

June 8, 2026

2025-CRW-1028

To: All Bidders of Record

Re: Addendum No. One (1)
Electric Charging Station
West Virginia International Yeager Airport (CRW)

Dear Bidders:

This Addendum is hereby made part of the Contract Documents for the above referenced Project. All other requirements of the original documents shall remain in effect in their respective order.

Bid Due Date: Thursday June 18th, 2026 at 2:00 PM EST **(REVISED)**

FRONT END SPECIFICATIONS

1.01 REPLACE Bid Forms with the new Bid Forms provided in this Addendum.

TECHNICAL SPECIFICATIONS

1.02 REVISE Specification WV-636

1.02.1 Delete Selection 1.8 Utility Coordination

1.03 ADD Specification X-2 (Miscellaneous Work Items) included in this Addendum.

CONSTRUCTION DRAWINGS

1.04 REVISE All Drawings

1.04.1 REVISE Total sheet count for project set reduced from 18 to 16

1.04.2 REVISE Sheet number to reflect changes in sheet count

1.05 REPLACE Drawing No. GI002 with new GI002 attached to this Addendum No. One (1)

1.05.1 REVISE Sheet Index to remove Sheet GC300 and CP300

1.05.2 REVISE Schedule of Quantities to reflect changes in ductbank installation

1.06 REMOVE Drawing No. GC300

1.07 REVISE Drawing No. CD100 with new CD100 attached to this Addendum No. One (1)

1.07.1 DELETE Site clearing and Asphalt pavement demolition crossing Eagle Mountain Road and parallel to Eagle Mountain Road



- 1.07.2 **ADD** Site clearing demolition to connect proposed equipment to existing equipment
- 1.08 **REPLACE** Drawing No. CP100 with new CP100 attached to this Addendum No. One (1)
- 1.08.1 **DELETE** 4Way-4" Ductbank crossing Eagle Mountain Road and parallel to Eagle Mountain Road.
- 1.08.2 **DELETE** 3'x3'x3' Handhole
- 1.08.3 **ADD** 4Way-4" Ductbank to connect proposed equipment to existing equipment
- 1.08.4 **REVISE** Equipment pad callout from "Proposed electrical meter and CT cabinet pad (6' x 6') to "Proposed electrical meter and transformer pad (6' x 6')"
- 1.08.5 **REVISE** Sheet Note 3 to include "Car Charger Dispenser" to list of equipment being provided by BETA
- 1.09 **REMOVE** Drawing No. CP300
- 1.10 **REPLACE** Drawing No. CE100 with new CE100 attached to this Addendum No. One (1)
- 1.10.1 **REMOVE** Silt Sock crossing Eagle Mountain Road
- 1.10.2 **REVISE** Silt Sock to properly protect new ductbank installation around proposed connection to existing utilities

BIDDERS QUESTIONS

- Q1.** Will the entirety of the 4 way-4" duct bank shown on CP100 that runs from the AEP transformer to the meter/CT pad be installed under this contract including the manhole?
- A1.** **The ductbank layout has been revised. The previously shown ductbank adjacent to the proposed Snow Removal Equipment (SRE) building and crossing Eagle Mountain Road has been removed by Addendum No.1. The contractor shall base its bid on the revised drawings included with Addendum No.1.**
- Q2.** If the manhole in question 1 is included in this contract, can you provide manhole details and answer who is to provide and install the manhole?
- A2.** **The manhole has been removed from the project. The previously shown manhole adjacent to the proposed Snow Removal Equipment (SRE) building has been removed by Addendum No.1. The contractor shall base its bid on the revised drawings included with Addendum No.1.**
- Q3.** Per drawing CP100, it shows that the SRE building would use the same duct bank and manhole, but the duct bank is only a 4 way-4" which is what is required for the EV charger MDP. Does two 4" conduits need to be added for the SRE project feed from the AEP transformer to the manhole?
- A3.** **There is no need for additional conduits as the ductbank layout has been revised. The previously shown ductbank adjacent to the proposed Snow Removal Equipment (SRE) building and crossing Eagle Mountain Road has been removed by Addendum No.1. The contractor shall base its bid on the revised drawings included with Addendum No.1.**

- Q4.** Are there specifications or details on the CT cabinet/meter rack (size, type, pad or rack mount, etc.) and who is to furnish it?
- A4.** The meter and transformer will be provided and installed by Appalachian Power Company (AEP). The Contractor shall provide the ductbanks, transformer pad, sweeps, trenching, backfill, restoration, and AEP coordination as shown and specified. Any CT cabinet required by AEP shall be furnished and installed by AEP or handled through the utility service work/allowance and shall not be a separate Contractor-furnished bid item.
- Q5.** Who is supplying the primary conduits from the AEP pole to the AEP primary transformer and if by contractor can you provide details?
- A5.** AEP will provide the cables that will connect the primary power to the new transformer. The Contractor shall provide the ductbanks, transformer pad, sweeps, trenching, backfill, restoration, and AEP coordination as shown and specified.
- Q6.** Can you provide details, specifications, and a location (how far from MDP pad) of Hand Hole HH1?
- A6.** The manhole has been removed from the project. The previously shown manhole adjacent to the proposed Snow Removal Equipment (SRE) building has been removed by Addendum No.1. The contractor shall base its bid on the revised drawings included with Addendum No.1.
- Q7.** Is there specifications on the fiber shown on drawing E200?
- A7.** Refer to key note 1 on E200 wire diagram for fiber specifications. The contractor shall furnish and install all fiber/communications cabling, terminations, testing and coordination required between equipment unless specifically noted as furnished by BETA.
- Q8.** Would like to verify that type XHHW insulated wire required for all associated EV charger circuits C feeders per E002?
- A8.** Correct, XHHW insulated wire is required
- Q9.** Can you provide submittal information/cut sheets on Beta Technologies provided equipment? (chargers, MDP, panelboards, etc.)
- A9.** Yes. The information/cut sheets have been included in this addendum. See Attachment 5 of this Addendum for the information/cut sheets associated with all of the items to be provided by BETA.
- Q10.** The service feeders from the primary transformer to the 1200A MDP are shown as four sets that have a #1/0 ground in parallel. Should this be changed to a #3/0 ground based on service ground requirements for 1200A per NEC?
- A10.** Yes, update #1/0 ground to #3/0 ground.



Q11. Is the #6 ground wire above the duct bank to be grounded at each terminal end via ground rods?

A11. The duct banks should be grounded at each terminal end via grounding rods.

Q12. Can you provide service C charger equipment details and requirements for each pad location?

A12. See Attachment 5 of this Addendum for the information/cut sheets associated with all of the items to be provided by BETA.

The pad requirements are shown on Sheet S100.

Q13. Could you please confirm the exact equipment that will be provided by the supplier?

A13. The supplier will provide the following items: Charging Cube, Mini-Charging Cube, Power Tower, Panel Board and Car Charger Dispenser. The list included on Note 3 of Sheet CP100 has been updated and included in this addendum.

See Attachment 5 of this Addendum for the information/cut sheets associated with all of the items to be provided by BETA.

Q14. Can we electronically submit our bids? And if so, who or where do we submit our bids to?

A14. Hard copies of the bids shall be submitted as described in Division 2 – Instruction to Bidders.

Q15. Is there a 5% bid bond required for this project?

A15. Yes. The 5% bid bond is outlined in the Invitation to Bid included in the Front End specifications.

Q16. Is there a bid form we must fill out, or can we use our own proposal?

A16. Please use the bid forms provided in Division 3 of the Front End Specifications. Use the updated Bid Forms included with this Addendum.

Proposals submitted under any other format will not be considered.

Q17. Who is supplying the CT Cabinet?

A17. Any CT cabinet required by AEP shall be furnished and installed by AEP or handled through the utility service work/allowance and shall not be a separate Contractor-furnished bid item.

Q18. Who is supplying the 1200 amp MDP?

A18. BETA will be providing the 1200 amp MDP.



- Q19.** We assume Beta Cube and level 2 dispenser will be provided by owner.
- A19.** The supplier will provide the following items: Charging Cube, Mini-Charging Cube, Power Tower, Panel Board and Car Charger Dispenser. The list included on Note 3 of Sheet CP100 has been updated and included in this addendum.
- Q20.** What is the conduit and conductor size/quality from MDP to dispenser.
- A20.** Refer to the single line diagram on sheet E200 and the Feeder ID schedule on sheet E001 for specific conduit and conductor sizes/quantities.
- Q21.** Are conductors Aluminum or copper? Plans do not indicate.
- A21.** Conductors shall be copper. Refer to Feeder ID Schedules on sheet E001 and specification section 2.2 on sheet E002 for more information.
- Q22.** Temporary Low Profile barricades will be proficient in all cone areas correct?
- A22.** Temporary Low Profile barricades **MUST** be used airside. The contractor may elect to utilize them landside as well.

MISCELLANEOUS

- M1.** The Pre-Bid Meeting Minutes (attendees list included) and Pre-Bid Power Point are included with this Addendum.
- M2.** Notice to Proceed date is anticipated to be August 2026.
- M3.** Please acknowledge receipt of this Addendum at the appropriate space on the Proposal Form. This Addendum shall also become part of the Project Manual for this Contract.
- M4.** All other provisions of these Specifications and Contract Documents shall remain unchanged and in full effect.

LIST OF ATTACHMENTS

1. Pre-Bid Meeting Minutes/Attendance Sheet/Pre-Bid PowerPoint/Pre-Bid Agenda (24 pages)
2. Bid Forms (1 page)
3. Specification X-2 (1 page)
4. Drawings No. GI002, CD100, CP100, CE100 (4 pages)
5. BETA Information/Cut Sheets (156 pages)

– END OF ADDENDUM NO. ONE (1) –

All Bidders
June 8, 2026



If you should have any questions regarding this matter, please do not hesitate to contact our office.

Sincerely,

A handwritten signature in blue ink, appearing to read "Rebecca McDonald", with a long horizontal flourish extending to the right.

Rebecca McDonald, PE
Project Engineer

RM

Cc: West Virginia International Yeager Airport (CRW)

P:\Airport\CRW\Projects\2025-1028 Beta Design\Non-CAD\9_Bidding\Addenda\Addendum No. 1\2026_06_05 Addendum No. 1 - CRW Electric Charging Stations.docx

All Bidders
June 8, 2026



ATTACHMENT NO. 1



WEST VIRGINIA INTERNATIONAL YEAGER AIRPORT MAINTENANCE BUILDING RELOCATION

PRE-BID MEETING MINUTES

Held on: May 27, 2026, at 3:30 PM in Airport Conference Room

1. Introductions

- **Bids due:** Monday, June 15, 2026, no later than 2:30 P.M in West Virginia Yeager International Airport, Terminal Building, Executive Conference Room, 100 Airport Road, Suite 175, Charleston, WV 25311. Bids will be opened and read aloud right after.
- **Plan Deposit:** No deposit required. Electronic bid documents available through download. Send request via email to RMcDonald@adci-corp.com.
- **Questions due:** 5:00 P.M. (EDT/EST), Wednesday, June 3, 2026. Submit all questions to RMcDonald@adci-corp.com utilizing Bid Question Form in Division 2 Page 16.

2. Contract Requirements:

- **Wage Rates:**
As the project is federally funded, Davis-Bacon prevailing wage rates apply. Division 1 of the project manual.
- **Award:**
Award of contract will be based on the lowest responsive and responsible bid that is in the best interest of the airport based on available funding.
- **DBE Requirements:**
 - a. DBE Requirement for this project is 0.00%.
- **Liquidated Damages for Exceeding Contract Time**
 - a. \$500 per calendar day (or part thereof) beyond project completion.



WEST VIRGINIA INTERNATIONAL YEAGER AIRPORT MAINTENANCE BUILDING RELOCATION

PRE-BID MEETING MINUTES

Held on: May 27, 2026, at 3:30 PM in Airport Conference Room

3. Project Location

The project is across Eagle Mountain Road from the Snow Removal Equipment (SRE) Building Project. The Charging Station project is directly adjacent to the Marshall Flight School building and parking lot.

Airfield access for the installation of the temporary AOA fence and final pavement marking shall be along Eagle Mountain Road. The access gate is referred to as Gate 16, across the road from the proposed SRE building as shown on project plans.

4. Civil Scope

- **Landside:**

The scope of work for the landside portion of the project includes the following items:

- Erosion and Sediment Control Measures
- Excavation for Ductbanks
- Backfill and Site Restoration
- Demolition of Asphalt Pavement
- Maintenance of Traffic
- Installation of Equipment Pads
- Temporary Fence Removal

A majority of ductbank that will be installed under this project is within grassy areas, where material will be required to be stockpiled and/or stabilized same day if work within the trench has not been completed by the end of the work day. The portion of this project that will require asphalt pavement demolition will utilize maintenance of traffic measures, designed to allow one way traffic through Eagle Mountain Road along the work area.

- **Airside**

The scope of work for the airside portion of the project includes the following items:

- Temporary AOA Fence Installation
- Permanent Pavement Marking



WEST VIRGINIA INTERNATIONAL YEAGER AIRPORT MAINTENANCE BUILDING RELOCATION

PRE-BID MEETING MINUTES

Held on: May 27, 2026, at 3:30 PM in Airport Conference Room

The temporary AOA fence will be required to be installed prior to the removal of the existing AOA fence that allows full landside access to all work items under this project.

5. Electrical Scope

The full scope of electrical work shall be landside for this project through the usage of the temporary AOA fence installation. The scope of electrical work for this project includes the following items:

- Electrical conduit/ductbank installation
- Pulling/Installing wire through all conduit and ductbanks
- Setting and anchoring equipment on pads
- Termination of all connections within equipment

All equipment (Charging Cube, Mini-Charging Cube, Power Tower, and Panel Board) will be provided to the contractor by BETA. The contractor will be responsible for unloading the equipment and installing it on the pads. The contractor **will not** be responsible for commissioning the equipment. BETA will commission the equipment after all necessary electrical items are terminated within the equipment and necessary connections to existing power infrastructure are made.

6. Coordination with Utility Company

The proposed ductbank under this project will connect to a transformer installed and managed by Appalachian Power Company (AEP). The contact information for AEP is provided on the civil site plan for any coordination needed regarding connection to existing transformers.

7. Construction Safety and Phasing

The construction safety and phasing plan details requirements for the project, including but not limited to the procedure for temporary AOA fence installation, closures of the surrounding area to perform work, as well as providing the necessary details to accompany the closures.



WEST VIRGINIA INTERNATIONAL YEAGER AIRPORT MAINTENANCE BUILDING RELOCATION

PRE-BID MEETING MINUTES

Held on: May 27, 2026, at 3:30 PM in Airport Conference Room

For any work airside, the contractor shall utilize low profile construction barricades to delineate the work area. Barricades will be removed at the end of every work day.

For the landside work, a maximum of 2 parking spaces is anticipated to be closed to complete the work. Construction traffic cones shall be used landside to demark the project area.

8. Temporary AOA Fence

The temporary AOA fence shall be installed and connected to the existing fence. The existing fence may not be removed until the temporary AOA fence is in place. The temporary AOA fence cannot be removed until the existing fence has been repaired/reinstalled.

9. Maintenance of Traffic

To install the ductbank across Eagle Mountain Road, the contractor will be required to perform maintenance of traffic to allow vehicles to still use the roadway while installing the ductbank. The contractor shall perform the work across the road in two segments, allowing one lane of traffic to pass the work area. All cones or barricades shall end before any parking lot entrances, airfield gates, or building entrances.

10. Addendum

- Addenda will be emailed to all who are registered plan holders. All Addenda sent to Bidders will become a part of the Contract Documents.
- Bidder acknowledges receipt of the Bulletins or Addendum(s) in Division 3 page 19, make sure this is completed. Bidder shall list the number and issuing dates of the Bulletins or Addendum(s) received.

11. Questions

Q: Is BETA providing the level 2 car charger, or is that still being installed?

A: ADCI will confirm. Please submit the question in writing.



**WEST VIRGINIA INTERNATIONAL YEAGER AIRPORT
MAINTENANCE BUILDING RELOCATION**

PRE-BID MEETING MINUTES

Held on: May 27, 2026, at 3:30 PM in Airport Conference Room



Meeting Attendance Record

Airport: West Virginia International Yeager Airport (CRW)

Project: Electric Charging Stations

Subject: Pre-Bid Meeting

Project No. 2025-1028

Meeting Date: May 26, 2026

Meeting Time: 3:30 PM

Name	Representing	Office/Mobile Phone	Email	Present
Rebecca McDonald	ADCI (Airport Design Consultants, Inc.)	410-465-9600	rmcdonald@adci-corp.com	☒ Virtual Attendance
Mike Waibul	ADCI (Airport Design Consultants, Inc.)	410-465-9600	mwaibul@adci-corp.com	☒ Virtual Attendance
Keith Fritz	ADCI (Airport Design Consultants, Inc.)	410-465-9600	kfritz@adci-corp.com	☒ Virtual Attendance
Kyle Kirby	ADCI (Airport Design Consultants, Inc.)	410-465-9600	kkirby@adci-corp.com	☒ Virtual Attendance
Sravya Velupula	ADCI (Airport Design Consultants, Inc.)	410-465-9600	svelupula@adci-corp.com	☒ Virtual Attendance
Amanda Pizza	ADCI (Airport Design Consultants, Inc.)	410-465-9600	apizza@adci-corp.com	☒ Virtual Attendance
Keri Dunn	Grae-Con Construction	740-373-0849	kdunn@graecon.com	☒ Virtual Attendance
Aaron Nelson	Osborne Construction	875-260-4198	aaron@osbornecon.com	☒ Virtual Attendance





Meeting Attendance Record

Airport: West Virginia International Yeager Airport (CRW)
Project: Electric Charging Stations
Subject: Pre-Bid Meeting

Project No. 2025-1028
Meeting Date: May 26, 2026
Meeting Time: 3:30 PM

Name	Representing	Office/Mobile Phone	Email	Present
Niles Stein	Osborne Construction		Nstein@osbornecm.com	☒ Virtual Attendance
Michael Snyder	Landcore Builders	304-437-9384	msnyder@landcorebuilders.com	☒ Virtual Attendance
				☐ Virtual Attendance
				☐ Virtual Attendance
				☐ Virtual Attendance
				☐ Virtual Attendance
				☐ Virtual Attendance
				☐ Virtual Attendance





Meeting Attendance Record

Airport: West Virginia International Yeager Airport (CRW)
 Project: Electric Charging Stations
 Subject: Pre-Bid Meeting

Project No. 2025-1028
 Meeting Date: May 26, 2026
 Meeting Time: 3:30 PM

Name	Representing	Office/Mobile Phone	Email	Present
Rob Whittington	ADCI	(681) 317-3160	rwhittington@adci-corp.com	☐ Virtual Attendance
Andrew Gurdue	CRW	304 348 8033 304	andrew@flycrw.com	☐ Virtual Attendance
Brian Christman	Hatzel & Buehler	207-4558	b.christman@hatzelandbuehler.com	☐ Virtual Attendance
Tanner Baxter	March-Ustin Company	304-942-7096	Tanner@MarchUstin.com	☐ Virtual Attendance
Lane Ashley	Burdette Electric Inc	304-984-0123	jstowers@burdette-electric.com	☐ Virtual Attendance
Christian Wells	BPI, Inc.	(304) 760-8909	cwells@bpi-gc.com	☐ Virtual Attendance
Vadym Kazarov	Persinger & Associates	304-531-2777	will@PersingerandAssociates.com	☐ Virtual Attendance
Joe Belcher	CRW	304-952-3986	jbelcher@flycrw.com	☐ Virtual Attendance



Meeting Attendance Record

Airport: West Virginia International Yeager Airport (CRW)
 Project: Electric Charging Stations
 Subject: Pre-Bid Meeting

Project No. 2025-1028
 Meeting Date: May 26, 2026
 Meeting Time: 3:30 PM

Name	Representing	Office/Mobile Phone	Email	Present
Jeremy Smith	UCCI	304-857-1051	JSmith@ucciv.com	☐ Virtual Attendance
Ryan Sparks	Progressive Electric	(971) 230-8921	RSparks@wevire.com	☐ Virtual Attendance
JAMES Mann	Gunday Enterprises	304-437-1974	Gunday138@gmail.com	☐ Virtual Attendance
J.R. Caldwell	CRW	304-881-2223	JRC@FlyCRW.com	☐ Virtual Attendance
Geoff Henton	Progressive Electric	304-345-1253	ghenton@wevire.com	☐ Virtual Attendance
				☐ Virtual Attendance
				☐ Virtual Attendance



West Virginia International Yeager Airport (CRW) Electric Charging Stations Prebid Meeting

May 26, 2026



Agenda

- Contract Requirements
- General Project Layout
- Civil Overview
- Electrical Overview
- Electrical Ductbank Overview
- Overall Construction Phasing/Schedule
- Questions



Contract Requirements

- Davis Bacon
- Bid Bond
 - 5%
- Liquidated Damages
 - \$500/day
- DBE Requirement
 - 0.0%





General Project Layout



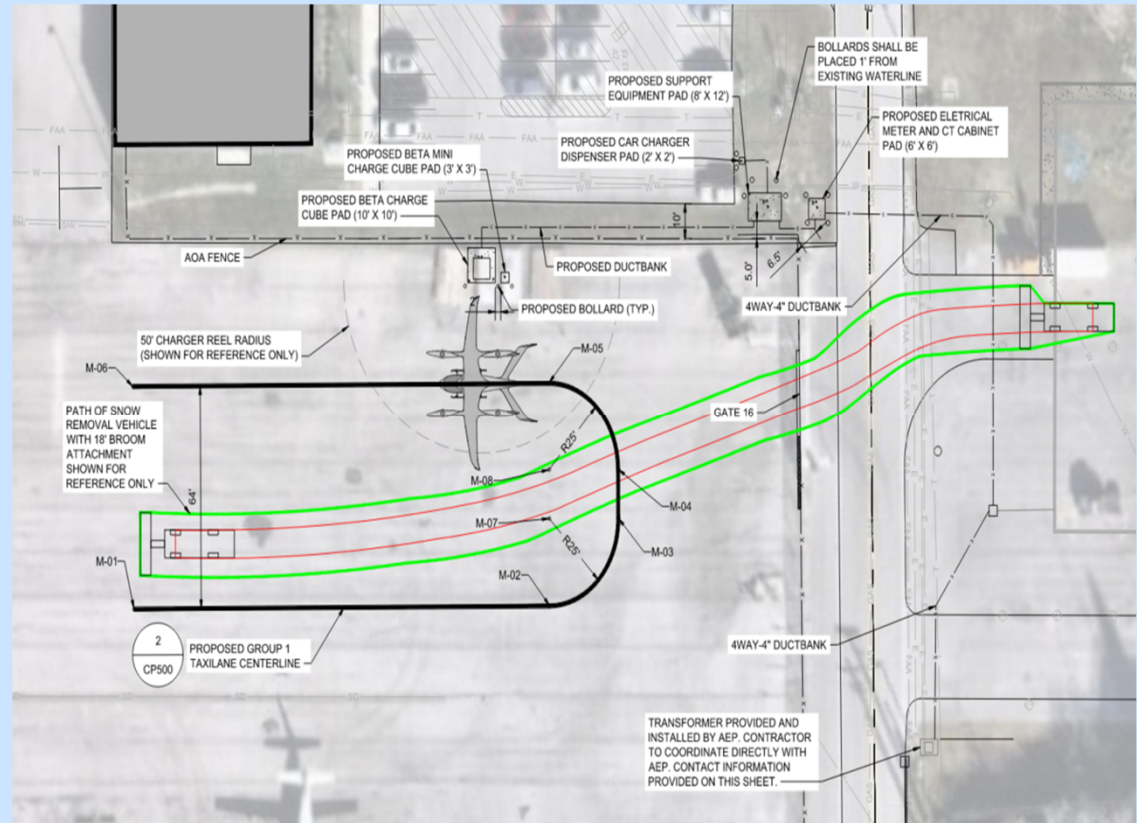
Civil Overview

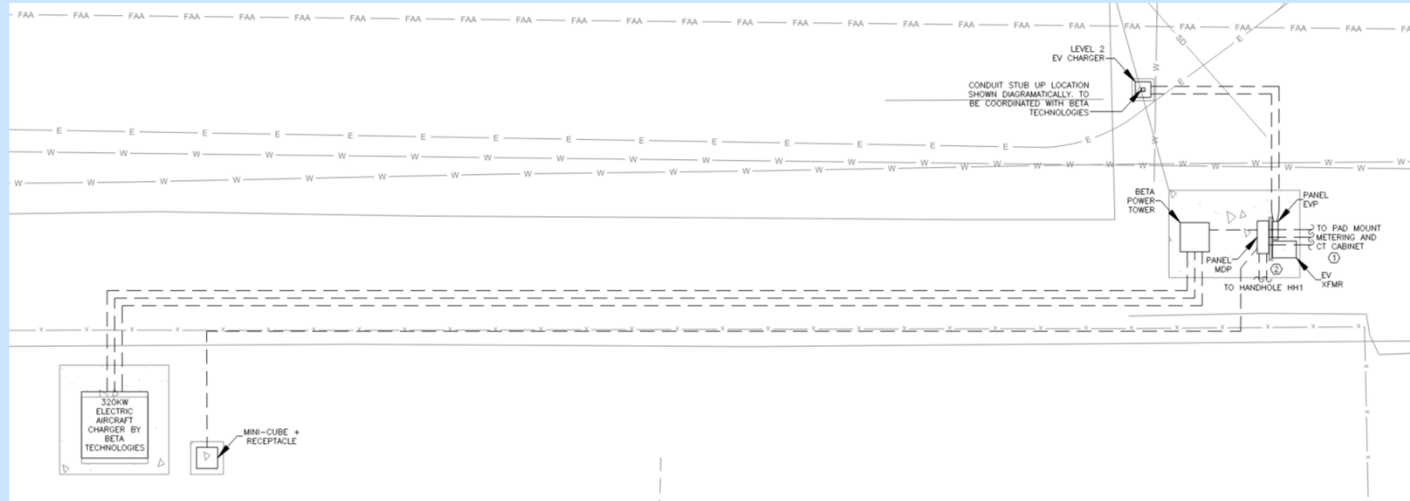
- LANDSIDE:

- INSTALL EROSION AND SEDIMENT CONTROL DEVICES
- DIG TRENCHES FOR PROPOSED DUCTBANKS
- INSTALL CONCRETE EQUIPMENT PADS
- INSTALL BOLLARDS TO PROTECT EQUIPMENT AND EQUIPMENT PADS

- AIRSIDE

- PAVEMENT MARKING
- TEMPORARY AOA FENCE CONSTRUCTION





• CONTRACTOR:

- INSTALL DUCTBANK AND CONDUIT
- INSTALL CABLE
- COMPLETE CONNECTIONS
- BETA EQUIPMENT: UNLOAD, SETTING AND ANCHORING ON CONCRETE PADS, TERMINATE ALL CONNECTIONS

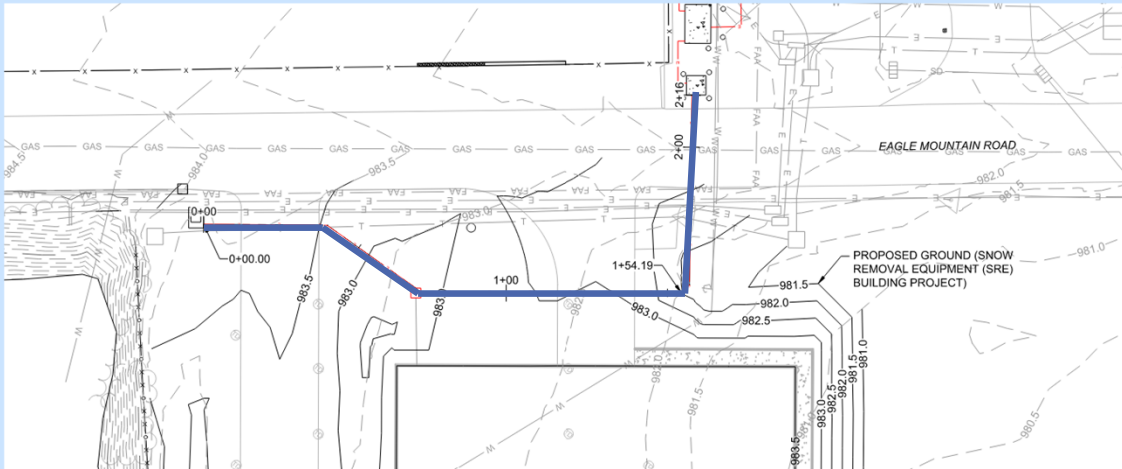
• BETA

- PROVIDE EQUIPMENT (CHARGING CUBE, MINI CHARGING CUBE, POWER TOWER AND PANEL BOARD)
- COMMISSION EQUIPMENT

Electrical Overview



Electrical Ductbank Overview



- PROPOSED UTILITY DUCTBANK:

- 4WAY-4" DUCTBANK
- 3X3X3 HANDHOLE
- CROSSES EAGLE MOUNTAIN ROAD
- FOLLOWS PARALLEL TO EAGLE MOUNTAIN ROAD TO CONNECT TO EXISTING TRANSFORMER
- TRANSFORMER FOR CONNECTION INSTALLED BY OTHERS
- CONDUITS SHALL BE IN SINGLE LINE ABOVE ALL UTILITY CROSSINGS

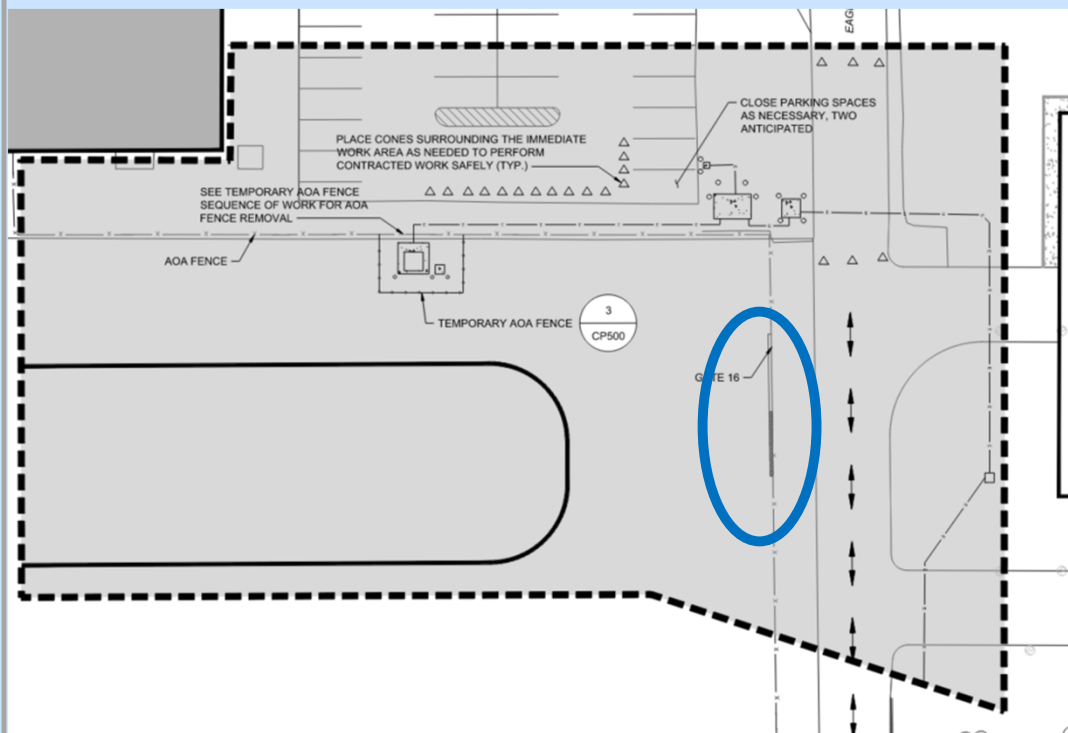
- TRANSFORMER & METER

- TO BE PROVIDED AND INSTALLED BY AEP. CONTRACTOR TO COORDINATE WITH AEP.
- TRANSFORMER AND METER ARE AT NO COST TO THE CONTRACTOR

- COORDINATE WITH SRE PROJECT



Construction Safety and Phasing



- CONSTRUCTION DURATION

- 30 CONCURRENT CALENDAR DAYS

- LANDSIDE IMPACTS

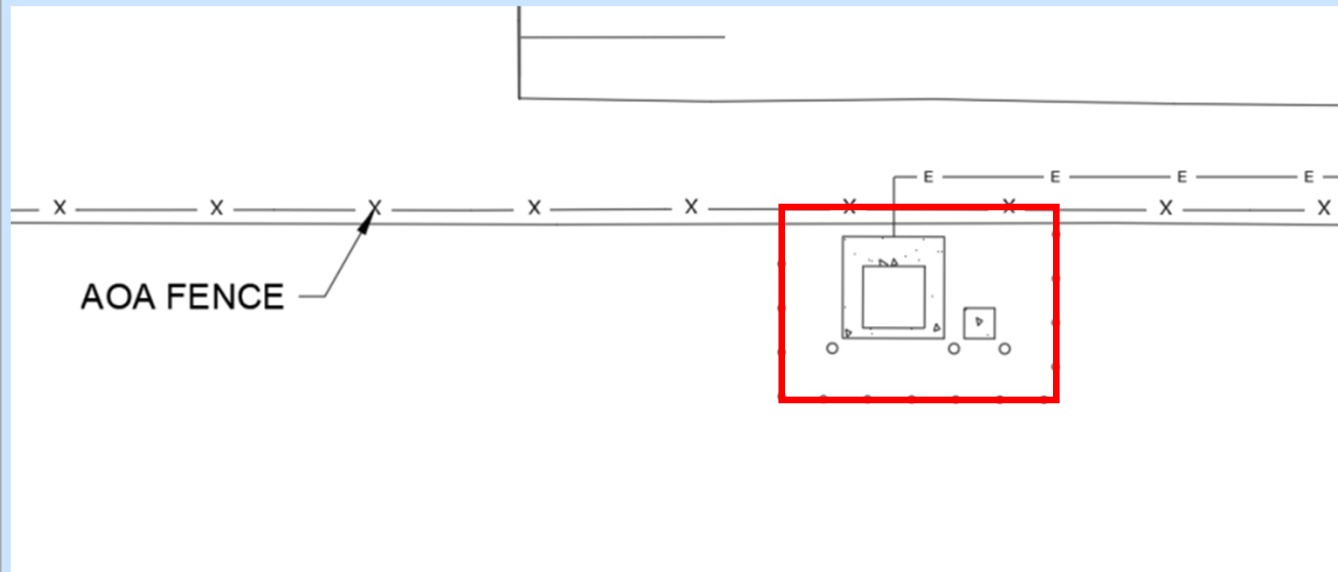
- CONSTRUCTION TRAFFIC ON PUBLIC ACCESS ROADS
- COORDINATION WITH MARSHALL UNIVERSITY REQUIRED FOR WORK ADJACENT TO THE PARKING LOT

- AIRSIDE IMPACTS

- LOW PROFILE BARRICADES TO DELINEATE THE AREA
- TEMPORARY AOA FENCE



Temporary AOA Fence

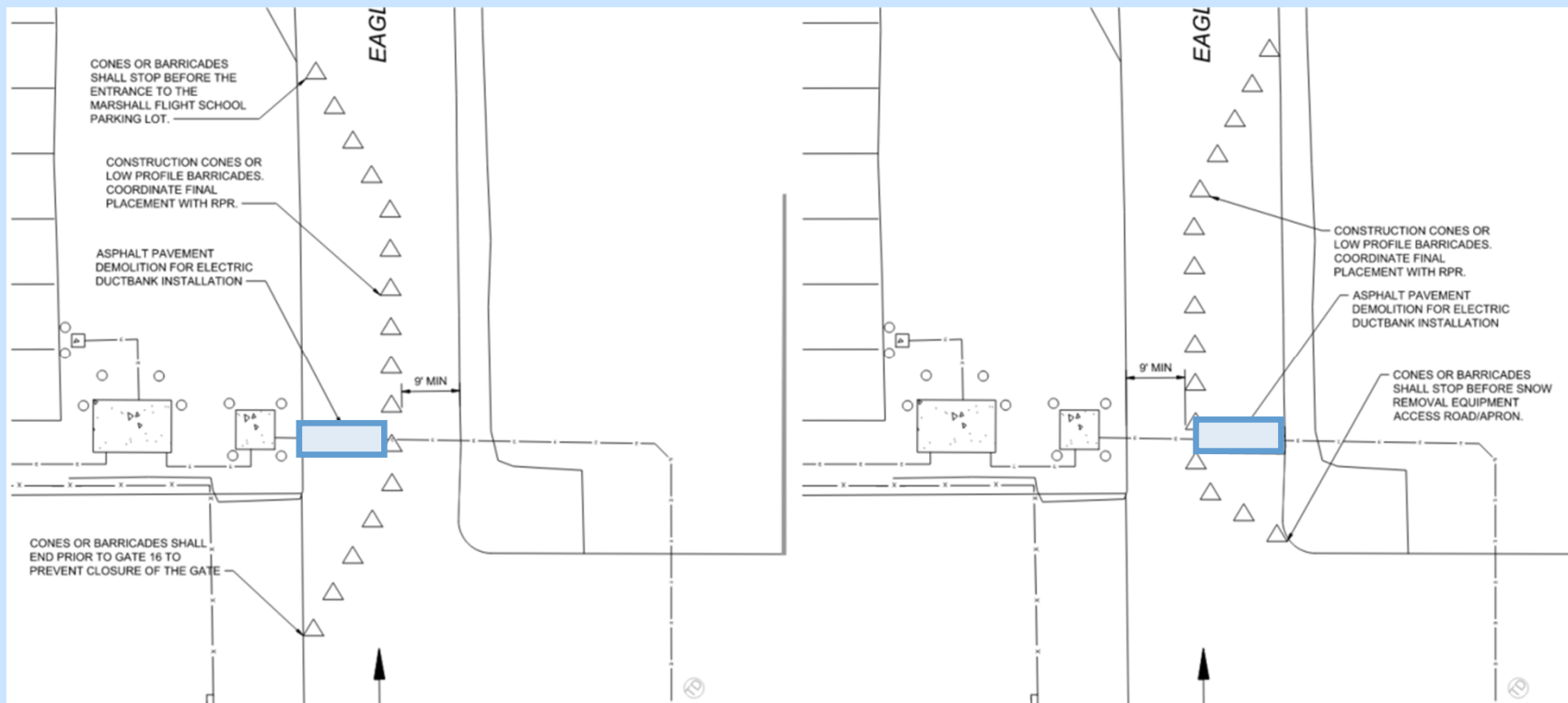


TEMPORARY AOA FENCE SEQUENCE OF WORK:

1. TEMPORARY FENCE SHALL BE INSTALLED AND CONNECTED TO THE EXISTING FENCE. THE LIMITS OF THE TEMPORARY FENCE SHALL ALIGN WITH EXISTING POSTS IN THE FENCE.
2. TEMPORARY REMOVAL OF THE EXISTING FENCE CANNOT BEGIN UNTIL THE TEMPORARY FENCE HAS BEEN INSTALLED COMPLETELY AND DEEMED ACCEPTABLE BY THE AIRPORT.
3. THE TEMPORARY AOA FENCE CANNOT BE REMOVED UNTIL AFTER THE EXISTING FENCE HAS BEEN REPAIRED/REINSTALLED AND DEEMED ACCEPTABLE BY THE AIRPORT. SEE DETAIL 5 ON SHEET CP500 FOR AOA FENCE CONNECTION DETAILS.



Eagle Mountain Road Maintenance of Traffic



**Questions – Shall be Submitted
electronically to RMcDonald@adci-corp.com**





WEST VIRGINIA INTERNATIONAL YEAGER AIRPORT ELECTRIC CHARGING STATIONS

PRE-BID MEETING AGENDA

May 26, 2026 at 3:30 PM

1. Introductions

- **Bids due:** Monday, June 15, 2026, no later than 2:30 P.M in West Virginia Yeager International Airport, Terminal Building, Executive Conference Room, 100 Airport Road, Suite 175, Charleston, WV 25311. Bids will be opened and read aloud right after.
- **Plan Deposit:** No deposit required. Electronic bid documents available through download. Send request via email to RMcDonald@adci-corp.com.
- **Questions due:** 5:00 P.M. (EDT/EST), Wednesday, June 3, 2026. Submit all questions to RMcDonald@adci-corp.com utilizing Bid Question Form in Division 2 Page 16.

2. Scope of Work

The project includes the placement, connection, and commissioning of the proposed electrical charging utilities and all support equipment. The connection and commissioning will include the installation of electrical conduits/ductbanks, connection to existing electrical utilities, and all site work related to these activities.

The major work components include:

- Installing Erosion and Sediment Control Measures
- Clear the existing site
- Complete Excavation
- Install Proposed Electrical Utilities
- Install Proposed Equipment Pads
- Connect Electrical Utilities to Equipment Pads
- Energize Installed Equipment
- Seed and mulch disturbed areas

BETA will provide the equipment (Charging Cube, mini charging cube, power tower and panel board). The contractor will be responsible for unloading equipment, setting and



WEST VIRGINIA INTERNATIONAL YEAGER AIRPORT ELECTRIC CHARGING STATIONS

PRE-BID MEETING AGENDA

May 26, 2026 at 3:30 PM

anchoring it, terminating all electrical/comm/grounding wires within the equipment and coordination with the local AHJ. BETA will commission the items.

The contractor will coordinate with BETA on dates for shipping and commissioning.

3. Security Requirements

- Temporary AOA fence
 - a. A proposed temporary fence will be installed on the airfield to allow 24-hour, landside access to proposed charging cube pads to make work easier
- Low Profile Barricades (Airside)
- Maintenance of Traffic
 - a. Electrical ductbank crossing eagle mountain will be installed in 2 parts, each consisting of half of the roadway.

4. Construction Schedule & Phasing

- 30 Calendar Days
- Coordination with Marshall University is required

5. Contract Requirements:

- **Contact duration:**
 - a. 30 Consecutive Calendar Days
- **Wage Rates:**

Davis-Bacon prevailing wage rates apply. Division 1 of the project manual.
- **Award:**

Award of contract will be based the lowest responsive and responsible bid that is in the best interest of the airport based on available funding.
- **Bonding & Insurance Requirements:**



WEST VIRGINIA INTERNATIONAL YEAGER AIRPORT ELECTRIC CHARGING STATIONS

PRE-BID MEETING AGENDA

May 26, 2026 at 3:30 PM

- a. Bid Bond shall be 5% of the contractor's base bid amount.
- b. Payment/Performance Bonds will be required of the successful low bidder in the full amount of the contract.
- c. The successful bidder shall maintain and provide proof of insurance coverage for the duration of the contract that protects the Owner from any and all liabilities. The successful bidder shall provide evidence of insurance for Workers' Compensation & Employer's Liability, West Virginia Deliberate Intent Coverage (West Virginia Code Section 23-4-2, et. seq.), General Liability, automobile liability, and Umbrella / Excess coverage.

- **Liquidated Damages for Exceeding Contract Time**

- a. \$500 per calendar day (or part thereof) beyond project completion.

6. Instructions to Bidders

- Bid proposals shall be labeled as follows and hand carried, during normal business hours, or sent by mail to:
CWVRAA
100 Airport Rd
Suite 175
Charleston, WV 25311
Subject: Electric Charging Stations
- One (1) separate copy of the Form of Proposal (Division 3) will be furnished as loose pdf with final addendum for the use of the Bidder. One (1) original and one (1) copy shall be submitted with the bid. Bid proposals shall contain forms and certifications included with Division 3. The original proposal submitted must be properly signed. No proposal will be considered which is submitted otherwise than upon the Form of Proposal or an exact copy thereof. One electronic copy (pdf) of the bid proposal shall also be submitted.
- One (1) duly executed copy of the Bid Bond (Division 4) must be submitted with the bid unless a proper guarantee check is submitted.

7. Addendum



**WEST VIRGINIA INTERNATIONAL YEAGER AIRPORT
ELECTRIC CHARGING STATIONS**

PRE-BID MEETING AGENDA

May 26, 2026 at 3:30 PM

- Addenda will be emailed to all who are registered plan holders. All Addenda sent to Bidders will become a part of the Contract Documents.
- Bidder acknowledges receipt of the Bulletins or Addendum(s) in Division 3 page 19, make sure this is completed. Bidder shall list the number and issuing dates of the Bulletins or Addendum(s) received.

8. Division 5 – Agreement

9. Division 6 Contract Bonds

- The "Contract Bond" form shall be used for all contracts. There shall be no deviation from this form.
- The Contract bond shall consist of two (2) parts. Part "A" shall be in sum equal to one hundred (100) percent of the amount of the contract awarded for faithful performance. Part "B" shall be in sum equal to one hundred (100) percent of the Amount of the contract awarded for payment of labor and material.
- The bond shall be executed by a company licensed to do business in the State in which the project is located.

10. Division 7G General Provisions

11. Division 7S Special Provisions

12. Division 8 Regulations

13. Division 9 Supplementary Conditions

14. Division 10 – Technical Specifications

15. Appendix A – Geotechnical Report

16. Questions

All Bidders
June 8, 2026



ATTACHMENT NO. 2

Electric Charging Stations

BASE BID					
BID ITEM NO.	DESCRIPTION	UNIT	APPROX. QUANTITY	UNIT PRICE WRITTEN	TOTAL PRICE
1	SITE WORK, RESTORATION AND CIVIL IMPROVEMENTS	LS	1	\$	\$
2	CONCRETE PADS	LS	1	\$	\$
3	ELECTRICAL WORK	LS	1	\$	\$
4	TEMPORARY CONSTRUCTION ITEMS	LS	1	\$	\$
5	MOBILIZATION/DEMOBILIZATION	LS	1	\$	\$
6	SECURITY REQUIREMENTS DURING CONSTRUCTION	LS	1	\$	\$
7	Utility Management and Construction Allowance (Electrical)	ALLOW	1	\$60,000.00	\$60,000.00
BASE BID TOTAL (Total of 1 through 7)	_____Dollars				\$

All Bidders
June 8, 2026



ATTACHMENT NO. 3

Item X-2 MISCELLANEOUS WORK ITEMS

DESCRIPTION

- 1.1 This section shall consist of items required by the Contract Documents for Miscellaneous Work Items.

REQUIREMENTS

2.1 BUILDING PERMITS

- a. Building permits will be the responsibility of the contractor. The contractor shall coordinate with the airport for their assistance in obtaining the building permits.

2.2 UTILITY ALLOWANCE

a. **ELECTRICAL**

- i. Coordination with Appalachian Power (AEP).

1. AEP will begin construction a minimum of 60 days following receipt of payment for inspections, equipment and construction.

- ii. The contractor shall pay all fees to establish new electrical service, inspections and construction of AEP items.

- iii. The contractor will install all ductbanks, the concrete pad for the transformer and long sweep 90 degree elbows by the primary enclosure

1. AEP will provide the requirements for the concrete pad

2. Ductbank installation will include trenching and backfilling.

- iv. AEP will install the transformer, meter, cable and other items as discussed and shown on the plans.

Utility contact information is shown on the plans.

METHOD OF MEASUREMENT

No direct measurement will be made for utility allowance as this payment will be made as an allowance.

No direct measurement will be made for the building permit and related items.

BASIS OF PAYMENT

No direct measurement will be made for utility allowance as this payment will be made as an allowance.

No direct measurement will be made for the building permit and related items.

Payment will be made under:

- | | |
|--------|---|
| Item 7 | Utility Management and Construction Allowance (Electrical)– per allowance |
|--------|---|

All Bidders
June 8, 2026



ATTACHMENT NO. 4

DRAWING INDEX		
NO.	SHEET NUMBER	SHEET TITLE
GENERAL		
1	GI001	COVER SHEET
2	GI002	DRAWING INDEX AND SCHEDULE OF QUANTITIES
3	GI003	CONSTRUCTION AND SAFETY NOTES
4	GC100	GENERAL PROJECT LAYOUT AND SURVEY CONTROL
5	GC101	MAXIMUM EQUIPMENT HEIGHT PLAN
6	GC200	CONSTRUCTION SAFETY PHASING PLAN AND DETAILS
CIVIL		
7	CD100	EXISTING CONDITIONS AND DEMOLITION PLAN
8	CP100	CIVIL SITE PLAN
9	CP500	CIVIL DETAILS
10	BL100	BORING LOCATION AND BORING LOG PLAN
11	CE100	EROSION AND SEDIMENT CONTROL PLAN AND DETAILS
STRUCTURAL		
12	S100	STRUCTURAL NOTES & DETAILS
ELECTRICAL		
13	E001	ELECTRICAL SYMBOLS AND ABBREVIATIONS
14	E002	ELECTRICAL SPECIFICATIONS
15	E100	ELECTRICAL NEW WORK PLAN
16	E200	ELECTRICAL DIAGRAMS

ESTIMATED QUANTITY SUMMARY TABLE (FOR INFORMATION ONLY)			
SPEC NO.	DESCRIPTION	UNIT	EST. QUANTITY
024119	ASPHALT PAVEMENT DEMOLITION	SY	30
024119	SITE CLEARING AND PREPARATION	SY	120
342100	BOLLARDS	EA	11
642001	18-INCH SILT SOCK	LF	160
642001	FILTER BAG	EA	2
651001	PLACING STOCKPILED TOPSOIL	CY	10
652003	SEED MIXTURES, TYPE L	LBS	5
P-620	PERMANENT PAVEMENT MARKING - WATERBORNE	SF	1000
F-162	CHAIN-LINK FENCE	LF	30
033000	CONCRETE PADS	LS	1
260000	ELECTRICAL WORK	LS	1
L-110	4WAY-4" PVC DUCTBANK IN UNPAVED AREAS	LF	30
L-115	3X3X3 HANDHOLE	EA	1
X-2	UTILITY MANAGEMENT AND CONSTRUCTION ALLOWANCE (WATER)	ALLOW	1

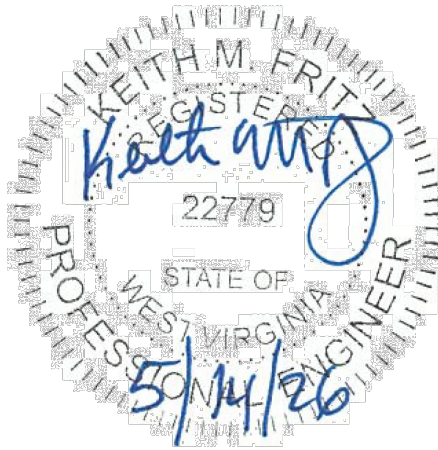
NOTES:

1. ESTIMATED QUANTITIES ARE PROVIDED FOR INFORMATION ONLY AND ARE NOT PAY QUANTITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INDEPENDENT QUANTITY TAKEOFF. PAYMENT SHALL BE MADE IN ACCORDANCE WITH THE LUMP SUM BID ITEMS IN THE PROPOSAL.



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Charleston, WV 25311

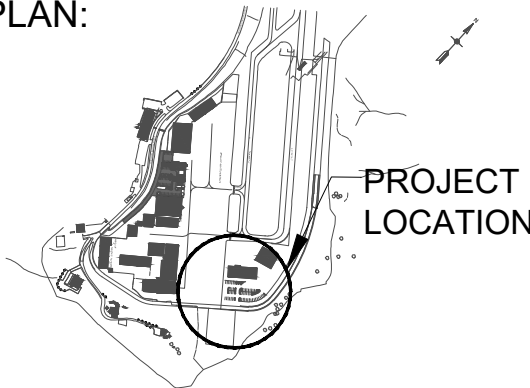
SEAL:



BID SUBMISSION

REVISION	ADDENDUM NO.1 DESCRIPTION	06/05/2026 DATE
----------	------------------------------	--------------------

KEY PLAN:



WEST VIRGINIA
INTERNATIONAL YEAGER
AIRPORT
ELECTRIC CHARGING
STATIONS

PROJECT NO. 2025-1028

SUBMITTAL DATE: MAY 2026

DESIGNED: KRK CHECKED: RSM

DRAWN: DAB APPROVED: KMF

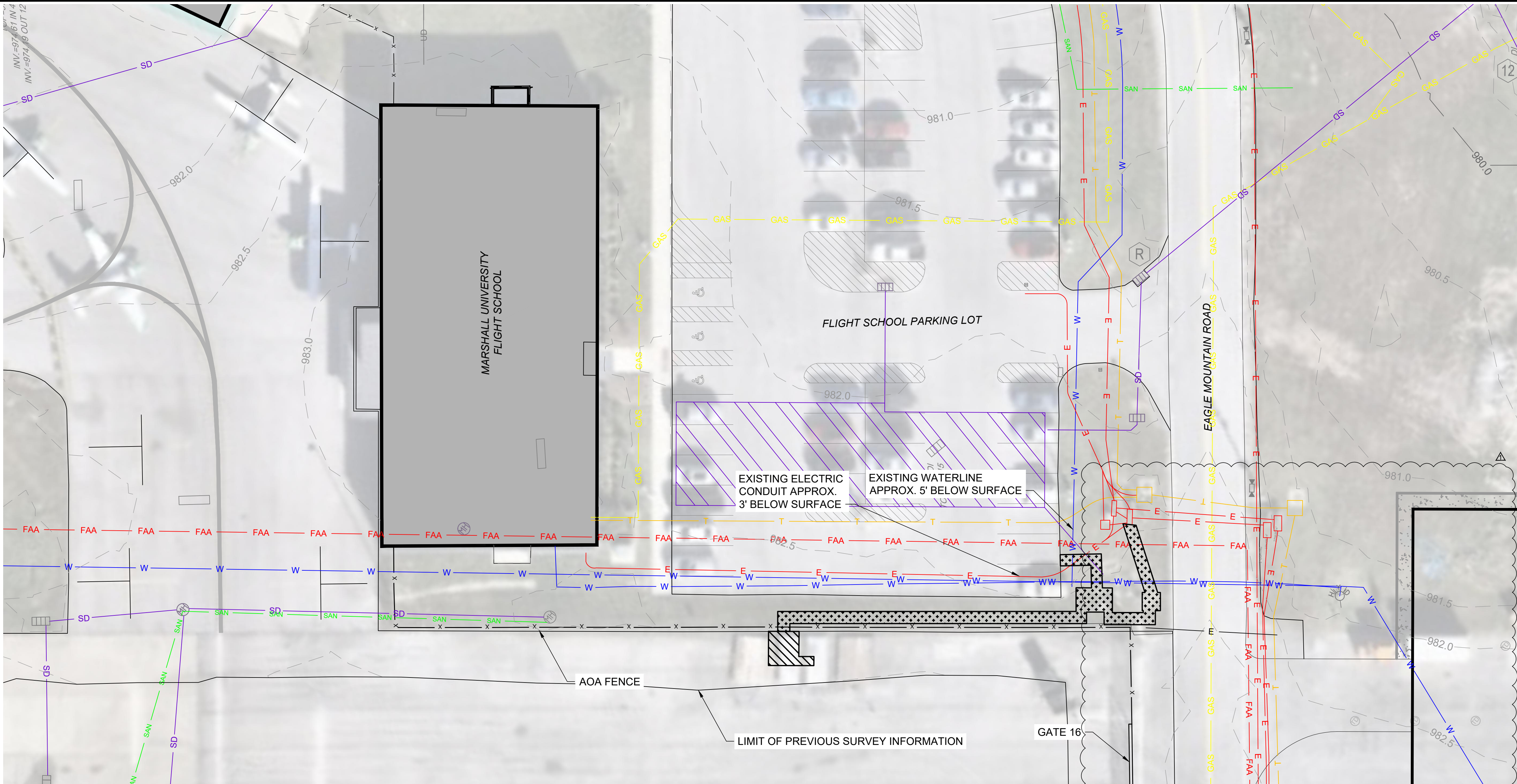
SHEET TITLE:

SHEET INDEX AND
SCHEDULE OF
QUANTITIES

DRAWING NO.

GI002

SHEET NO. 2 of 16



LEGEND:

- W — EXISTING WATERLINE
- E — EXISTING ELECTRICAL DUCTBANK/CONDUIT
- FAA — EXISTING FAA DUCTBANK
- SD — EXISTING STORM DRAINAGE PIPE
- GAS — EXISTING GAS LINE
- SAN — EXISTING SANITARY SEWER PIPE
- T — EXISTING TELECOM DUCTBANK/CONDUIT
- x — EXISTING FENCE LINE
- ASPHALT PAVEMENT DEMOLITION (024119-1)
- SITE CLEARING AND PREPARATION (024119-2)

NOTES:

1. BASEFILES ARE COMPROMISED OF LEGACY FILES AND SURVEY. THE SURVEY WAS COMPLETED JANUARY 8, 2026 AND PROVIDED BY TERRADON. ALL UTILITY LOCATIONS SHOWN ARE APPROXIMATE AND IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE ACCURACY, SUFFICIENCY, AND COMPLETENESS OF THIS INFORMATION.
2. UNLESS OTHERWISE NOTED, ALL EXISTING DRAINAGE FEATURES, ELECTRICAL ITEMS, SIGNS, AND OTHER ITEMS SHALL BE PROTECTED IN PLACE OR REMOVED AND REINSTALLED AS APPROPRIATE.
3. CONTRACTOR SHALL MARK ALL UTILITIES PRIOR TO EXCAVATION ACTIVITIES AND SHALL USE MANUAL TOOLS WHEN DIGGING WITHIN ONE (1) FOOT OF UTILITIES TO PREVENT DAMAGE. CONTRACTOR SHALL TAKE SPECIAL CARE WHEN DIGGING NEAR EXISTING FAA UTILITIES.
4. THIS SHEET IS MEANT TO BE PRINTED IN COLOR

WEST VIRGINIA INTERNATIONAL YEAGER AIRPORT

FAA Bldg 2nd Floor
301 Eagle Mountain Rd, Rm 227
Charleston, WV 25311

SEAL:

BID SUBMISSION

KEY PLAN:

WEST VIRGINIA INTERNATIONAL YEAGER AIRPORT
ELECTRIC CHARGING STATIONS

PROJECT NO. 2025-1028

SUBMITTAL DATE: MAY 2026

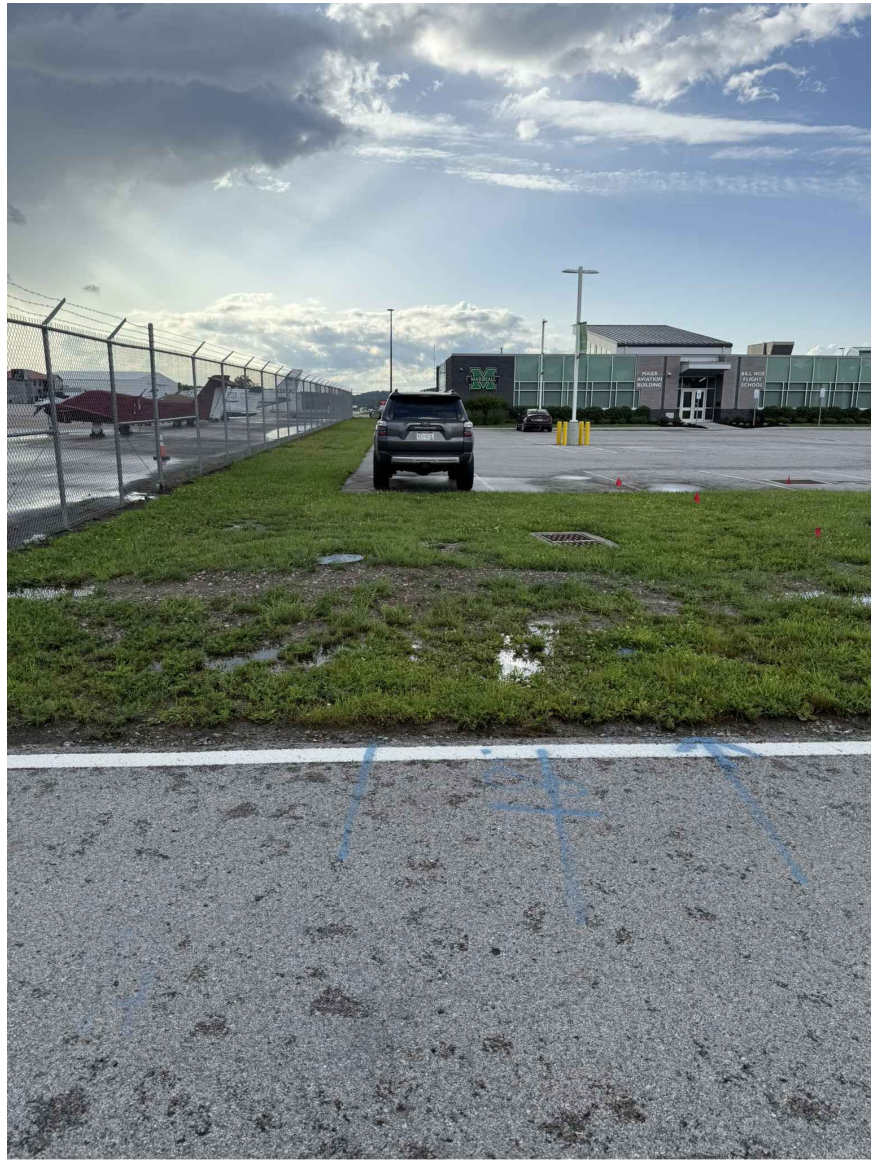
DESIGNED: KRK CHECKED: RSM
DRAWN: DAB APPROVED: KMF

SHEET TITLE:

EXISTING CONDITIONS AND DEMOLITION PLAN

DRAWING NO. CD100

SHEET NO. 7 of 16



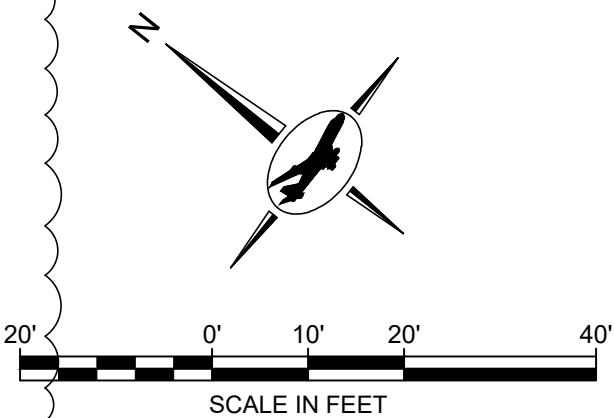
1 EXISTING PARKING LOT AND FENCE
SCALE: NTS

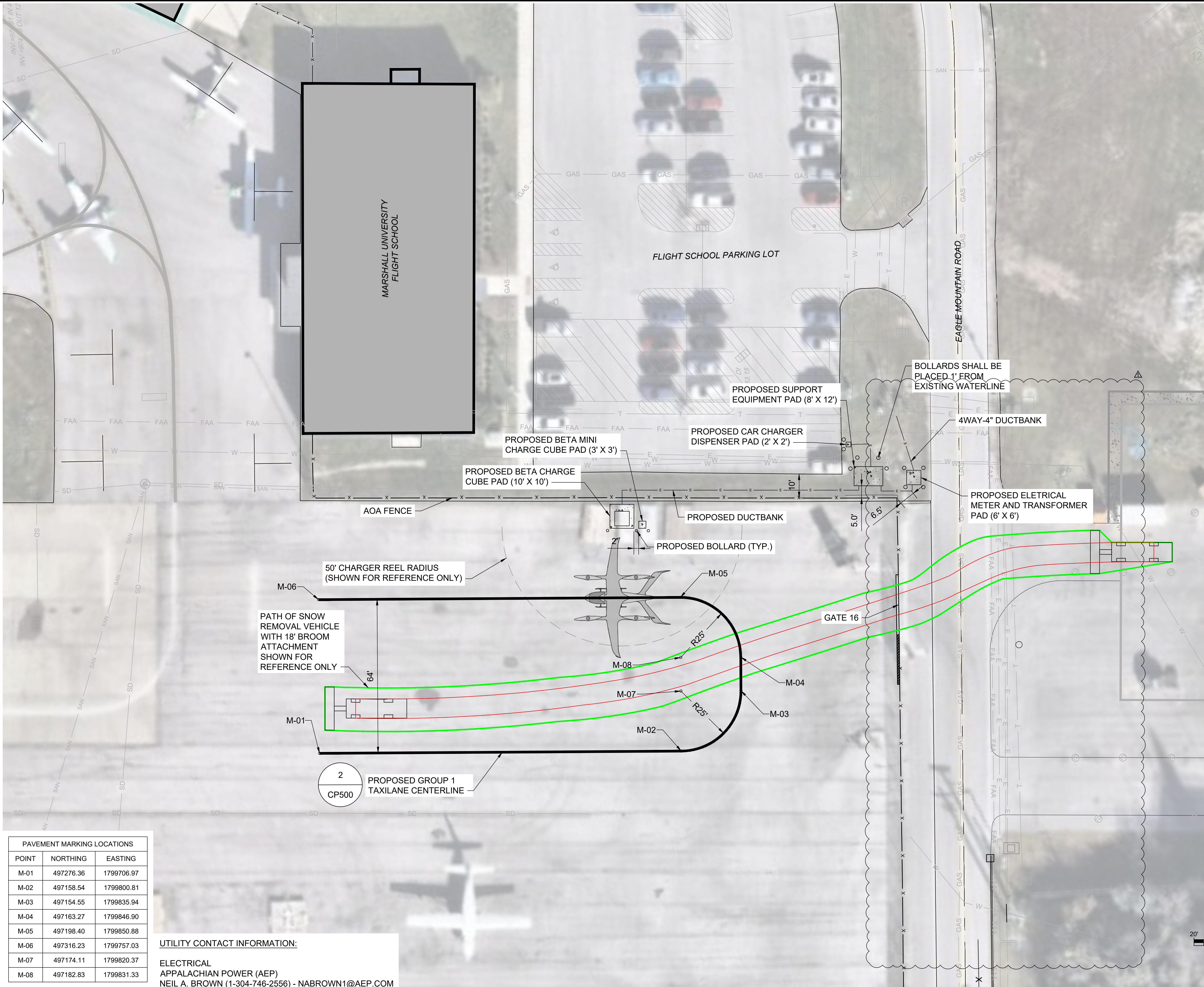


2 EXISTING ABOVE GROUND UTILITIES
SCALE: NTS



3 EXISTING ABOVE GROUND UTILITIES
SCALE: NTS





PAVEMENT MARKING LOCATIONS		
POINT	NORTHING	EASTING
M-01	497276.36	1799706.97
M-02	497158.54	1799800.81
M-03	497154.55	1799835.94
M-04	497163.27	1799846.90
M-05	497198.40	1799850.88
M-06	497316.23	1799757.03
M-07	497174.11	1799820.37
M-08	497182.83	1799831.33

UTILITY CONTACT INFORMATION:

ELECTRICAL
APPALACHIAN POWER (AEP)
NEIL A. BROWN (1-304-746-2556) - NABROWN1@AEP.COM

LEGEND:

- PROPOSED CONCRETE FOUNDATION
- PROPOSED ELECTRICAL DUCTBANK
- SNOW BROOM SWEEPER HEAD ENVELOPE
- SNOW BROOM VEHICLE BODY ENVELOPE

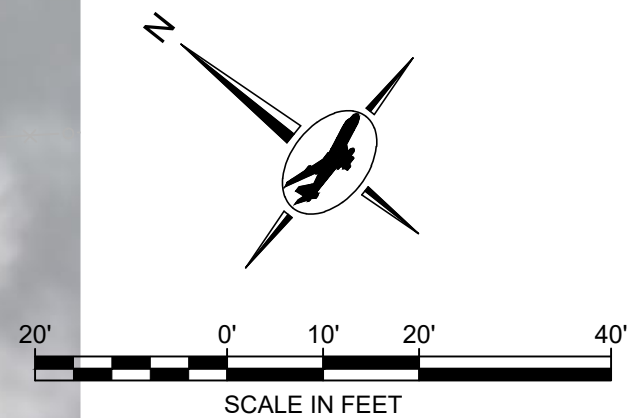
NOTES:

- SEE ELECTRICAL SHEETS FOR UTILITY CONNECTION REQUIREMENTS AND LOCATIONS
- SEE SHEET CP500 FOR TRENCH DETAILS
- EQUIPMENT PROVIDED BY BETA SHALL INCLUDE:
 - CHARGING CUBE
 - MINI CHARGING CUBE
 - POWER TOWER
 - PANEL BOARD
 - CAR CHARGER DISPENSER

THE CONTRACTOR WILL BE RESPONSIBLE FOR UNLOADING, SETTING, ANCHORING, AND TERMINATING ALL ELECTRICAL/COMMS/GROUNDING WITHIN THE EQUIPMENT. THE CONTRACTOR WILL BE RESPONSIBLE FOR COORDINATING WITH THE LOCAL AHJ FOR AN ELECTRICAL INSPECTION.

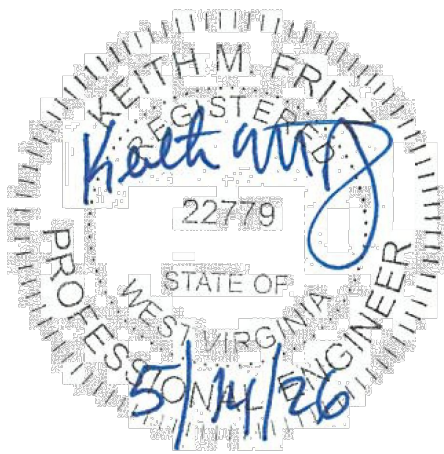
BETA WILL COMMISSION THE EQUIPMENT ONCE THE SITE IS ENERGIZED.

- FOR INFORMATION ON THE PROPOSED PADS AND BOLLARDS, SEE STRUCTURAL SHEETS
- METER AND TRANSFORMER SHALL BE PROVIDED AND INSTALLED BY THE UTILITY COMPANY (APPALACHIAN POWER (AEP)). THE CONTRACTOR WILL BE RESPONSIBLE FOR COORDINATION WITH AEP. FINAL CONNECTIONS BETWEEN THE TRANSFORMER AND THE SITE ELECTRICAL WILL BE COORDINATED BETWEEN THE CONTRACTOR AND AEP.
- SEE SHEET CD100 FOR INFORMATION REGARDING EXISTING UTILITIES IN PROXIMITY TO PROPOSED EQUIPMENT PADS
- COORDINATE DUCTBANK WORK WITH ADJACENT SNOW REMOVAL EQUIPMENT (SRE) BUILDING PROJECT.
- THIS SHEET IS MEANT TO BE PRINTED IN COLOR.



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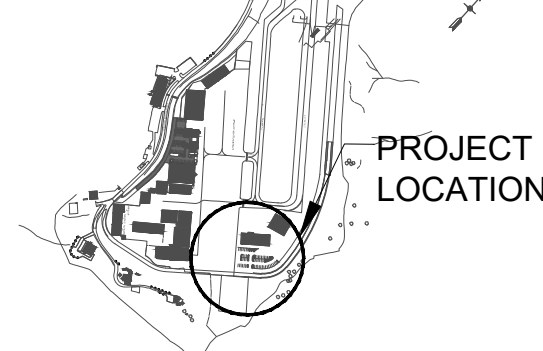
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BID SUBMISSION

REVISION	ADDENDUM NO. 1	06/05/2026
DESCRIPTION	DATE	

KEY PLAN:



WEST VIRGINIA
INTERNATIONAL YEAGER
AIRPORT
ELECTRIC CHARGING
STATIONS

PROJECT NO. 2025-1028

SUBMITTAL DATE: MAY 2026

DESIGNED: KRK CHECKED: RSM

DRAWN: DAB APPROVED: KMF

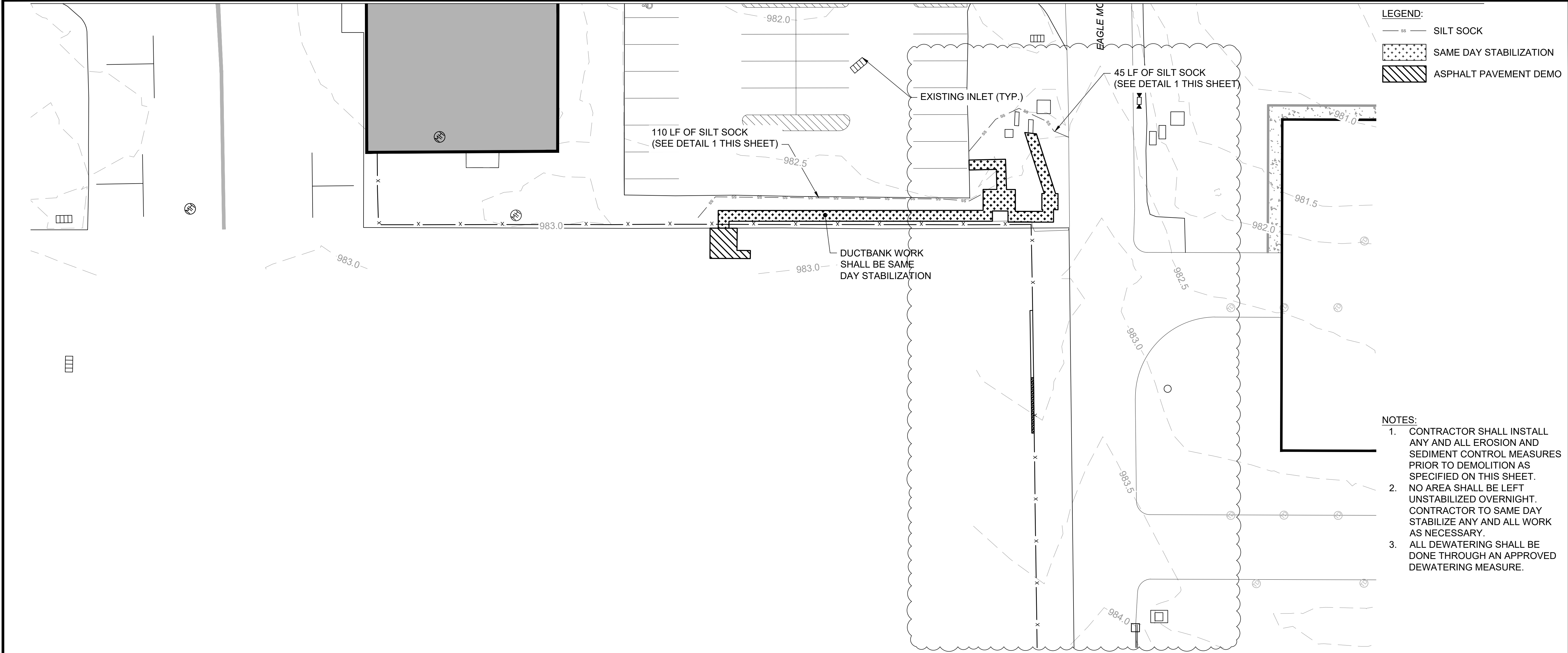
SHEET TITLE:

CIVIL SITE PLAN

DRAWING NO.

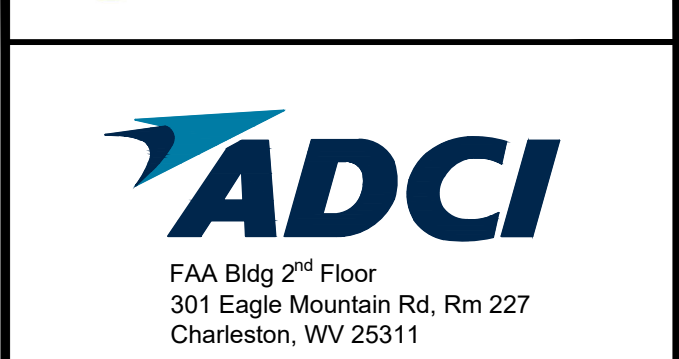
CP100

SHEET NO. 8 of 16

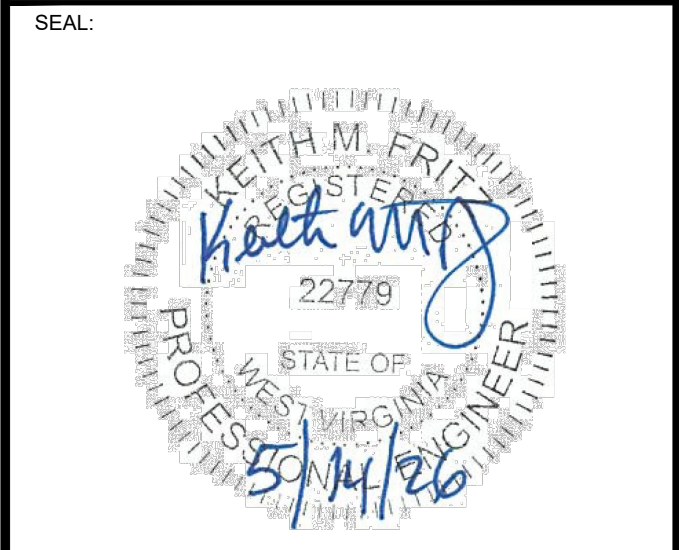




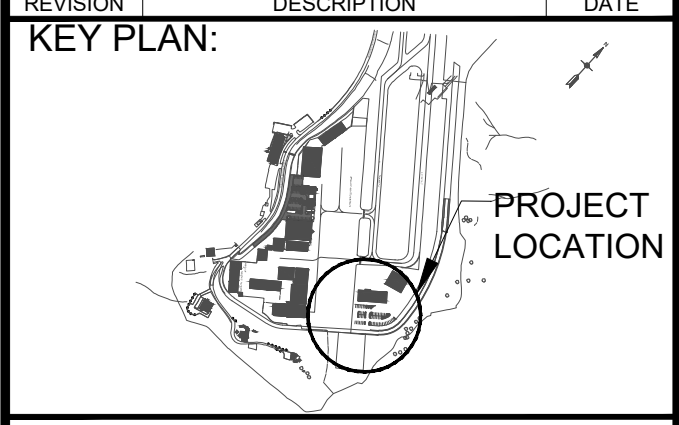
WEST VIRGINIA
INTERNATIONAL
YEAGER AIRPORT



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SEAL:


REVISION	ADDENDUM NO. 1 DESCRIPTION	06/05/2026 DATE
BID SUBMISSION		

KEY PLAN:


WEST VIRGINIA
INTERNATIONAL YEAGER
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ELECTRIC CHARGING
STATIONS

PROJECT NO. 2025-1028

SUBMITTAL DATE: MAY 2026

DESIGNED: KRK CHECKED: RSM

DRAWN: DAB APPROVED: KMF

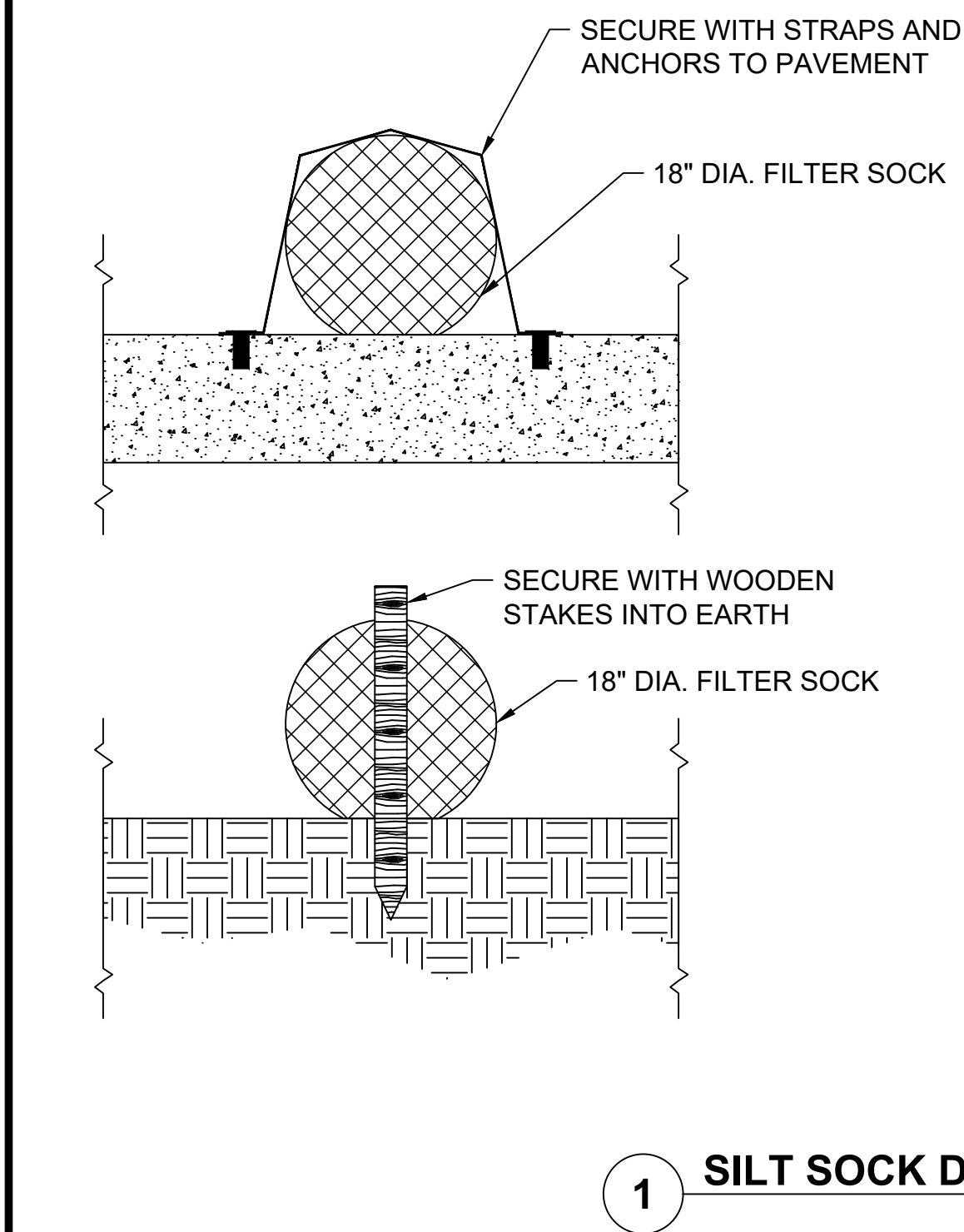
SHEET TITLE:

EROSION AND
SEDIMENT CONTROL
PLAN AND DETAILS

DRAWING NO.

CE100

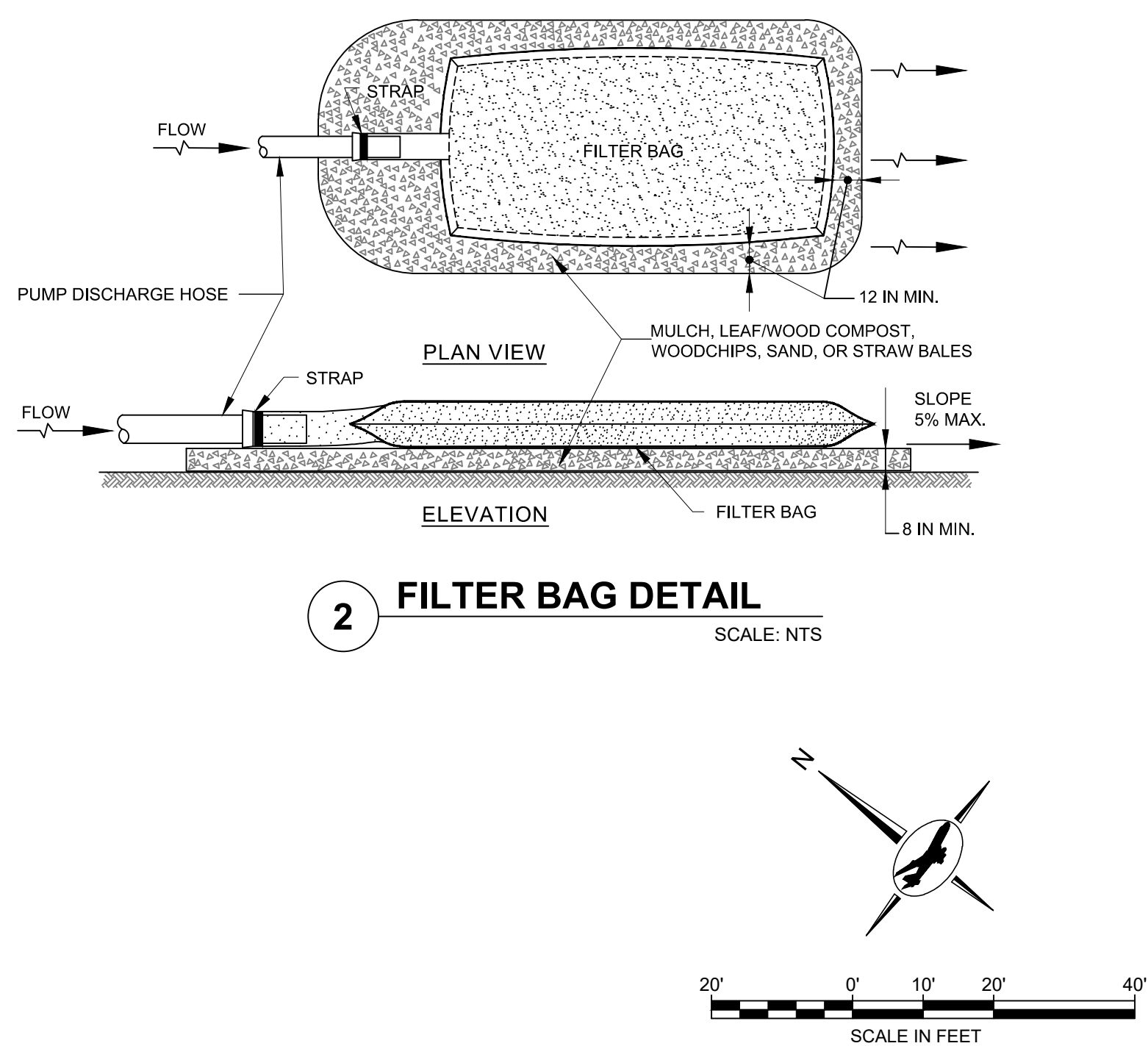
SHEET NO. 11 of 16



- SILT SOCK NOTES**
- INSTALL NEAR THE DOWNSTREAM PERIMETER OF DISTURBED AREA TO INTERCEPT SEDIMENT FROM SHEET FLOW.
 - SECURE SILT SOCK IN A METHOD ADEQUATE TO PREVENT DISPLACEMENT AS A RESULT OF NORMAL RAIN EVENTS AND SUCH THAT FLOW IS NOT ALLOWED UNDER THE EELS.
 - INSPECT AND MAINTAIN THE SILT SOCK IN GOOD CONDITION. MAINTAIN THE INTEGRITY OF THE CONTROL, KEEPING THE BAGS FREE OF ACCUMULATED SILT, DEBRIS, ETC. UNTIL PERMANENT MEASURES ARE IN PLACE OR THE DISTURBED AREA HAS BEEN ADEQUATELY STABILIZED. REPAIR OR REPLACE DAMAGED SILT SOCK AS REQUIRED. REMOVE SEDIMENT AND DEBRIS WHEN ACCUMULATION AFFECTS THE PERFORMANCE OF THE DEVICES.

- FILTER BAG NOTES:**
- TIGHTLY SEAL SLEEVE AROUND THE PUMP DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE.
 - PLACE FILTER BAG ON SUITABLE BASE (E.G., MULCH, LEAFWOOD COMPOST, WOODCHIPS, SAND, OR STRAW BALES) LOCATED ON A LEVEL OR 5% MAXIMUM SLOPING SURFACE. DISCHARGE TO A STABILIZED AREA. EXTEND BASE A MINIMUM OF 12 INCHES FROM EDGES OF BAG.
 - CONTROL PUMPING RATE TO PREVENT EXCESSIVE PRESSURE WITHIN THE FILTER BAG IN ACCORDANCE WITH THE MANUFACTURER RECOMMENDATIONS. AS THE BAG FILLS WITH SEDIMENT, REDUCE PUMPING RATE.
 - REMOVE AND PROPERLY DISPOSE OF FILTER BAG UPON COMPLETION OF PUMPING OPERATIONS OR AFTER BAG HAS REACHED CAPACITY, WHICHEVER OCCURS FIRST. SPREAD THE DEWATERED SEDIMENT FROM THE BAG IN AN APPROVED UPLAND AREA AND STABILIZE WITH SEED AND MULCH BY THE END OF THE WORK DAY. RESTORE THE SURFACE AREA BENEATH THE BAG TO ORIGINAL CONDITION UPON REMOVAL OF THE DEVICE.
 - USE NONWOVEN GEOTEXTILE WITH DOUBLE STITCHED SEAMS USING HIGH STRENGTH RATED THREAD. SIZE SLEEVE TO ACCOMMODATE A MAXIMUM 4-INCH DIAMETER PUMP DISCHARGE HOSE. THE BAG MUST BE MANUFACTURED FROM A NONWOVEN GEOTEXTILE THAT MEETS OR EXCEEDS MINIMUM AVERAGE ROLL VALUES (MARV) FOR THE FOLLOWING:

GRAB TENSILE	250 LB	ASTM D-4632
PUNCTURE	150 LB	ASTM D-4633
FLOW RATE	70 GAL/MIN/FT ²	ASTM D-4491
PERMITTIVITY (SEC ⁻¹)	1.2 SEC ⁻¹	ASTM D-4491
UV RESISTANCE	70% STRENGTH @ 500 HOURS	ASTM D-4355
APPARENT OPENING SIZE (AOS)	0.15-0.18MM	ASTM D-4751
SEAM STRENGTH	90%	ASTM D-4632
 - REPLACE FILTER BAG IF BAG CLOGS OR HAS RIPS, TEARS, OR PUNCTURES. DURING OPERATION KEEP CONNECTION BETWEEN PUMP HOSE AND FILTER BAG WATER TIGHT. REPLACE BEDDING IF IT BECOMES DISPLACED.



All Bidders
June 8, 2026



ATTACHMENT NO. 5

BETA®

Charge Cube 350™

320 kW Charging System

Instruction Manual

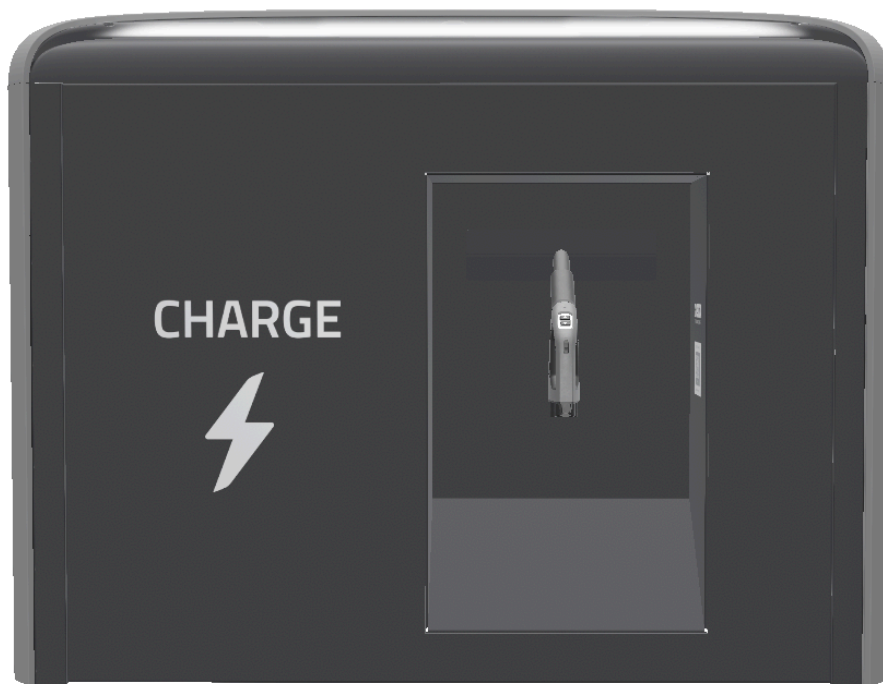


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1.2. Symbols

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1.2. Electrical Symbols

1.3. Technical Support

1.4. Abbreviations & Acronyms

1.5. Safety and Compliance Standards

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2.1.2. Charge Cube Cable Management

2.1.3. Data Plate Information

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2.2.2. Charge Cube

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2.3.3. System Conductors

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IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

This manual contains important instructions for the BETA 320 kW Electric Vehicle Charging System that shall be followed during installation, operation, and maintenance of the unit.

Please read these instructions carefully before assembling, installing, operating, or servicing the charging system and its equipment.



DANGER

This equipment uses high voltages. Only qualified electrical personnel familiar with the operation and construction of this equipment should install, adjust, modify, and service it. Failure to observe this precaution could result in severe injury or death.



WARNING

This charging system shall be assembled, installed, and commissioned by qualified persons in accordance with all applicable codes, standards, local ordinances, and this instruction manual.

Tampering with any feature or device of this system or its components could result in risk of fire, electric shock, or injury to persons.

Make sure to obey the following instructions when assembling, installing, or otherwise working with the equipment:

- The equipment may be installed outdoors but may be used only under the environmental conditions noted as acceptable in this manual.
- Do not perform any live wire operations.
- Do not touch the inside of the equipment while it is running.
- This equipment includes capacitive components such as electrolytic capacitors. Some parts inside the unit may still remain charged even after input power is disconnected.
- This charger should not be modified in any way. This will void the warranty, compromise protection, and could result in a possible shock or fire hazard.
- Personal protective equipment should be used at all times when servicing or installing the equipment.



GROUNDING INSTRUCTIONS

This unit shall be connected to a grounded, metal, permanent wiring system to reduce the risk of electric shock.

An equipment grounding conductor shall be run with circuit conductors and connected to equipment-grounding terminals in the charging system. Connections to the battery charging system shall comply with all local codes and ordinances.

If multiple conduits are used in the installation, parallel conductors shall have an equipment grounding conductor included in each conduit.



CAUTION

During installation of the unit, ensure that the charging station's supply cable is placed so that no one will trip over it, step on it, pull it or otherwise subject it to damage or stress.

1. About This Manual

This manual contains important instructions for the BETA Technologies 320 kW charging systems, which include the Power Tower and Charge Cube assemblies. These instructions must be followed during system installation, operation, and maintenance.

1.1. Safety Symbols and Signal Words

1.2. Symbols

The following symbols are used in this manual to draw attention to essential safety information.

	HIGH VOLTAGE
	SHOCK HAZARD
	ATTENTION!

1.1. Signal Words

The symbols depicted above will be followed by a signal word indicating the level of concern and potential severity of the hazard, and a brief explanation.

Signal Word	Level of Concern	Severity
DANGER	Immediate threat	Death or serious injury
WARNING	Possible threat	Possible risk of personal injury or equipment damage
CAUTION	Potential hazard	Minor injury

1.2. Electrical Symbols

The manual and wiring diagrams for the BETA 320 kW charging systems use the following symbols.



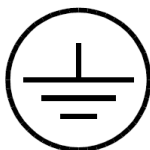
Symbol for Risk of Electric Shock

This symbol may be used as an alternative to the word "warning", "WARNING", and shall be considered a warning when it appears on the equipment and in any instructions for the equipment.



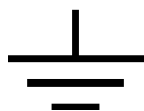
Phase Symbol

This symbol indicates that the charging system is intended to be used in a polyphase circuit. It can serve as an alternative to the word "phase."



Symbol for Equipment Grounding Conductor

This symbol is used to identify a field-wired equipment grounding conductor.



Symbol for Bonding to Ground

When this symbol appears (without a circle around it), it indicates that a part or component is bonded to ground.

1.3. Technical Support

If you need help during installation, commissioning, or operation of the charging system, please contact BETA for support.

Means of contact:

- Email: mobilesupport@beta.team
- Phone: +1-252-FLY-BETA (1-252-359-2382)
- Web: <https://chargesupport.beta.team/>

When calling for technical support, please have the following information available:

- Charge Cube ID – Located on the data plate see Section 2.1.3
- Serial Number – Located on the data plate see Section 2.1.3
- The type of vehicle being charged
- E-Mail address for logging into BETA Mobile App

If the issue is related to a failed charging session, BETA support also will need this information:

- Date and time the issue was observed
- Description of the issue
- Photos and video, if possible

1.4. Abbreviations & Acronyms

AWG	American wire gauge
CSA	Canadian Standards Association
CCS	Combined Charging System
DIN SPEC	German technical specification
EMC	Electromagnetic compatibility
EV	Electric vehicle
EVSE	Electric vehicle supply equipment
Hz	Hertz
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
kA	Kiloampere
kVA	Kilovolt ampere
kW	Kilowatt
MCM	Thousands of circular mils
μm	Micrometer
NEMA	National Electrical Manufacturers Association
Nm	Newton meter
OCPP	Open Charge Point Protocol
PF	Power factor
RCD	Residual current device
SAE	Society of Automotive Engineers (now SAE International)
SSCR	Short-circuit current rating
ST Connector	Straight tip connector
THD	Total harmonic distortion
UL	Underwriters Laboratories
VAC	Volts alternating current
XHHW-2	Cross-linked polyethylene (insulation)

1.5. Safety and Compliance Standards

cULus Listed, File Number: E537613

The BETA 320 kW Charging System is certified to comply with UL 2202, Third Edition, DC Charging Equipment For Electric Vehicles, and the following safety standards and requirements for EV charging systems:

- UL 2231-1, *Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits; Part 1: General Requirements*
- UL 2231-2, *Electric Vehicle (EV) Supply Circuits: Particular Requirements for Protection Devices for Use in Charging Systems*
 - EMC 24.2, Harmonic Distortion Immunity
 - EMC 24.3, Electrostatic Discharge Immunity
 - EMC 24.4, Radiated Electromagnetic Field Immunity
 - EMC 24.5, Immunity to Conducted Disturbances, induced by RF fields
 - EMC 24.6, Electrical Fast Transient Immunity
 - EMC 24.7, Voltage dips, short interruptions and voltage variations immunity
 - EMC 24.8, Magnetic Field Immunity
 - EMC Radiated Emissions per UL 2231-2
 - EMC Conducted Emissions per UL 2231-2
- UL 2251, *Plugs, Receptacles, and Couplers for Electric Vehicles*
- Canadian Standards Association (CSA) C22.2 No.107.1, *Power Conversion Equipment*
- Canadian Standards Association (CSA) C22.2 No. 281.2-12, *Standard for Safety for Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits: Particular Requirements for Protection Devices for Use in Charging Systems (Tri-national standard, with UL 2231-2 and NMX-J-668/2-ANCE)*
- DIN SPEC 70121, *Electromobility - Digital communication between a DC EV charging station and an electric vehicle for control of DC charging in the Combined Charging System*
- International Electrotechnical Commission (IEC) 61851, *Electric Vehicle Conductive Charging System - Part 1: General Requirements*
- International Standard Organization (ISO) 15118, *Road vehicles — Vehicle to grid communication interface*
- SAE International J1772, *Electric Vehicle and Plug in Hybrid Electric Vehicle Conductive Charge Coupler*

2. System Overview

2.1. The BETA 320 kW Charging System

2.1.1. Product Overview

The BETA 320 kW Charging System enables fast charging of electric vehicles (EVs), including electric aircraft. It consists of a Charge Cube dispenser, which contains the charging cable and the plug that interfaces with the EV, and a power section, known as the Power Tower. The Power Tower is a 350-amp AC-to-DC converter designed specifically for use with the Charge Cube and the Open Charge Point Protocol (OCPP) server. It has a single 480 V, three-phase, plus ground input and is connected to Charge Cube for vehicle charging.

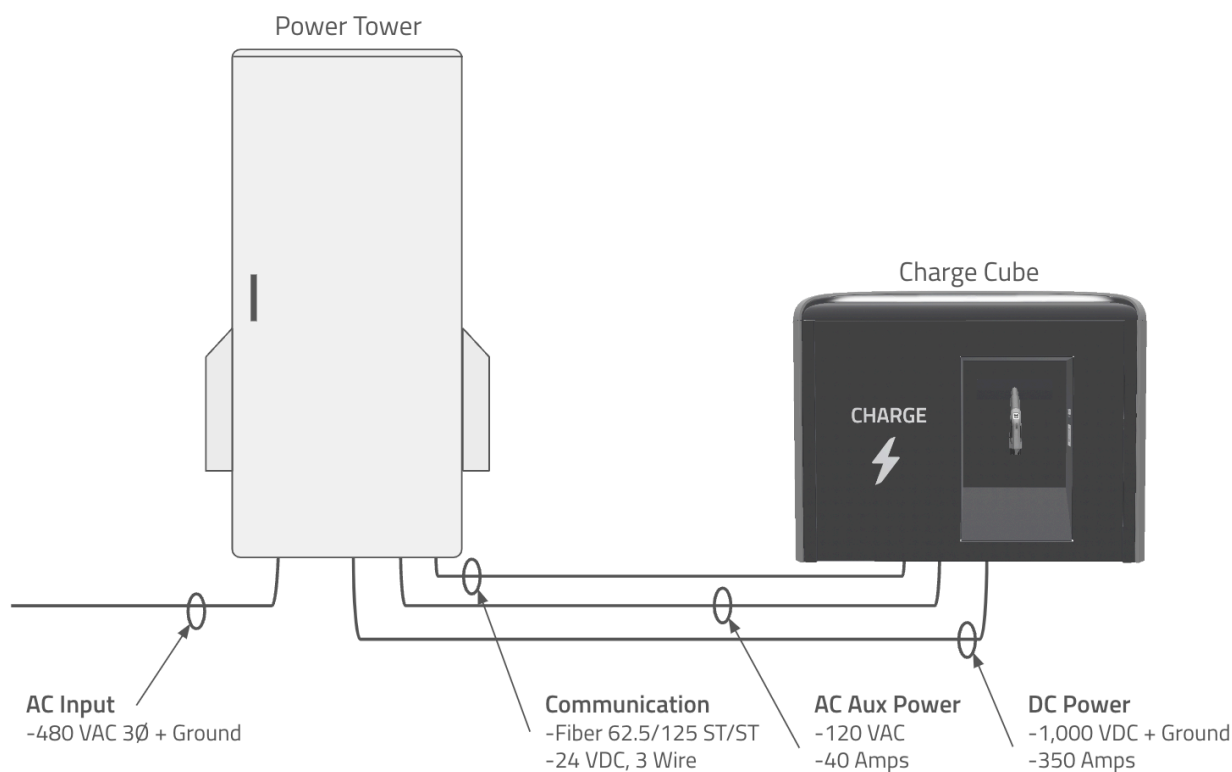


Figure 1. Typical connections between system components.

2.1.2. Charge Cube Cable Management

The Charge Cube uses a motorized reel for powered cable extension and retraction. This allows for easy, intuitive cable management and reduces ground crew and operator workloads. LED indicators illuminate the cable extend and retract buttons on the handle and provide information about the charging process. (See pages 21-22.)

The ergonomic charge handle is optimized for use on a range of port heights, and the 50-foot cord length provides ample reach to the aircraft regardless of its orientation to the Charge Cube.

2.1.3. Data Plate Information

PRODUCT:		Power Tower Assembly	
			
Support: 231-359-2382 Patent: www.beta.team/patents			
MODEL NUMBER:		SERIAL NUMBER:	
A006443			
Input Volts: 480 VAC Input Amps: 420 A Input Phase: 3 Ø Input Frequency: 60 Hz Output Volts: 300-950 VDC Output Amps: 350 A		Wiring Diagram #: R006900 Aux. Output Volts: 120 VAC Aux. Output Amps: 40 A Aux. Output Phase: 1 Ø Aux. Output Frequency: 60 Hz	
CAUTION Have defective cords or wires replaced immediately by a qualified service person.		ATTENTION Les cordons ou fils électriques défectueux seront immédiatement remplacés par une personne qualifiée pour effectuer l'entretien.	
WARNING This equipment is intended only for charging; vehicles not requiring ventilation during charging. See vehicle owner's manual.		MISE EN GARDE Cet appareillage est conçu uniquement pour les véhicules dont la recharge n'exige pas de ventilation. Consulter le manuel du propriétaire du véhicule.	
CAUTION Risk of electric shock, do not remove cover. No user serviceable parts inside. Refer servicing to qualified service person.		ATTENTION Ne pas retirer le couvercle. Aucune pièce à l'intérieur n'est réparable par l'utilisateur. Consulter du personnel qualifié pour effectuer l'entretien.	

Figure 2. Power Tower data plate.

PRODUCT: Charge Cube Assembly	
	
Support: 231-359-2382	
Patent: www.beta.team/patents	
CHARGE CUBE ID:	SERIAL NUMBER:
MODEL NUMBER:	Wiring Diagram #: R006901
A006444	Aux. Input Volts: 120 VAC
Input Volts: 300-950 VDC	Aux. Input Amps: 30 A
Input Amps: 350 A	Aux. Input Phase: 1 Ø
Output Volts: 300-950 VDC	Aux. Input Frequency: 60 Hz
Output Amps: 350 A	
CAUTION Have defective cords or wires replaced immediately by a qualified service person.	ATTENTION Les cordons ou fils électriques défectueux seront immédiatement remplacés par une personne qualifiée pour effectuer l'entretien.
WARNING This equipment is intended only for charging; vehicles not requiring ventilation during charging. See vehicle owner's manual.	MISE EN GARDE Cet appareillage est conçu uniquement pour les véhicules dont la recharge n'exige pas de ventilation. Consulter le manuel du propriétaire du véhicule.
CAUTION Risk of electric shock, do not remove cover. No user serviceable parts inside. Refer servicing to qualified service person.	ATTENTION Ne pas retirer le couvercle. Aucune pièce à l'intérieur n'est réparable par l'utilisateur. Consulter du personnel qualifié pour effectuer l'entretien.

Figure 3. Charge Cube data plate.

2.2. Electrical Service Connection Requirements

Per NEC 70, Art. 625.42, all EVSE and EV charging loads shall be considered continuous.

2.2.1. Tower

- **AC input:** 480 VAC, 420 amps continuous, 3Ø, 60Hz supplied by a WYE connection
- **DC output (to Charge Cube):** 1,000 VDC, 350 amps continuous
- **Auxiliary AC output (to Charge Cube):** 120 VAC, 40 amps continuous, 1Ø, 60Hz
- **Communications (to Charge Cube):** Optical fibers 1 Pair, 62.5/125 µm, multi-mode, twist-on straight tip (ST) connections. Not included, can be purchased separately from BETA.
- **Enable Circuit (to Charge Cube):** 3 conductor, 24VDC connection. Not included, can be purchased separately from BETA.

2.2.2. Charge Cube

All Charge Cube connections are sourced from Power Tower.

- **DC input (from Power Tower):** 1,000 VDC, 350 amps continuous
- **Auxiliary AC input: (from Power Tower):** 120 VAC, 40 amps, 1Ø, 60Hz
- **Communications (from Power Tower):** Optical fibers 1 Pair, 62.5/125 µm, multi-mode, ST connections
- **Enable Circuit (from Power Tower):** 3 conductor, 24VDC connection

2.3. Circuit Safety

BETA's charging system has multiple safety features that exceed UL Standards safety requirements. These include isolation and ground monitoring. Our system is designed to terminate the current charging session and prevent a new one if a hazardous situation is detected, such as a minimum resistance to ground, symmetrical resistance to ground, asymmetrical resistance to ground, and absence of safety grounding.

2.3.1. AC Overcurrent and Short-Circuit Current Protection

The AC input is protected from overcurrent protection through the use of a manually operated and resettable circuit breaker, which has a short-circuit current rating (SCCR) of 65 kA. This circuit breaker can handle a short-circuit current from a transformer of up to 2,000 kVA.

2.3.2. DC Overcurrent Protection

Power Tower and Charge Cube DC outputs are protected from overcurrent events through the use of non-resettable fuses. All fuses are sized and coordinated per manufacturer recommendations.

2.3.3. System Conductors

DC output conductors shall be installed based on a 350-amp continuous load, minimum. (See the AC and DC information tables for recommended conductor sizing and connection information.) All conductors shall be sized in accordance with all applicable local/national codes.

2.4. System Parameters

Per NEC 70, Art. 625.42, all EVSE and EV charging loads shall be considered continuous.

2.4.1. Electrical

2.4.1.1. AC Input

Table 1. AC Input

Parameter	Value	Unit
Voltage	480 $\pm$ 10%	VAC
Utility Service Configuration	480, 3 Phase, Wye (Y)	Neutral is not used on the charger Delta configuration is not supported
Current	420	Amps (continuous)
Frequency	60	Hz
Phase	3	Ø
Wires	3-phase + ground	3P, 4W
PF	>0.95	At full load
Short Circuit Current Rating	65	kAmps
Recommended Input Circuit Breaker	600	Amps
Connection Type	- Parallel lugs on main circuit breaker - L1, L2, L3 - Busbar - ground/PE*	500 MCM maximum on circuit breaker input lugs

Wire Sizing Options (Recommendation Only)	• Parallel run of 250 MCM 90° copper conductors or 300 MCM 75° copper conductors • Parallel run of 350 MCM 90° aluminum conductors or 400 MCM 75° aluminum conductors	
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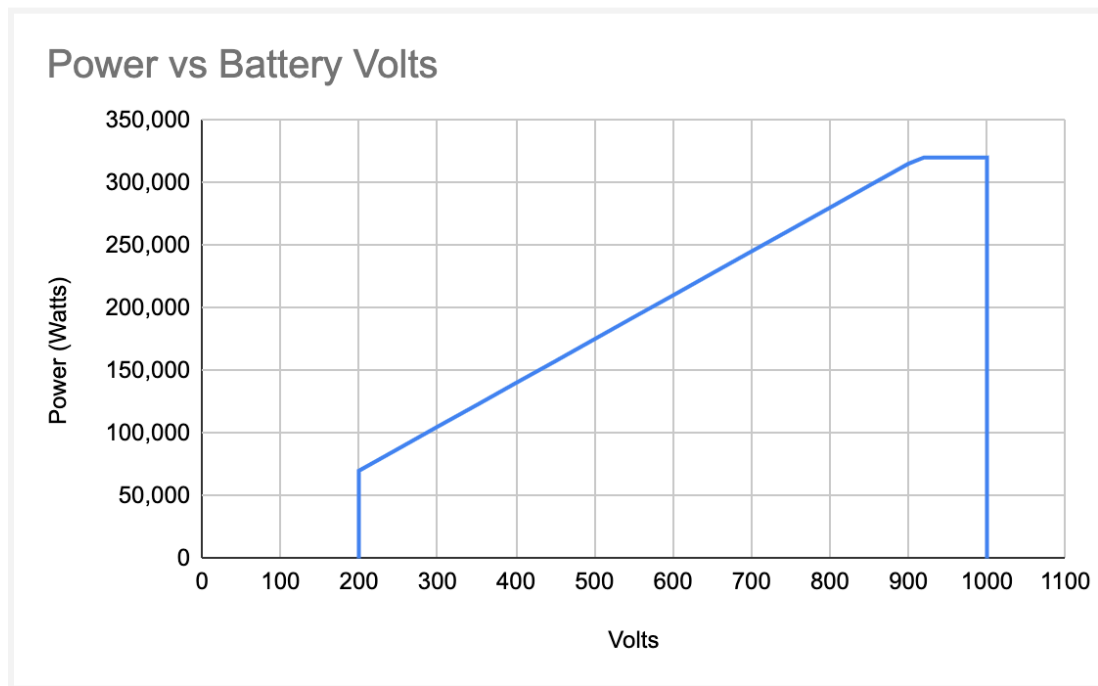


Figure 4. Output in kW vs. Battery Voltage

2.4.2. Power Tower DC Output

Table 2. DC Output

Parameter	Value	Unit
Voltage	350 - 950	VDC
Current	0 - 350	Amps (continuous)
Connection	Mechanical lugs	600 MCM maximum on mechanical lugs
Wire Sizing Options (Recommendation Only)	• Single 600 MCM 90° copper conductors* • Parallel run of 3/0 AWG 90° copper conductors or 4/0 AWG 75° copper conductors • Parallel run of 250 MCM 90° aluminum conductors or 300 MCM 75° aluminum conductors	
Protocol	CCS per IEC 61851; SAE J1772; DIN SPEC 70121; and ISO 15118-2 and -3.	

*Single conductors rated 75° or of aluminum construction are not recommended for the DC connections.

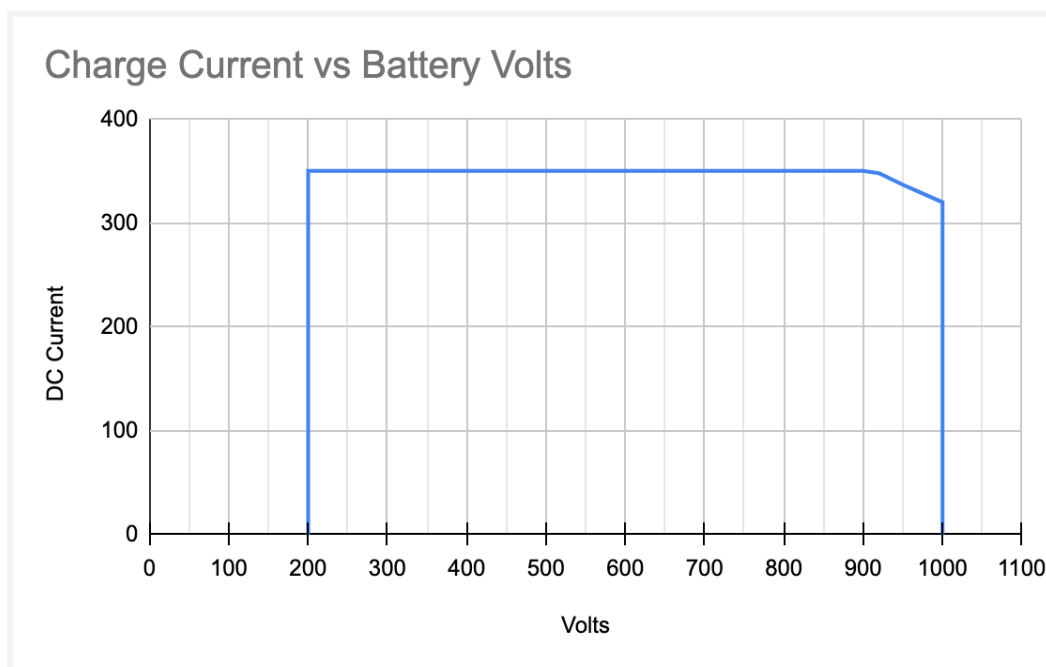


Figure 5. Output in Amps vs. Battery Voltage

2.5. System Environmental Ratings

Table 3. Environmental Parameters

Parameter	Value	Unit
Operating Temperature Normal Operation	-35 to 40	°C
Operating Temperature, Degraded Operation	40 to 50	°C
Operating Humidity	Up to 95%, non-condensing	%
Installation Location	Outdoor	

2.6. Mechanical

2.6.1. Power Tower

Table 4. Power Tower Mechanical Parameters

Parameter	Value	Unit
Dimensions	42 (W) x 45 (D) x 79 (H)	inch
Weight	1,300	lb
Rating	NEMA 3R	

2.6.2. Charge Cube

Table 5. Charge Cube Mechanical Parameters

Parameter	Value	Unit
Dimensions	73 (W) x 73 (L) x 58 (H)	inch
Weight	2,000	lb
Cable Length	50	foot
Rating	NEMA 3R	

3. Operation

3.1. Charging Status Displays

Color	Meaning	Details
None (No lights on)	Major issue, no charging available	Check power supply to charger feeding charger.
Red - Pulsing	Vehicle communication error	Indicates a problem communicating with the vehicle. Typically will occur within 10 seconds of plugging into a vehicle. Inspect the cable, plug, and vehicle inlet for any signs of obvious damage or water ingress.
Red - Solid	Charger error, charging disabled	Turn off power to the charger for 30 seconds and re-energize. If the problem persists, call BETA Technical Support with ChargeBox ID from the data plate.
White - Solid	Ready to charge	Indicates no errors with the charger and that it is ready to plug into a vehicle and charge.
White - Pulsing	Communicating with vehicle	Indicates connection to an EV has been detected and communication is in process.
Green - Ring	Charging in progress	Indicates that the EV is being charged.
Green - Solid	Charging complete	Indicates that that charging is complete.

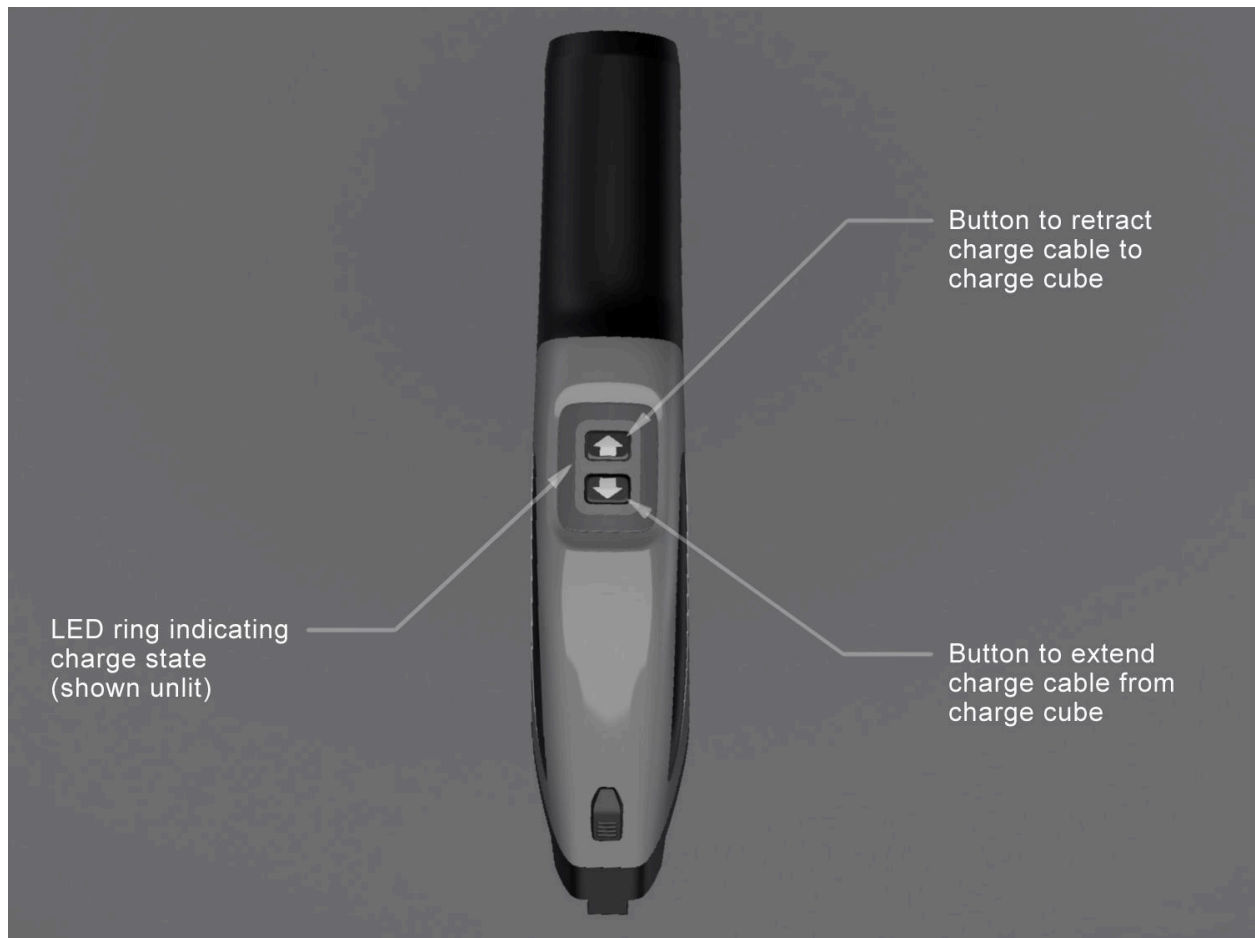


Figure 6. The handle contains extend and retract buttons and an LED ring that shows charge state.



Figure 7. The white LED indicating light on the handle shows that the Charge Cube is ready to charge a vehicle.



*Figure 8. If the green LED light ring is flashing, it indicates charging is in progress.
A solid green light means charging has been completed.*



*Figure 9. A pulsing red light indicates an error in communication between the vehicle and the charger.
A solid red light signals a charger error; charging has been disabled.*

3.2. Modes of Operation

3.2.1. Single Charge Cube

The Charge Cube is capable of providing up to full power to the single-connected electric vehicle (EV).

3.2.2. Multiple Charge Cubes

When connected to two Charge Cubes, the system can be in concurrent mode, sequential mode, or collaborative mode.

3.2.2.1. Concurrent (Parallel) Mode

In concurrent mode, each output is capable of up to 50% power and can charge up to two EVs at a time, each up to 50% power.

3.2.2.2. Sequential (Series) Mode

When the charger is set to sequential mode, it will charge only one EV at a time. In this mode, the EV being charged will receive up to 100% power. If a second EV is connected to the second Charge Cube, it will not be charged until the first EV has completed its charging session. Prioritization for sequential mode can be set based on Charge Cube ID.

3.2.2.3. Collaborative (Friendly) Mode

Collaborative mode is a hybrid of concurrent mode and sequential mode. The first EV connected will receive up to 100% of rated power. When a second EV is connected, the charger will automatically enter concurrent mode and both EVs will receive up to 50% power. When either EV finishes charging, the remaining EV will now receive up to 100% power.

3.3. Open Charge Point Protocol (OCPP)

The OCPP server implements the open-source standard version 2.0.1 and runs on the main host computer. The OCPP server keeps track of the charger state, sends OCPP operations to the server if required, receives operations from the server and notifies the Charge Cube when any action is required.

Parameters sent via OCPP from Cube Master to the server, available to the user via the OCPP client, are detailed in the table below

Table 6. OCPP Server Parameters Available from Cube Master via OCPP

Field Name	Data Type	Description
connector_plugged	bool	The EV is physically plugged to the electric vehicle supply equipment (EVSE)
iso15118_id	string	The identification token of the EV (ignored if connector_plugged: false)
energy_reg	int	Energy register of the energy meter in watt-hours (Wh). Measures the total energy delivered by the EVSE
power	int	Current charge rate in watts
soc	float	EV state of charge in percent (%)
ev_ready	bool	If EV requests charge: True if charging can start or has already started; false if the EV is fully charged, waiting for safety diagnosis, or charging has been suspended for any other reason
evse_ready	bool	If EVSE offers charge: True if it announced readiness to EV; false if it suspends charging (e.g., because it is waiting for safety diagnosis or is cooling down)
error_codes	[[String, String]]	Array of OCPP error codes with vendor-specific description. Example: [{"code": "PowerMeterFailure", "description": "communication lost"}, {"code": "GroundFailure", "description": "detected at RCD"}]
evse_serial	String	A unique identifier of the Charge Cube hardware
evse_fw_version	String	The version number of the Charge Cube firmware

3.4. Power Tower and Charge Cube Connections

Power to the charger must come from a wye-configured transformer.

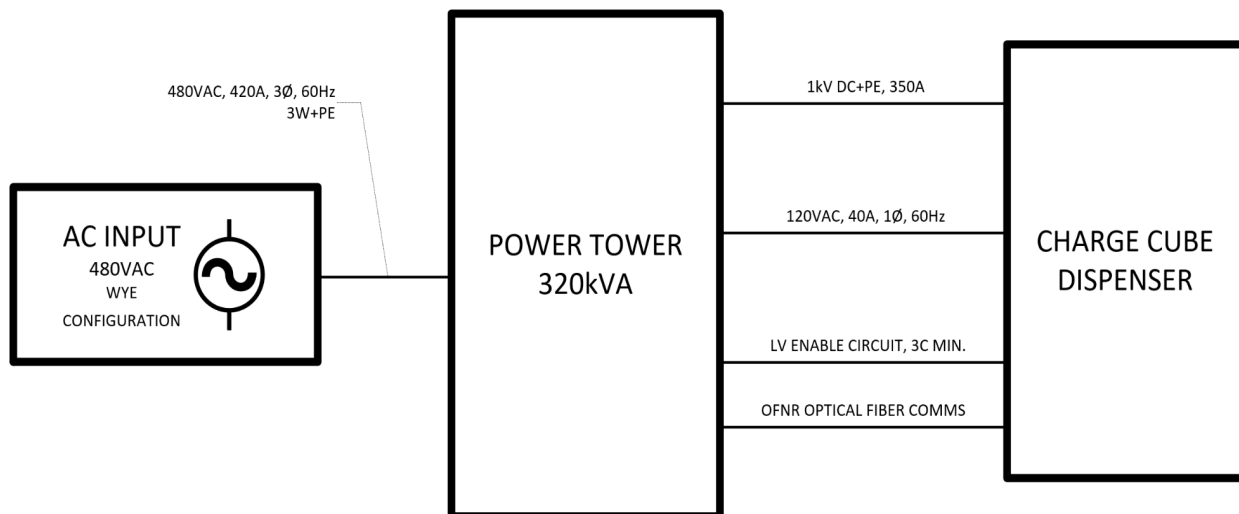


Figure 10. The connections between AC input, the Power Tower and the Charge Cube dispenser.

Table 7. Power Tower and Charge Cube Connections

Source	Destination	Voltage	Current	Description
Main Distribution Panel	Power Tower 3-phase input breaker	480 V	420 amps*	AC input power to Power Tower
Main Distribution Panel	Power Tower main ground bar	0 V	As required	Ground
Power Tower DC Output +	Charge Cube DC + connection	1,000 VDC	350 amps*	DC + connection
Power Tower DC Output -	Charge Cube DC - connection	1,000 VDC	350 amps*	DC - connection
Power Tower Ground Bar	Charge Cube ground bar	0 V	As required	Ground to Charge Cube
Power Tower Fiber Output	Charge Cube fiber input	N/A	N/A	CAN communication
Enable Circuit	Enable Circuit	24 VDC	1 Amp	
Power Tower Auxiliary Power	Charge Cube	120VAC	40 Amps*	Controls power

*Per NEC 70, Art. 625.42, all EVSE and EV charging loads shall be considered continuous.

3.5. AC Input Connection to Power Tower

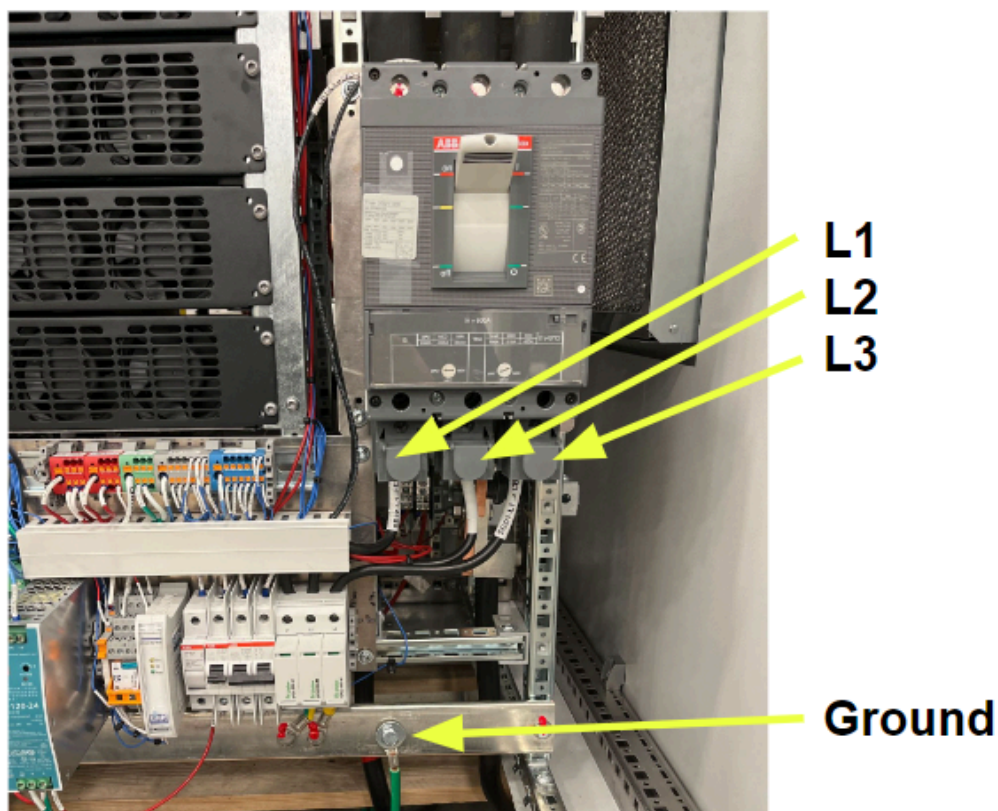


Figure 11. Power Tower AC input connections: L1, L2, L3 and ground.

Table 8. Power Tower AC Input Connection Specifications

Connection	Wire Size Options (Recommendation Only)	Fastener Size	Drive type	Torque (in-lbs)
L1	- Parallel run of 250 MCM 90° copper conductors or 300 MCM 75° copper conductors - Parallel run of 350 MCM 90° aluminum conductors or 400 MCM 75° aluminum conductors	M10	8 mm Allen	318
L2		M10	8 mm Allen	318
L3		M10	8 mm Allen	318
Ground	As required per NEC 250.122	-	-	-

3.6. DC Output Connection in Power Tower

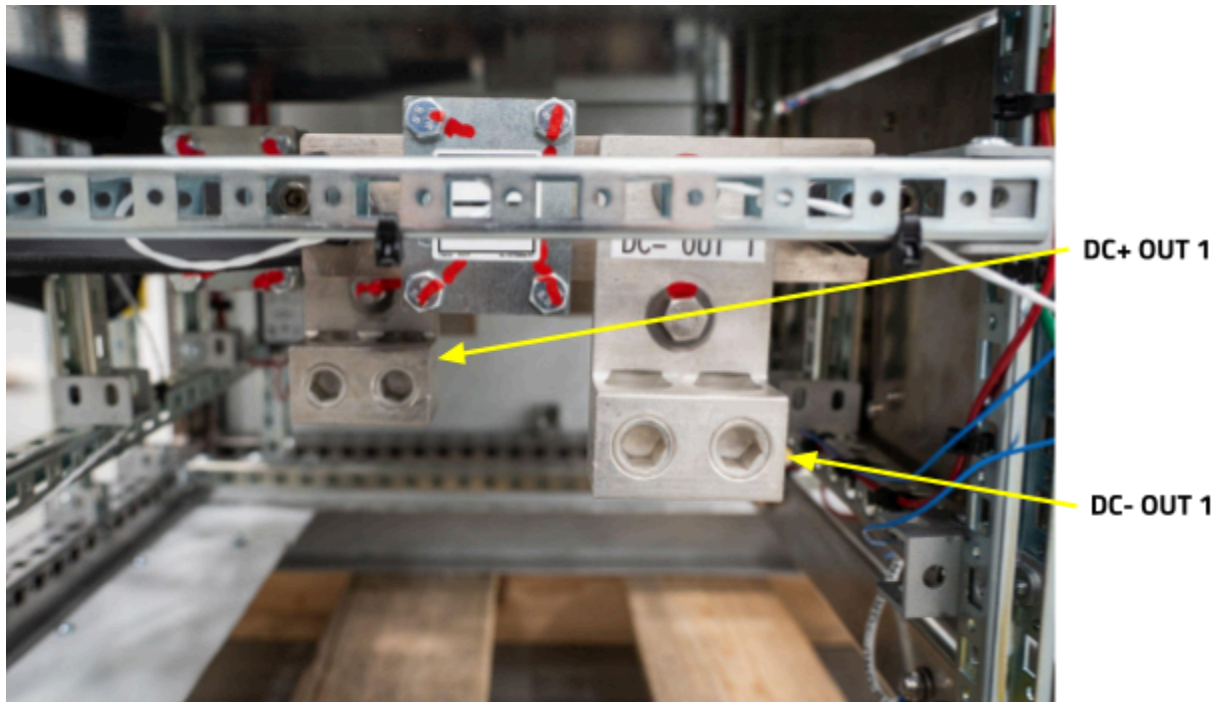


Figure 12. DC positive and DC negative output connections for Power Tower.

Table 9. Charge Cube DC Connection Specifications

Connection	Wire Size Options (Recommendation only)	Voltage	Current	Fastener	Drive Type	Torque (in-lbs)
DC Positive	- Single 600 MCM 90° copper conductors* - Parallel run of 3/0 AWG 90° copper conductors or 4/0 AWG 75° copper conductors - Parallel run of 250 MCM 90° aluminum conductors or 300 MCM 75° aluminum conductors	1000 VDC Minimum	350A maximum <u>continuous</u>	13/16" wire binding screw	½" Allen	500
DC Negative		1000 VDC Minimum	350A maximum <u>continuous</u>	13/16" wire binding screw	½" Allen	500

*Single conductors rated 75° or of aluminum construction are not recommended for the DC connections.

3.7. Control Power in Power Tower

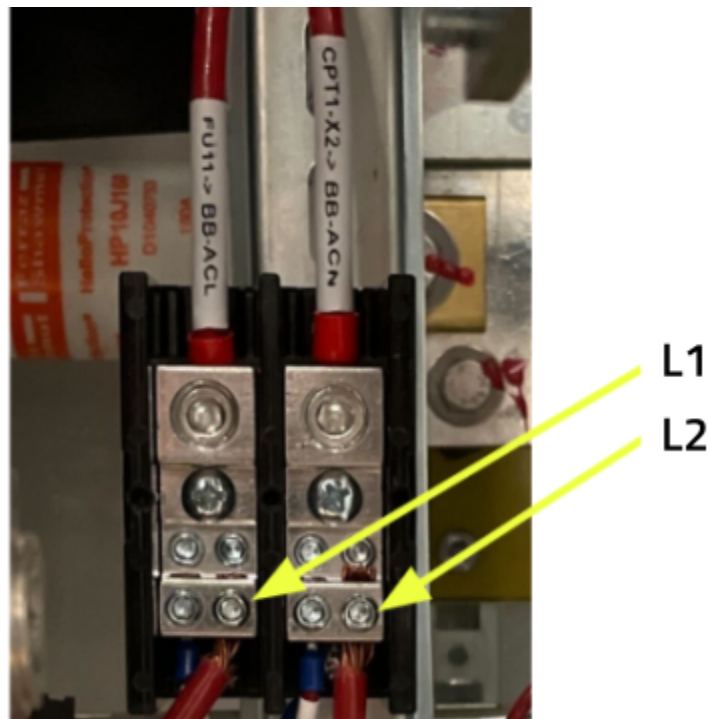


Figure 13. Power Tower L1 and L2 control power connections.

Table 10. Power Tower Control Power Specifications

Connection	Wire Size (Recommendation only)	Voltage	Current	Fastener	Drive type	Torque (in-lbs)
L1	#8 AWG	250 VAC minimum	40A maximum <u>continuous</u>	Set screw lug	1/8" Allen	50
L2	#8 AWG	250 VAC minimum	40A maximum <u>continuous</u>	Set screw lug	1/8" Allen	50

3.8. Fiber Connection in Power Tower



Figure 14. Fiber connection in Power Tower to Charge Cube.

3.9. Enable Circuit Connection in Power Tower

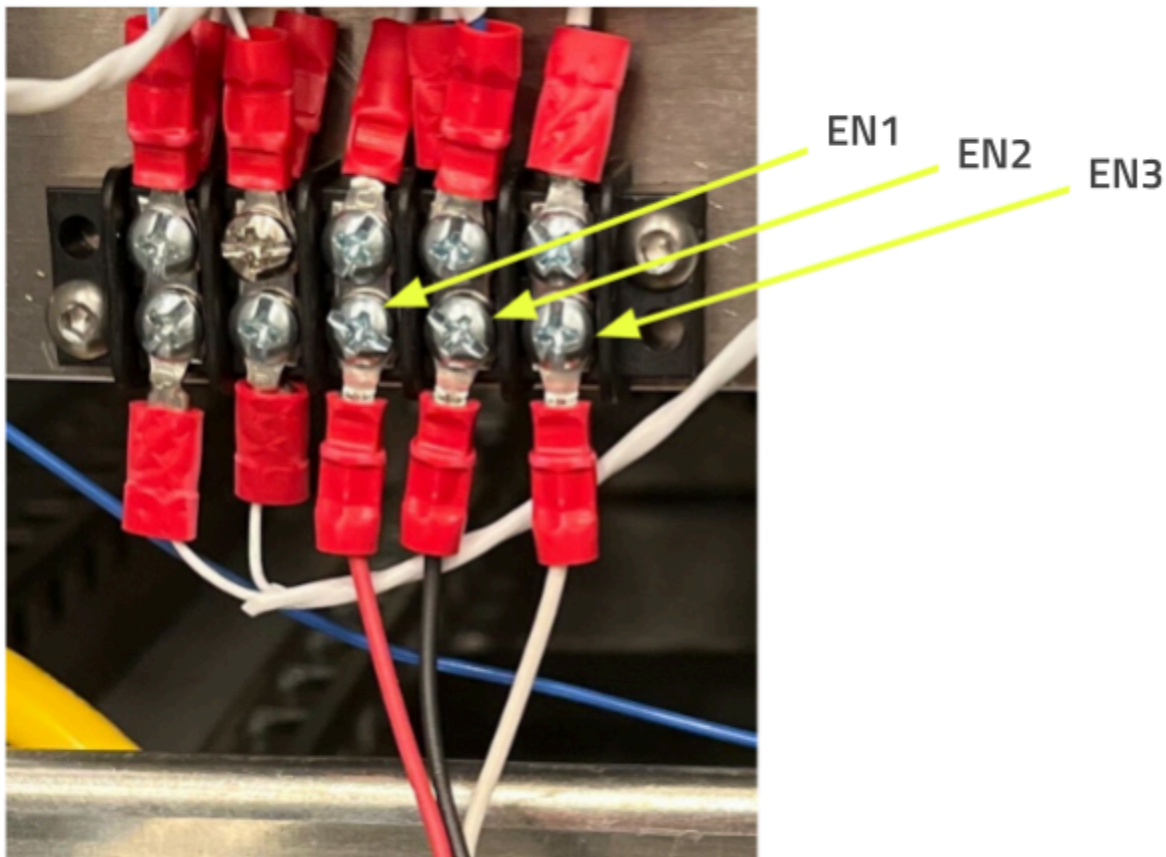


Figure 15. Enable Circuit at its connection point in the Power Tower.

Table 11. Enable Circuit Connection Specifications

Connection	Wire Size	Voltage	Fastener	Drive type	Torque (in-lbs)
EN1	16 AWG/3 conductor cable*	24 VDC	#6-32 pan-head screw	Phillips or slotted screwdriver	12
EN2	16 AWG/3 conductor cable*	24 VDC	#6-32 pan-head screw	Phillips or slotted screwdriver	12
EN3	16 AWG/3 conductor cable*	24 VDC	#6-32 pan-head screw	Phillips or slotted screwdriver	12

*A 3-conductor cable assembly is suggested, such as Belden 8618 or equivalent.

3.10. DC Connection in Charge Cube

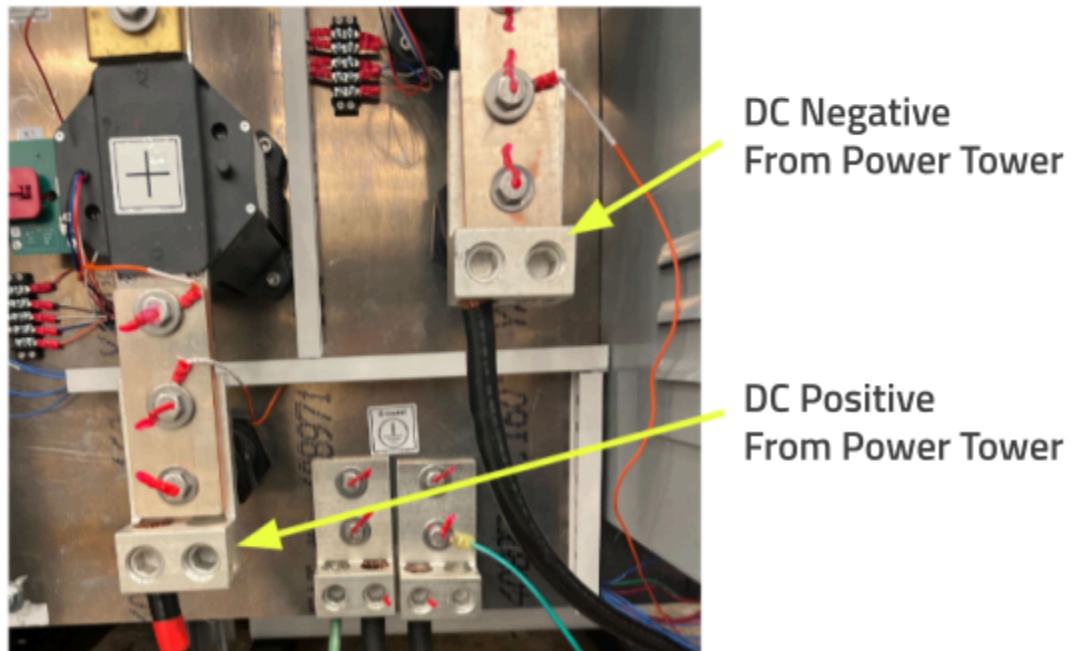


Figure 16. Charge Cube DC power connections from Power Tower.

Table 12. Charge Cube DC Connection Specifications

Connection	Wire Size Options (Recommendation only)	Voltage	Current	Fastener	Drive Type	Torque (in-lbs)
DC Positive	600mcm 90° copper conductors* - Parallel run of 3/0 AWG 90° copper conductors or 4/0 AWG 75° copper conductors	1000 VDC Minimum	350A maximum <u>continuous</u>	13/16" wire binding screw	½" Allen	500
DC Negative	Parallel run of 250 MCM 90° aluminum conductors or 300 MCM 75° aluminum conductors	1000 VDC Minimum	350A maximum <u>continuous</u>	13/16" wire binding screw	½" Allen	500

*Single conductors rated 75° or of aluminum construction are not recommended for the DC connections.

3.11. Ground Connection in Charge Cube

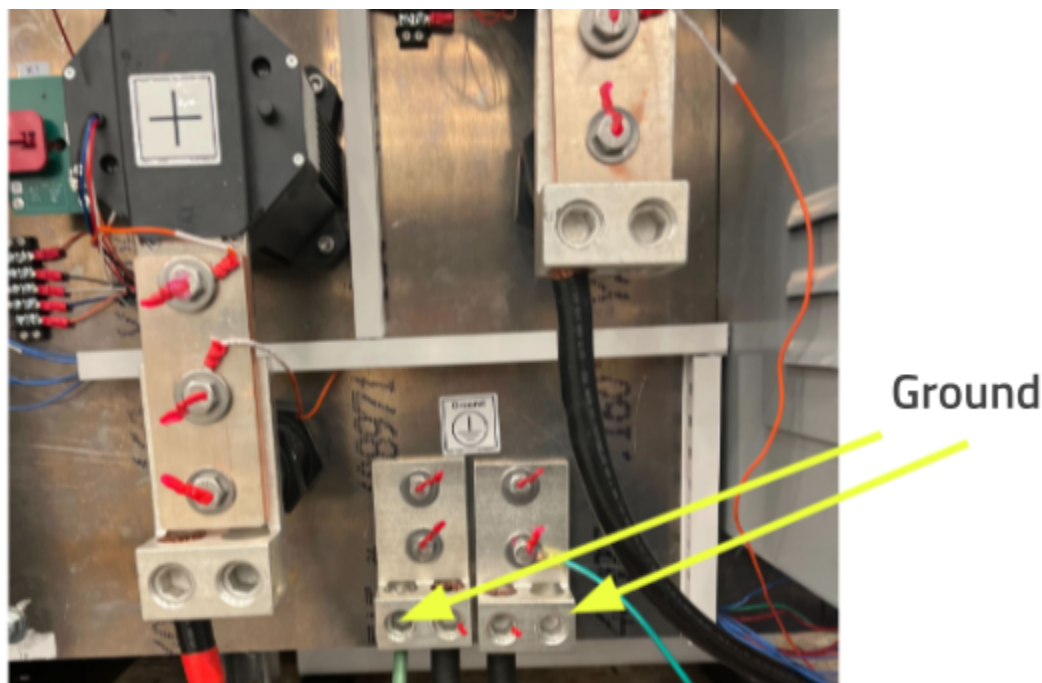


Figure 17. Charge Cube ground connection from Power Tower.

Table 13. Charge Cube Ground Connection Specifications

Connection	Wire Size Options (Recommendation only)	Voltage	Current	Fastener	Drive type	Torque (in-lbs)
Ground	- Per NEC 250.122 - Sized for 600A main breaker - Single #1 AWG copper or #2/0 AWG aluminum - If power is run in parallel runs in multiple conduits, one grounding conductor shall be run in each conduit at full size and connected in parallel in accordance with NEC 250.121 (F)(1)(b)	1000 VDC Minimum	Per NEC 250.122	13/16" wire binding screw	½" Allen	500

3.12. Control Power in Charge Cube

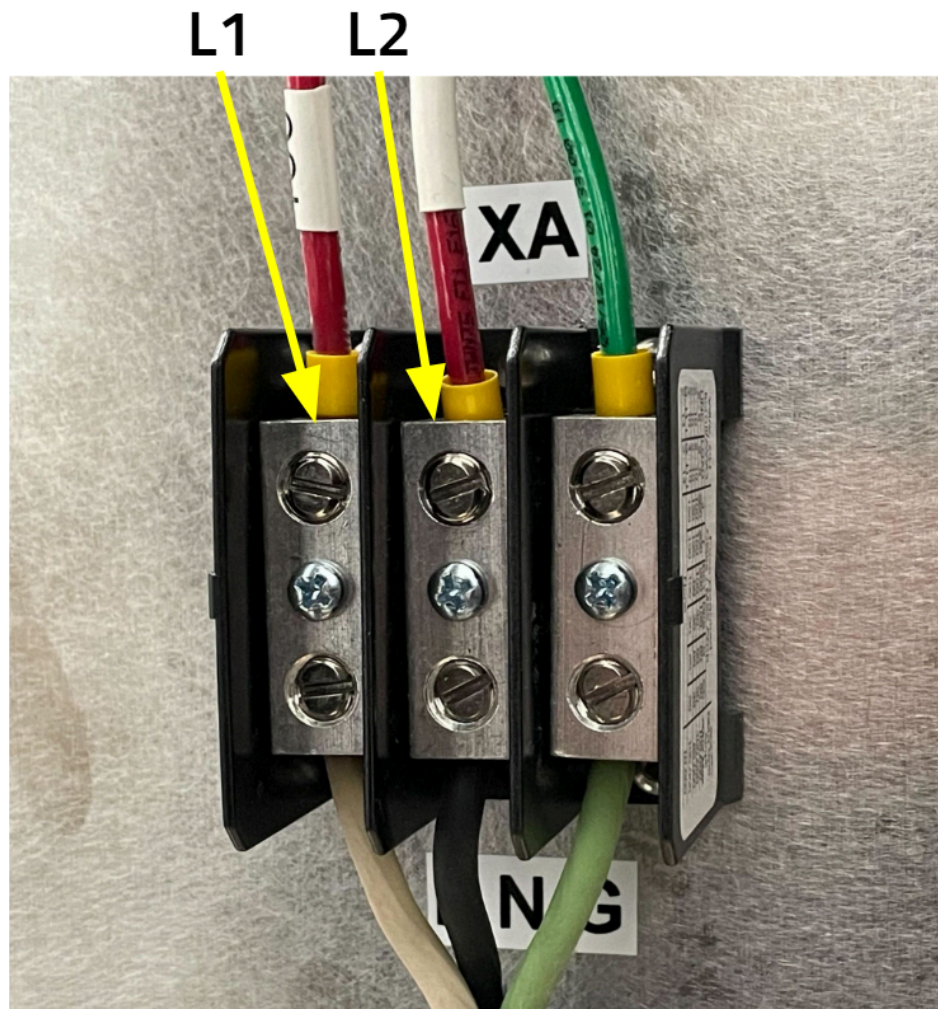


Figure 18. Charge Cube 120 VAC auxiliary power sourced from Power Tower.

Table 14. Charge Cube Control Power Specifications

Connection	Wire Size	Voltage	Current	Fastener	Drive type	Torque (in-lbs)
L1 (From Power Tower)	#8 AWG	250 VAC minimum	40A maximum <u>continuous</u>	Slotted Screw	Slotted screwdriver	40
L2 (From Power Tower)	#8 AWG	250 VAC minimum	40A maximum <u>continuous</u>	Slotted Screw	Slotted screwdriver	40

3.14. Fiber Connection in Charge Cube

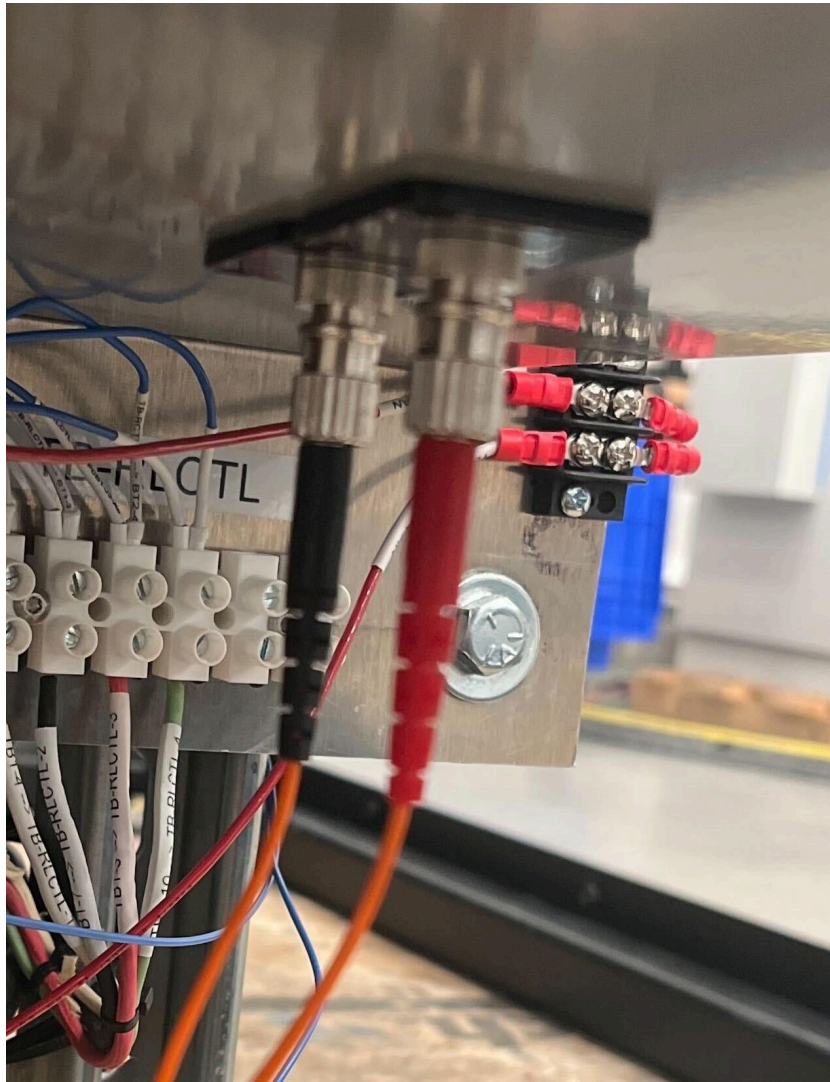


Figure 20. Charge Cube fiber connection from Power Tower.

4. Moving and Storage Instructions



Improper handling may result in severe injury and/or damage to the unit due to dropping or falling. Make sure to follow specified procedures for hoisting operations. Take necessary measures to prevent falling when moving or hoisting the unit.

4.1. Using Forklift or Pallet Jack

1. Be careful when lifting the charger using a forklift or pallet jack.
2. Extend forks completely under the unit to avoid accidents.

4.2. Using Lifting Eye Bolts

1. The Power Tower is shipped with lifting eyes installed.
2. Select lifting eyes with the correct capacity for the estimated weight of the Charge Cube.
 - a. See estimated Charge Cube and Power Tower weights on page 16.
3. Lift directly upward on lifting eyes.

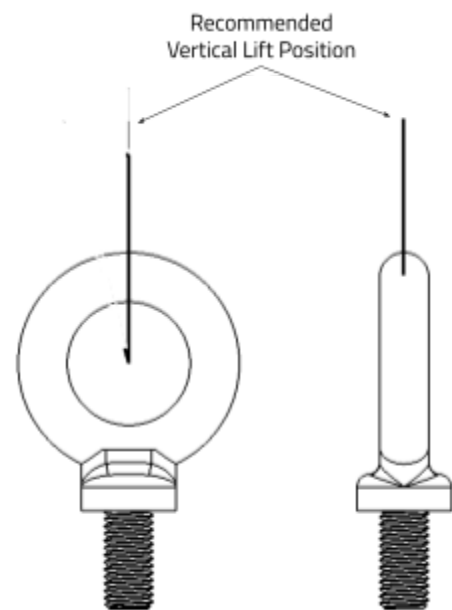


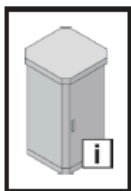
Figure 21. Lifting eye bolt.

4.3. Lifting the Power Tower

Table 16. System mass properties

Component	Total Weight (lbs)	Total Lifting Capacity of Lifting Eyes (lbs)
Charge Cube	2,000	10,000
Power Tower	1,300	3,000

Instructions for lifting the Power Tower enclosure (Rittal model CS 9888.500) are on the following page.



5. Transport 5. Transport 5. Transport

DE EN FR



DE

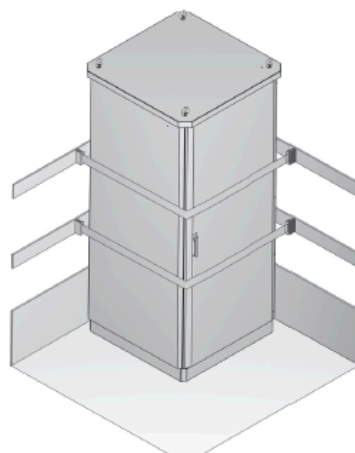
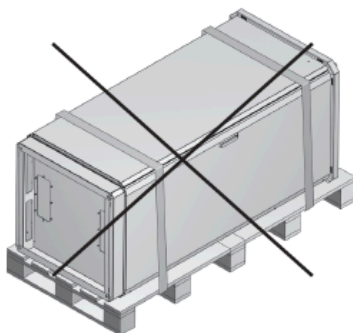
- Die angegebenen Belastungsgrenzen sind einzuhalten.
- Das Gehäuse muss während Transport, Auf- und Ausbau sowie Demontage gegen Umkippen und Verrutschen gesichert werden – **ACHTUNG:** Schwerpunktverschiebung!
- Hebezeuge sind unter Beachtung der angegebenen zulässigen Anstellwinkel vorschriftsmäßig einzusetzen.
- Ein Krantransport eines Gehäuses mit Palette ist nicht gestattet.

EN

- The stated load limits must be observed.
- The enclosure must be secured during transportation, assembly, configuration and dismantling in order to prevent potential tipping or sliding – **CAUTION:** Displacement of centre of gravity!
- A lifting gear can be used provided that the stated, permitted setting angle is used.
- Transporting an enclosure by crane with a palette is not permitted.

FR

- Respecter impérativement les limites de charge indiquées.
- L'armoire électrique doit être sécurisée pour éviter toute chute et tout glissement lors du transport, du montage et de l'équipement ainsi que du démontage – **ATTENTION :** déplacement du centre de gravité !
- Les outils de levage doivent être utilisés conformément aux instructions et en respectant l'angle d'incidence admissible indiqué.
- Le transport par grue d'une armoire électrique sur une palette n'est pas autorisé

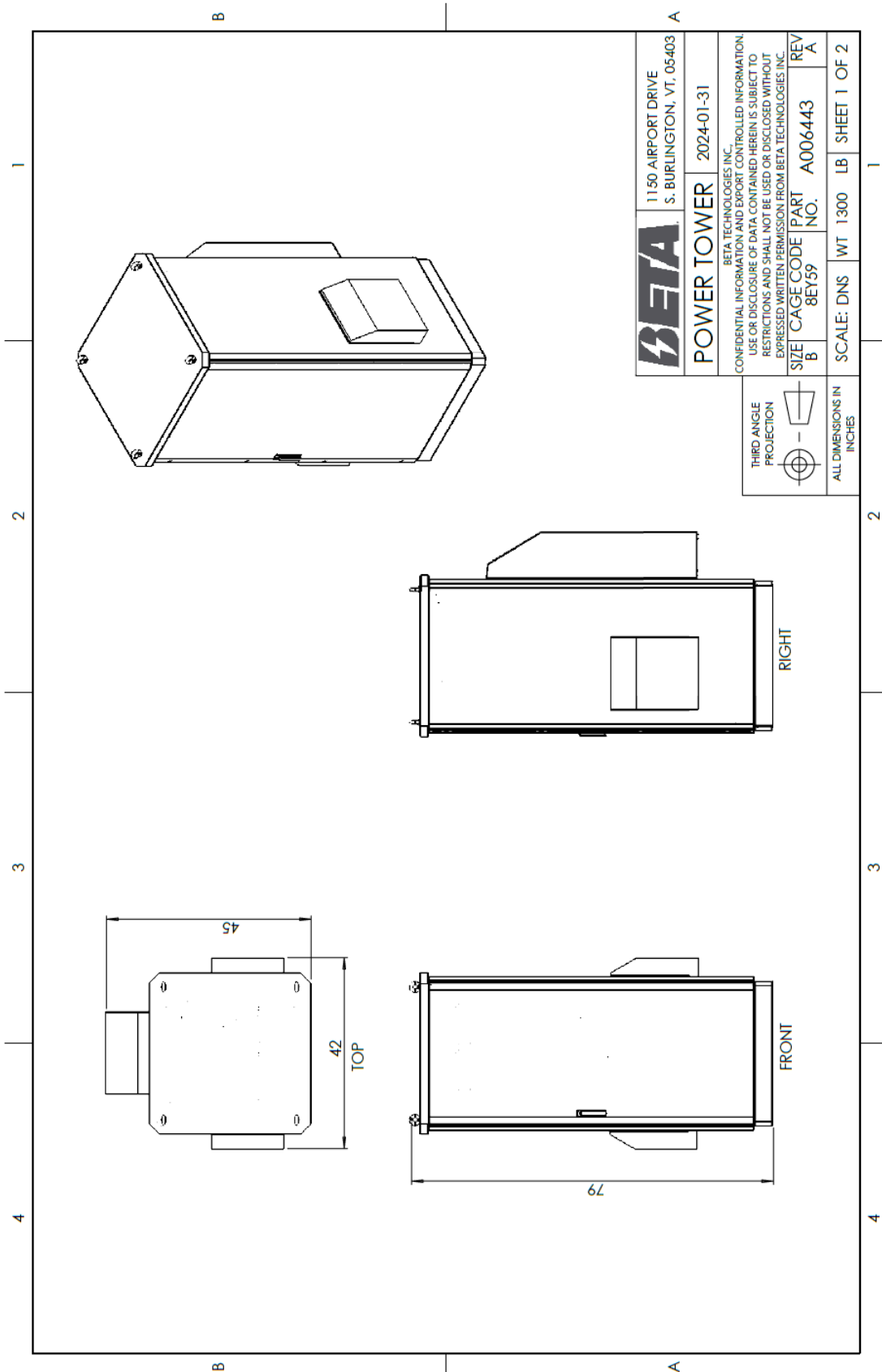


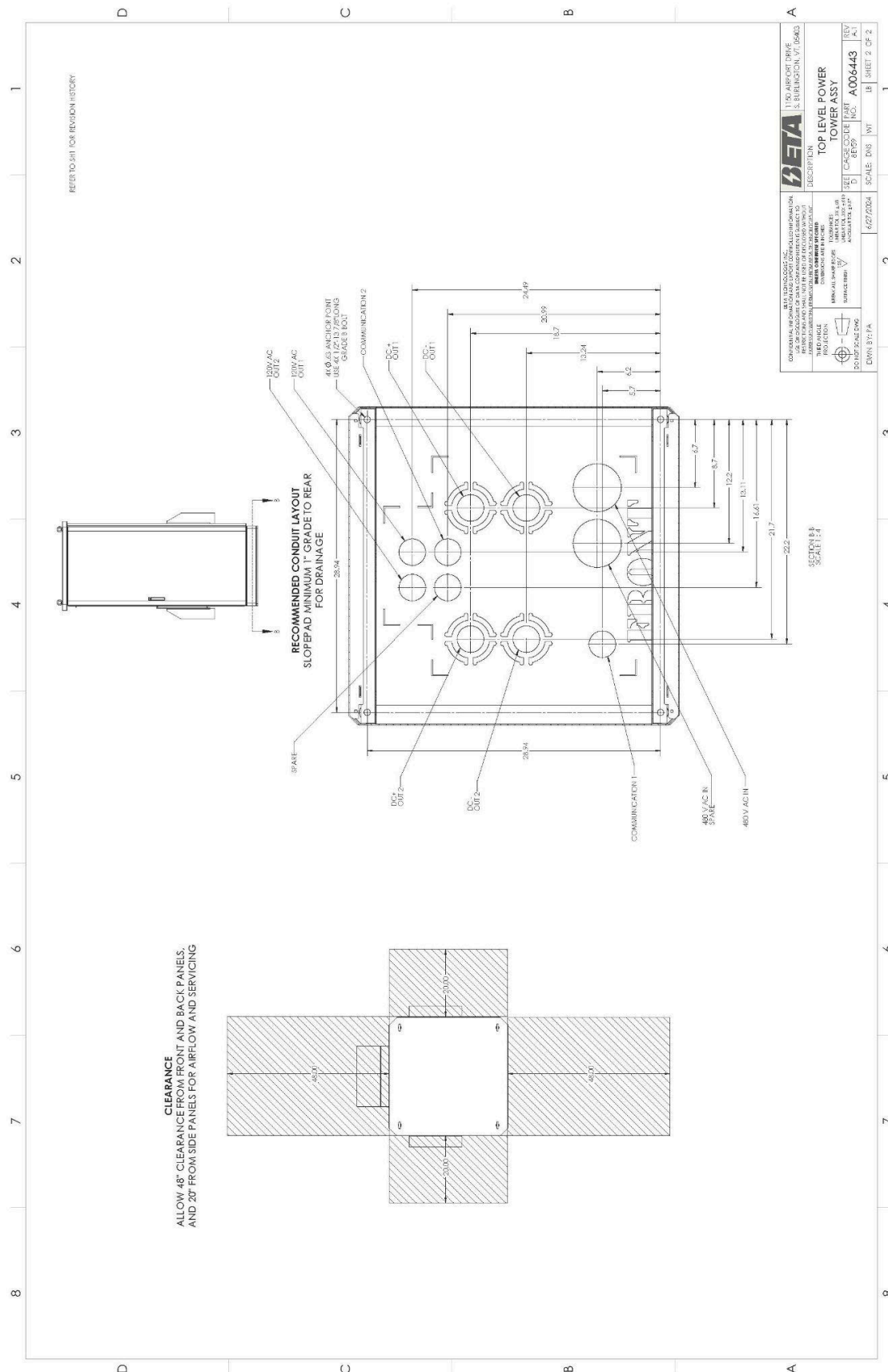
F	4 x 3400 N	4800 N	6400 N

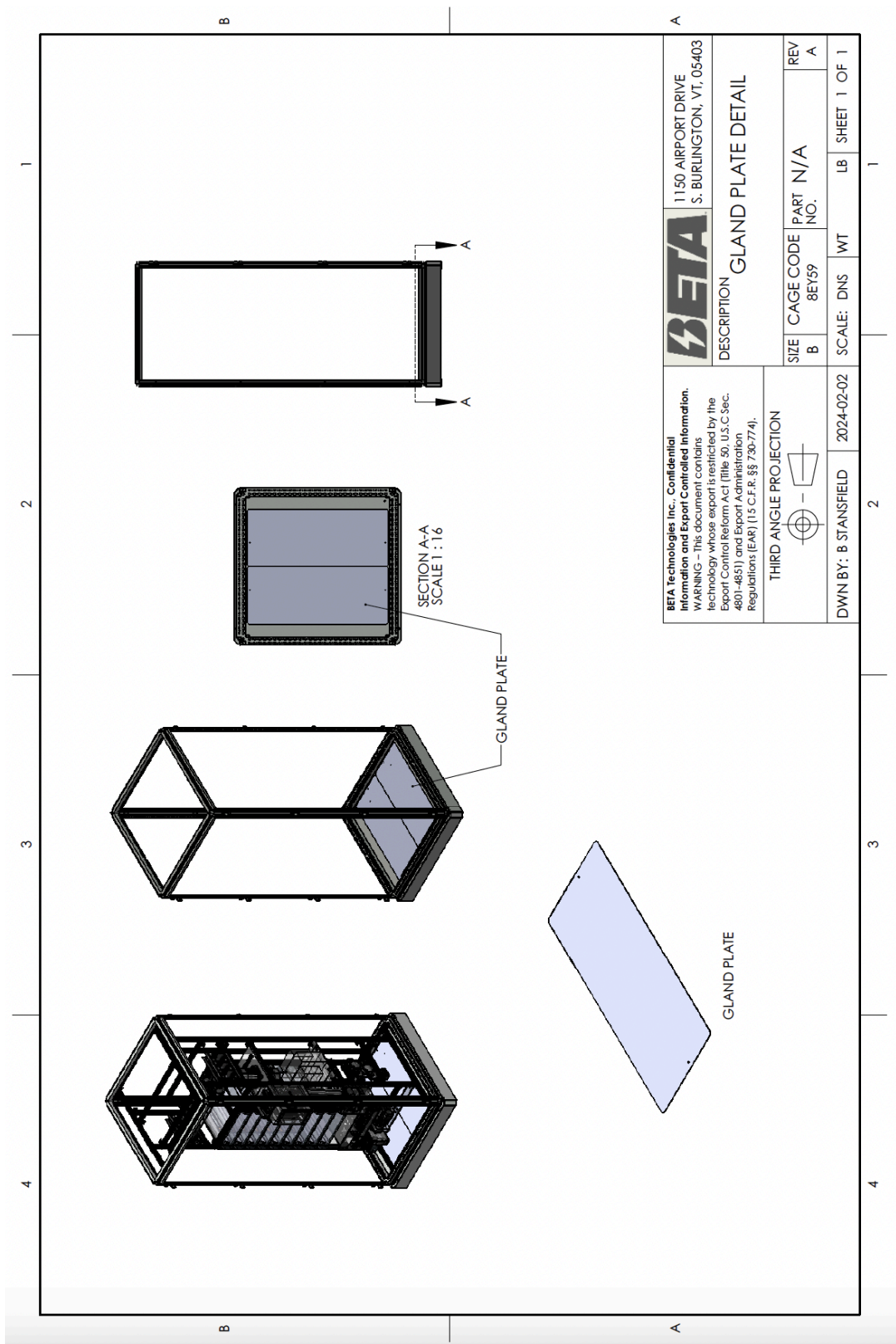
5. Mounting Procedures

5.1. Installation Drawings

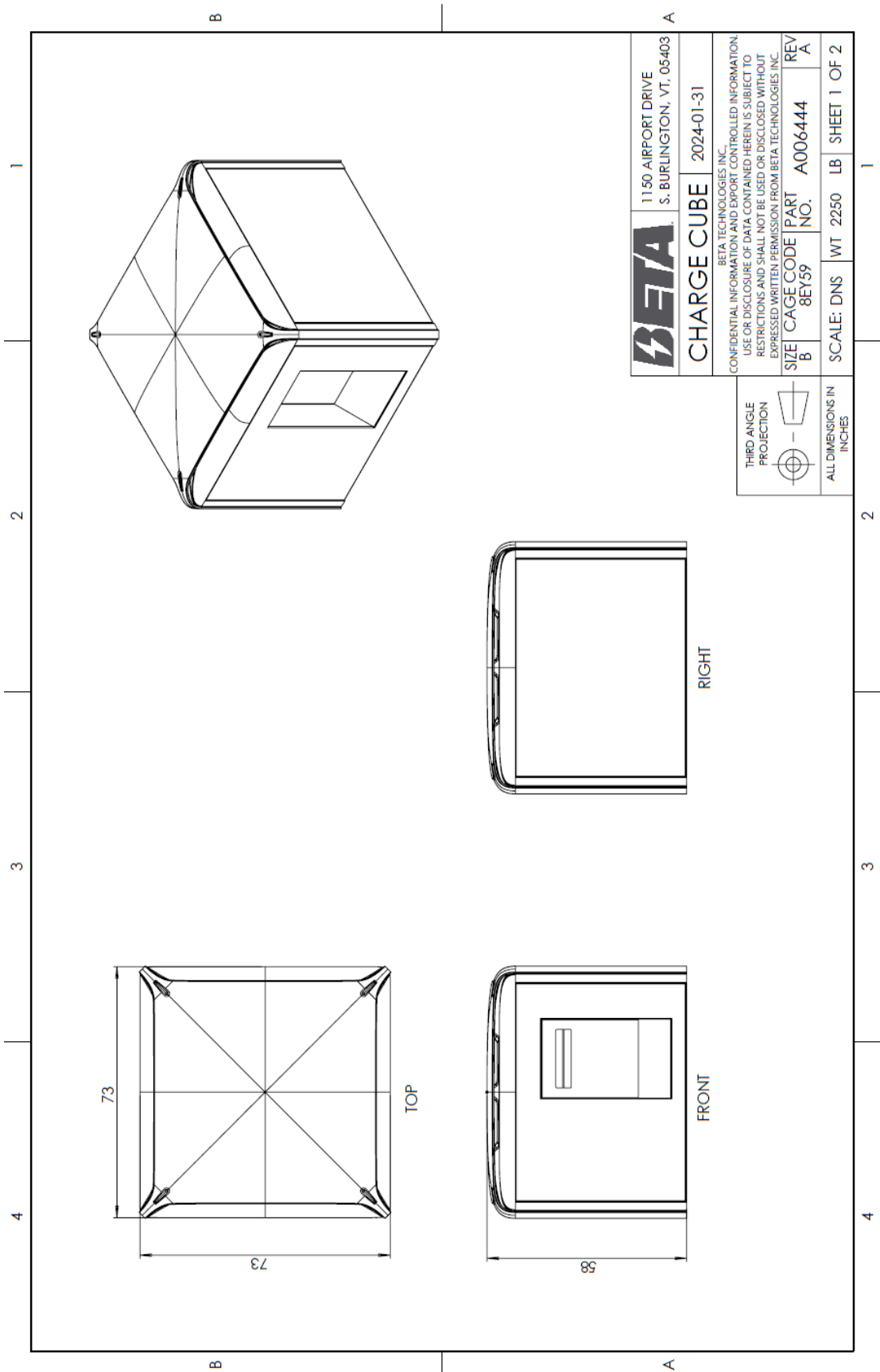
See the following installation drawings for conduit locations, clearances, and dimensions.

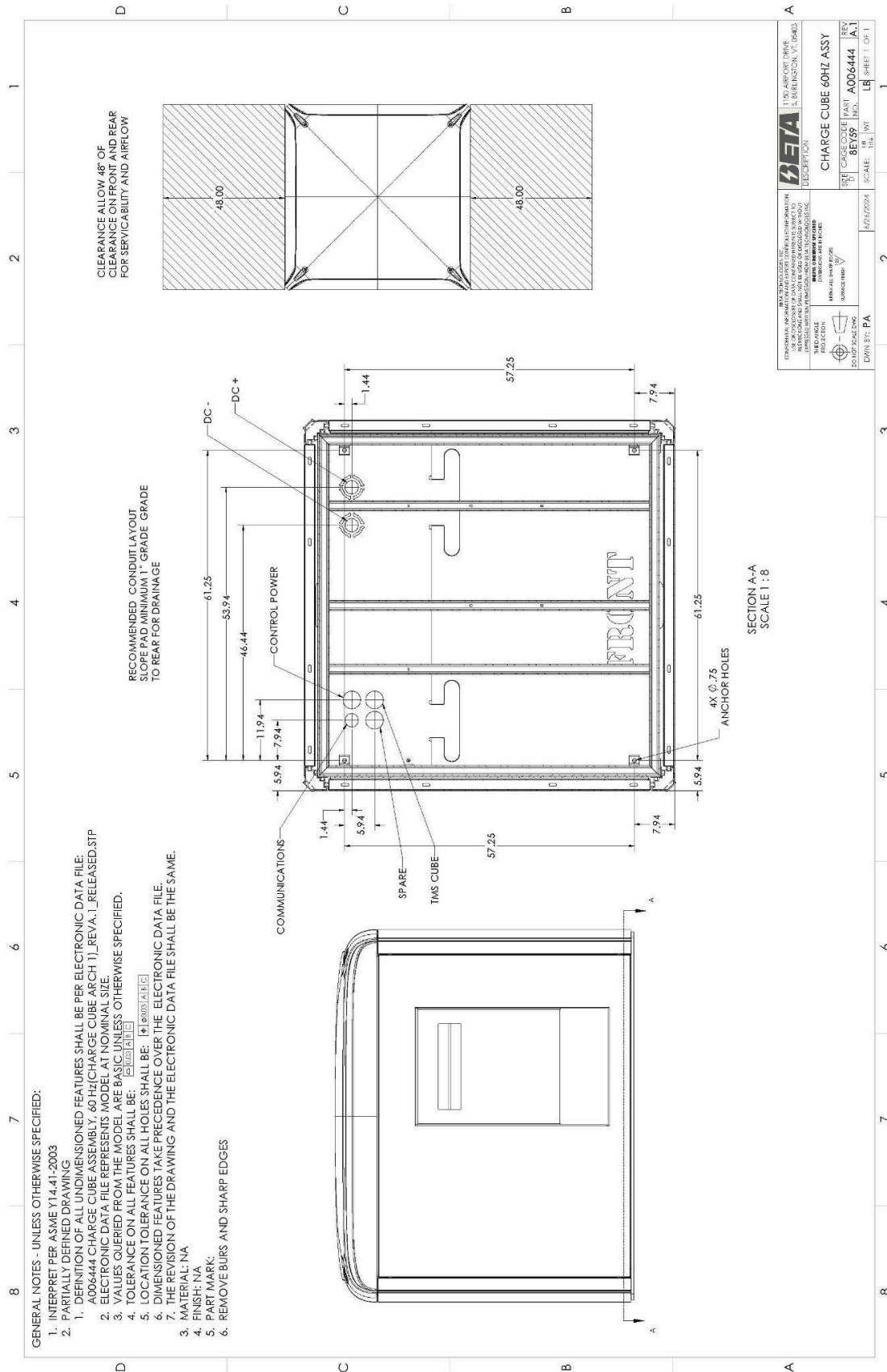






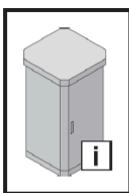
Note: Gland plate to be field modified for penetrations.





5.2. Mounting the Power Tower Enclosure

The following instructions show how to anchor the Power Tower enclosure (Rittal model number CS 9888.500) to its base. This includes removing decorative plinth trim pieces to gain access to mounting holes for anchoring to a recommended mounting surface, such as a concrete pad.



4. Montage und Aufstellung 4. Assembly and siting 4. Montage et implantation



DE

4.1 Anforderungen an den Aufstellort Vor der Montage ist zu beachten, dass

- die Umgebungstemperatur am Aufstellort nicht höher als +60 °C bei Ausführung mit Kühlgerät oder nicht höher als +80 °C bei geschlossener Ausführung ist.
- die Umgebungstemperatur am Aufstellort nicht niedriger als -30 °C bei Ausführung mit Kühlgerät oder nicht niedriger als -40 °C bei geschlossener Ausführung ist.
- bei Außenaufstellung die Windgeschwindigkeit nicht höher als max. 56 m/s ist.

Liegen besondere Betriebsbedingungen vor, so müssen besondere Vereinbarungen zwischen Rittal und dem Anwender getroffen werden.

Hinweise zur Montage

- Halten Sie die auf Seite 28 vorgegebenen Belastungsangaben ein.
- Bei der Montage der Gehäuse ist auf eine ausreichende Ebenheit der Montageflächen zu achten.
- Halten Sie alle vorgegebenen Drehmomentangaben ein. Ein Über- bzw. Unterschreiten der in dieser Anleitung vorgegebenen Anzugsdrehmomente kann zu Anlagenschäden oder zu schweren bis hin zu tödlichen Verletzungen führen.
- Vermeiden Sie nicht notwendige Öffnungen am Schaltschrank. Jede nicht sorgfältig eingebrachte und abgedichtete Öffnung kann zu einer Reduzierung der Schutzart führen.

EN

4.1 Site requirements

Prior to assembly, ensure that:

- the ambient temperature at the installation site is not higher than +60 °C if equipped with a cooling unit and not higher than +80 °C if closed.
- the ambient temperature at the installation site is not lower than -30 °C if equipped with a cooling unit and not lower than -40 °C if closed.
- if installed outdoors, the wind speed does not exceed 56 m/s.

If particular operating conditions apply, special agreements must be made between Rittal and the user.

Assembly instructions

- Observe the load capacities specified on page 28.
- When installing the enclosures the mounting surfaces must be sufficiently smooth.
- Observe all specified torque values. Over- or undershooting the tensioning torques specified in these instructions can cause system damage, severe injuries or even death.
- Avoid any unnecessary openings on the enclosure. Any opening that is not made and sealed carefully can reduce the degree of protection.

FR

4.1 Exigences concernant le lieu d'implantation

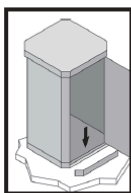
Avant le montage, il faut veiller à ce que

- la température ambiante du lieu d'implantation ne soit pas supérieure à +60 °C pour baies avec climatiseur ou ne soit pas supérieure à +80 °C pour baies avec porte pleine.
- la température ambiante du lieu d'implantation ne soit pas inférieure à -30 °C pour baies avec climatiseur ou ne soit pas inférieure à -40 °C pour baies avec porte pleine.
- la vitesse du vent ne soit pas supérieure à max. 56 m/s en cas de placement en extérieur.

Des accords particuliers doivent être signés entre Rittal et l'utilisateur en cas de conditions d'exploitation particulières.

Instructions relatives au montage

- Veuillez respecter les charges maximales admissibles à la page 28.
- Lors du montage des armoires, il faut préserver une planéité suffisante de la surface de montage.
- Respectez les couples de serrage prescrits. Le non-respect des couples de serrage prescrits dans cette notice peut occasionner des dommages à l'installation ou des blessures graves voire mortelles.
- Évitez les ouvertures non nécessaires sur l'armoire électrique. Toute ouverture qui n'est pas soigneusement étanchéifiée peut réduire l'indice de protection.



TX25



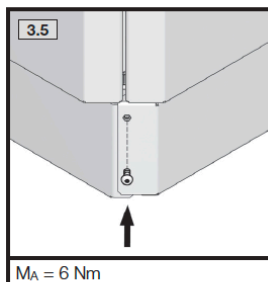
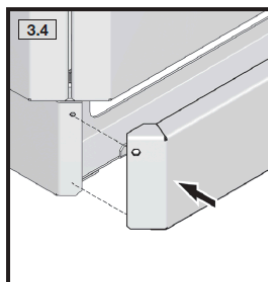
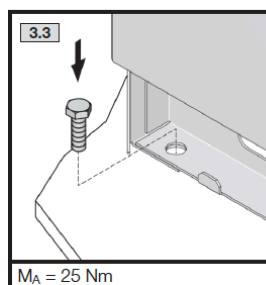
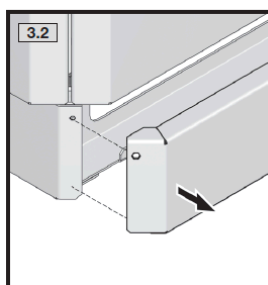
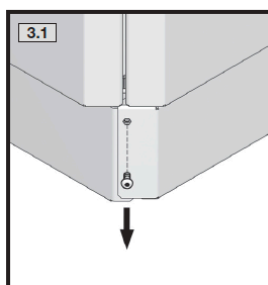
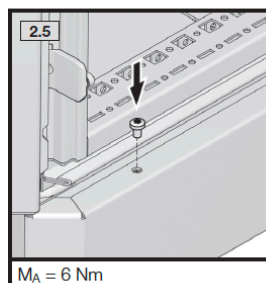
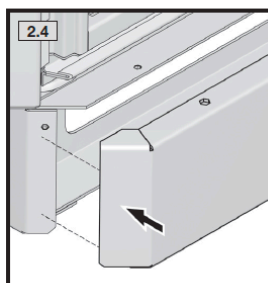
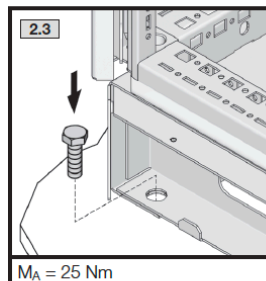
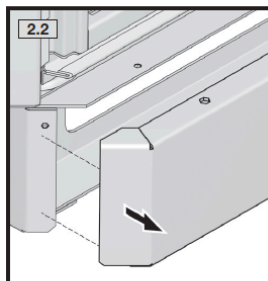
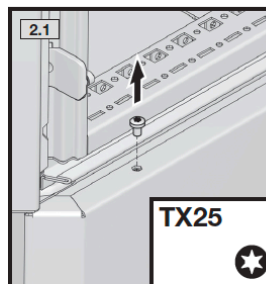
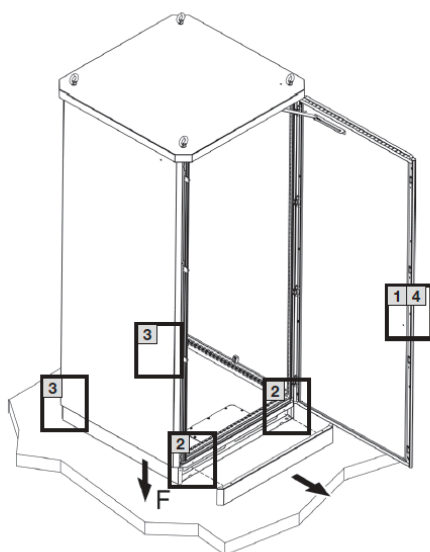
SW3



4. Montage und Aufstellung 4. Assembly and siting 4. Montage et implantation



4.8 Bodenbefestigung
4.8 Base mounting
4.8 Ancrage au sol

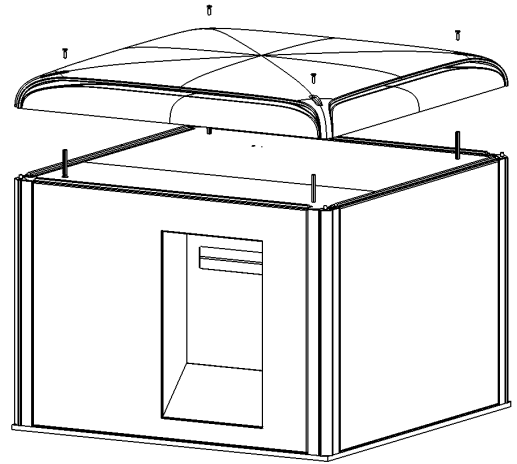


6. Charge Cube Disassembly / Assembly

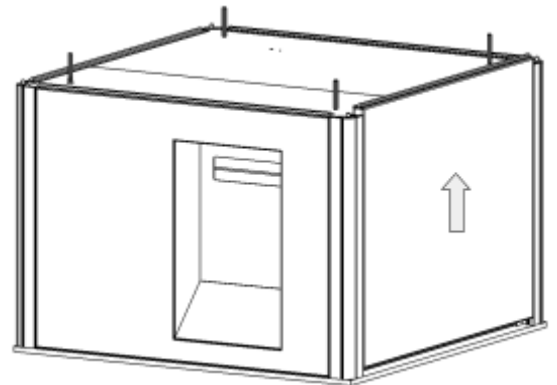
6.1. Disassembling the Charge Cube

The charge cube must be disassembled in order to lift it.

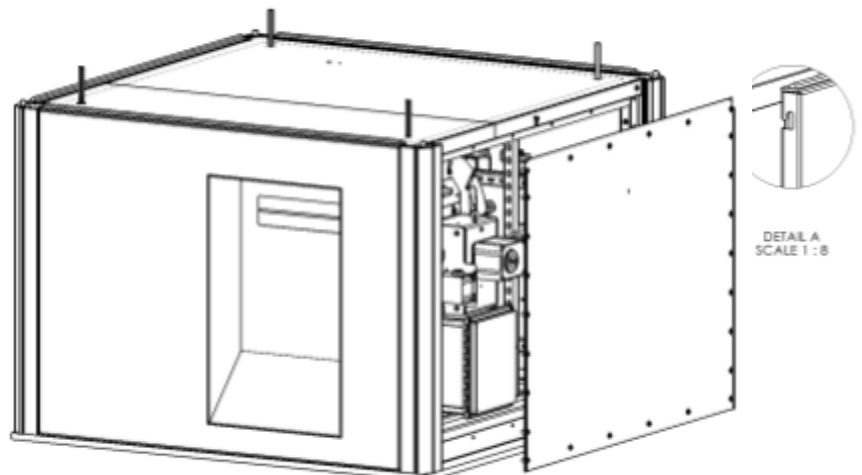
1. Remove all 4 socket-head cap screws, 1 from each corner of the Charge Cube lid.
2. Lift the lid to remove it.



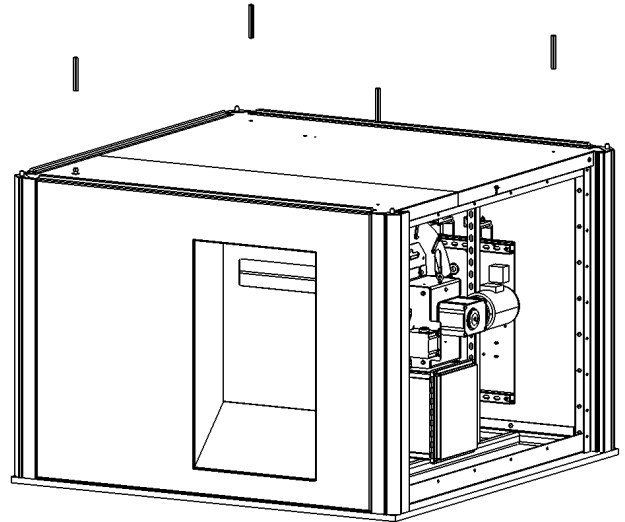
3. Remove the right side outer panel. Lift the panel straight up, then pull it out.



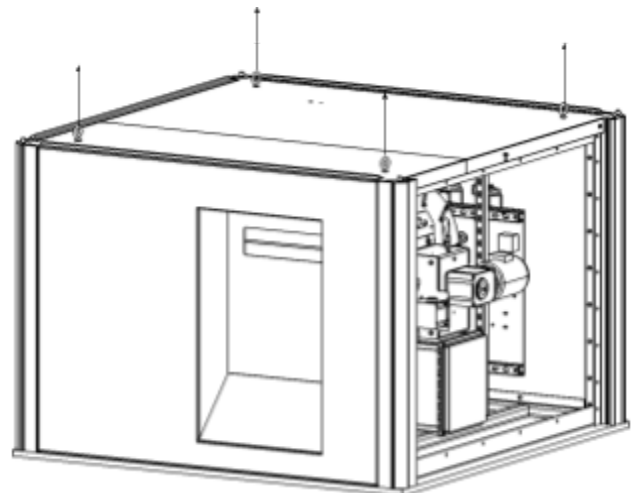
4. To remove the inner side panel, unscrew and remove all the socket-head screws around the perimeter of the panel.
5. Remove the panel.



6. Remove the 4 corner standoffs, which are secured by 4 retaining nuts inside the cube.
7. Loosen and remove each retaining nut.
8. You may also need to remove the left side panel to access the retaining nuts.
9. Unscrew and remove all the socket-head screws around the perimeter of the panel.
10. Remove the panel.

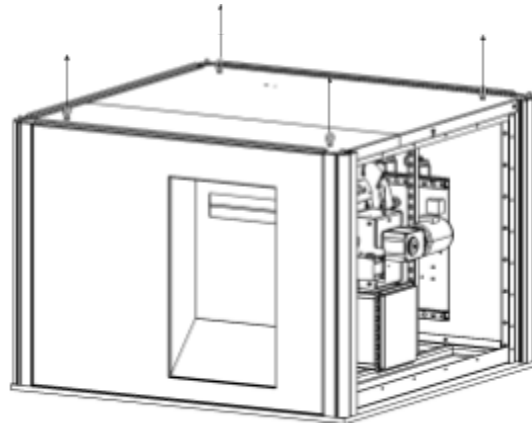


11. Replace the 4 standoffs with 4 lifting eyes.
12. Lift directly upward on the lifting eyes.
 - a. Estimated weight capacity is listed on page 16.

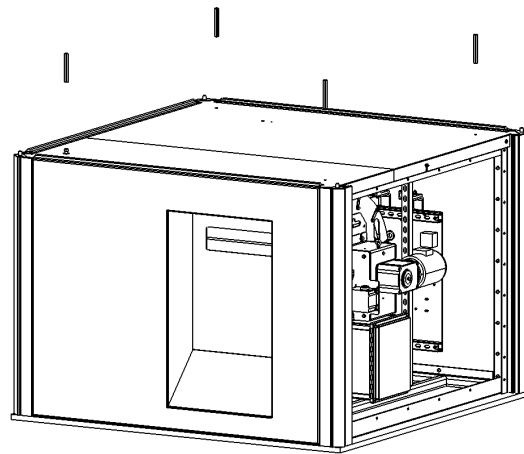


6.2. Assembling the Charge Cube

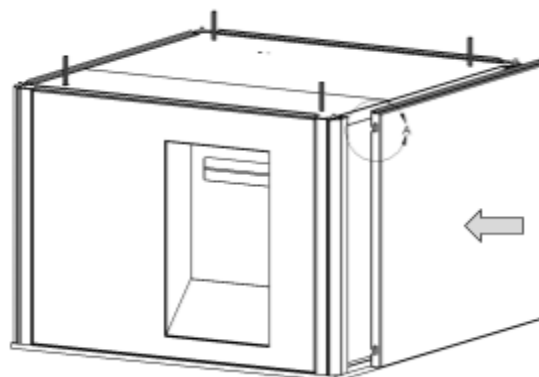
1. Remove all 4 lifting eyes, 1 from each corner of the Charge Cube lid.



2. Install the 4 corner standoffs.
 - a. Secure the standoffs with the 4 retaining nuts inside the cube.
 - b. Torque the nuts to 110 in-lbs.

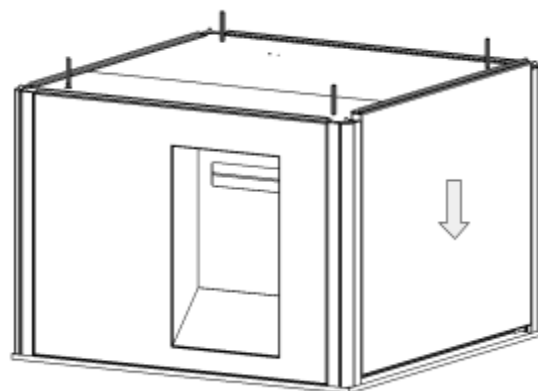


3. Install the inner side panel.
 - a. Tighten the 26 socket-head screws around the perimeter of the panel.
 - b. Torque the screws to 35 in-lbs.

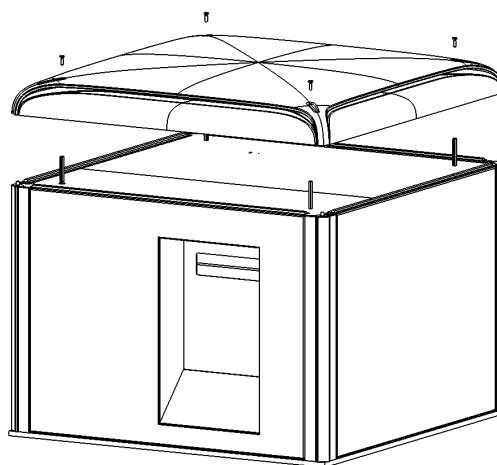


DETAIL A
SCALE 1:8

4. Install the outer panel.
 - a. Align the opening of the J slots with the pins on the corner bracket. (See Detail A of the figure in Step 3.)
 - b. Move the panel inward.
 - c. Then let the panel drop down so that it is fully seated.



5. Attach the lid.
 - a. Lift the lid onto the standoffs.
 - b. Secure the lid with 4 socket-head cap screws, 1 in each corner.
 - c. Tighten the screws until there is no clearance between the bolt head and the lid, then one $\frac{1}{4}$ turn further.
 - d. Do not tighten the screws any further. Any additional torque will damage the lid.



Version History

Version	Pages	Summary
1.1	Pg. 17, 39 & 42	Updated Conduit Layout & Unit Weight
1.2	Pg. 13, 14, 15, 16, 23, 24, 25, 26, 28, & 29	Updated Wire Sizing & Formatting

Detail Bill of Material

Project Name: KS-BETA 1200A 2026 PROJECTS
General Order No:
Bid Date 3/24/2026

Negotiation No: POIL0324X6K1
Alternate No: 0002
Est. Purchase Date: 3/24/2026

Item No.	Qty	Product	Description
	50	Panelboards	PRL4X, 21 Circuits, 1200A, Fully Rated, 480Y/277V 3Ph 4W, Copper Bus, 65kAIC, 1200A, 3P PDG53M1200 Main Breaker[Bottom Fed], Surface Mounted

Catalog No WI:PESFNIBBB26C
Designation 80% 36x73" 3R

Qty List of Materials

- 1 1200A, 3P PDG53M1200 Main Breaker
- 1 PXR20 LSIG + ARMS Trip Unit Option M with no control wiring
- 1 Trip Unit Amps, 1200A
- 3 Padlockable Hasp Lockoff Device
- 1 Padlockable Hasp Lockoff Device
- 1 Padlockable Hasp Lockoff Device
- 2 40A, 3P PDG23M0040 Branch Breaker
- 1 600A, 3P PDG33M0600 Branch Breaker
- 2 3P Frame 2 Branch Provision Only
- 1 100A, 3P PDG23M0100 Branch Breaker
- 1 30A, 3P PDG23M0030 Branch Breaker
- 1 Copper Main Bus, 1200 Amps
- 1 Std. Bolted Al Ground Bar (Al/Cu Cable)
- 1 Panel Nameplate - White with Black Letters
- 1 Service Entrance Panel
- 1 Type 3R Enclosure - Galvanized: RPCB3673G

Item No.	Qty	Product	Description
	50	SPD	SPD

Catalog No SPD080480Y2N

Catalog No SPD080480Y2N
Qty 1
List of Materials EATON SPD SERIES080KA277/480VSTANDARDNEM

Eaton Selling Policy 25-000 applies.

If Eaton and the buyer entity listed on this purchase order have a separate executed written agreement for the products/services herein, then that agreement applies. Otherwise, Eaton's Selling Policy 25000 (<https://www.eaton.com/ca/en-gb/support/terms-conditions.html>) controls and supersedes all prior correspondence or communications between Eaton and the buyer, and any additional or different terms proposed by the buyer are rejected.

All orders must be released for manufacture within 90 days of date of order entry. If approval drawings are required, drawings must be returned approved for release within 60 days of mailing. If drawings are not returned accordingly, and/or if shipment is delayed for any reason, the price of the order will increase by 1.0% per month or fraction thereof for the time the shipment is delayed.

Seller shall not be responsible for any failure to perform, or delay in performance of, its obligations resulting from the COVID-19 pandemic or any future epidemic, and Buyer shall not be entitled to any damages resulting thereof.

Blank Cover Bus Cover, Filler 4X 1 PDG23M0100 2 PDG23M0040 3 TS, 100A 4 TS, 40A 5 TMTU 6 TMTU 7 PDG23M0040 8 PDG23M0030 9 TS, 40A 10 TS, 30A 11 TMTU 12 TMTU 13 PROVFrame23 14 PROVFrame23 15 17 PDG33M0600 18 19 TS, 600A 20 21 TMTU 22 23 25 Main Breaker 1200A H. Mtd. 26 PDG53M1200, PXR20 ALSIG Neutral		General Information (Section 1 of 1) Service Voltage: 480Y/277V 3Ph 4W Enclosure: Type 3R Bus Rating & Type: 1200A Copper Neutral Rating: 1200A Ground Bar: Std. Bolted Aluminum, Al or Cu cable S.C. Rating: 65k A.I.C. Fully Rated Main Device Type: Main Breaker - Bottom Cable Entry Main Terminals: Mechanical - (4) 4/0-500 kcmil (Cu/Al) Neutral Terminals: Mechanical - (4) #2-500 kcmil (Cu/Al) Box Catalog No.: RPCB3673G Trim: Complete Enclosure (Includes Trim) Surface Mounted Box Dimensions: 73.50" [1866.9mm]H x 36.00" [914.4mm]W x 12.85" [326.4mm]D Min. Gutter Size: Top = 10.625" [269.9mm] Bottom = 10.625" [269.9mm] Left = 6" [152.4mm] Right = 8" [203.2mm] Panel ID Nameplate: (1) 80% 36x73" 3R Type: Plastic, adhesive-backed (2) 480Y/277V 3Ph 4W Color: White with Black Letters (3) UL Service Entrance Label Y Trim Lock: T-Handle Lock Assembly Circuit Directory: Plastic Sleeve with Card Painted Box:ANSI 61 Main Circuit Breaker Trip Type: PXR20 Electronic Trip Unit. Seismic Label (IBC/CBC Seismic Qualified). Heat Loss - Watts (Est.) = 626 Wire shall be based on the ampacity of 75°C rated conductors unless otherwise indicated.																																																													
Device Modifications: <table><tr><th>Ref #</th><th>Description</th></tr><tr><td>PDG3XPLKT</td><td>Padlockable Hasp Lockoff</td></tr><tr><td>Ckt #:19</td><td></td></tr><tr><td>PDG2XPLKT</td><td>Padlockable Hasp Lockoff</td></tr><tr><td>Ckt #:1, 2, 7</td><td></td></tr><tr><td>Main Device Mods:</td><td></td></tr><tr><td>PDG5XPLKT</td><td>Padlockable Hasp Lockoff Device</td></tr></table>	Ref #	Description	PDG3XPLKT	Padlockable Hasp Lockoff	Ckt #:19		PDG2XPLKT	Padlockable Hasp Lockoff	Ckt #:1, 2, 7		Main Device Mods:		PDG5XPLKT	Padlockable Hasp Lockoff Device	Branch Devices <table><tr><th>Qty</th><th>Poles</th><th>Trip</th><th>Frame</th><th>Amps</th><th>kAIC</th></tr><tr><td>1</td><td>3</td><td>600</td><td>Frame 3</td><td>600</td><td>65</td></tr><tr><td>2</td><td>3</td><td>40</td><td>Frame 2</td><td>225</td><td>65</td></tr><tr><td>2</td><td>3</td><td></td><td>PROVFrame23</td><td></td><td></td></tr><tr><td>1</td><td>3</td><td>100</td><td>Frame 2</td><td>225</td><td>65</td></tr><tr><td>1</td><td>3</td><td>30</td><td>Frame 2</td><td>100</td><td>65</td></tr></table> Main Devices <table><tr><th>Qty</th><th>Poles</th><th>Trip</th><th>Frame</th><th>Amps</th><th>kAIC</th></tr><tr><td>1</td><td>3</td><td>1200</td><td>Frame 5</td><td>1200</td><td>65</td></tr></table>	Qty	Poles	Trip	Frame	Amps	kAIC	1	3	600	Frame 3	600	65	2	3	40	Frame 2	225	65	2	3		PROVFrame23			1	3	100	Frame 2	225	65	1	3	30	Frame 2	100	65	Qty	Poles	Trip	Frame	Amps	kAIC	1	3	1200	Frame 5	1200	65
Ref #	Description																																																														
PDG3XPLKT	Padlockable Hasp Lockoff																																																														
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Notes:																																																															
The information on this document is created by Eaton Corporation. It is disclosed in confidence and it is only to be used for the purpose in which it is supplied. PREPARED BY JEREMY LABER DATE 3/24/2026 Eaton APPROVED BY DATE JOB NAME KS-BETA 1200A 2026 PROJECTS DESIGNATION 80% 36x73" 3R VERSION 1.0.0.92 TYPE PRL4X DRAWING TYPE Customer Approval NEG-ALT Number P0IL0324X6K1-0002 REVISION 0 DWG SIZE A G.O. ITEM SHEET 1 of 2																																																															

Pow-R-Line4X Device Specifications

Ckt #s	Nameplate	Device	Trip	Terminal	Modifications
Main		PDG53M1200	1200	(4) 4/0-500 kcmil (Cu/Al)	PXR20 LSIG + ARMS Trip Unit Option M with no control wiring Trip Unit Amps, 1200A
Padlockable Hasp Lockoff Device					
1,3,5		PDG23M0100	100	(1) #4-4/0 (Cu/Al)	
Padlockable Hasp Lockoff Device					
2,4,6		PDG23M0040	40	(1) #4-4/0 (Cu/Al)	
Padlockable Hasp Lockoff Device					
7,9,11		PDG23M0040	40	(1) #4-4/0 (Cu/Al)	
Padlockable Hasp Lockoff Device					
8,10,12		PDG23M0030	30	(1) #14-1/0 (Cu/Al)	
13,15,17		PROVFrame23	40	None Available	
14,16,18		PROVFrame23	30	None Available	
19,20,21 22,23,24 25,26		PDG33M0600	600	(2) #2-500 kcmil (Cu/Al)	
Padlockable Hasp Lockoff Device					

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	JEREMY LABER		3/24/2026			
	APPROVED BY		DATE	JOB NAME	KS-BETA 1200A 2026 PROJECTS	
				DESIGNATION	80% 36x73" 3R	
	VERSION		TYPE		DRAWING TYPE	
	1.0.0.92		PRL4X		Customer Approval	
NEG-ALT Number	REVISION	DWG SIZE	G.O.	ITEM	SHEET	
P0IL0324X6K1-0002	0	A			2 of 2	

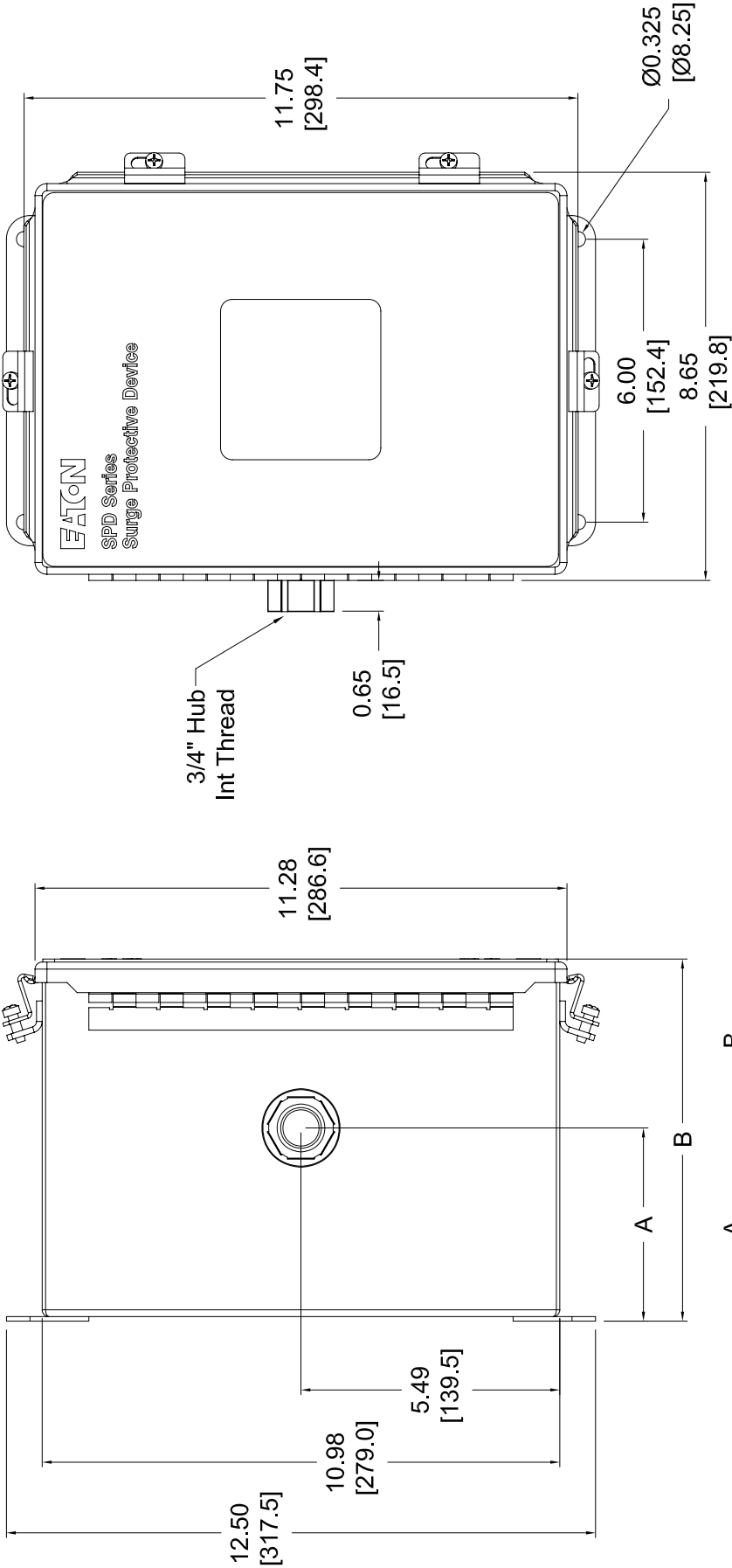
General Information: Surge Protection Device

CATALOG NUMBER:	SPD080480Y2N
DEVICE:	SPD Series
SURGE RATING:	80 kA per phase
PER MODE SURGE RATING:	40 kA
VOLTAGE:	480 VAC
WIRING:	(4W+G)
ENCLOSURE:	NEMA 4
PROTECTION MODES:	10 Modes

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The information on this document is created by Eaton Corporation. It is disclosed in confidence and it is only to be used for the purpose in which it is supplied.	PREPARED BY	DATE	Eaton		
	JEREMY LABER	3/24/2026			
	APPROVED BY	DATE	JOB NAME	KS-BETA 1200A 2026 PROJECTS	
			DESIGNATION		
	VERSION		TYPE	DRAWING TYPE	
	1.0.0.0		Surge Protection Device	Customer Appr.	
NEG-ALT Number	REVISION	DWG SIZE	G.O.	ITEM	SHEET
P0IL0324X6K1-0002	0	A			1 of 1

GO/NEG-Alt-Date: POIL0324X6K1-0002-3/24/2026		Job Name: KS-BETA 1200A 2026 PROJECTS
Item Number:	Catalog Number: SPD080480Y2N	Designation:



50-200 KA	2.60 / [66.0]	5.39 / [137.0]	Weight - 14.6 lb / 6.6 kg
250-400 KA	4.10 / [104.1]	7.68 / [195.0]	Weight - 21.0 lb / 9.5 kg



Bill of Material(s)

Item No.	Quantity	Description
----------	----------	-------------

8	1	Transformer, Aluminum, 9T10A1003
---	---	---

Marks: T-1 KLWB

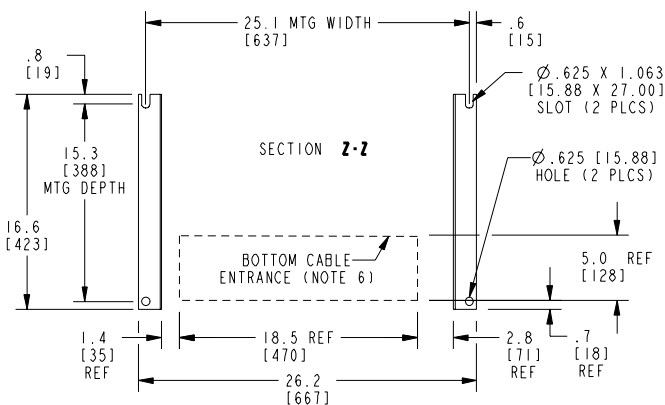
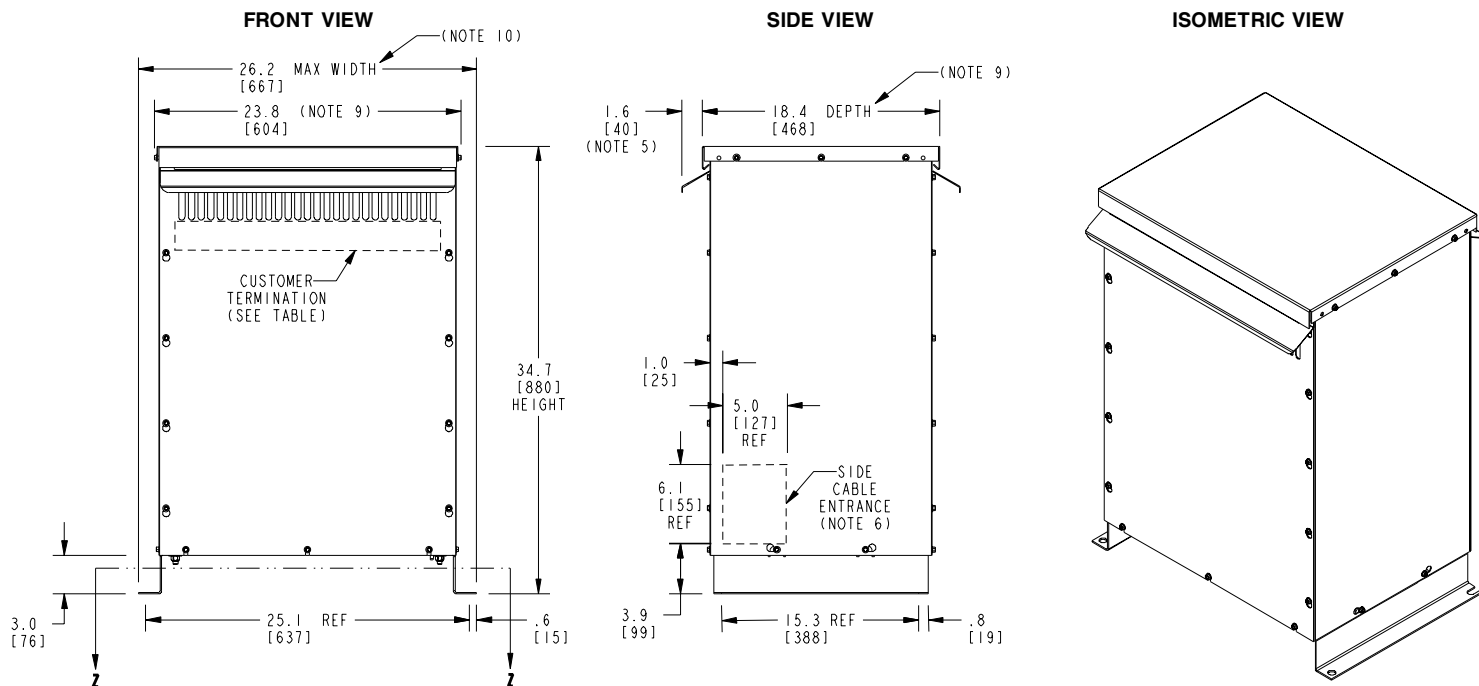
1 3 Phase, 60 Hz, 45 kVA
Ambient Temperature : 40°C
Coil Material : Aluminum
Primary Voltage : 480, Primary Connection : Delta
Secondary Voltage : 208Y/120, Secondary Connection : Wye
Temperature Rise : 150
Energy Efficiency : DOE 2016 (Std)
Enclosure : NEMA 1/NEMA 2
Taps(Nominal) : 2 above 4 below 2.5%
Impedance : 4.3%
K Factor : K1
Sound Level : Std(45dB)
UL : Yes, cUL : No, CE : No,

Accessories :

1 9T18Y1071G11 Ground Bar Kit included
1 9T18Y1072G06 Rain Shield Kit
1 9T18Y1072G10 Lug Kit included

Factory Individualized Transformer Test Reports :

NEMA ST-20 Sound Level Test Report - Not Required
IEEE std C57.12.91 Electrical Test Performance Report - Not Required



**BOTTOM VIEW OF
MOUNTING AND
CABLE ENTRANCE**

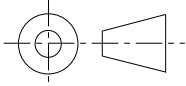
APPROX TOTAL WEIGHT LBS [KG]
PAINTED: 444 [201]
STAINLESS STEEL: 464 [210]

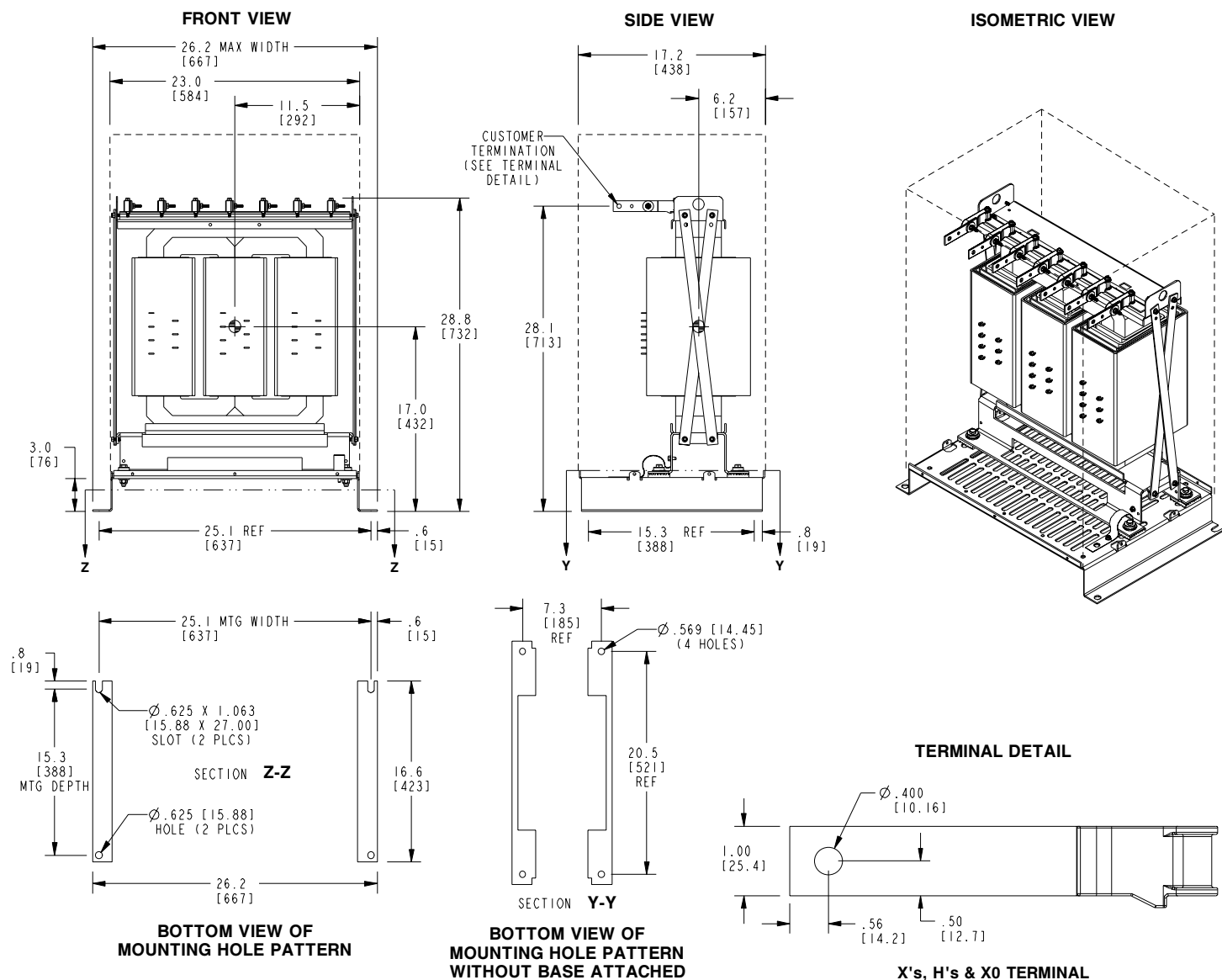
kVA RATING: 45
K-FACTOR: K1
PRI VOLTAGE: 480
SEC VOLTAGE: 208Y/120
FREQ (Hz): 60 Hz
TEMP RISE: 150C
WINDING MATL: Aluminum
ES SHIELD: NO
SOUND LVL (dB): Std (45)

CUSTOMER TERMINATION			
LOCATION	CONNECTION TYPE	HOLE SIZE	HOLE QTY
PRIMARY BUS BARS	STANDARD BUS BAR (LUGS ARE OPTIONAL)	.40 [10.2] DIA	1 PER BUS BAR
SECONDARY BUS BARS			

NOTES:

- 1) ALL UNITS ARE UL LISTED AND ARE DESIGNED PER NEMA ST-20 STANDARDS.
- 2) THE TEMPERATURE RISE LISTED WAS DETERMINED WHEN THE TRANSFORMER WAS MOUNTED IN A STANDARD NEMA-2 ENCLOSURE.
- 3) TRANSFORMER IS DESIGNED FOR FLOOR MOUNTING. OPTIONAL WALL MOUNTING BRACKETS ARE AVAILABLE.
- 4) TRANSFORMER IS DRY TYPE, CLASS AA, WITH VENTILATED ENCLOSURE FOR INDOOR USE. OPTIONAL RAINSHIELD KITS ARE AVAILABLE TO ADAPT UNIT FOR TYPE 3R OUTDOOR USE WITHOUT VOIDING THE WARRANTY.
- 5) APPLICABLE WHEN OPTIONAL RAINSHIELDS ARE INSTALLED. RAINSHIELDS ARE SHIPPED IN KITS FOR FIELD INSTALLATION.
- 6) CABLE ENTRANCE IS PERMITTED THROUGH THE LEFT SIDE, RIGHT SIDE AND/OR BOTTOM ENTRANCE ONLY. CABLE ENTRANCE IS NOT PERMITTED THROUGH THE FRONT, REAR OR TOP PANELS.
- 7) FOR LIFTING OTHER THAN WITH A FORK TRUCK, REMOVE TOP COVER AND USE 1" [25 MM] DIAMETER HOLES IN THE TOP CORE CLAMPS.
- 8) ENCLOSURE PAINT COLOR IS ANSI #61 GRAY. OPTIONAL STAINLESS STEEL ENCLOSURE IS AVAILABLE. FINISH IS #80 GRIT.
- 9) 6" [152 MM] MINIMUM CLEARANCE IS REQUIRED FROM ALL WALLS.
- 10) USE THIS DIMENSION WHEN PLANNING THE MOUNTING PAD.

JOB NAME:	UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE INCH [MM]		
	THIRD ANGLE PROJECTION 		
electrification.us.abb.com	SHEET 1 OF 2	DRY TYPE TRANSFORMER OUTLINE DRAWING TYPE QL, 3-PHASE, DOE 2016 EFFICIENCY (ENCLOSED UNIT)	
		CATALOG # 9T10A1003	REV 2



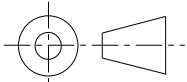
CONNECTION TYPE: STANDARD BUS BAR (LUGS ARE OPTIONAL).

APPROX TOTAL WEIGHT LBS [KG]
PAINTED: 390 [177]

kVA RATING: 45
K-FACTOR: K1
PRI VOLTAGE: 480
SEC VOLTAGE: 208Y/120
FREQ (Hz): 60 Hz
TEMP RISE: 150C
WINDING MATL: Aluminum
ES SHIELD: NO
SOUND LVL (dB): Std (45)

NOTES:

- 1) ALL UNITS ARE UL LISTED AND ARE DESIGNED PER NEMA ST-20 STANDARDS.
- 2) THE TEMPERATURE RISE LISTED WAS DETERMINED WHEN THE TRANSFORMER WAS MOUNTED IN A STANDARD NEMA-2 ENCLOSURE.
- 3) TRANSFORMER IS DRY TYPE, CLASS AA FOR INDOOR USE.
- 4) FOR LIFTING OTHER THAN WITH A FORK TRUCK, USE 1" [25 MM] DIAMETER HOLES IN THE TOP CORE CLAMPS.
- 5) BASE PAINT COLOR IS ANSI #61 GRAY.
- 6) 6" [152 MM] MINIMUM CLEARANCE IS REQUIRED FROM ALL WALLS.
- 7) Ⓢ INDICATES APPROXIMATE CENTER OF GRAVITY.

JOB NAME:	UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE INCH [MM]		
	THIRD ANGLE PROJECTION 		
electrification.us.abb.com		DRY TYPE TRANSFORMER OUTLINE DRAWING TYPE QL, 3-PHASE, DOE 2016 EFFICIENCY (CORE & COIL UNIT)	
CAD DRAWING: 303B111GEUXP73A	SHEET 2 OF 2	CATALOG # 9T10A1003	REV 2



Transformer

by ABB



1M000000

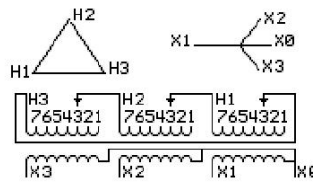
Catalog Number
9T10A1003

Type QL

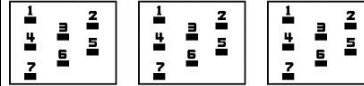
45.0 KVA 60 HZ 3 PH 4.3 % IMP
40 C AMB. 150 C RISE 220 C SYSTEM IS-19C

JUMPER CONNECTION	
TAP	VOLTS
1	504
2	491
3	480
4	467
5	457
6	444
7	431

PRIMARY (H) 480 VOLTS (LINE-LINE)
SECONDARY (X) 208 VOLTS (LINE-LINE)
120 VOLTS (LINE-NEUTRAL)



COIL TAP ARRANGMENT



NET WGT
363 LB
164.7 Kg
88676
UY73A

INSPECTION
& FINAL
TEST
NOG
N137!
091021



ENCLOSURE TYPE 2 (IP20). OR RAINPROOF TYPE 3R (IP22) WHEN PROVIDED SHIELD 9T18Y1072G06

BEFORE HANDLING, INSTALLING AND OPERATING, SEE INSTRUCTION 475A667AAP001
ALUMINUM CONDUCTOR PRIMARY: 10 KV BIL SECONDARY: 10 KV BIL
IN ACCORDANCE WITH NEC SECTION 450-9, ALLOW AT LEAST SIX INCHES CLEARANCE FOR VENTILATION.
CHECK ADDITIONAL NEC AND LOCAL CODE

NEMA CLASS AA DRY TYPE TRANSFORMER

Meets DOE 2016 efficiency

ASSEMBLED IN MEXICO

X3 H3 X2 H2 X1 H1 X0

Note: standard

Outline: 303B111GEUY73A





Bill of Material(s)

Item No.	Quantity	Description
----------	----------	-------------

3	1	Lighting Panelboard, ReliaGear RQ Marks: LP-1 KABE 1 Section(s), NEMA 3R Cabinets 225 Amps, 3 Phase 4 Wire 208Y/120V, 50/60 Hz Minimum Interrupt Rating: 10kA Fully Rated Incoming Feed: Bottom Surface Mounted 24 Circuits UL67 / CSA C22.2 No. 29 Certified cULus Certified Height: 37.5 Inches; Width: 20 Inches; Depth: 6.21 Inches 1 125 Amps Main Breaker A2A225 Al - 1-lug/phase 1-cable/lug 2/0 -300 kcmil Or Cu - 1-lug/phase 1-cable/lug #1 -250 kcmil Main Option Details 1 Aluminum Bus Heat Rated 2 Ground-Box bonded TGL2 1 Ground main lug TGL20 1 100% Rated Neutral 1 NEMA 3R Cabinets Feeders 3 Breaker Device 40 Amps 2 Poles THQB 14 Breaker Space Device 20 Amps 1 Poles THQB 4 Breaker Device 20 Amps 1 Poles THQB 1 Interior: AQF3242AB
---	---	--

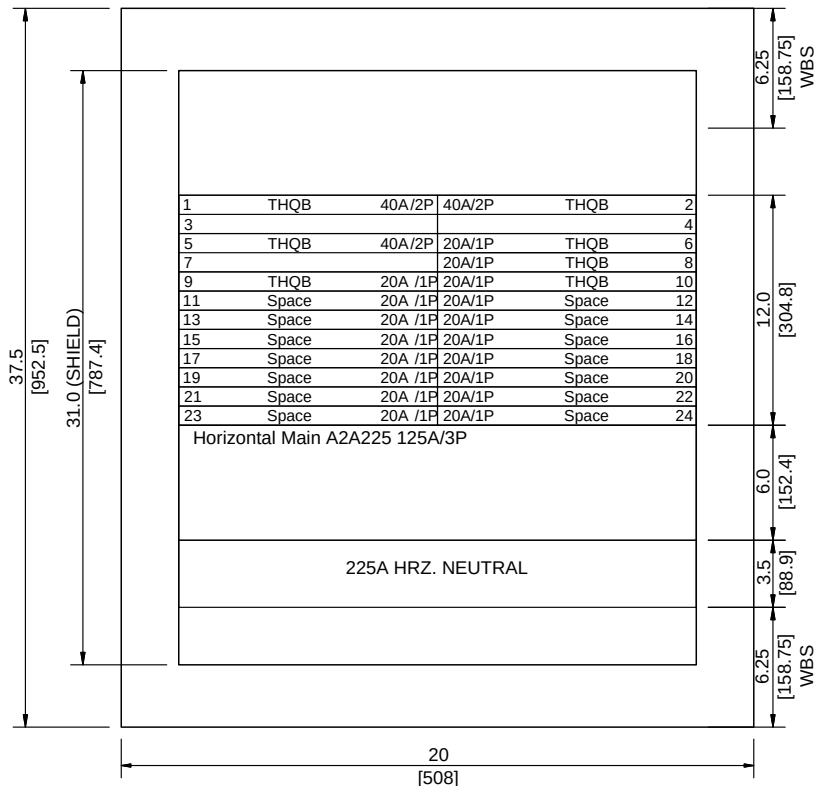
PANEL MARKS: LP-1 kabe

TECHNICAL SPECIFICATIONS	
PANEL TYPE:	RQ PANELBOARD
QUANTITY:	1
AMPS:	225A
VOLTAGE:	208Y/120V
SYSTEM:	3P4W
KAIC:	10 KAIC SC FULLY RATED
MATERIAL:	ALUMINUM BUS
PLATE:	TIN PLATE
ENCLOSURE:	NEMA 3R CABINETS
MOUNTING:	SURFACE
SECTION:	1

MAIN DISCONNECT DEVICE	
FEED DIR.	Bottom
TYPE:	Breaker
AMPS/SENSOR:	125A/-
CATALOG NO.:	A2A125TT
POLES:	3
LUGS:	Al - 1-lug/phase 1-cable/lug 2/0 -300 MCM Or Cu - 1-lug/phase 1-cable/lug #1 -250 MCM

OPTIONS INCLUDED	
QTY	DESCRIPTION
1	Aluminum Bus Heat Rated
2	Ground-Box bonded TGL2
1	Ground main lug TGL20

BRANCH DEVICES			
QTY	AMPS/SENSOR/POLES	DESCRIPTION	
3	40A /- / 2P	THQB2140	
14	20A /- / 1P	Space THQB1120	
4	20A /- / 1P	THQB1120	

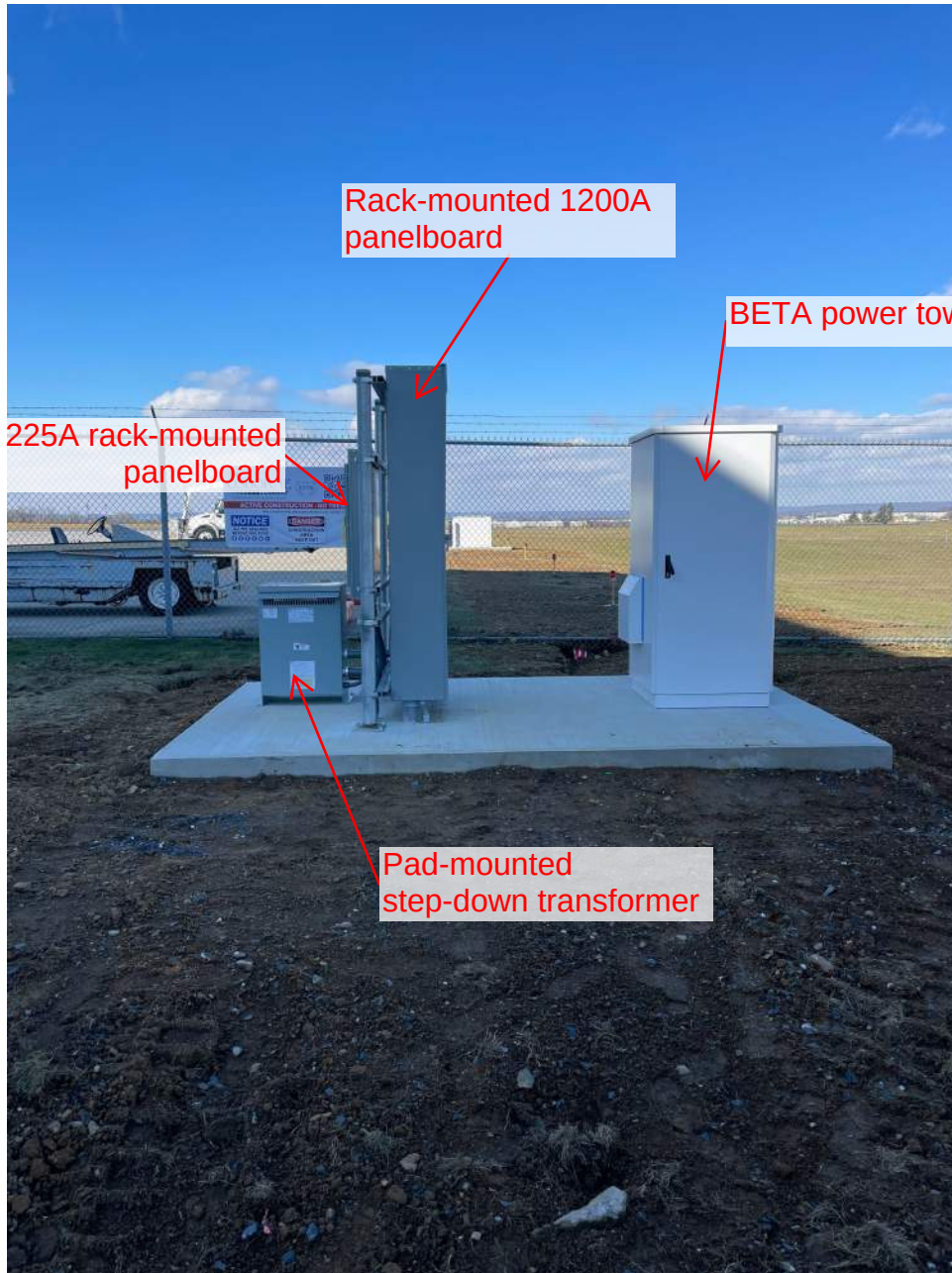


PANEL INFORMATION		
INTERIOR	AQF3242AB	
INTERIOR		
BOX	AB373	
FRONT	NONE	
TROUGH		
TROUGH END		
PULL BOX		
DIMENSIONS	37.5"X20"X6.21"	

1. WBS - WIRE BENDING SPACE.
2. DRAWING NOT TO SCALE.
3. DIMENSIONS ARE IN INCHES[mm].

FACTORY AUTO-LAYOUT. THE LAYOUT IS NOT SPECIFIED, THE FACTORY MAY CHANGE THE LOCATION OF SOME OF THE BREAKERS.

PROJECT NAME : BETA Technologies PA-Lehigh Valley CUSTOMER: BUTLER SUPPLY INC, FENTON	ABB	PANEL ID: RQ Panelboard	PRODUCT NAME: RELIA GEAR LIGHTING PANELBOARD	DRAWING NO: ITEM NO: 3 MARKS: LP-1 kabe
		APPROVED BY: DATE: 02/21/2023 01:02:12 REVISION 0002E00001SslCeQAJ		QUOTE NO: UM5-00014258 SHEET: 1



BTC POWER

AC Level 2 Charger

INSTALLATION AND USER'S MANUAL (REVISION W)



BTCPower, INC.

1719 S. GRAND AVE. SANTA ANA, CA 92705

WWW.BTCPower.COM

AC Level 2 Charger INSTALLATION AND USER'S MANUAL

PLEASE NOTE

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Changes or modifications to this product by other than an authorized service facility could void the product warranty.

If you have questions about the use of this product, contact your customer service representative.

This product should be operated by trained personnel only.

MANUFACTURER:

BTC POWER

www.btcpower.com

OFFICE ADDRESS:

1719 S. Grand Ave., Santa Ana, CA 92705

CONTACT INFORMATION:

Phone: 1-714-259-4888

Fax: 1-714-259-0840

Email: sales@btcpower.com

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AC Level 2 Charger
INSTALLATION AND USER'S MANUAL

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1. Safety Guidelines

SAVE THESE INSTRUCTIONS

This document contains important instructions for the installation, operation, and maintenance of AC Level 2 Charger with Models 30A, 40A, and 70A, Pedestal and Wall Mount, in Single and Dual Configurations. These instructions should be retained for future reference.

1.1. Important Safety Instructions



WARNING

INSTRUCTIONS PERTAINING TO A RISK OF FIRE OR ELECTRIC SHOCK



DANGER

READ THIS MANUAL CAREFULLY BEFORE YOU BEGIN

This **AC Level 2 Charger** manages electricity and may be hazardous. The equipment should be installed, adjusted, and serviced only by qualified electrical personnel familiar with the construction and operation of this type of equipment and the hazards involved, and in full compliance with all local and national codes and standards. Failure to observe this precaution could result in severe injury or death.

Read this manual completely and become familiar with the equipment prior to performing any procedures specified in the manual and energizing the equipment. Inspection and maintenance of this equipment should be performed in accordance with the procedures detailed in this manual.

In situations where it is not possible to perform an installation following the procedures stated in this document, contact BTCPower, Inc. BTCPower, Inc. will not be responsible for any damages that may occur resulting from custom installations that are not stated in this document.

There are no user serviceable parts inside. For service, please contact customer service or your local distributor. **DO NOT ATTEMPT TO REPAIR THE CHARGE STATION YOURSELF. SERVICE TO THE UNIT SHALL ONLY BE PERFORMED BY A QUALIFIED PERSONNEL.**

If the charging cable is somehow damaged, do not operate the charge station. Contact your service representative for service immediately. Shut down the power to the unit by switching the breaker on the supply panel to an off position.

1.2. Symbols and Definitions

Please take special attention to all information marked with the following symbols. These symbols may be found throughout the manual and on labels affixed to the equipment unit.

	DANGER	Indicates High Voltage. It calls attention to items or operations that could be dangerous to the person operating this equipment. Read and follow the instructions carefully. Failure to do so will result in severe injury or possibly death.
	WARNING	Indicates a hazard or unsafe practice which, if not avoided, may result in severe injury or possibly death.
	CAUTION	Indicates a hazard or unsafe practice which, if not avoided, may result in minor to moderate injury.
	NOTE	Indicates important information to consider, otherwise, improper installation and/or damage to components may occur.

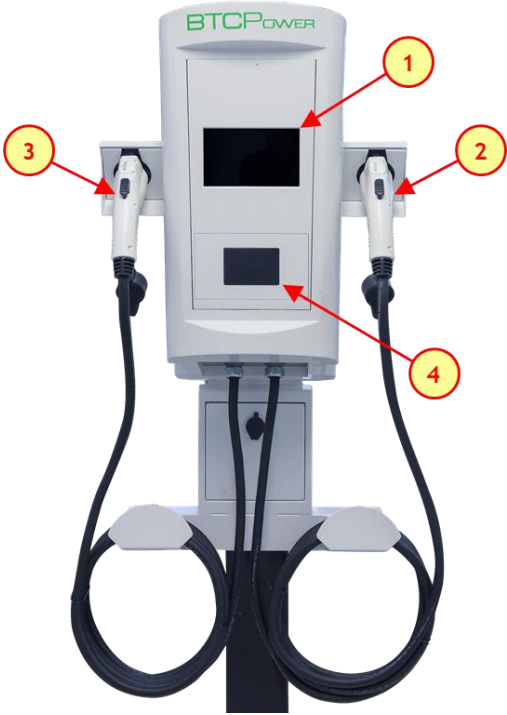
2. System Overview

BRIEF DESCRIPTION OF AC LEVEL 2 CHARGER

The BTCPower 208-240VAC Single Phase Level 2 EVSE acts as a safety device to supply the electric vehicle or hybrid vehicle on-board AC/DC charger with electricity to charge its high voltage battery pack. It can charge all EV compliant with the SAE J1772 charging standard. It is available as a wall-mount or as a freestanding pedestal.

3. Equipment Description

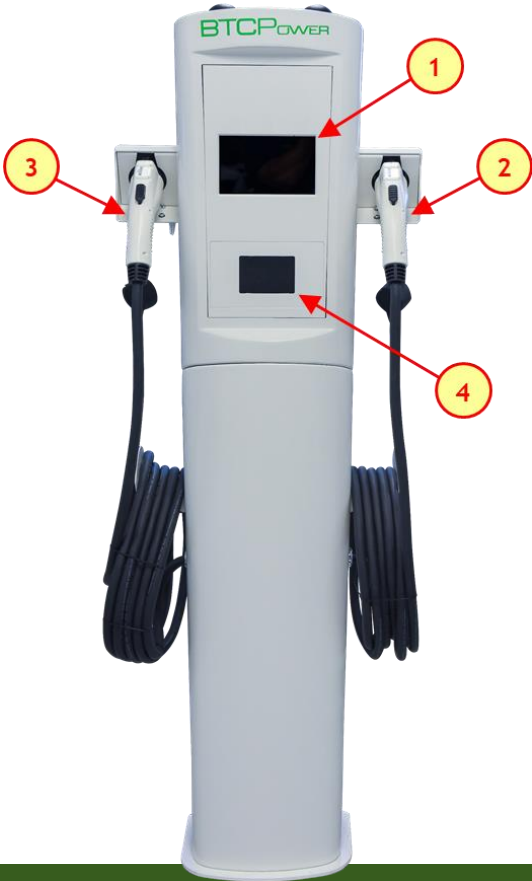
30A / 40A / 70A SINGLE OR DUAL PORT WALL MOUNT CHARGING STATION



COMPONENT DESCRIPTION

1. 7" LCD Panel Display	4. Payment System
2. Charging Connector <u>2</u> (for dual configuration), <u>1</u> (for single configuration)	<u>Available Options:</u>
3. Charging Connector <u>1</u> (for dual configuration)	- RFID Reader
	- Encrypted Insert Magstripe Card Reader

30A / 40A / 70A SINGLE OR DUAL PORT PEDESTAL CHARGING STATION



COMPONENT DESCRIPTION

- | | |
|--|--|
| 1. 7" LCD Panel Display | 4. Payment System |
| 2. Charging Connector 2 (for dual configuration), 1 (for single configuration) | <u>Available Options:</u> |
| 3. Charging Connector 1 (for dual configuration) | - RFID Reader |
| | - Encrypted Insert Magstripe Card Reader |

 NOTE

Both the wall-mount and pedestal charger can come with an optional Cable Retractor. Refer to L2 Charger Cable Retractor Installation Manual for the details.

4. System Specification

4.1. Single or Dual Port Wall Mount Charging Station

Model Numbers: **EVP-2001-30-W-001, EVP-2002-30-W-001,**
EVP-2001-40-W-001, EVP-2002-40-W-001, EVP-2001-70-W-0001

SKUs: **L2W-30-240-16, L2W-30-240-15, L2W-40-240-16, L2W-40-240-15, L2W-70-240-16**

PARAMETER	SINGLE/DUAL 30A	SINGLE/DUAL 40A	SINGLE 70A
Power per Port	7.2kW (240VAC @30A)	9.6kW (240VAC @ 40A)	16.8kW (240VAC @ 70A)
Electrical Service			
Power	240/208 VAC, 30A Load with 40A Branch Circuit per Port	240/208 VAC, 40A Load with 50A Branch Circuit per Port	240/208 VAC, 70A Load with 100A Branch Circuit per Port
Service Panel	40A Breakers per Port (No GFCI)	50A Breakers per Port (No GFCI)	100A Breakers per Port (No GFCI)
Service Wiring	3-Wire (L1, L2, Earth Ground)		
Functional Interface			
Connector Type	SAE J1772		
Charging Protocol	SAE J1772		
Standard Cable Length	22 ft		
Cable Retractor	Optional (Cable 18 ft w/ Cable Management)		
LCD Display	500 Nits, 7" Color, 800 x 480, UV Protected		
Card Reader	ISO 14443 Type A & B, ISO 18092 NFC		
Safety & Connectivity			
Ground Fault Detection	20 mA		
Plug-Out Detection	SAE J1772		
Power Measurement (opt)	Accuracy: 1% – 5%		
Power Report Interval	Every 15 minute on the hour		
Wireless	2.4 GHz Wi-Fi (802.11 b/g/n)		
Wide Area Network	4G LTE Modem, Wi-Fi, Ethernet		
Communication Protocols	OCPP 1.5 and 1.6 Compliant		
Safety and Operation			
Regulatory Compliance	ETL Certified for USA and cUL Certified for Canada; Complies with UL 2594, UL 2231-1, UL 2231-2, and NEC Article 625, EMC: FCC Part 15 Class A		
Operating Temperature	–30°C to +60°C (–22°F to 140°F)		
Storage Temperature	–50°C to +80°C (–58°F to 176°F)		
Humidity	95% Non-Condensing		
Mechanical Characteristics			
Enclosure Rating	NEMA 3R		
Weight	Single: 68 lbs Dual: 78 lbs	Single: 78 lbs Dual: 78 lbs	Single: 47 lbs

Specifications are subject to change, without prior notice.

AC Level 2 Charger INSTALLATION AND USER'S MANUAL

SYSTEM SPECIFICATION

4.2. Single or Dual Port Pedestal Charging Station

Model Numbers: **EVP-2001-30-P-001, EVP-2002-30-P-001,**

EVP-2001-40-P-001, EVP-2002-40-P-001, EVP-2001-70-P-0001

SKUs: **L2P-30-240-15, L2P-30-240-16, L2P-40-240-15, L2P-40-240-16, L2P-70-240-16**

PARAMETER	SINGLE/DUAL 30A	SINGLE/DUAL 40A	SINGLE 70A
Power per Port	7.2kW (240VAC @30A)	9.6kW (240VAC @ 40A)	16.8kW (240VAC @ 70A)
Electrical Service			
Power	240/208 VAC, 30A Load with 40A Branch Circuit per Port	240/208 VAC, 40A Load with 50A Branch Circuit per Port	240/208 VAC, 70A Load with 100A Branch Circuit per Port
Service Panel	40A Breakers per Port (No GFCI)	50A Breakers per Port (No GFCI)	100A Breakers per Port (No GFCI)
Service Wiring	3-Wire (L1, L2, Earth Ground)		
Functional Interface			
Connector Type	SAE J1772		
Charging Protocol	SAE J1772		
Standard Cable Length	21 ft		
Cable Retractor	Optional (Cable 18 ft w/ Cable Management)		
LCD Display	500 Nits, 7" Color, 800 x 480, UV Protected		
Card Reader	ISO 14443 Type A & B, ISO 18092 NFC		
Safety & Connectivity			
Ground Fault Detection	20 mA		
Plug-Out Detection	SAE J1772		
Power Measurement (opt)	Accuracy: 1% – 5%		
Power Report Interval	Every 15 minute on the hour		
Wireless	2.4 GHz Wi-Fi (802.11 b/g/n)		
Wide Area Network	4G LTE Modem, Wi-Fi, Ethernet		
Communication Protocols	OCPP 1.5 and 1.6 Compliant		
Safety and Operation			
Enclosure Rating	NEMA 3R		
Regulatory Compliance	ETL Certified for USA and cUL Certified for Canada; Complies with UL 2594, UL 2231-1, UL 2231-2, and NEC Article 625, EMC: FCC Part 15 Class A		
Operating Temperature	–30°C to +60°C (–22°F to 140°F)		
Storage Temperature	–50°C to +80°C (–58°F to 176°F)		
Humidity	95% Non-Condensing		
Mechanical Characteristics			
Enclosure Rating	NEMA 3R		
Weight	Single : 85 lbs Dual : 98 lbs	Single : 77 lbs Dual : 111 lbs	Single : 94 lbs

Specifications are subject to change, without prior notice.

5. Pre-Installation

Prior to performing any installation activities, it is important to read each of the items outlined in this section, which are essential for the installation process.

5.1. Location Selection

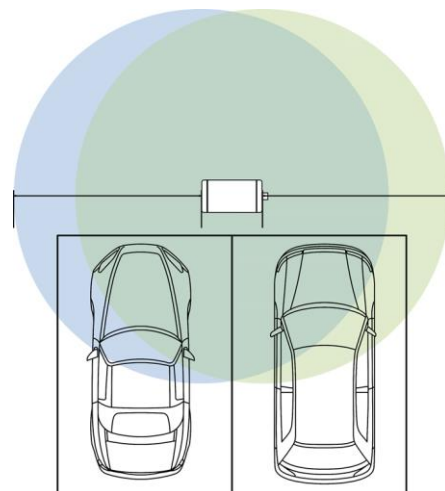
Items to consider when choosing a location to install the unit:

- Standards for Accessible Design (refer to section 5.2)
- Conformance to all governing standards for location and placement of the charger
- Communications Connectivity (refer to section 5.3)
- Local Conditions
 - Area is not exposed to high temperatures, dust, corrosive fumes, combustible materials, or explosive gases
 - Area is dry and well-ventilated
 - Clearances at both sides for proper ventilation
 - Clearance at front and sides for accessibility during service (refer to Section 6.1.1)
 - Wiring and conduit needed to connect the charger to the circuit panel
 - Location of vehicle's charging inlets while parked
 - Use of protective bollards and wheel stops to protect the charger

5.2. Cable Reach

The cables of the charger come in different lengths depending on the charger's configuration and cable/connector type. The table below shows the connector type with its corresponding cable reach while the figure shows the radius in which the two (2) DC connectors can be used.

Model	Connector	Cable Reach
Pedestal	SAE Cable	21 feet
Wall Mount	SAE Cable	22 feet



ADA Consideration

STANDARDS FOR ACCESSIBLE DESIGN for Americans with Disabilities is applicable when choosing the location and placement of all Electric Vehicle Supply Equipment. The following is a direct excerpt from the 2010 ADA Standards for Accessible Design:

http://www.ada.gov/2010ADASTandards_index.htm

"The Department of Justice published revised regulations for Titles II and III of the Americans with Disabilities Act of 1990 "ADA" in the Federal Register on September 15, 2010. These regulations adopted revised, enforceable accessibility standards called the 2010 ADA Standards for Accessible Design "2010 Standards" or "Standards". The 2010 Standards set minimum requirements – both scoping and technical – for newly designed and constructed or altered State and local government facilities, public accommodations, and commercial facilities to be readily accessible to and usable by individuals with disabilities.

Adoption of the 2010 Standards also establishes a revised reference point for Title II entities that choose to make structural changes to existing facilities to meet their program accessibility requirements; and it establishes a similar reference for Title III entities undertaking readily achievable barrier removal.

The Department has assembled this online version of the official 2010 Standards to increase its ease of use. This version includes:

- 2010 Standards for State and Local Government Facilities Title II
- 2010 Standards for Public Accommodations and Commercial Facilities Title III

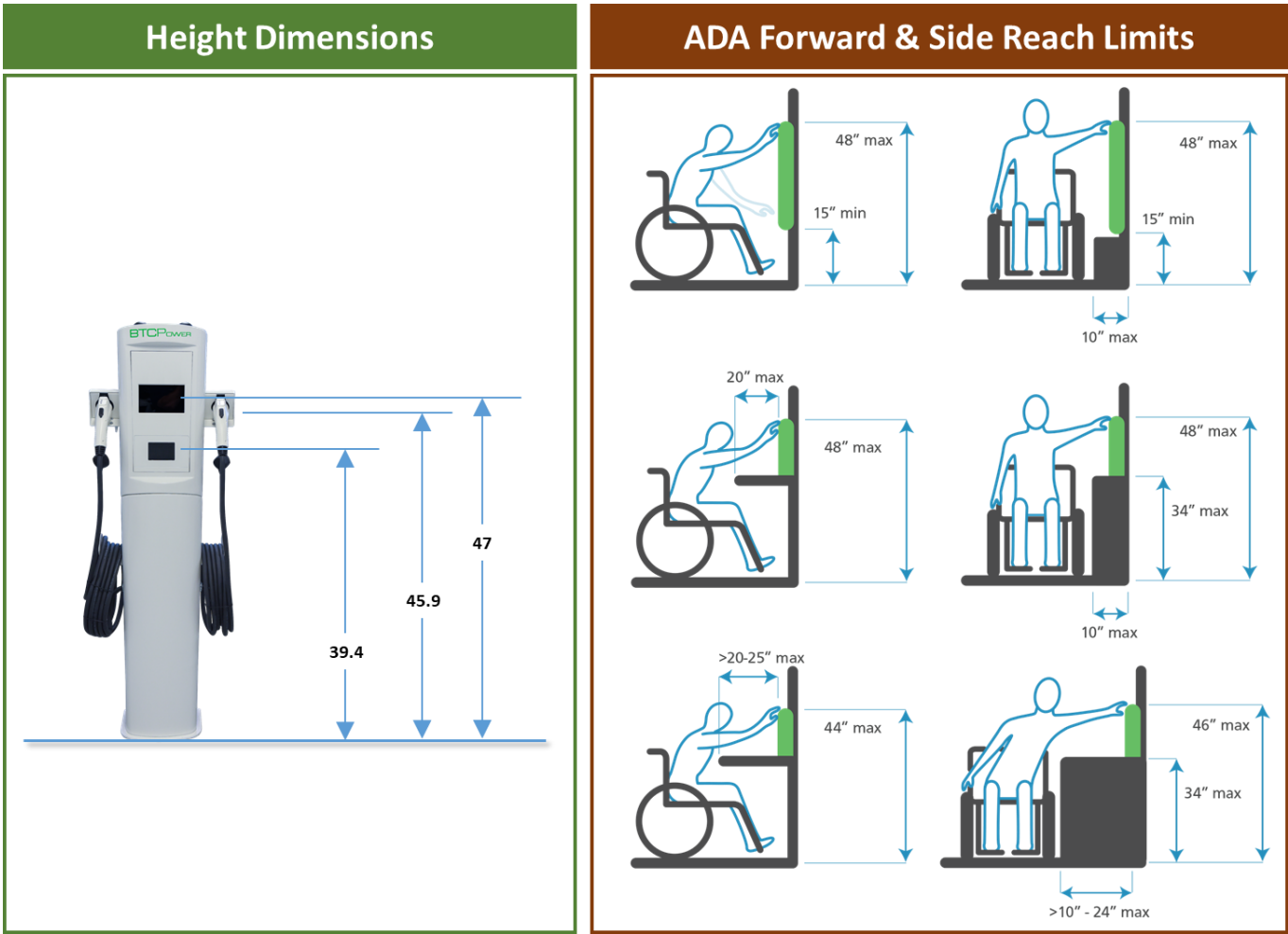
The Department has assembled into a separate publication the revised regulation guidance that applies to the Standards. The Department included guidance in its revised ADA regulations published on September 15, 2010. This guidance provides detailed information about the Department's adoption of the 2010 Standards including changes to the Standards, the reasoning behind those changes, and responses to public comments received on these topics. The document, Guidance on the 2010 ADA Standards for Accessible Design, can be downloaded from:

<http://www.ada.gov>

For information about the ADA, including the revised 2010 ADA regulations, please visit the Department's website www.ADA.gov; or, for answers to specific questions, call the toll-free ADA Information Line at 800- 514-0301 (Voice) or 800-514-0383 (TTY)."

Compliance to ADA Standards

Access to all the controls and commands including the buttons and the card reader, must comply with local codes and ADA requirements. That includes being under 48" of distance to the ground.



Height Dimensions

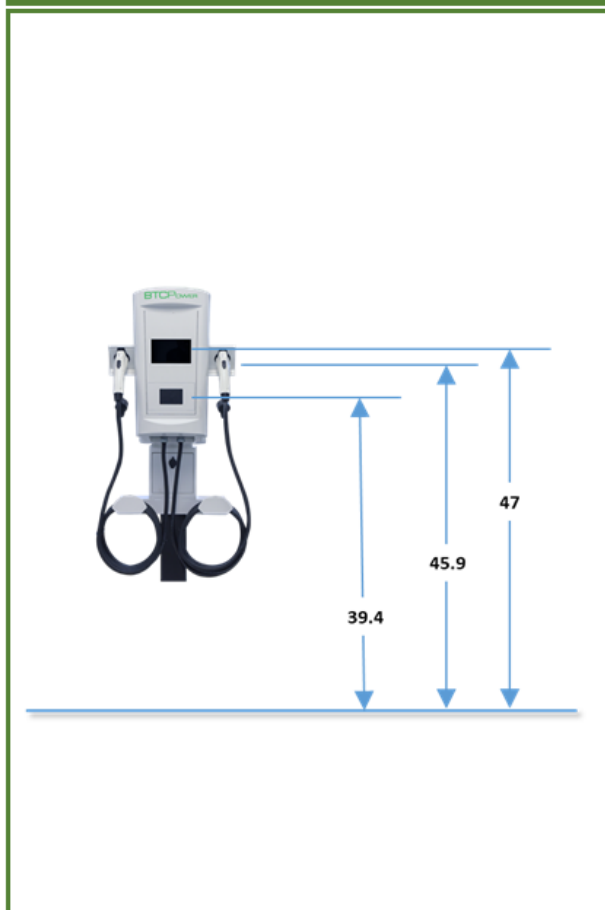


Figure 1 illustrates recommended clearances for wheelchair and manual truck access to a counter. The figure is organized into a 3x2 grid of diagrams, each showing a person (blue outline) interacting with a counter (black outline) and a green vertical bar representing a clearance. Dimensions are indicated by blue arrows and text.

- Top Left (Wheelchair):** A person in a wheelchair is shown reaching for a green bar. The clearance height is labeled "48" max" and the depth is labeled "15" min".
- Top Right (Manual Truck):** A person on a manual truck is shown reaching for a green bar. The clearance height is labeled "48" max" and the depth is labeled "15" min". A horizontal dimension of "10" max" is also shown.
- Middle Left (Wheelchair):** A person in a wheelchair is shown reaching for a green bar. The clearance height is labeled "48" max" and the depth is labeled "20" max".
- Middle Right (Manual Truck):** A person on a manual truck is shown reaching for a green bar. The clearance height is labeled "48" max" and the depth is labeled "34" max". A horizontal dimension of "10" max" is also shown.
- Bottom Left (Wheelchair):** A person in a wheelchair is shown reaching for a green bar. The clearance height is labeled "44" max" and the depth is labeled ">20-25" max".
- Bottom Right (Manual Truck):** A person on a manual truck is shown reaching for a green bar. The clearance height is labeled "46" max" and the depth is labeled "34" max". A horizontal dimension of ">10" - 24" max" is also shown.

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5.3. Communications Connectivity

Site Survey Process

Follow the procedure steps below and record all results and information using the Site Survey Form in Annex A.

- 1) Use a cellular signal meter that can measure RSRP, RSRQ and SNIR.
 - Use the same antenna and spacing as charger
 - Signal strength tool and antenna can be purchased from BTCPower or use Squid 4G M2M Tool or equivalent
 - Antenna spacing should be 6 – 8" apart
 - In a pinch, use a SureCall RF Signal Meter CM-METER-01 or equivalent and use the RSSI reading but do not use for boosted signals
 - If the RSSI does not meet criteria, then use a meter that can measure RSRP, RSRQ and SNIR
- 2) Measure and record the signal strength at each charger location and note description of location.
 - Outdoors, indoor parking structure
 - Obstructions if there are any
 - Record location with photo and GPS coordinates
- 3) Ensure that location meets the Cellular Signal Strength Criteria as shown below:

Parameter	Min Value	Device	Notes
RSSI	-69 dBm	SureCall RF Signal Meter CM-METER-01 or equivalent	If RSSI < - 69dBm, measure RSRP, RSRQ, and SNIR
RSRP	-100 dBm	BTC-Cellular Meter or Squid 4G M2M Tool or equivalent	Please consult BTCPower Application Engineering
RSRQ	-11 dBm	BTC-Cellular Meter or Squid 4G M2M Tool or equivalent	Please consult BTCPower Application Engineering
SINR	> 6 dB	BTC-Cellular Meter or Squid 4G M2M Tool or equivalent	For Reference

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- 4) Use the Bullet M2 HP in measuring the Wi-Fi Signal Strength. See sections 6.3 and 6.4 for the set-up.
- 5) Ensure that location meets the Wi-Fi Signal Strength Criteria as shown below:

Parameter	Min Value	Device	Notes
RSSI	-62 dBm	Ubiquiti Bullet M2 HP	- - -
SINR	> 10 dB	Ubiquiti Bullet M2 HP	- - -

5.4. List of Parts, Materials, and Tools Needed for Installation

Tools and Supplies Needed during Installation

Item	Part Description	Quantity
1	1/4" Lag Bolt	6
2	Concrete Expansion Bolt	4
3	Box Level	1
4	1/2" Torque Wrench	1
5	1/4" Washer	6
6	Back Door Key (shipped with the unit)	2
7	3/16" Allen Wrench	1
8	Philips Head Screwdriver	1
9	Installation Manual	1

Special Tools & Hardware Torque Value

Tools/Hardware	Torque Specification	Tolerance
6 – 32 UNC	13 in-lbs.	+/- 2 in-lbs.
10 – 32 UNF	30 in-lbs.	+/- 5 in-lbs.
1/4 – 20 UNC	53 in-lbs.	+/- 7 in-lbs.
1/2 – 13 UNC	48 in-lbs.	+/- 7 in-lbs.
M6 x 1 Liquid Tight Fitting	30 in-lbs.	+/- 5 in-lbs.
Fuse Block Lugs, 8AWG	40 in-lbs.	+/- 5 in-lbs.
Fuse Block Lugs, 6AWG	45 in-lbs.	+/- 5 in-lbs.
Ground Terminal Screws, 14 – 10AWG	34 in-lbs.	+/- 5 in-lbs.
Ground Terminal Screws, 8AWG	38 in-lbs.	+/- 5 in-lbs.
1/4 – 20" Lock Nut	53 in-lbs.	+/- 7 in-lbs.

6. Installation

Make sure to study all drawings provided by the supplier for the installation. These include arrangement drawings (front, end, and plan views). Connections to the equipment that may be required to meet any local codes such as mats, screens, or railings, will not be furnished.

IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

The **AC Level 2 Charger** should be installed in accordance with local codes and all applicable ordinances.

Read all installations instructions carefully prior to performing the installation.



DANGER

The equipment utilizes high voltages, only qualified electrical personnel familiar with the operation and construction should install, adjust, modify, and service this equipment. Failure to observe this precaution could result to severe injury or death.



WARNING

INSTRUCTIONS PERTAINING TO A RISK OF FIRE OR ELECTRIC SHOCK

- This device should be supervised when used around children.
- Do not perform any live wire operations.
- Do not touch the inside of the equipment while electrical power is applied.
- Do not use this product if the flexible power cord or EV cable is frayed, has broken insulation, or any other signs of damage.
- Do not use this product if the enclosure or the EV connector is broken, cracked, open, or shows any other indication of damage.
- The equipment may be installed outdoors but only used under environmental conditions as stated in this document.
- This equipment includes capacitive components such as electrolytic capacitors. Some parts may remain charged inside of the unit even after the input power is disconnected.
- This charger should not be modified in any way. This will void the warranty, compromise protection and could result in a shock or fire hazard.

- Personal Protective Equipment should always be used when working with the equipment.
- Equipment should not be opened and serviced in rain or snow conditions.

**CAUTION**

During installation of the unit, ensure that the charge station's supply cable is secured in such a way that it will not be tripped over, stepped on, pulled on, or somehow subjected to damage or stress.

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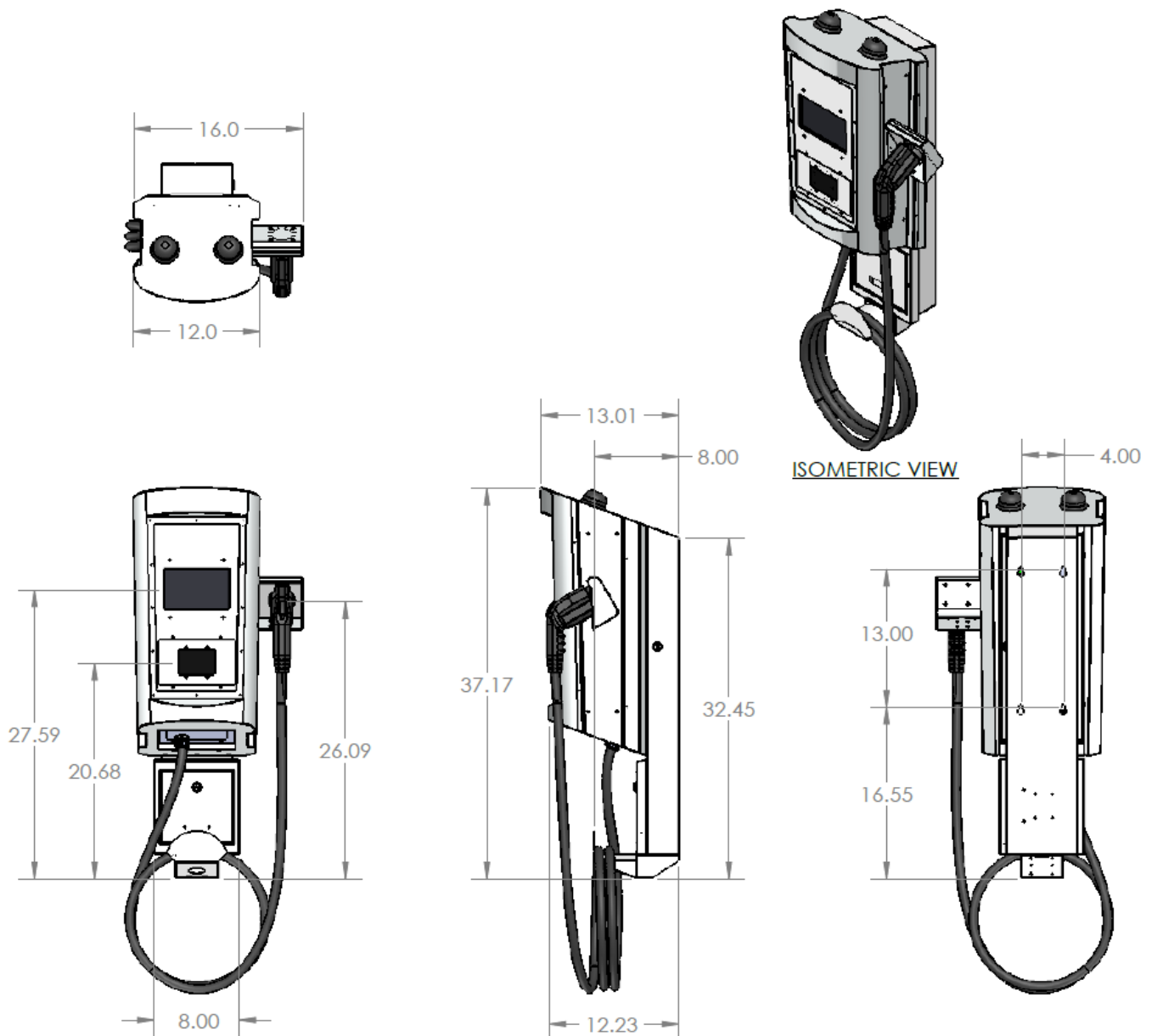
INSTALLATION

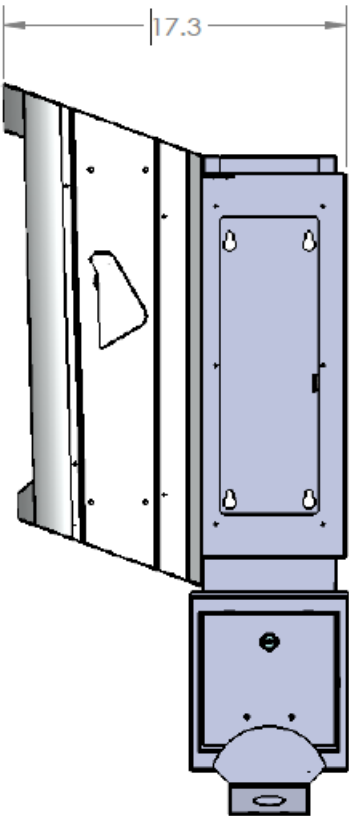
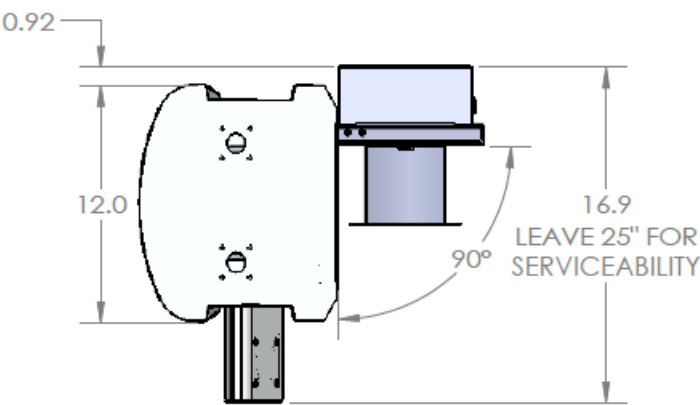
6.1. Mounting Procedures

- Clearance around the unit

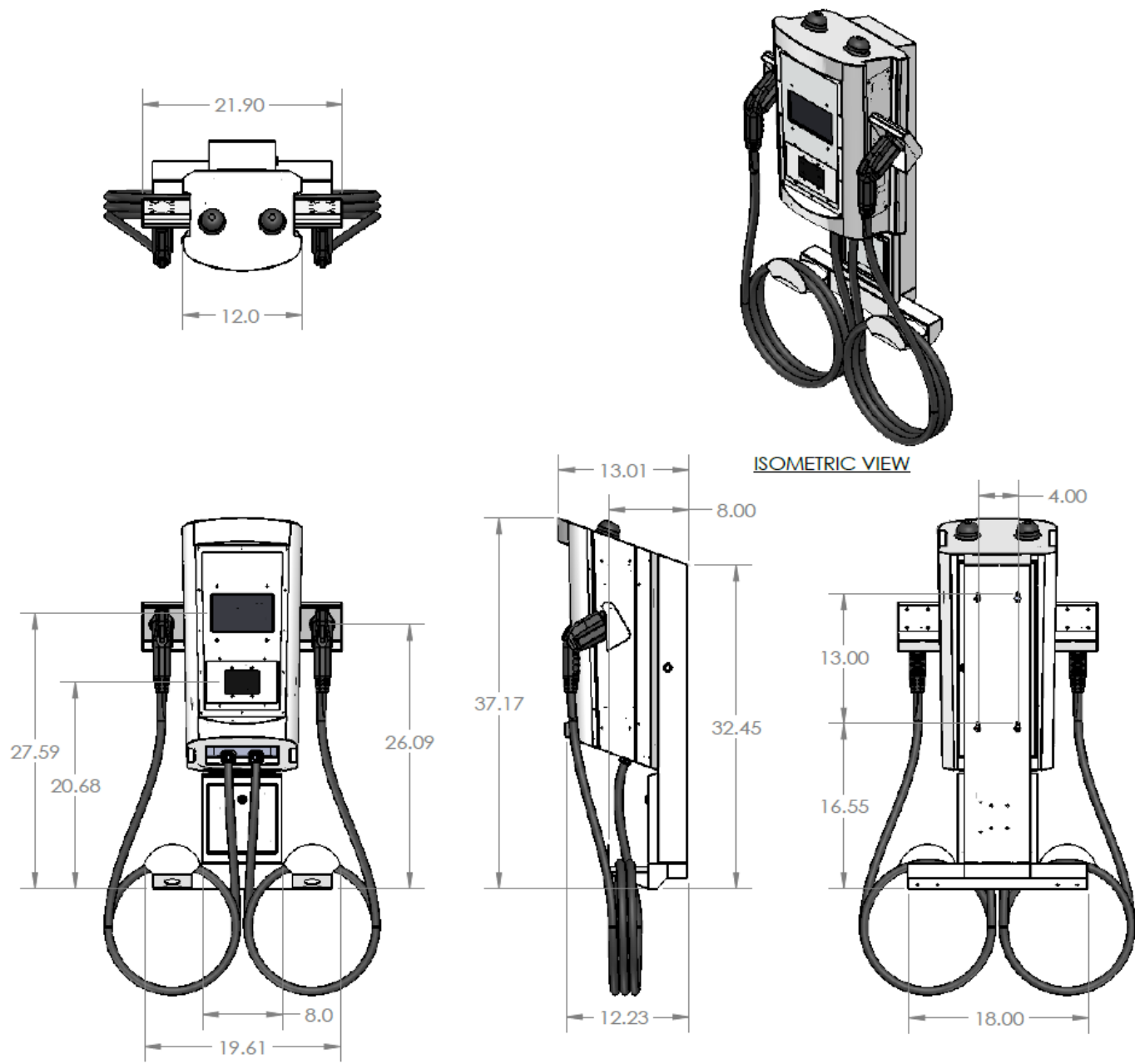
Clearance surrounding the unit must be considered for proper ventilation and service accessibility. Refer to the installation drawings as illustrated below.

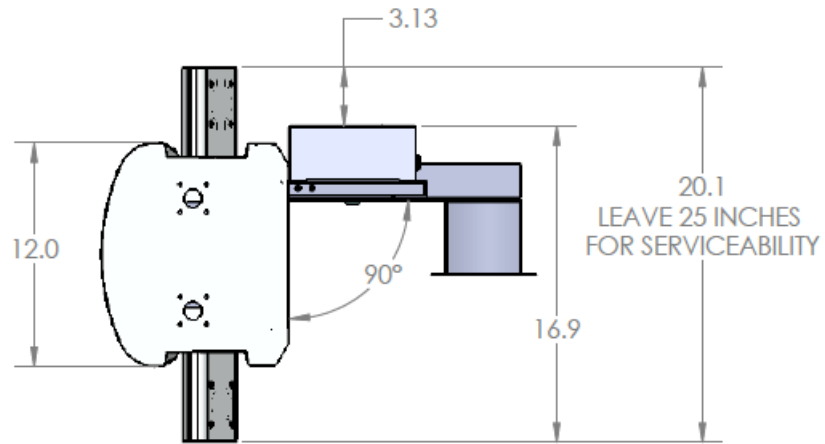
Single – Wall Mount Charger Installation Drawing



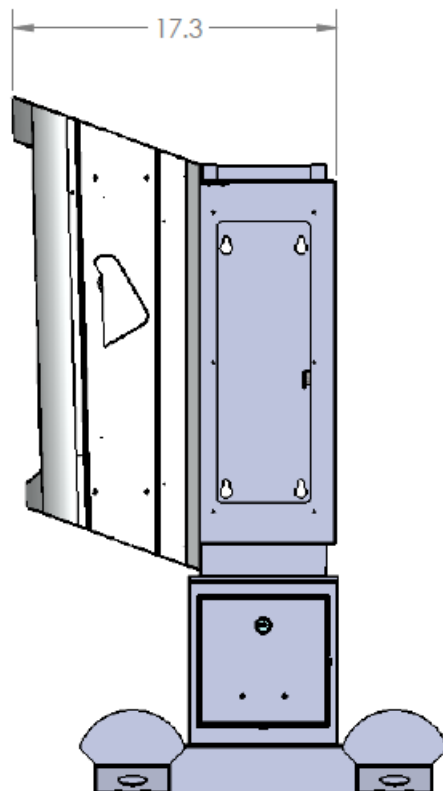


Dual – Wall Mount Charger Installation Drawing

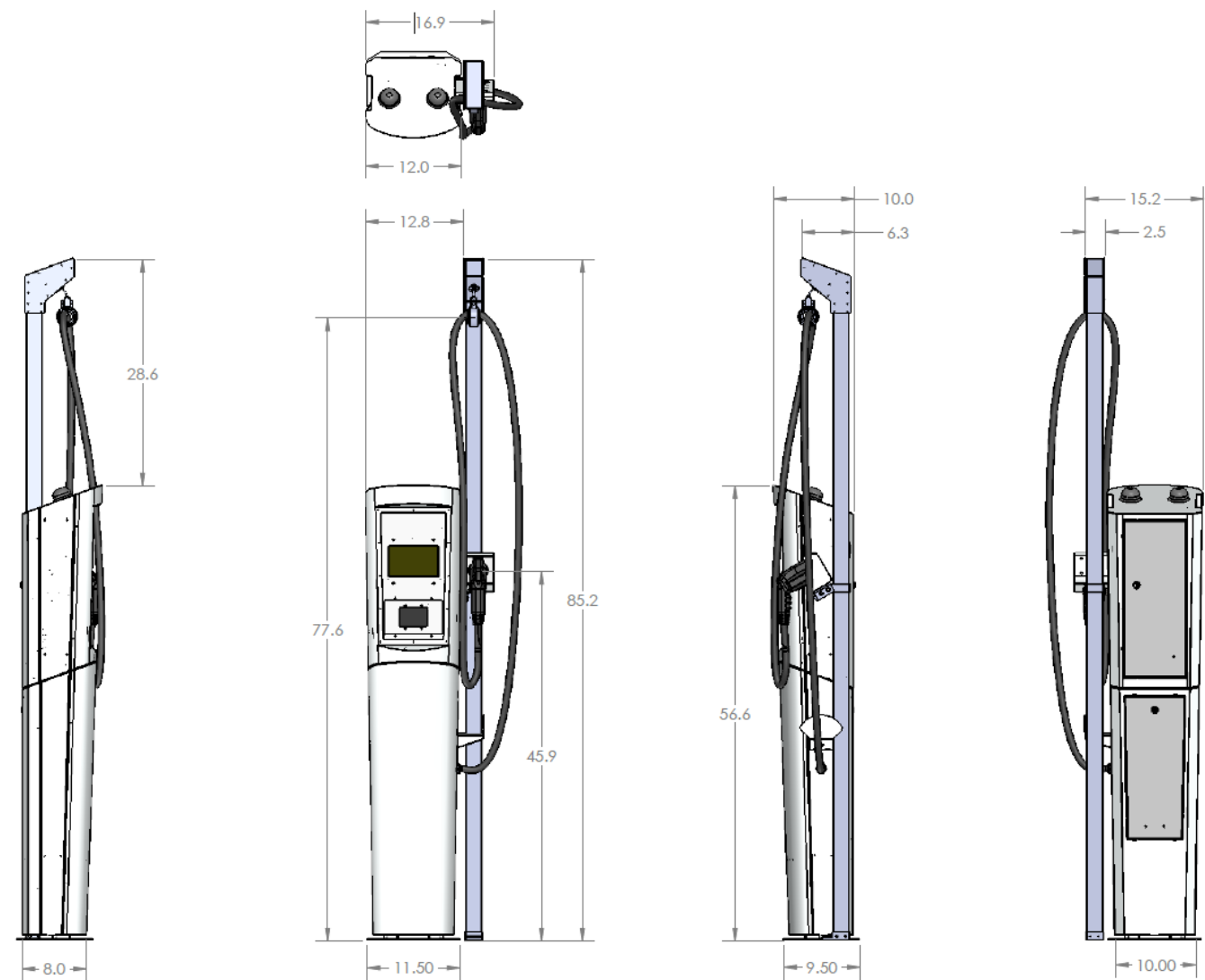




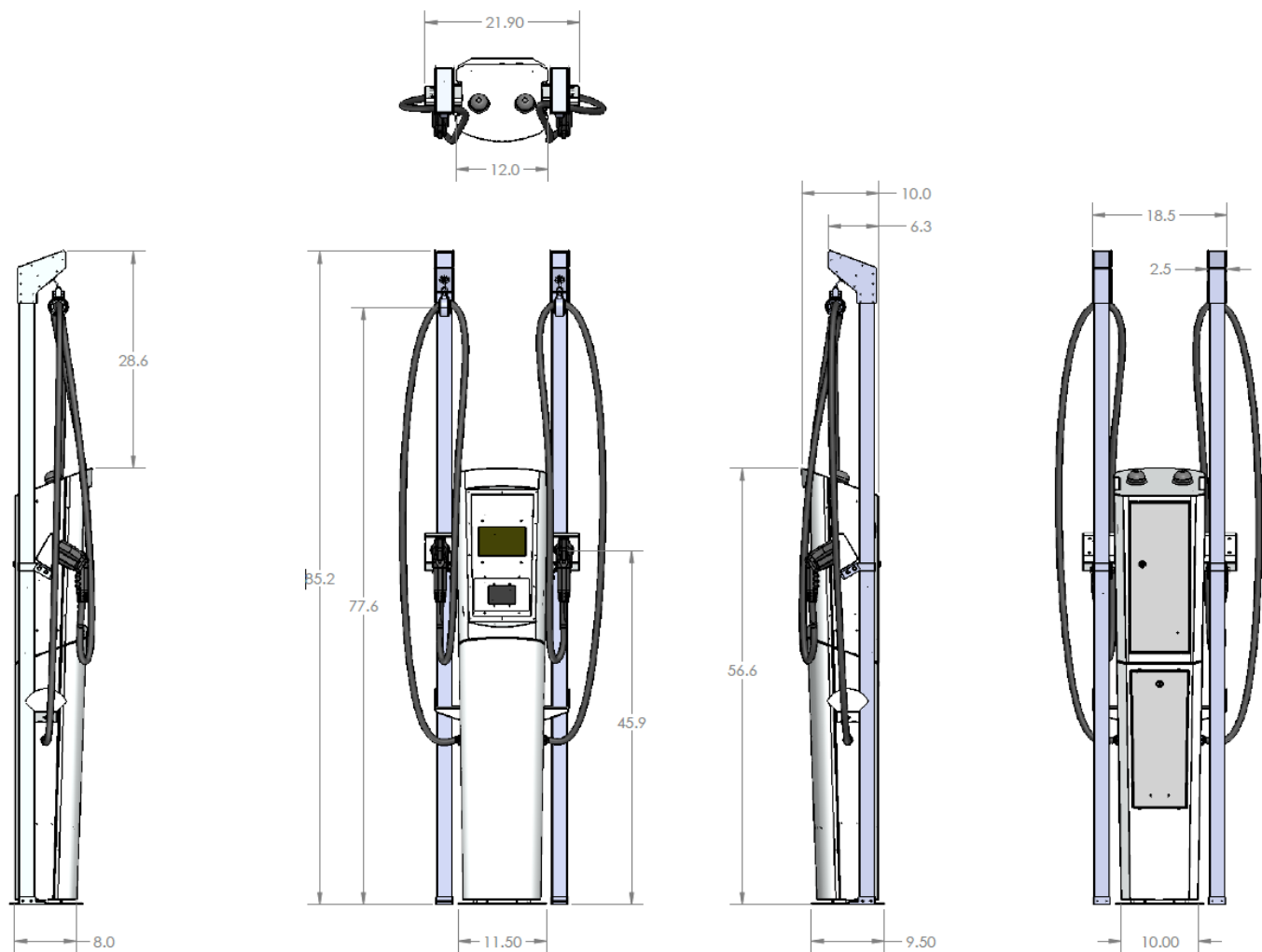
Note: A spacer is needed to provide the 3.13" clearance from wall.



Single – Pedestal Charger Installation Drawing



Dual – Pedestal Charger Installation Drawing



6.2. Single or Dual Wall Mount Charger Mounting

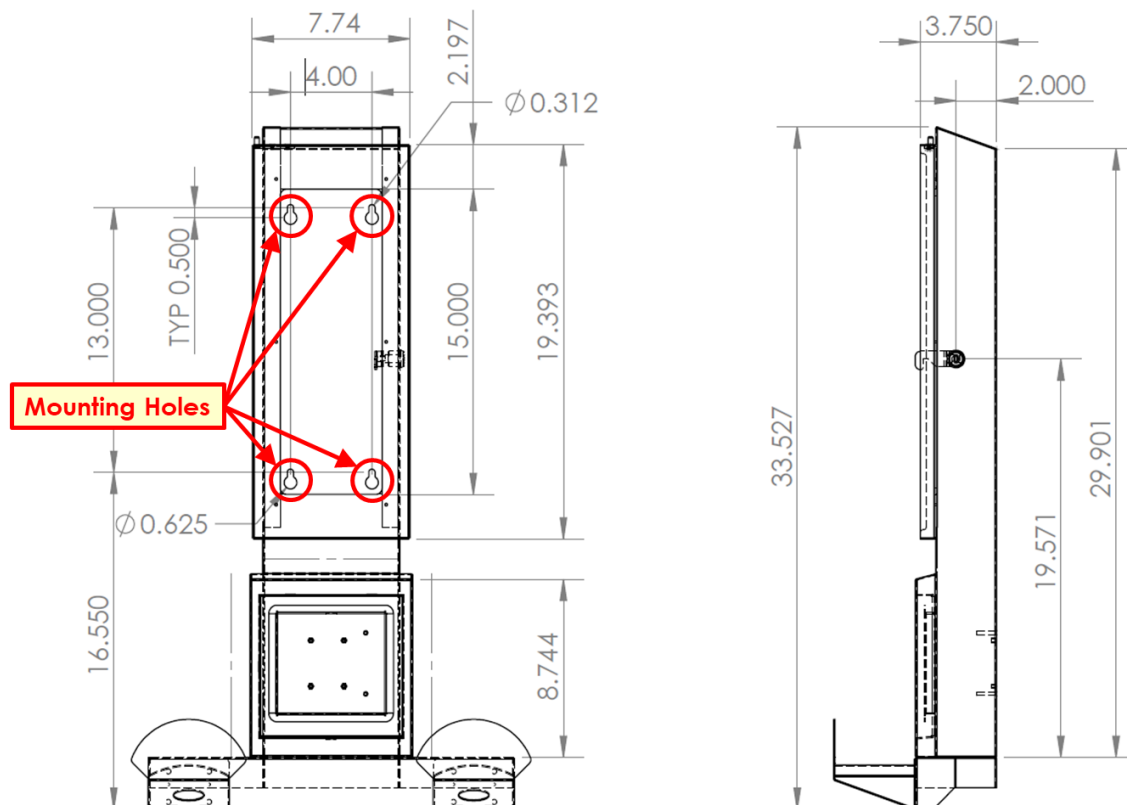


WARNING

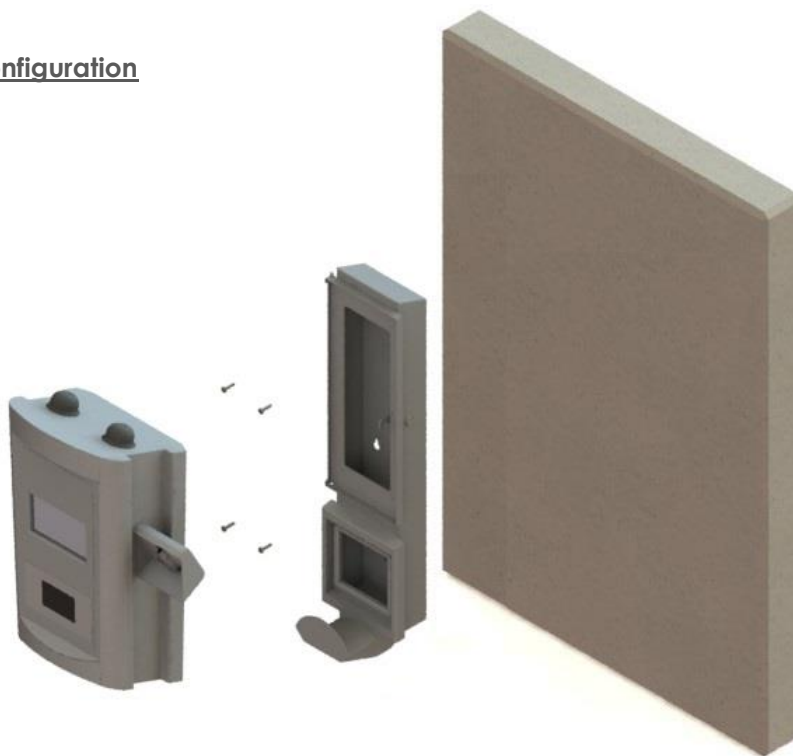
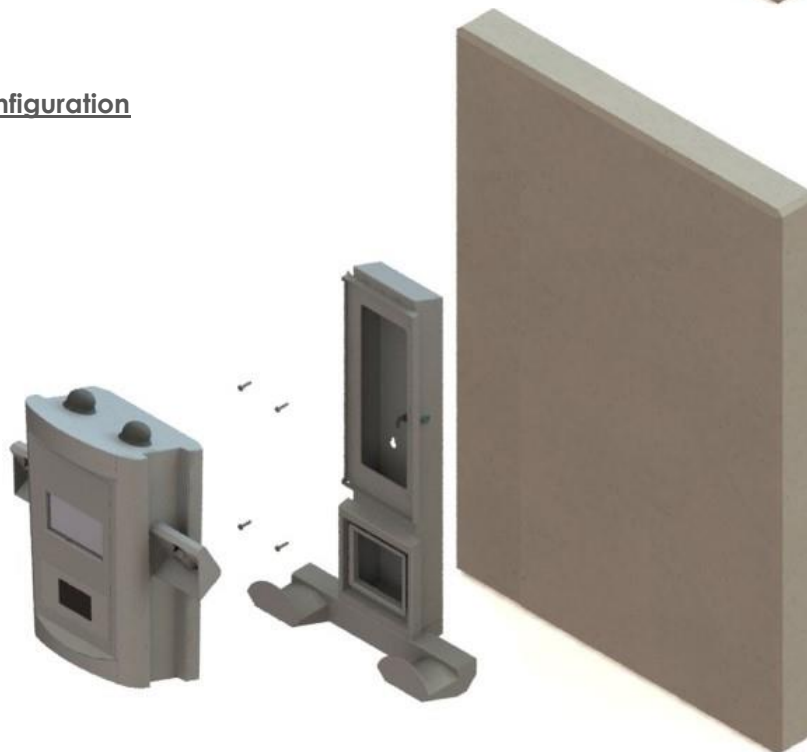
Make sure to provide adequate structural strength for this charger to prevent any serious personal injury or damage to equipment. It is the responsibility of the installer to ensure that the structure to where this charger is mounted can support five (5) times the combined weight of the entire charger unit.

Mounting procedures for Single or Dual Wall Mount Charger are outlines as follows:

1. Take out the charger from its packaging.
2. Using the key (shipped together on the same packaging), open the charger's door to expose the four (4) mounting holes.
3. Mount and secure the charger's rear hold bracket.



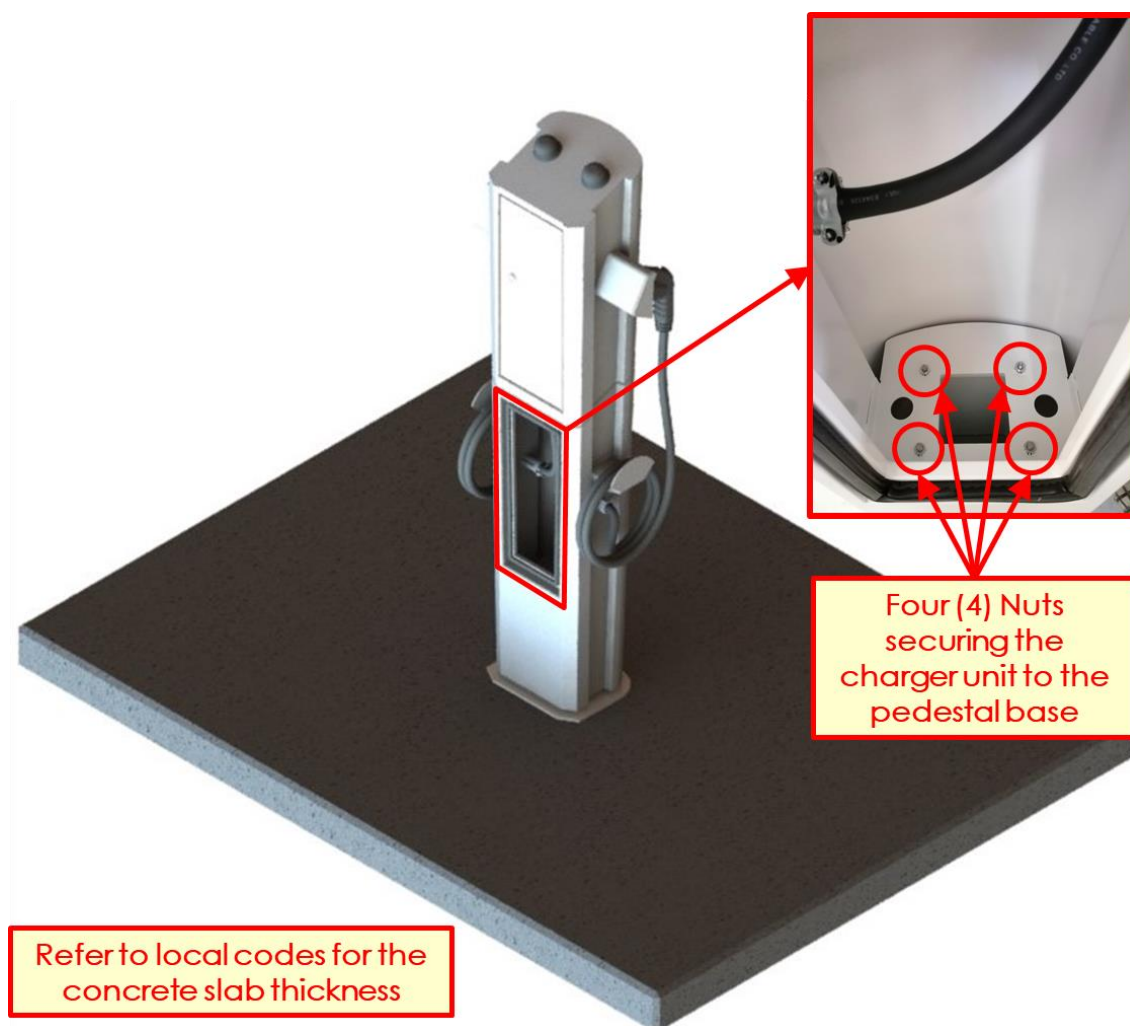
4. Anchor the charger to the wall using expansion bolts.

SINGLE Port Configuration**DUAL Port Configuration**

6.3. Single or Dual Pedestal Charger Mounting

Mounting procedures for Single or Dual Pedestal Charger are outlines as follows:

1. Take out the charger from its packaging.
2. Using the key (shipped together on the same packaging), open the charger's rear door assembly to expose the four (4) nuts.

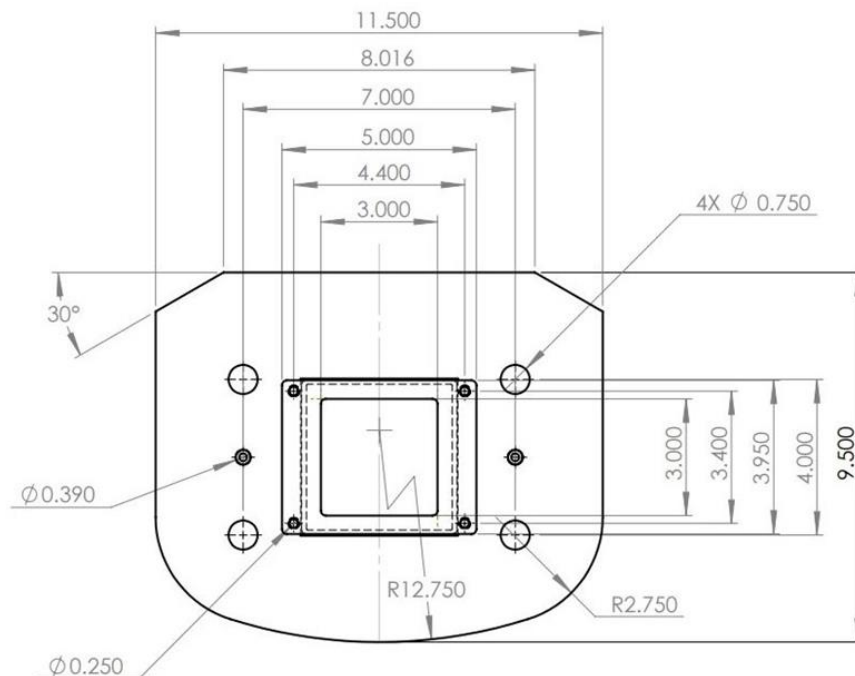
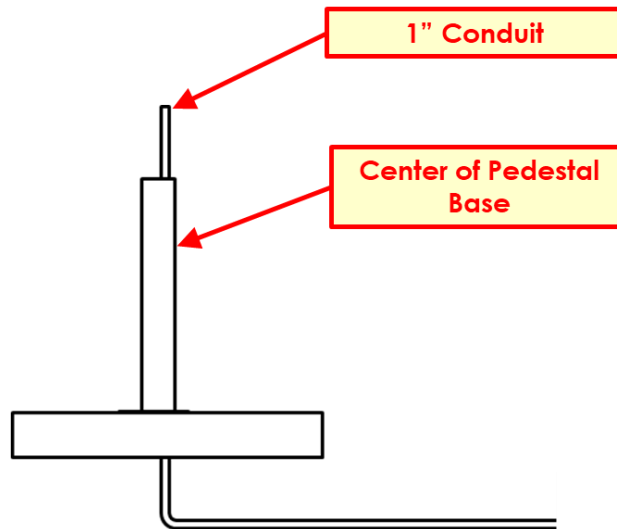


3. Release the pedestal from the charger unit by removing the four (4) nuts.

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- Prior mounting the pedestal base to the concrete slab, make sure that AC powerlines are properly secured inside the conduit at the center of the pedestal base mounting location.



Pedestal Base Dimensions

Conduit Connection Options:

The conduit carrying electrical service can also be installed above the concrete slab going thru:

- a) a hole drilled on either left or right side of the charger unit going thru the same side of the pedestal base going up to the input safety breaker.
- b) a hole drilled on the rear side of the charger unit going thru the same side of the pedestal base going up to the input safety breaker.

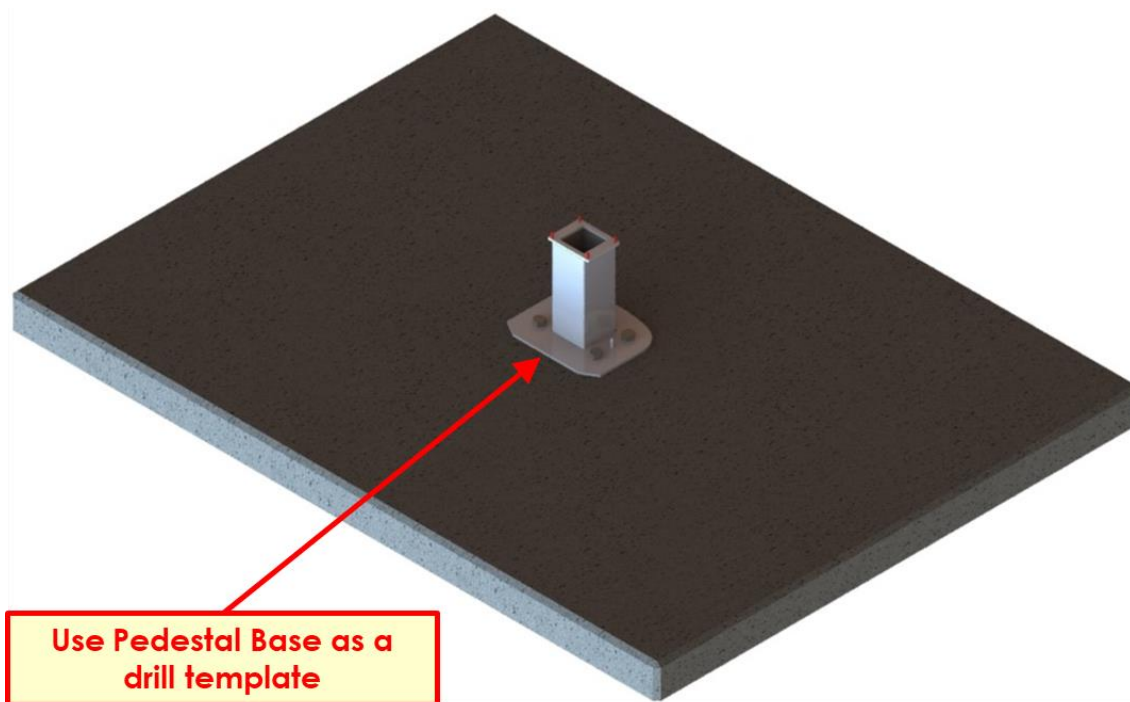
In either option above, please ensure that the cut surfaces (during drilling) are treated / recoated to prevent from rusting.

Options:

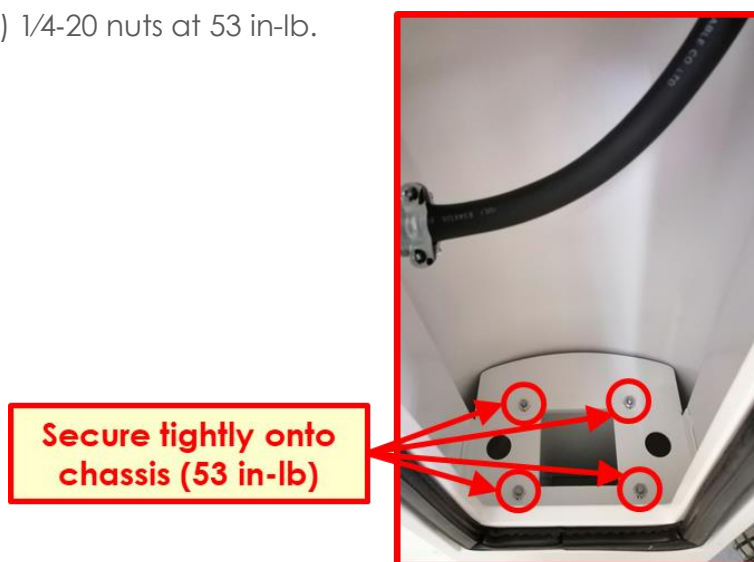
- A) either left or right side of the charger going thru the pedestal base
- B) rear side of the charger going thru the pedestal base



5. Once the pedestal is released from the charger unit, mount and secure the pedestal base to the concrete slab using four (4) concrete expansion bolts.



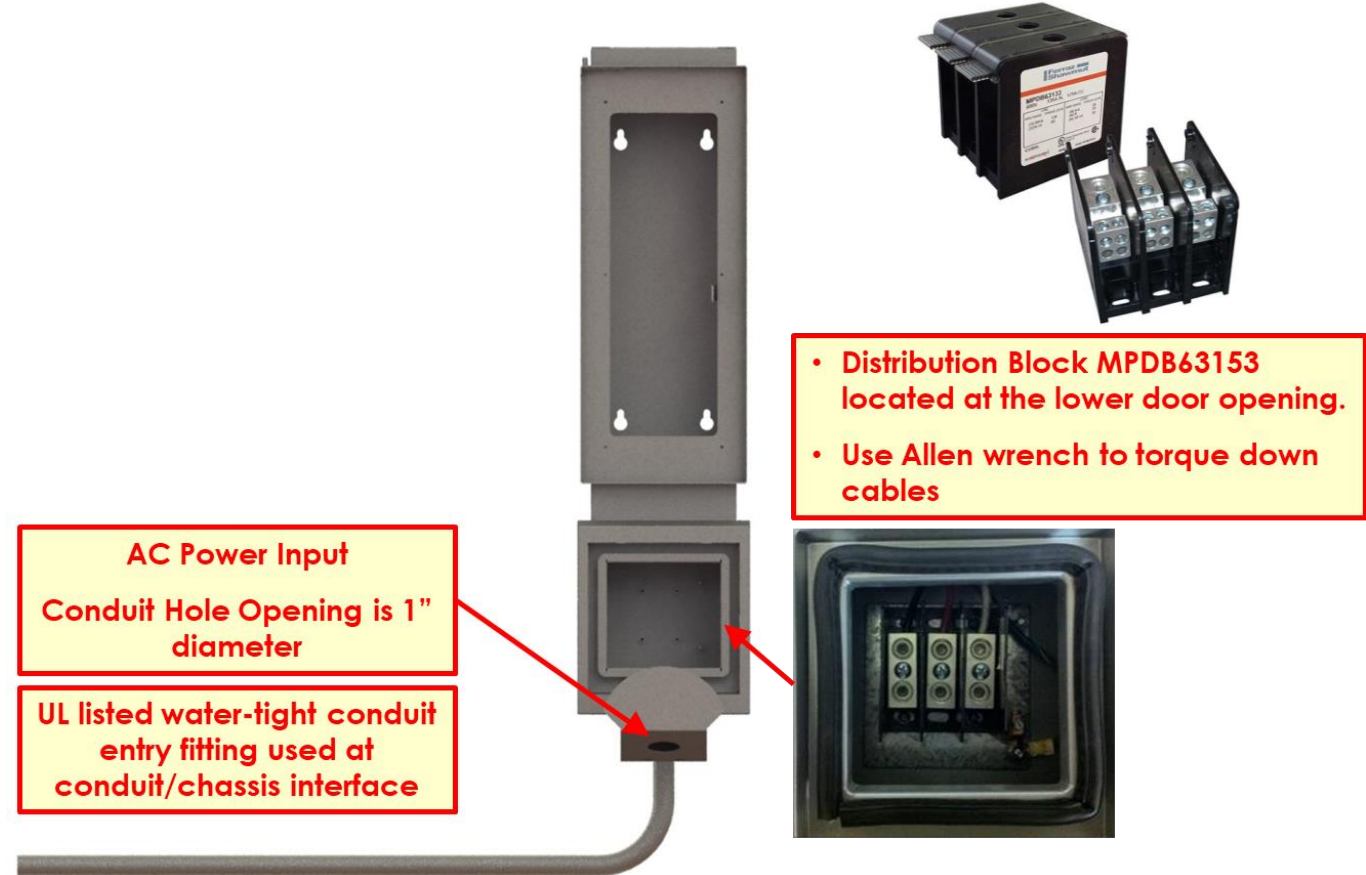
6. Once the pedestal base is mounted and secured to the concrete slab, attach the charger unit to the pedestal base using the four (4) nuts previously removed in step 3.
7. Fasten the four (4) 1/4-20 nuts at 53 in-lb.



6.4. Electrical Service Connection

Wall Mount Charger Electrical Connection

The unit is provisioned to receive an electrical power connection from the bottom as shown in the figure below.



MERSEN DISTRIBUTION BLOCK (MPDB63153)

Primary			Secondary		
Wire Range	Opening per Pole	Torque (lb-in)	Wire Range	Opening per Pole	Torque (lb-in)
2/0 – #6	1	120	2/0 – #6	1	120
#8 – #14	1	50	#8 – #14	1	50

Single / Dual System Electrical Connection

Single Sided Charger Connection

- Two (2) appropriately gauged hot leads (refer to local electrical code)
- One (1) appropriately gauged ground (green) lead
- Electrical conduit per all applicable state and federal regulations
- AC input power should be inserted through bottom of EVSE enclosure
- Electrical connections shall be made as specified in this section



NOTE

For the dual units, two separate line pairs need to be connected from independent service panel breakers of the appropriate rating. Each hot lead should measure 120VAC to ground.

Service Connection

Electrical Input AC Voltage		Single Port 208/240 VAC		Dual Port 208/240 VAC		
	Current	Input Power Connection	Service Panel Breaker	Current	Input Power Connection	Service Panel Breaker
Standard (recommend 10 – 8AWG)	30A	one 50A branch circuit	40A dual pole (non-GFCI type)	30A x 2	two independent 40A branch circuits	40A dual pole (non-GFCI type) x 2
Standard (recommend 8 – 6AWG)	40A	one 50A branch circuit	50A dual pole (non-GFCI type)	40A x 2	two independent 50A branch circuits	50A dual pole (non-GFCI type) x 2
Standard (recommend 6 – 3AWG)	70A	one 100A branch circuit	100A dual pole (non-GFCI type)	---	---	---
Service Panel GFCI		Do not provide external GFCI as it may conflict with internal GFCI (CCID)				
Wiring Standard		3-wire (L1, L2, earth)		5-wire (L1, L1, L2, L2, earth) For a 3-phase system, the 2 ports should be distributed between 2 different phases (e.g. L1 & L2, and L2 & L3)		

To reduce the risk of fire, connect only to a circuit provided with the appropriate maximum branch circuit overcurrent protection (40A, 50A, & 100A for 30A, 40A, and 70A output rating, respectively) in accordance with the ANSI/NFPA 70 National Electrical Code. On a dual-port charger, this circuit breaker is for each port.

Single Port Charger (30A/40A) – Pedestal

Connect L1 and L2 to the input safety breaker. BTCPower highly recommends crimp ferrule lugs to be used to make all electrical connection to the input safety breaker. In addition, a torque wrench should be used on the input breaker screw terminals. Set the wrench to a torque of 21.2 lb.in or 2.4 N.m. A pull test should be done on the wire connections to ensure proper connection.

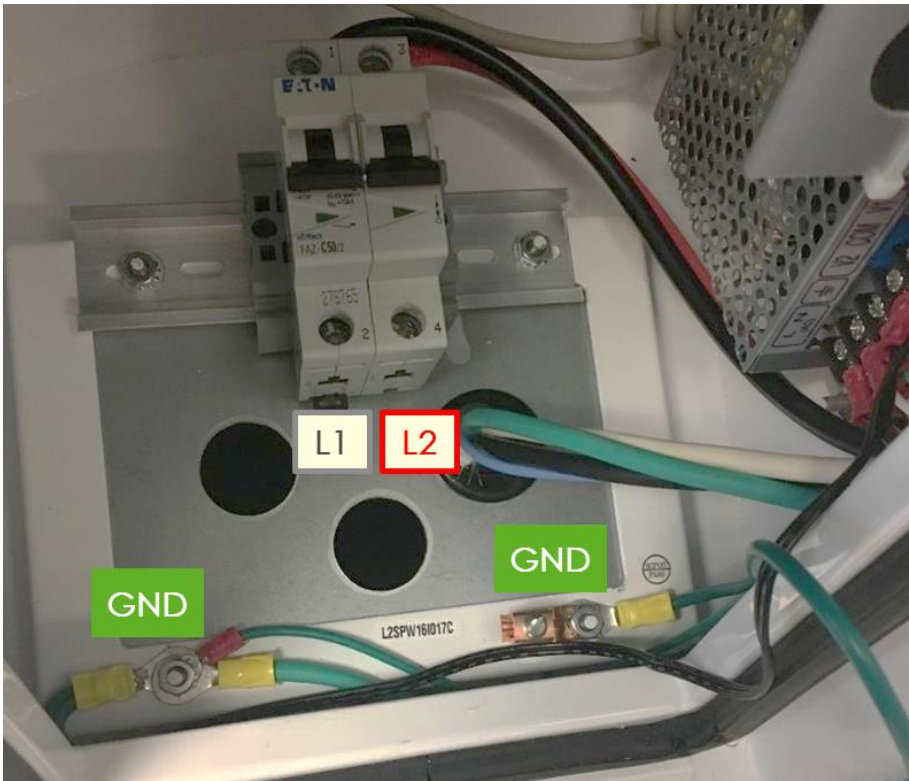
Eaton Breaker (FAZ-C50/2)		
Charger	Wire Size	Torque Requirement
30A	10 – 8AWG (recommended)	21.2 lb.in
40A	8 – 6AWG (recommended)	(2.4 N.m)

* Temperature rating of wires should be 60°C. Use Copper wires only.



NOTE

Appropriate wire size / gauge to be used will be determined by the installer in-charge.



Dual Port Charger (30A/40A) – Pedestal

Connect L1 and L2 on both charge ports to the input safety breaker. BTCPower highly recommends crimp ferrule lugs to be used to make all electrical connection to the input safety breaker. This requires the correct crimping tool. In addition, a torque wrench should be used on the input breaker screw terminals. Set the wrench to a torque of 2.4Nm or 21.2 lb.in. A pull test should be done on the wire connections to ensure proper connection.

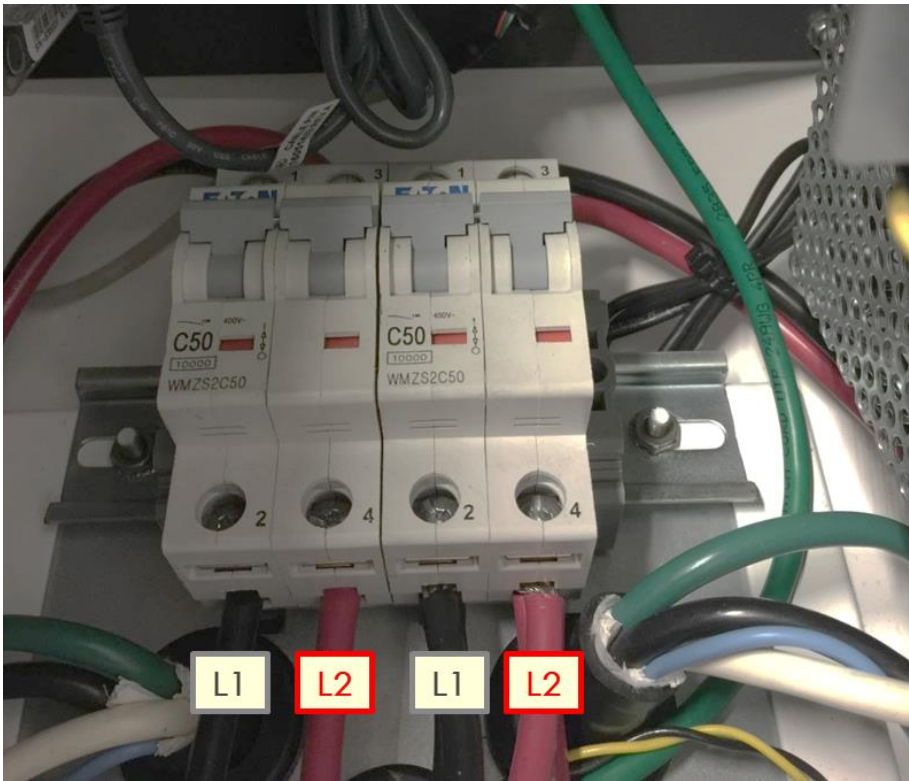
Eaton Breaker (FAZ-C50/2)		
Charger	Wire Size	Torque Requirement
30A	10 – 8AWG (recommended)	21.2 lb.in
40A	8 – 6AWG (recommended)	(2.4 N.m)

* Temperature rating of wires should be 60°C. Use Copper wires only.



NOTE

Appropriate wire size / gauge to be used will be determined by the installer in-charge.



Single Port Charger (70A) – Pedestal

Connect L1 and L2 to the input safety breaker. BTCPower highly recommends crimp ferrule lugs to be used to make all electrical connection to the input safety breaker. In addition, a torque wrench should be used on the input breaker screw terminals. Set the wrench to a torque of 80lb.in or 9 N.m. A pull test should be done on the wire connections to ensure proper connection.

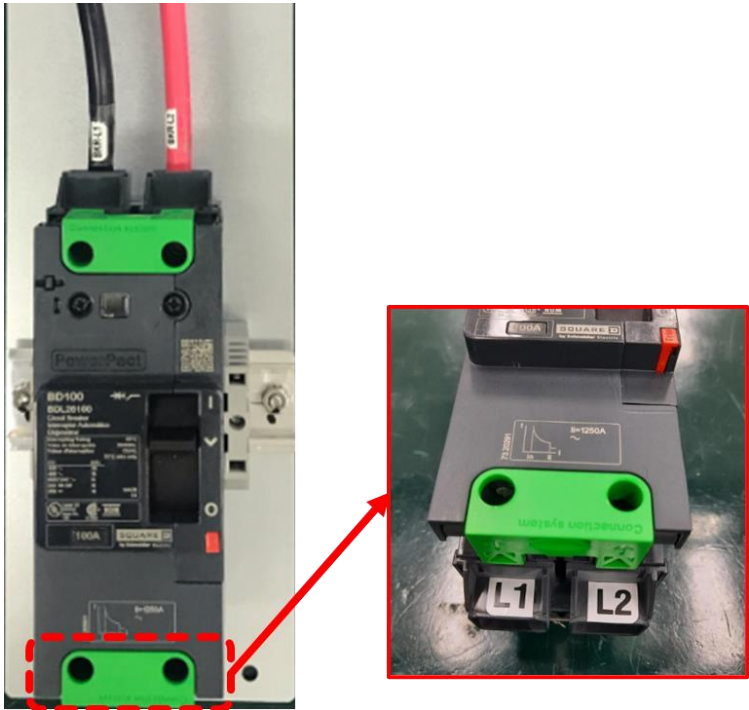
SquareD Breaker (BDL26100)		
Charger	Wire Size Range	Torque Requirement
70A	6 – 3 AWG (recommended)	80 lb.in (9 N.m)

* Temperature rating of wires should be 60°C for 3AWG and 90°C for 6AWG. Use Copper wires only.



NOTE

Appropriate wire size / gauge to be used will be determined by the installer in-charge.



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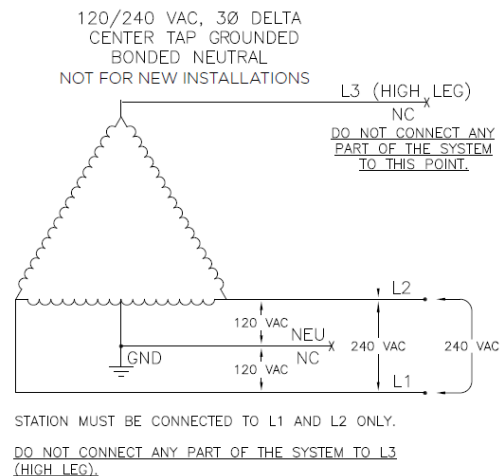
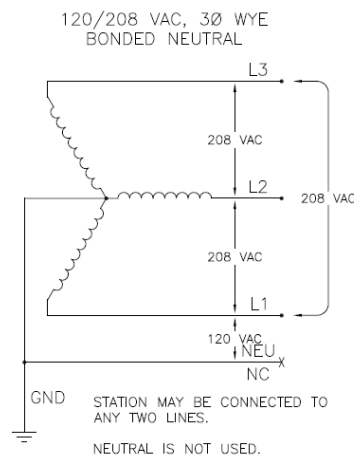
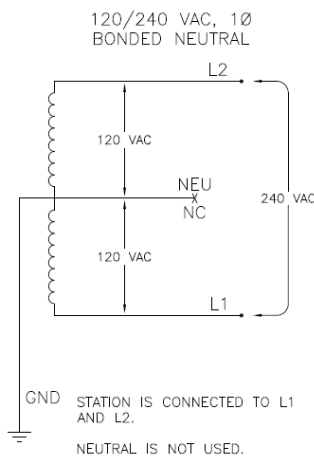
Grounding Instructions



DANGER

Improper connection of the equipment-grounding conductor may result in a risk of electric shock. Check with a qualified electrical personnel or service person if you are in doubt as to whether the unit is properly grounded.

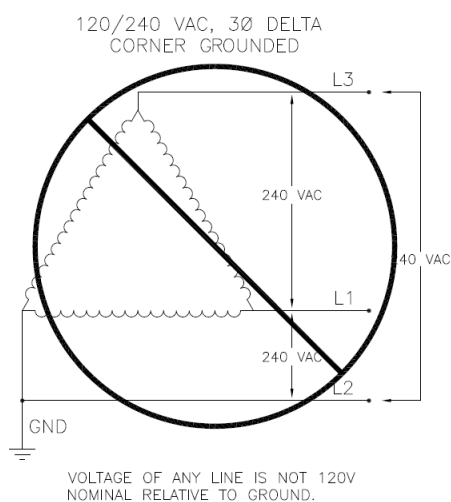
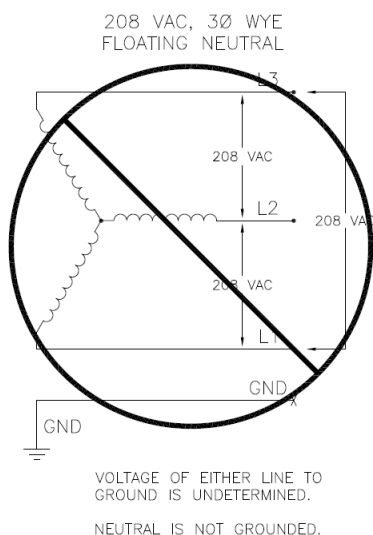
The **AC Level 2 Charger** must be connected to a grounded, metal, permanent wiring system, or an equipment-grounding conductor is to be run with the circuit conductors and connected to the equipment grounding terminal.



Do not connect to these systems:

Do not connect the charger to the following types of power sources:

- 120/208 VAC 3 phase wye, ungrounded
- 120/240 VAC 3 phase delta, corner-grounded
- Any system where the center point of the AC power source is not grounded



6.5. Wi-Fi Kit Mounting Procedure

Refer to the following instructions in mounting the Wi-Fi Module:

1. Remove the modem from the unit.
 - 1.1. Disconnect the antennas, power cord, and Ethernet cable from the cellular modem as shown in **Figure 1.1**.
 - 1.2. Remove the two (2) screws holding the modem to the mounting bracket as shown in **Figure 1.2**.
 - 1.3. Remove the right antenna only by removing the nut holding it in place as shown in **Figure 1.3**.

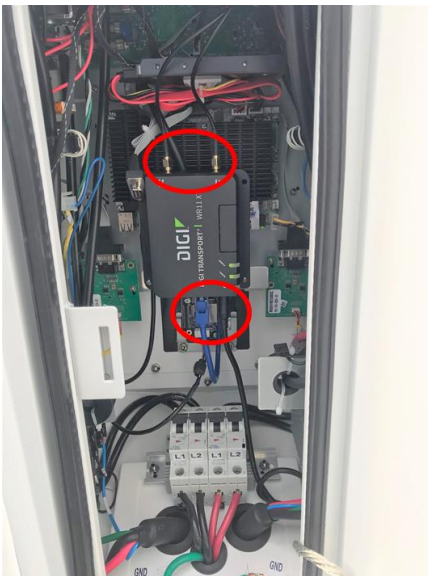


Figure 1.1

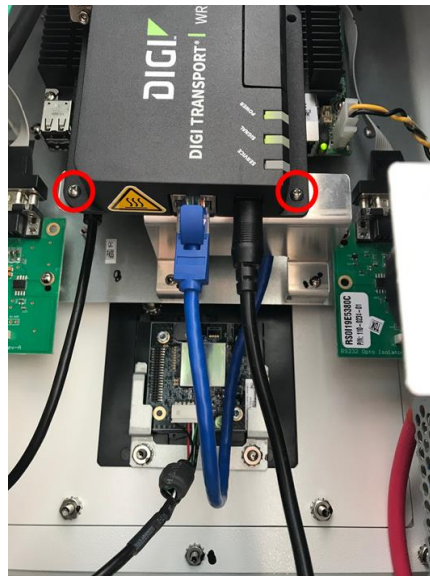


Figure 1.2

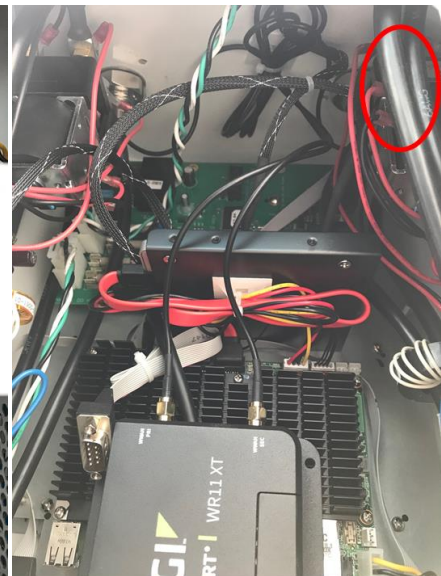


Figure 1.3

2. Use the mounting holes as shown in Figure 2 to mount the aluminum bracket for Wi-Fi module with power supply.
3. Mount the power supply.
 - 3.1. Mount the power supply bracket (with zip ties on it) to the left side of the aluminum bracket as shown in **Figure 3.1**.
 - 3.2. Secure the power supply bracket with two (2) mounting screws as shown in **Figure 3.2**.

Attach the power supply (shown in **Figure 3.3a**) to the bracket by sliding onto the bracket as it is pushed down as shown in **Figure 3.3b**.

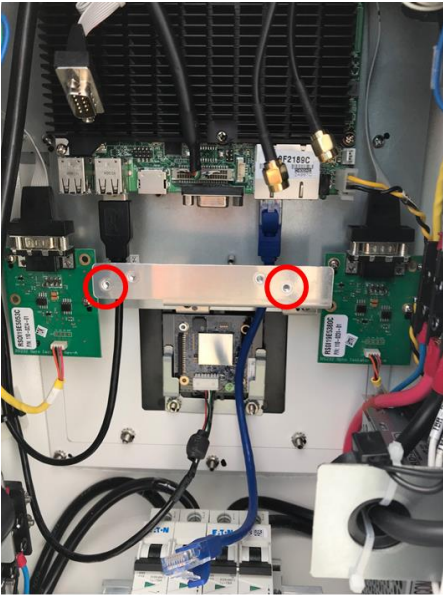


Figure 2

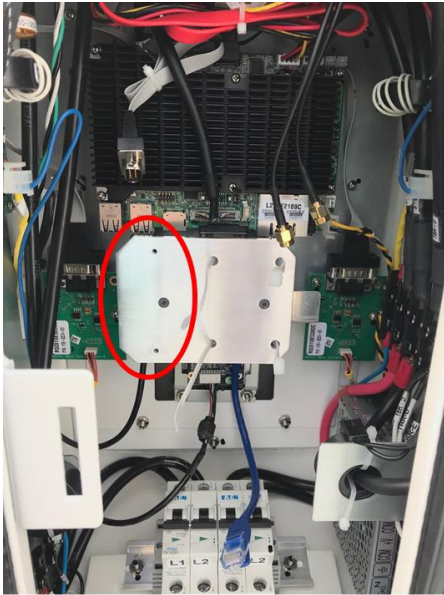


Figure 3.1

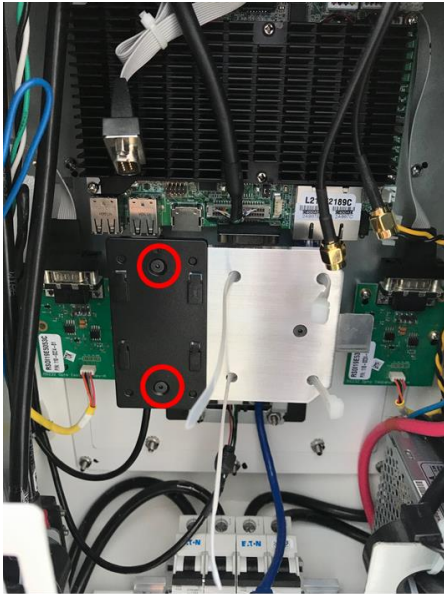


Figure 3.2



Figure 3.3a



Figure 3.3b

4. Install the Wi-Fi Module

- 4.1. Install the Wi-Fi module and secure it to the bracket with zip ties as shown in **Figure 4.1**.
- 4.2. Connect one end of the blue Ethernet cable to the power supply (shown in **Figure 4.2a**) and the other end going to the left PC Ethernet port (shown in **Figure 4.2b**).



Figure 4.1



Figure 4.2a



Figure 4.2b

- 4.3. Connect the white Ethernet cable from the bottom of the Wi-Fi module to the power supply as shown in **Figure 4.3**.
- 4.4. Connect the power supply wires from the bottom of the unit to the input power terminals of the terminal block located at the right side of the charger. See **Figure 4.4**.
- 4.5. Connect the ground wire to any terminal block mounting chassis ground as shown in **Figure 4.5**.

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Figure 4.3

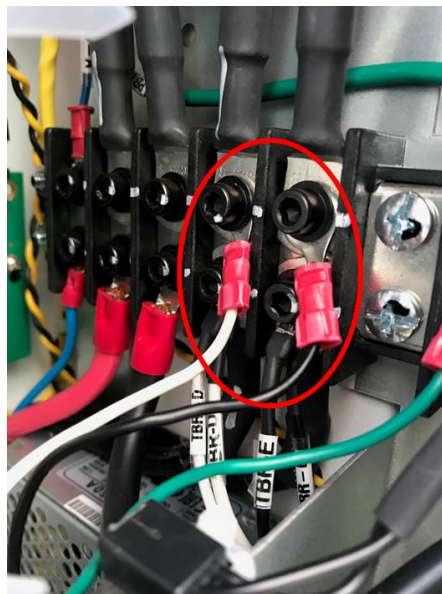


Figure 4.4

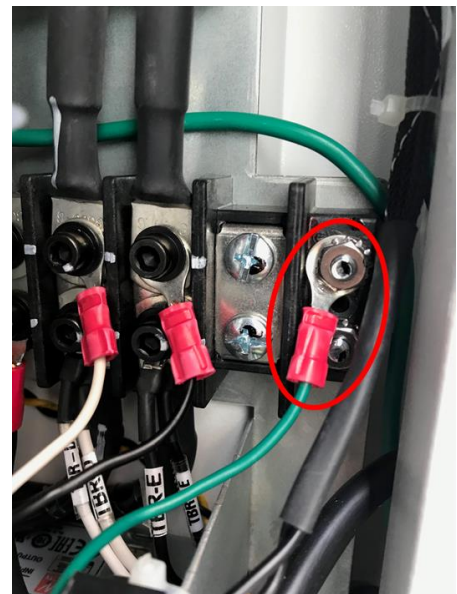


Figure 4.5

- 4.6. Connect one end of the Wi-Fi antenna cable on the tip of Wi-Fi module and the other end to the Wi-Fi antenna attached on the right side where one of the cellular modem antennas was previously installed. See **Figures 4.6, 4.7, and 4.8.**

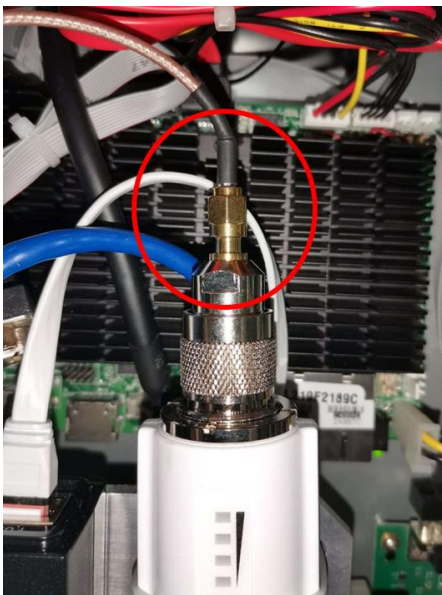


Figure 4.6



Figure 4.7

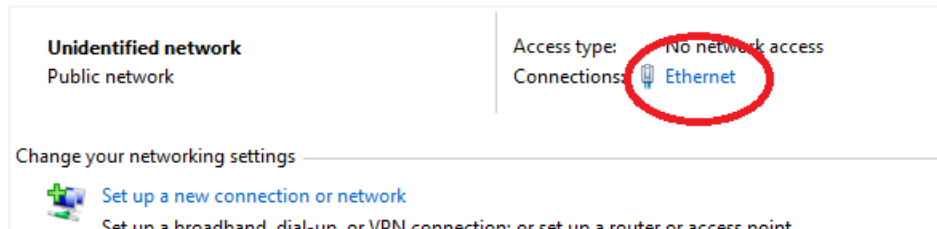


Figure 4.8

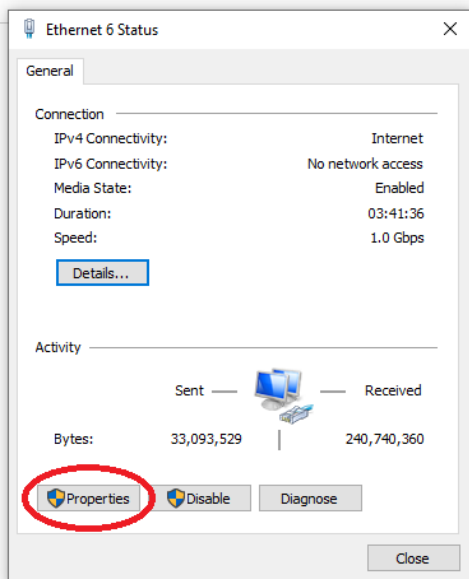
6.6. Wi-Fi Network Connection

Configuring PC to connect to Wireless Access Point

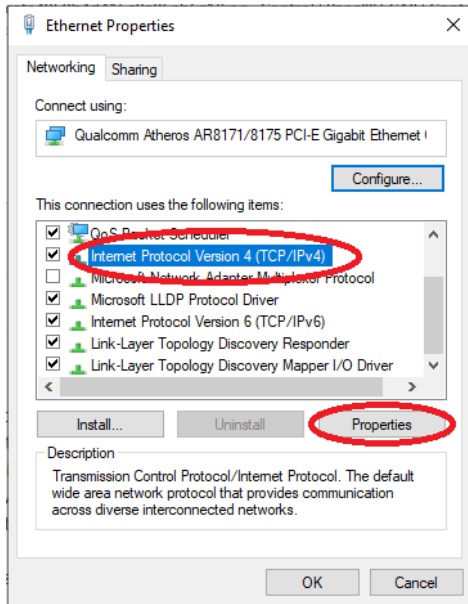
1. Disconnect the Ethernet cable from Wi-Fi Wireless Access Point POE/power supply.
2. Connect a patch cord ethernet cable from Wi Fi Wireless Access Point POE/Power supply to the Ethernet port on the PC.
3. On the laptop, open File Explorer. This can be accomplished by left clicking on taskbar icon or entering "File Explorer" in the search bar.
4. Enter "Control Panel\All Control Panel Items\Network and Sharing Center" into the address bar in File explorer.
5. In the "Network and Sharing Center" page, left click on the "Ethernet" link as circled in red below:



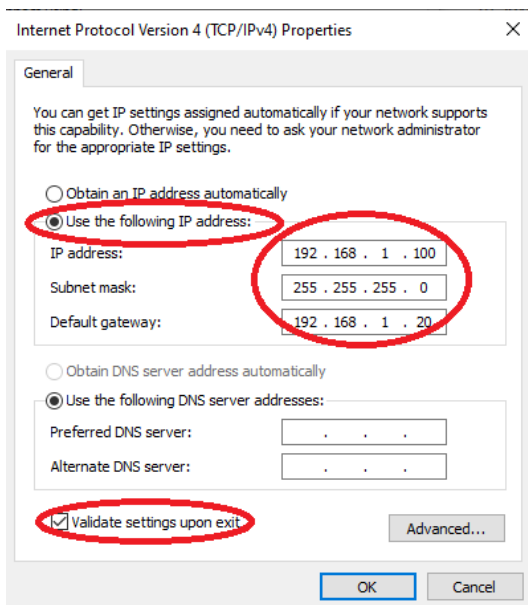
6. In the "Ethernet Status" window, left click on the "Properties" button as shown below (circled in red):



7. In the "Ethernet Properties" window, click on the "Internet Protocol Version 4 (TCP/IPv4)" connection and then "Properties" button as shown below (circled in red):



8. In the "Internet Protocol Version 4 (TCP/IPv4) Properties" window, select the "Use the following IP address" option, enter the IP address, Subnet mask, and Default gateway, and select "Validate settings upon exit" as shown below (circled in red):



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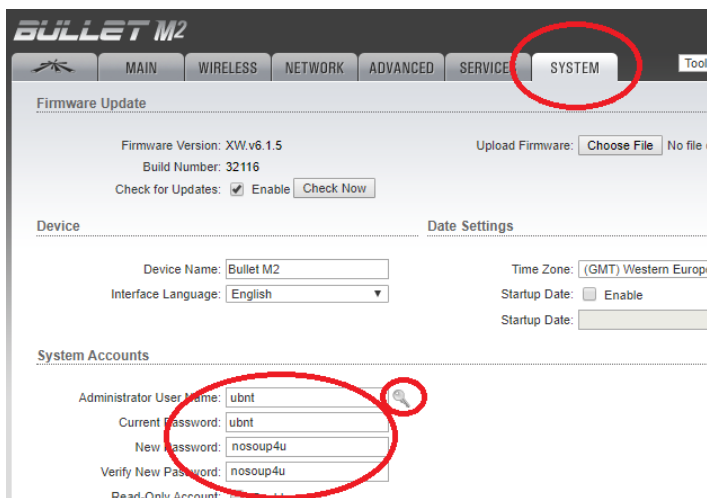
9. Click "OK"
10. Click on the "Close" button on the "Ethernet Properties" window.
11. A pop-up banner may appear showing connection to a network.

Connecting PC to Wi-Fi Wireless Access Point

1. Launch a browser on the PC (Chrome is recommended)
2. In the address field, type: "https://192.168.1.20" and press "enter."
3. If a warning screen appears, click on links needed to allow access to the management page (e.g. click on "Advanced" and then "Proceed to 192.168.1.20 (unsafe)").
4. When the login page appears, enter "ubnt" in both the password and username fields.
5. Click the box to accept "TERMS OF USE and LICENSE AGREEMENT."
6. Left click the "Login" button in lower right area below Terms of Use.

Configuring Wi-Fi Wireless Access Point Username/Password

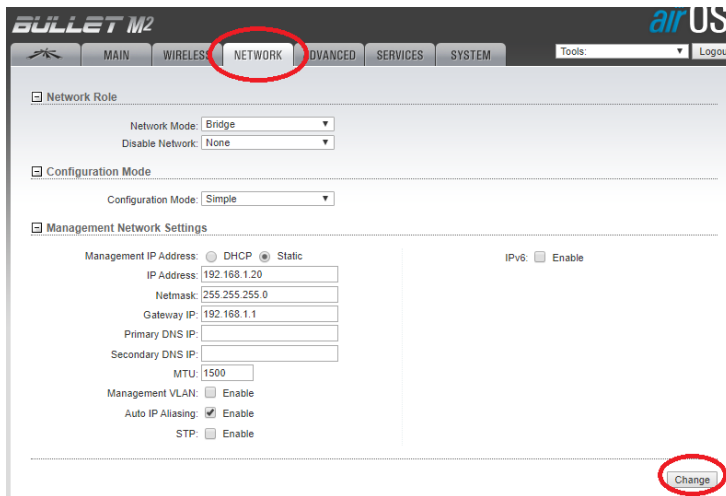
1. Once the Wi Fi Wireless Access Point management page opens, click on the "SYSTEM" tab as shown below (circled in red):
2. Click on magnifier icon as shown below (circled in red):
3. To change password, for "Current Password," use "ubnt;" for New Password, use "nosoup4u" as shown below (circled in red):



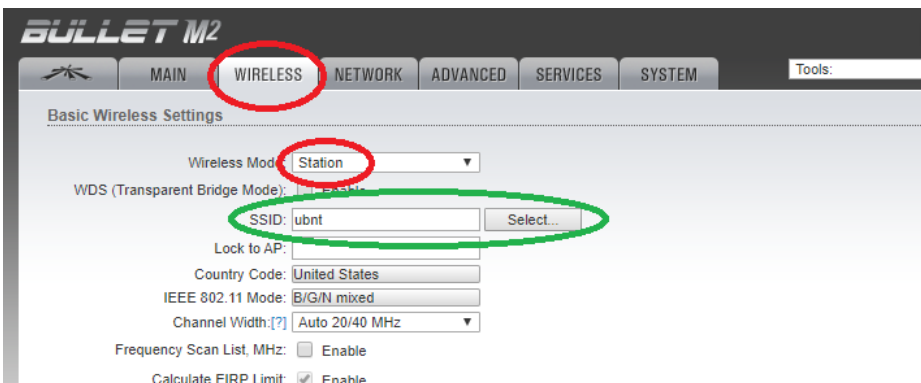
4. Click "Change" button below "Miscellaneous" section (on the right).
5. On top, a blue banner will appear allowing you to select the "Apply" button.

Configuring Wi-Fi Wireless Access Point Operation Mode

1. After a moment, select the "Network" tab as shown below (circled in red):
2. Assure that the settings are as shown in the screen below.
3. Select the "Change" in lower right corner of the window (circled in red):



4. On top, a blue banner will appear allowing you to select "Apply."
5. Select the "Wireless" tab as shown below (circled in red):
6. Assure that the Wireless Mode is set to "Station" as shown below (circled in red):



7. Select "Change" button in lower right corner of the window as applicable.

Configuring Wi-Fi Wireless Access Point Select Network

1. Remaining in the "Wireless" tab page select the "Select" button for the SSID as shown above (circled in green).
2. Choose the appropriate network SSID by left clicking on the button to the left of the identified network as shown in example below (circled in red). Assure Signal is above -70dBm and is more than 15 dB above noise (yellow):

AC Level 2 Charger INSTALLATION AND USER'S MANUAL

INSTALLATION

3. Left click on "Select" as shown below (circled in green):

Site Survey

Scanned Frequencies:
2.412GHz 2.414GHz 2.417GHz 2.419GHz 2.422GHz 2.424GHz 2.427GHz 2.429GHz 2.432GHz 2.434GHz 2.437GHz 2.439GHz 2.442GHz 2.444GHz
2.447GHz 2.449GHz 2.452GHz 2.454GHz 2.457GHz 2.459GHz 2.462GHz

MAC Address	SSID	Device Name	Radio Mode	Encryption	Signal / Noise, dBm	Frequency, GHz / Channel
60:38:E0:7B:9A:D0	YC-WIFI		802.11n	WPA2	-60 / -89	2.422 / 3
3E:52:82:87:1A:37	DIRECT-37-HP OfficeJet Pro 7720		802.11n	WPA2	-50 / -89	2.437 / 6
FC:15:B4:D3:1E:DA	HP-Print-DA-ENVY 4500 series		802.11g	WPA2	-81 / -96	2.437 / 6
9A:E7:F4:B1:AC:B7	DIRECT-B7-HP OfficeJet Pro 7740		802.11n	WPA2	-79 / -88	2.442 / 7
10:62:E5:71:C1:5D	DIRECT-5C-HP OfficeJet 6950		802.11n	WPA2	-75 / -88	2.442 / 7
1C:3B:AD:8A:E9:C0	NewBTCPowerwifi		802.11n	WPA2	-64 / -96	2.462 / 11
F8:E7:1E:2C:92:C8	CableWiFi		802.11n	NONE	-80 / -96	2.462 / 11
F8:E7:1E:AC:92:C8	SpectrumWiFi		802.11n	NONE	-91 / -96	2.462 / 11

Selectable SSID's must be visible and have compatible channel bandwidth and security settings.

Lock to AP:

4. Once the selection is accepted, the window will move to background (but may still be opened) returning screen to the "Wireless" tab page.
5. Enter the password provided at site, for the selected network SSID, and left click "Change" as shown in the example screen below (circled in red):

BULLET M2 **airOS**

MAIN WIRELESS NETWORK ADVANCED SERVICES SYSTEM Tools Logout

Basic Wireless Settings

Wireless Mode: Station

WDS (Transparent Bridge Mode): ☐ Enable

SSID: NewBTCPowerwifi

Lock to AP: ☐

Country Code: United States

IEEE 802.11 Mode: B/G/N mixed

Channel Width: Auto 20/40 MHz

Frequency Scan List, MHz: ☐ Enable

Calculate EIRP Limit: ☒ Enable

Antenna Gain: 0 dBi Cable Loss: 0 dB

Output Power: 25 dBm

Data Rate Module: Default

Max TX Rate, Mbps: MCS 7 - 85/72.2 (135/15) ☒ Auto

Wireless Security

Security: WPA2-AES

WPA Authentication: PSK (P) ☐

WPA Preshared Key: <password> ☒ Show

6. Once the "Change" is accepted, the window will display a banner along the top of the screen as shown below in the example screen shot (circled in red):

BULLET M2 **airOS**

MAIN WIRELESS NETWORK ADVANCED SERVICES SYSTEM Tools Logout

Configuration contains changes. Apply these changes?

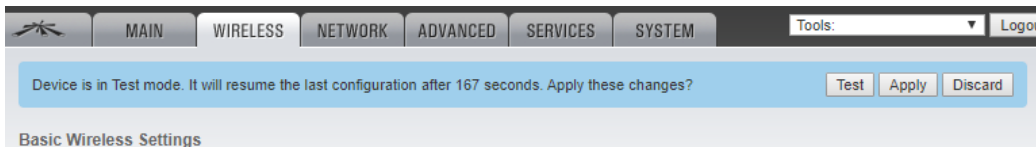
Basic Wireless Settings

Wireless Mode: Station

WDS (Transparent Bridge Mode): ☐ Enable

SSID: NewBTCPowerwifi

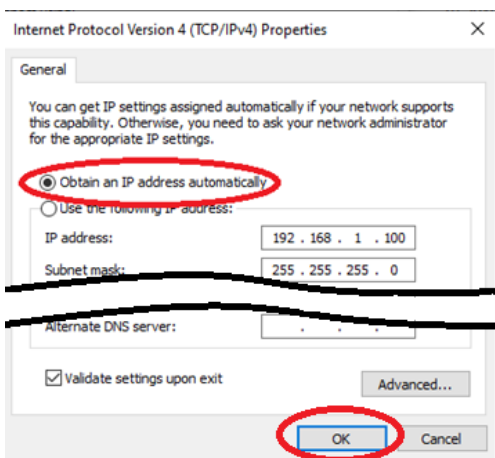
7. Initially select the "Test" button (circled in orange on the previous page)
8. The banner will show that the settings are temporarily being applied and will resort back to previous setting after a shown time period as seen below:



9. The succeeding set of procedures is for testing network internet connection. Note that you will have about three (3) minutes to complete these next procedures.

Testing Internet Connectivity/Returning PC to DHCP

1. After initiating test mode on previous page, test for Internet connection by doing search in browser. If the connected WAN network is using the 192.168.1.xxx network schema, skip to the next page of these instructions.
2. Repeat instructions on the first three pages of the "Configuring PC to connect to Wireless Access Point" of this document. In the "Internet Protocol Version 4 (TCP/IPv4) Properties" window.
3. Select the "Obtain an IP address automatically" option as shown below (circled in red):
4. Click "OK" (circled in red):



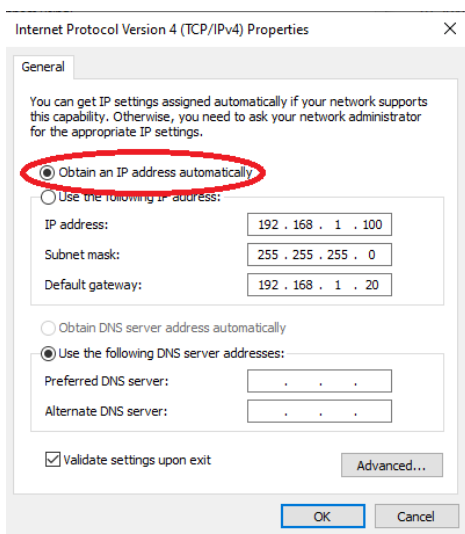
Testing Internet Connectivity/Returning PC to Static IP

1. If there is connection to the Internet, return the PC IP address to a static address as described under "Configuring PC to connect to Wireless Access Point" on the previous pages.
2. Click "Apply" (green circle in top screen shown on the previous page), otherwise select "Discard" or wait until timer expires.

3. If there is no Internet connection, verify settings set previously and repeat steps under "Configuring Wi-Fi Wireless Access Point Select Network" and "Testing Internet Connectivity/Returning PC to DHCP."

Returning PC to DHCP

1. Once the Internet connection is verified and settings are set, repeat instructions number 1 to 6 of the "Configuring PC to connect to Wireless Access Point" procedure.
2. In the "Internet Protocol Version 4 (TCP/IPv4) Properties" window, select the "Obtain an IP address automatically" option as shown below (circled in red):
3. Click "OK"



4. Disconnect the Ethernet patch cable from the POE/power supply and reconnect the Ethernet cable from the charger PC to the Ethernet port on the POE/power supply.

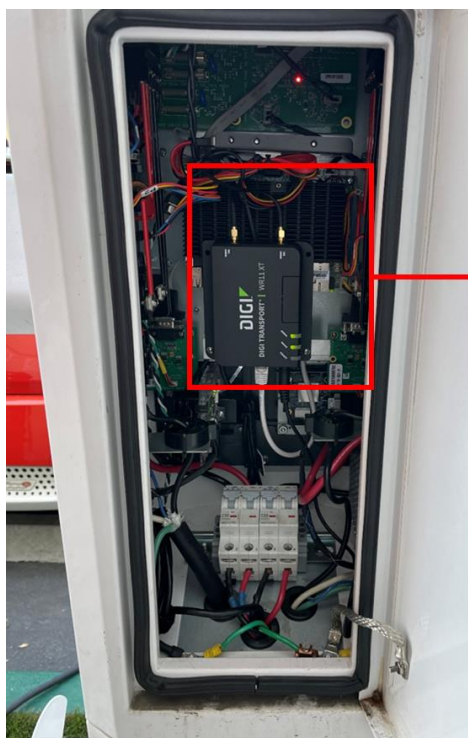


NOTE

All BTCPower EVSEs should be connected to a dedicated wireless router.

6.7. Ethernet Port Location from Modem

The RJ45 cable from the modem should be connected to the left-side ethernet port of the PC.



**Ethernet
Connection to
Modem/LAN**

**Note: The PC has two
ethernet ports – plug the
ethernet cable into the left
port.**

7. Retractor Assembly Installation Instruction

PLEASE NOTE

This instruction includes the latest information at the time of printing. BTC Power reserves the right to make changes to this product without further notice. Changes or modifications to this product by other than an authorized service facility could void the product warranty.

If you have questions about the use of this product, contact your customer service representative. Refer to the Customer Support section located in this guide.

WARNING:

Failure to provide adequate structural strength for this component can result in serious personal injury or damage to equipment! It is the installer's responsibility to make sure the structure to which this component is attached can support five times the combined weight of all equipment.

**WALL MOUNT RETRACTOR KIT****PEDASTAL RETRACTOR KIT**

Model Number: **L2-RETR-001**

Description: **Cable Retractor Kit**

CABLE RETRACTOR KIT: Packaging-As-Received



Left

As Packaged

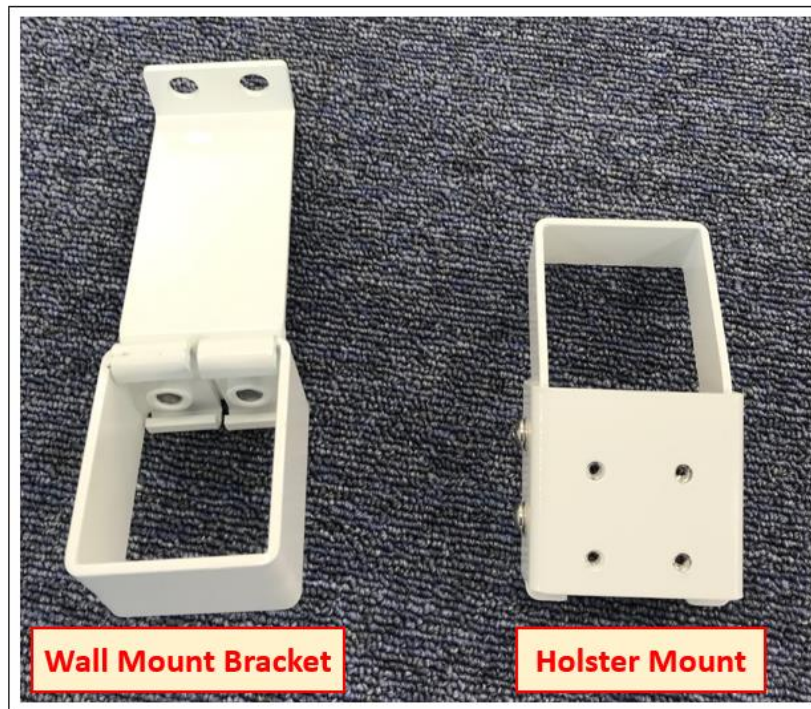


Right

CABLE RETRACTOR KIT: Brackets and Hardware



Brackets & Hardware



Wall Mount Bracket

Holster Mount

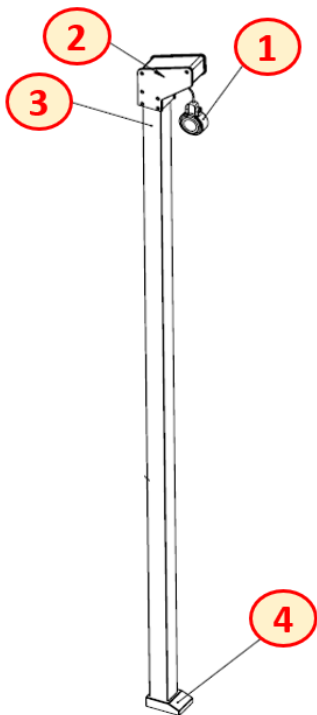
7.1. Installation Guidelines & Overview

7.1.1. Before Installing

Before any installation work is performed, study all drawings furnished by the supplier for the installation. These include arrangement drawings (front, end, and plan views), connections to the equipment that may be required to meet any local codes (such as mats, screens, or railings) is not furnished.

7.1.2. Overview

Below is the Bill of Materials in the Cable Retractor Assembly for Reference:



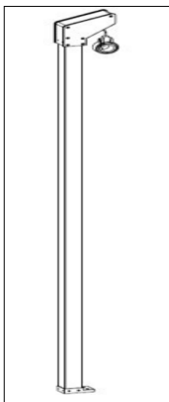
ITEM NO.	DESCRIPTION	QTY.
1	Cable Clamp	1
2	Retractable Housing	1
3	Extrusion, Aluminum	1
4	Base	1

7.1.3. Special Tools & Hardware Torque Value

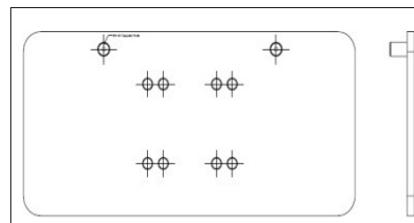
Tools/Hardware	Torque Specification	Tolerance
6-32 UNC	13 in-lbs.	+/- 2 in-lb
10-32 UNF	30 in-lbs.	+/- 5 in-lb
1/4-20 UNC	53 in-lbs.	+/- 7 in-lb
1/2-13 UNCS	48 in-lbs.	+/- 7 in-lb
M6 x 1 LIGUIDTIGHT FITTING	30 in-lbs.	+/- 5 in-lb
FUSE BLOCK LUGS, 8 AWG	40 in-lbs.	+/- 5 in-lb
FUSE BLOCK LUGS, 6 AWG	45 in-lbs.	+/- 5 in-lb
GROUND TERM. SCREWS, 14-10 AWG	34 in-lbs.	+/- 5 in-lb
GROUND TERM. SCREWS, 8 AWG	38 in-lbs.	+/- 5 in-lb
1/4-20" LOCKNUT	12 ft-lbs.	EVP-2001-XX-P EVP-2002-XX-P

7.2. Cable Retractor Pedestal Mount

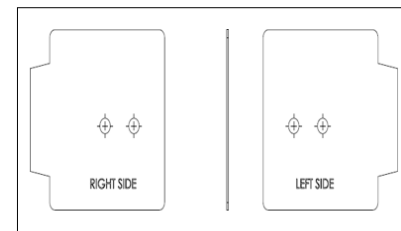
7.2.1. Tools and Ancillary Equipment



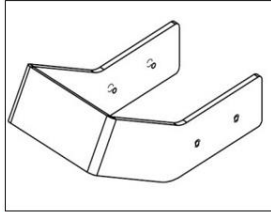
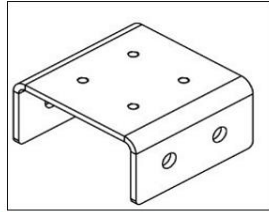
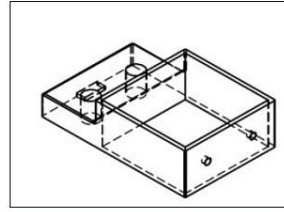
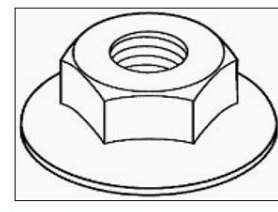
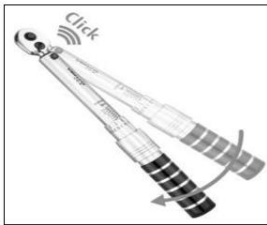
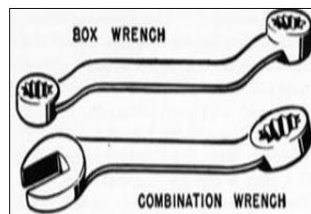
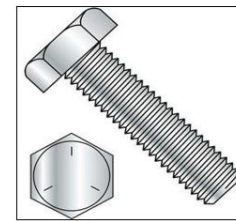
Retractor Head Assembly



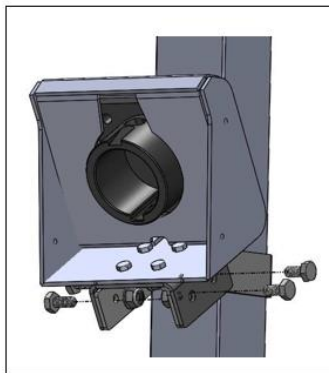
Holster Template



Retractor Base Template

Continuation 7.2.1 Tools and Ancillary Equipment

Retractor Brace

**Retractor
Pedestal Mount**

**Retractor Post
Bracket**

**1/4-20 Nylon Nut
Qty. 4**

Torque Wrench

Box Wrench

**1/4-20 x 5/8 Bolt
Qty. 4**
7.2.2. Assembly

1. When opening the package, the Retractor head assembly and Retractor Post Bracket will be attached to each other. The Retractor Pedestal Mount will also be attached to the Retractor Brace with 1/4-20 Bolts and Nuts.
2. For new installations, detach the 1/4-20 Bolts attached to the Retractor Brace from the Retractor Post. Proceed to Step 4, Mounting the Post to the Ground.

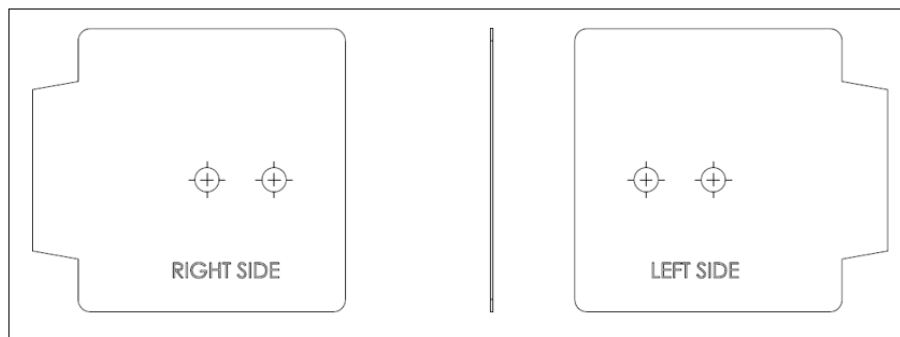


NOTE: If you are installing a Cable Retractor Assembly on an existing Level 2 Charging Unit, skip to Step 4.

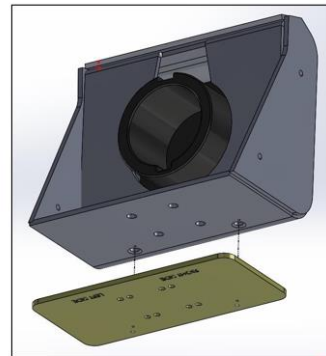
AC Level 2 Charger INSTALLATION AND USER'S MANUAL

RETRACTOR INSTALLATION

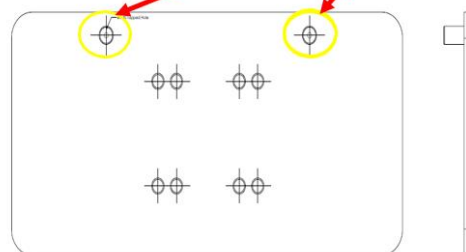
3. Locate the Drill template for locating the retractor base bracket stud.
 - a. Based on the location of the charger the retractor base will need to have a separate stud to mount the retractor post base bracket. Provided is a drilling template for each side of the charger. The right side is indicated by facing the charger's display.
 - b. Note that the following is not the actual size. PDF file should be printed 1:1 scale to locate the ideal location of the concrete stud to be drilled.



4. Locate the Holster Template and use this to drill 4 pilot holes which will later be oversized to .266 through holes for the 1/4-20 Bolts.



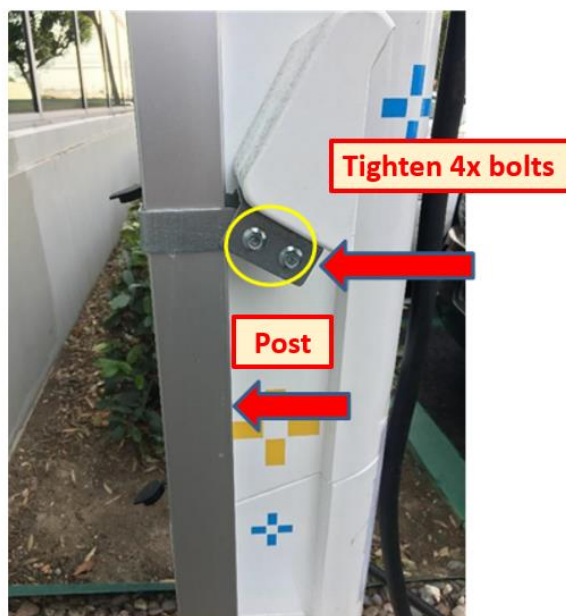
**Template Guide
Screw Holes**



5. Once four through holes have been drilled use the provided bolts to secure the two post brackets like the following picture:



6. Insert post into the charger mount bracket and tighten the provided bolts.



AC Level 2 Charger INSTALLATION AND USER'S MANUAL

RETRACTOR INSTALLATION

7. Use the cord-set attached to the retractor head assembly to pick the length of the charger plug to charger where the clamp will sit without letting the charger cord and plug to be off of the ground.



Make sure the cord does not come in contact with the ground

8. Mark the location of the clamp and wrap four layers of double-sided gasket tape (included in this package) in that location.
 - a. Assemble the retractor clamp over the four (4) layers of double-sided gasket tape as shown below:
NOTE: Install all four (4) screws (encircled **red**) in the same orientation. Each half of the half of each cable clamp is the same piece. By turning on half 180 degrees they go together. One side of the clamp has clearance holes for the screws. The other side has holes sized for self-taping screws.



- b. Attach the clamp assembly to the cord retractor head cord cable.



9. Attach clamp assembly to the end of the cord clamp with provided screw and nut.



10. Test to make sure there is no binding on the cord retractor assembly prior to allowing the counterweight to be fully lowered.



- Slight variation may be present from different charger models.
- Contact customer support at BTCPower for additional help.

AC Level 2 Charger INSTALLATION AND USER'S MANUAL

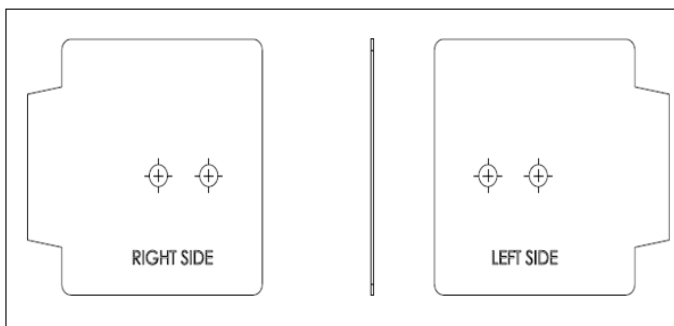
RETRACTOR INSTALLATION

7.3. Cable Retractor Wall Mount

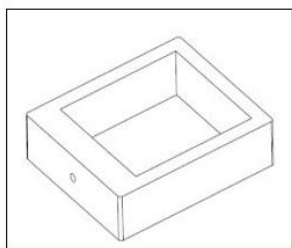
7.3.1. Tools and Ancillary Equipment



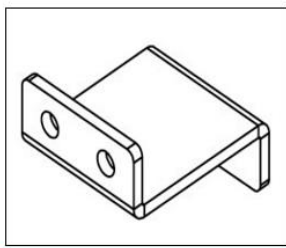
Retractor Head Assembly



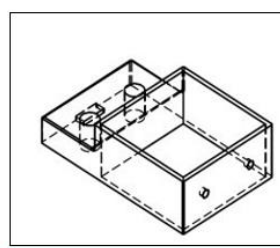
Retractor Base Template



Retractor Brace Collar



Retractor Wall Mount



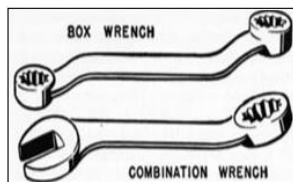
**Retractor Post
Base Bracket**



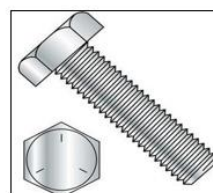
**Concrete
Expansion
Bolt Qty. 2**



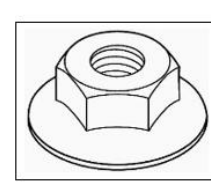
Torque Wrench



**7/16" Box
Wrench**



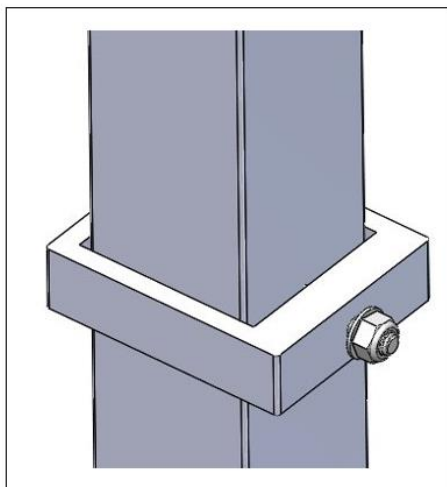
**1/4-20 x 1 Bolt
Qty. 1**



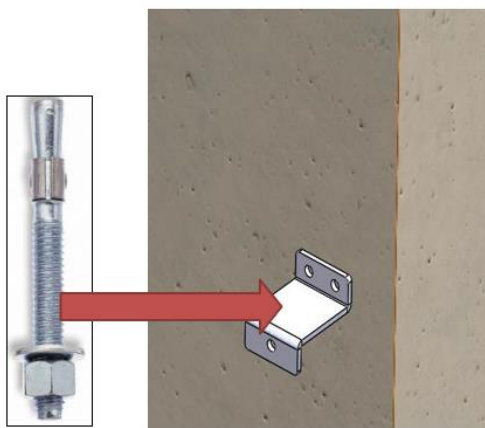
**1/4-20 Nylock
Nut Qty. 1**

7.3.2. Assembly

1. When opening the package, the Retractor post will be attached to the Retractor Brace Collar with $\frac{1}{4}$ -20 bolt and nut.



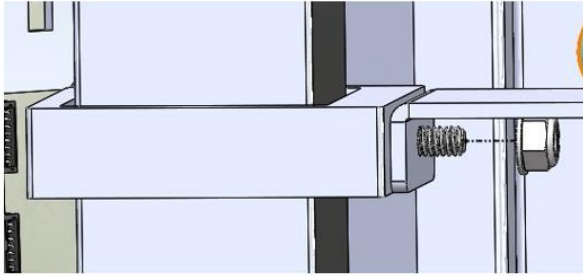
2. Bolt the Retractor Wall mount to the Wall approximately 40 inches from the base using Qty 2 Concrete Expansion bolts shown below:



AC Level 2 Charger INSTALLATION AND USER'S MANUAL

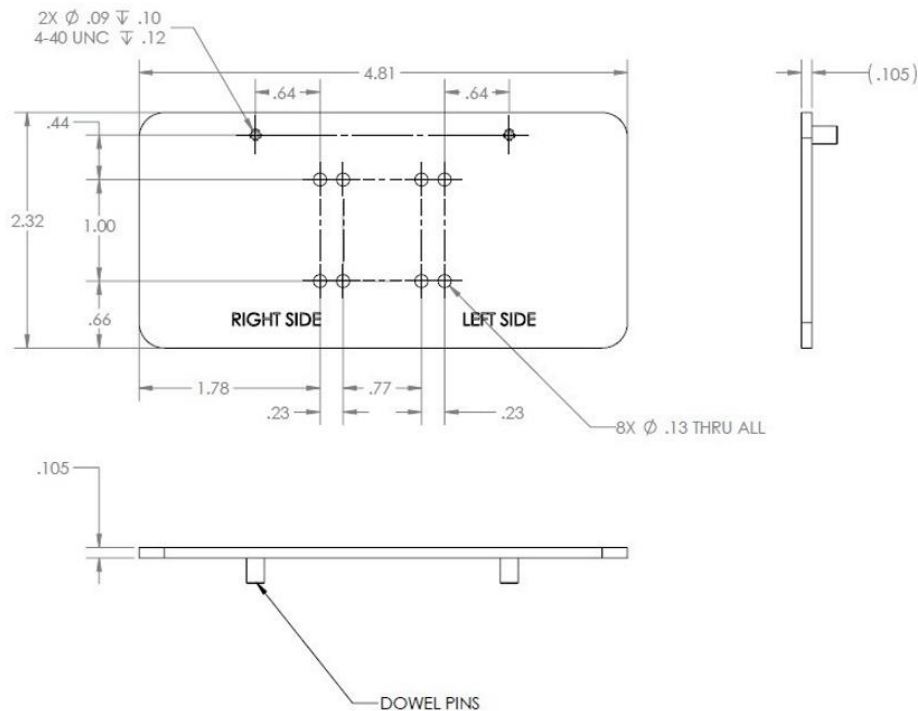
RETRACTOR INSTALLATION

- After installing the Cable Retractor Wall Mount bracket to the wall, bolt the Cable Retractor post to the Cable Retractor wall mount.

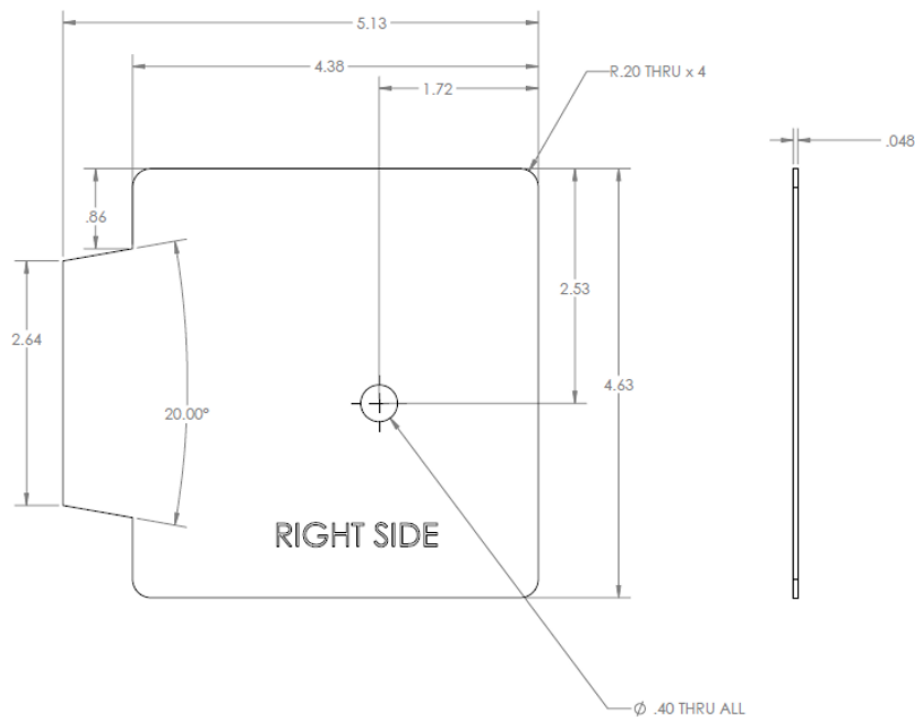


NOTE: Please allow for clearance from Cable Retractor Post to swing Level 2 Charger for Servicing

7.4. Drill Templates



RETRACTOR INSTALLATION



7.5. Assembly Instructions

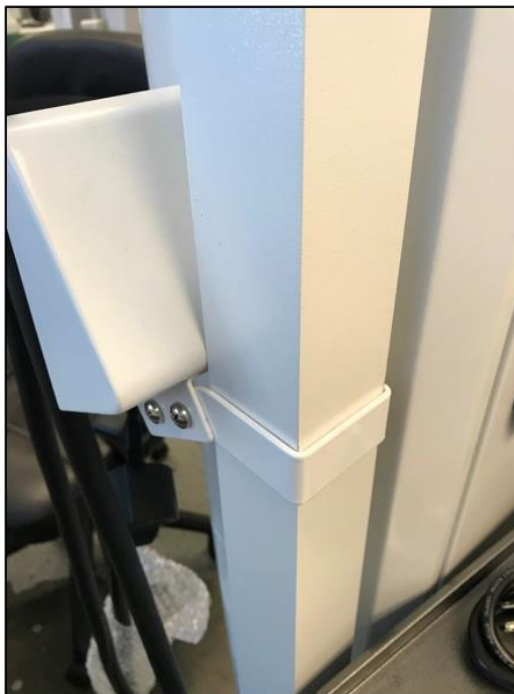
1. After receiving the retractor box, disassemble the holster retractor clamp as shown below by removing the 4 1/4-20 bolts that attach them on the side using a 7/16 wrench.



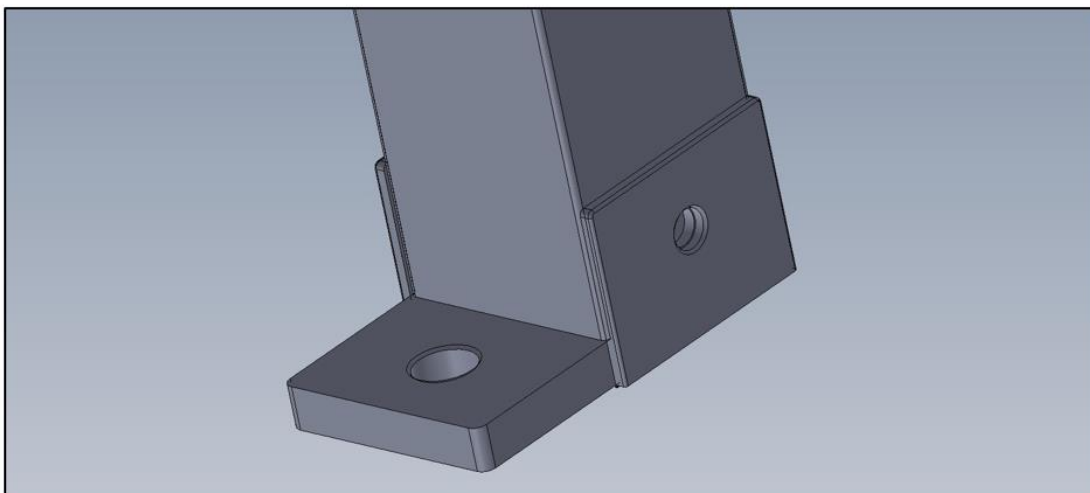
2. Once the bolts have been removed the clamp can easily be slid on the retractor shaft as shown in the next illustration.



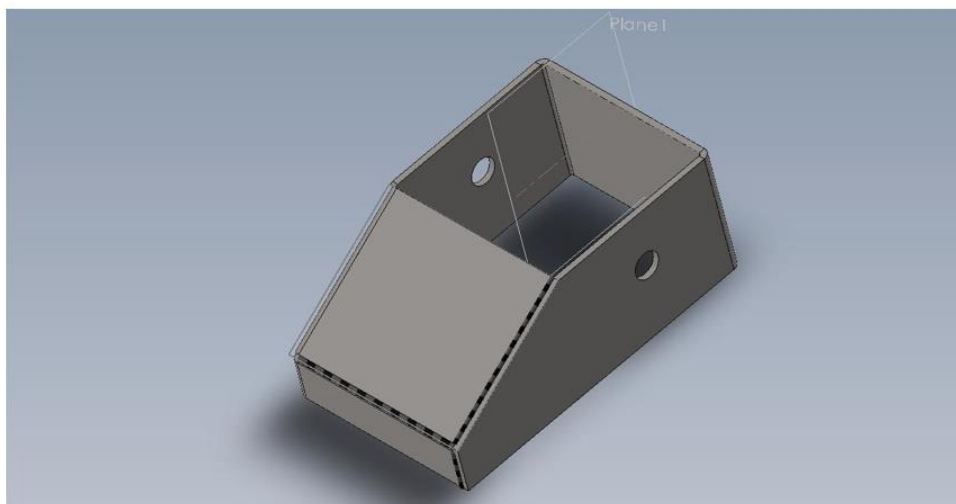
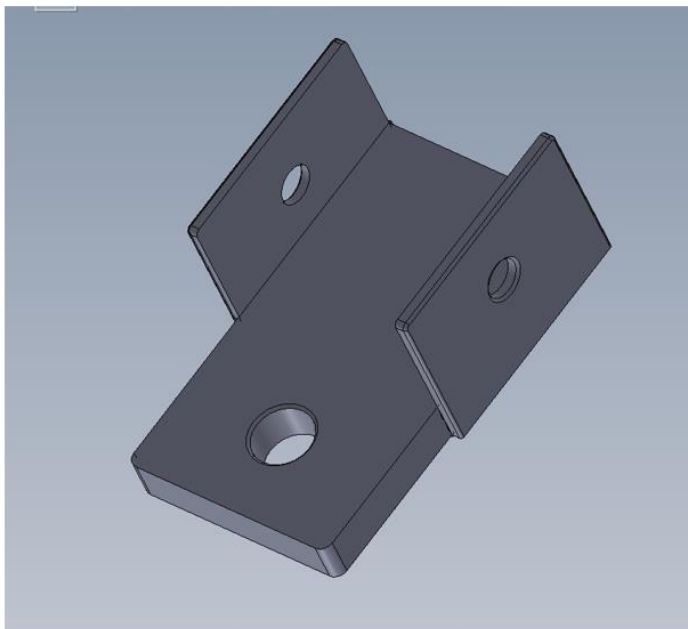
3. Once the retractor post is installed in the position shown below, proceed to reinstall the 4 1/4-20 bolts that were removed in previous step.



4. Place the retractor base to the concrete anchor is in a vertical position using a level to ensure the angle is straight.
The base of the retractor cover needs to be removed to access the base anchor hole.



5. Position the base bracket so that the retractor assembly is installed in a vertical position from the base to the top of the retractor using a Level.



• LEVEL II, SINGLE CHARGER, 4.5KG RETRACTOR SYSTEM

DO NOT SCALE IF IN DOUBT - ASK

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A	DRAWING RELEASED FOR REGISTRATION	06/22/2021 JB	OM NPN21-023

ITEM NO.	PART NUMBER	BTCP PART NUMBER	DESCRIPTION	QTY	
WM ACCESSORIES	16	130-0593-01_revA	130-0593-01	4.5kg WM Retractor Accessories, Retractor Bracket	1
	15	130-0592-01_revA	130-0592-01	4.5kg WM Retractor Accessories, Retractor Holder	1
PED ACCESSORIES	14	130-0616-01_revC	130-0616-01	4.5kg PED Retractor Accessories, Retractor Clamp	1
	13	130-0615-01_revC	130-0615-01	4.5kg PED Retractor Accessories, Clamp Holster	1
RETRACTOR SYSTEM	12	130-0619-01_revA	130-0619-01	Base Cover	1
	11	130-0618-01_revA	130-0618-01	Spacer, Nylon2	1
	10	130-0617-01_revA	130-0617-01	Spacer, Nylon	1
	9	130-0613-01	130-0613-01	Clamp, Cable 30A - for cable with 0.675±0.02 OD	1
	8	130-0612-01_revA	130-0612-01	Bushing, Delrin	1
	7	130-0603-01_revA	130-0603-01	Assy, Counterweight System, 4.5kg	1
	6	130-0602-01_revA	130-0602-01	Bracket, Base, Weldment	1
	5	130-0601-01_revA	130-0601-01	Extrusion, Aluminum, 2x2	1
	4	97395A492	130-0600-01	Dowel Pin, SS	1
	3	130-0599-01_revA	130-0599-01	Pulley, Large	1
2	130-0598-01_revA	130-0598-01	Cover, Retractable Housing, CRS	2	
1	130-0597-01_revA	130-0597-01	Housing, Retractable CRS	1	

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. DECIMALS ARE 1/16". ANGLES ARE 1/4".

APPROVALS: DATE: 12/02/15

DESIGNED BY: CE

CHECKED BY: AS

12/10/15

QUAL ENG

DO NOT SCALE DRAWING

THE PART/COMPONENT/ASSEMBLY MUST COMPLY WITH BATTERY POWER ENVIRONMENTAL SPECIFICATION ENG-00-25

PROPRIETARY AND CONFIDENTIAL

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BTC POWER

BROADBAND TELCOM

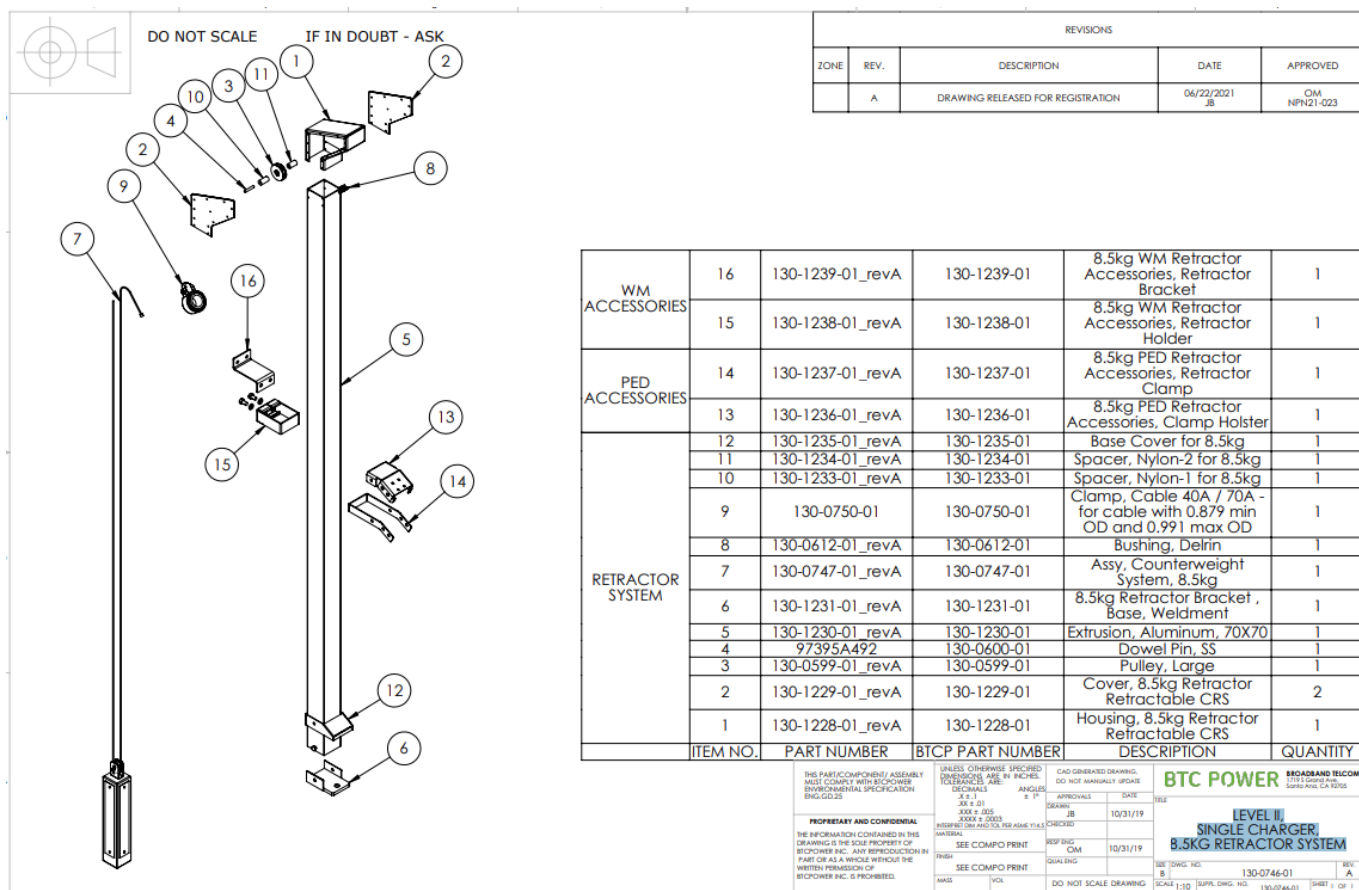
LEVEL II, SINGLE CHARGER, 4.5KG RETRACTOR SYSTEM

130-0745-01

SCALE: 1:10

SHEET 1 OF 1

- **LEVEL II, SINGLE CHARGER, 8.5KG RETRACTOR SYSTEM**



- Wall Mount Installation Example



- Wall Mount With Bollards



- Wall Mount



8. Verification and Inspection

Commissioning

Prior and during system start-up, perform verification and inspection on the charger unit using the **AC Level 2 Charger Commissioning Checklist** which was provided together with this manual.

All instructions listed in the commissioning checklist are considered mandatory and must be carried out by the contractor in-charge of the commissioning. The required information shall be filled-in as well.

For any issues, concerns, or questions during commissioning, please email to dispatch@btcpower.com or call **1-855-901-1558**.

After successful commissioning, email the completed commissioning checklist to dispatch@btcpower.com.

9. Operation

9.1. System Power Up and Testing



DANGER

The charger must NOT be started or put into use without having been commissioned by fully trained and authorized personnel.



WARNING

WARNING AGAINST TAMPERING, and PLEASE REFER TO SAFETY WARNINGS PERTAINING TO A RISK OF FIRE OR ELECTRIC SHOCK FROM SECTION 6.

Front Display Panel

The front panel display allows the user to know the status of the charger and if charging is taking place.

Switching ON

Once a qualified electrician has installed the charger, switch ON the breaker inside the charger then the main panel breaker. The system and the display should turn ON.

Free Vending Mode

Remove the charging connector from its holder on the front of the charging station. Open the J1772 plug cover on your vehicle (refer to the vehicle's owner's manual). Plug the J1772 plug into the vehicle's charge port.

Upon insertion, push down on the handle to lock it into place. Normally, the vehicle will immediately request a charge and the contactor inside the charger can be heard closing. The display will show ready for charge followed by charging.

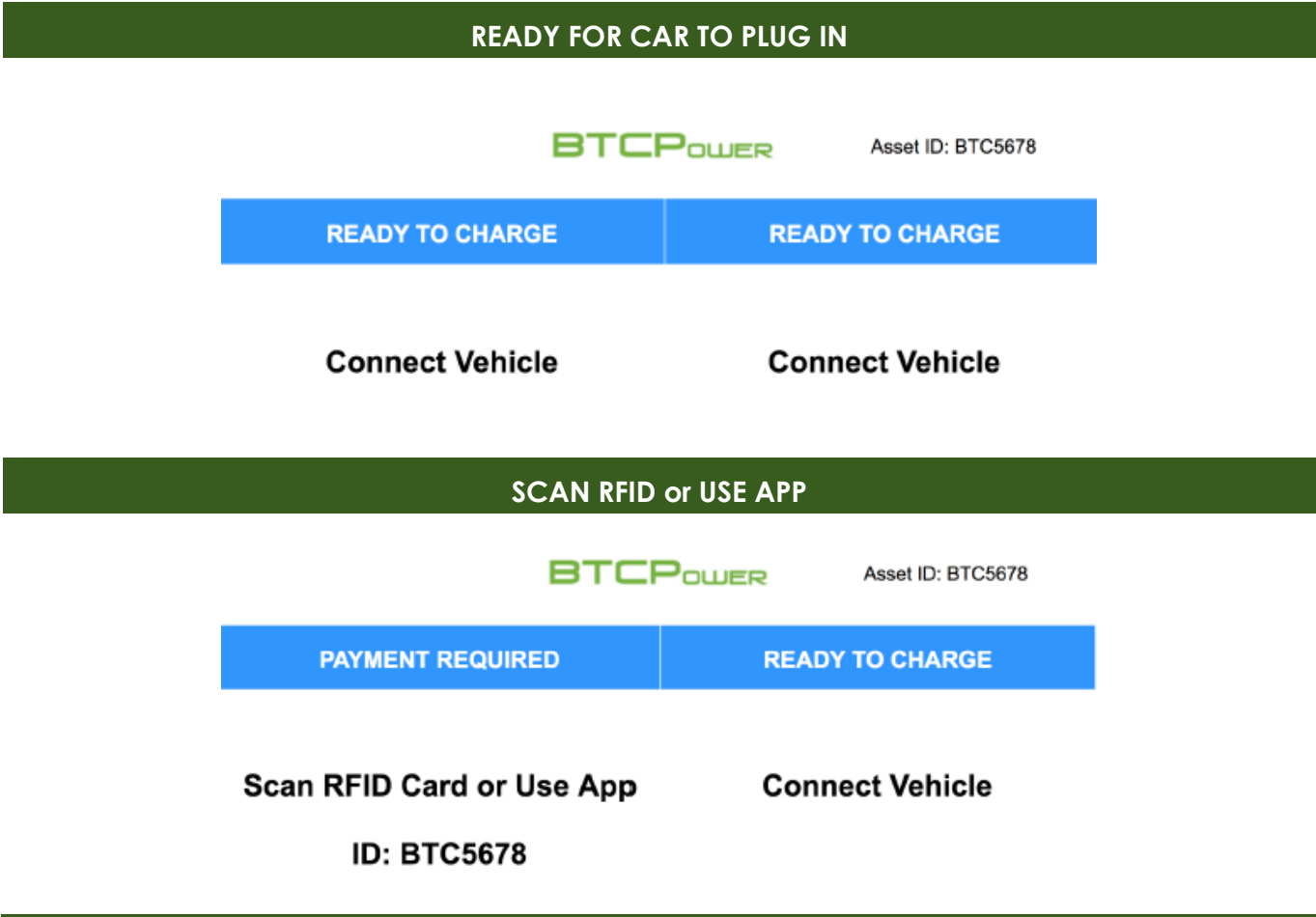
To remove the connector from the vehicle, depress the button in the middle of the handle to release the connector.

Place the charge connector back into the connector provided on the charge station.

Access Control Mode

- RFID
- Credit Card Payment
- Phone Application

9.2. Screen Scenarios



RFID INVALID



Asset ID: BTC5678

PAYMENT REQUIRED

READY TO CHARGE

RFID Card Invalid. Please Try
Again.

Connect Vehicle

PAYMENT TIMER EXCEEDED



Asset ID: BTC5678

RECONNECT VEHICLE

READY TO CHARGE

Reconnect Vehicle

Connect Vehicle

AUTHORIZING PAYMENT



Asset ID: BTC5678

AUTHORIZING...

READY TO CHARGE

Processing...

Connect Vehicle

CAR CHARGING

BTCPOWER

Asset ID: BTC5678

CHARGING...

READY TO CHARGE

Energy	0.01	kWh	Connect Vehicle
Charger Voltage	241.58	VAC	
Charger Current	15	A	

CHARGING COMPLETED

BTCPOWER

Asset ID: BTC5678

CHARGING COMPLETED

READY TO CHARGE

Please Unplug Charger and
Return to Holder

Connect Vehicle

CAR UNPLUGGED

BTCPOWER

Asset ID: BTC5678

CHARGING SUMMARY

READY TO CHARGE

Plugged In Time:	4h 20m 14s	Connect Vehicle
Charge Time:	3h 28m 2s	
Energy:	28.8 kWh	

INTERNET DOWN



Asset ID: BTC5678

NETWORK DOWN

NETWORK DOWN

Please Contact Customer
Support.

Please Contact Customer
Support.

ERROR SCREEN WITH ERROR CODE



Asset ID: BTC5678

ERROR0

READY TO CHARGE

Please Call Customer Support.

Connect Vehicle

9.3. Troubleshooting

Charging Does Not Start

In the event of a problem, charging will stop, and an error message will appear on the display panel. When this happens, perform the following steps before calling your field service representative.

1. Remove the charging connector from the vehicle socket. The error message on the screen may go off. Plug the connector back into the socket and check if charging begins normally. If charging does not start, then call customer service.
2. If an error code appears on screen and persists after removing the connector, consider calling the field service representative to investigate the issue. The user should record the Error Code shown on the display along with the station ID and date and time of the occurrence.
3. Alternatively, if the error code does not appear when the connector is removed, be sure the connector is removed from the vehicle socket and switch OFF power at the circuit breaker feeding power to the charger. Wait a few seconds and switch the circuit breaker back ON again. Charging should start normally. If charging does not begin, call for field service representative.

AC Level 2 Charger INSTALLATION AND USER'S MANUAL

OPERATION

Error Codes

Error Code	Source	Severity	Description	Troubleshooting Steps
ERROR0 OR No MCU Communication	Power Board to PC	High	Display shows "No MCU Communication". The PC no longer has control over the actions of the Power Board.	"1) Check all AC Input voltages (both ports) with a multimeter: line-to-line (208 to 240 VAC) and line-to-ground (120 VAC). If no voltages are found, ensure the switchgear (power going into the charger) is on. 2) Ensure the breaker is turned on for the port that is being troubleshot. 3) Connect a laptop via USB to Serial cable to the RS232 connector and check the firmware version of the Power Board. Update firmware if necessary. If the laptop is not communicating with the Power Board, replace the Power Board Assembly. 4) Check if RS232 Board is the optically isolated version. Replace board if the existing board is not the optically isolated version. 5) Check if the TTL cable is yellow-jacketed. Replace cable if the cable is not yellow-jacketed. 6) Check the TTL cable for proper connection on the Power Board and the RS232 board. Ensure the connections are landed properly in their respective ports. Replace the cable if damaged. 7) Check the serial connection between the RS232 Board and the PC (ribbon cable). Ensure connections are landed properly. Replace the cable if damaged. a) Check position and polarity of the PC serial ribbon cables. 8) Plug a keyboard into the charger PC, press F11, and open a new tab on the browser. In the Address bar, type "127.0.0.1/config.php". Check for proper serial port assignment.

Error Codes (Continuation)

Error Code	Source	Severity	Description	Troubleshooting Steps
ERROR1	Contactor	High	Welded contacts - contactor stuck closed.	1) Check the power board assembly version. If the power board assembly has cables for the high voltage lines, it is the older version. If the power board assembly has busbars for the high voltage lines, it is the current version. 2) Check the AC Voltage across the J1772 line pin () to ground pin with a multimeter. If ANY voltage is detected, replace the Power Board Assembly. On older units replace the output contactor/relay. 3) Connect a laptop via USB to Serial cable to the RS232 connector and check the firmware version of the Power Board. Update firmware if necessary. a) Check the fault condition on the center of the GUI. If no error is shown in the GUI, check the compatibility between the Power Board Firmware and the PC Software. 4) Shut off the charger's input AC Breaker, then turn on. If you hear contactor open, there may have been a glitch in the Power Board.

AC Level 2 Charger INSTALLATION AND USER'S MANUAL

OPERATION

Error Codes (Continuation)

Error Code	Source	Severity	Description	Troubleshooting Steps
ERROR2	Grounds	High	Missing or loose grounds	1) Check all physical grounds - ensure all the grounds are securely fastened. a) Check the power board ground. Ensure there is no conformal coat on the ground position. Additionally, ensure the ground mounted to the proper position. b) Check the ground lugs at the bottom of the unit c) Check the source ground - ensure the charger is properly grounded.
ERROR5	Charger	High	Contactor not engaging due to excessive heat, causing the safety not to engage the contactor coil.	1) Check for any loose connections on the terminal block (all terminals), and the output contactor/relay. Torque any loose connections down. 2) Check if the Power Board thermistor is adhered to the contactor. Adhere to the contactor with Kapton Tape if necessary. 3) Check the Power Board firmware and ensure the error shows up on the Level 2 GUI under Fault prompt. Record the number on the bottom center of the GUI. 4) In the GUI, check the output current settings. 5) Replace Power Board Assembly if the error persists.

AC Level 2 Charger INSTALLATION AND USER'S MANUAL

OPERATION

Error Codes (Continuation)

Error Code	Source	Severity	Description	Troubleshooting Steps
ERROR6	Contactor	High	Contactor welded - voltage is present at charge handle	1) Replace Power Board Assembly - for older versions replace the relay. 2) In the L2 GUI, check the firmware version and fault status.
ERROR8	Charger/GFCI	High	Line voltage getting shorted	1) Check line to ground continuity on both the input and output sides. Check for any loose wires that are shorting to ground. 2) Check if the Power Board firmware is compatible with the PC Software. Update the firmware/software if necessary. 3) Check Power Board firmware on Level 2 GUI and ensure the error shows under fault prompt. 4) See if fault continues after disconnecting the vehicle. 5) Replace Power Board Assembly. If the Power Board assembly is the older version, replace the Power Board.
No Network Connection	Charger	Medium	Network connection is down (cellular, Wi-Fi, or ethernet)	1) Ensure cellular service/internet bill is paid 2) Update modem firmware (if applicable) 3) Update Gateway firmware for Wi-Fi Gateway Modem (if applicable) 4) Check Power Supply for proper voltage to the modem. (5V or 12V, depending on the modem) 5) Check antennae to ensure they are not disconnected from the radio device (modem or Wi-Fi) 6) Check modem APN 7) Check the lights on the modem housing 8) Dial into the unit remotely to see if the unit is reachable (if successful the URL to the EndPoint is not configured correctly)

Error Codes (Continuation)

Error Code	Source	Severity	Description	Troubleshooting Steps
ERROR7	GFCI	Medium	Equipment detecting internal fault during pre-charge session before the vehicle starts pulling current	1) If the error code shows up before the charging session is initiated, check the following items: a) Start another charging session, see if the error code is thrown again. b) Check for continuity on the charging cable pins from line-to-line and line-to-ground. If continuity is detected, replace the charging cable. c) If the error code is thrown again, plug a laptop in and open the Level 2 GUI. Check for fault status. If the fault is showing in the GUI, press the "Compute CRC" button to reset the Power Board - see if the error clears. d) If the error persists, check the Power Board firmware is compatible with the PC software. If not, update the appropriate firmware/software. e) Replace the Power Board assembly if the error persists. 2) If the error code shows up after the charging session is initiated, refer to steps 1 (d) and 1 (e).
ERROR9	Charger	Medium	Power Board programming has been corrupted	1) Check Power Board on Level 2 GUI and reflash firmware to the Power Board - see if the issue resolves. 2) If issue does not resolve, replace the Power Board Assembly.
Connect Vehicle	Charger / Vehicle	Medium	Occurs when the vehicle is connected, but the connection status is not reflected on the charger display.	1) Check Pilot Line continuity from the J1772 pin to the Terminal Block. 2) Check the charging cable for any kinks or cuts. Replace cable if these issues are detected. 3) Connect to the Power Board on the Level 2 GUI and ensure the vehicle is changing the pilot state correctly under "State" in the center of the GUI. ("a" for idle, "b" for connected, and "c" for charging) 4) Replace Power Board Assembly if the problem persists.

10. Warranty

This Limited Product Warranty applies to customers who have purchased a BTCPower Electric Vehicle Charging Station(s) and/or a related product ("Product(s)") from BTCPower, Inc., or one of its authorized distributors.

LIMITED WARRANTY: Subject to the exclusions from warranty coverage set forth below, BTCPower warrants that the Product will be free from any defects in materials and/or workmanship (the "Limited Warranty") for a period of two (2) years after the date of the initial installation of the Product (the "Warranty Period"). If the Product becomes defective in breach of the Limited Warranty, BTCPower will, upon written notice of the defect received during the Warranty Period, either repair or replace, at BTCPower's election, the Product if it proves to be defective; provided, that BTCPower will not be responsible for the cost of any labor associated with the repair or replacement of any defective Product.

You acknowledge that replacement products provided by BTCPower under the Limited Warranty may be remanufactured or reconditioned Products or, if the exact Product is no longer manufactured by BTCPower, a Product with similar functionality ("Replacement Products") will be supplied. Any Replacement Products so furnished will be warranted for the remainder of the original Warranty Period or ninety (90) days from the date of delivery of such Replacement Product, whichever is greater. Should BTCPower be unable to repair the Product, BTCPower will replace the Product with the latest model/version of a similar product in current production.

EXCLUSIONS FROM LIMITED WARRANTY

IMPORTANT: The Limited Warranty and on your Product, shall not apply to defects, or service repairs, resulting from any of the following:

- Force Majeure – any occurrence or extraordinary event or circumstance beyond the control of BTCPower that is an act of God or whether that occurrence is caused by war, riot, storm, (such as hurricane, flooding, earthquake, volcanic eruption, etc.), or other natural forces, or acts of nature or other causes.

AC Level 2 Charger INSTALLATION AND USER'S MANUAL

REVISION HISTORY

REVISION HISTORY

Revision	Date	ECN #	Description	Originator
C	02-Mar-13	1001	Initial Release	Cortes
D	10-Apr-13	1002	Added warnings per ETL	Hymel
E	12-Apr-13	1003	Added user instructions	Schulz
F	13-May-13	1004	Added Wi-Fi modem/ Level 2 without meter	Hymel
G	20-Nov-14	1005	Updated to new hardware	Paryani
H	02-Nov-15	1009, 1006	Updated hardware as well as payment controller	Cortes
I	05-Jan-17		Added updated charger images	Moinee
J	22-Mar-17		Updated Entire Manual	Elmassry
K	09-Aug-17		Updated Entire Manual Add Spec Drawings	Elmassry
L	09-Oct-17		Updated Entire Manual Added Troubleshooting and Warranty Information	Elmassry
M	10-Nov-17		Updated I-sheets	Elmassry
N	05-Jun-18		Added Display and Wi-Fi Instructions	Elmassry
O	18-Jun-18		Service Breaker requirements	Moinee
P	16-Jan-19		Cellular Connectivity site survey checklist	Moinee
Q	26-Feb-19		Added ADA Mounting Requirements	Ogawa
R	19-Jul-19		- Changed document format - Added, rewrote, and re-arranged sections	Sanchez
S	05-Nov-19		- Updated the wire size requirements - Added ADA compliance for wall-mount - Added temperature rating requirements of the wires	Sanchez

AC Level 2 Charger INSTALLATION AND USER'S MANUAL

REVISION HISTORY

Revision	Date	ECN #	Description	Originator
T	09-Mar-20		- Added Manufacturer information - Created a separate section for Communications Connectivity - Added Wi-Fi Kit Mounting Procedure and Wi-Fi Network Connection sections - Added Site Survey Form in the Annex - Added the Conduit Connection Options - Added Verification and Inspection (or Commissioning) Section	Sanchez
U	10-Sept-21		- Added ethernet port location - Added Gross and Net Weight - Updated Error Codes - Added Cable Reach <i>Specifications</i> - Updated cable length <i>Description</i> - Removed Nayax	Dihayco
V	09-Feb-22		- Updated Error Codes - Page 35 – updated breaker photo	Dihayco
W	18-Jan-23		Added Chapter 7 Retractor Assembly Installation Instruction	Pulido

Site Survey Form

BTCPower EVSE Charger Connectivity

☐ **Newly Installed Unit**

☐ **Existing Installed Unit**

Model Number	Description	Date	MM	DD	YYYY
Unit ID	Serial Number				

Charger Location Data

Address: (Street, City, State, & Zip Code)			
GPS Coordinates:	Latitude:	Longitude:	
Description of Location:	Outdoor ☐	Inside Building ☐	In Parking Structure ☐
Obstruction:	Trees ☐	Buildings ☐	Hills ☐
	Power Lines ☐	Others (please specify): _____	

Cellular Signal Strength Measurement (using SureCall device)

RSSI	Requirement: -69 dBm (minimum)	
RSRP	Requirement: -100 dBm (minimum)	
RSRQ	Requirement: -11 dBm (minimum)	
SINR	Requirement: > 6 dB	

Wi-Fi Signal Strength Measurement (using Bullet M2 HP device)

RSSI	Requirement: -62 dBm (minimum)	
SINR	Requirement: > 10 dB	

Site Survey Form

Connection Points between the Power Supply to Modem to PC and Antenna to Modem

Nominal Voltage Out of Power Supply to Modem	
Ethernet Cat5 Cable Connection	
Antenna SMA Connectors	

Contractor's Information

Technician Name:	
Technician Signature:	
Technician Company Name:	

AC Level 2 30A

SINGLE or DUAL PORT CHARGING STATION (PEDESTAL)

MODEL	SINGLE PORT		DUAL PORT	
	MODEL Number	EVP-2001-30-P-0001	MODEL Number	EVP-2002-30-P-0001
	PRODUCT Number	L2P-30-240-16-001	PRODUCT Number	L2P-30-240-15-001
Power per Port	7.2 kW (240VAC @ 30A)			
ELECTRICAL SERVICE				
Power	240/208 VAC, 30A Load with 40A Branch Circuit Per Port			
Service Panel	40A Breakers per Port (No GFCI)			
Service Wiring	3-Wire (L1, L2, Earth Ground)		5-wire (L1, L1, L2, L2, Earth Ground)	
FUNCTIONAL INTERFACES				
Connector Type	SAE J1772			
Charging Protocol	SAE J1772			
Standard Cable Length	25 ft			
Cable Retractor	Optional (Cable 18 ft w/ Cable Management)			
LCD Display	500 Nits, 7" Color, 800 x 480, UV Protected			
Card Reader	ISO 14443 Type A & B, ISO 18092 NFC			
SAFETY AND CONNECTIVITY				
Ground Fault Detection	20 mA			
Plug-Out Detection	SAE J1772			
Power Measurement (opt)	Accuracy: 1% - 5%			
Power Report Interval	Every 15 minute on the hour			
Wireless	2.4 GHz Wi-Fi (802.11 b/g/n)			
Wide Area Network	4G Modem			
Communication Protocols	OCPP 1.5 and 1.6 Compliant			
SAFETY AND OPERATION				
Enclosure Rating	NEMA 3R			
Regulatory Compliance	ETL Certified for USA and cUL Certified for Canada; Complies with UL 2594, UL 2231-1, UL 2231-2, and NEC Article 625, EMC: FCC Part 15 Class A			
Operating Temperature	-30°C to +60°C (-22°F to 140°F)			
Storage Temperature	-50°C to +80°C (-58°F to 176°F)			
Humidity	95% Non-Condensing			



- ▶ SINGLE or DUAL PORT, 30A, LEVEL 2
- ▶ CHARGING PROTOCOL: SAE J1772
- ▶ 7.2 KW PER PORT
- ▶ 25 FT or 18 FT with CABLE RETRACTOR
- ▶ NEMA 3R HOUSING
- ▶ RFID READER
- ▶ OCPP COMPLIANT – STANDARD

- ▶ 7" COLOR SCREEN – STANDARD
- ▶ UL COMPLIANT – ETL CERTIFIED
- ▶ OPTIONS:
 - CABLE RETRACTOR
 - CREDIT CARD READER
 - CREDIT CARD SCANNER

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