENT SYSTEM	GPM
BUILDING CLEAN OUT BALANCING DAMPER	Gv
BELOW FINISHED FLOOR	Н
BELOW FINISHED GRADE	HC
BOILDING BOTTOM OF DUCT	HVAC
BOTTOM OF PIPE	
	HZ
BRITISH THERMAL UNITS	IF
BALANCING VALVE	
CATEGORY	ΚV Κ\/Δ
CONSTANT AIR VOLUME	KW
COOLING COIL	. –
CHECK VALVE	LB/HR
CONDENSATE	LVR
	М
CARBON STEEL	MAU
CENTER	MAX
COPPER CABINET LINIT HEATER	MCC
	MD
DAMPER	MIN
DIRECT DIGITAL CONTROL	MUA
DEGREES	
DIAMETER	N/A
DUCT SMOKE DETECTOR	NC
DOOR TRANSFER GRILLE	NFPA
	NIC
	NL
EXHAUST AIR	NO
ENTERING AIR TEMPERATURE	NPS NTS
EFFICIENCY	
EXHAUST GRILLE	
EXPANSION JUINT ELEVATION	OA OS
EMERGENCY	OSHA
ELECTRIC UNIT MEATER EXHAUST	Р
	PD
	PH PLBG
	PPH
	PROVID
	PRV PSI
	PSIA
	PSIG

PVC

FINAL AIR TEMPERATURE FURNISHED BY OTHERS FLEXABLE CONNECTION FAN COIL UNIT FLOW CONTROL VALVE FIRE DAMPER, FLOOR DRAIN **FINISHED FLOOR** FROM FLOOR ABOVE FROM FLOOR BELOW FULL LOAD AMPS FLOOR FINS PER INCH FEET PER MINUTE FEET PER SECOND **3 HR FIRE/SMOKE DAMPER** FEET, FLASH TANK GALLON GALVANIZED GENERAL CONTRACTOR GALLONS PER HOUR GALLONS PER MINUTE **GRAVITY VENTILATOR** HUMIDIFIER **HEATING COIL** HORSEPOWER, HEAT PUMP HEATING VENTILATION AND AIR CONDITIONING HERTZ INLINE FAN KILOVOLT **KILOVOLT-AMP** KILOWATT LINEAR FEET LEAVING AIR TEMPERATURE POUNDS PER HOUR LOUVER MOTOR MAKE-UP AIR UNIT MAXIMUM THOUSANDS OF BTU PER HOL MOTOR CONTROL CENTER MANUAL DAMPER MINIMUM MOTOR OPERATED DAMPER MAKE-UP AIR NOT APPLICABLE NORMALLY CLOSED, NOISE CRITERIA NATIONAL FIRE PROTECTION ASSOCIATION NOT IN CONTRACT NIGHT LIGHT NORMALLY OPEN NOMINAL PIPE SIZE NOT TO SCALE ON CENTER **OUTSIDE AIR** OCCUPANCY SENSOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION PUMP, PILOT LIGHT PRESSURE DROP PHASE PLUMBING POUNDS PER HOUR FURNISH AND INSTALL PRESSURE RELIEF VALVE POUNDS PER SQUARE INCH POUNDS PER SQUARE INCH ABSOLUTE POUNDS PER SQUARE INCH GAUGE

POLYVINYL CHLORIDE

D	SMOKE DETECTOR
	QTY RA RC RCP RF RG RH RLA RLFA RMC RPM RTU
	S/S SA SD
	SF SG SOV SPEC SQ SQFT STD
	T T STAT T&P
JR	TA TBD TEMP TFA TFB TG TOB TOC TOP TOS TP TSP
	TTS TYP
	U/F U/G UH UL UV
	V VAV VD VFD DRIVE VTR
	W/ W/O WB WG WH WP WR
	XP #
	& @ +/-

	30"X20" ⇔	OVAL DUCT DIMENSION
	12"X24"	RECTANGU SECTION. F ARROW SID
	20"X30"⇔	OVAL DUCT FIRST NUME SIDE.
		INTERNALLY
		DROP IN ELI DUCT (IN DII FLOW)
		RISE IN ELE' DUCT (IN DIF FLOW)
S IT	FOB	DUCT TRAN FLAT ON BO
	FOT	DUCT TRAN

1. REFER TO SHEETS A SERIES FOR ARCHITECTURAL DRAWINGS, NOTES, DETAILS, SCHEDULES AND REFER TO SHEETS E SERIES FOR BUILDING ELECTRICAL DRAWINGS, NOTES, DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE APPLICATION. REFER TO SHEETS M SERIES FOR HVAC MECHANICAL DRAWINGS, NOTES, DETAILS, SCHEDULES AND REFER TO SHEETS P SERIES FOR PLUMBING DRAWINGS, NOTES, DETAILS, SCHEDULES AND

REFER TO SHEETS S SERIES FOR BUILDING STRUCTURAL DRAWINGS, NOTES, DETAILS, SCHEDULES 6. REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK

SUPPLY AIR DUCT OR AIR UNDER POSITIVE PRESSURE		DUCT SIZE TRANSITION FLAT ON ONE SIDE
TURNING TOWARD/AWAY RESPECTIVELY		DUCT SIZE TRANSITION CONCENTRIC
RETURN AIR/OUTSIDE AIR DUCT, AIR UNDER NEGATIVE PRESSURE (UNCONDITIONED AIR) TURNING TOWARD/AWAY		DUCT SIZE TRANSITION RECTANGULAR TO ROUND
RESPECTIVELY		TURNING VANES
EXHAUST AIR DUCT, AIR UNDER		FLEXIBLE CONNECTION
(UNCONDITIONED AIR) TURNING TOWARD/AWAY RESPECTIVELY		ACCESS DOOR/ACCESS PANEL NEAR SIDE, FAR SIDE, AND SIDE OF DUC RESPECTIVELY
FIRST NUMBER IS SIDESHOWN		SPLITTER DAMPER
ROUND DUCT DIMENSION		CEILING SUPPLY DIFFU
OVAL DUCT DIMENSION FIRST DIMENSION IS SIDE SEEN.	∠ ₹	RETURN INLET, GRILLE OR REGISTER
RECTANGULAR DUCT IN SECTION. FIRST NUMBER IS ARROW SIDE.		EXHAUST INLET, GRILLE OR REGISTER
OVAL DUCT IN SECTION FIRST NUMBER IS ARROW		SUPPLY OUTLET, REGIS OR GRILLE IN DUCTWO (SIDE OR BOTTOM)
INTERNALLY LINED DUCT		RETURN INLET, REGIST OR GRILLE IN DUCTWO (SIDE OR BOTTOM)
DROP IN ELEVATION OF DUCT (IN DIRECTION OF FLOW)		EXHAUST INLET, REGIS OR GRILLE IN DUCTWO (SIDE OR BOTTOM)
RISE IN ELEVATION OF		ROOF SUPPLY OR EXHAUST FAN
DUCT (IN DIRECTION OF FLOW)]	VOLUME DAMPER (VD)
DUCT TRANSITION	>	FIRE DAMPER (FD) W/ HOUR RATING
DUCT TRANSITION FLAT ON TOP	M	MOTOR OPERATED DAMPER (MOD) HORIZONTAL DUCT

SIZE TRANSITION ANGULAR TO ING VANES IBLE CONNECTION ESS DOOR/ACCESS EL NEAR SIDE, FAR AND SIDE OF DUCT PECTIVELY TER DAMPER

NG SUPPLY DIFFUSER

PLY OUTLET. REGISTER RILLE IN DUCTWORK OR BOTTOM)

JRN INLET. REGISTER RILLE IN DUCTWORK OR BOTTOM)

AUST INLET, REGISTEF RILLE IN DUCTWORK OR BOTTOM)

OR OPERATED PER (MOD) ZONTAL DUCT MOTOR OPERATED DAMPER (MOD) VERTICAL

DUCT

ISSUED FOR PERMIT

Engineering and

Land Surveying, P.C

370 7th Avenue SUITE 1604 New York, NY 10001



25 Mohawk Avenue Sparta, NJ 07871

CONFIDENTIAL

THESE DRAWINGS ARE CONFIDENTIAL IN NATURE, ANY MISUSE OR LINAUTHORIZED DISTRIBUTION OF THE DRAWINGS CONTAINED HEREIN WILL BE A VIOLATION OF THIS CONFIDENTIALITY REQUIREMENT AND SUBJECT THE VIOLATOR TO LIABILITY. REVIEW OF THESE MATERIALS BY RECEIPT HALL CONSTITUTE ACCEPTANCE OF THESE TERMS AND THE TERMS OF ANY UNDERLYING CONFIDENTIALITY AGREEMENT WE MAY HAVE EXCLUDED IN OBTAINING THIS INFORMATION FROM A THIRD PARTY. IF THE RECIPIENT IS NOT IN AGREEMENT WITH THE OBLIGATION OF ONFIDENTIALITY THEN THE DRAWINGS SHALL BE RETURNED TO THE ORIGINATOR

B FINAL SUBMISSION A INTERIM SUBMISSION DESCRIPTION

470 Chestnut Ridge Rd # 2,

Woodcliff Lake, NJ 07677

PROJECT

Hitachi Energy

DRW BY CHK BY DATE

12-12-22

09-13-22

901 Main Campus Drive Raleigh, North Carolina 27606

CHPE **Champlain Hudson**

Astoria HVDC

Power Express

Converter Station 31-45 20th Avenue, Astoria, Queens NY 11105

Block #850 - Lot #310 - BIN #4624437

HVAC GENERAL NOTES, SYMBOLS, LEGENDS & ABBREVIATIONS







DIFFERENTIAL PRESURE SENSOR (ONE DP SENSING PORT THROUGH THE WALL- THE SECOND IS FOR THE INDOOR MEASURMENT)

(T) DRY BULB TEMPERATURE SENSOR

(H) RELATIVE HUMIDITY SENSOR

- 3

10. FLEXIBLE DUCT IS NOT ALLOWED TO USE IN THIS PROJECT. 11. ALL AIR DISTRIBUTION DEVICES SHALL HAVE LOCKABLE VOLUME CONTROL DEVICES. 12. ALL 90 DEGREE TURNING ELBOWS SHALL BE SMOOTH ROUND OR SQUARE WITH TURNING VANES. 13. DUCT SIZES SHOWN ON PLANS ARE INSIDE FREE AREA.

1 MECHANICAL KEYNOTES

1 VERTICAL DUCT DOWN WITH SUPPLY GRILLE ABOVE FINISH FLOOR. REFER TO M300 SECTIONAL VIEW FOR MORE INFORMATION. 2 REACTORS BY HITACHI. DO NOT ROUTE DUCTWORK THROUGH HITACHI EQUIPMENT CLEARANCES.

3 EQUIPMENT BY HITACHI. DO NOT ROUTE DUCTWORK THROUGH HITACHI EQUIPMENT CLEARANCES.

5 ELECTRICAL BUSHING BY HITACHI. DO NOT ROUTE DUCTWORK THROUGH HITACHI EQUIPMENT CLEARANCES. 6 HVAC DUCTS & ASSOCIATED ACCESSORIES SHALL BE MADE FROM

LEVEL.

SHEET NOTES:

1. REFER TO SHEETS A SERIES FOR ARCHITECTURAL DRAWINGS, NOTES, DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE APPLICATION. REFER TO SHEETS E SERIES FOR BUILDING ELECTRICAL DRAWINGS, NOTES, 2 DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE APPLICATION. REFER TO SHEETS M SERIES FOR HVAC MECHANICAL DRAWINGS, NOTES, DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE APPLICATION. 4. REFER TO SHEETS P SERIES FOR PLUMBING DRAWINGS, NOTES, DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE APPLICATION. REFER TO SHEETS S SERIES FOR BUILDING STRUCTURAL DRAWINGS, NOTES, DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE APPLICATION. REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL

REQUIREMENTS OF WORK.

8. ALL HVAC SENSORS TO BE INSTALLED BEYOND EMF SHIELD. SENSORS INSTALLED INSIDE THE CONVERTOR BUILDING SHALL BE INSTALLED WITH ELECTROMAGNETIC SHEILD. COORDINATE WITH ELECTRICAL DRAWINGS, CONTRACTOR AND MECHANICAL DETAILS.. 9. BRANCH DUCT SHALL BE THE SAME SIZE AS THE DIFFUSER NECK UNLESS NOTED

OTHERWISE.

14. PROVIDE ACCESS DOORS IN DUCTS AHEAD OF ALL AUTOMATIC, FIRE, AND SMOKE

DAMPERS. 15. FOR BALANCING THE OUTSIDE AIRFLOW QUANTITIES, REFER TO HVAC SCHEDULES. 16. ALL DUCTS PENETRATING WALLS INSIDE CONVERTOR BUILD SHALL BE PROVIDED WITH A RFI SCREEN. REFER TO MECHANICAL AND ELECTRICAL GROUNDING

DETAILS FOR MORE INFORMATION. 17. ALL HVAC METALLIC COMPONENTS INSIDE CONVERTOR BUILDING SHALL BE BONDED TO THE BUILDING OR BUILDING RING CONDUCTOR. COORDINATE WITH ELECTRICAL PLANS AND CONTRACTOR FOR REQUIREMENTS.

7. ALL HVAC COMPONENTS, INCLUDING, BUT NOT LIMITED TO, DUCTWORK, HANGERS, DIFFUSERS, CONTROL WIRING CONDUIT AND ASSOCIATED ACCESSORIES INSTALLED IN THE REACTOR HALL SHALL BE MADE FROM ALUMINUM. FERROURS MATERIAL FOR HVAC COMPENENTS IS NOT ALLOWED.

4 VENTILATORS TO BE INSTALLED EXACTLY ABOVE THE REACTORS ON ROOF. RFI SCREEN TO BE PROVIDED AT THE ROOF OPENING. REFER TO MECHANICAL AND ELECTRICAL GROUNDING AND ELECTROMAGNETIC DETAILS FOR MORE INFORMATION.

ALUMINUM. TYPICAL INSIDE THE REACTOR HALL. 7 SENSORS TO BE INSTALLED 4' AFF.

8 SENSORS TO BE INSTALLED ON ROOF STRUCTURE. SENSORS MOUNTED ON THE WALL SHOULD BE INSTALLED AT THE STRUCTURE







CO-E CO-F CO-G **REACTOR HALL** M-300.0 A103 NIR <u>M</u> N (CO-7.3) TYP 1 P 237 TYP 3 TYP 6 /─ 4 | TYP (CO-4.4) **REACTOR HALL** A103 TYP 3 TYP 6 DN 120"x60" SA MATCHLINE SEE: 1/M-10700 _ SE-4 (SE-B) SE-A

8. 9. 10. 11. DEVICES. 12. 13. 14. 15. SCHEDULES. 16. 17. 1 <u>MECHANICAL KEYNOTES</u> 1

2 IN THIS ROOM. 3 6

4

5

SHEET NOTES: 1.

2.

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6.

- DIFFERENTIAL PRESURE SENSOR (ONE DP SENSING PORT THROUGH THE WALL- THE SECOND IS FOR THE INDOOR MEASURMENT)
- (T) DRY BULB TEMPERATURE SENSOR
- (H) RELATIVE HUMIDITY SENSOR

REFER TO SHEETS A SERIES FOR ARCHITECTURAL DRAWINGS, NOTES, DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE

APPLICATION. REFER TO SHEETS E SERIES FOR BUILDING ELECTRICAL DRAWINGS, NOTES, DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE APPLICATION.

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REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK. ALL HVAC COMPONENTS, INCLUDING, BUT NOT LIMITED TO, DUCTWORK,

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ALL 90 DEGREE TURNING ELBOWS SHALL BE SMOOTH ROUND OR SQUARE WITH TURNING VANES.

DUCT SIZES SHOWN ON PLANS ARE INSIDE FREE AREA. PROVIDE ACCESS DOORS IN DUCTS AHEAD OF ALL AUTOMATIC, FIRE, AND SMOKE DAMPERS.

FOR BALANCING THE OUTSIDE AIRFLOW QUANTITIES, REFER TO HVAC ALL DUCTS PENETRATING WALLS INSIDE CONVERTOR BUILD SHALL BE PROVIDED WITH A RFI SCREEN. REFER TO MECHANICAL AND ELECTRICAL GROUNDING

DETAILS FOR MORE INFORMATION. ALL HVAC METALLIC COMPONENTS INSIDE CONVERTOR BUILDING SHALL BE BONDED TO THE BUILDING OR BUILDING RING CONDUCTOR. COORDINATE WITH ELECTRICAL PLANS AND CONTRACTOR FOR REQUIREMENTS.

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ELECTRICAL BUSHING BY HITACHI. DO NOT ROUTE DUCTWORK THROUGH

HITRACHI EQUIPMENT CLEARANCES. REACTORS BY HITACHI. DO NOT ROUTE DUCTWORK THROUGH HITACHI

EQUIPMENT CLEARANCES. RFI SCREEN TO BE PROVIDED INSIDE DUCT AFTER FIRE-SMOKE DAMPER. REFER TO MECHANICAL AND ELECTRICAL GROUNDING AND ELECTROMEGNETIC

DETAILS FOR MORE INFORMATION. HVAC DUCTS & ASSOCIATED ACCESSORIES SHALL BE MADE FROM ALUMINUM. TYPICAL INSIDE THE REACTOR HALL. SENSORS TO BE INSTALLED 4' AFF.

SENSORS TO BE INSTALLED ON ROOF STRUCTURE. SENSORS MOUNTED ON THE WALL SHOULD BE INSTALLED AT THE STRUCTURE LEVEL. DIELECTRIC FLEXIBLE DUCT CONNECTION TO BE PROVIDED ON THE OUTSIDE OF FIRE SMOKE DAMPER.







REFER TO SHEETS A SERIES FOR ARCHITECTURAL DRAWINGS, NOTES, DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE

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- UNLESS NOTED OTHERWISE. FLEXIBLE DUCT IS NOT ALLOWED TO USE IN THIS PROJECT.

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TURNING VANES. DUCT SIZES SHOWN ON PLANS ARE INSIDE FREE AREA. PROVIDE ACCESS DOORS IN DUCTS AHEAD OF ALL AUTOMATIC, FIRE, AND

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SCHEDULES. ALL DUCTS PENETRATING WALLS INSIDE CONVERTOR BUILD SHALL BE PROVIDED WITH A RFI SCREEN. REFER TO MECHANICAL AND ELECTRICAL GROUNDING

DETAILS FOR MORE INFORMATION. ALL METALLIC COMPONENTS INSIDE CONVERTOR BUILDING SHALL BE BONDED TO THE BUILDING OR BUILDING RING CONDUCTOR. COORDINATE WITH ELECTRICAL PLANS AND CONTRACTOR FOR REQUIREMENTS.

ALL HVAC METALLIC COMPONENTS INSIDE CONVERTOR BUILDING SHALL BE BONDED TO THE BUILDING OR BUILDING RING CONDUCTOR. COORDINATE WITH ELECTRICAL PLANS AND CONTRACTOR FOR REQUIREMENTS.

SHEET NOTES:

1.

DIFFERENTIAL PRESURE SENSOR (ONE

ROUND DUCT UP TO EQUIPMENT PLATFORM LEVEL. PROVIDE VOLUME DAMPER IN THE ACCESSIBLE LOCATION PRIOR TO ANY RETURN GRILLE. REFER TO M114 SHEET FOR CONTINUATION.

HIGH VOLTAGE VALVES BY HITACHI. DO NOT ROUTE DUCTWORK THROUGH HITRACHI EQUIPMENT CLEARANCES.

ELECTRICAL BUSHING BY HITACHI. DO NOT ROUTE DUCTWORK THROUGH HITACHI EQUIPMENT CLEARANCES.

EQUIPMENT BY HITACHI. DO NOT ROUTE DUCTWORK THROUGH HITACHI EQUIPMENT CLEARANCES.

2-HR FIRE RATED DUCT SHALL BE ENDED AFTER THE WALL PENETRATION, INSIDE VALVE HALL-1. WALL PENETRATION SHALL BE SEALED BY 2-HR-RATED SEAL. PROVIDE RFI SCREEN ON BOTH SIDES OF THE WALL PENETRATION. SENSORS TO BE INSTALLED 4' AFF.

SENSORS TO BE INSTALLED ON ROOF STRUCTURE. SENSORS MOUNTED ON THE WALL SHOULD BE INSTALLED AT THE STRUCTURE LEVEL.

WALL-MOUNTED RFI SCREEN CAGE TO BE PROVIDED AROUND WALL HVAC EQUIPMENT. RFI SCREEN CAGE SHALL BE APPROVED BY HITACHI. RFI SCREEN CAGE SHALL BE REMOVABLE TO ACCESS AND MAINTAIN THE EQUIPMENT. REFER TO MECHANICAL AND ELECTRICAL GROUNDING AND ELECTROMAGNETIC DETAILS FOR MORE INFORMATION.

ROUTE RETURN DUCT TIGHT TO ROOF THROUGH STRUCTURAL FRAMING. PROVIDE ACCESS SPACE BELOW THE DUCTWORK ON EQUIPMENT PLATFORM. DO NOT ROUTE DUCTWORK ABOVE HITACHI'S HIGH VOLTAGE VALVES.









SHEET NOTES: 1.

2.

APPLICATION. 4. APPLICATION. 6. 10. DEVICES. 11. 12. 13. 14.

SCHEDULES. 15. 16. 17.

1

- 1
- HITACHI EQUIPMENT CLEARANCES.
- SENSORS TO BE INSTALLED 4' AFF. SENSORS TO BE INSTALLED ON ROOF STRUCTURE. SENSORS MOUNTED ON THE WALL SHOULD BE INSTALLED AT THE STRUCTURE LEVEL.

- INSIDE VALVE HALL-1. WALL PENETRATION SHALL BE SEALED BY 2-HR-RATED SEAL. PROVIDE RFI SCREEN ON BOTH SIDES OF THE WALL PENETRATION. RFI SCREEN TO BE PROVIDED INSIDE DUCT AFTER FIRE-SMOKE DAMPER. REFER TO MECHANICAL AND ELECTRICAL GROUNDING AND ELECTROMEGNETIC DETAILS FOR MORE INFORMATION.
- WALL-MOUNTED RFI SCREEN CAGE TO BE PROVIDED AROUND WALL HVAC 9 EQUIPMENT. RFI SCREEN CAGE SHALL BE APPROVED BY HITACHI. RFI SCREEN CAGE SHALL BE REMOVABLE TO ACCESS AND MAINTAIN THE EQUIPMENT. REFER TO MECHANICAL AND ELECTRICAL GROUNDING AND ELECTROMAGNETIC DETAILS FOR MORE INFORMATION.

REFER TO SHEETS A SERIES FOR ARCHITECTURAL DRAWINGS, NOTES, DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE APPLICATION.

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- INSTALLED INSIDE THE CONVERTOR BUILDING SHALL BE INSTALLED WITH ELECTROMAGNETIC SHEILD. COORDINATE WITH ELECTRICAL DRAWINGS, CONTRACTOR AND MECHANICAL DETAILS.
- BRANCH DUCT SHALL BE THE SAME SIZE AS THE DIFFUSER NECK UNLESS NOTED OTHERWISE. FLEXIBLE DUCT IS NOT ALLOWED TO USE IN THIS PROJECT.

ALL AIR DISTRIBUTION DEVICES SHALL HAVE LOCKABLE VOLUME CONTROL ALL 90 DEGREE TURNING ELBOWS SHALL BE SMOOTH ROUND OR SQUARE WITH

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- PROVIDE ACCESS DOORS IN DUCTS AHEAD OF ALL AUTOMATIC, FIRE, AND SMOKE DAMPERS. FOR BALANCING THE OUTSIDE AIRFLOW QUANTITIES, REFER TO HVAC
- ALL DUCTS PENETRATING WALLS INSIDE CONVERTOR BUILD SHALL BE PROVIDED WITH A RFI SCREEN. REFER TO MECHANICAL AND ELECTRICAL GROUNDING
- DETAILS FOR MORE INFORMATION. ALL METALLIC COMPONENTS INSIDE CONVERTOR BUILDING SHALL BE BONDED TO THE BUILDING OR BUILDING RING CONDUCTOR. COORDINATE WITH
- ELECTRICAL PLANS AND CONTRACTOR FOR REQUIREMENTS. ALL HVAC METALLIC COMPONENTS INSIDE CONVERTOR BUILDING SHALL BE BONDED TO THE BUILDING OR BUILDING RING CONDUCTOR. COORDINATE WITH ELECTRICAL PLANS AND CONTRACTOR FOR REQUIREMENTS.

MECHANICAL KEY NOTES

ROUND DUCT UP TO EQUIPMENT PLATFORM LEVEL. PROVIDE VOLUME DAMPER IN THE ACCESSIBLE LOCATION PRIOR TO ANY RETURN GRILLE. REFER TO M114 SHEET FOR CONTINUATION.

HIGH VOLTAGE VALVES BY HITACHI. DO NOT ROUTE DUCTWORK THROUGH HITRACHI EQUIPMENT CLEARANCES. ELECTRICAL BUSHING BY HITACHI. DO NOT ROUTE DUCTWORK THROUGH

PROVIDE 2-HR FIRE RATED DUCTWORK AND ASSOCIATED SUPPORT & ACCESSORIES FOR DUCTS SERVING VALVE HALL 1. 2-HR FIRE RATED DUCT SHALL BE ENDED AFTER THE WALL PENETRATION,

TRUE







REFER TO SHEETS A SERIES FOR ARCHITECTURAL DRAWINGS, NOTES, DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE APPLICATION.

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ALL 90 DEGREE TURNING ELBOWS SHALL BE SMOOTH ROUND OR SQUARE WITH

DUCT SIZES SHOWN ON PLANS ARE INSIDE FREE AREA. PROVIDE ACCESS DOORS IN DUCTS AHEAD OF ALL AUTOMATIC, FIRE, AND SMOKE DAMPERS.

FOR BALANCING THE OUTSIDE AIRFLOW QUANTITIES, REFER TO HVAC

ALL DUCTS PENETRATING WALLS INSIDE CONVERTOR BUILD SHALL BE PROVIDED WITH A RFI SCREEN. REFER TO MECHANICAL AND ELECTRICAL GROUNDING DETAILS FOR MORE INFORMATION.

ALL HVAC METALLIC COMPONENTS INSIDE CONVERTOR BUILDING SHALL BE BONDED TO THE BUILDING OR BUILDING RING CONDUCTOR. COORDINATE WITH ELECTRICAL PLANS AND CONTRACTOR FOR REQUIREMENTS.

TRUE

16

SHEET NOTES:

1.

2.

EQUIPMENT BY HITACHI. DO NOT ROUTE DUCTWORK THROUGH HITACHI EQUIPMENT CLEARANCES. REFER TO ROOF PLAN FOR ROOF VENTILATORS INSTALLED IN THIS ROOM.





CONVERTER BUILDING DC HALL HVAC Plan - Area F 1 M-106.00 1/8" = 1'-0"





11. DUCT SIZES SHOWN ON PLANS ARE INSIDE FREE AREA. 12. PROVIDE ACCESS DOORS IN DUCTS AHEAD OF ALL AUTOMATIC, FIRE, AND SMOKE DAMPERS. 13. FOR BALANCING THE OUTSIDE AIRFLOW QUANTITIES, REFER TO HVAC

SCHEDULES. 14. ALL DUCTS PENETRATING WALLS INSIDE CONVERTOR BUILD SHALL BE PROVIDED WITH A RFI SCREEN. REFER TO MECHANICAL AND ELECTRICAL GROUNDING DETAILS FOR MORE INFORMATION. 15. ALL HVAC METALLIC COMPONENTS INSIDE CONVERTOR BUILDING SHALL BE BONDED

1 MECHANICAL KEY NOTES 1

EQUIPMENT CLEARANCES. 2 - 3 4 5

6 7

8

FIRE SMOKE DAMPER. 9 CONTRACTOR.

1. REFER TO SHEETS A SERIES FOR ARCHITECTURAL DRAWINGS, NOTES, DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE

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6. REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK. 7. BRANCH DUCT DUCT SHALL BE THE SAME SIZE AS THE DIFFUSER NECK

UNLESS NOTED OTHERWISE. 8. FLEXIBLE DUCT IS NOT ALLOWED TO USE IN THIS PROJECT. 9. ALL AIR DISTRIBUTION DEVICES SHALL HAVE LOCKABLE VOLUME CONTROL

10. ALL 90 DEGREE TURNING ELBOWS SHALL BE SMOOTH ROUND OR SQUARE WITH

TO THE BUILDING OR BUILDING RING CONDUCTOR. COORDINATE WITH ELECTRICAL PLANS AND CONTRACTOR FOR REQUIREMENTS.

EQUIPMENT BY HITACHI. DO NOT ROUTE DUCTWORK THROUGH HITACHI

REFER TO ROOF PLAN FOR ROOF VENTILATORS INSTALLED IN THIS ROOM. AHU-081-05A REMOTE UNIT CONTROL PANEL

AHU-081-05B REMOTE UNIT CONTROL PANEL

SENSORS TO BE INSTALLED 4' AFF. SENSORS TO BE INSTALLED ON ROOF STRUCTURE. SENSORS MOUNTED ON THE

WALL SHOULD BE INSTALLED AT THE STRUCTURE LEVEL. RFI SCREEN TO BE PROVIDED INSIDE DUCT AFTER FIRE-SMOKE DAMPER. REFER TO MECHANICAL AND ELECTRICAL GROUNDING AND ELECTROMEGNETIC DETAILS

FOR MORE INFORMATION. DIELECTRIC FLEXIBLE DUCT CONNECTION TO BE PROVIDED ON THE OUTSIDE OF

SMOKE DETECTORS TO BE PROVIDED AND INSTALLED BY FIRE ALARM

TRUE 16





14. 15. 1

MECHANICAL KEYNOTES 1

SHALL BE 5'-0". DEVICES. TURNING VANES. 10. SCHEDULES. 12. SMOKE DAMPERS. 13. SCHEDULE.

SHEET NOTES:

1.

2.

4.

6.

8.

9.

11.

REFER TO SHEETS A SERIES FOR ARCHITECTURAL DRAWINGS, NOTES, DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE

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REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.

ROUND BRANCH DUCT RUNOUTS SHALL BE THE SAME SIZE AS THE DIFFUSER NECK UNLESS NOTED OTHERWISE. MAXIMUM FLEXIBLE DUCT LENGTH

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DUCT SHOWN ON PLANS ARE INSIDE FREE AREA. PROVIDE ACCESS DOORS IN DUCTS AHEAD OF ALL AUTOMATIC, FIRE AND

FOR BALACING THE OUTSIDE AIRFLOW QUANTITIES, REFER TO HVAC

DUCTWORK SHALL BE CONNECTED TO EQUIPMENT BY FLEX DUCT. DUCTWORK SHALL BE SUPPORTED BY ROOF TRUSSES. DUCTS SHALL BE BRACED IN ACCORDANCE WITH THE LATEST EDITION OF SMACNA SEISMIC RESTRAINTS. ALL HVAC METALLIC COMPONENTS INSIDE CONVERTOR BUILDING SHALL BE BONDED TO THE BUILDING OR BUILDING RING CONDUCTOR. COORDINATE WITH ELECTRICAL PLANS AND CONTRACTOR FOR REQUIREMENTS.

FOR CONTINUATION.

6" EXHAUST DUCT WITH WALL CAP AND INSECT SCREEN. TERMINATE MIN. 10 FEET ABOVE GRADE.

2-HR FIRE-RATED EXHAUST DUCT FROM CEILING GRILLE UP TO EXHAUST FAN. PROVIDE ALL DUCT-WALL/ FLOOR PENETRATIONS WITH FIRE-RATED SLEEVE. REFER TO M108 FOR CONTINUATION. 12" X 6" SUPPLY DUCT DOWN WITH SUPPLY GRILLE INSTALLED 6" AFF.

8" X 6" SUPPLY DUCT DOWN WITH SUPPLY GRILLE INSTALLED 6" AFF. 2-HR FIRE-RATED EXHAUST WITH WALL CAP & INSECT SCREEN. INSTALL WALL CAP AND DUCT WITH 2-HR FIRE-RATED ASSEMBLY. TERMINATE MIN 10 FT ABOVE GRADE

PRESSURE RELIEF LOUVER WITH BACKDRAFT DAMPER. BACKDRAFT DAMPER SHALL BE APPROVED BY A CLEAN AGENT SPECIALIST. TERMINATE MIN 10 FT ABOVE GRADE.

ROOM THERMOSTAT. MOUNT 4'-0" AFF.

18"X18" SUPPLY AIR DUCT FROM DEDICATED OUTSIDE AIR UNITS. PROIVDE FLOOR PENETRATION WITH 2-HR FIRE SMOKE DAMPER. REFER

TO M108 SHEET FOR CONTINUATION. 2-HR FIRE RATED PRESSURE RELIEF DUCT WITH BACK DRAFT DAMPER UP TO ROOF. PROVIDE ALL WALL/ ROOF PENETRATIONS WITH 2-HR FIRE RATED SLEEVE, COORDINATE WITH CLEAN AGENT CONTRACTOR FOR BACK DRAFT DAMPER PRESSURE PRIOR ORDER. REFER TO M108 SHEET







SHEET NOTES:

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REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.

ROUND BRANCH DUCT RUNOUTS SHALL BE THE SAME SIZE AS THE DIFFUSER NECK UNLESS NOTED OTHERWISE. MAXIMUM FLEXIBLE DUCT LENGTH SHALL BE 5'-0".

ALL AIR DISTRIBUTION DEVICES SHALL HAVE LOCKABLE VOLUME CONTROL DEVICES.

ALL 90 DEGREE TURNING ELBOWS SHALL BE SMOOTH ROUND OR SQUARE WITH TURNING VANES. FOR BALANCING THE OUTSIDE AIRFLOW QUANTITIES, REFER TO HVAC SCHEDULES.

DUCT SHOWN ON PLANS ARE INSIDE FREE AREA. PROVIDE ACCESS DOORS IN DUCTS AHEAD OF ALL AUTOMATIC, FIRE AND SMOKE DAMPERS.

FOR BALACING THE OUTSIDE AIRFLOW QUANTITIES, REFER TO HVAC SCHEDULE. DUCTWORK SHALL BE CONNECTED TO EQUIPMENT BY FLEX DUCT. DUCTWORK SHALL BE SUPPORTED BY ROOF TRUSSES. DUCTS SHALL BE BRACED IN ACCORDANCE WITH THE LATEST EDITION OF SMACNA SEISMIC

RESTRAINTS. ALL HVAC METALLIC COMPONENTS INSIDE CONVERTOR BUILDING SHALL BE BONDED TO THE BUILDING OR BUILDING RING CONDUCTOR. COORDINATE WITH ELECTRICAL PLANS AND CONTRACTOR FOR

MECHANICAL KEYNOTES

12"X12" PRESSURE RELIEF AIR DUCT DN.

12"X12" PRESSURE RELIEF LOUVER WITH BACKDRAFT DAMPER. TERMINATE 17-0" AFF.

12"X12" PRESSURE RELIEF DUCT UP TO THE ROOF. TERMINATE WITH GOOSENECK WITH BACKDRAFT DAMPER

ROOM THERMOSTAT. MOUNT 4'-0" AFF. EXHAUST DUCT TO ROOF WITH PENTHOUSE LOUVER. REFER TO ROOF

PLAN. BATTERY ROOM EXHAUST DUCT FROM FLOOR BELOW. PROVIDE FLOOR PENETRATION WITH A FIRE SMOKE DAMPER. TERMINATE EXHAUST DUCT ON ROOF WITH GOOSENECK TERMINATION. REFER TO DETAIL.

ROUTE 4" DUCT WITH WALL CAP AND INSECT SCREEN. 66"X34" EXHAUST DUCT THRU THE ROOF WITH PENTHOUSE LOUVER. 10'-1" X 6'-0" RELIEF AIR DUCT THRU THE ROOF WITH PENTHOUSE LOUVER.

DIELECTRIC FLEXIBLE DUCT CONNECTION TO BE PROVIDED ON THE OUTSIDE OF FIRE SMOKE DAMPER.

RFI SCREEN TO BE PROVIDED INSIDE DUCT AFTER FIRE-SMOKE DAMPER. REFER TO MECHANICAL AND ELECTRICAL GROUNDING AND ELECTROMEGNETIC DETAILS FOR MORE INFORMATION.

SMOKE DETECTORS TO BE PROVIDED AND INSTALLED BY FIRE ALARM CONTRACTOR.

TRUE

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M-111.00/ 1/16" = 1'-0"



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VENTILATORS TO BE INSTALLED EXACTLY ABOVE THE REACTORS ON ROOF. RFI SCREEN TO BE PROVIDED AT THE ROOF OPENING. REFER TO MECHANICAL AND ELECTRICAL GROUNDING AND ELECTROMAGNETIC DETAILS FOR MORE INFORMATION.

2'0 8' 10

16'

ROOF EQUIPMENT ACCESS WALKWAY.







SHE	<u>ET NO</u>
1.	RE DE
2.	API RE NO
3.	SEI RE DE
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5.	RE
6.	RE
7.	ALL CO RE
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EPARATE APPLICATION. EFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL EQUIREMENTS OF WORK.

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HANICAL KEYNOTES

1 ROOF EQUIPMENT ACCESS WALKWAY.



<u>SEQUENCES OF OPERATION</u> POST-FIRE SMOKE PURGE

THE POST-FIRE SMOKE PURGE (PFSP) MODE OF OPERATION SHALL BE INITIATED MANUALLY BY THE FIRE DEPARTMENT PERSONNEL, OPERATING PFSP ALARM PANEL PER NYCBC 917.2.3. THE PANEL SHALL CONSIST OF A SERIES OF MANUAL SWITCHES THAT WILL BE ARRANGED IN ZONES WITH CLEAR IDENTIFICATION. EACH SWITCH SHALL BE LABELED FOR A PARTICULAR ZONE OR EQUIPMENT THAT WILL BE ENABLED AND OPERATE DURING THE PFSP MODE OF OPERATION. THE SOUTH VALVE HALL ZONE SWITCH SHALL ENABLE AND OPERATE THE FOLLOWING FOURPMENT

L HALL ZONE 3	WIGH SHALL ENABLE AND OF ENATE THE FOLLOWING EQUIFICENT.
POSITION	MODE
ON	FULL SPEED
ON	OPEN
ON	OPEN
ON	OPEN
ON	ALL FANS-FULL SPEED; RETURN DMPR- CLOSED; HTG COIL,
	DESICCANT WHEEL- OFF; INTAKE, EXH DMPRS- OPEN
E HALL ZONE S	WITCH SHALL ENABLE AND OPERATE THE FOLLOWING EQUIPMENT:
POSITION	MODE
ON	FULL SPEED
ON	OPEN
ON	OPEN
ON	OPEN
ON	ALL FANS-FULL SPEED; RETURN DMPR- CLOSED; HTG COIL,
	DESICCANT WHEEL- OFF; INTAKE, EXH DMPRS- OPEN
LL ZONE SWITC	CH SHALL ENABLE AND OPERATE THE FOLLOWING EQUIPMENT:
POSITION	MODE
ON	ALL FANS-FULL SPEED; INTAKE, DMPR- OPEN
ON	ALL FANS-FULL SPEED; INTAKE, DMPR- OPEN
ON	OPEN
IE SWITCH SHAI	LENABLE AND OPERATE THE FOLLOWING FOLIPMENT
POSITION	MODE
ON	ALL FANS-FULL SPEED: INTAKE, DMPR- OPEN
ON	ALL FANS-FULL SPEED; INTAKE, DMPR- OPEN
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	POSITION ON ON ON ON ON ON ON ON ON ON ON ON O

REACTOR/DC HALL THE PRIMARY CONTROL VARIABLE FOR THE REACTOR/DC HALL SHALL BE SPACE TEMPERATURE, AND SECONDARY- DIFFERENTIAL PRESSURE BETWEEN INDOOR AND OUTDOOR ENVIRONMENTS. TEMPERATURE AND DIFFERENTIAL PRESSURE IN THE HALL SHALL BE MEASURED IN SEVERAL LOCATIONS, IDENTIFIED ON DRAWINGS. EACH SENSOR READING SHALL HAVE TWO PRE-ALARM AND ONE ALARMABLE SETPOINTS FOR MONITORING, REPORTING, TRENDING, AND ALARMING PURPOSES. ALL TEMPERATURE READINGS SHALL BE AVERAGED FOR A COMMON FEEDBACK CONTROL SIGNAL.

THE SPACE TEMPERATURE IN THE HALL SHALL BE CONTROLLED BY MODULATING OUTSIDE AIR SUPPLY INTO THE HALL, BASED ON THE SPACE TEMPERATURE FEEDBACK. AIRFLOW MODULATION SHALL BE ACCOMPLISHED BY VARYING THE FAN ARRAY SPEED THROUGH THE RESPECTIVE VFD'S. ONE OF THE AHU'S SHALL BE ACTIVE AND ONE- IN THE STANDBY MODE. EACH AHU SHALL HAVE A DEDICATED ISOLATION DISCHARGE SMOKE DAMPER AND AN OUTSIDE AIR INTAKE DAMPER. BOTH DAMPERS SHALL HAVE POSITION INDICATOR (PROOF) AND OPEN ON A START COMMAND PRIOR TO UNIT FANS' OPERATION.

THE ACTIVE AHU FOR THE REACTOR/DC HALL SHALL BE STARTED BY A MANUAL COMMAND, INITIATED AT THE WORKSTATION. UPON RECEIVING THE START COMMAND THE LEAD AHU DDC CONTROLLER SHALL BE ENABLED FOR OPERATION. THAT COMMAND SHALL FIRST OPEN THE SUPPLY AND INTAKE ISOLATION DAMPERS AND AFTER RECEIVING PROOF BOTH DAMPERS ARE OPEN, ENABLE THE FAN ARRAY FOR OPERATION. ONCE THE FANS ARE ENABLED, THE CONTROLLER SHALL RAMP UP THE FANS' SPEED TO ACHIEVE DIFFERENTIAL PRESSURE SETPOINT. FOLLOWING THAT, THE DDC CONTROLLER SHALL BE MAINTAINING THE SPACE TEMPERATURE BY MODULATING THE FANS' SPEED, STAYING ABOVE THE MINIMUM PRESSURIZATION CONTROL LEVEL. THE BMS SHALL EQUALIZE THE RUNTIME OF EACH AHU BY SWITCHING THE LEAD STATUS ON A WEEKLY BASIS. THE LEAD AHU

SHALL RUN ON A CONTINUOUS BASIS. EACH REACTOR/DC HALL AHU SHALL BE PROVIDED WITH A SERIES OF DIGITAL INSTRUMENTATION. SOME OF THE DIGITAL INSTRUMENTATION INPUT WILL BE USED FOR MONITORING, TRENDING, ALARMING, AND REPORTING PURPOSES AND SOME - BY CONTROL ALGORITHMS. IN ADDITION, EACH AHU SECTION SHALL BE PROVIDED WITH TEMPERATURE THERMOMETERS AND FILTER

PRESSURE GAUGES FOR VISUAL INSPECTION. A DUCT SMOKE DETECTOR, LOCATED DOWNSTREAM OF EACH AHU, SHALL STOP THE ASSOCIATED UNIT FROM OPERATION UPON DETECTING PRODUCTS OF COMBUSTION. THE SMOKE DETECTOR ALARM SIGNAL SHALL BE REPORTED TO THE FIRE ALARM SYSTEM WITH AN OUTPUT STOP THE AHU SIGNAL TRANSMITTED TO THE BMS.

THE DESIGN INTENT FOR THE REACTOR/DC HALL AHU'S IS CONTINUOUS RUN OF THE LEAD AHU. IN THE EVENT THE LEAD AHU REPORTS THE FAIL STATUS, THE BMS SHALL AUTOMATICALLY RUN THE STOP (THE LEAD AHU) COMMAND, RESULTING IN OUTSIDE AIR INTAKE AND DISCHARGE AIR DAMPER CLOSURES, AND ORDERLY SHUTDOWN OF THE FAN ARRAY. AFTER CONFIRMING COMPLETE SHUTDOWN OF A LEAD AHU, THE BMS SHALL SWITCH THE LEAD STATUS TO THE STANDBY AHU AND ISSUE THE START COMMAND

<u>VALVE HALI</u>

THE PRIMARY CONTROL VARIABLE FOR EACH VALVE HALL SHALL BE SPACE TEMPERATURE. RELATIVE HUMIDITY, AND DIFFERENTIAL PRESSURE BETWEEN INDOOR AND OUTDOOR ENVIRONMENTS. THE SECONDARY VARIABLE SHALL BE ABSOLUTE HUMIDITY, TEMPERATURE, RELATIVE HUMIDITY, AND DIFFERENTIAL PRESSURE IN EACH HALL SHALL BE MEASURED IN SEVERAL LOCATIONS, IDENTIFIED ON DRAWINGS. EACH SENSOR READING SHALL HAVE TWO PRE-ALARM AND ONE ALARMABLE SETPOINTS FOR MONITORING, REPORTING, TRENDING, AND ALARMING PURPOSES. ALL TEMPERATURE READINGS SHALL BE AVERAGED FOR A COMMON FEEDBACK CONTROL SIGNAL. ABSOLUTE HUMIDITY VALUE, USED BY THE BMS SHALL BE CALCULATED.

THE ACTIVE AHU FOR EACH VALVE HALL SHALL BE STARTED BY A MANUAL COMMAND, INITIATED AT THE WORKSTATION. UPON RECEIVING THE START COMMAND THE LEAD AHU DDC CONTROLLER SHALL BE ENABLED FOR OPERATION. THAT COMMAND SHALL FIRST OPEN THE SUPPLY AND INTAKE ISOLATION DAMPERS ON THE RESPECTIVE UNIT AND AFTER RECEIVING PROOF BOTH DAMPERS ARE OPEN. ENABLE THE FAN ARRAY FOR OPERATION, ONCE THE FANS ARE ENABLED. THE CONTROLLER SHALL ENGAGE THE FAN ARRAY IN PRESSURIZING THE HALL TO A SETPOINT. PRESSURIZATION CONTROL ALGORITHM SHALL BE INDEPENDENT OF TEMPERATURE AND HUMIDITY CONTROL ALGORITHMS.

TEMPERATURE CONTROL ALGORITHM SHALL HAVE ACTIVE (SLIDING) TEMPERATURE SETPOINT THAT WILL DEPEND ON THE RELATION BETWEEN THE VALVE HEAT REJECTION VALUE, OUTDOOR DRY BULB TEMPERATURE AND FAN WALL SPEED. AS THE OUTDOOR AIR TEMPERATURE DROPS AND THE SPACE TEMPERATURE SETPOINT IS ACHIEVED WITH SMALLER AIRFLOW, THE PROGRAM SHALL LOWER THE SETPOINT TO MAINTAIN MINIMUM AIRFLOW IN THE HALL. THE MINIMUM AIRFLOW VALUE SHALL BE DETERMINED DURING THE COMMISSIONING PHASE OF THE PROJECT.

EACH VALVE HALL SHALL BE PROVIDED WITH A DEDICATED AHU AND ONE STANDBY AHU FOR BOTH HALLS TO THE TOTAL OF THREE AHUS SERVING THE VALVE HALL. ALL AHUS SHALL BE CONNECTED TO A COMMON SUPPLY AND RETURN DUCT HEADERS ON THE SECOND FLOOR OF THE SERVICE BUILDING WITH A STANDBY AHU LOCATED BETWEEN THE DEDICATED AHU'S. THE SUPPLY AND RETURN DUCT HEADER CONNECTIONS OF THE STANDBY AHU SHALL BE ISOLATED ON EACH SIDE WITH THE TOTAL OF FOUR (4) MOTORIZED DAMPERS. ALL ISOLATION DAMPERS SHALL ALWAYS REMAIN CLOSED EXCEPT FOR WHEN ON OF THE DEDICATED AHUS REPORTS FAILURE, IN WHICH CASE THE SUPPLY/RETURN DAMPER PAIR ASSOCIATED WITH THE FAILED AHU SHALL OPEN AND THE STANDBY AHU SHALL BE ENGAGED IN THE SAME PRESCRIBED SEQUENCE OF OPERATION AS THE FAILED AHU.

THE HUMIDITY CONTROL IN EACH VALVE HALL SHALL HAVE PRIMARY AND SECONDARY SETPOINTS- RELATIVE HUMIDITY AS PRIMARY AND ABSOLUTE HUMIDITY AS SECONDARY SETPOINTS. THE RELATIVE HUMIDITY SETPOINT SHALL BE A MAXIMUM OF 50% RH (NOT TO EXCEED). NORMALLY, IT IS EXPECTED TO BE ACHIEVED NATURALLY, BY HEAT REJECTION FROM THE VALVES (NO ACTION IS REQUIRED). IN THE EVENT OF THE REJECTED HEAT NOT BEING ABLE TO RAISE THE DRY BULB TEMPERATURE TO THE POINT WHERE RELATIVE HUMIDITY APPROACHED THE MAXIMUM VALUE, THE DESICCANT WHEEL SHALL BE ENGAGED IN OPERATION. THE RELATIVE HUMIDITY SETPOINT SHALL BE MAINTAINED BY MODULATING THE WHEEL SPEED ALONG WITH MODULATING THE EXHAUST AIR TEMPERATURE ENTERING THE WHEEL BY MODULATING THE ELECTRIC COIL OUTPUT. THE ABSOLUTE HUMIDITY CONTROL SHALL BE ENGAGED WHEN THE INDOOR LEVEL EXCEEDS 90 GR/LB AT WHICH POINT THE PROGRAM SHALL START THE DESICCANT WHEEL AT 24 RPH AND MAINTAIN THE SUPPLY AIR TEMPERATURE AT MAXIMUM OF 110°F.

EACH VALVE HALL AHU SHALL BE PROVIDED WITH A SERIES OF DIGITAL INSTRUMENTATION. SOME OF THE DIGITAL INSTRUMENTATION INPUT WILL BE USED FOR MONITORING, TRENDING, ALARMING, AND REPORTING PURPOSES AND SOME – BY CONTROL ALGORITHMS. IN ADDITION, EACH AHU SECTION SHALL BE PROVIDED WITH TEMPERATURE THERMOMETERS AND FILTER PRESSURE GAUGES FOR VISUAL INSPECTION. A DUCT SMOKE DETECTOR, LOCATED DOWNSTREAM OF EACH AHU, SHALL STOP THE ASSOCIATED UNIT FROM OPERATION UPON DETECTING PRODUCTS OF COMBUSTION. THE SMOKE DETECTOR ALARM SIGNAL SHALL BE REPORTED TO THE FIRE ALARM

SYSTEM WITH AN OUTPUT STOP COMMAND TO THE ASSOCIATED AHU, TRANSMITTED TO THE BMS.

THERE ARE THREE BATTERY STORAGE ROOMS, B114, B101, AND B103. EACH ROOM WILL BE SERVED BY TWO DEDICATED EXHAUST FANS- ONE ACTIVE AND ONE IN A STANDBY MODE. ONCE THE FAN STARTS, IT SHALL RUN CONTINUOUSLY, AND THE FAN'S OPERATION SHALL BE MONITORED BY AN AIRFLOW PROOF DIFFERENTIAL PRESSURE SWITCH. IN THE EVENT OF THE ACTIVE FAN'S FAILURE, THE DIFFERENTIAL PRESSURE SWITCH'S ACTION SHALL ACTIVATE THE CONTROL RELAY TO START THE STANDBY FAN AND AFTER THE PREDETERMINED TIME DELAY RUNS OUT AND THE STANDBY FAN HAS STARTED THE OPERATION, THE STANDBY FAN'S DEDICATED DIFFERENTIAL PRESSURE SWITCH WILL ASSUME THE MONITORING OF THE STANDBY FAN. DURING THE FAN FAILURE SWITCHOVER, THE ACTIVE RELAY SHALL SEND THE ALARM SIGNAL TO BMS.

EACH BATTERY STORAGE ROOM SHALL BE PROVIDED WITH THE HYDROGEN SENSOR FOR MONITORING PURPOSES. MAKEUP AIR TO EACH BATTERY STORAGE ROOM SHALL BE PROVIDED BY ONE OF THE TWO DOAS UNITS, LOCATED ON THE SECOND FLOOR OF THE SERVICE BUILDING. ONE DOAS UNIT SHALL BE ACTIVE, WHILE THE OTHER UNIT SHALL BE IN THE STANDBY MODE. THE ACTIVE UNIT SHALL BE SUPPLYING CONDITIONED MAKEUP AIR TO BATTERY STORAGE ROOMS AND OTHER AREAS ON THE FIRST FLOOR. FAILURE OF THE ACTIVE UNIT SHALL RESULT IN AUTOMATIC SWITCHOVER TO THE STANDBY UNIT.

CLEAN AGENT PURGE FANS

ALL IT ROOMS THAT ARE PROTECTED WITH CLEAN AGENT FIRE SUPPRESSION SYSTEM SHALL BE PROVIDED WITH AN EXHAUST PURGE FAN THAT WILL BE ACTIVATED MANUALLY AFTER PRESET TIME DELAY ASSOCIATED WITH THE CLEAN AGENT RELEASE CONTROLS HAS ELAPSED. IN CASE WHERE ONE EXHAUST FAN SERVES MORE THAN ONE ROOM, EACH ROOM EXHAUST DUCT BRANCH SHALL BE PROVIDED WITH LOW LEAKAGE MOTORIZED ISOLATION DAMPER, ASSIGNED TO ASSOCIATED ROOM, THAT WILL BE OPEN UPON CLEAN AGENT EXHAUST FAN'S ACTIVATION.

CONTROL ABBREVIATIONS

AF	AIR FLOW
AFMS	AIR FLOW MEASURING STATION
AI	ANALOG INPUT
AO	ANALOG OUTPUT
BMS	BUILDING MANAGEMENT SYSTEM
BTU	BRITISH THERMAL UNIT
BYP	BYPASS
CA	COMMON ALARM
COND	CONDENSATE
DI	DIGITAL INPUT
DO	DIGITAL OUTPUT
DP	DIFFERENTIAL PRESSURE
EA	EXHAUST AIR
ES	END SWITCH
ES-C	END SWITCH CLOSED
ES-O	END SWITCH OPEN
F	FLOW
FM	FLOW METER
FAS	FIRE ALARM SYSTEM
FSD	FIRE/SMOKE DAMPER
НТ	HUMIDITY TRANSMITTER
HW	HARDWIRED
LD	LEAK DETECTOR
М	MOTORIZED
MD	MOTORIZED DAMPER
OA	OUTSIDE AIR
RA	RETURN AIR
S/S	START/STOP
SA	SUPPLY AIR
SC	SPEED CONTROL
SD	SMOKE DETECTOR
SP	STATIC PRESSURE
SPS	STATIC PRESSURE SAFETY
STPT	SETPOINT OVERRIDE
STS	STATUS
TT	TEMPERATURE TRANSMITTER
VFD	VARIABLE FREQUENCY DRIVE

CONTROL SYMBOL LIST

	DUCT INSERTION TEMPERATURE SENSOR
	AVERAGING TEMPERATURE SENSOR
	DUCT HUMIDITY SENSOR
	SPACE TEMPERATURE SENSOR
	FLOW METER
••	DIFFERENTIAL PRESSURE TRANSMITTER
A F M S	AIR FLOW MEASURING STATION
	STATIC PRESSURE SWITCH
	PRESSURE SENSOR
	SMOKE DETECTOR
	FLOW SWITCH
	DAMPER END SWITCH
	CURRENT SWITCH
	CONDENSATE SENSOR
	MOTORIZED DAMPER W/ ACTUATOR
	VAV BOX DAMPER W/ ACTUATOR
H	HEATING COIL
	FAN/PUMP
	VARIABLE FREQUENCY DRIVE
STARTER	STARTER





NOTES:
 ALL SAFETIES TO BE HARDWIRED TO SHUTDOWN THE FANS AND MONITORED VIA THE BMS.
 LOCATE DUCT DIFFERENTIAL PRESSURE SENSOR IN THE SUPPLY/RETURN AIR DUCT LOCATED 2/3 OF THE DISTANCE FROM FAN.
 FSD ASSEMBLY WITH INTEGRAL ACTUATOR PROVIDED BY MECHANICAL CONTRACTOR. REFER TO MECHANICAL FLOOR PLANS AND AIRFLOW RISERS FOR QUANTITIES AND LOCATIONS OF ASSOCIATED FIRE SMOKE DAMPERS.

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TO NEXT EVAPORATOR





SHEET NOTES:

REFER TO SHEETS A SERIES
DETAILS, SCHEDULES AND F
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APPLICATION.
REFER TO GENERAL NOTES
REQUIREMENTS OF WORK.

NOTE:

PROVIDED AT FINAL SUBMISSION

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2'0 8' 16'

32'

ALL METALIC DUCTS AND SUPPORTS NEED GROUNDING; DETAILS TO BE





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SHEET NOTES: 1. APPLICATION. 2. APPLICATION. APPLICATION. 4 APPLICATION. 6.

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1' 02'0 8' 316'

362'

REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL REQUIREMENTS OF WORK.

ISSUED FOR PERMIT

Engineering and b Land Surveying, P.C.

370 7th Avenue **SUITE 1604** New York, NY 10001



25 Mohawk Avenue Sparta, NJ 07871

CONFIDENTIAL

THESE DRAWINGS ARE CONFIDENTIAL IN NATURE. ANY MISUSE OR UNAUTHORIZED DISTRIBUTION OF THE DRAWINGS CONTAINED HEREIN WILL BE A VIOLATION OF THIS CONFIDENTIALITY REQUIREMENT AND SUBJECT THE VIOLATOR TO LIABILITY. REVIEW OF THESE MATERIALS BY RECEIPT SHALL CONSTITUTE ACCEPTANCE OF THESE TERMS AND THE TERMS OF ANY UNDERLYING CONFIDENTIALITY AGREEMENT WE MAY HAVE EXCLUDED IN OBTAINING THIS INFORMATION FROM A THIRD PARTY. IF THE RECIPIENT IS NOT IN AGREEMENT WITH THE OBLIGATION OF CONFIDENTIALITY THEN THE DRAWINGS SHALL BE RETURNED TO THE ORIGINATOR.

B FINAL SUBMISSION AZ A INTERIM SUBMISSION WP REV DESCRIPTION DRW BY CHK BY DATE

OHitachi Energy

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

901 Main Campus Drive Raleigh, North Carolina 27606

12-12-22

09-13-22



Astoria HVDC **Converter Station**

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

CONVERTER BUILDING HVAC - SECTIONS











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COORDINATE WITH ELECTRICAL PLANS AND CONTRACTOR FOR REQUIREMENTS.

CONNECT REFRIGERANT PIPING LIQUID AND SUCTION BRANCHES TO VRF INDOOR UNIT. FOLLOW MANUFACTURER'S PIPE SIZING RECOMMENDATIONS.

CONDENSATE PIPING SHALL NOT BE ROUTED OVER ELECTRICAL PANELS, DISCONNECTS, TRANSFORMERS, OR OTHER ELECTRICAL EQUIPMENT. VERIFY LOCATION OF ALL ELECTRICAL EQUIPMENT BEFORE

INSTALLATION OF HVAC DUCTWORK AND PIPING. ROUTE CONDENSATE DOWN FROM FLOOR ABOVE.

VRF PIPING DOWN FROM MEZZANINE ABOVE.



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COORDINATE WITH ELECTRICAL PLANS AND CONTRACTOR FOR

FURNISH AND INSTALL A 1" GRAVITY CONDENSATE DRAIN LINE FROM THE INDOOR UNITS AND ROUTE ABOVE CEILING AND DOWN THE BACK WALL AS SHOWN TO THE JANITOR CLOSET MOP SINK ON FIRST FLOOR. DAYLIGHT OPEN END PIPE WITH 6" AIR-GAP ABOVE THE RESERVOIR OF THE SINK. SLOPE HORIZONTAL PIPING AT 1/8" PER FOOT OF RUN AND INSULATE DRAIN LINE WITH 1" CLOSE-CELL ARMAFLEX. COORDINATE

CONNECTION TO CONDENSATE PUMP PRIOR TO ROUTING. ROUTE CONDENSATE DOWN TO FLOOR BELOW.

CONNECT REFRIGERANT PIPING LIQUID AND SUCTION BRANCHES TO VRF INDOOR UNIT. FOLLOW MANUFACTURER'S PIPE SIZING

RECOMMENDATIONS. CONDENSATE PIPING SHALL NOT BE ROUTED OVER ELECTRICAL PANELS, DISCONNECTS, TRANSFORMERS, OR OTHER ELECTRICAL EQUIPMENT. VERIFY LOCATION OF ALL ELECTRICAL EQUIPMENT BEFORE INSTALLATION OF HVAC DUCTWORK AND PIPING.

SHEET NOTES:

1.	REFER TO SHE
	DETAILS, SCH
	APPLICATION.
2.	REFER TO SHE
	DETAILS, SCHE
	APPLICATION.
3.	REFER TO SHE
	DETAILS, SCHE
	APPLICATION.
4.	REFER TO SHE
	SCHEDULES A
5.	REFER TO SHE
	DETAILS, SCHE
	APPLICATION.
6.	REFER TO GEN

(3" THROUGH 8") 45 DEGREE ELBOW

COMBINATION TEE

L=(LARGER OF C OR D)+4" LATERAL CROSS

1 1/4" X 1 1/4" X 3/16"-

ANGLE IRON

SUPPORTS

DUCT HANGER DETAIL

EXPOSED PIPING.

MASONRY FLOOR-

SEALANT-

45 DEGREE **3-PIECE ELBOW**

L=AL+2 RL=(A-B)+3"(MIN) REDUCING COMBINATION TEE

L=(LARGER OF C OR D)+4" RL=(A-B)+3"(MIN) REDUCING LATÉRAL CROSS

TEE

R

| A | R=1.5A

60 DEGREE

L=C+4"

SPUN TEE

3-PIECE ELBOW

-NUTS AND WASHERS BOTH SIDES OF ANGLE (TYP)

╺╼╬┢╾

-ALUMINUM JACKET WITH FACTORY

APPLIED MOISTURE BARRIER.

-METAL BAND NEAR FLOOR

*OMIT ALUMINUM JACKET IF

PIPING IS INSULATED

EXTEND FROM BELOW BACKUP

MATERIAL TO 10" ABOVE FLOOR*

-INSULATION (WHERE REQUIRED)

USE SLICE INSTEAD OF ROUND RECTANGULAR ROUND WHERE d IS GREATER THAN 2/3d SLICE IN DUCT

 $\mathbf{S} \mathbf{O} \mathbf{S}$

—L=C+4"

A R=1.5A

(3" THROUGH 8")

90 DEGREE

+

Ē

ELBOW

REDUCING SPUN TEE

L=C+4" RL=(A-B)+3"(MIN)

L=C+4"

-STRUCTURAL

-1/2" BOLT AND

-1/2" THREADED

MINIMUM 1/4" GAP ALL-----

AROUND PIPE

ESCUTCHEONS FOR EXPOSED PIPING

(WHERE REQUIRED)

*FOR GYP BOARD

WALLS PROVIDE MIN 16

GAUGE GALV. STEEL

SLEEVE W/ LOCK-TYPE

LONGITUDINAL SEAM

WALL PIPE PENETRATION

3

M-600.00 NTS

BACKUP MATERIAL-

PROVIDE-

INSULATION-----

ROD (TYP)

NUT W/ 2 1/2"

WASHER

JOIST

90 DEGREE 5-PIECE ELBOW

CONICAL TEE

APPLICATION. APPLICATION. APPLICATION. APPLICATION.

6.

22

20

18

16

WALL OR FLOOR -

1 1/2"x1 1/2"x1/8" —

ANGLE IRON TIGHT

TO WALL OR FLOOR

ALL AROUND DUCT

BY SHEETMETAL

CONTRACTOR

8

M-600.00 NTS

-SEALANT

CONSTRUCTION

4.

FITTING MINIMUM DIAMETER MATERIAL

GAUGE

UP TO 8"

10"-36"

38"-60"

62"-78"

SHEET NOTES:

1.

2

3.

REFER TO SHEETS A SERIES FOR ARCHITECTURAL DRAWINGS, NOTES, DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE

REFER TO SHEETS E SERIES FOR BUILDING ELECTRICAL DRAWINGS, NOTES, DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE

REFER TO SHEETS M SERIES FOR HVAC MECHANICAL DRAWINGS, NOTES, DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE

REFER TO SHEETS P SERIES FOR PLUMBING DRAWINGS, NOTES, DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE APPLICATION. REFER TO SHEETS S SERIES FOR BUILDING STRUCTURAL DRAWINGS, NOTES, DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL

REQUIREMENTS OF WORK. ALL HVAC METALLIC COMPONENTS INSIDE CONVERTOR BUILDING SHALL BE BONDED TO THE BUILDING OR BUILDING RING CONDUCTOR. COORDINATE WITH ELECTRICAL PLANS AND CONTRACTOR FOR REQUIREMENTS.

ALL HVAC METALLIC COMPONENTS INSTALLED OUTSIDE OF BUILDING SHALL BE BONDED TO GROUND. COORDINATE WITH ELECTRICAL PLANS AND CONTRACTOR FOR REQUIREMENTS.

K Engineering and Land Surveying, P.C.

370 7th Avenue **SUITE 1604** New York, NY 10001

25 Mohawk Avenue Sparta, NJ 07871

CONFIDENTIAL

THESE DRAWINGS ARE CONFIDENTIAL IN NATURE. ANY MISUSE OR UNAUTHORIZED DISTRIBUTION OF THE DRAWINGS CONTAINED HEREIN WILL BE A VIOLATION OF THIS CONFIDENTIALITY REQUIREMENT AND SUBJECT THE VIOLATOR TO LIABILITY. REVIEW OF THESE MATERIALS BY RECEIPT HALL CONSTITUTE ACCEPTANCE OF THESE TERMS AND THE TERMS OF ANY UNDERLYING CONFIDENTIALITY AGREEMENT WE MAY HAVE EXCLUDED IN OBTAINING THIS INFORMATION FROM A THIRD PARTY. IF THE RECIPIENT IS NOT IN AGREEMENT WITH THE OBLIGATION OF ONFIDENTIALITY THEN THE DRAWINGS SHALL BE RETURNED TO THE ORIGINATOR.

B FINAL SUBMISSION A INTERIM SUBMISSION DESCRIPTION REV

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

Hitachi Energy

AZ

DRW BY CHK BY DATE

WP

12-12-22

09-13-22

901 Main Campus Drive Raleigh, North Carolina 27606

PROJECT **IPE Champlain Hudson Power Express**

Astoria HVDC **Converter Station**

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

HVAC - DETAILS

NOTE: 1. FOR WALLS REQUIRING FIRE DAMPERS, SEE OTHER DETAILS. DETAIL OF CAULKING OF DUCT PIERCING WALLS OR FLOORS WHERE FIRE DAMPERS ARE NOT REQUIRED

> ----ALUMINUM JACKET WITH FACTORY APPLIED MOISTURE BARRIER. EXTEND 2" BOTH SIDES & SECURE BOTH ENDS WITH

A BAND**

—MASONRY WALL

WITH WALL*

**OMIT ALUMINUM JACKET IF PIPING IS

UNINSULATED

-SCHEDULE 40 STEEL OR CAST IRON PIPE SLEEVE. CUT FLUSH

/IDTH	MAX. EQUIPMENT WT.	MAX. TIEDOWN	SPACING(IN.)
ТО	LBS./LIN. FT.	1"G"	1/2"G"
59"	500#	12"	24"
95"	800#	10"	20"
120"	950#	18"	36"

DETAILS SHOWN ON THIS DRAWING ARE TO BE USED AS A GUIDE FOR THE SUPPORT OF MECHANICAL EQUIPMENT, PIPING, DUCTWORK, ETC. PROVIDE SEISMIC CALCULATIONS, SIGNED AND SEALED BY A LICENSED PROFESSIONAL ENGINEER WITH A MINIMUM OF FIVE YEARS EXPERIENCE IN SEISMIC DESIGN AND MUST HAVE SEISMIC INSURANCE.

SHEET NOTES: APPLICATION. 2. APPLICATION. 3. APPLICATION. 4. APPLICATION. 6. 8

<u>NOTE:</u> THIS IS A SEISMIC ZONE 2A PROJECT.

SEISMIC RESTRAINT OF DUCT BETWEEN FIRE DAMPER CONNECTIONS

SEISMIC RESTRAINT OF DUCT BETWEEN FIRE DAMPER CONNECTIONS

Autodesk Docs://CHPE Astoria/CHA-KIE-081-00-M3-H-001.rvt

REFER TO SHEETS A SERIES FOR ARCHITECTURAL DRAWINGS, NOTES, DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE REFER TO SHEETS E SERIES FOR BUILDING ELECTRICAL DRAWINGS, NOTES, **ISSUED FOR PERMIT** DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE REFER TO SHEETS M SERIES FOR HVAC MECHANICAL DRAWINGS, NOTES, DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE REFER TO SHEETS P SERIES FOR PLUMBING DRAWINGS, NOTES, DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE APPLICATION. REFER TO SHEETS S SERIES FOR BUILDING STRUCTURAL DRAWINGS, NOTES, DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE REFER TO GENERAL NOTES ON MEP COVER SHEET FOR ADDITIONAL ALL HVAC METALLIC COMPONENTS INSIDE CONVERTOR BUILDING SHALL BE BONDED TO THE BUILDING OR BUILDING RING CONDUCTOR. COORDINATE WITH ELECTRICAL PLANS AND CONTRACTOR FOR REQUIREMENTS. ALL HVAC METALLIC COMPONENTS SHALL BE BONDED TO GROUND. COORDINATE WITH ELECTRICAL PLANS AND CONTRACTOR FOR REQUIREMENTS. Engineering and Land Surveying, P.C. 370 7th Avenue SUITE 1604 New York, NY 10001 25 Mohawk Avenue Sparta, NJ 07871 CONFIDENTIAL THESE DRAWINGS ARE CONFIDENTIAL IN NATURE. ANY MISUSE OR UNAUTHORIZED DISTRIBUTION OF THE DRAWINGS CONTAINED HEREIN WILL BE A VIOLATION OF THIS CONFIDENTIALITY REQUIREMENT AND SUBJECT THE VIOLATOR TO LIABILITY. REVIEW OF THESE MATERIALS BY RECEIPT SHALL CONSTITUTE ACCEPTANCE OF THESE TERMS AND THE TERMS OF ANY UNDERLYING CONFIDENTIALITY AGREEMENT WE MAY HAVE EXCLUDED IN OBTAINING THIS INFORMATION FROM A THIRD PARTY. IF THE RECIPIENT IS NOT IN AGREEMENT WITH THE OBLIGATION OF CONFIDENTIALITY THEN THE DRAWINGS SHALL BE RETURNED TO THE ORIGINATOR. - ALUMINUM MESH TYPE EXPAMET 3"x1 1/4"-1/8"x1/8" B FINAL SUBMISSION 12-12-22 AZ A INTERIM SUBMISSION WP 09-13-22 DESCRIPTION DRW BY CHK BY DATE REV Hitachi Energy 470 Chestnut Ridge Rd # 2, Woodcliff Lake, NJ 07677 901 Main Campus Drive Raleigh, North Carolina 27606 PROJECT HPE **Champlain Hudson Power Express** Astoria HVDC **Converter Station** 31-45 20th Avenue, Astoria, Queens NY 11105 Block #850 - Lot #310 - BIN #4624437 HVAC - DETAILS DATE 12/12/2022 PROJECT NO 105121 W.PENDLETON DRAWING B CHECKED BY S.DEVADKAR DRAWING NO M-605.00 CADD FILE N0 Autodesk Docs://CHPE Astoria/CHA-KIE-081-00-M3-H-001.rvt

MODEL NUMBERS ARE FOR GENERAL IDENTIFICATION. SPECIFIC MODEL NUMBERS DEPEND ON APPLICABLE NOTES AND ARCHITECTURAL PLANS. VERIFY MOUNTING TYPE AND DIMENSIONS WITH ARCHITECTURAL WOR 2. SEE SYMBOLS SHEET FOR DIFFUSER, REGISTER, AND GRILLE SYMBOLS AND DESIGNATORS.

3. FRAME TO MATCH CEILING/SURFACE TYPE.

VARIABLE REFRIGERANT FLOW (VRF) INDOOR UNIT SCHEDULE

						/					
					NOMINAL CAF	ACITY (BTU/H)		ELECTRICA	L DATA		
TAG	UNIT	BUILDING	MANUFACTURER	MODEL	TOTAL COOLING	HEATING	FAN AIR FLOW (CFM)	V/PH/HZ	RLA	(LBS)	NOTES
AC-111-01A	CU-111-01A	SERVICE	LG	LCN188HV4	18,459	10,890	459	208/1/60	0.25	32	1
AC-111-01B	CU-111-01B	SERVICE	LG	LCN188HV4	18,459	10,890	459	208/1/60	0.25	32	1,2
AC-111-02	CU-111-03	SERVICE	LG	ARNU283TAA4	28,000	31,500	855	208/1/60	1.67	60	1
AC-111-03	CU-111-03	SERVICE	LG	ARNU283TAA4	28,000	31,500	855	208/1/60	1.67	60	1
AC-111-04	CU-111-02	SERVICE	LG	ARNU123TRD4	12,300	13,600	307	208/1/60	0.2	32	1
AC-111-05	CU-111-02	SERVICE	LG	ARNU123TRD4	12,300	13,600	307	208/1/60	0.2	32	1
AC-111-06	CU-111-02	SERVICE	LG	ARNU123TRD4	12,300	13,600	307	208/1/60	0.2	32	1
AC-111-07	CU-111-02	SERVICE	LG	ARNU123TRD4	12,300	13,600	307	208/1/60	0.2	32	1
AC-111-08	CU-111-02	SERVICE	LG	ARNU123TRD4	12,300	13,600	307	208/1/60	0.2	32	1
AC-111-09	CU-111-02	SERVICE	LG	ARNU123TRD4	12,300	13,600	307	208/1/60	0.2	32	1
AC-111-10	CU-111-02	SERVICE	LG	ARNU123TRD4	12,300	13,600	307	208/1/60	0.2	32	1
AC-111-11	CU-111-02	SERVICE	LG	ARNU123TRD4	12,300	13,600	307	208/1/60	0.2	32	1
AC-111-12	CU-111-03	SERVICE	LG	ARNU123TRD4	12,300	13,600	307	208/1/60	0.2	32	1
AC-111-13	CU-111-03	SERVICE	LG	ARNU123TRD4	12,300	13,600	307	208/1/60	0.2	32	1
AC-111-14	CU-111-03	SERVICE	LG	ARNU123TRD4	12,300	13,600	307	208/1/60	0.2	32	1
AC-111-15	CU-111-02	SERVICE	LG	ARNU123TRD4	12,300	13,600	307	208/1/60	0.2	32	1
AC-111-16	CU-111-04	SERVICE	LG	LCN188HV4	18,459	10,890	459	208/1/60	0.25	32	1
NOTES:											
1. ELECTRICAL	DISCONNECTS TO BE	E FURNISHED AN	ID INSTALLED BY THE DI	VISION 26 CONTE	RACTOR. COORDIN	ATE ALL ELECTRIC	AL AND DISCONNE	CT REQUIREMEN	NTS WITH TH	HE DIVISION 2	6

CONTRACTOR.

2. AC-141-02A, AC-141-02B, AC-141-03B, AC-141-04B, AND AC-111-01B ARE STANDBY-UNITS.

							MA	٩KΕ	-UP AIR	L
					SUPPLY	OUTSIDE			COO	L
MARK	BUILDING	PURPOSE	MANUFACTURER	MODEL	AIR	AIR	ESP (IN. WC)	HP	CAPACITY (T/S)	
					(CFM)	(CFM)			(MBH)	
PACU-111-01A	SERVICE	OUTDOOR AIR	LG	ARDR-112-5A-1-F1	700	700	1	1	69.5 / 34.8	
PACU-111-01B	SERVICE	OUTDOOR AIR	LG	ARDR-112-5A-1-F1	700	700	1	1	69.5 / 34.8	

NOTES: 1. PROVIDE FACTORY MOUNTED AND WIRED STARTER/DISCONNECT WITH SINGLE POINT POWER CONNECTION.

2. PROVIDE MOTORIZED OUTSIDE AIR DAMPER.

3. PROVIDE WITH PAINTED EXTERIOR WITH 2,500 HOUR SALT SPRAY RATING.

4. PROVIDE WITH DIRECT DRIVE FANS WITH FACTORY MOUNTED VFD.

5. PROVIDE WITH DOWNTURNED WEATHERHOOD. . PROVIDE VERTICAL DISCHARGE UNIT

7. PROVIDE WITH FACTORY-MOUNTED CONVENIENCE OUTLET POWERED FROM THE LINE SIDE OF THE UNIT DISCONNECT. ALSO INCLUDE SERVICE RECEPTACLE DISCONNECT. 8. UNIT SHALL BE DOUBLE WALL CONSTRUCTION WITH 2" R-13 INSULATION.

9. UNIT SHALL BE PROVIDED WITH VFD FAN, STAINLESS STELL CONDENSATE DRAIN PAN, LOW AMBIENT OPERATION KIT.

10. UNIT SHALL HAVE THE ABILITY TO OPERATE HEAT PUMP HEATING AND SECONDARY HEAT TOGETHER.

		VA	RIABL	E REFR	IGERAN	NT FLC	W (VF	RF) CO	NDENS	SING UI	NIT SCH	IEDU	LE				
				TOTAL CAPA	CITY (BTU/H)	OUTDOO	R TEMPERA	TURE (°F)	EFFIC	IENCY		ELECT	RICAL D	DATA		WEIGHT	
TAG	MANFACTURER	MODEL	BUILDING	TOTAL	TOTAL	COOLING	COOLING	HEATING	COOLING	HEATING	T			MCA			NOTES
				COOLING	HEATING	DB	WB	DB	IEER (SEER)	COP (HSPF)	I	V/F11/11Z	IVIOF		UDA		
CU-111-01A	LG	LUU189HV	SERVICE	18,000	18,500	91.9	73.9	10.9	(20)	(10)	R410A	208/1/60	30	20	48	129	1-5
CU-111-01B	LG	LUU189HV	SERVICE	18,000	18,500	91.9	73.9	10.9	(20)	(10)	R410A	208/1/60	30	20	48	129	1-5
CU-111-02	LG	ARUM121BTE5	SERVICE	119,700	135,000	91.9	73.9	10.9	29.6	4.0	R410A	208/3/60	40	31	79	507	1-5
CU-111-03	LG	ARUM096BTE5	SERVICE	96,000	108,000	91.9	73.9	10.9	33.0	4.3	R410A	208/3/60	40	29	78	507	1-5
CU-111-04	LG	LUU189HV	SERVICE	18,000	18,500	91.9	73.9	10.9	(20)	(10)	R410A	208/1/60	30	20	48	129	1-5
NOTES					-	÷				•		•					

1. FURNISH AND INSTALL CONDENSING UNIT ON THE INSTALLED CONCRETE EQUIPMENT PAD. UNIT SHALL BE INSTALLED TO RESIST CONTINUAL 185 MPH WIND SPEED. 2. DISCONNECTS TO BE FURNISHED AND INSTALLED BY THE DIVISION 26 CONTRACTOR. COORDINATE ALL DISCONNECT REQUIREMENTS WITH THE DIVISION 26 CONTRACTOR. 3. FURNISH AND INSTALL INTERLOCK WITH THE BUILDING AUTOMATIC TRANSFER SWITCH. UNIT TO SHUT DOWN IN THE EVENT OF LOSS OF POWER AND DELAY 30 SECONDS PRIOR TO RE-STARTING,

COORDINATE REQUIREMENTS WITH DIVISION 26 CONTRACTOR AND UNIT MANUFACTURER. 4. PROVIDE VOLTAGE & PHASE LOSS MONITOR INSTALLED PER MANUFACTURER'S REQUIREMENTS.

5. UNITS SHALL BE PROVIDED WITH LOW AMBIENT TEMPERATURE KIT.

6. UNITS TO BE INSTALLED 12" ABOVE CONCRETE PAD ON PRE-FABRICATED METAL FRAME. UNIT SHALL BE INSTALLED TO RESIST CONTINUAL 185 MPH WIND SPEED. 7. CU-141-02, CU-141-03B, CU-141-04B, CU-111-01B, AND CU-111-02C ARE STAND-BY UNITS.

QUIPMENT TAG	BUILDING	MOUNTIN	G MANU	JFACTU	RER	10DE	L HE	Moun Ight	NTING (FT AF	F)	ECTRIC EATER	; FAN/I	Mot Hp	OR	E	ELECTF V/PH/I	RICAL HZ	_ DA	TA MPS	WE (l	EIGHT _BS)	NOTE
UH-111-01 UH-111-02 UH-111-03	SERVICE SERVICE SERVICE	SUSPENDE SUSPENDE SUSPENDE	 C C C C	NDEECO NDEECO NDEECO		IUH IUH IUH		8 8 8	3 3 3		5.0 5.0 5.0		1/4 1/4 1/4			480/3/6 480/3/6 480/3/6	60 60 60		8 8 8		45 45 45	1-4 1-4 1-4
ES: JRNISH AND I ROVIDE DISCO JRNISH AND I OORDINATE T S REQUIRED	NSTALL WITH M DNNECT SWITCI NSTALL THERM HE EXACT UNIT TO MAINTAIN M	ANUFACTURE H TO EACH UN OSTAT; TO BE HEATER ELE ANUFACTURE	R PROVIDE IT HEATER MOUNTED /ATION WI R'S RECOM	ED MOUNT RS IN ACCC ON UNIT H TH OTHER IMENDED	ING BRA DRDANCI HEATER. UTILITIE CLEARA	CKET / E WITH S AND NCES.	AND HA DIVISI EQUIP	ARDWA ON 26 S MENT \	RE. Specific Within T	CATIONS	DING PRI	OR TO AN	ND AF	TER	INST	ALLATIO	N. REL	OCA	TED			
		R	EGIS	STEF	r Al	٧D	Gl	RIL	LE	SCI	HED	DUL	E									
YPE	MANUFAC	TURER			FAC	E TY	PE z	7		ACCE	ESSOR			M	ATE	RIAL	FI	NISH	4	COL	.OR	
RIPTION	TITU	S S	IZE (IN)	JOUNTING		HROW	ILADE DEFLECTIO	LADE PACING (IN	CONTROL SRID)PPOSED LADE AMPER	IN TO ROUI	EPARATE LASTER RI	THER	TEEL		16 STAINLE STEEL	AKED	AQUER	ATIN	TANDARD DFF-WHITE	ATCH T-B/	NOTES
AIR GRILLE	300FS SE	RIES	48 X36		т	⊢ ⊡_ 2W	≝ ⊆ 45°	回 の 3/4	00		S ≤	ሪ ሮ	0	رم ا	X X	ຕິທ	Х		S	S O	2	1,2,3
AIR GRILLE	132RL SE 300RS SE	RIES RIES	36 x 24 12 X 6	DUC	ст ст	2W 2W	45° 45°	3/4 3/4		X X							X X					1,2,3
AIR GRILLE	300RS SE	RIES	18 X 6	DUC	т	2W	45°	3/4		X							Х					1,2,3
	350FS SE	RIES	24 X 24	DUC		1W	35°	3/4		X				-			X					1,2,3
	350KS SE 350RS SF	RIES	0 X 0 8 X 8		л СТ	1W	ა5° 35°	3/4 3/4		<u>х</u> х							X X					1,2,3
AIR GRILLE	350RS SE	RIES	10 X 10	DUC	т	1W	35°	3/4		X							X					1,2,3
AIR GRILLE	350RS SE	RIES	12 X 12	DUC	т	1W	35°	3/4		Х							X					1,2,3
AIR GRILLE	350RS SE	RIES	14 X 14	DUC	т	1W	35°	3/4		Х							X					1,2,3
ARE FOR GEN /ORK. ET FOR DIFFL CEILING/SURF	ERAL IDENTIFIC JSER, REGISTEF ACE TYPE.	ATION. SPEC	FIC MODE	L NUMBER	S DEPEN	ND ON A	APPLIC	CABLE	NOTES A	AND ARC	HITECTU	RAL PLAN	4S. V	ERIF	Y MO	DUNTING	TYPE /	AND [DIMEN	ISIONS	S WITH	
BACK	JP HEAT		ELEC	TRICAL																		
BACK	JP HEAT EAT L/	AT MCA			/OLTS	/ WE	IGHT	NO	TES													
BACK CAPACITY (KW)	JP HEAT EAT L/ (°F) (°	AT F) MCA	ELEC (A) MOC	TRICAL CP (A)	/OLTS PHASE	/ WE	IGHT _BS)	NO	TES													

S S

	EQUIPMENT TAG	BUILDING	MOUNTING	MANUFACTU	JRER MO	DEL	MOUN	NTING (FT AF	F) ELE HE (ECTRIC ATER KW)	; FAN/I	MOTO HP	R –	ELECT V/PH/	RICAL HZ	. DA	TA MPS	WEI (Lf	IGHT BS)	NOTES
	EUH-111-01 EUH-111-02 EUH-111-03	SERVICE SERVICE SERVICE	SUSPENDED SUSPENDED SUSPENDED	INDEECO INDEECO INDEECO		JH JH H	8	8 8 8		5.0 5.0 5.0		1/4 1/4 1/4		480/3/ 480/3/ 480/3/	60 60 60		8 8 8		45 45 45	1-4 1-4 1-4
	 FURNISH AND PROVIDE DISC FURNISH AND COORDINATE AS REQUIRED 	INSTALL WITH M ONNECT SWITCH INSTALL THERMO THE EXACT UNIT TO MAINTAIN M	ANUFACTURER F H TO EACH UNIT OSTAT; TO BE MO HEATER ELEVAT ANUFACTURER'S	PROVIDED MOUN HEATERS IN ACC DUNTED ON UNIT TION WITH OTHE RECOMMENDED	ITING BRACH ORDANCE V HEATER. R UTILITIES / O CLEARANC	KET AND VITH DIV AND EQU SES.	HARDWA ISION 26 S	ARE. SPECIFIC WITHIN T	ATIONS. He Buili	DING PRI		ID AFTE	RINS	STALLATIO	N. REL	OCA ⁻	TED			
	ТҮРЕ	MANUFAC		GISTE	R AN	DO	BRIL	LE	SCI			E	MAT	ERIAL	FIN	VISH		COL(
	DESCRIPTION	TITU	S SIZ	E (IN)	THROW	PATTERN BLADE	DEFLECTION BLADE SPACING (IN)	CONTROL GRID	OPPOSED BLADE DAMPER	SQ TO ROUND ADAPTER	SEPARATE PLASTER RING	OTHER	ALUMINUM	316 STAINLESS STEEL	BAKED ENAMEL	LAQUER	SATIN	STANDARD OFF-WHITE	MATCH T-BAR	IOTES
		300FS SE	RIES 48	X36 DL	ICT 2	W 45	° 3/4		<u>x</u>				X		X					1,2,3
-	SUPPLY AIR GRILLE	132RL SE 300RS SE	RIES 36 RIES 12	2 X 6 DL	ICT 2	W 45 W 45	° 3/4 ° 3/4		<u>х</u> х						X					1,2,3
-	SUPPLY AIR GRILLE	300RS SE	RIES 18	BX6 DU	JCT 2	W 45	° 3/4		X						X					1,2,3
	RETURN AIR GRILLE	350FS SE	RIES 24	X 24 DL	JCT 1	W 35	° 3/4		Х						Х					1,2,3
	EXHAUST AIR GRILLE	350RS SE	RIES 6	X6 DL	JCT 1	W 35	° 3/4		Х						Х					1,2,3
_	EXHAUST AIR GRILLE	350RS SE	RIES 8	X8 DL	JCT 1	W 35	° 3/4		X						X					1,2,3
┝		350RS SE	RIES 10	X 10 DL		W 35	° 3/4 ° 2/4		X 						X					1,2,3
	EXHAUST AIR GRILLE	350RS SE	RIES 12 RIES 14	X 12 DL X 14 DL		W 35	° 3/4		×						X					1,2,3
- -	NUMBERS ARE FOR GEN ECTURAL WORK. MBOLS SHEET FOR DIFFI TO MATCH CEILING/SUR	IERAL IDENTIFIC JSER, REGISTEF FACE TYPE.	ATION. SPECIFIC	MODEL NUMBE	RS DEPEND SIGNATORS.	ON APPI	LICABLE	NOTES A	AND ARC	HITECTU	RAL PLAN	IS. VER	RIFY N	IOUNTING	TYPE A		DIMEN	SIONS	WITH	
EL HIT SY ME	NUMBERS ARE FOR GEN ECTURAL WORK. MBOLS SHEET FOR DIFFU TO MATCH CEILING/SURI	IERAL IDENTIFIC JSER, REGISTEF FACE TYPE.	ATION. SPECIFIC	C MODEL NUMBE	RS DEPEND SIGNATORS.	ON APPI	ICABLE	NOTES A	ND ARC	HITECTU		IS. VER		IOUNTING	TYPE A		DIMEN	SIONS	WITH	
				FI FCTRICAL																
	BACK	UP HEAT	AT .	ELECTRICAL		WEIGH	IT NO	TES												
	BACK AT CAPACITY	UP HEAT	AT F) MCA (A)	ELECTRICAL MOCP (A)	- VOLTS / PHASE	WEIGH		TES												
-	BACK AT CAPACITY F) (KW)	UP HEAT EAT LA (°F) (°	AT F) MCA (A)	ELECTRICAL MOCP (A)	- VOLTS / PHASE	WEIGH (LBS	IT NO	TES												

UNIT SCHEDULE ING COIL HEAT PUMP HE EAT (°F) LAT (°F) CAPACITY EAT (DB/WB) (DB/WB) (MBH) (°F) 92.2 / 77.2 47.0 / 47.0 12.6 31 92.2 / 77.2 47.0 / 47.0 12.6 31

Engineering and

Land Surveying, P.C.

370 7th Avenue

New York, NY 10001

SUITE 1604

AL SOUND POWER LEVEL (SONES) 36.0 36.0 36.0 36.0 36.0 36.0 36.0	ND /ER EL ES) 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ELECTRI R MOTOR STARTER OR VFD MOTOR STARTER MOTOR STARTER MOTOR STARTER MOTOR STARTER MOTOR STARTER	CAL DATA COMBINATION MOTOR STARTER TAG BY ELECTRICAL BY ELECTRICAL BY ELECTRICAL BY ELECTRICAL BY ELECTRICAL	V/PH/HZ 460/3/60 460/3/60 460/3/60 460/3/60	FIRE ALARM SYS. FIRE ALARM SYS. FIRE ALARM SYS. FIRE ALARM SYS. FIRE ALARM SYS. FIRE ALARM SYS.
POWER RE LEVEL) (SONES) 36.0 36.0 36.0 36.0 36.0 36.0 36.0 36.0 36.0 36.0	ER MOTOR EL POWER POWER (HP) 0 5.0 0 5.0 0 5.0 0 5.0 0 5.0 0 5.0 0 5.0 0 5.0	 MOTOR STARTER OR VFD MOTOR STARTER MOTOR STARTER MOTOR STARTER MOTOR STARTER MOTOR STARTER 	COMBINATION MOTOR STARTER TAG BY ELECTRICAL BY ELECTRICAL BY ELECTRICAL BY ELECTRICAL BY ELECTRICAL	V/PH/HZ 460/3/60 460/3/60 460/3/60 460/3/60	FIRE ALARM SYS. FIRE ALARM SYS. FIRE ALARM SYS. FIRE ALARM SYS. FIRE ALARM SYS. FIRE ALARM SYS.
36.0 36.0 36.0 36.0 36.0 36.0 36.0	0 5.0 0 5.0 0 5.0 0 5.0 0 5.0 0 5.0 0 5.0	MOTOR STARTER MOTOR STARTER MOTOR STARTER MOTOR STARTER MOTOR STARTER	BY ELECTRICAL BY ELECTRICAL BY ELECTRICAL BY ELECTRICAL BY ELECTRICAL	460/3/60 460/3/60 460/3/60 460/3/60	FIRE ALARM SYS. FIRE ALARM SYS. FIRE ALARM SYS. FIRE ALARM SYS. FIRE ALARM SYS.
36.0 36.0 36.0 36.0 36.0	0 5.0 0 5.0 0 5.0 0 5.0 0 5.0	MOTOR STARTER MOTOR STARTER MOTOR STARTER MOTOR STARTER	BY ELECTRICAL BY ELECTRICAL BY ELECTRICAL BY ELECTRICAL	460/3/60 460/3/60 460/3/60	FIRE ALARM SYS. FIRE ALARM SYS. FIRE ALARM SYS. FIRE ALARM SYS.
36.0 36.0 36.0 36.0	0 5.0 0 5.0 0 5.0	MOTOR STARTER MOTOR STARTER MOTOR STARTER	BY ELECTRICAL BY ELECTRICAL BY ELECTRICAL	460/3/60 460/3/60	FIRE ALARM SYS. FIRE ALARM SYS. FIRE ALARM SYS.
36.0 36.0 36.0	0 5.0 0 5.0	MOTOR STARTER MOTOR STARTER	BY ELECTRICAL BY ELECTRICAL	460/3/60	FIRE ALARM SYS. FIRE ALARM SYS.
36.0	0 5.0	MOTOR STARTER	BY ELECTRICAL	460/3/60	FIRE ALARM SYS.
36.0				400/3/00	1
50.0	0 5.0	MOTOR STARTER	BY ELECTRICAL	460/3/60	FIRE ALARM SYS.
36.0	0 5.0	MOTOR STARTER	BY ELECTRICAL	460/3/60	FIRE ALARM SYS.
36.0	0 5.0	MOTOR STARTER	BY ELECTRICAL	460/3/60	FIRE ALARM SYS.
6.1	1/4	VFD		460/3/60	PACU-111-01A/B
6.1	1/4	VFD		460/3/60	PACU-111-01A/B
6.1	1/4	VFD		460/3/60	PACU-111-01A/B
6.1	1/4	VFD		460/3/60	PACU-111-01A/B
4.0) 1/4	VFD		115/1/60	PACU-111-01A/B
4.0) 1/4	VFD		115/1/60	PACU-111-01A/B
2.0) 87 WATTS	S		115/1/60	CLEAN AGENT SYS
9.3	3 0.11	VFD		115/1/60	CLEAN AGENT SYS
10.5	5 0.33	VFD		115/1/60	CLEAN AGENT SYS
9.2	2 0.19	VFD		115/1/60	CLEAN AGENT SYS
2.0	87 WATTS	S		115/1/60	CLEAN AGENT SYS
2.0) 87 WATTS	S		115/1/60	CLEAN AGENT SYS
	0.1 4.0 2.0 9.3 10.1 9.2 2.0 2.0 2.0	0.1 1/4 4.0 1/4 4.0 1/4 2.0 87 WATTS 9.3 0.11 10.5 0.33 9.2 0.19 2.0 87 WATTS 2.0 87 WATTS 2.0 87 WATTS	0.1 1/4 VFD 4.0 1/4 VFD 4.0 1/4 VFD 2.0 87 WATTS 9.3 0.11 VFD 10.5 0.33 VFD 9.2 0.19 VFD 2.0 87 WATTS 2.0 87 WATTS 2.0 87 WATTS	6.1 1/4 VFD 4.0 1/4 VFD 4.0 1/4 VFD 2.0 87 WATTS 9.3 0.11 VFD 10.5 0.33 VFD 9.2 0.19 VFD 2.0 87 WATTS 2.0 87 WATTS 2.0 87 WATTS	6.1 1/4 VFD 460/3/60 4.0 1/4 VFD 115/1/60 4.0 1/4 VFD 115/1/60 2.0 87 WATTS 115/1/60 9.3 0.11 VFD 115/1/60 10.5 0.33 VFD 115/1/60 9.2 0.19 VFD 115/1/60 2.0 87 WATTS 115/1/60 2.0 87 WATTS 115/1/60 2.0 87 WATTS 115/1/60

NOTES:

PROVIDE FACTORY MOUNTED AND WIRED STARTER/DISCONNECT WITH SINGLE POINT POWER CONNECTION. PROVIDE MOTORIZED LOW LEAKAGE OUTSIDE AIR DAMPER.

DELETED

PROVIDE WITH FACTORY SUPPLY FAN VFD.

PROVIDE WITH WEATHER INTAKE HOOD WITH BIRDSCREEN.

PROVIDE WITH MERV-13 FILTER AND FILTER RACK.

PROVIDE HORIZONTAL DISCHARGE UNIT.

PROVIDE WITH 4 WAY SUPPLY AIR DIFFUSER. 9. FAN SHALL BE SPARK B RESISTANT CONTRUCTION.

10. PROVIDE WITH VARIABLE SPPEED V-BELT DRIVE, 1.5 SF.

11. PROVIDE WITH POTTORFF 3-HR FIRE-SMOKE DAMPER AND LOUVER.

12. PROVIDE WITH TAMCO CONTROL DAMPER.

13. PROVIDE WITH OSHA MOTOR SIDE GUARD, HINGED - FOR USE WITH WALL COLLAR.

					A	AIR HAN		g uni	T (AH	U) SCHEE	DULE (P	PART-1)						
								МОТО	R- SUPPLY	FAN				Ν	IOTOR- RE	TURN FAN		
EQUIPMENT TAG	BUILDING	MANUFACTURER	MODEL	SUPPLY AIRFLOW (CFM)	OUTSIDE AIRFLOW RANGE (CFM)	EXTERNAL STATIC PRESSURE (IN WG)	TOTAL STATIC PRESSURE (IN WG)	MOTOR POWER (HP)	QUANTITY	TYPE	ELECTRICAL (V/PH/HZ)	EXTERNAL STATIC PRESSURE (IN WG)	TOTAL STATIC PRESSURE (IN WG)	RETURN AIR FLOW (CFM)	MOTOR POWER (HP)	QUANTITY	TYPE	ELECTRICAL (V/PH/HZ)
AHU-081-01	VALVE HALL	AIRWISE	NJ-36/K/HRW	36,200	8000-32000	6.00	8.96	10	12	ANPA12 STACKABLE	460/3/60	6.00	8.08	36,639	7.5	12	ANPA14 STACKABLE	460/3/60
AHU-081-02	VALVE HALL	AIRWISE	NJ-36/K/HRW	36,200	8000-32000	6.00	8.96	10	12	ANPA12 STACKABLE	460/3/60	6.00	8.08	36,639	7.5	12	ANPA14 STACKABLE	460/3/60
AHU-081-03	VALVE HALL	AIRWISE	NJ-36/K/HRW	36,200	8000-32000	6.00	8.96	10	12	ANPA12 STACKABLE	460/3/60	6.00	8.08	36,639	7.5	12	ANPA14 STACKABLE	460/3/60
AHU-081-04A	REACTOR HALL	NORTEK/VENTROL	CSU-106K	106,270	106,270	4	5.74	10	18	TOSHIBA 4-POLE	460/3/60							
AHU-081-04B	REACTOR HALL	NORTEK/VENTROL	CSU-106K	106,270	106,270	4	5.74	10	18	TOSHIBA 4-POLE	460/3/60							
AHU-081-05A	DC HALL	NORTEK/VENTROL	CSU-79K	65,200	65,200	4	5.75	10	12	TOSHIBA 4-POLE	460/3/60							
AHU-081-05B	DC HALL	NORTEK/VENTROL	CSU-79K	65,200	65,200	4	5.75	10	12	TOSHIBA 4-POLE	460/3/60							
NOTES: 1. PROVIDE UNI	T WITH OVERALL D	IMENSIONS NOT TO EXC	EED EQUIPMEN	T SIZES SHOWI	N ON MECHANIC	CAL DRAWINGS AN	D ON STRUCTU	RAL EQUIPM	ENT PAD/FOUN	DATION DRAWINGS. IF	UNITS EXCEED TH	ESE DIMENSIONS	, COORDINATION	N DRAWINGS MU	JST BE INCLUE		AL INDICATING REVISED	SIZES

AND MAINTAINING CLEARANCES ESTABLISHED.

MAINTAIN MANUFACTURER RECOMMENDED CLEARANCES AROUND THE ENTIRE UNIT.

DISCONNECT SHALL BE PROVIDED IN ACCORDANCE WITH DIVISION 26 SPECIFICATIONS.

PROVIDE MERV 9 PRE-FILTER AND MERV-15 FINAL FILTER IN BOTH SUPPLY AND RETURN TUNNELS . PROVIDE EQUIPMENT WITH NOVLEAIR 'WSG 3050x200' DESICCANT WHEEL.

	AIR HANDLING UNIT (AHU) SCHEDULE PART 2												
ELECTRICAL DATA PRE-FILTER			FINAL FILTER			UNIT DIMENSIONS							
ELECTRICAL (V/PH/HZ)	MCA	FLA	AIR FLOW (CFM)	TYPE	EFFICIENCY - % (MERV)	AIR FLOW (CFM)	TYPE	EFFICIENCY - % (MERV)	WIDTH (IN)	HEIGHT (IN)	LENGTH (IN)	WEIGHT (LBS)	NOTES
460/3/60	TBD	TBD	32,000	2"	MERV 9	32,000	2"	MERV 15	140	210	233	30720	1,2,3,4
460/3/60	TBD	TBD	32,000	2"	MERV 9	32,000	2"	MERV 15	140	210	233	30720	1,2,3,4
460/3/60	TBD	TBD	32,000	2"	MERV 9	32,000	2"	MERV 15	140	210	233	30720	1,2,3,4
460/3/60	239	236	106,270	2"	MERV 9	106,270	4"	-	264	137	117	18850	1,2,3
460/3/60	239	236	106,270	2"	MERV 9	106,270	4"	-	264	137	117	18850	1,2,3
460/3/60	152	149	65,200	2"	MERV 9	65,200	2"	-	124	210	117	15150	1,2,3
460/3/60	152	149	65,200	2"	MERV 9	65,200	2"	-	124	210	117	15150	1,2,3

FAN SCHEDULE

DRIVE TYPE	NOTES
DIRECT	1,11,12,13
BELT	4,9,10
DIRECT	1
BELT	4,9,10
BELT	4,9,10
BELT	4,9,10
DIRECT	1
DIRECT	1

Hitachi Energy

901 Main Campus Drive Raleigh, North Carolina 27606

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

Astoria HVDC **Converter Station**

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

HVAC - SCHEDULES

LOUVER (LVR) SCHEDULE													
EQUIPMENT TAG	BUILDING	MANUFACTURER	MODEL	APPLICATION	WIDTH (IN)	HEIGHT (IN)	DEPTH (IN)	AIR FLOW (CFM)	MAX PRESSURE DROP (IN WG)	FREE AREA VELOCITY (FT/MIN)	FREE AREA (%)	FREE AREA (SQ FT)	NOTES
GV-081-01	CONVERTER BUILDING	POTTORFF	ECV-645-PH	RELIEF	96	40	96	17,667	0.01	358	49.4	49.4	1-9
GV-081-02	CONVERTER BUILDING	POTTORFF	ECV-645-PH	RELIEF	96	40	96	17,667	0.01	358	49.4	49.4	1-9
GV-081-03	CONVERTER BUILDING	POTTORFF	ECV-645-PH	RELIEF	96	40	96	17,667	0.01	358	49.4	49.4	1-9
GV-081-04	CONVERTER BUILDING	POTTORFF	ECV-645-PH	RELIEF	96	40	96	17,667	0.01	358	49.4	49.4	1-9
GV-081-05	CONVERTER BUILDING	POTTORFF	ECV-645-PH	RELIEF	96	40	96	17,667	0.01	358	49.4	49.4	1-9
GV-081-06	CONVERTER BUILDING	POTTORFF	ECV-645-PH	RELIEF	96	40	96	17,667	0.01	358	49.4	49.4	1-9
GV-081-07	CONVERTER BUILDING	POTTORFF	ECV-645-PH	RELIEF	96	40	96	17,667	0.01	358	49.4	49.4	1-9
GV-081-08	CONVERTER BUILDING	POTTORFF	ECV-645-PH	RELIEF	96	40	96	17,667	0.01	358	49.4	49.4	1-9
GV-111-01	SERVICE BUILDING	POTTORFF	ECV-645-PH	RELIEF	96	40	54	17,667	0.01	358	49.4	49.4	1-9
GV-111-02	SERVICE BUILDING	POTTORFF	ECV-645-PH	RELIEF	96	40	54	17,667	0.01	358	49.4	49.4	1-9
GV-111-03	SERVICE BUILDING	POTTORFF	ECV-645-PH	RELIEF	96	40	54	17,667	0.01	358	49.4	49.4	1-9
GV-111-04	SERVICE BUILDING	POTTORFF	ECV-645-PH	RELIEF	78	40	48	17,667	0.01	358	49.4	49.4	1-9
GV-111-05	SERVICE BUILDING	POTTORFF	ECV-645-PH	RELIEF	78	40	48	17,667	0.01	358	49.4	49.4	1-9
GV-111-06	SERVICE BUILDING	POTTORFF	ECV-645-PH	RELIEF	96	40	42	17,667	0.01	358	49.4	49.4	1-9
LVR-081-01	CONVERTER BUILDING	POTTORFF	ECV-645	RELIEF	210	72	6	70,000	0.03	1409	47.3	49.69	1-9, 11,13
LVR-081-02	CONVERTER BUILDING	POTTORFF	ECV-645	RELIEF	210	72	6	70,000	0.03	1409	47.3	49.69	1-9, 11,13
LVR-081-03	CONVERTER BUILDING	POTTORFF	ECV-645	INTAKE	204	120	6	104,000	0.16	1250	49.4	83.4	1-9, 11
LVR-081-04	CONVERTER BUILDING	POTTORFF	ECV-645	INTAKE	204	120	6	104,000	0.16	1250	49.4	83.4	1-9, 11
LVR-111-01	SERVICE BUILDING	POTTORFF	ECV-645	INTAKE	1512	72	6	453,000	0.16	1250	48.4	363.1	1-9, 11
LVR-111-02	SERVICE BUILDING	POTTORFF	ECV-645	INTAKE	504	72	6	150,000	0.16	1250	48.4	120.4	1-9, 11
LVR-111-03	SERVICE BUILDING	POTTORFF	ECV-645	INTAKE	504	72	6	150,000	0.16	1250	48.4	120.4	1-9, 11
LVR-111-04	SERVICE BUILDING	POTTORFF	EXA-645	RELIEF	12	12	6	200	0.1	400	49.4	0.49	1-8, 10,11,12
LVR-111-05	SERVICE BUILDING	POTTORFF	EXA-645	RELIEF	12	12	6	200	0.1	400	49.4	0.49	1-8, 10,11,12
NOTES:		•	•	1	•	•					-	++	
1. COORDINATE	STRUCTURAL OPENING, FI	RAMING, AND MOUNTING	REQUIREME	NTS WITH CONTRAC	TORS PRIOR TO	PURCHASE AND	INSTALLATION.						
2. FURNISH AND	INSTALL BIRD SCREEN ON	THE OUTSIDE OF THE L	OUVER.										
3. REFER TO ARC	CHIECTURAL DRAWINGS F	OR DETAILS. COLOR ANI	D FINISH TO BE	E SELECTED BY ARC	HITECT.								
4. PROVIDE LOUN	VER WITH 37.5° TO 45° COM	BINATION BLADE.											
5. PRESSURE DR	ROP DOES NOT INCLUDE TH	HE LOSS FOR THE BIRD	SCREEN.										
6. PROVIDE AMC	A CERTIFIED FOR WATER I	PENETRATION, AIR PERF	ORMANCE AN	ID WIND-DRIVEN RA	IN.								
8. PROVIDE LOUV	PROVIDE AMON GENTILLE FOR WATER FENERATION, AIR FERFORMANCE AND WIND-DRIVEN RAIN. PROVIDE LOUVER WITH 6063 T EXTRUDED ALUMINUM MATERIAL.												

9. PROVIDE LOUVER WITH AMCA 540 AND AMCA 550 LISTED. 10. PROVIDE WITH BACKDRAFT DAMPER.

11. COORDINATE THE BOTTOM OF LOUVER HEIGHT WITH ARCHITECTURAL DRAWINGS.

12. PROVIDE LOUVER WITH AMCA 511 LISTED.

13. PROVIDE WITH LOW LEAK MOTORIZED DAMPER. COORDINATE DAMPER BLADE DEPTH, LOUVER SIZE & FIRE-RATED SLEEVE.

	BMS RISER LEGEND					
AC	VRF SYSTEM EVAPORATOR					
ACCU	VRF SYSTEM CONDENSING UNIT					
BMS SWITCH	BMS SWITCH PROVIDE 50% SPARE PORT CAPACITY					
DXR	IP-BASED UNITARY CONTROLLER					
DESIGO CC SERVER	DESIGO CC SERVER NOTE 4					
PXC	IP-BASED DDC CONTROLLER					
	MULTIMODE FIBER					
	CAT-6A ETHERNET					
	SERIAL COMMUNICATION WIRING. USE THE FOLLOWING PROTOCOLS AS APPLICABLE:RS-485, BACnet MS/TP OR MODBUS RTU.					
	LOCAL BMS INTERLOCK WIRING					

REFER TO SHEETS A SERIES FOR ARCHITECTURAL DRAWINGS, NOTES, DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE

REFER TO SHEETS E SERIES FOR BUILDING ELECTRICAL DRAWINGS, NOTES, DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE

DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE

REFER TO SHEETS P SERIES FOR PLUMBING DRAWINGS, NOTES, DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE APPLICATION. REFER TO SHEETS S SERIES FOR BUILDING STRUCTURAL DRAWINGS, NOTES, DETAILS, SCHEDULES AND REQUIREMENTS. FILED UNDER SEPARATE

ALL HVAC METALLIC COMPONENTS INSIDE CONVERTOR BUILDING SHALL BE BONDED TO THE BUILDING OR BUILDING RING CONDUCTOR. COORDINATE WITH

COORDINATE WITH ELECTRICAL PLANS AND CONTRACTOR FOR REQUIREMENTS. STORAGE, MVS AND REPLAY ENCLOUSER ARE FILED UNDER SEPERATE

CONVERTOR AND SERVICE BUILDING IS FILED UNDER SEPARATE APPLICATION.

370 7th Avenue **SUITE 1604** New York, NY 10001

25 Mohawk Avenue Sparta, NJ 07871

CONFIDENTIAL

THESE DRAWINGS ARE CONFIDENTIAL IN NATURE, ANY MISUSE OR UNAUTHORIZED DISTRIBUTION OF THE DRAWINGS CONTAINED HEREIN WILL BE A VIOLATION OF THIS CONFIDENTIALITY REQUIREMENT AND SUBJECT THE VIOLATOR TO LIABILITY. REVIEW OF THESE MATERIALS BY RECEIPT HALL CONSTITUTE ACCEPTANCE OF THESE TERMS AND THE TERMS OF ANY UNDERLYING CONFIDENTIALITY AGREEMENT WE MAY HAVE XCLUDED IN ORTAINING THIS INFORMATION FROM A THIRD PARTY IF THE RECIPIENT IS NOT IN AGREEMENT WITH THE OBLIGATION OF ONFIDENTIALITY THEN THE DRAWINGS SHALL BE RETURNED TO THE ORIGINATOR.

B FINAL SUBMISSION A INTERIM SUBMISSION DESCRIPTION REV

Woodcliff Lake, NJ 07677

470 Chestnut Ridge Rd # 2,

Hitachi Energy

AZ

DRW BY CHK BY DATE

WP

12-12-22

09-13-22

901 Main Campus Drive Raleigh, North Carolina 27606

PROJECT HPE **Champlain Hudson Power Express**

Astoria HVDC **Converter Station**

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

HVAC - BUILDING MANAGEMENT SYSTEM **RISER DIAGRAM**

	Mechanical Compliance	Certificate	 AC-111-02 and 03 (Service) (Single Zone): Cooling: 2 each - VRF Zone Fan Unit, Capacity = 28 kBtu/h No minimum efficiency requirement applies Fan System: AC-111-02 and 03 Service Compliance (Motor nameplate HP method) : Passes
roject Informa	ation		Fans: AC1110203 Supply, Constant Volume, 855 CFM, 0.1 motor nameplate hp, 0.0 fan efficiency grade
nergy Code: roject Title: ocation: limate Zone: roject Type:	2020 New York City Energy Conservation Astoria HVDC Converter Station New York, New York 4a New Construction	on Code, Appendix CA (modified 90.1-2016)	 AC-111-04 through 15 (Service) (Single Zone): Cooling: 12 each - VRF Zone Fan Unit, Capacity = 12 kBtu/h No minimum efficiency requirement applies Fan System: AC-111-04 through 15 Service Compliance (Motor nameplate HP method) : Passes Fans: AC1110415 Supply, Constant Volume, 307 CFM, 0.1 motor nameplate hp, 0.0 fan efficiency grade
onstruction Site: 31-45m20th Ave Astoria, NY 1110	Owner/Agent: enue 05	Designer/Contractor: Kiewit	 AC-111-16 (Service) (Single Zone): Cooling: 1 each - VRF Zone Fan Unit, Capacity = 19 kBtu/h No minimum efficiency requirement applies Fan System: AC-111-16 Service Compliance (Motor nameplate HP method) : Passes
dditional Effic edits: 1.0 Requir High Performanc	ciency Package(s) red 1.0 Proposed re HVAC, 1.0 credit		Fans: AC11116 Supply, Constant Volume, 459 CFM, 0.1 motor nameplate hp, 0.0 fan efficiency grade
echanical System uantity System 1 ACCU- VRF Co Heating Prop Fan Sy 1 ACCU- VRF Co Heating Prop Fan Sy	stems List m Type & Description -111-01 A/B (Service) (Single Zone): ondensing Unit, Air Cooled Heat Pump g Mode: Capacity = 18 kBtu/h, bosed Efficiency = 10.00 HSPF, Required Efficiency = 8.47 HSPF g Mode: Capacity = 18 kBtu/h, bosed Efficiency = 20.00 SEER, Required Efficiency: 14.30 SEER vstem: None -111-02 (Service) (Single Zone): ondensing Unit, Air Cooled w/ Heat Recovery Heat Pump g Mode: Capacity = 135 kBtu/h, bosed Efficiency = 4.00 COP, Required Efficiency = 3.63 COP g Mode: Capacity = 120 kBtu/h, bosed Efficiency = 20.70 EER, Required Efficiency: 11.88 EER + 15.8 vstem: None -111-03 (Service) (Single Zone): ondensing Unit, Air Cooled w/ Heat Recovery Heat Pump g Mode: Capacity = 108 kBtu/h, bosed Efficiency = 4.30 COP, Required Efficiency = 3.63 COP g Mode: Capacity = 108 kBtu/h, bosed Efficiency = 4.30 COP, Required Efficiency = 3.63 COP g Mode: Capacity = 108 kBtu/h, bosed Efficiency = 4.50 EER, Required Efficiency = 3.63 COP g Mode: Capacity = 108 kBtu/h, bosed Efficiency = 17.50 EER, Required Efficiency: 11.88 EER + 15.8 vstem: None -111-04 (Service) (Single Zone): ondensing Unit, Air Cooled w/ Heat Recovery Heat Pump g Mode: Capacity = 19 kBtu/h, bosed Efficiency = 17.50 EER, Required Efficiency: 11.88 EER + 15.8 vstem: None	EER	1 AHU-081-01/02/03 (Valve Hall) (Single Zone): Heating: 2 each - Central Furnace, Electric, Capacity = 757 kBtu/h No minimum efficiency requirement applies Fan System: AHU-081-01, 02, 03 Valve Hall - Compliance (Brake HP method) : Passes Fans: AHU081010203 Supply, Single-Zone VAV, 32000 CFM, 90.0 motor nameplate hp, 67.6 design brake hp (70.0 max. BHP), 80.0 fan efficiency grade Pressure Drop Credits: Particulate filtration credit: MERV 13 through 15, 15.6863 credit Return and/or exhaust airflow control devices, 8,7146 credit Energy recover device, other than Coil Runaround Loop, 14654 credit Fully ducted return and/or exhaust air systems, 8.7146 credit Exhaust filtration credit: MERV 9 through 12, 8.7146 credit Exhaust filtration credit: VERV 9 through 12, 8.7146 credit Exhaust filteration statement. The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 2020 New York City Energy Conservation Code, Appendix CA (modified 90.1-2016) requirements in COMcheck Version 4.1.5.5 and to comply with any applicable mandatory requirements listed in the Inspection Checklist. Alexander Zabolotsky, PE- Lead Mechanical Engineer Name - Title Signature Mark
Cooling Prop Fan Sy 1 AC-111 Cooling No n Fan Sy Fans:	g Mode: Capacity = 18.66 Hol 1, Required Efficiency: 14.30 SEER yoseed Efficiency = 20.00 SEER, Required Efficiency: 14.30 SEER 1-01A/B (Service) (Single Zone): g: 1 each - VRF Zone Fan Unit, Capacity = 18 kBtu/h ninimum efficiency requirement applies ystem: AC-111-01A/B Service Compliance (Motor nameplate HP me	thod) : Passes	
1110	01 Supply, Constant Volume, 459 CFM, 0.1 motor nameplate hp, 0.0 far	efficiency grade	

Section # & Req.ID	Footing / Foundation
6.4.3.7 [FO9] ³	Freeze protection and sno melting system sensors for connection to controls.

Additional Comments/Assumpt

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1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)
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Project Title: Astoria HVDC Converter Station Data filename: C:\Users\Alexander.Zabolotsky\Downloads\Astoria COMcheck.cck

Inspection	Complies?	Comments/Assumptions
ow/ice or future	□Complies □Does Not	Exception: Requirement does not apply.
	□Not Observable □Not Applicable	
tions:		

	1 High Impact (Tier 1) 2	Medium Impact (Tier 2)	3 Low Impact (Tier 3)		
Project Title:	Astoria HVDC Converter Station		Rep	ort date: 1	2/07/22
Data filename:	C:\Users\Alexander.Zabolotsky\Download	s\Astoria COMcheck.cck		Page	5 of 19

COMcheck Software Version 4.1.5.5 ഹി **Inspection Checklist**

Energy Code: 2020 New York City Energy Conservation Code, Appendix CA Requirements: 100.0% were addressed directly in the COMcheck software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section	Plan Poviow	Complies?	Commonts/Assumpt
& Req.ID	Fian Review	complies?	Comments/Assumpt
4.2.2, 6.4.4.2.1, 6.7.2 [PR2] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical systems and equipment and document where exceptions to the standard are claimed. Load calculations per acceptable engineering standards and handbooks.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
4.2.2, 7.7.1, 10.4.2 [PR3] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the service water heating systems and equipment and document where exceptions to the standard are claimed. Hot water system sized per manufacturer's sizing guide.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
4.2.2, 8.4.1.1, 8.4.1.2, 8.7 [PR6] ²	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the electrical systems and equipment and document where exceptions are claimed. Feeder connectors sized in accordance with approved plans and branch circuits sized for maximum drop of 3%.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
6.7.2.4 [PR5] ¹	Detailed instructions for HVAC systems commissioning included on the plans or specifications for projects >=50,000 ft2.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
8.4.5 [PR11] ¹	Electrical meters for tenant spaces in covered buildings. Each covered tenant space in a new building shall be equipped with a separate meter or sub-meter to measure the electrical consumption of such space when let or sublet. See section details and Section 28-311.2 of the Administrative Code. As new covered tenant spaces are created, they shall be equipped with meters or sub-meters as provided in this section	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply
l1 [PR12] ¹	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the additional energy efficiency package options.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.

 1
 High Impact (Tier 1)
 2
 Medium Impact (Tier 2)
 3
 Low Impact (Tier 3)

Project Title: Astoria HVDC Converter Station Data filename: C:\Users\Alexander.Zabolotsky\Downloads\Astoria COMcheck.cck

Page 3 of 19

Section # & Req.ID	Mechanical Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
6.4.1.4, 6.4.1.5 [ME1] ²	HVAC equipment efficiency verified. Non-NAECA HVAC equipment labeled as meeting 90.1.	Efficiency:	Efficiency:	□Complies □Does Not □Not Observable □Not Applicable	See the Mechanical Systems list for values.
6.4.3.4.1 [ME3] ³	Stair and elevator shaft vents have motorized dampers that automatically close.			Complies Does Not Not Observable Not Applicable	Exception: Requirement does not apply.
6.4.3.4.2, 6.4.3.4.3 [ME4] ³	Outdoor air and exhaust systems have motorized dampers that automatically shut when not in use and meet maximum leakage rates. Check gravity dampers where allowed.			Complies Does Not Not Observable Not Applicable	Requirement will be met.
6.4.3.4.5 [ME39] ³	Enclosed parking garage ventilation has automatic contaminant detection and capacity to stage or modulate fans to 50% or less of design capacity.			Complies Does Not Not Observable Not Applicable	Exception: Requirement does not apply.
6.4.3.4.4 [ME5] ³	Ventilation fans >0.75 hp have automatic controls to shut off fan when not required.			□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
6.4.3.8 [ME6] ¹	Demand control ventilation provided for spaces >500 ft2 and >25 people/1000 ft2 occupant density and served by systems with air side economizer, auto modulating outside air damper control, or design airflow >3,000 cfm.			□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
6.5.3.2.1 [ME40] ²	DX cooling systems $>= 75$ kBtu/h ($>= 65$ kBtu/h effective 1/2016) and chilled-water and evaporative cooling fan motor hp $>= \frac{1}{4}$ designed to vary supply fan airflow as a function of load and comply with operational requirements.			□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met. See the Mechanical Systems list for values.
6.4.4.1.1 [ME7] ³	Insulation exposed to weather protected from damage. Insulation outside of the conditioned space and associated with cooling systems is vapor retardant.			□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
6.4.4.1.2 [ME8] ²	HVAC ducts and plenums insulated per Table 6.8.2. Where ducts or plenums are installed in or under a slab, verification may need to occur during Foundation Inspection.	R	R	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
6.4.4.1.3 [ME9] ²	HVAC piping insulation thickness. Where piping is installed in or under a slab, verification may need to occur during Foundation Inspection.	in.	in.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.

1 High Impact (Tier 1)	2 Medium Impact (Tier 2)	3 Low Impact (Tier 3)
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Project Title: Astoria HVDC Converter Station Data filename: C:\Users\Alexander.Zabolotsky\Downloads\Astoria COMcheck.cck Report date: 12/07/22 Page 6 of 19

Section #	Mechanical Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
6.4.4.1.4 [ME41] ³	Thermally ineffective panel surfaces of sensible heating panels have insulation >= R-3.5.			Complies Does Not Not Observable	Exception: Requirement does not apply.
6.4.4.2.1 [ME10] ²	Ducts and plenums having pressure class ratings are Seal Class A construction.			Complies Does Not Not Observable Not Applicable	Requirement will be met.
6.8.1-15, 6.8.1-16 [ME110] ²	Electrically operated DX-DOAS units meet requirements per Tables 6.8.1-15 or 6.8.1-16.			□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			Complies Does Not Not Observable Not Applicable	Exception: Requirement does not apply.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			Complies Does Not Not Observable Not Applicable	Exception: Requirement does not apply.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			Complies Does Not Not Observable Not Applicable	Exception: Requirement does not apply.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			Complies Does Not Not Observable Not Applicable	Exception: Requirement does not apply.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			Complies Does Not Not Observable Not Applicable	Exception: Requirement does not apply.
6.4.4.2.2 [ME11] ³	Ductwork operating >3 in. water column requires air leakage testing.			Complies Does Not Not Observable Not Applicable	Requirement will be met.

 1 High Impact (Tier 1)
 2 Medium Impact (Tier 2)
 3 Low Impact (Tier 3)
 Project Title: Astoria HVDC Converter Station Report date: 12/07/22 Page 7 of 19 Data filename: C:\Users\Alexander.Zabolotsky\Downloads\Astoria COMcheck.cck

& Req.ID	Mechanical Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions	& Reg	.ID Mechanical Rou Inspection
6.5.3.6 [ME72] ²	Motors for fans >= 1/12 hp and < 1 hp are electronically- commutated motors or have a minimum motor efficiency of 70%. These motors are also speed adjustable for either balancing or remote control.			Complies Does Not Not Observable Not Applicable	Exception: Requirement does not apply.	6.5.3.4 [ME103	Parallel-flow fan-power terminals have automa controls to a) turn off t terminal fan except wh heating is required or i for ventilation; b) turn terminal fan as the firs
6.5.3.4 [ME108] ²	Parallel-flow fan-powered VAV air terminals have automatic controls to a) turn off the terminal fan except when space heating is required or if required for ventilation; b) turn on the terminal fan as the first stage of heating before the heating coil is activated; and c) during heating for warmup or setback			Complies Does Not Not Observable Not Applicable	Exception: Requirement does not apply.		heating before the hea activated; and c) durin. for warmup or setback temperature control, e operate the terminal fa heating coil without pri or reverse the terminal logic and provide heati the central air handler primary air.
	temperature control, either operate the terminal fan and heating coil without primary air or reverse the terminal damper logic and provide heating from the central air handler through primary air.					6.5.3.4 [ME103	Parallel-flow fan-power terminals have automa controls to a) turn off the terminal fan except wh heating is required or if for ventilation; b) turn terminal fan as the first
6.5.3.4 [ME108] ²	Parallel-flow fan-powered VAV air terminals have automatic controls to a) turn off the terminal fan except when space heating is required or if required for ventilation; b) turn on the terminal fan as the first stage of heating before the heating coil is activated; and c) during heating for warmup or setback			□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.		heating before the heat activated; and c) during for warmup or setback temperature control, ei operate the terminal fa heating coil without pri or reverse the terminal logic and provide heati the central air handler primary air.
	temperature control, either operate the terminal fan and heating coil without primary air or reverse the terminal damper logic and provide heating from the central air handler through primary air.					6.5.3.7 [ME109	Required minimum out rate is the larger of min outdoor air rate or min exhaust air rate require Standard 62.1, Standar applicable codes or acc standards. Outdoor air
6.5.3.4 [ME108] ²	Parallel-flow fan-powered VAV air terminals have automatic controls to a) turn off the terminal fan except when space heating is required or if required for ventilation; b) turn on the terminal fan as the first stage of heating before the heating coil is activated; and c) during heating for warmup or setback temperature control, either operate the terminal fan and heating coil without primary air			Complies Does Not Not Observable Not Applicable	Exception: Requirement does not apply.		systems shall comply w the following: a) design system outdoor air pro 135% of the required n outdoor air rate, b) dan ductwork, and controls system to supply <= th required minimum outo rate with a single set-p adjustment., or c) syste includes exhaust air en recovery complying wil 6.5.6.1.
	or reverse the terminal damper logic and provide heating from the central air handler through primary air.						
	1 High Impact (Tier	1) 2 Medium	Impact (Tier 2)	3 Low Impact (T	ier 3)		1 High Ir
roject Title	e: Astoria HVDC Converter Statio)n ()Downloade) Astaria			Report date: 12/07/22	Project	Title: Astoria HVDC Conv

 1 High Impact (Tier 1)
 2 Medium Impact (Tier 2)
 3 Low Impact (Tier 3)
 tle: Astoria HVDC Converter Station Report date: 12/07/22 Data filename: C:\Users\Alexander.Zabolotsky\Downloads\Astoria COMcheck.cck Page 10 of 19

Mechanical Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
Parallel-flow fan-powered VAV air terminals have automatic controls to a) turn off the terminal fan except when space heating is required or if required for ventilation; b) turn on the terminal fan as the first stage of heating before the heating coil is activated; and c) during heating for warmup or setback temperature control, either operate the terminal fan and heating coil without primary air or reverse the terminal damper logic and provide heating from the central air handler through primary air.			□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
Parallel-flow fan-powered VAV air terminals have automatic controls to a) turn off the terminal fan except when space heating is required or if required for ventilation; b) turn on the terminal fan as the first stage of heating before the heating coil is activated; and c) during heating for warmup or setback temperature control, either operate the terminal fan and heating coil without primary air or reverse the terminal damper logic and provide heating from the central air handler through primary air.			□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.
Required minimum outdoor air rate is the larger of minimum outdoor air rate or minimum exhaust air rate required by Standard 62.1, Standard 170, or applicable codes or accreditation standards. Outdoor air ventilation systems shall comply with one of the following: a) design minimum system outdoor air provided < 135% of the required minimum outdoor air rate, b) dampers, ductwork, and controls allow the system to supply <= the required minimum outdoor air rate with a single set-point adjustment., or c) system includes exhaust air energy recovery complying with Section 6.5.6.1.			□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.

6.5.2.3 [ME19]3Deh prover airsi and airsi6.5.2.3 [ME19]3Deh prover airsi and airsi and acti not6.5.2.4.1 [ME68]3Hun mod preh acti not6.5.2.4.2 [ME69]3Hun tube airsi han 0.5.6.5.2.5 [ME70]3Preh med econ6.5.2.6 [ME70]3Unit to med econ6.5.3.1.3 [ME74]2Preh hea and prev built to med econ6.5.3.6 [ME72]2Mot (ME72]26.5.3.6 [ME72]2Mot (min 70% spec bala6.5.3.6 [ME72]2Mot (merze)		value	Value	Complies
6.5.2.4.1 [ME68] ³ Hun mou prel acti not 6.5.2.4.2 [ME69] ³ Hun tube airsi not 6.5.2.5 [ME70] ³ Prel mean prev prev prev prev prev prev prev prev	humidification controls ovided to prevent reheating, cooling, mixing of hot and cold streams or concurrent heating d cooling of the same stream.			Complies Does Not Not Observa Not Applica
6.5.2.4.2 Hun [ME69] ³ kuba [ME70] ³ Pref [ME70] ³ Pref [ME70] ³ Pref [ME106] ³ Unit 6.5.2.6 Unit [ME106] ³ Init 6.5.3.1.3 Fan: [ME74] ² Fan: 6.5.3.6 Mot [ME72] ² Commin 6.5.3.6 Mot [ME72] ² Spea 6.5.3.6 Mot [ME72] ² Spea 6.5.3.6 Mot [ME72] ² Commin 70% Spea 6.5.3.6 Mot [ME72] ² Commin 70% Spea 6.5.3.6 Mot [ME72] ² Commin 70% Spea 6.5.3.6 Mot [ME72] ² Commin	midifiers with airstream ounted preheating jackets have sheat auto-shutoff value set to tivate when humidification is t required.			Complies Does Not Not Observa
6.5.2.5 Pref [ME70] ³ Pred [ME70] ³ Pred 6.5.2.6 Unit [ME106] ³ Unit 6.5.3.1.3 Fan: [ME74] ² Fan: 6.5.3.6 Mot [ME72] ² Common 6.5.3.6 Mot [ME72] ² Spece 6.5.3.6 Mot [ME72] ² Common 6.5.3.6 Mot [ME72] ² Common 6.5.3.6 Mot [ME72] ² Common 70% Spece bala Spece </td <td>midification system dispersion be hot surfaces in the streams of ducts or air- ndling units insulated >= R- 5.</td> <td></td> <td></td> <td>Complies Does Not Not Observa Not Applica</td>	midification system dispersion be hot surfaces in the streams of ducts or air- ndling units insulated >= R- 5.			Complies Does Not Not Observa Not Applica
6.5.2.6 [ME106] ³ Unit to m conj and prev heat aboin tem 6.5.3.1.3 [ME74] ² Fans prev fan ope 6.5.3.6 [ME72] ² Mot com min 70% spec bala 6.5.3.6 [ME72] ² Mot com min 70% spec bala 6.5.3.6 [ME72] ² Mot com min 70% spec bala 6.5.3.6 [ME72] ² Mot com min 70% spec bala 6.5.3.6 [ME72] ² Mot com min 70%	eheat coils controlled to stop at output whenever echanical cooling, including onomizer operation, is active.			Complies Does Not Not Observa
6.5.3.1.3 [ME74] ² and performance for the second	its that provide ventilation air multiple zones and operate in njunction with zone heating d cooling systems are evented from using heating or at recovery to warm supply air ove 60°F when representative ilding loads or outdoor air mperature indicate that most nes demand cooling.			Complies Does Not Not Observa Not Applica
6.5.3.6 [ME72] ² Solution [ME72] ² S	ns have efficiency grade (FEG) = 67. The total efficiency of the h at the design point of eration $\leq 15\%$ of maximum cal efficiency of the fan.			Complies Does Not Not Observa
6.5.3.6 Mot [ME72] ² < 1 com min 70% spec bala 6.5.3.6 Mot [ME72] ² < 1 com min 70%	otors for fans >= 1/12 hp and 1 hp are electronically- mmutated motors or have a nimum motor efficiency of %. These motors are also eed adjustable for either lancing or remote control.			Complies Does Not Not Observa
6.5.3.6 Mot [ME72] ² < 1 com min 70%	otors for fans >= 1/12 hp and 1 hp are electronically- mmutated motors or have a nimum motor efficiency of %. These motors are also eed adjustable for either lancing or remote control.			Complies Does Not Not Observa Not Applica
spec bala	tors for fans >= 1/12 hp and 1 hp are electronically- mmutated motors or have a nimum motor efficiency of %. These motors are also eed adjustable for either lancing or remote control.			Complies Does Not Not Observa Not Applica
6.5.3.6 Mot [ME72] ² < 1 com min 70% spec bala	otors for fans >= 1/12 hp and 1 hp are electronically- mmutated motors or have a nimum motor efficiency of %. These motors are also eed adjustable for either lancing or remote control.			Complies Does Not Not Observa Not Applica

Project Title: Astoria HVDC Converter Station Data filename: C:\Users\Alexander.Zabolotsky\Downloads\Astoria COMcheck.cck

6.5.3.7 [ME109] ²			value		connents/Assumptions
	Required minimum outdoor air rate is the larger of minimum outdoor air rate or minimum exhaust air rate required by Standard 62.1, Standard 170, or applicable codes or accreditation standards. Outdoor air ventilation systems shall comply with one of the following: a) design minimum system outdoor air provided < 135% of the required minimum outdoor air rate, b) dampers, ductwork, and controls allow the system to supply <= the required minimum outdoor air rate with a single set-point adjustment., or c) system includes exhaust air energy recovery complying with Section 6.5.6.1.			Complies Does Not Not Observable Not Applicable	Requirement will be met.
6.5.3.7 [ME109] ²	Required minimum outdoor air rate is the larger of minimum outdoor air rate or minimum exhaust air rate required by Standard 62.1, Standard 170, or applicable codes or accreditation standards. Outdoor air ventilation systems shall comply with one of the following: a) design minimum system outdoor air provided < 135% of the required minimum outdoor air rate, b) dampers, ductwork, and controls allow the system to supply <= the required minimum outdoor air rate with a single set-point adjustment., or c) system includes exhaust air energy recovery complying with Section 6.5.6.1.			□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
6.5.3.7 [ME109] ²	Required minimum outdoor air rate is the larger of minimum outdoor air rate or minimum exhaust air rate required by Standard 62.1, Standard 170, or applicable codes or accreditation standards. Outdoor air ventilation systems shall comply with one of the following: a) design minimum system outdoor air provided < 135% of the required minimum outdoor air rate, b) dampers, ductwork, and controls allow the system to supply <= the required minimum outdoor air rate with a single set-point adjustment., or c) system includes exhaust air energy recovery complying with Section 6.5.6.1.			□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
	1 High Impact (Tier	1) 2 Medium	Impact (Tier 2)	3 Low Impact (Ti	er 3)

Req.ID	Mechanical Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
.5.3.7 ME109] ²	Required minimum outdoor air rate is the larger of minimum outdoor air rate or minimum exhaust air rate required by Standard 62.1, Standard 170, or applicable codes or accreditation standards. Outdoor air ventilation systems shall comply with one of the following: a) design minimum system outdoor air provided < 135% of the required minimum outdoor air rate, b) dampers, ductwork, and controls allow the system to supply <= the required minimum outdoor air rate with a single set-point adjustment., or c) system includes exhaust air energy recovery complying with Section 6.5.6.1.			□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.
.5.3.3 ME42] ³	Multiple zone VAV systems with DDC of individual zone boxes have static pressure setpoint reset controls.			Complies Does Not Not Observable	Exception: Requirement does not apply. <i>See the Mechanical Systems list</i>
.5.3.3 ME42] ³	Multiple zone VAV systems with DDC of individual zone boxes			Complies	for values. Exception: Requirement does not apply.
	have static pressure setpoint reset controls.			□Not Observable □Not Applicable	See the Mechanical Systems list for values.
.5.3.3 4E42] ³	Multiple zone VAV systems with DDC of individual zone boxes have static pressure setpoint			Complies	Exception: Requirement does not apply.
	reset controls.			□Not Observable □Not Applicable	See the Mechanical Systems list for values.
.5.3.3 ME42] ³	Multiple zone VAV systems with DDC of individual zone boxes have static pressure setpoint reset controls.			□Complies □Does Not □Not Observable	Exception: Requirement does not apply. <i>See the Mechanical Systems list</i>
.5.3.3 ME42] ³	Multiple zone VAV systems with DDC of individual zone boxes have static pressure setpoint			□Not Applicable □Complies □Does Not □Not Observable	for values. Exception: Requirement does not apply.
	reset controls.				See the Mechanical Systems list for values.
.5.3.3 4E42] ³	Multiple zone VAV systems with DDC of individual zone boxes have static pressure setpoint				Exception: Requirement does not apply.
	reset controls.			Not Observable	<i>See the Mechanical Systems list for values.</i>
.5.3.3 4E42] ³	Multiple zone VAV systems with DDC of individual zone boxes have static pressure setpoint			□Complies □Does Not	Exception: Requirement does not apply.
	reset controls.			□Not Observable □Not Applicable	See the Mechanical Systems list for values.
.5.3.3 ME42] ³	Multiple zone VAV systems with DDC of individual zone boxes have static pressure setagist			□Complies □Does Not	Exception: Requirement does not apply.
	reset controls.			□Not Observable □Not Applicable	<i>See the Mechanical Systems list for values.</i>
.5.3.3 4E42] ³	Multiple zone VAV systems with DDC of individual zone boxes have static pressure setpoint			Complies	Exception: Requirement does not apply.
				⊔Not Observable	See the Mechanical Systems list

Project Title: Astoria HVDC Converter Station Data filename: C:\Users\Alexander.Zabolotsky\Downloads\Astoria COMcheck.cck

Section # & Req.ID	Rough-In Electrical Inspecti
8.4.2 [EL10] ²	At least 50% of all 125 volt 15- ar 20-Amp receptacles are controlled an automatic control device.
8.4.3 [EL11] ²	New buildings have electrical ene use measurement devices installe Where tenant spaces exist, each tenant is monitored separately. Ir buildings with a digital control sys the energy use is transmitted to t control system and displayed graphically.
10.4.1 [EL9] ²	Electric motors meet requirement where applicable.

Section Mechanical Rough-In Plans Verified Field Verified # & Req.ID **Complies?** Comments/Assumptions Inspection Value Value 6.4.3.9 Heating for vestibules and air curtains with integral heating include automatic controls that Exception: Requirement Complies does not apply. Does Not □Not Observable shut off the heating system when □Not Applicable outdoor air temperatures > 45F. Vestibule heating and cooling systems controlled by a thermostat in the vestibule with heating setpoint <= 60F and cooling setpoint >= 80F. 6.5.10 Doors separating conditioned Complies Exception: Building entrances have automatic [ME73]³ space from the outdoors have Does Not Not Observable controls that disable/reset heating and cooling system when □Not Applicable open. 6.7.2.3.2. Mechanical systems, Renewable Complies Exception: Fans with fan motors of 1 hp (0.74 kW) or Systems, and SWH Does Not [ME53]³ Commissioning: Air outlets and Not Observable zone terminal devices have □Not Applicable means for air balancing. See section details. Additional Comments/Assumptions:

 1
 High Impact (Tier 1)
 2
 Medium Impact (Tier 2)
 3
 Low Impact (Tier 3)

Project Title: Astoria HVDC Converter Station Data filename: C:\Users\Alexander.Zabolotsky\Downloads\Astoria COMcheck.cck Report date: 12/07/22 Page 14 of 19

1 High Im Project Title: Astoria HVDC Conve Data filename: C:\Users\Alexander.2

Section # & Reg ID	Mechanical Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
5.5.4.2 [ME25] ³	HVAC pumping systems with >= 3 control values designed for variable fluid flow (see section			Complies Does Not	Exception: Requirement does not apply.
	details).			□Not Observable □Not Applicable	
5.5.6.1 ME56] ¹	Exhaust air energy recovery on systems meeting Tables 6.5.6.1-			Complies Does Not	Requirement will be met.
	1, and 0.5.0.1-2.			□Not Observable □Not Applicable	
.5.7.1 ME100] ²	Conditioned supply air to space with mechanical exhaust <= the greater of criteria of supply flow			□Complies □Does Not 	Requirement will be met.
	required ventilation rate, exhaust flow minu the available transffer air (see section details).			□Not Observable □Not Applicable	
0.5.7.1 ME100] ²	Conditioned supply air to space with mechanical exhaust <= the greater of criteria of supply flow			□Complies □Does Not	Requirement will be met.
	flow minu the available transfer air (see section details).			□Not Observable □Not Applicable	
0.5.7.1 ME100] ²	Conditioned supply air to space with mechanical exhaust <= the greater of criteria of supply flow			□Complies □Does Not	Requirement will be met.
	flow minu the available transfer air (see section details).			□Not Observable □Not Applicable	
.5.7.1 ME100] ²	Conditioned supply air to space with mechanical exhaust <= the groater of criteria of supply flow			□Complies □Does Not	Requirement will be met.
	flow minu the available transfer air (see section details).			□Not Observable □Not Applicable	
5.5.7.1 ME100] ²	Conditioned supply air to space with mechanical exhaust <= the groater of criteria of supply flow			□Complies □Does Not	Requirement will be met.
	flow minu the available transfer air (see section details).			□Not Observable □Not Applicable	
5.5.7.2.1 ME32] ²	Kitchen hoods >5,000 cfm have make up air >=50% of exhaust air volume			□Complies □Does Not	Exception: Requirement does not apply.
				□Not Observable □Not Applicable	
.5.7.2.4 ME49] ³	Approved field test used to evaluate design air flow rates			Complies Does Not	Exception: Requirement does not apply.
	and demonstrate proper capture and containment of kitchen exhaust systems.			□Not Observable □Not Applicable	
5.5.8.1 ME34] ²	Unenclosed spaces that are heated use only radiant heat.			□Complies □Does Not	Exception: Requirement does not apply.
				□Not Observable □Not Applicable	
.4.2 ME36] ²	Service water heating equipment meets efficiency requirements.			□Complies □Does Not	
				□Not Observable □Not Applicable	
	1 High Impact (Tier	1) 2 Medium	Impact (Tier 2)	3 Low Impact (Ti	er 3)
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Comments/Assumptions **Complies?** cal Inspection 25 volt 15- and Complies **Exception:** Requirement does not apply. are controlled by Does Not l device. □Not Observable Not Applicable electrical energy Complies Exception: Requirement does not apply. evices installed. Does Not s exist, each □Not Observable separately. In ital control system insmitted to to displayed Requirement will be met. t requirements Complies Does Not □Not Observable □Not Applicable

Page 12 of 19

npact (Tier 1)	2 Medium Impact (Tier 2)	3 Low Impact (Tier 3)	
erter Station Zabolotsky\Down	loads\Astoria COMcheck.cck	R	eport date: 12/07/22 Page 15 of 19

Section #	Final Inspection	Complies?	Comments/Assumptions
& Req.ID	Thermostatic controls have a 5 °F		Requirement will be met
[FI3] ³	deadband.	Does Not	nequirement will be met.
		□Not Observable □Not Applicable	
6.4.3.2 [FI20] ³	Temperature controls have setpoint overlap restrictions.	□Complies □Does Not	Requirement will be met.
		□Not Observable □Not Applicable	
6.4.3.3.1 [FI21] ³	HVAC systems equipped with at least one automatic shutdown control.	□Complies □Does Not □	Requirement will be met.
		Not Observable	
6.4.3.3.2 [FI22] ³	Setback controls allow automatic restart and temporary operation as required for maintenance.	□Complies □Does Not	Requirement will be met.
		□Not Observable	
6.4.3.3.3 [FI4] ³	Systems with setback controls and DDC include optimum start controls.	□Complies □Does Not	Exception: Systems designed for continuous operation.
	Optimum start algorithm considers mass radiant slab floor temperature.	□Not Observable □Not Applicable	
6.4.3.5 [FI5] ³	Heat pump controls prevent supplemental electric resistance heat	□Complies □Does Not	Requirement will be met.
	from coming on when not needed.	□Not Observable □Not Applicable	
6.4.3.5 [FI5] ³	Heat pump controls prevent supplemental electric resistance heat from coming on when not needed	□Complies □Does Not	Requirement will be met.
		□Not Observable □Not Applicable	
6.4.3.5 [FI5] ³	Heat pump controls prevent supplemental electric resistance heat	□Complies □Does Not	Requirement will be met.
	from coming on when not needed.	□Not Observable □Not Applicable	
6.4.3.5 [FI5] ³	Heat pump controls prevent supplemental electric resistance heat	□Complies □Does Not	Requirement will be met.
	from coming on when not needed.	□Not Observable □Not Applicable	
6.4.3.6 [FI6] ³	When humidification and dehumidification are provided to a	□Complies □Does Not	Exception: Zones served by desiccant systems.
	prohibited. Humidity control prohibits the use of fossil fuel or electricity to produce RH $>$ 30% in the warmest zone humidified and RH $<$ 60% in the coldest zone dehumidified.	□Not Observable □Not Applicable	
6.7.2.1 [FI7] ³	Furnished HVAC as-built drawings submitted within 90 days of system acceptance.	Complies	Requirement will be met.
		∐Not Observable □Not Applicable	
6.7.2.2 [FI8] ³	Furnished O&M manuals for HVAC systems within 90 days of system acceptance.	□Complies □Does Not	Requirement will be met.
		∐Not Observable □Not Applicable	

 1
 High Impact (Tier 1)
 2
 Medium Impact (Tier 2)
 3
 Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions	Additional Co	omments/Assumptions:		
6.7.2.3 [FI9] ¹	An air and/or hydronic system balancing report is provided for HVAC systems serving zones >5,000 ft2 of conditioned area.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.				
6.7.2.4 [FI10] ¹	HVAC control systems have been tested to ensure proper operation, calibration and adjustment of controls.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.				
7.4.4.3 [FI11] ³	Public lavatory faucet water temperature <=110°F.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.				
10.4.3 [FI24] ²	Elevators are designed with the proper lighting, ventilation power, and standby mode.	Complies Does Not Not Observable Not Applicable	Exception: Requirement does not apply.				
7.4.3 [FI45] ²	First 8 ft of outlet piping in nonrecirculating storage system, or branch piping connected to recirculated, heat traced, or impredance heated piping is insulated.	□Complies □Does Not □Not Observable □Not Applicable	Exception: Requirement does not apply.				
6.7.2.3.1 [FI28] ¹	Mechanical systems, Renewable Systems, and SWH Commissioning: Commisioning plan developed by registered design professional or approved agency. See section details.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.				
6.7.2.3.3. 1 [FI31] ¹	Mechanical systems, Renewable Systems, and SWH Commissioning: HVAC equipment has been tested to ensure proper operation. See section details.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.				
6.7.2.3.3. 2 [FI10] ¹	Mechanical systems, Renewable Systems, and SWH Commissioning: HVAC control systems have been tested to ensure proper operation, calibration and adjustment of controls. See section details.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.				
6.7.2.3.4 [FI29] ¹	Mechanical systems, Renewable Systems, and SWH Commissioning: Preliminary commissioning report completed and certified by registered design professional or approved agency. See section details.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.				
6.7.2.3.5. 1 [FI7] ³	Mechanical systems, Renewable Systems, and SWH Commissioning: Furnished HVAC as-built drawings submitted within 90 days of system acceptance. See section details.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.				
6.7.2.3.5. 3 [FI43] ¹	Mechanical systems, Renewable Systems, and SWH Commissioning: An air and/or hydronic system balancing report is provided for HVAC systems. See section details.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.				
6.7.2.3.5. 4 [FI30] ¹	Mechanical systems, Renewable Systems, and SWH Commissioning: Final commissioning report due to building owner within 90 days of receipt of certificate of occupancy. See section details.	□Complies □Does Not □Not Observable □Not Applicable	Requirement will be met.				
	1 High Impact (Tier 1)	2 Medium Imp	act (Tier 2) 3 Low Impact (Tier 3)		1 High Impact (Tier 1)	2 Medium Impact (Tier 2)	3 Low
Project Title Data filena	e: Astoria HVDC Converter Station me: C:\Users\Alexander.Zabolotsky\Dov	wnloads\Astoria CC	Report date: 12/07/22 Mcheck.cck Page 17 of 19	Project Title: Data filename:	Astoria HVDC Converter Station C:\Users\Alexander.Zabolotsky\D	ownloads\Astoria COMcheck.cck	

Project Title: Astoria HVDC Converter Station Data filename: C:\Users\Alexander.Zabolotsky\Downloads\Astoria COMcheck.cck Report date: 12/07/22 Page 16 of 19

Project Title: Astoria HVDC Converter Station Report date: 12/07/22

