CONDUIT SYSTEM

———	NEW WORK
- - - - -	EXISTING WORK
———○	CONDUIT TURNING UP
———●	CONDUIT TURNING DOWN
DP-3A #2 3#12,1#12G -6"C.	POWER CIRCUIT HOMERUN - CIRCUIT BREAKER SIZE AND NUMBER OF POLES AS INDICATED.
LP-3A #1,2,3	CIRCUIT HOMERUN TO PANEL BOARD - ARROWS DENOTE NUMBER OF CIRCUITS. DESIGNATION DENOTES PANEL BOARD AND CIRCUIT NUMBERS.
— — —	UNDERGROUND CONDUIT RUN.
	EXISTING TO BE DEMOLISHED AND REMOVED

PANELBOARD AND CABINETS

	SURFACE TYPE PANELBOARD
	DISTRIBUTION PANELBOARD

POWER

5 3 3	MOTOR WITH JUNCTION BOX AND FLEXIBLE CONDUIT CONNECTION. NUMERAL DENOTES HORSEPOWER. 'F' DENOTES FRACTIONAL HORSEPOWER LESS THAN 1/2 HP
A B	FUSED DISCONNECT SWITCH 'A' - DENOTES SWITCH SIZE 'B' - DENOTES FUSE SIZE IF INDICATED
A	UNFUSED DISCONNECT SWITCH. RATING SAME AS UPSTREAM BRANCH CIRCUIT PROTECTIVE DEVICE. 'A' - DENOTES SWITCH SIZE
Δ Y	TRANSFORMER

ABBREVIATIONS

ABBREVIATION	DESCRIPTION
AC	ABOVE CENTER
AFF	ABOVE FINISHED FLOOR
ATS	AUTOMATIC TRANSFER SWITCH
BFG	BELOW FINISHED GRADE
BMS	BUILDING MANAGEMENT SYSTEM
C	CONDUIT
CL	CLOSET
CB	CIRCUIT BREAKER
CBV	CABLE BY VENDOR
CKT(S)	CIRCUIT(S)
DP	DISTRIBUTION PANEL
DISC	DISCONNECT SWITCH
EB	CON EDISON END BOXES
EC	EMPTY CONDUIT
ELEV	ELEVATOR
EM	EMERGENCY
ER	EXISTING TO BE RELOCATED
EWC	ELECTRIC WATER COOLER
EX/E	EXISTING
FA	FIRE ALARM
GRD/GND	GROUND
HD	ELECTRIC HANDDRYER
HC	HUNG CEILING
HP	HORSE POWER
IG	ISOLATED GROUND
LAN	LOCAL AREA NETWORK
LTG	LIGHTING
MTD	MOUNTED
NIC	NOT IN CONTRACT
NO	NORTH
OC	ON CENTER
P	POLES(S)
PB	PULL BOX
PC	PERSONAL COMPUTER
PH	PHASE
PM	POWER MONITOR
PNL	PANEL
RGS	RIGID GALVANIZED STEEL
SO	SOUTH
SP	SPARE
STD	STANDARD
SW	SWITCH
TBD	TO BE DETERMINED
TEL	TELEPHONE
TVSS	TRANSITION VOLT SURGE SUPRESSION
TYP	TYPICAL
UNF	UNFUSED
UON	UNLESS OTHERWISE NOTED
UTP	UNSHIELDED TWISTED-PAIR
V	VOLT
W	WIRE
WP	WEATHERPROOF
XFMR	TRANSFORMER

ELECTRICAL GENERAL NOTES:

1. BEFORE SUBMITTING A BID PROPOSAL, THE CONTRACTOR SHALL:
   A. VISIT THE JOB SITE AND BECOME FULLY ACQUAINTED WITH JOB CONDITIONS.
   B. REVIEW A FULL SET OF BID DOCUMENTS TO MAKE SELF AWARE OF THE TOTAL JOB BEFORE SUBMITTING A PRICE.
   C. VERIFY ALL EXISTING CONDITIONS IN THE FIELD AND INCLUDE IN BID PRICE ALL WORK REQUIRED TO ACCOMMODATE THE EXISTING INSTALLATION.
2. COORDINATE WITH OTHER TRADES TO DETERMINE THE EXACT LOCATION OF MOTORS, MOTOR TERMINAL BOXES, AND OTHER EQUIPMENT TO BE INSTALLED BY OTHER TRADES BEFORE CONDUIT WORK IS STARTED. REFER TO MECHANICAL, PLUMBING, AND FIRE PROTECTION DRAWINGS FOR LOCATIONS OF ALL EQUIPMENT.
3. CONTRACTOR SHALL FIELD VERIFY DIMENSIONS OF FINISHED CONSTRUCTION PRIOR TO FABRICATION AND INSTALLATION OF FIXTURES AND EQUIPMENT.
4. EXISTING ELECTRICAL EQUIPMENT AND PANELBOARDS SHALL BE MODIFIED AS REQUIRED TO ACCOMMODATE THE WORK OF THIS CONTRACT. REPLACE EXISTING CIRCUIT BREAKERS IN PANELS WITH IDENTICAL NEW BREAKERS AS REQUIRED AND PROVIDE UPDATED DIRECTORIES.
5. EXISTING EQUIPMENT AFFECTED BY THE WORK OF THIS CONTRACT SHALL BE COMPLETELY IDENTIFIED IN ACCORDANCE WITH THE REQUIREMENTS OF THIS CONTRACT.
6. ANY EXISTING WORK DAMAGED AS A RESULT OF PERFORMING THE WORK OF THIS CONTRACT SHALL BE REPAIRED OR REPLACED AS REQUIRED. MATERIAL AND FINISH TO MATCH EXISTING TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE.
7. ALL WORK REQUIRING ELECTRICAL SHUTDOWN WHICH WILL AFFECT OTHER FLOORS OF THE BUILDING OR EVEN AFFECT THE NORMAL CONTINUATION OF CONSTRUCTION WORK ON THESE FLOORS, SHALL BE DONE ON OVERTIME HOURS, AND SHALL NOT DISTURB CONTINUITY OF ELECTRICAL SERVICE TO EXISTING TENANTS ON THE AFFECTED FLOORS.
8. ALL ELECTRICAL WORK IN ADJOINING AREAS WHICH IS REQUIRED TO FUNCTION BUT IS AFFECTED BY THIS WORK SHALL BE RECONNECTED AND RESTORED TO ITS PRESENT FUNCTION AS PART OF THE ELECTRICAL SYSTEM OF THE BUILDING(S).
9. MOUNTING HEIGHTS OF EQUIPMENT AND DEVICES SHALL BE AS INDICATED ON THE ARCHITECTURAL DRAWINGS. WHERE MOUNTING HEIGHTS ARE NOT GIVEN ON THE ARCHITECTURAL DRAWINGS, UTILIZE THE FOLLOWING MOUNTING HEIGHTS UNLESS OTHERWISE NOTED (ALL DIMENSIONS TO CENTERLINE OF BOX):
10. WHERE CONDUIT AND WIRING CONNECTIONS ARE NOT SHOWN ON THE PLANS, MAKE CONNECTIONS AS FOLLOWS:
    A. USE #10 AWG WIRE TO THE FIRST AND ANY OUTLET FOR BRANCH CIRCUIT RUNS MORE THAN 80 FEET FOR 120V AND 208V CIRCUITS, U.O.N.
    B. USE #10 AWG WIRE TO THE FIRST AND ANY OUTLET FOR BRANCH CIRCUIT RUNS MORE THAN 150 FEET FOR 265V AND 460V CIRCUITS, U.O.N.
11. ALL BRANCH CIRCUIT WIRING SHALL BE RUN CONCEALED IN WALLS AND/OR ABOVE HUNG CEILING UNLESS OTHERWISE NOTED.
12. WIRING IN AIR PLENUM HUNG CEILINGS INSTALLED WITHOUT CONDUIT OR EMT SHALL BE TEFLON JACKETED.
13. NO LOW VOLTAGE WIRING SHALL BE PERMITTED IN THE SAME RACEWAY AS POWER WIRING.
14. CONTRACTOR TO DE-RATE CONDUCTORS IN ACCORDANCE WITH THE 2017 NATIONAL ELECTRICAL CODE WHEN INSTALLING MORE THAN THREE (3) CIRCUITS IN A 3/4"C HOMERUN.
15. PROVIDE DRAG LINES IN ALL EMPTY RACEWAYS. ALL DRAG LINES SHALL BE TAGGED AND LABELED AT BOTH ENDS.
16. ALL CONDUITS FOR BRANCH CIRCUITING AND/OR COMMUNICATIONS CABLING, INCLUDING THOSE RUN IN CEILING OF FLOOR BELOW SHALL BE IDENTIFIED AT EVERY 50 FEET OF LENGTH AND AT EACH OUTLET AND PULL BOX WITH PANEL AND CIRCUIT NUMBER OR SYSTEM NAME.

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CONTACT INFO

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CONTACT PERSON : PAUL LIPPOLIS
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PHONE 914-548-1101

SYSTEM OPERATOR: SPROCKET OWNER
EMAIL:DQUINN@SPROCKETPOWER.COM
PHONE: 503-333-5475

PROJECT NAME

CROTON AUTO MALL
SOLAR PLUS BATTERY STORAGE

1 MUNICIPAL PL. CROTON ON HUDSON, NY 10520

UTILITY ACCOUNT NO: 58890203710000
UTILITY METER NO: 009983133

CLIENT PROJECT No.

KEY PLAN:

REV.#	DATE	ISSUE DESCRIPTION
-	04/25/2024	CROTON ON HUDSON APPLICATION
-	04/04/2024	ISSUED FOR PRICING & COORDINATION

LORING CONSULTING ENGINEERS
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New York City • Washington, DC • Princeton • Durham • Toronto • Philadelphia • Gaithersburg

DRAWING TITLE:

ELECTRICAL,
SYMBOLS, ABBREVIATIONS,
& NOTES

GRAPHIC SCALE:

SEAL:

DRAWN:	CHECKED:
WP	PC

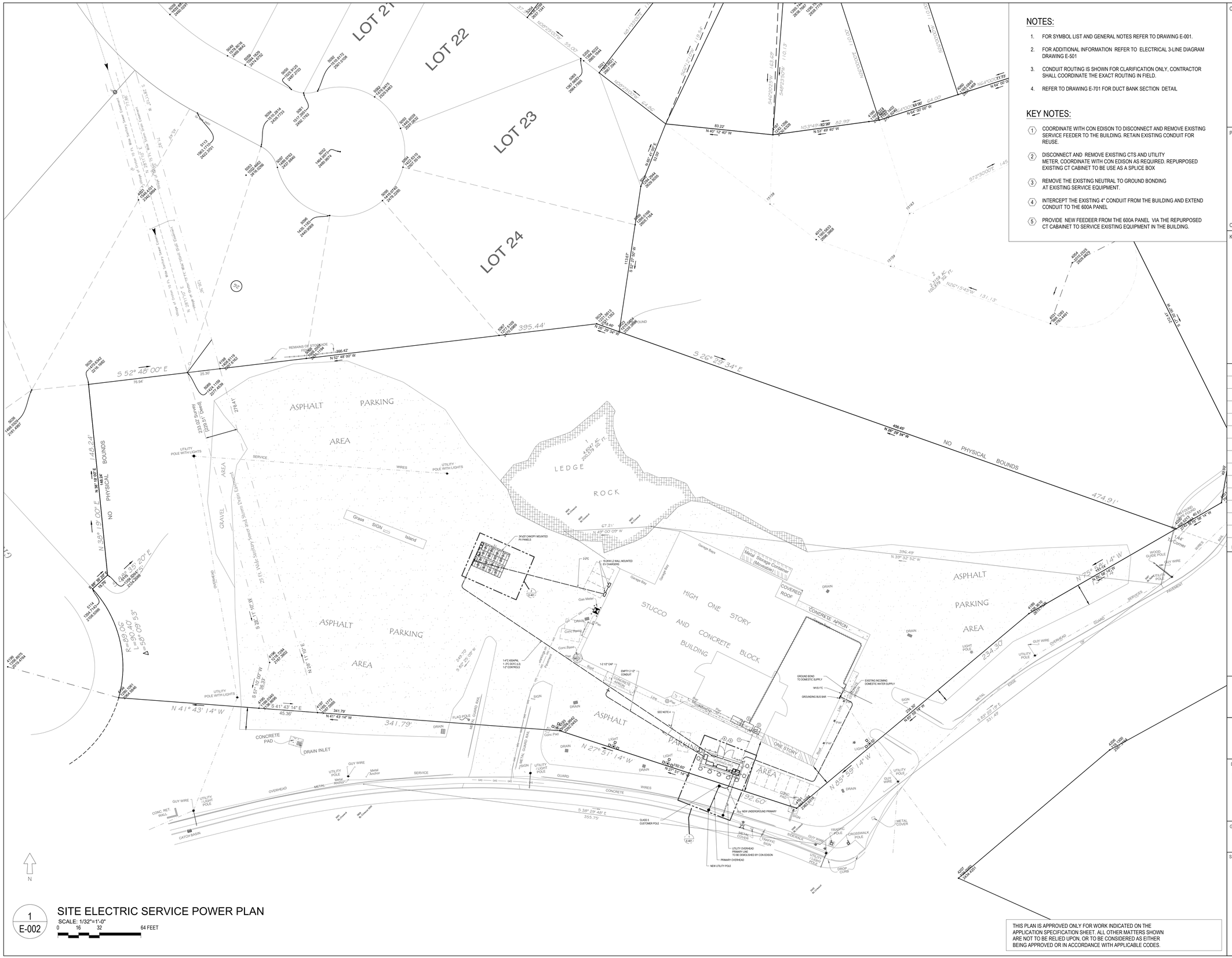
APPROVED:

LORING JOB No.:

DATE:

SHEET NUMBER:

E-001



1 / E-002

SITE ELECTRIC SERVICE POWER PLAN

SCALE: 1/32"=1'-0"

0 16 32 64 FEET

NOTES:

1. FOR SYMBOL LIST AND GENERAL NOTES REFER TO DRAWING E-001.
2. FOR ADDITIONAL INFORMATION REFER TO ELECTRICAL 3-LINE DIAGRAM DRAWING E-501
3. CONDUIT ROUTING IS SHOWN FOR CLARIFICATION ONLY, CONTRACTOR SHALL COORDINATE THE EXACT ROUTING IN FIELD.
4. REFER TO DRAWING E-701 FOR DUCT BANK SECTION DETAIL

KEY NOTES:

1. COORDINATE WITH CON EDISON TO DISCONNECT AND REMOVE EXISTING SERVICE FEEDER TO THE BUILDING. RETAIN EXISTING CONDUIT FOR REUSE.
2. DISCONNECT AND REMOVE EXISTING CTS AND UTILITY METER, COORDINATE WITH CON EDISON AS REQUIRED. REPURPOSED EXISTING CT CABINET TO BE USE AS A SPLICE BOX
3. REMOVE THE EXISTING NEUTRAL TO GROUND BONDING AT EXISTING SERVICE EQUIPMENT.
4. INTERCEPT THE EXISTING 4" CONDUIT FROM THE BUILDING AND EXTEND CONDUIT TO THE 600A PANEL
5. PROVIDE NEW FEEDEER FROM THE 600A PANEL VIA THE REPURPOSED CT CABAINET TO SERVICE EXISTING EQUIPMENT IN THE BUILDING.

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SYSTEM OPERATOR: SPROCKET OWNER
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PHONE: 503-333-5475

PROJECT NAME

CROTON AUTO MALL
SOLAR PLUS BATTERY STORAGE

1 MUNICIPAL PL. CROTON ON HUDSON, NY 10520

UTILITY ACCOUNT NO: 58890203710000
UTILITY METER NO: 009983133

CLIENT PROJECT No.

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New York City • Washington, DC • Princeton • Durham • Toronto • Philadelphia • Gaithersburg

DRAWING TITLE:

ELECTRICAL SITE PLAN

GRAPHIC SCALE:

0 16 32 64 FEET

SEAL:

DRAWN:	CHECKED:
WCP	PC

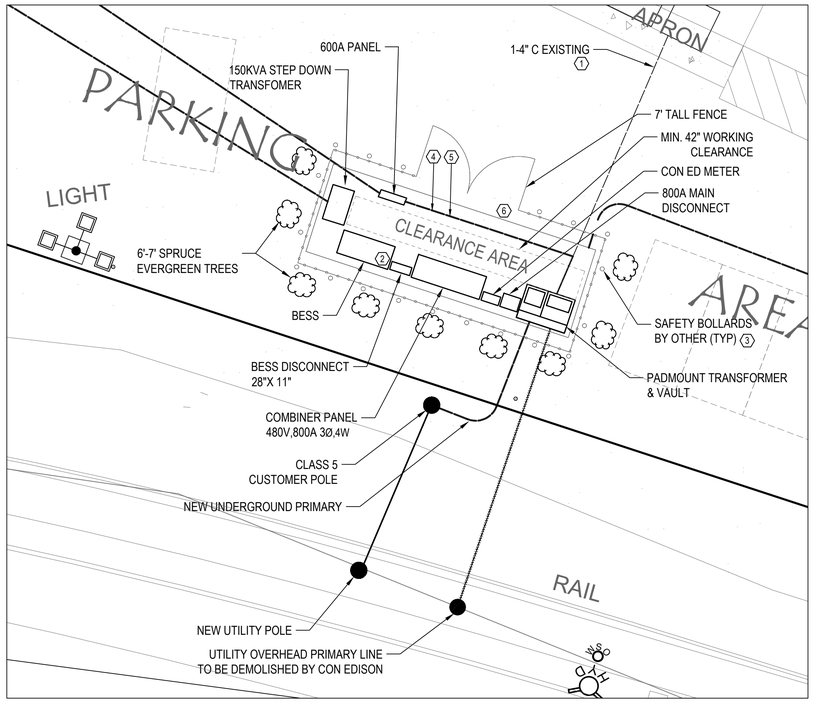
APPROVED:

LORING JOB No.:

DATE:

SHEET NUMBER:

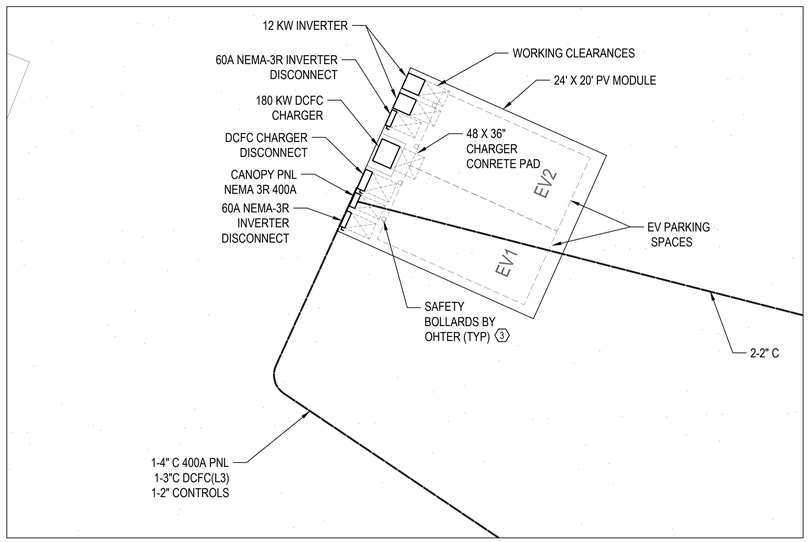
E-002



1 / E-401 SITE ELECTRIC SERVICE EQUIPMENT POWER PART PLAN

SCALE: 1/8"=1'-0"

0 4 8 16 FEET



N

2 / E-401 EV CHARGE STATION POWER PART PLAN

SCALE: 1/8"=1'-0"

0 4 8 16 FEET

NOTES:

1. FOR SYMBOL LIST AND GENERAL NOTES REFER TO DRAWING E-001.
2. FOR ADDITIONAL INFORMATION REFER TO ELECTRICAL 3-LINE DIAGRAM DRAWING E-501
3. CONTRACTOR SHALL PROVIDE STAINLESS C CHANNEL MOUNTING RACKS FOR THE FOR THE INSTALLATION OF THE DISCONNECT SWITCHES, METER CABINET, PANELS ETC.
4. BOLLARD, CONCRETE, PADS, TREES AND FENCE ARE SHOWN FOR COORDINATION ONLY, REFER TO THE CIVIL ENGINEERING DRAWING FOR ADDITIONAL INFORMATION.

KEY NOTES:

1. COORDINATE WITH CON EDISON TO DISCONNECT AND REMOVE EXISTING SERVICE FEEDER TO THE BUILDING. RETAIN EXISTING CONDUIT FOR REUSE.
2. PROVIDE APPROVED SIGNAGE AS PER APPLICABLE CODES AND STANDARD. SIGNAGE SHALL READ AS FOLLOWS:
   - --- ESS TYPE: BATTERY STORAGE SYSTEM
   - --- LITHIUM IRON PHOSPHATE; CAPACITY 280KWH
   - --- ENERGIZED ELECTRICAL CIRCUITS: MAIN COMBINER SWITCHBOARD.
   - --- DO NOT APPLY WATER
   - --- FIRE MITIGATION PERSONNEL TEL #: XXX-XXX-XXX
3. SAFETY BOLLARDS ARE SHOWN ON THE ELECTRICAL DRAWING FOR REFERENCE ONLY. THE CONTRACTOR SHALL REFER TO STRUCTURAL ENGINEER DRAWINGS FOR TYPE, SIZE QUANTITY AND PERTINENT INFORMATION
4. INTERCEPT THE EXISTING 4" CONDUIT FROM THE BUILDING AND EXTEND CONDUIT TO THE 600A PANEL
5. PROVIDE NEW FEEDER FROM THE 600A PANEL VIA THE RE-PURPOSED CT CABINET TO SERVICE EXISTING EQUIPMENT IN THE BUILDING.
6. CONCRETE PAD BY OTHER; CONCRETE MIINIMUM STRENGTH 4000 PSI SLAB THICKNESS 8"

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PROJECT NAME

CROTON AUTO MALL
SOLAR PLUS BATTERY STORAGE

1 MUNICIPAL PL. CROTON ON HUDSON, NY 10520

UTILITY ACCOUNT NO: 58890203710000
UTILITY METER NO: 009983133

CLIENT PROJECT No.

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DRAWING TITLE:

SITE ELECTRICAL SERVICE POWER PART PLAN, EV CHARGE STATION POWER PART PLAN

GRAPHIC SCALE:

SEAL:

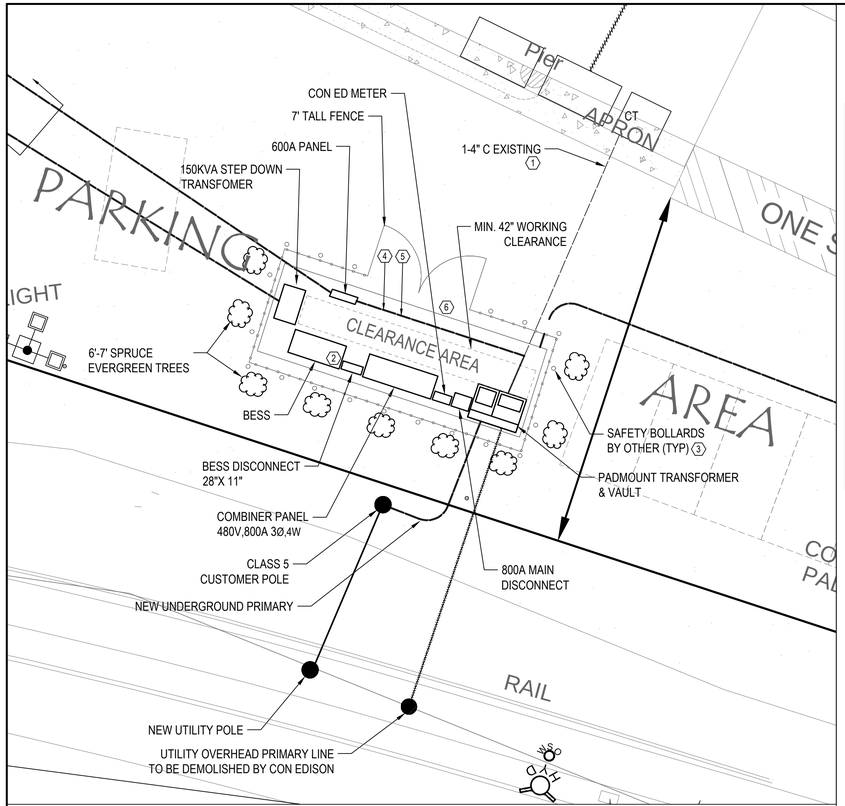
DRAWN: WCP | CHECKED: PC

APPROVED:

LORING JOB No.:

DATE:

SHEET NUMBER: E-401



1 E-402 SITE ELECTRIC SERVICE EQUIPMENT POWER PART PLAN

SCALE: 1/8"=1'-0"

0 4 8 16 FEET

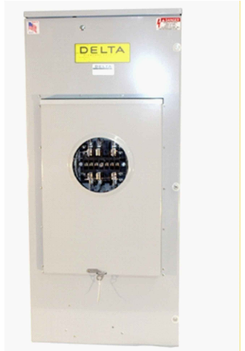
CROTON AUTO PARK - 1 MUNICIPAL PLAZA

2 E-402 ELECTRIC SERVICE EQUIPMENT N.T.S

1. 150 KVA TRANSFORMER

2. BATTERY STORAGE SYSTEM

3. PAD MOUNTED UTILITY TRANSFORMER



4. 800A CON ED METER

5. 800A MAIN DISCONNECT SWITCH

6. COMBINER PANEL

7. 600A PANEL

EQUIPMENT	DIMENSIONS W, D, H	PHOTO #
800A COMBINER PANEL	93.5" x 88.5" x 49.21"	#6
150KVA TRANSFOMER	44.5" x 31.5" x 29.5"	#1
BATTERY STORAGE SYSTEM	92.13" x 51.18" x 51.18"	#2
800A SERVICE SWITCH	48" x 36.62" x 17.75 "	#5
800A METERING CABINET	48" x 24" x 10"	#4
600A PANEL	36" x 30" x 90"	#7
UTILITY TRANSFORMER	71" x 63" x 61"	#3

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PROJECT NAME

CROTON AUTO MALL
SOLAR PLUS BATTERY STORAGE

1 MUNICIPAL PL. CROTON ON HUDSON, NY 10520

UTILITY ACCOUNT NO: 58890203710000
UTILITY METER NO: 009983133

CLIENT PROJECT No.

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DRAWING TITLE:

SITE ELECTRICAL SERVICE EQUIPMENT

GRAPHIC SCALE:

SEAL:

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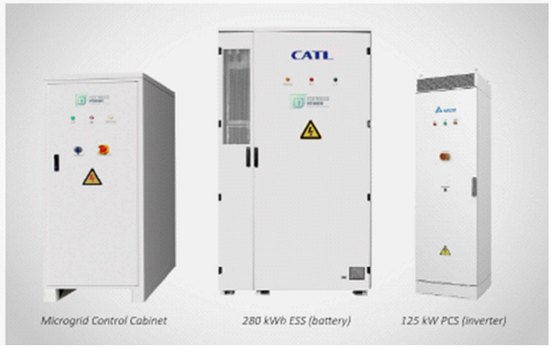
SHEET NUMBER: E-402



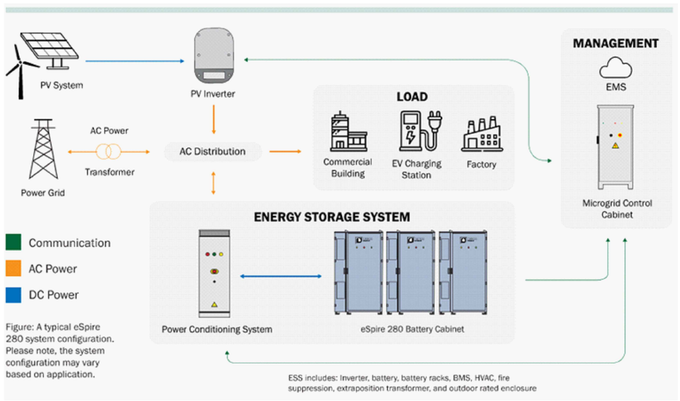


Figure: A typical eSpire 280 system configuration. Please note, the system configuration may vary based on application.

Battery Specification	
Fortress Power Battery Module	eSpire 280
Chemistry	Lithium Iron Phosphate
Cell Type	Prismatic
Configuration	IP82S
Number of Modules	6
Nominal Capacity	280 Ah
Nominal Energy	279.5 kWh
Nominal Voltage	998.4 Vdc
Operating Voltage Range	873.7 - 1123.2 Vdc
Maximum Continuous Charging / Discharging Current	280 Amps
Peak Charging / Discharging Current	280 Amps
Communication	Modbus TCP, CAN, Modbus RTU
Cycle Life @ 25C @ 70% Retention	8000 Cycles
DC DC Round Trip Efficiency	92% @ 0.5C, 25°C, 1 Cycle Per Day
Operating Temperature Range	Charging: 0-55°C & Discharging -20-55°C
Key Components	6 Modules, 6 Cell Supervision Circuits, 1 Slave Battery Management Unit, 6 Maintenance Switch Disconnects
Thermal Management System	Integrated Liquid Cooling System (HVAC)
Fire Suppression System	Fire Detector, Smoke Detector & Fire Extinguisher
IP Class	Type IP66
Battery Bank Scalability	Up to 15 (4.2 mWh)

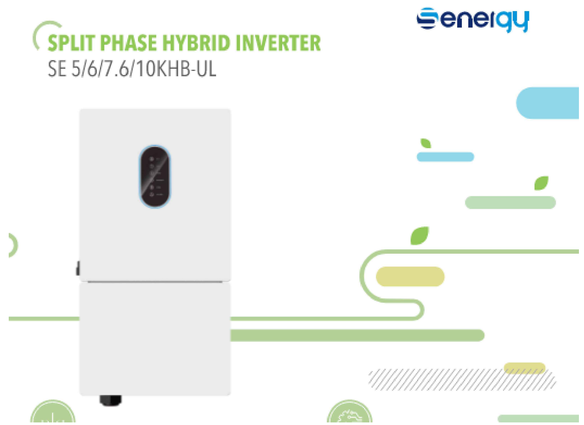
PCS Specification	
PCS Model	125 HV
Rated AC Power	125 KVA/KW
Rated Grid Voltage	3Ph 480Vac + PE
Grid Voltage Range	422 to 528Vac (-12%, +10%) / (3Ph 208Vac + PE)*
Rated Grid Frequency	60 Hz
Grid Frequency Range	59.3 to 60.5Hz, Adjustable
Rated AC Current	151 Amps
DC Voltage Range	750-1050Vdc
Rated Discharge / Charge Power	128KW/122KW
Max. Discharge/Charge Current	157Amps/151Amps
Output THDi	<3%
Peak Efficiency	98%
Standby Loss	<25W @ Cool Mode
Grid Power Factor	-1 (leading) to (Lagging), Continuously Adjustable
Wiring Configuration	3Phase 4 Wire (3P4W Configuration)
Protection	DC Reverse Protection/OVP/UVP/OCP/DC Insulation Detection

*** For 3Ph 208Vac + PE application, a step-down transformer is required.**

Energy Management Software	
Operation Mode	On Grid/Economic, Off Grid/Microgrid, Blackstart
Use Cases	Back-up, Microgrid, Off-grid, Peak Shaving, Demand Response, Time of Use, Net Metering, Zero Export, VPP
Communication Interface	Modbus (TCP and RTU), TCP/IP, CANbus, BACnet, Dry Contactor, External APIs

System Specification	PCS Details	Microgrid Control Panel Details	Battery Details
Operating Temperature	-30 to 60°C, De-Rating >45°C	-25 to 40°C	-30 to 45°C
Storage Temperature Range	-25 to 65°C	-15C to 45°C	-40 to 60°C
Dimensions (H*W*D)	2002*600*509mm	2300*600*750mm	2280*1300*1300mm
Enclosure Rating	NEMA 3R / IP55	NEMA 3 / IP54	NEMA 4X / IP66
Relative Humidity	<95% No Condensing	<95% No Condensing	<95% No Condensing
Max Altitude	4000m, De-Rating > 2000m	4000m, De-Rating > 2000m	4000m, De-Rating > 2000m
Acoustic Noise	<70 dBA, Max 75dB	N/A	<70dB, Max 80dB
Cooling System	Forced Air via Speed Control	Air Cool	Liquid Cooling Via HVAC
Net Weight	230kg/286.6lbs	313Kg/690lbs	2510kg/5533.60lbs
Operation Status Indicators	Warning, Low Voltage & High Voltage		
Lockage Enclosure	Swing Handle Poolockable		
User Interface	LED, EPO, Ethernet & HMI via Web Access		
Communication Protocol	Ethernet/Modbus TCP		
Certifications	UL1973, UL9540(A), UL1741-SB, IEEE-1547-2018, IEEE-519, FCC Part 15 Class A (UL9540 CEC, SGIP Pending)		

1 E-403 B.E.S.S



Model	SE 5KHB-130-D2/UL	SE 6KHB-130-D2/UL	SE 7K6HB-180 T2/UL	SE 10KHB-210-T2/UL
Efficiency				
Max. Efficiency (PV to AC)	98.0%			
Max. Efficiency (BAT to AC)	94.5%			
Input (PV)				
Max. PV Input Power	7,500W	9,000W	12,000W	15,000W
Max. PV Voltage	600V			
Start-up Voltage	90V			
MPPT Operating Voltage Range	70V-540V			
Max. Input Current per MPPT	30A/22A		30A/22A/22A	
Max short current per MPPT	40A/30A		40A/30A/30A	
Srring per MPPT	4 (2/2)		6 (2/2/2)	
Nos. of MPPT	2		3	
Input/Output (BAT)				
Battery Type	Lithium-ion/Lead-acid			
Nominal Battery Voltage	48V			
Battery Voltage Range	40V-64V			
Max. Charge/Discharge Current	210A/130A	210A/130A	210A/180A	210A/210A
Max. Charge/Discharge Power	10,000W/5,000W	10,000W/6,000W	10,000W/7,600W	11,400W/11,400W
Output (Grid)				
Nominal AC Output Power	5,000W	6,000W	7,600W	10,000W
Max. AC Output Apparent Power	5,500VA	6,600VA	7,600VA	11,400VA
Max. AC Output Power (PF=1)	5,500W	6,600W	7,600W	11,400W
Nominal AC Output Current	20.9A/24.1A	25A/28.9A	31.7A/36.6A	41.7A/47.5A
Max. AC Output Current	26.5A	31.8A	40.4A	47.5A
Nominal Grid Voltage	120V/240V (Split phase) / 208V (2/3 phase)			
Nominal Grid Frequency	50Hz /60Hz			
Grid Frequency Range	45Hz-55Hz/55Hz-65Hz (Adjustable)			
Power Factor	> 0.99 @rated power (Adjustable 0.8 LD - 0.8 LG)			
THDI	<3% (Rated Power)			
Output (Back up)				
Nominal Output Power	5,000W	6,000W	7,600W	10,000W
Nominal Output Current	20.9A/24.1A	25A/28.9A	31.7A/36.6A	41.7A/47.5A
Peak Output Apparent Power (1s)	10,000VA	12,000VA	15,200VA	20,000VA
Nominal Output Voltage	120V/240V (Split phase) / 208V (2/3 phase)			
Nominal Output Frequency	50Hz/60Hz			
Transfer Time	<10ms			
THDV	<3% @100% R Load			
Protection				
Protection Category	Class I			
DC Switch	Yes			
Anti-islanding Protection	Yes			
AC Overcurrent Protection	Yes			
DC/AC Overvoltage Protection	DC Type II, AC Type III			
AC Short Circuit Protection	Yes			
DC Reverse Protection	Yes			
Surge Arrester	DC Type II, AC Type II			
Insulation Resistance Detection	Yes			
Leakage Current Protection	Yes			
AFCI	Yes			
RSD	Yes (APsystems Sunspec)			
Generator	Yes			
General				
Max. Operation Altitude	2000m			
Ingress Protection Degree	IP65/NEMA 3R			
Operating Temperature Range	-25°C~60°C (>45°C derating)			
Relative Humidity	0~100%			
Cooling Method	Fan Cooling			
Mounting	Wall bracket			
Dimensions (W*H*D)	16.5*31.5*9.4 inch (420mm*800mm*240mm)			
Weight	40Kg/88lb			
PV Connection Way	Terminals			
HMI & COM				
Display	Wireless & APP + LED, LCD (optional)			
Communication Interface	RS485/CAN (for BMS), DRM/RS485 (for meter), RS485, Optional: WiFi /LAN			
Certification				
Safety	UL 1741/CSA C22.2/UL 16998			
Grid	UL1741SB, IEEE1547: 2018, HECO SRD 2.0			
EMC	FCC Part 15 Class B			
Warranty	5 Years			

Remarks : • The range of output voltage and frequency may vary depending on different grid codes.

2 E-403 PV INVERTERS

ELECTRICAL TYPICAL VALUES										
Model	PS550M7GFH-24/TNH		PS555M7GFH-24/TNH		PS560M7GFH-24/TNH		PS565M7GFH-24/TNH		PS570M7GFH-24/TNH	
Testing Condition	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Rated Power (Pmpp)	550	411	555	414	560	418	565	422	570	426
Rated Current (Impp)	13.23	10.46	13.29	10.50	13.35	10.55	13.41	10.60	13.47	10.65
Rated Voltage (Vmpp)	41.58	39.30	41.77	39.40	41.96	39.60	42.15	39.80	42.34	40.00
Short Circuit Current (Isc)	14.01	11.29	14.07	11.34	14.13	11.39	14.19	11.44	14.25	11.49
Open Circuit Voltage (Voc)	50.27	47.40	50.47	47.60	50.67	47.80	50.87	48.00	51.07	48.20
Module Efficiency (%)	21.29		21.48		21.68		21.87		22.07	

STC(Standard Testing Conditions):Irradiance 1000W/m², AM 1.5, Cell Temperature 25°C

NOCT (Nominal Operation Cell Temperature): Irradiance 800W/m², Ambient Temperature 20°C, Spectra at AM1.5, Wind at 1m/S

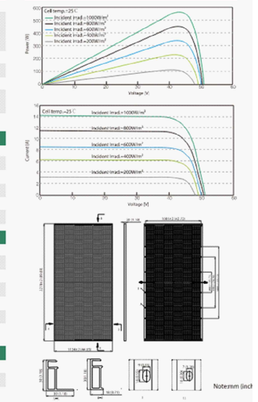
BIFACIAL ELECTRICAL VALUES						
5%	Maximum Power(W)	572	577	582	588	593
	Module Efficiency(%)	22.14	22.34	22.55	22.75	22.95
15%	Maximum Power(W)	616	622	627	633	638
	Module Efficiency(%)	23.85	24.06	24.28	24.50	24.71
25%	Maximum Power(W)	660	666	672	678	684
	Module Efficiency(%)	25.55	25.78	26.01	26.25	26.48

MECHANICAL CHARACTERISTICS	
Cell Type	Monocrystalline 182mm x 91mm
Dimension (L× W × H)	Length: 2278mm (89.69 inch) Width: 1134mm (44.65 inch) Height: 30mm (1.18 inch)
Weight	32.7kg (72.09 lbs)
Glass	2.0mm/2.0mm Toughened Glass
Frame	Anodized Aluminium Alloy
Cable	4mm² (IEC), (+):450mm,(-):250mm or Customized Length
Junction Box	IP 68 Rated

TEMPERATURE RATINGS	
Voltage Temperature Coefficient	-0.25%/°C
Current Temperature Coefficient	+0.045%/°C
Power Temperature Coefficient	-0.30%/°C
Tolerance	0~+5w
NOCT	42±2°C
Bifaciality	80±5%

ABSOLUTE MAXIMUM RATING	
Operating Temperature	From -40 to +85°C
Hail Diameter @ 80km/h	Up to 25mm
Front Side Maximum Static Loading	5400Pa
Rear Side Maximum Static Loading	2400Pa
Maximum Series Fuse Rating	30A
PV Module Classification	II
Maximum System Voltage	DC 1500V

PACKING CONFIGURATION		
Container	20' GP	40' HQ
Pieces/Container	180	720



Phono Solar

PHONO SOLAR TECHNOLOGY CO.,LTD reserves the right to make necessary adjustments to the information described herein at any time without further notice. The specifications and certificates contained in this datasheet may deviate slightly from our actual products due to the on-going innovation and product enhancement. Please be sure to use the most recent version of data.

3 E-403 PV PANEL

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SYSTEM OWNER: LOU GIORDANO
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PHONE 914-548-1101

SYSTEM OPERATOR: SPROCKET OWNER
EMAIL:DQUINN@SPROCKETPOWER.COM
PHONE: 503-333-5475

PROJECT NAME

CROTON AUTO MALL
SOLAR PLUS BATTERY STORAGE

1 MUNICIPAL PL. CROTON ON HUDSON, NY 10520

UTILITY ACCOUNT NO: 58890203710000
UTILITY METER NO: 009983133

CLIENT PROJECT No.

KEY PLAN:

REV.#	DATE	ISSUE DESCRIPTION
-	04/25/2024	CROTON ON HUDSON APPLICATION
-	04/04/2024	ISSUED FOR PRICING & COORDINATION

LORING CONSULTING ENGINEERS

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New York City • Washington, DC • Princeton • Durham • Toronto • Philadelphia • Gaithersburg

DRAWING TITLE:

EQUIPMENT SPECIFICATION SHEET

GRAPHIC SCALE:

SEAL:

DRAWN:	CHECKED:
WCP	PC

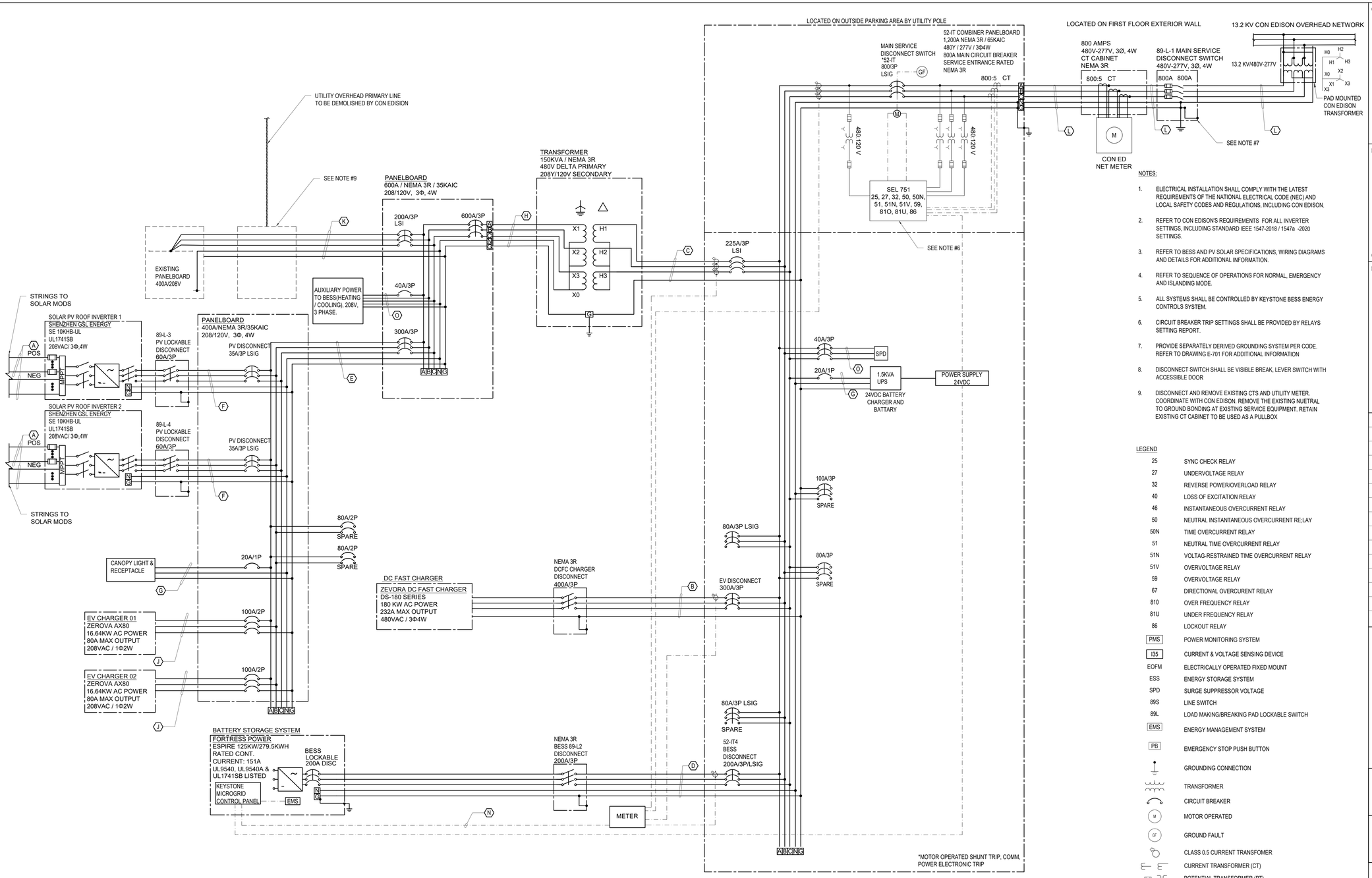
APPROVED:

LORING JOB No.:

DATE:

SHEET NUMBER:

E-403



INVERTER SETTINGS				
SETTINGS	PICKUP			TIME (S)
27-1	80%	0.8 pu	V L-L	3.0
27-2	50%	0.5 pu	V L-L	1.1
59-1	110%	1.1 pu	V L-L	2.0
59-2	120%	1.2 pu	V L-L	2.0
81-O1		61.0	Hz	300
81-O2		62.0	Hz	0.16
81-U1		58.5	Hz	300
81-U2		56.5	Hz	0.16
INVERTER VOLTAGE: 600V L-L				
UTILITY INTERACTIVE INVERTER FUNCTION STATUS				
FUNCTION	DEFAULT			
POWER FACTOR	1.0			
VOLT-VAR	OFF			
	2% MAX CURRENT OUTPUT PER SEC			
SOFT START RAMP RATE	ON			
FREQ-WATT FUNCTION	OFF			

CABLE SCHEUDLE							
CALLOUT ID	WIRE SIZE	PARALLEL RUNS	PHASE SIZE	NEUTRAL SIZE	GROUND SIZE & TYPE	INSULATION	CONDUIT TYPE
A	2Φ PER STRING, G	1 PER STRING	#10 AWG CU	-	#6 AWG CU EGC	2KV PVWIRE	VARIES*
B	3Φ, N, G	1	#350 KCMIL CU	#350 KCMIL CU	#2 AWG CU EGC	600V THWN2	3" C
C	3Φ,G	1	#4/0 AWG CU	-	#6 AWG CU EGC	600V THWN2	2 1/2" C
D	3Φ, N, G	1	#3/0 AWG CU	#3/0 AWG CU	#6 AWG CU EGC	600V THWN2	2 1/2" C
E	3Φ,N,G	1	#500 AWG CU	#500 AWG CU	#2/0 AWG CU EA	600V THWN2	4" C
F	3Φ, N, G	1	#8 AWG CU	#8 AWG CU	#12 AWG CU SSBJ	600V THWN2	1" C
G	1Φ, N, G	1	#12 AWG CU	#12 AWG CU	#12 AWG CU EGC	600V THWN2	1 1/4" C
H	3Φ, N, G	2	#350 KCMIL CU	#350 KCMIL CU	#2 AWG CU SSBJ	600V THWN2	3" C
J	2Φ,N,G	1	#2 AWG CU	#2 AWG CU	#8 AWG CU EGC	600V THWN2	1. 1/2" C
K	3Φ, N, G	1	#3/0 AWG CU	#3/0 AWG CU	#6 AWG CU	600V THWN2	2" C
L	3Φ, N	2	#500 KCMIL CU	#500 KCMIL CU	#1/0 AWG CU EA	600V THWN2	4" C
N	1 CABLE	1	RS485	-	-	BELDEN 3106A	1" C
O	3PH, N, G	1	#8 AWG CU	#10 AWG	#10AWG	600V THWN2	3/4" C

NOTES:

1. ELECTRICAL INSTALLATION SHALL COMPLY WITH THE LATEST REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AND LOCAL SAFETY CODES AND REGULATIONS, INCLUDING CON EDISON.
2. REFER TO CON EDISON'S REQUIREMENTS FOR ALL INVERTER SETTINGS, INCLUDING STANDARD IEEE 1547-2018 / 1547a -2020 SETTINGS.
3. REFER TO BESS AND PV SOLAR SPECIFICATIONS, WIRING DIAGRAMS AND DETAILS FOR ADDITIONAL INFORMATION.
4. REFER TO SEQUENCE OF OPERATIONS FOR NORMAL, EMERGENCY AND ISLANDING MODE.
5. ALL SYSTEMS SHALL BE CONTROLLED BY KEYSTONE BESS ENERGY CONTROLS SYSTEM.
6. CIRCUIT BREAKER TRIP SETTINGS SHALL BE PROVIDED BY RELAYS SETTING REPORT.
7. PROVIDE SEPARATELY DERIVED GROUNDING SYSTEM PER CODE. REFER TO DRAWING E-701 FOR ADDITIONAL INFORMATION
8. DISCONNECT SWITCH SHALL BE VISIBLE BREAK, LEVER SWITCH WITH ACCESSIBLE DOOR
9. DISCONNECT AND REMOVE EXISTING CTS AND UTILITY METER. COORDINATE WITH CON EDISON. REMOVE THE EXISTING NUETRAL TO GROUND BONDING AT EXISTING SERVICE EQUIPMENT. RETAIN EXISTING CT CABINET TO BE USED AS A PULLBOX

LEGEND

25	SYNC CHECK RELAY
27	UNDERVOLTAGE RELAY
32	REVERSE POWER/OVERLOAD RELAY
40	LOSS OF EXCITATION RELAY
46	INSTANTANEOUS OVERCURRENT RELAY
50	NEUTRAL INSTANTANEOUS OVERCURRENT RE:LAY
50N	TIME OVERCURRENT RELAY
51	NEUTRAL TIME OVERCURRENT RELAY
51N	VOLTAG-RESTRAINED TIME OVERCURRENT RELAY
51V	OVERVOLTAGE RELAY
59	OVERVOLTAGE RELAY
67	DIRECTIONAL OVERCURENT RELAY
810	OVER FREQUENCY RELAY
81U	UNDER FREQUENCY RELAY
86	LOCKOUT RELAY
PMS	POWER MONITORING SYSTEM
I35	CURRENT & VOLTAGE SENSING DEVICE
EOFM	ELECTRICALLY OPERATED FIXED MOUNT
ESS	ENERGY STORAGE SYSTEM
SPD	SURGE SUPPRESSOR VOLTAGE
89S	LINE SWITCH
89L	LOAD MAKING/BREAKING PAD LOCKABLE SWITCH
EMS	ENERGY MANAGEMENT SYSTEM
PB	EMERGENCY STOP PUSH BUTTON
	GROUNDING CONNECTION
	TRANSFORMER
	CIRCUIT BREAKER
M	MOTOR OPERATED
GF	GROUND FAULT
	CLASS 0.5 CURRENT TRANSFOMER
	CURRENT TRANSFORMER (CT)
	POTENTIAL TRANSFORMER (PT)
	HEAVY LINE TYPE REPRESENTING NEW ELECTRICAL SYSTEM ELEMENT (EQUIPMENT, DEVICE FEEDER, ETC.)
	LIGHT LINE TYPE REPRESENTING EXISTING ELECTRICAL SYSTEM ELEMENT (EQUIPMENT, DEVICE FEEDER, ETC.)
	DASHED LINE TYPE REPRESENTING CONTROL WIRING IN 1"C
METER	ELECTRONIC SUBMETER
M	UTILITY METER

NOT FOR CONSTRUCTION

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PROJECT NAME

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SOLAR PLUS BATTERY STORAGE

1 MUNICIPAL PL. CROTON ON HUDSON, NY 10520

UTILITY ACCOUNT NO: 58890203710000
UTILITY METER NO: 009983133

CLIENT PROJECT No.

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New York City • Washington, DC • Princeton • Durham • Toronto • Philadelphia • Gaithersburg

DRAWING TITLE:

ELECTRICAL THREE LINE DIAGRAM

GRAPHIC SCALE: NTS

SEAL:

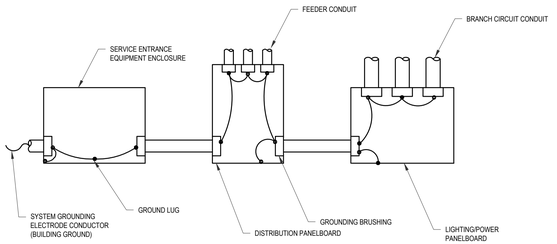
DRAWN:	CHECKED:
WCP	PC

APPROVED:

LORING JOB No.: 13551

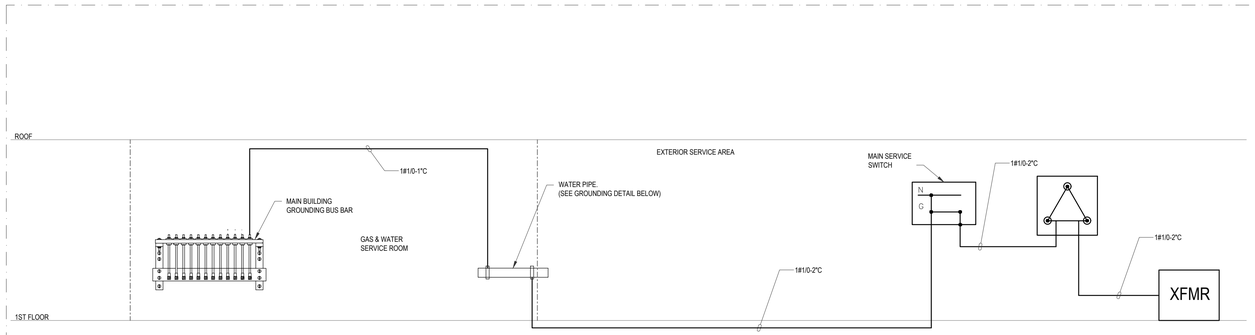
DATE:

SHEET NUMBER: E-501



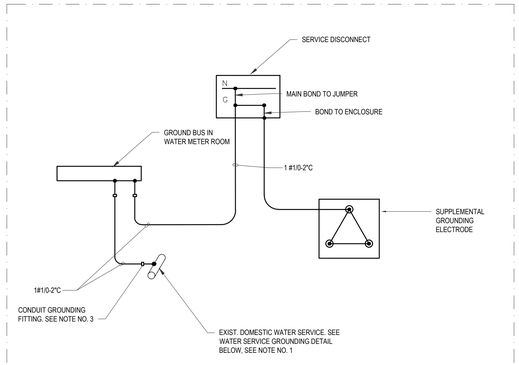
RACEWAY EQUIPMENT GROUNDING SYSTEM

(N.T.S)



GROUNDING RISER DIAGRAM

(N.T.S.)

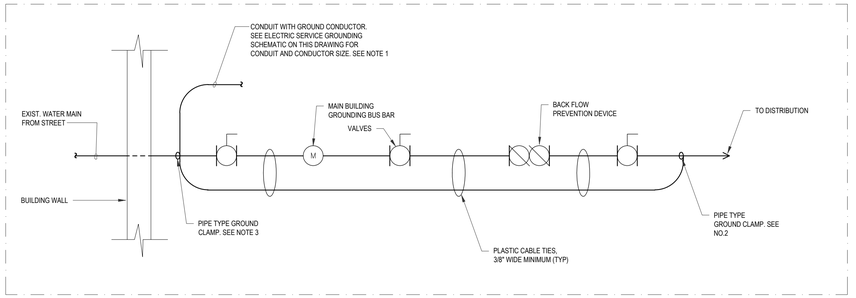


ELECTRIC SERVICE GROUNDING SCHEMATIC

SCALE: NONE

NOTES:

1. WHERE THE BUILDING HAS MORE THAN ONE DOMESTIC WATER AND/OR FIRE PROTECTION SERVICE A GROUND CONDUCTOR, IN CONDUIT, SHALL BE INSTALLED FROM THE MAIN BUILDING GROUND BUS TO EACH DOMESTIC WATER AND FIRE PROTECTION SERVICE. COORDINATE WITH BUILDING ENGINEER FOR INSTALLATION.
2. NOT USED
3. CONDUIT GROUNDING FITTINGS SHALL BE O-Z/GEDNEY TYPE GH-B OR APPROVED EQUAL
4. GROUND BUS SHALL BE MINIMUM 1/4" x 4" x 30", DRILLED FOR TWO-HOLE HYDRAULIC COMPRESSION LUGS. TERMINATION OF GROUNDING ELECTRODE CONDUCTORS SHALL BE WITH TWO-HOLE COMPRESSION LUGS OR EXOTHERMIC WELD. PROVIDE TWO COPPER ALLOY MECHANICAL LUGS FOR FIRE ALARM GROUNDS, EQUAL TO FCI BURNDY TYPE "KA4C", OR APPROVED EQUAL, SECURED TO BUS WITH 1/4"-20 SILICON BRONZE BOLTS
5. GROUNDING ELECTRODE CONDUCTORS (TO WATER SERVICE, SUPPLEMENTAL ELECTRODE, BUILDING STEEL AND SERVICE SWITCH SHALL BE SIZED AS INDICATED.
6. WHERE GROUNDING CONDUITS TERMINATE AT AN ENCLOSURE , TERMINATE CONDUIT WITH LOCKNUTS AND A BONDING BUSHING
7. ALL GROUND CONDUCTOR TERMINATIONS AT GROUND BUS SHALL BE TWO HOLE HYDRAULIC COMPRESSION LUGS. LUGS SHALL BE SECURED TO BUS WITH SILICON BRONZE BOLTS, NUTS AND WASHERS. EACH BOLT SHALL BE PROVIDED WITH A SPRING STEEL BELLEVILLE WASHER AND SHALL BE TIGHTENED WITH A CALIBRATED TORQUE WRENCH.
8. TERMINATE CONDUIT AT GROUND BUS AND WATER MAINS WITH DIEC-CAST BRONZE FITTING BRASS SCREW. FITTING SHALL BE O-Z/GEDNEY GH-B SERIES

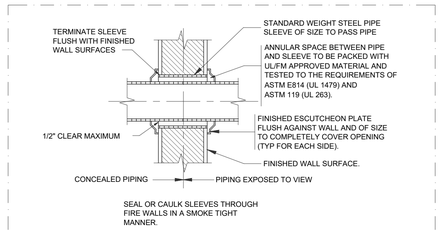


GROUNDING DETAIL-WATER/FIRE/STAND PIPE SERVICE

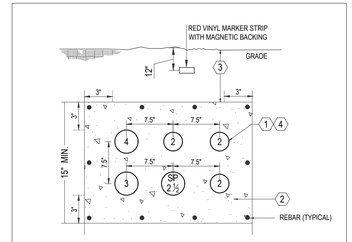
SCALE:NONE

NOTES:

1. TERMINATE CONDUIT NEAR WATER MAIN WITH A THREADED, CAST-BRONZE GROUND CLAMP, WITH A BRASS CONDUCTOR SET SCREW, CLAMP SHALL BE O-Z/GEDNEY TYPE GH-B SERIES OR APPROVED EQUAL.
2. GROUNDING CLAMP SHALL BE UL LISTED CONSISTING OF A COPPER GROUND CONNECTOR. A U-BOLT AND A CONDUCTOR CLAMP TO SECURE THE GROUND CONDUCTOR. CLAMP SHALL B EO-Z/GEDNEY TYPE GAR SERVICES
3. GROUND CONDUCTOR SHALL BE CONTINUOUS TO THE SECOND GROUND CLAMP ON THE OPPOSITE SIDE OF REMOVABLE EQUIPMENT, SUCH AS METERS, VALVES ETC., AS REQUIRED BY ARTICLE 250.68(B) OF NFPA 70
4. SECURE CABLE TO PIPE WITH 3/8" WIDE NYLON CABLE TIES. LEAVE ADEQUATE SLACK IN CABLE TO ALLOW EQUIPMENT TO BE REMOVED WITHOUT DISCONNECTING CABLE
5. GROUNDING AT FIRE PROTECTION SERVICES SHALL BE INSTALLED IN A SIMILAR MANNER



DETAIL OF CONDUIT PENETRATING THROUGH FIRE RATED WALL AND FLOOR



SECTION A-A: DUCT DETAIL

N.T.S.

NOTE:

1. INSTALLATION DEPTH TO BE DETERMINED IN FIELD TO AVOID INTERFERENCE WITH OTHER UNDERGROUND UTILITIES AND STRUCTURAL MEMBERS (36" MIN.).

KEY NOTE:

1. PVC SCHEDULE 40 CONDUIT (TYP.)
2. POURED IN PLACE CONCRETE
3. 36" MINIMUM BELOW GRADE
4. PROVIDE PVC DUCT SPACER EVERY 6 1/2' - 7'

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GRAPHIC SCALE: NTS

SEAL:

DRAWN:	CHECKED:
PC	WCP

APPROVED:

LORING JOB No.: 13551

DATE:

SHEET NUMBER:

E-701