

P & R FASTENERS

EV CHARGING STATION INSTALLATION

325 PIERCE ST,
SOMERSET, NJ 08873

SCOPE OF WORK

A. INSTALL (4) LEVEL 2 EV CHARGERS & ALL ITS ASSOCIATED ELECTRICAL EQUIPMENTS IN THE PARKING LOT OF THE BUILDING.

APPLICABLE CODES

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES:

- NEW JERSEY BUILDING CODE 2021
- NEW JERSEY ENERGY CODE 2021
- NEC 2020

SHEET INDEX

| SHEET NO. | TITLE |
|-----------|--|
| EV01 | COVER SHEET |
| EV02 | NOTES, LEGEND & SYMBOLS |
| EV03 | ELECTRICAL SITE LAYOUT |
| EV04 | SINGLE LINE DIAGRAM, CALCULATION, & DATA SHEET |
| EV05 | INSTALLATION DETAILS SHEET 1 OF 2 |
| EV06 | INSTALLATION DETAILS SHEET 2 OF 2 |

UNDERGROUND SERVICE ALERT



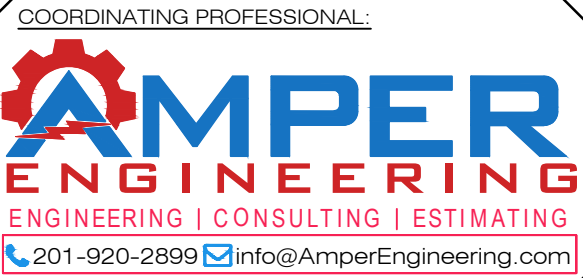
CALL AT LEAST TWO WORKING DAYS BEFORE YOU DIG

EXISTING UNDERGROUND FACILITIES ARE SHOWN ON THESE PLANS FROM RECORD INFORMATION AND ARE INFORMATION ONLY. OTHER UNDERGROUND FACILITIES NOT SHOWN ON THE PLANS MAY EXIST. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL EXISTING UNDERGROUND FACILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY A ONE-CALL SERVICE CENTER, TOLL FREE AT 811, NO LESS TWO DAYS PRIOR TO ANY EXCAVATION.

VICINITY MAP



SATELLITE VIEW



ENGINEER OF RECORD SEAL & STAMP:



PROFESSIONAL ENGINEER:
DURAK EVRIM ERCAN, P.E.
LICENSE # 24GE54902

AMPER PROJECT NUMBER: 1999-NJ

THE ENGINEER OF RECORD SHALL NOT HAVE CONTROL OR CHARGE OF AND SHALL NOT BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, DEVIATIONS, TECHNIQUES, SEQUENCES, OR PROCEDURES, OR FOR SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK, FOR THE ACTS OR OMISSIONS OF THE CONTRACTOR, SUBCONTRACTORS OR ANY OTHER PERSONS PERFORMING ANY OF THE WORK, OR FOR THE FAILURE OF ANY OF THEM TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
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| REV | DATE | DESCRIPTION |
|-----|------------|------------------------|
| 0 | 11/08/2024 | ISSUED FOR PLAN REVIEW |

CLIENT:



ADDRESS:
24 COKESBURY ROAD,
LEBANON, NJ 08833
PHONE:
908-735-6126

PROJECT:

P & R FASTERNERS
EVCS
INSTALLATION

ADDRESS:
325 PIERCE ST,
SOMERSET, NJ
08873

SHEET SIZE:
24X36

DESIGNED BY:
AC

DRAWN BY:
IB

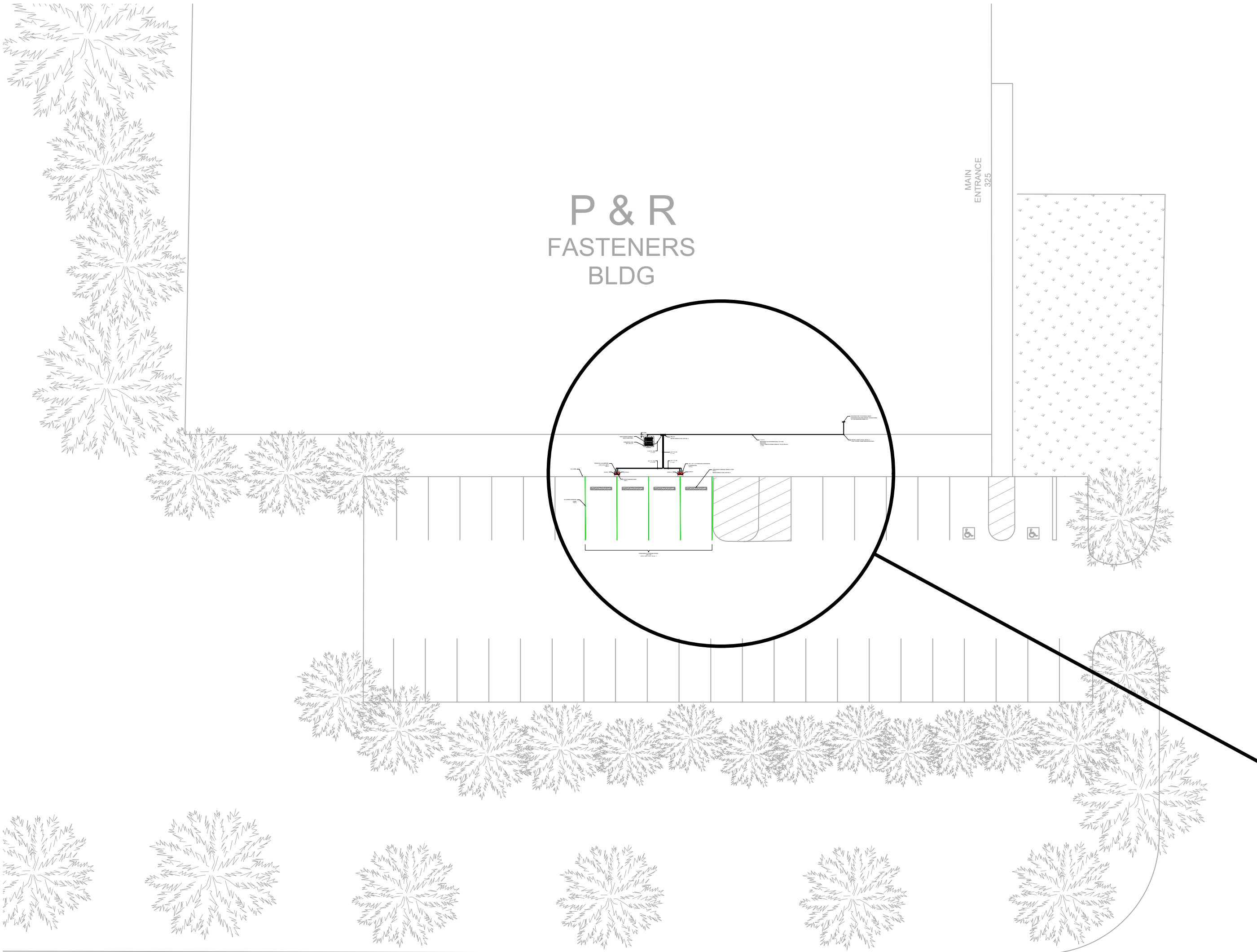
CHECKED BY:
DEE

SHEET TITLE:

COVER SHEET

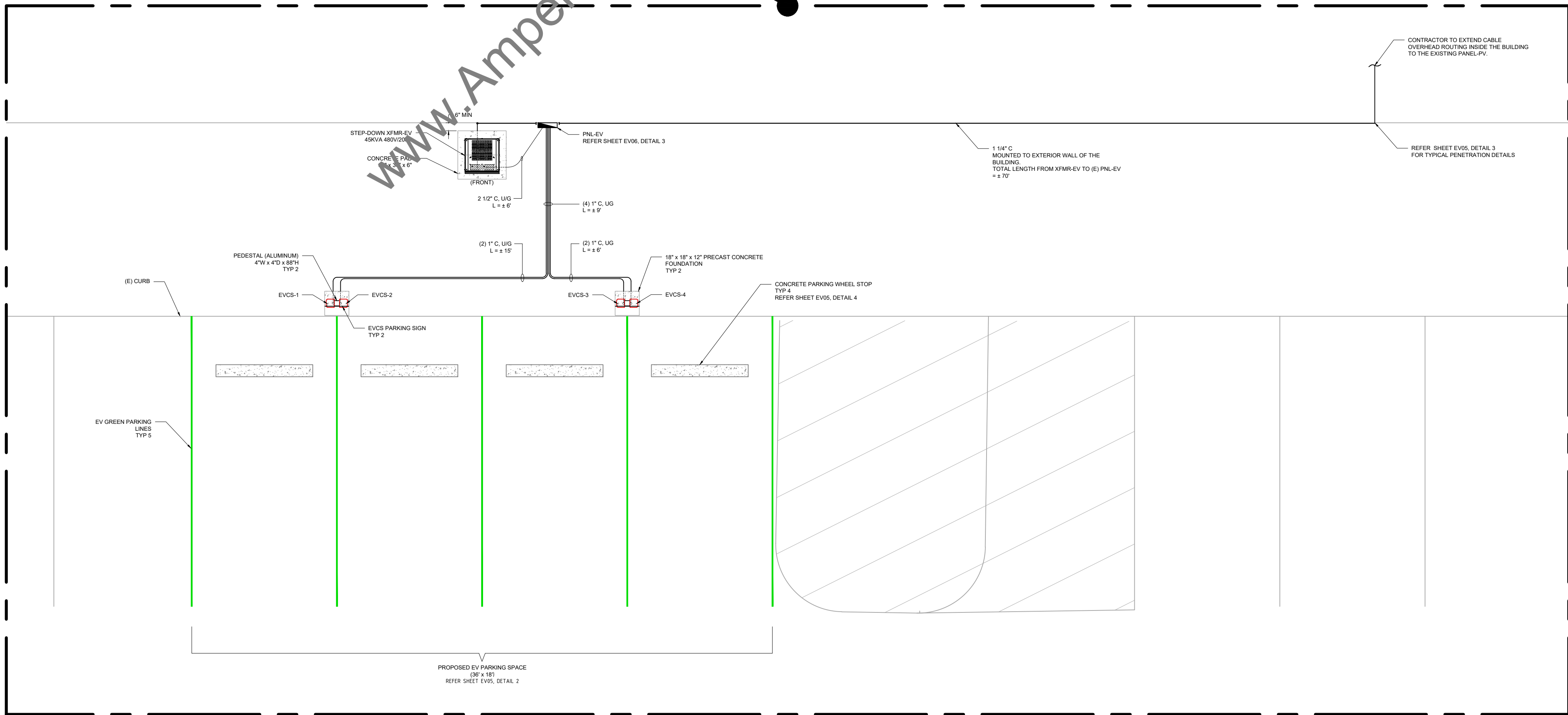
SHEET NO:

EV01



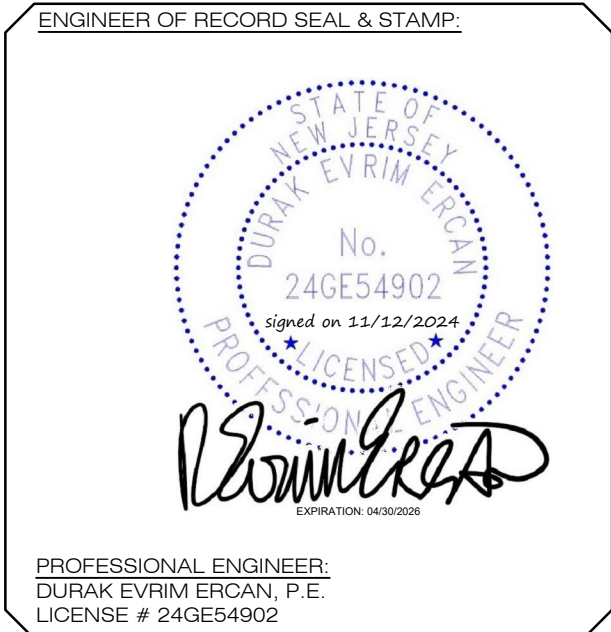
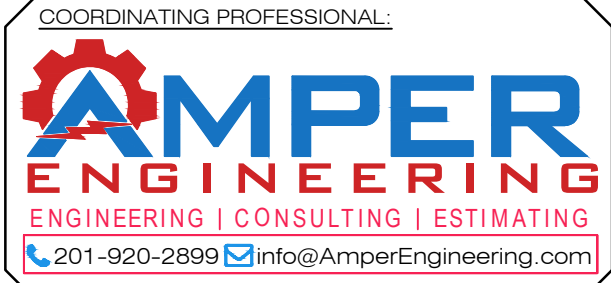
- ESTIMATED WIRE PULL LENGTHS:
- EXISTING PANEL-PV TO NEW XFMR-EV = ± 70 FT
 - XFMR-EV TO PNL-EV = ± 5 FT
 - PNL-EV TO EVCS 1 & 2 = ± 24 FT
 - PNL-EV TO EVCS 3 & 4 = ± 15 FT

ELECTRICAL SITE LAYOUT
SCALE: NTS



ENLARGED PLAN VIEW OF ELECTRICAL & EVCS EQUIPMENTS
SCALE: NTS

- NOTES:
- THIS DRAWING WAS PRODUCED WITHOUT THE BENEFIT OF A CURRENT LAND SURVEY. ALL PROPERTY LINES, EASEMENTS, AND SETBACKS SHALL BE VERIFIED PRIOR TO START OF CONSTRUCTION.
 - FOR INSTALLATION DETAILS, REFER SHEET EV05 & EV06.



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CLIENT:

Mt Salem Electric

ADDRESS:
24 COKESBURY ROAD,
LEBANON, NJ 08833
PHONE:
908-735-6126

PROJECT:

P & R FASTERNERS EVCS INSTALLATION

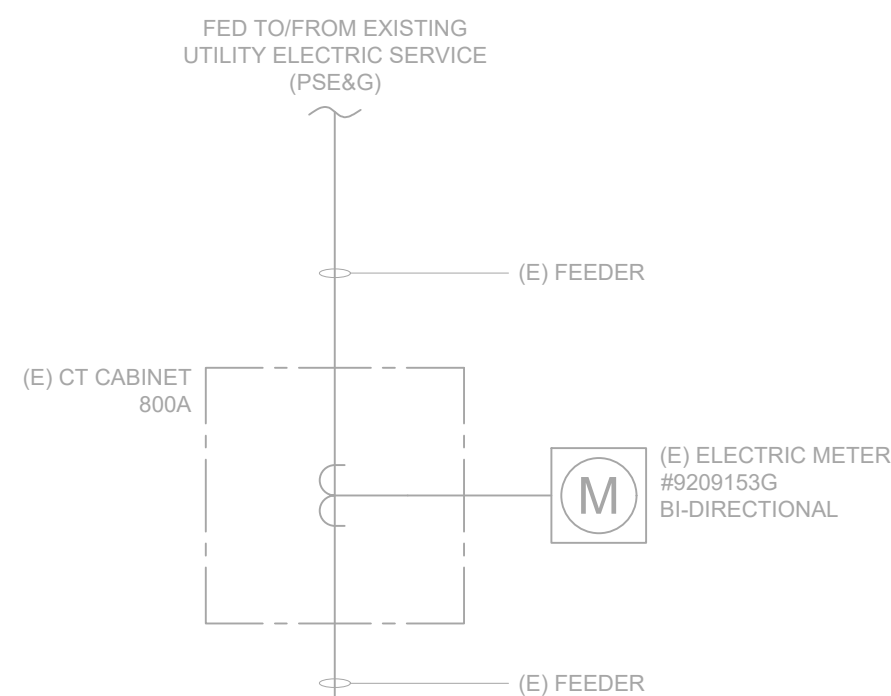
ADDRESS:
325 PIERCE ST,
SOMERSET, NJ 08873

| | |
|----------------------|--------------------|
| SHEET SIZE: 24X36 | DRAWN BY: IB |
| DESIGNED BY: AC | CHECKED BY: DEE |

SHEET TITLE:
ELECTRICAL SITE LAYOUT

SHEET NO:
EV03

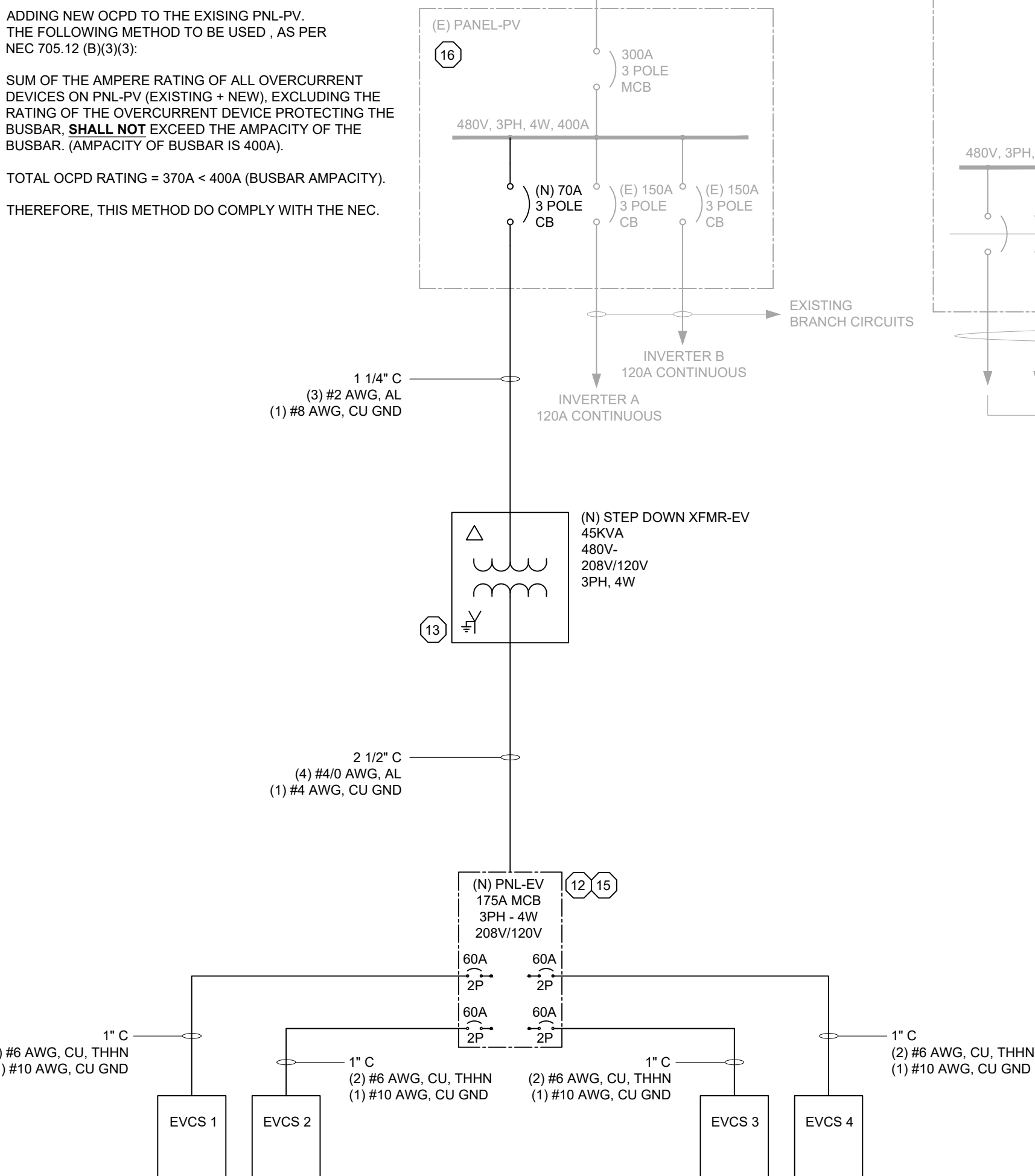
| CABLE ROUTE | | LOAD VOLTAGE | WIRE SIZE | DISTANCE (FT) | LOAD (AMP) | VOLTAGE DROP (%) | PARALLELS (SETS) |
|-------------|---------|--------------|------------------|---------------|------------|------------------|------------------|
| FROM | TO | | | | | | |
| (E) PNL-PV | XFMR-EV | 480V | #2 AWG, AL | 70 | 54 | 0.40 | 1 |
| XFMR-EV | PNL-EV | 208V | #4/0 AWG, AL | 5 | 156 | 0.07 | 1 |
| PNL-EV | EVCS 1 | 208V | #6 AWG, CU, THHN | 24 | 60 | 0.67 | 1 |
| PNL-EV | EVCS 2 | 208V | #6 AWG, CU, THHN | 24 | 60 | 0.67 | 1 |
| PNL-EV | EVCS 3 | 208V | #6 AWG, CU, THHN | 15 | 60 | 0.42 | 1 |
| PNL-EV | EVCS 4 | 208V | #6 AWG, CU, THHN | 15 | 60 | 0.42 | 1 |



| NEC 220.87 LOAD CALCULATION | | | |
|---|---------|-------------|-----------------------------------|
| VOLTAGE | | 277 / 480 V | |
| PHASE | | 3 | |
| EXISTING SERVICE | | 800 A | |
| PEAK DEMAND LOAD | PERIOD: | 1 YR | KW 96.2 P.F. 0.9 KVA 108.11 |
| MAXIMUM DEMAND AT 125%: | | 136.4 KVA | |
| NEW LOAD ADDED: | QTY | KVA | KVA |
| XFMR EV | 1 | 45 | 45 |
| | | | 0 |
| NEW LOAD AT 125% | | | 56.25 |
| OTHER LOADS | | | 0 |
| TOTAL NEW LOAD | | | 56.25 |
| MAXIMUM DEMAND AT 125% + TOTAL NEW LOAD | | 192.6 KVA | |
| TOTAL DEMAND LOAD | | 232 A | |
| EXISTING SERVICE | | 800 A | |
| FREE CAPACITY TO BE CONNECTED TO EXIST. SERVICE | | 568 A | |

AS SHOWN ABOVE CALCULATION, THE TOTAL NEW DEMAND LOAD IN AMPS IS 232 AMPS., THEREFORE, THE EXISTING SERVICE IS ADEQUATE AND CAN HANDLE THE NEW EV LOAD BEING ADDED WITHOUT EXCEEDING THE EXISTING SERVICE RATING 800 AMPS.

- 1 ALL ELECTRICAL WORK AND RELATED ACTIVITIES PERFORMED ON-SITE SHALL BE DONE IN ACCORDANCE WITH NATIONAL ELECTRIC CODE (NEC) STANDARDS BEING ENFORCED BY ALL APPLICABLE JURISDICTIONAL REQUIREMENTS AT THE TIME OF CONSTRUCTION.
- 2 CONDUIT PATHS ARE REPRESENTATIVE ONLY. EXACT CONDUIT PLACEMENT TO BE DETERMINED ON SITE BASED ON FIELD CONDITIONS.
- 3 A NATIONALLY RECOGNIZED TESTING LABORATORY SHALL LIST ALL EQUIPMENT IN COMPLIANCE WITH NEC ARTICLE 110.3
- 4 ALL EXTERIOR EQUIPMENT SHALL BE RAIN TIGHT AND APPROVED FOR USE IN WET CONDITIONS.
- 5 ALL CONDUCTORS TO BE THHN COPPER, UNLESS OTHERWISE NOTED.
- 6 ALL CONDUCTORS AND CABLES SHALL BE PROVIDED WITH STRAIN RELIEF UPON ENTRY INTO ENCLOSURES
- 7 EACH UNGROUNDED CONDUCTOR SHALL BE IDENTIFIED BY PHASE AND SYSTEM PER NEC 210.5
- 8 ALL METALLIC COMPONENTS SHALL BE GROUNDED VIA ELECTRIC GROUNDING CONDUCTORS.
- 9 WIRING FOR ELECTRICAL VEHICLE CHARGING STATIONS TO BE INSTALLED PER MANUFACTURER'S DIRECTIONS AND SPECIFICATIONS.
- 10 CONTRACTOR TO ENSURE THAT ALL FEEDERS, CONDUITS, CONDUCTORS, OCPD, TRANSFORMERS, ELECTRICAL PANELS AND OTHER ELECTRICAL EQUIPMENT IS SIZED TO COMPLY WITH CURRENT NEC AND LOCAL AHJ CODES.
- 11 CONTRACTOR IS RESPONSIBLE TO VERIFY DESIGN, ENGINEERING ASSUMPTIONS AND EXISTING FIELD CONDITIONS. REPORT ANY INSUFFICIENCIES TO ENGINEER OF RECORD PRIOR TO ANY WORK BEING PERFORMED.
- 12 THE NEW PANEL AND CBs SHALL HAVE THE SAME KAIC OR HIGHER THAN FAULT CONTRIBUTION FROM THE UTILITY. THE CBs SHALL BE RATED 75°C AND USE 75° RATED WIRE.
- 13 GROUNDING INSTALLATION AS PER NEC ART. 250.
- 14 THE EV CHARGING SUPPLY SHALL BE INSTALLED AS PER NEC ART. 625.
- 15 ALL (4) EVCS WILL BE PROTECTED WITH THE SMART BRANCH CIRCUIT BREAKERS INSTALLED AT PANEL-EV. IN SUCH SCENARIO, THE END USER CAN REMOTELY TURN OFF THE EV CHARGERS ON WEEKENDS AND HOLIDAYS.
- 16 AS PER NEC 705.12 (B)(3)(3), PERMANENT LABEL SHALL BE APPLIED TO THE EXISTING PNL-PV. REFER SHEET EV05, DETAIL 6, FOR THE EQUIVALENT WORDING OF PERMANENT WARNING LABEL.



* ALL EXISTING CONDITIONS ARE SHOWN IN LIGHT COLOR AND NEW
INSTALLATION AND SCOPE OF WORK ARE SHOWN IN DARK TONE.

| PANEL-EV | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---------------------|---------------------------------------|-----------------------|------|------|-------|------|-----------------|--|------|-------|-------|-----------------|--|------|-------|-----|-----|------|------|---------------------|--------|---|------|------|-------|---------------------|--|--|--|
| VOLTAGE: 120/208 3 PHASE, 4 WIRE | | | | | | | | | | | | | | LOCATION: BUILDING EXTERIOR BUS (A): 225 MAIN (A): 175 | | | | | | | | | | | | | | | | |
| No. | CIRCUIT DESCRIPTION | CONT | RCPT | MTR | A/C | KITCH | MISC | BREAKER TRIP | POLE | A | B | C | BREAKER POLE | TRIP | MISC | KITCH | A/C | MTR | RCPT | CONT | CIRCUIT DESCRIPTION | No. | | | | | | | | |
| 1 | EVCS-1 | 4.99 | | | | | | * 60 | 2 | 9.98 | | | | 2 | * 60 | | | | | 4.99 | | EVCS-4 | 2 | | | | | | | |
| 3 | X | 4.99 | | | | | | X | X | | 9.98 | | | X | X | | | | | 4.99 | | X | 4 | | | | | | | |
| 5 | EVCS-2 | 4.99 | | | | | | * 60 | 2 | | | 4.99 | | | | | | | | | | BLANK | 6 | | | | | | | |
| 7 | X | 4.99 | | | | | | X | X | 4.99 | | | | | | | | | | | | BLANK | 8 | | | | | | | |
| 9 | EVCS-3 | 4.99 | | | | | | * 60 | 2 | | 4.99 | | | | | | | | | | | BLANK | 10 | | | | | | | |
| 11 | X | 4.99 | | | | | | X | X | | | 4.99 | | | | | | | | | | BLANK | 12 | | | | | | | |
| 13 | BLANK | | | | | | | | | 0.00 | | | | | | | | | | | | BLANK | 14 | | | | | | | |
| 15 | BLANK | | | | | | | | | | 0.00 | | | | | | | | | | | BLANK | 16 | | | | | | | |
| 17 | BLANK | | | | | | | | | | | 0.00 | | | | | | | | | | BLANK | 18 | | | | | | | |
| v15 - 01/25/2024 | | LOADS W/ NEC 220 DEMAND FACTORS (KVA) | | | | | | | TOTAL | | 14.98 | 14.98 | 9.98 | | | | | | | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 39.94 | CONNECTED KVA 39.94 | | | |
| DEMAND LOAD PHASE-A (KVA) | | 18.72 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 18.72 | CONTINUOUS:125% LOAD | | | | | | | | | | | | | | PANEL NOTES 1)IF PANEL EXISTING AND ACTUAL CONNECTED KVA ARE NOT KNOWN, ASSUMPTIONS ARE MADE AS: CONTINUOUS & NON-CONTINUOUS CONNECTED LOADS ASSUMED TO BE 80% OF THE OCP RATING. 2)DESIGN IS BASED ON NEC TABLE 310.15(B)(16) COPPER THHN CONDUCTORS, EXISTING CONDUCTORS, AND WIRING MAY NEED TO BE INSPECTED AND VERIFIED BY ELECTRICAL CONTRACTOR. 3)EVCS ARE CONSIDERED CONDUCTIVE LOADS AND ACTUAL NAME PLATE VALUES ARE USED. 4) ALL CONDUCTORS ON THE PANEL SCHEDULE ARE COPPER UNLESS OTHERWISE NOTED. 5) * - SMART CIRCUIT BREAKERS. | | | | | | | |
| DEMAND LOAD PHASE-B (KVA) | | 18.72 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 18.72 | RECEPTACLES:100% 15T 10 KW + 50% REMAINING | | | | | | | | | | | | | | | | | | | | | |
| DEMAND LOAD PHASE-C (KVA) | | 12.48 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 12.48 | HITCHEN:68% LOAD | | | | | | | | | | | | | | | | | | | | | |
| TOTAL DEMAND LOAD OF ALL PHASES (KVA) | | 49.92 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 49.92 | MISC:100% LOAD | | | | | | | | | | | | | | | | | | | | | |
| LARGEST DEMAND LOAD OF ANY PHASE (KVA) | | 18.72 | A/C or HEAT PUMP LOAD | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LARGEST DEMAND LOAD OF ANY PHASE (AMP) | | 156 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TOTAL DEMAND LOAD OF ALL PHASES (KVA) | | 49.92 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TOTAL DEMAND LOAD OF ALL PHASES (AMP) | | 156 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MINIMUM FEEDER AMPACITY SELECTION (AMP) | | 156 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |


The Tesla Universal Wall Connector is an efficient and convenient charging solution that lets you plug your electric vehicle in overnight and start your day fully charged. It is compatible with Tesla and non-Tesla electric vehicle models. It provides up to 48A of continuous current that offers 77 km or 44 miles of range per hour of charge. It is approved for indoor and outdoor installation. The Universal Wall Connector can support AC charging for vehicles with NACS or J1772 chargeports through the use of a J1772 adapter that docks into the side of the Wall Connector.



Tesla Wall Connector

2023-09-28

Performance

| | | |
|------------------------------|---|---|
| Performance Specifications | Part Numbers | 1734412-02-X; 1734412-03-X |
| | Nominal Voltage | 200-240 V L-L 1-phase |
| | Current | Maximum 48A (adjustable by installer) |
| | Grounding Scheme | TN/TT |
| | Frequency | 50/60 Hz |
| Compliance Information | Means of Disconnect | External branch circuit breaker |
| | Residual Current Detection | Integrated, CCID20 |
| | Connectors | NACS, J1772 |
| | Connectivity | Wi-Fi (2.4 GHz, 802.11b/g/n) |
| | Agency Approvals | cULus - E351001 |
| Environmental Specifications | Standards | UL 2594, UL 2231 |
| | Energy Star Certified (Applicable to U.S. only) |  |
| | Operating Temperature | -22°F to 122°F (-30°C to 50°C) |
| Mechanical Specifications | Storage Temperature | -40°F to 185°F (-40°C to 85°C) |
| | Enclosure Rating | Type 3R |
| | Wall Connector Dimensions | 13.6 in x 6.1 in x 5.9 in |
| Mechanical Specifications | Wire Box Bracket Dimensions (Weight (Including bracket)) | 9.8 in x 4.7 in x 3.5 in 15 lbs (6.8 kg) |
| | Cable Length | 1734412-02-X: 24 ft (7.3 m) 1734412-03-X: 13.1 ft. (4 m) |



Tesla Wall Connector

2023-09-28

PRODUCT DATA SHEET



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| DESIGNED BY: AC | CHECKED BY: DEE |

SHEET TITLE:

SINGLE LINE DIAGRAM, CALCULATION & DATA SHEET

SHEET NO.

EV04