

PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE



March 31, 2020

Advice Letter 5695-E

Erik Jacobson
Director, Regulatory Relations
Pacific Gas and Electric Company
77 Beale Street, Mail Code B10C
P.O. Box 770000
San Francisco, CA 94177

**SUBJECT: Description of PG&E's Safety Requirements Checklist Compliance Efforts
for the SB350 Standard Review Projects**

Dear Mr. Jacobson:

Advice Letter 5695-E is effective as of November 25, 2019

Sincerely,

A handwritten signature in cursive script that reads "Edward Randolph".

Edward Randolph
Deputy Executive Director for Energy and Climate Policy/
Director, Energy Division

November 25, 2019

Advice 5695-E

(Pacific Gas and Electric Company ID U 39 E)

Public Utilities Commission of the State of California

Subject: Description of PG&E's Safety Requirements Checklist Compliance Efforts for the SB350 Standard Review Projects

Purpose

As provided in Ordering Paragraph (OP) 53 of Decision (D.)18-05-040 and further described on page 130 of the decision, Pacific Gas and Electric Company (PG&E) hereby submits this Tier 1 advice letter to provide details of its compliance with the Safety Requirements Checklist for its Standard Review Projects (SRPs). Specifically, OP 53 requests that PG&E describe efforts to comply with the Safety Requirements Checklist and provide an attestation signed by the Project Manager.

Background

On May 31, 2018, the California Public Utilities Commission (Commission or CPUC) issued D.18-05-040 approving, with modifications, 4 of the SRPs proposed by California's three largest investor owned electric utilities for a total budget of approximately \$738 million.

The Commission directed the utilities to work with their respective Program Advisory Councils (PACs) to develop the format and template for attestation and other necessary logistical details to support compliance with the Safety Requirements Checklist, made available at <http://www.cpuc.ca.gov/sb350te/>. The Commission also directed each utility to file a Tier 1 Advice Letter describing their compliance efforts no later than 18 months from the date of the decision.

PG&E is responsible for two of the approved 4 SRPs; each of PG&E's SRPs are infrastructure projects which are subject to the Safety Requirements Checklist developed by the CPUC. Included in this advice letter are a description of PG&E's efforts to comply with the Safety Requirements Checklist, along with supporting documentation when available, and an attestation signed by PG&E's Project Manager.

Discussion

Included in the table below is a copy of the Safety Requirements Checklist with accompanying notes describing PG&E's compliance efforts. Included in Appendix A is an attestation signed by PG&E's Manager of Project Delivery confirming PG&E's compliance with the Safety Requirements Checklist as described in detail below.

Safety Requirement	
Pre-construction: These EV charging equipment safety requirements must be specified in procurement documents:	
1. Charging equipment must be certified by a Nationally Recognized Testing Lab (NRTL).	Please refer to the attached Appendix B for the list of charging equipment that has been certified by NRTL and approved for the SRP projects.
2. Infrastructure must comply with applicable safety performance requirements associated with the type of TE infrastructure being installed including: <ul style="list-style-type: none"> • For light-duty vehicles, compliance with the Society of Automotive Engineers (SAE) J-1772 Standard for Level 1 or Level 2 charging. Compliance with CHAdeMO and CCS for DC fast charging would be appropriate evidence of compliance with this requirement. • For other types of TE infrastructure, including any non-standardized EVSE, the following basic connector safety measures will be required: <ul style="list-style-type: none"> ○ A passing EVSE safety performance evaluation report performed by a Nationally Recognized Testing Lab (NRTL); ○ When not connected, the vehicle inlet and the EVSE connector must be designed to prevent direct contact with any live components; ○ The vehicle inlet and EVSE connector shall be free of sharp edges and potentially injurious protrusions; 	<p>The SRP is focused on medium and heavy-duty applications. Infrastructure installed as part of this program are for non-light duty vehicles.</p> <p>This advice letter includes the installation at 4 locations for the purpose of charging medium and heavy-duty electric vehicles.</p> <p>The following equipment was installed:</p> <ul style="list-style-type: none"> • Standardized Level 2 EVSE compliant with SAE J-1772: <ul style="list-style-type: none"> ○ BTC Power AC Charging Station 70A (Model number EVP-2001-70-P-0001) ○ Clipper Creek (CS-100) with the Liberty Plug-ins HYDRA-R control system ○ Clipper Creek (CS-100) • Non-Standardized EVSE <ul style="list-style-type: none"> ○ Orange EV 80kW Offboard Fast Charger (Model Number 80H-003)

<ul style="list-style-type: none"> The coupler between the vehicle and the EVSE should avoid or mitigate any potentially hazardous conditions such as fires, electrical shock to users, or other personal injuries 	<p>Please refer to the attached Appendix B and Appendix C for the list of charging equipment that meet the basic connector safety measures and have been approved for the SRP projects.</p>
<p>3. Infrastructure and its planned installation must comply with California Electrical Code Article 625.2¹</p>	<p>All SRP projects completed to date have required the customer to install customer-side facilities. Customers are required to submit construction plans to the relevant Authorities Having Jurisdiction (AHJs) and acquire permits before commencing work. Any future customer-side infrastructure built by PG&E would follow a similar permitting process prior to construction; where the AHJ verifies compliance with California Electric Code (CEC) 625.2.</p>
<p>4. Infrastructure and its planned installation must comply with the Americans with Disabilities Act (ADA), 42 U.S.C. § 12101 et seq., and California Building Code Chapter 11B,² if applicable, per the AHJ where the EVSE will be installed, unless the appropriate waiver is obtained from local authorities.</p>	<p>ADA requirements are not applicable. All PG&E SRPs are commercial installations for private fleet use and not available to the public. Pertaining to compliance for California Building Code 11B, all SRP projects completed to date have required the customer to install customer-side facilities. Customers are required to submit construction plans to the relevant Authorities Having Jurisdiction (AHJs) and acquire permits before commencing work. Any future customer-side infrastructure built by PG&E would follow a similar permitting process prior to construction; where the AHJ verifies compliance with Title 24 Chapter 11B.</p>

¹ California Electrical Code Article 625 covers Electric Vehicle Charging System safety and standards as installed in place. California Code of Regulations, Title 24, Article 625.

² California Building Code Chapter 2 includes definition associated with electric vehicle charging stations. CBC Chapter 11B defines requirements for 'Accessibility to Public Buildings, Public Accommodations, Commercial Buildings, and Public Housing.

5. Outdoor-mounted EVSE must be rated to be installed for outdoor use.	Please refer to the attached Appendix B and Appendix C for the charging equipment that comply with this requirement.
6. For utility infrastructure work on the customer side of the meter, contractors must provide proof of EVITP Certification prior to construction.	To date, PG&E has utilized Cupertino Electric Inc. as the sole resource to construct SRP projects. This has been limited to utility-side infrastructure; all of the customer-side infrastructure has been installed by the customer. Cupertino Electric Inc. is EVITP certified as required. New contractors hired to install customer-side infrastructure will also be required to provide proof of EVITP Certification prior to commencing work. Details can be provided upon request of the Commission.
7. Contractors must provide the utility proof of a full site assessment, including the appropriate load calculations to ensure existing infrastructure can accommodate additional EV load, or that appropriate infrastructure upgrades will be completed.	During the design phase of the SRPs, contractors performed the appropriate load calculations to inform whether infrastructure upgrades would be required. Details can be provided upon request of the Commission.
During Construction:	
1. All utility infrastructure work on the customer side of the meter not performed by employees of the IOUs shall be performed by fully licensed electricians. For commercial installations, all electrical contractors should hold a valid C-10 contractor's license.	All SRP projects completed to date have required the customer to install customer-side facilities. Therefore, none of the work on the customer side of the meter was performed by employees or contractors of PG&E. However, any future customer-side installations shall be performed by licensed electricians who hold valid C-10 contractor's licenses. Details can be provided upon request of the Commission.
2. Installations will be designed per Article 625 of the California Electrical Code.	All SRP projects completed to date have required the customer to install customer-side facilities. In this scenario, customers submit

	<p>construction plans to the relevant Authorities Having Jurisdiction (AHJs) and acquire permits before commencing work. All of this work has been in compliance with Article 625 of the CEC. Any future customer-side infrastructure built by PG&E would follow a similar permitting process prior to construction; where the AHJ verifies compliance with CEC 625.</p>
Operational Safety:	
<p>1. Overcurrent protection associated with utility transformers and distribution circuits that feed power to the charging stations.</p>	<p>All SRPs were designed and constructed to provide overcurrent protection. Details can be provided upon request of the Commission.</p>
<p>2. Overcurrent protection in the meter pedestal/circuit breaker panel that feeds each of the charging stations.</p>	<p>Please refer to the attached Appendix B and Appendix C for the charging equipment that comply with this requirement.</p>
<p>3. Bollard equipment protection installed where appropriate as defined by utility design standards and AHJ requirements.</p>	<p>All SRP projects completed to date have required the customer to install customer-side facilities. Customers are required to submit construction plans to the relevant Authorities Having Jurisdiction (AHJs) and acquire permits before commencing work. Any future customer-side infrastructure built by PG&E would follow a similar permitting process prior to construction. For all utility distribution equipment, Bollard protection was installed where appropriate. Details can be provided upon request of the Commission.</p>
<p>4. Concrete parking stops to protect equipment where appropriate as defined by utility design standards and AHJ requirements.</p>	<p>All SRP projects completed to date have required the customer to install customer-side facilities. Customers are required to submit construction plans to the relevant Authorities Having Jurisdiction (AHJs) and acquire permits before commencing</p>

	work. Any future customer-side infrastructure built by PG&E would follow a similar permitting process prior to construction; where the AHJ verifies compliance with the parking stop requirements. Details can be provided upon request of the Commission.
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Protests

Anyone wishing to protest this submittal may do so by letter sent via U.S. mail, facsimile or E-mail, no later than December 16, 2019, which is 20 days³ after the date of this submittal. Protests must be submitted to:

CPUC Energy Division
ED Tariff Unit
505 Van Ness Avenue, 4th Floor
San Francisco, California 94102

Facsimile: (415) 703-2200
E-mail: EDTariffUnit@cpuc.ca.gov

Copies of protests also should be mailed to the attention of the Director, Energy Division, Room 4004, at the address shown above.

The protest shall also be sent to PG&E either via E-mail or U.S. mail (and by facsimile, if possible) at the address shown below on the same date it is mailed or delivered to the Commission:

Erik Jacobson
Director, Regulatory Relations
c/o Megan Lawson
Pacific Gas and Electric Company
77 Beale Street, Mail Code B13U
P.O. Box 770000
San Francisco, California 94177

Facsimile: (415) 973-3582
E-mail: PGETariffs@pge.com

³ The 20-day protest period concludes on a weekend, therefore, PG&E is moving this date to the following business day.

Any person (including individuals, groups, or organizations) may protest or respond to an advice letter (General Order 96-B, Section 7.4). The protest shall contain the following information: specification of the advice letter protested; grounds for the protest; supporting factual information or legal argument; name, telephone number, postal address, and (where appropriate) e-mail address of the protestant; and statement that the protest was sent to the utility no later than the day on which the protest was submitted to the reviewing Industry Division (General Order 96-B, Section 3.11).

Effective Date

PG&E requests that this Tier 1 advice submittal become effective upon date of submittal, which is November 25, 2019.

Notice

In accordance with General Order 96-B, Section IV, a copy of this advice letter is being sent electronically and via U.S. mail to parties shown on the attached list and the parties on the service list for Service List A.17-01-020 et al. Address changes to the General Order 96-B service list should be directed to PG&E at email address PGETariffs@pge.com. For changes to any other service list, please contact the Commission's Process Office at (415) 703-2021 or at Process_Office@cpuc.ca.gov. Send all electronic approvals to PGETariffs@pge.com. Advice letter submittals can also be accessed electronically at: <http://www.pge.com/tariffs/>.

_____/S/

Erik Jacobson
Director, Regulatory Relations

Attachments

cc: Service lists for A.17-01-020



ADVICE LETTER SUMMARY

ENERGY UTILITY



MUST BE COMPLETED BY UTILITY (Attach additional pages as needed)

Company name/CPUC Utility No.: Pacific Gas and Electric Company (ID U39E)

Utility type:

- ELC GAS WATER
 PLC HEAT

Contact Person: Yvonne Yang

Phone #: (415)973-2094

E-mail: PGETariffs@pge.com

E-mail Disposition Notice to: Yvonne.Yang@pge.com

EXPLANATION OF UTILITY TYPE

ELC = Electric GAS = Gas WATER = Water
 PLC = Pipeline HEAT = Heat

(Date Submitted / Received Stamp by CPUC)

Advice Letter (AL) #: 5695-E

Tier Designation: 1

Subject of AL: Description of PG&E's Safety Requirements Checklist Compliance Efforts for the SB350 Standard Review Projects

Keywords (choose from CPUC listing): Compliance

AL Type: Monthly Quarterly Annual One-Time Other:

If AL submitted in compliance with a Commission order, indicate relevant Decision/Resolution #: Ordering Paragraph 53 of Decision 18-05-040

Does AL replace a withdrawn or rejected AL? If so, identify the prior AL: No

Summarize differences between the AL and the prior withdrawn or rejected AL:

Confidential treatment requested? Yes No

If yes, specification of confidential information: See attached Confidentiality Declaration and Matrix
Confidential information will be made available to appropriate parties who execute a nondisclosure agreement. Name and contact information to request nondisclosure agreement/ access to confidential information:

Resolution required? Yes No

Requested effective date: 11/25/19

No. of tariff sheets: 0

Estimated system annual revenue effect (%): N/A

Estimated system average rate effect (%): N/A

When rates are affected by AL, include attachment in AL showing average rate effects on customer classes (residential, small commercial, large C/I, agricultural, lighting).

Tariff schedules affected: N/A

Service affected and changes proposed¹: N/A

Pending advice letters that revise the same tariff sheets: N/A

¹Discuss in AL if more space is needed.

Protests and all other correspondence regarding this AL are due no later than 20 days after the date of this submittal, unless otherwise authorized by the Commission, and shall be sent to:

CPUC, Energy Division
Attention: Tariff Unit
505 Van Ness Avenue
San Francisco, CA 94102
Email: EDTariffUnit@cpuc.ca.gov

Name: Erik Jacobson, c/o Megan Lawson
Title: Director, Regulatory Relations
Utility Name: Pacific Gas and Electric Company
Address: 77 Beale Street, Mail Code B13U
City: San Francisco, CA 94177
State: California Zip: 94177
Telephone (xxx) xxx-xxxx: (415)973-2093
Facsimile (xxx) xxx-xxxx: (415)973-3582
Email: PGETariffs@pge.com

Name:
Title:
Utility Name:
Address:
City:
State: District of Columbia Zip:
Telephone (xxx) xxx-xxxx:
Facsimile (xxx) xxx-xxxx:
Email:

Advice 5695-E
November 25, 2019

Appendix A

Advice 5695-E
November 25, 2019

Appendix B

EVSE Vendor	Name	Model Number
ABB	DC Wallbox 24	6AGC077778
	DC Wallbox 24	6AGC076047
	Terra 53	4EPY410108R1
	Terra 54	6AGC071648
	Terra 54 HV	6AGC076299
	HVC 100C	6AGC073513
	HVC 150C	6AGC070558
	HVC-C Depot Charge Box	6AGC072866
	HVC 150P with overhead charging	(1) 6AGC068145, (1) 6AGC069039
	HVC 300P with overhead charging	(1) 6AGC069046, (1) 6AGC069039
	HVC 450P with overhead charging	(1) 6AGC069047, (1) 6AGC069039
	Terra 175 HP	(1) 6AGC067631, (1) 6AGC072428
	Terra 350 HP	(2) 6AGC067631, (1) 6AGC072428
BTCPower	<i>DC EVSE</i>	
	25kW w/ 480 or 208 VAC	L3S-25-480 or L3S-25-208
	50kW w/ 480 or 208	L3S-50-480 or L3S-50-208
	100kW Tower	HPCT-100-480-2
	150kW Tower	HPCT-150-480-2
	200kW Tower	HPCT-200-480-2
	200kW Tower	HPCT-200-480-4
	350kW Tower	HPCT-350-480-2
	Level 3 125A Dispenser CHAdeMO/CCS1	HPCD1-125-01
	Level 4 200A Dispenser CHAdeMO/CCS1	HPCD1-200-01
	Level 4 350A Dispenser CHAdeMO/CCS1	HPCD1-350-01
	<i>AC EVSE</i>	
	AC Charging Station 30A	L2P,L2W: SKU: EVP-2001
AC Charging Station 40A	L2P,L2W: SKU: EVP-2001	
AC Charging Station 70A	L2P,L2W: SKU: EVP-2001	
ChargePoint	ChargePoint	CT4000
	ChargePoint	CPF25
	ChargePoint	CPE250
	ChargePoint	CPE100
	ChargePoint	CPF50

	<i>EvoCharge</i>	
	EvoCharge Intelligent+ Charging Station - Wall Mount, Single Port	EVO32-311-002
	EvoCharge Intelligent+ Charging Station - Wall Mount, Dual Port	EVO32-312-002
	EvoCharge Intelligent+ Charging Station - Pedestal Mount, Single Port	EVO32-611-002
	EvoCharge Intelligent+ Charging Station - Pedestal Mount, Dual Port	EVO32-612-002
	EvoCharge Intelligent Charging Station - Wall Mount, Single Port	EVO32-321-002
	EvoCharge Intelligent Charging Station - Wall Mount, Dual Port	EVO32-322-002
	EvoCharge Intelligent Charging Station - Pedestal Mount, Single Port	EVO32-621-002
	EvoCharge Intelligent Charging Station - Pedestal Mount, Dual Port	EVO32-622-002
	<i>BTCPower (DC EVSE)</i>	
	25kW w/ 480 or 208 VAC	L3S-25-480 or L3S-25-208
	50kW w/ 480 or 208	L3S-50-480 or L3S-50-208
	100kW Tower	HPCT-100-480-2
	150kW Tower	HPCT-150-480-2
	200kW Tower	HPCT-200-480-2
	200kW Tower	HPCT-200-480-4
	350kW Tower	HPCT-350-480-2
	Level 3 125A Dispenser CHAdeMO/CCS1	HPCD1-125-01
	Level 4 200A Dispenser CHAdeMO/CCS1	HPCD1-200-01
	Level 4 350A Dispenser CHAdeMO/CCS1	HPCD1-350-01
	<i>BTCPower (AC EVSE)</i>	
	AC Charging Station 30A	L2P,L2W: SKU: EVP-2001
	AC Charging Station 40A	L2P,L2W: SKU: EVP-2001
	AC Charging Station 70A	L2P,L2W: SKU: EVP-2001
	<i>Efacec</i>	
	Level 2 7.2KW dual port Wall	Level 2 7.2KW dual port Wall
	Level 2 7.2KW dual port Pedestal	Level 2 7.2KW dual port Pedestal
	Level 2 7.2KW single port Wall	Level 2 7.2KW single port Wall
	Level 2 7.2KW Single port Pedestal	Level 2 7.2KW Single port Pedestal
EVConnect	DCFC charger 20KW CCS and CHADEMO	QC20
	DCFC charger 50KW CCS and CHADEMO	QC45
	Bus charger, 90KW, CCS output	QCBUS 90
	Bus charger, 150KW, CCS output	QCBUS 90150
	HV160 with CCS T1 350A & CHADEMO 125A	HV160
	HV3500 with CCS T1 350A & CHADEMO 125A	HV350

ABB	
DC Wallbox 24	6AGC077778
DC Wallbox 24	6AGC076047
Terra 53	4EPY410108R1
Terra 54	6AGC071648
Terra 54 HV	6AGC076299
HVC 100C	6AGC073513
HVC 150C	6AGC070558
HVC-C Depot Charge Box	6AGC072866
HVC 150P with overhead charging	(1) 6AGC068145, (1) 6AGC069039
HVC 300P with overhead charging	(1) 6AGC069046, (1) 6AGC069039
HVC 450P with overhead charging	(1) 6AGC069047, (1) 6AGC069039
Terra 175 HP	(1) 6AGC067631, (1) 6AGC072428
Terra 350 HP	(2) 6AGC067631, (1) 6AGC072428
EVBox	
EVBox BL Single - EVConnect Networked - Hub - 18ft Cables	B2320-65063-EVC-04
BL Single - EVConnect Networked - Satellites - 18ft Cables	B2320-45063-EVC-04
BL Double - EVConnect Networked - Hub - 18ft Cables	B2323-65063-EVC-04
BL Double - EVConnect Networked - Satellites - 18ft Cables	B2323-45063-EVC-04
BL Single - EVConnect Networked - Hub - 18ft Cables	B2320-65063-EVC-04
BL Single - EVConnect Networked - Satellites - 18ft Cables	B2320-45063-EVC-04
BL Double - EVConnect Networked - Hub - 18ft Cables	B2323-65063-EVC-04
BL Double - EVConnect Networked - Satellites - 18ft Cables	B2323-45063-EVC-04
BL Double - EVConnect Networked - Hub - 18ft Cables	L2303-C15063
Tritium	
Tritium - Veefil RT 50KW	TRI93-50-1
BL Single - EVConnect Networked - Hub - 18ft Cables	B2320-65063-EVC-04
BL Single - EVConnect Networked - Satellites - 18ft Cables	B2320-45063-EVC-04
BL Double - EVConnect Networked - Hub - 18ft Cables	B2323-65063-EVC-04
BL Double - EVConnect Networked - Satellites - 18ft Cables	B2323-45063-EVC-04
BL Single - Greenlots Networked - Hub - 18ft Cables	B2320-65063-GRL-04
BL Single - Greenlots Networked - Satellites - 18ft Cables	B2320-45063-GRL-04
BL Double - Greenlots Networked - Hub - 18ft Cables	B2323-65063-GRL-04

EVBox North America	BL Double - Greenlots Networked - Satellites - 18ft Cables BL Single - EVConnect Networked - Hub - 18ft Cables BL Single - EVConnect Networked - Satellites - 18ft Cables BL Double - EVConnect Networked - Hub - 18ft Cables BL Double - EVConnect Networked - Satellites - 18ft Cables BL Single - Greenlots Networked - Hub - 18ft Cables BL Single - Greenlots Networked - Satellites - 18ft Cables BL Double - Greenlots Networked - Hub - 18ft Cables BL Double - Greenlots Networked - Satellites - 18ft Cables	B2323-45063-GRL-04 B2320-65063-EVC-04 B2320-45063-EVC-04 B2323-65063-EVC-04 B2323-45063-EVC-04 B2320-65063-GRL-04 B2320-45063-GRL-04 B2323-65063-GRL-04 B2323-45063-GRL-04
evGateway	Wall Mount / Gateway Station Wall Mount / Non-Gateway Pedestal Mount / Gateway Station Pedestal Mount / Non - Gateway	UP160J-WMP-COM UP160J-WMP UP160J-PMP-COM UP160J-PMP
Evgo	<p style="text-align: center;"><i>Delta</i></p> Delta DC Wallbox Delta AC Mini EV Charger <p style="text-align: center;"><i>ABB</i></p> ABB Terra 53 CJ ABB Terra 54 CJ ABB Terra 54 C HV ABB Terra HP UL Power Cabinet ABB Terra HP UL Charge Post ABB HVC-C 150 UL Power Cabinet ABB HVC-C 150 UL Depot Box ABB Pantograph Dispenser UL <p style="text-align: center;"><i>BTCPower</i></p> BTC L3R-50 BTC Slimline L3S50 BTC 80 kW ; BTC DCFC Dispenser, Dual CCS 200 BTC 150 ; BTC DCFC Dispenser, Dual CCS 350 An	EVDU25 EVMU401xxxxxx, EVMU321xxxxxx, EVMU301xxxxxx, EVMU161xxxxxx 4EPY410108R1 6AGC071648 6AGC076299 6AGC067631 6AGC072428 6AGC070558 6AGC070558 ACM 450-600 L3R-50-480-CS, L3R-50-208-CS L3R-50-480-CS, L3R-50-208-CS L4R-100; EVDSP-200-3-120-0-2-C-4-0 L4T-150; EVDSP-350-3-120-0-2-C-4-0
	EvoCharge Intelligent+ Charging Station - Wall Mount, Single Port EvoCharge Intelligent+ Charging Station - Wall Mount, Dual Port EvoCharge Intelligent+ Charging Station - Pedestal Mount, Single Port	EVO32-311-002 EVO32-312-002 EVO32-611-002

EVoCharge	EVoCharge Intelligent+ Charging Station - Pedestal Mount, Dual Port	EVO32-612-002	
	EVoCharge Intelligent Charging Station - Wall Mount, Single Port	EVO32-321-002	
	EVoCharge Intelligent Charging Station - Wall Mount, Dual Port	EVO32-322-002	
	EVoCharge Intelligent Charging Station - Pedestal Mount, Single Port	EVO32-621-002	
	EVoCharge Intelligent Charging Station - Pedestal Mount, Dual Port	EVO32-622-002	
	ABB		
	ABB - Terra 53	4EPY410108R1	
	ABB - Terra 54	6AGC071648	
	ABB - Terra 175 HP	(1) 6AGC067631, (1) 6AGC072428	
	ABB - Terra 350 HP	(2) 6AGC067631, (1) 6AGC072428	
BTCPower			
	BTC - 50kW Regular 208VAC CHAdeMO/CCS1	L3R-50-208-01	
	50kW Regular 208VAC CCS1 Only	L3R-50-208-05	
	50kW Regular 208VAC CHAdeMO Only	L3R-50-208-06	
	50kW Regular 480VAC CHAdeMO/CCS1	L3R-50-480-01	
	50kW Regular 480VAC CCS1 Only	L3R-50-480-05	
	50kW Regular 480VAC CHAdeMO Only	L3R-50-480-06	
	50kW Slim 208VAC CHAdeMO/CCS1	L3S-50-208-01	
	50kW Slim 208VAC CCS1 Only	L3S-50-208-05	
	50kW Slim 208VAC CHAdeMO Only	L3S-50-208-06	
	50kW Slim 480VAC CHAdeMO/CCS1	L3S-50-480-01	
	50kW Slim 480VAC CCS1 Only	L3S-50-480-05	
	Level 4 Tower 100kW 480VAC	HPCT-100-480-2	
	Level 4 Tower 150kW 480VAC	HPCT-150-480-2	
	Level 4 Tower 200kW 480VAC	HPCT-200-480-2	
HPC			
Greenlots	HPC 200kW, Parallel Output 2-Towers, 350kW Total Output	HCS202P	
	125A Level 4 Dispenser CHAdeMO/CCS1	HPCD1-125-01	
	125A Level 4 Dispenser CCS1 Only	HPCD1-125-05	
	125A Level 4 Dispenser CHAdeMO Only	HPCD1-125-06	
	350A Level 4 Dispenser CHAdeMO/CCS1	HPCD1-350-01	
	350A Level 4 Dispenser CCS1 Only	HPCD1-350-05	
	350A Level 4 Dispenser CHAdeMO Only	HPCD1-350-06	
	Efacec		
	Efacec - Level 2 7.2KW dual port Wall	Level 2 7.2KW dual port Wall	

	<p>Level 2 7.2KW dual port Pedestal Level 2 7.2KW single port Wall Level 2 7.2KW Single port Pedestal DCFC charger 20KW CCS and CHADEMO DCFC charger 50KW CCS and CHADEMO HV160 with CCS T1 350A & CHADEMO 125A HV3500 with CCS T1 350A & CHADEMO 125A</p> <p style="text-align: center;"><i>Tritium</i></p> <p>Tritium - Veefil RT 50KW</p>	<p>Level 2 7.2KW dual port Pedestal Level 2 7.2KW single port Wall Level 2 7.2KW Single port Pedestal QC20 QC45 HV160 HV350</p> <p>TRI93-50-1</p>
GreenWealth	<i>OpConnect</i>	
	100amp, 3 phase, Level 2 Networked	CS-100-NX-3
	100amp, single phase, Level 2 Networked	CS-100-NX-3
	40 amp, Level 2 Networked	HCS-40-NX
	50 amp, Level 2 Networked	HCS-50-NX
Kitu Systems	<i>Coritech</i>	
	Coritech DC V2G Fast Charger	KS-CORITECH-30-DC-CCS
	Coritech DC V2G Fast Charger	KS-CORITECH-30-DC-CHA
	<i>Delta</i>	
	Delta MiniAC	KS-Delta-30-25, KS-Delta-40-25
	Delta DC Wallbox	KS-Delta-3P-480, KS-Delta-3P-208, KS-Delta-1P-240
	<i>Efacec</i>	
	Efacec Public L2 Charger	KS-EFACEC-L2-SPG, KS-EFACEC-L2-DPG, KS-EFACEC-L2-SPW, KS-EFACEC-L2-DPW,
	Efacec QuickCharge DCFC	KS-EFACEC-QC20, KS-EFACEC-QC45
	Efacec QCBus	KS-EFACECQC40B, KS-EFACEC-QC90B, KS-EFACEC-QC150B
Efacec HighPower	KS-EFACEC-HV160-125, KS-EFACEC-HV160-200, KS-EFACEC-HV350-125, KS-EFACEC-HV350-200, KS-EFACEC-HV350-X2	
	<i>Webasto</i>	
	Webasto TurboDX 25	KS-Webasto-DX-25
Liberty Plugins	Liberty PlugIns, Inc.	HCU10
	Liberty PlugIns, Inc.	RX-ACU
	Liberty PlugIns, Inc.	RMM
	Liberty PlugIns, Inc.	HKU
	<i>ClipperCreek</i>	
	ClipperCreek	CS-100
	ClipperCreek	HCS-80
ClipperCreek	HCS-40	

Nuvve	Nuvve PowerPort	EVSE-B-P3-H1
OpConnect	100amp, 3 phase, Level 2 Networked 100amp, single phase, Level 2 Networked 40 amp, Level 2 Networked 50 amp, Level 2 Networked	CS-100-NX-3 CS-100-NX-3 HCS-40-NX HCS-50-NX
SemaConnect	SemaConnect Series 6 Smart EV Charging Station	620
Siemens	Rave 150kW Overhead pantograph "Opportunity" Charger; 300-600kW VersiCharge OCPP	PT2110015032 Project-based VCSG30GCPUW
Tritium	Tritium - Veefil RT 50KW	TRI93-50-1

Additional Details (Software type, etc.)

24 kW with CCS-1 only (rated up to 920 VDC)
24 kW with CCS-1 & Chademo (rated up to 920 VDC)
50 kW with CCS-1 & Chademo
50 kW with CCS-1 & Chademo
50 kW with CCS-1 only (rated up to 920 VDC)
100 kW power cabinet (rated up to 920 VDC)
150 kW power cabinet (rated up to 920 VDC)
HVC-C Charge Box (dispenser) to be used with HVC100C or HVC150C, CCS-1 only (up to 3 Charge Boxes can be connected to the power cabinet)
150 kW power cabinet with overhead Pantograph charging pole for transit buses
300 kW power cabinet with overhead Pantograph charging pole for transit buses
450 kW power cabinet with overhead Pantograph charging pole for transit buses
175 kWp power cabinet with Charge Post (dispenser), liquid cooled CCS-1 cable and Chademo cable, rated up to 920 VDC
350 kWp power cabinet with Charge Post (dispenser), liquid cooled CCS-1 cable and Chademo cable, rated up to 920 VDC

Compatible, tested and operational with most major EV Charger Network Providers, except ChargePoint
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Up to 2 Dispensers, see below: Charges in Parallel, up to 940VDC
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Up to 2 Dispensers, see below: Charges in Parallel, up to 940VDC
Up to 4 Dispensers, see below: Charges in Parallel but Vdc limited to 500VDC
Up to 2 Dispensers, see below: Charges in Parallel, up to 940VDC
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Wall and bollard mounting options for single or dual port stations with cord length at either 18' or 23'. See attached datasheet.
See datasheet
Can be a standalone or paired configuration
Single port unit that comes as CCS1 or ChaDEmo
48A output AC single phase charging station, compatible with ChargePoint cloud plans

OCPP 1.6, 4G-LTE or Wi-Fi Network Connection; Optional EVoReel or Retractor Cable Management

OCPP 1.6, 4G-LTE or Wi-Fi Network Connection; mount (2) units side-by-side for dual port wall; Optional EVoReel or Retractor Cable Management

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Up to 2 Dispensers, see below: Charges in Parallel, up to 940VDC

Up to 4 Dispensers, see below: Charges in Parallel but Vdc limited to 500VDC

Up to 2 Dispensers, see below: Charges in Parallel, up to 940VDC

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OCPP 1.6J

OCPP 1.5 - OCPP 1.6J

OCPP 1.6J | EVC

OCPP 1.6J | EVC

OCPP 1.6J | EVC

OCPP 1.6J | EVC

OCPP 1.6J | Greenlots

OCPP 1.6J | Greenlots

OCPP 1.6J | Greenlots

OCPP 1.6J | Greenlots

OCPP 1.6J | EVC

OCPP 1.6J | EVC

OCPP 1.6J | EVC

OCPP 1.6J | EVC

OCPP 1.6J | Greenlots

OCPP 1.6J | Greenlots

OCPP 1.6J | Greenlots

OCPP 1.6J | Greenlots

7.2 kw (per port) dual Wall Mount OCPP Compliant Charger / Gateway Station / Include a Cellular Modem for connectivity to the backend EVSE communication network . Monthly SIM card Data Charges apply

7.2 kw (per port) dual Wall Mount OCPP Compliant Charger / Non-Gateway / Can connect to a Gateway Station using daisy chaining of Chargers (Ethernet)

7.2 kw (per port) dual Pedestal Mount OCPP Compliant Charger / Gateway Station /Include a Cellular Modem for connectivity to the backend EVSE communication network . Monthly SIM card Data Charges apply

7.2 kw (per port) dual Pedestal Mount OCPP Compliant Charger / Non-Gateway / Can connect to a Gateway Station using daisy chaining of Chargers (Ethernet)

Available in 208V three phase, 480V three phase, and 240V single phase.

Available in 7.2kW or 9.6kW

UL w/ 20' cables

UL w/ 20' cables

UL w/ 20' cable

OCPP 1.6, 4G-LTE or Wi-Fi Network Connection; Optional EVoReel or Retractor Cable Management

OCPP 1.6, 4G-LTE or Wi-Fi Network Connection; mount (2) units side-by-side for dual port wall; Optional EVoReel or Retractor Cable Management

OCPP 1.6, 4G-LTE or Wi-Fi Network Connection; Optional EVoReel or Retractor Cable Management

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OCPP 1.6, Wi-Fi Network Connection; Optional EVoReel or Retractor Cable Management

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OCPP 1.6, Wi-Fi Network Connection; Optional EVoReel or Retractor Cable Management

OCPP 1.6, Wi-Fi Network Connection; Optional EVoReel or Retractor Cable Management

50 kW with CCS-1 & Chademo

50 kW with CCS-1 & Chademo

175 kWp power cabinet with Charge Post (dispenser), liquid cooled CCS-1 cable and Chademo cable, rated up to 920 VDC

350 kWp power cabinet with Charge Post (dispenser), liquid cooled CCS-1 cable and Chademo cable, rated up to 920 VDC

All BTCPower DCFC's run the latest certified OCPP Version (1.6x)

In order to deliver 350kW output two (2) 200kW power towers with four (4) 50kW power engines are required.

This dispenser version means it's a 350kW rated dispenser equipped with low-power connectors (125A)

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This dispenser version means it's a 350kW rated dispenser equipped with high-power connectors (200A-Chademo and 350A liquid-cooled SAE Combo, CCS-1)

This dispenser version means it's a 350kW rated dispenser equipped with high-power connectors (200A-Chademo and 350A liquid-cooled SAE Combo, CCS-1)

This dispenser version means it's a 350kW rated dispenser equipped with high-power connectors (200A-Chademo and 350A liquid-cooled SAE Combo, CCS-1)

OCPP 1.5 - OCPP 1.6J

Meltric connector 3-phase connector (used in medium duty trucks, delivery vans and buses such as Motiv); cellular communications are standard, but a Bluetooth interface to driver's mobile device which leverages driver's mobile device's cellular is optional to eliminate cellular costs

J1772 connector instead of 3phase connector

available with cellular communication standard or optional Bluetooth interface to replace cellular

available with cellular communication standard or optional Bluetooth interface

Coritech 30kW 408VAC 3Ph CCS - IEEE 2030.5

Coritech 30kW 408VAC 3Ph CHAdeMO - IEEE 2030.5

Delta L2 EVSE - OCPP1.6 - 40A

Delta DCFC OCPP1.6 - 25kW (single or triple phase)

Efacec L2 EVSE - OCPP1.6J - 7.2kW AC output, single- or dual-port, ground- or wall-mounted

Efacec DCFC - OCPP1.6J - 25/50kW DC output, CCS and CHAdeMO

Efacec DCFC for buses - OCPP1.6J - 40/90/150kW DC output

Efacec high power DCFC - OCPP1.6J - 160/350kW DC output, CCS T1350A and CHAdeMo125/200A

Webast L2 EVSE - IEEE2030.5 - 32A

HYDRA Control Unit - intelligent gateway controls up to ten (10) basic EVSE up to 19.2kW

HYDRA-RX Auxiliary Control Unit. Contains the relays and additional control circuits to control EVSE with outputs greater than 40A

Relay Meter Module. Integrated 40A relay with revenue-grade electric meter. One (1) RMM required for each EVSE

HYDRA Keypad Unit, up to two (2) per HCU

Level 2 EVSE with 100A max, 80A continuous

Level 2 EVSE with 80A max, 64A continuous

Level 2 EVSE with 40A max, 32A continuous

A wall mounted AC station with 80 amps, three phase, one connector w/ a 15' cord. Station is also AC-V2G ready with capable vehicles and connection to the Nuvve Grid Integrated Vehicle platform

Meltric connector 3-phase connector (used in medium duty trucks, delivery vans and buses such as Motiv); cellular communications are standard, but a Bluetooth interface to driver's mobile device which leverages driver's mobile device's cellular is optional to eliminate cellular costs

J1772 connector instead of 3phase connector

available with cellular communication standard or optional Bluetooth interface to replace cellular

available with cellular communication standard or optional Bluetooth interface

Our Series 6 is a smart, networked Level 2 charging station.

Connected via E-Car OC, Siemens aggregated network system; options for integrated, 1 or 2 dispensers; integrated cellular connection

Connected via E-Car OC, Siemens aggregated network system

Wall-mounted; pedestal single or two unit mount is optional; WiFi built in, cellular requires separate optional gateway and data plan; connected to E-Car OC, Siemens aggregated network system

OCPP 1.5 - OCPP 1.6J

Advice 5695-E
November 25, 2019

Appendix C

Specifications – Fast Charging

T-Series Pure Electric Terminal Truck



Purpose: This document shares the specs and how to setup electrical service required at sites that will be using and charging Orange EV's electric terminal truck with fast charging.



Orange EV designs the T-Series pure electric terminal truck complete with charging capability. Orange EV's Fast Charging Cabinets (FCC) provide 80 kW charging capacity and come with cabinet, cabinet feet, charging cables, and cable hanger. Customers provide electric service to and completes installation of the FCC. The customer's site electrician installs required electric circuits to meet the specs below in compliance with applicable code. Orange EV will advise site electrician on proper installation and charging operation.

- Cabinet Dimensions: 69" x 23" x 106" (W, D, H) with lifting eyes. Dual 30", swingout doors.
- Cabinet Base: 64" x 22". See drawing below.
- Cabinet Mounting: Standalone, 2 pieces, raised 12 inches off ground. Lugs must be installed into concrete to meet local codes to prevent toppling in strong winds.
- Cabinet Weight: 1100 lbs (excludes detachable charging cables).
- Cable Length: Three, each 23 ft max.
- Cable Hanger: Moveable stand on which to coil and store 3 cables.
- MCA: 200 Amps. MCA = Minimum Current Ampacity (also Amperage).
- Typical Amp Draw: 153 Amps. Max while charging including intermittent loads.
- Input Voltage: 480 VAC \pm 15% , 3 Phase, 4 wire wye.
- Input Wiring: 4 wire + ground.
- Disconnect: A pullable fuse is provided on the FCC.
Customer electrician is encouraged to provide additional in-line, knife-style disconnect switch apart from the FCC.
- Switchgear: 200 Amp minimum circuit breaker or fuse to protect and disconnect FCC.
- Cabinet Supply Cable: Line conductor size to match switchgear.

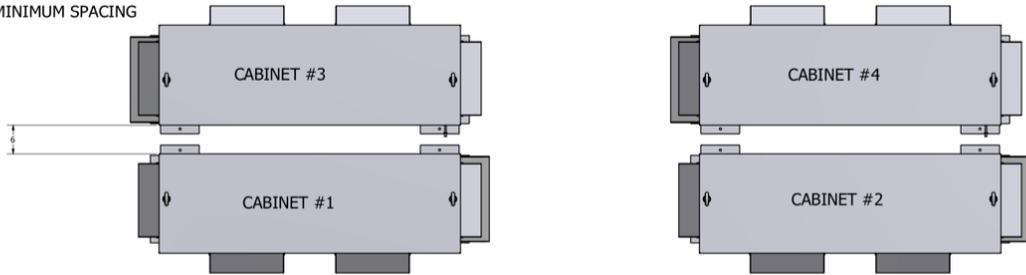
Specifications – Fast Charging

T-Series Pure Electric Terminal Truck

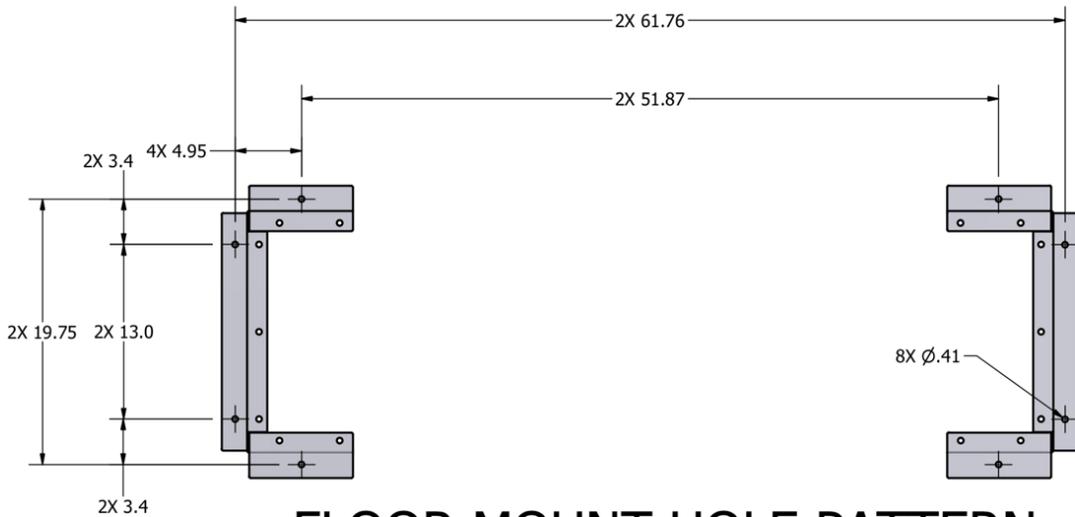
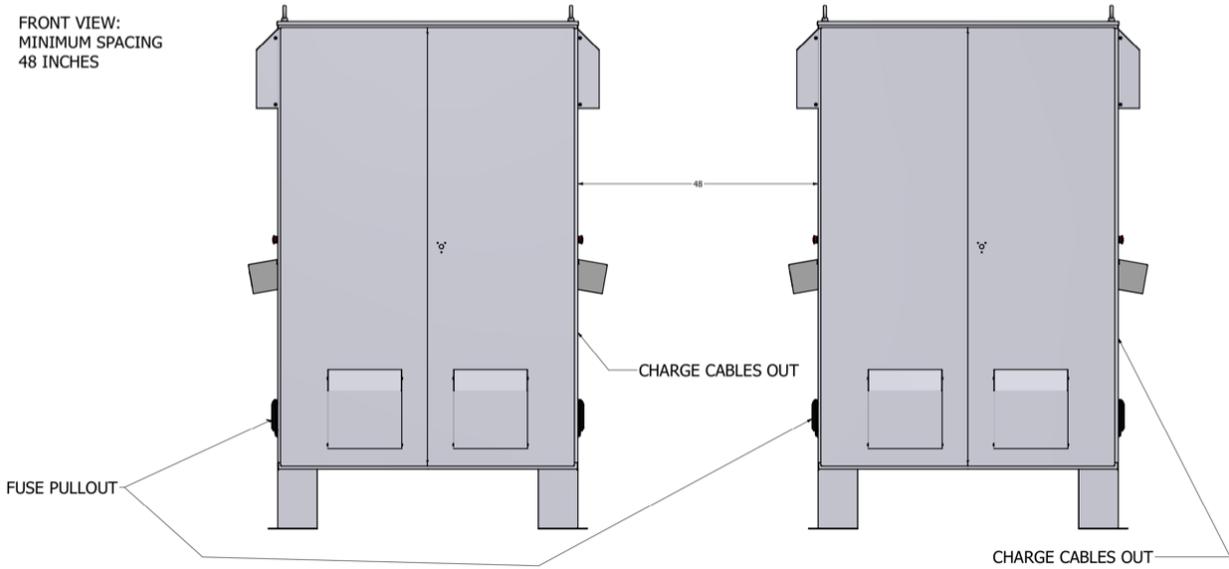


- Capacity: Charges one truck at a time at about 80 kw.

TOP VIEW - 4 CABINET ARRANGEMENT
BACK TO BACK MINIMUM SPACING
6 INCHES



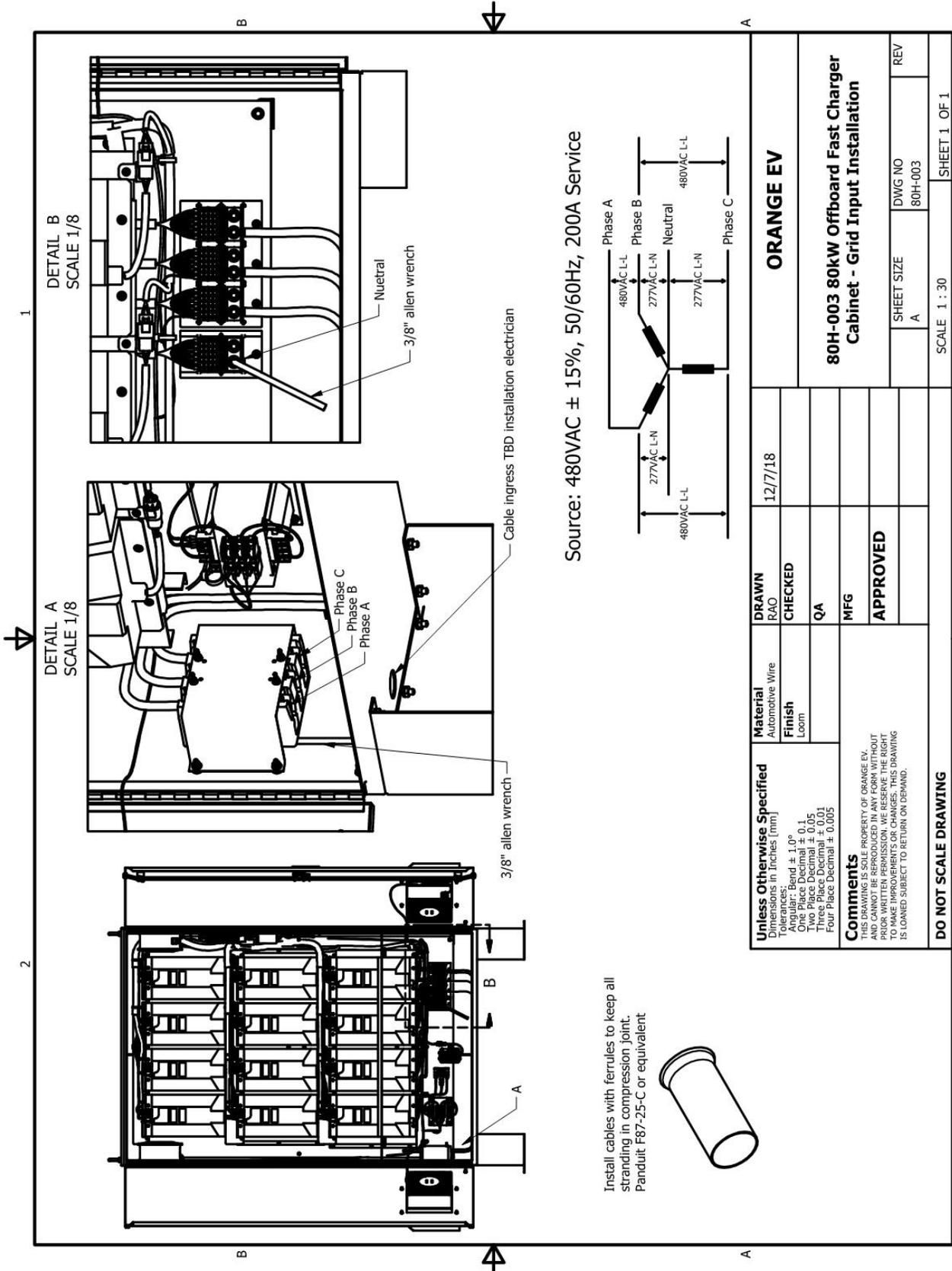
FRONT VIEW:
MINIMUM SPACING
48 INCHES



FLOOR MOUNT HOLE PATTERN

Specifications – Fast Charging

T-Series Pure Electric Terminal Truck



Source: 480VAC ± 15%, 50/60Hz, 200A Service

Install cables with ferrules to keep all stranding in compression joint. Panduit F87-25-C or equivalent



Unless Otherwise Specified Dimensions in Inches [mm] Tolerances: One Place Decimal ± 0.1 Two Place Decimal ± 0.05 Three Place Decimal ± 0.01 Four Place Decimal ± 0.005	Material Automotive Wire	DRAWN RAO	12/7/18	ORANGE EV 80H-003 80kW Offboard Fast Charger Cabinet - Grid Input Installation		
	Finish Loom	CHECKED QA	MFG			APPROVED
Comments THIS DRAWING IS THE SOLE PROPERTY OF ORANGE EV. AND CANNOT BE REPRODUCED IN ANY FORM WITHOUT PRIOR WRITTEN PERMISSION. WE RESERVE THE RIGHT TO MAKE IMPROVEMENTS OR CHANGES. THIS DRAWING IS LOANED SUBJECT TO RETURN ON DEMAND.				SCALE 1 : 30		SHEET 1 OF 1

DO NOT SCALE DRAWING

**PG&E Gas and Electric
Advice Submittal List
General Order 96-B, Section IV**

AT&T	Downey & Brand	Pioneer Community Energy
Albion Power Company	East Bay Community Energy	Praxair
Alcantar & Kahl LLP	Ellison Schneider & Harris LLP	
	Energy Management Service	
Alta Power Group, LLC	Engineers and Scientists of California	Redwood Coast Energy Authority
Anderson & Poole	Evaluation + Strategy for Social Innovation	Regulatory & Cogeneration Service, Inc.
	GenOn Energy, Inc.	SCD Energy Solutions
Atlas ReFuel	Goodin, MacBride, Squeri, Schlotz & Ritchie	
BART	Green Charge Networks	SCE
	Green Power Institute	SDG&E and SoCalGas
Barkovich & Yap, Inc.	Hanna & Morton	
P.C. CalCom Solar	ICF	SPURR
California Cotton Ginners & Growers Assn	International Power Technology	San Francisco Water Power and Sewer
California Energy Commission	Intestate Gas Services, Inc.	Seattle City Light
California Public Utilities Commission	Kelly Group	Sempra Utilities
California State Association of Counties	Ken Bohn Consulting	Southern California Edison Company
Calpine	Keyes & Fox LLP	Southern California Gas Company
	Leviton Manufacturing Co., Inc. Linde	Spark Energy
Cameron-Daniel, P.C.	Los Angeles County Integrated Waste Management Task Force	Sun Light & Power
Casner, Steve	Los Angeles Dept of Water & Power	Sunshine Design
Cenergy Power	MRW & Associates	Tecogen, Inc.
Center for Biological Diversity	Manatt Phelps Phillips	TerraVerde Renewable Partners
	Marin Energy Authority	Tiger Natural Gas, Inc.
Chevron Pipeline and Power City of Palo Alto	McKenzie & Associates	
	Modesto Irrigation District	TransCanada
City of San Jose	Morgan Stanley	Troutman Sanders LLP
Clean Power Research	NLine Energy, Inc.	Utility Cost Management
Coast Economic Consulting	NRG Solar	Utility Power Solutions
Commercial Energy		Utility Specialists
County of Tehama - Department of Public Works	Office of Ratepayer Advocates	
Crossborder Energy	OnGrid Solar	Verizon
Crown Road Energy, LLC	Pacific Gas and Electric Company	Water and Energy Consulting Wellhead Electric Company
Davis Wright Tremaine LLP	Peninsula Clean Energy	Western Manufactured Housing Communities Association (WMA)
Day Carter Murphy		Yep Energy
Dept of General Services		
Don Pickett & Associates, Inc.		
Douglass & Liddell		