

13-SA-2024

WAYMO Parking and Charging Facility

APPLICATION INFORMATION				
LOCATION:	8701 E McDowell Rd	APPLICANT:	Brian Moore	
PARCEL:	131-07-560	COMPANY:	BCMA Architecture	
Q.S.:	12-48	ADDRESS:	322 W. Knight Lane Tempe, AZ 85284	
ZONING:	C-4 & C-3	PHONE:	(602) 571-5728	
Request: Request for new EV charging stations (including: SES, distribution, car chargers with bollards, and parking				
restriping) on a C-4 & C-3 lot, located at 8701 E. McDowell Rd.				

STIPULATIONS

- 1. Architectural elements, including dimensions, materials, form, color, and texture, shall be constructed to be consistent with the building elevations submitted by BCMA Architecture, with a city staff date of 5/23/2024.
- 2. The location and configuration of all site improvements shall be consistent with the site plan submitted by BCMA Architecture,, with a city staff date of 5/23/2024.

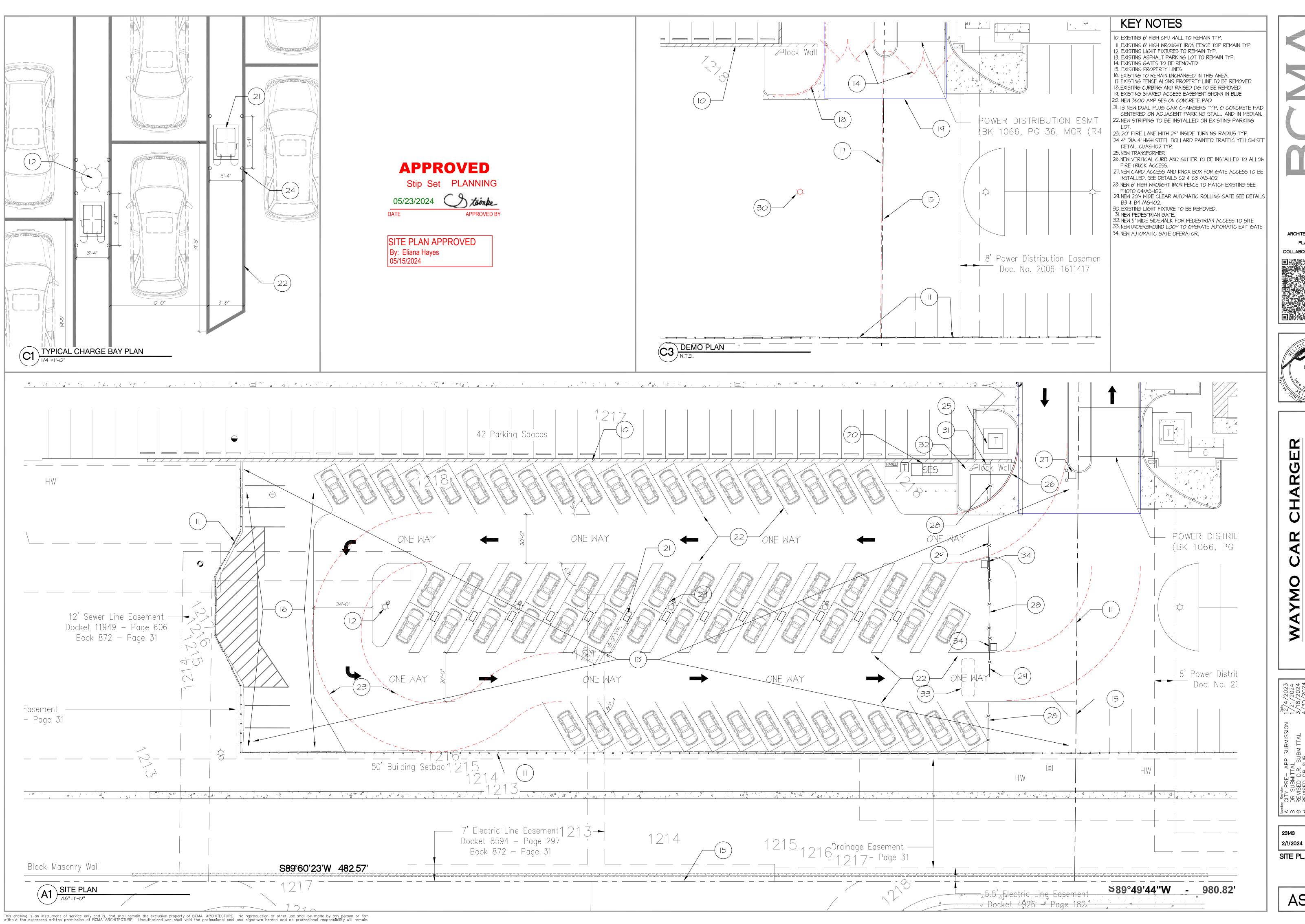
CONSTRUCTION DOCUMENT PLAN REVIEW SUBMITTAL REQUIREMENTS

Submit one copy of this approval letter along with the following plan set(s) for review, using the e-Services Planning Online Center:

Digital Plan submittals can be made using the City's e-Services at https://eservices.scottsdaleaz.gov/bldgresources/plans and should include one PDF copy of each of the required plans/documents identified below.

ARCHITECTURAL: Commercial Architectural Plans

Expiration of Dev	velopment Review (Minor) Approval			
This approval expires two (2) years from date of approval if a permit has not been issued, or if no permit is required,				
work for which approval has been granted has not been completed.				
Staff Signature:	Stein	Date:	5/23/24	
	Casey Steinke, 480-312-2611			

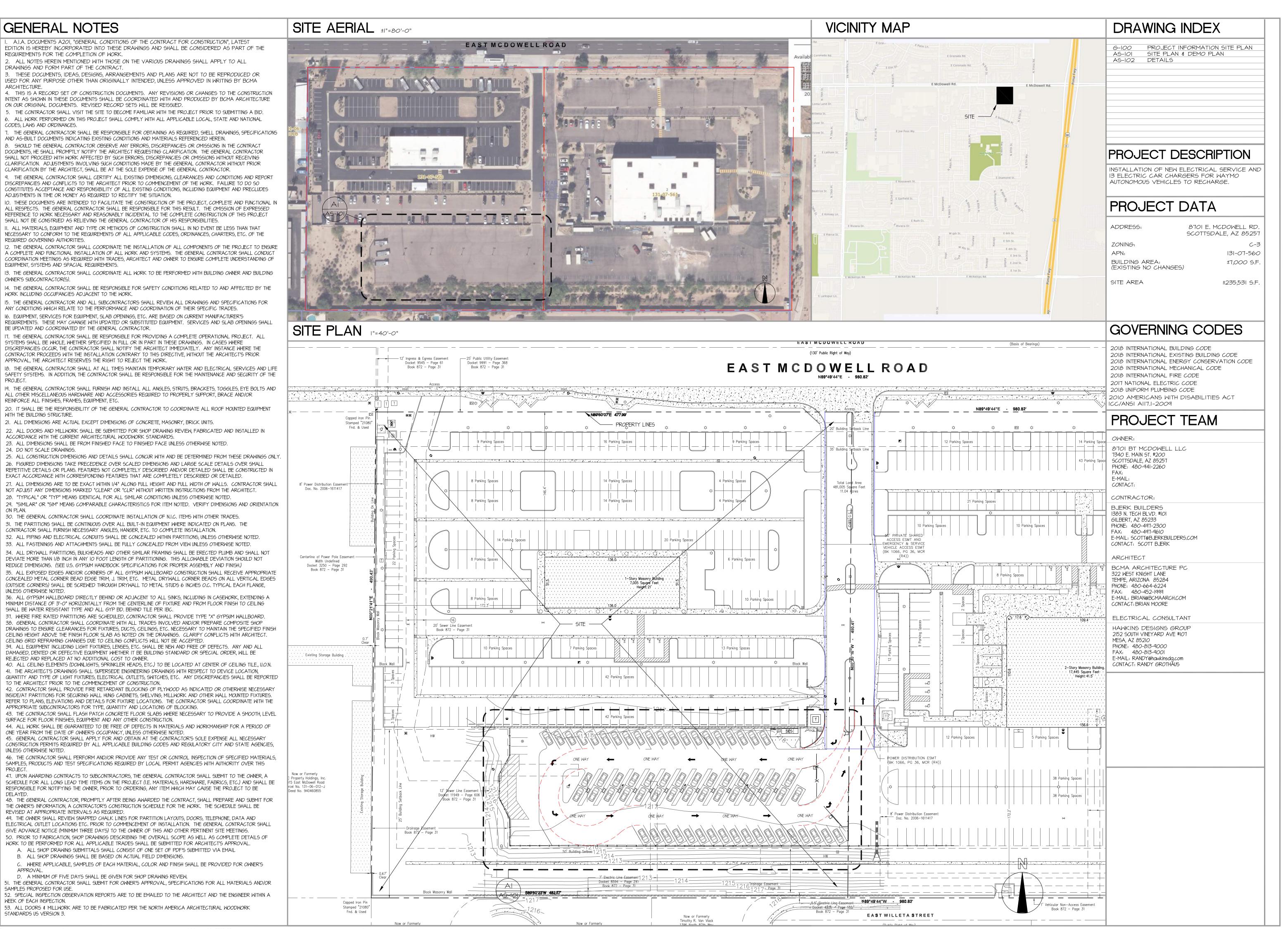


ARCHITECTURE X 4 98 PLANNING COLLABORATION

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SITE PLAN

AS-101



ARCHITECTURE **PLANNING** COLLABORATION

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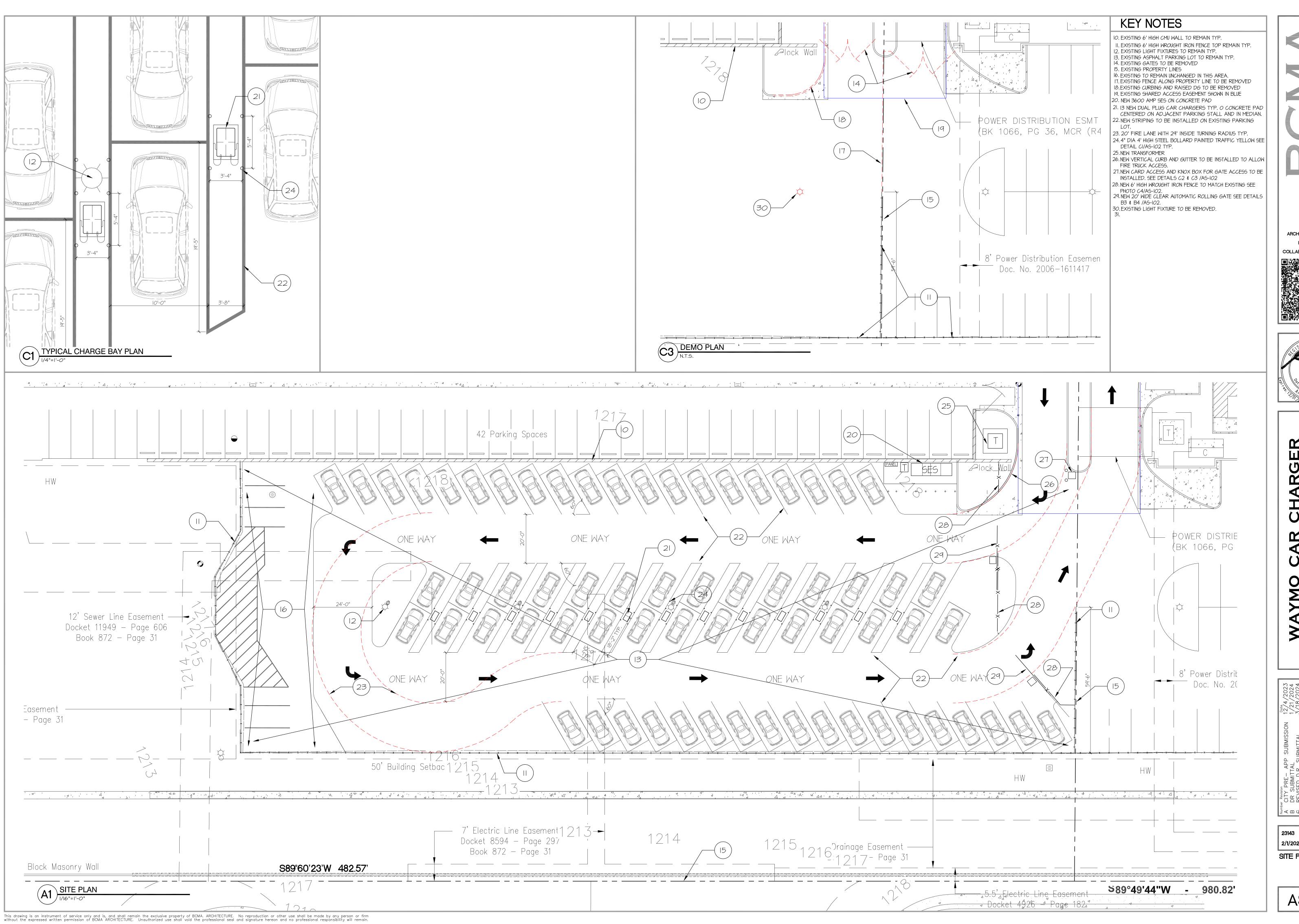
23143

2/1/2024

PROJECT INFORMATION

COVER SHEET

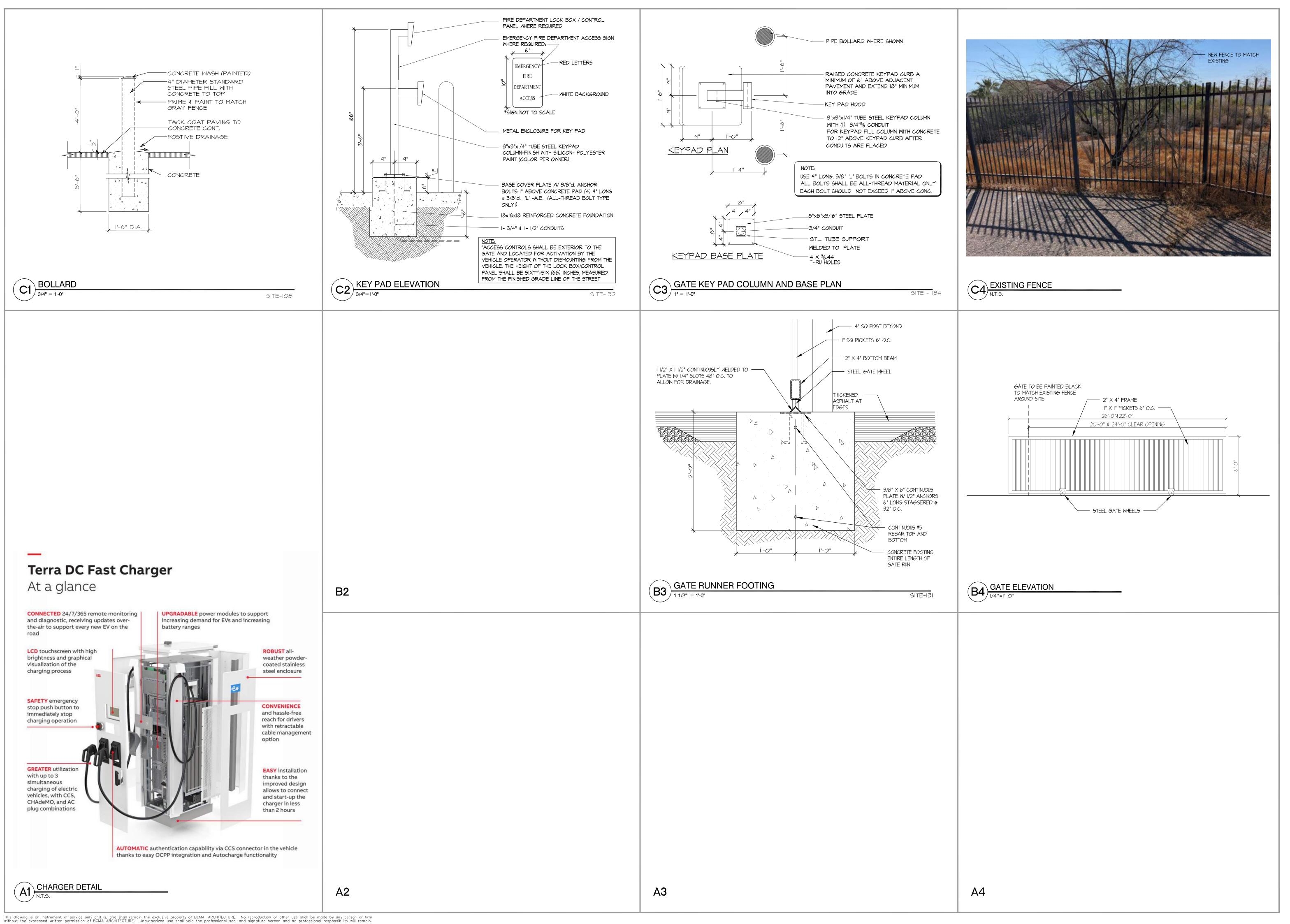
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ARCHITECTURE XXXX PLANNING COLLABORATION

2/1/2024 SITE PLAN

AS-101





ARCHITECTURE X 4 90

PLANNING

COLLABORATION

23143 2/1/2024 **DETAILS**

AS-102

January 21, 2024

City of Scottsdale. 7447 E. Indian School Rd. # 105 Scottsdale, AZ 85251

Attn: Plan Reviewers

RE: 8701 E. McDowell Rd. Scottsdale, AZ WAYMO Parking and Charging Facility

Attached is a preliminary design to add 3600 amp electrical service and 13 dual electric car chargers to an existing fenced asphalt parking lot at the back of the existing site. The scope of work is to add the transformer, SES, distribution, and car chargers with bollards and restripe the existing parking lot. All the added electrical will be behind the existing 6' cmu wall that surrounds the site. The existing lights will remain, and no new lighting will be added.

Attached please find the cut sheets for the car chargers.

Please let me know if you have any further questions. Sincerely

Brian Moore, AIA
Principal, BCMA Architecture P.C.





Electrify the road

Terra DC fast chargers. The most successful EV fast chargers in the market, ranging from 20 to 180 kW and ideal for urban applications, retail and refueling stations.



- Compact footprint
- Maximized revenue generation
- Future ready

The Terra DC fast chargers product line consists of a unique offering, with a wide range of ratings. They are designed for convenient charging of all electric vehicles, including future models with high voltage battery systems. The compact size makes it perfect for urban use, with flexibility to upgrade charging power up to 180kW and ability to charge up to 3 vehicles at the same time.

Terra DC Fast Charger

At a glance

CONNECTED 24/7/365 remote monitoring and diagnostic, receiving updates overthe-air to support every new EV on the road

UPGRADABLE power modules to support increasing demand for EVs and increasing battery ranges

LCD touchscreen with high brightness and graphical visualization of the charging process

SAFETY emergency stop push button to immediately stop charging operation

GREATER utilization with up to 3 simultaneous charging of electric vehicles, with CCS,

CHAdeMO, and AC

plug combinations



ROBUST allweather powdercoated stainless steel enclosure

CONVENIENCE

and hassle-free reach for drivers with retractable cable management option

EASY installation thanks to the improved design allows to connect and start-up the charger in less than 2 hours

AUTOMATIC authentication capability via CCS connector in the vehicle thanks to easy OCPP integration and Autocharge functionality

MAX CHARGING POWER

Terra 24: 20 kW Terra 54: 50 kW Terra 94: 90 kW

Terra 124: 120 kW (and 2 x 60 kW) Terra 184: 180 kW (and 2 x 90 kW)

MAX CHARGING VOLTAGE

CCS 920 V DC CHAdeMO 500 V DC

DIMENSIONS

Height 1900 mm / 74.8 in Width 565.5 mm / 22.3 in Depth 880 mm / 34.6 in Weight 395 kg / 871 lbs (Terra 184)

Why Terra DC fast chargers?

Advanced, flexible, compact and smart



Power sharing for high utilization

- Terra 124 and Terra 184 can charge two vehicles simultaneously
- High utilization of charging assets benefit both public and fleet business models
- Supports all open charging standards in flexible configurations
- Safety certified to the highest standards



Future-proof, flexible highvoltage technology

- Flexible, redundant power architecture supports high uptime
- High-voltage charging range up to 920 V
- Fully compatible with current and future EVs
- Option to upgrade power over time, from 90 kW up to 180 kW, to follow EV market growth



Reliable, compact and flexible design

- Based on the Terra platform, the most widely deployed DCFC family in the world
- Space-saving, all-in-one footprint with very easy installation and servicing
- Robust construction for all operational environments
- Cable management options enhance longevity



Always connected, always smart

- 24/7 connectivity, 99.5% ABB network uptime
- Remote services with remote firmware updates and upgrades
- OCPP integration-ready as well as ABB Web Tools functionality
- Autocharge and ISO 15118-ready for plug and charge operation

Fast charging beyond 50 kW

Power sharing delivers high utilization

90kW Charging Points

Terra chargers can provide a quick refill adding 100 miles of range in as little as 15 minutes (Terra 94) or 30 minutes (Terra 54).*

Retail/Shopping Sites

The Terra 124 charger can provide a full battery charge to two vehicles simultaneously while drivers are shopping, dining or at the movies.

Highway corridors and Fleets

The Terra 184 chargers can add 100 miles of range in as little as 10 minutes as well as fast-charge two vehicles at the same time in less than 20 minutes.*



one EV up to

90 kW



one EV up to

120 kW



two EVs each up to





up to

180 kW



each up to









* actual charging speed depends on the electric vehicle model(s) and charging conditions



Simultaneous charging with high power fast chargers can deliver maximum charging asset utilization while serving an ever-growing population of large battery electric vehicles.

High voltage charging explained

A future-proof strategy

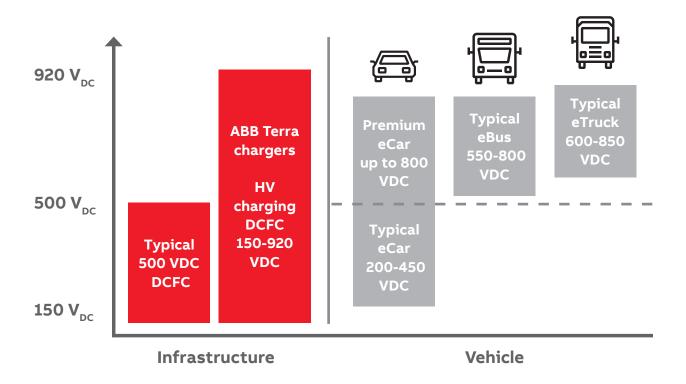
High voltage charging capabilities

As electric vehicles and their use cases diversify, high voltage DC charging has become more important to increase charging power while ensuring as much efficiency, safety and usability in DC charging systems.

Traditional passenger vehicle battery packs are usually designed for 400 VDC charging, so many standard charging systems do not exceed 500 VDC capability. However, some newer vehicles may have battery packs that exceed 400 VDC, often in the 600 to 800 VDC range.

Some EV battery packs, such as with vehicles designed for fleet usage, may only charge at high voltage ratings, demanding charging infrastructure that can deliver power tailored to HV battery packs.

ABB's Terra 94, Terra 124 and Terra 184 chargers are designed to meet EV battery voltage capabilities up to 920V to deliver charging services across a wider range of today's and tomorrow's EVs.



A high range of DC voltage capability is demanded to deliver efficient charging service to every EV and use case.

Terra charging times

All-in-one charging for every EV

		Charging time (minutes)					
		50 kW Terra 54	90 kW Terra 94	120 kW Terra 124		180 kW Terra 184	
		Terra 54HV		2 EVs	1 EV	2 EVs	1 EV
	60 kWh BEV 400 VDC	50	25	40	20	25	13
Car	90 kWh BEV 400 VDC	70	40	60	30	40	20
	100 kWh BEV 800 VDC	80	45	65	33	45	22
	120 kWh BEV School Bus 400 VDC	95	53	80	40	55	26
Bus/Truck	150 kWh BEV Delivery Van 800 VDC	120	65	100	50	65	33
Bus/	200 kWh BEV Work Truck 800 VDC	160	88	133	66	88	44
	300 kWh BEV 60' Transit Bus 800 VDC	240	130	200	100	130	66

Charge times shown based on average vehicle battery management system (BMS) requesting charging power from 20% to 80% under mild environmental conditions. Data assumes vehicles capable of charging at cited power levels.

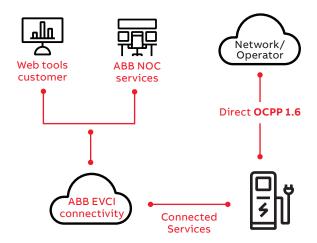
Flexible OCPP enablement

Back-office integrations backed by ABB connectivity

Network communications

ABB has integrated with nearly every major charging network around the world for OCPP support across public and fleet charging operations. ABB chargers can be operated using a direct OCPP connection while linking to ABB's advanced diagnostics and firmware update services for additional intelligence, technical support as well as reduced maintenance.

Leading the industry in implementing authentication technologies, ABB enables Autocharge coupled with an OCPP server. This functionality offers access control at the vehicle level, ideal for fleet asset telematics. ABB's software engineers work with the latest standardized protocols in the EV charging industry including roaming platforms, energy management software and next generation authentication solutions.



Better and faster support: Chargers connected to ABB's network operations center can achieve the fastest remote support from ABB network engineers. This leads to higher uptime of a charger network, minimizes the number of unplanned on-site visits, and significantly reduces overall operational costs.

Scalability and security: IT resources can scale in the ABB Ability cloud while connectivity monitoring is supported by ABB around the clock. ABB leverages Microsoft Azure based security with fewer backend connections to monitor.



OCPP Integrations

The Open Charge Point Protocol (OCPP) includes a broad set of messages with a wide range of functionality for enterprise telematics and usage data. The transaction-based set-up of the messages makes it easy to connect to a back-end system to process charging sessions, define usage models and handle data. Other capabilities include integration with apps and energy management, such as with OCPP Smart Charging Profiles.



Plug and charge

Eliminating manual authentication methods for drivers while delivering granular data sets to network operators and fleets has never been easier with 'plug and play' charging solutions.

ABB supports Autocharge, in conjunction with an OCPP network integration, to meet vehicle-based authentication demands seamlessly with any CCS vehicle

Additionally, ABB has proactively enabled ISO 15118 (Plug & Charge) for its charging systems to deliver more advanced plug and play charging experience for the next generation of electric vehicles.

ABB EV Infrastructure services

For highest utilization and lowest downtime

Operational excellence

Charging infrastructure must be optimized for the highest utilization and lowest downtime. ABB's remote and real-time services meets that demand, incorporating a decade of experience with thousands of intelligent fast chargers deployed across the globe.

ABB's Terra family of all-in-one chargers are the easiest chargers in the market to service, with high uptime due to its innovative modularity, round the clock connectivity and experience-led design.





Remote services

- 24/7 connectivity
- Remote services
- Remote diagnostics
- · Firmware upgrades
- Driver care web tools
- Charger Care web tools



Fleet spare parts programs

Custom software services

- OCPP integration
- Autocharge integration testing
- Interoperability testing and validation



 Customized enterprise software support

Training

services

• Standardized online training

Parts and warranty

• Full service warranty process

• Network spare parts programs

• Preventive service and maintenance

· Extended warranties

- · Customized service training
- Third-party service training programs

Technical specification

	Terra 184	Terra 124				
Product information						
Charging type	DC fast charging and AC type-2 charging	DC fast charging and AC type-2 charging				
Outlet options	C: CCS cable, J: CHAdeMO cable, T: AC Type-2 socket	C: CCS cable, J: CHAdeMO cable, T: AC Type-2 socket				
Input AC power rating	280 A, 192 kVA	187 A, 128 kVA				
Input voltage range	400 VAC +/- 10% (50 Hz or 60 Hz) - CE Version 480 VAC or 270 VAC +/- 10% (50 Hz or 60 Hz) - UL V	ersion				
DC output power rating (max)	180 kW	120 kW				
AC output power rating (optional)	22 kW	22 kW				
DC output voltage	150-920 Vdc	150-920 Vdc				
Number of EV served	Up to 3 (CCT, CJT models) Up to 2 (CC, CJ, JJ models) Up to 1 (C models)	Up to 3 (CCT, CJT models) Up to 2 (CC, CJ, JJ models) Up to 1 (C models)				
Cable length	3.9 m Optional: 6.0 m / 8.0 m	3.9 m Optional: 6.0 m / 8.0 m				
CCS cables maximum current	Standard: 200 A High current: 400 A	Standard: 200 A High current: 400 A				
CHAdeMO cables maximum current	200 A, 125 A (Optional)	200 A				
Network type	TN-S, TN-C, TN-C-S, TT (Requires external RCD)	TN-S, TN-C, TN-C-S, TT (Requires external RCD)				
Connector types	3-phase, neutral, protective earth (CE models)3-phase, protective earth (UL models)	3-phase, neutral, protective earth (CE models)3-phase, protective earth (UL models)				
Protection	Overcurrent, overvoltage, undervoltage, ground fault including DC leakage protection, integrated surge protection					
Overvoltage category	Type II	Type II				
Power factor (full load)	> 0.96	> 0.96				
THDi	< 4.5%	< 4.5%				
Efficiency	> 95% (peak)	> 95% (peak)				
Standby power	80 W 980 W (with heater active)	80 W 980 W (with heater active)				
Short circuit current	10 kA (CE models) 65 kA (UL models)	10 kA (CE models) 65 kA (UL models)				
Pre- charge current	< 1 A	< 1 A				
Inrush current	< 100 A	< 100 A				
Leakage current	0.8 mA	0.8 mA				
Energy metering Optional: MID metering for AC and DC outlets Optional: Eichrecht/PTB compliant metering solution fo		ion for AC and DC outlets				
Cellular communication	GSM / 4G / LTE	GSM / 4G / LTE				
User interface						
Connectivity	Internet access via 4G / 3G / Ethernet (RJ45)	Internet access via 4G / 3G / Ethernet (RJ45)				
User authentication	App, ISO 15118 Plug'n'Charge, RFID, PIN code	App, ISO 15118 Plug'n'Charge, RFID, PIN code				
User interface	7" LCD high-contrast touchscreen	7" LCD high-contrast touchscreen				
Communication protocols	OCPP 1.5 / 1.6 and OPC-UA	OCPP 1.5 / 1.6 and OPC-UA				
RFID Reader	ISO 14443 A + B to part 4 and ISO/IEC 15693, Mifare, NFC, Calypso, Ultralight, PayPass, HID; and more					
Emergency button						
Configuration						
Software update	over-the-air updates via ABB web portal					
Control and configuration	ABB web portal, on-board Service Portal, OCPP 1.6, OPC-UA					

Terra 94	Terra 54	Terra 24	
DC fast charging and AC type-2 charging	DC fast charging and AC type-2 charging	DC fast charging and AC type-2 charging	
C: CCS cable, J: CHAdeMO cable, T: AC Type-2 socket	C: CCS cable, J: CHAdeMO cable, G: AC Type-2 cable, T: AC Type-2 socket	C: CCS cable, J: CHAdeMO cable, G: AC Type-2 cable, T: AC Type-2 socket	
140 A, 96 kVA	C, CJ: 88 A, 55 kVA CT, CJT, CG, CJG: 112A, 77 kVA CG, CJG: 143 A, 98 kVA	CJ: 32 A, 23 kVA CT, CG, CJG with 22 kW AC outlet: 63 A, 43 kVA	
400 VAC +/- 10% (50 Hz or 60 Hz) - CE Version 480 VAC or 270 VAC +/- 10% (50 Hz or 60 Hz) - U	L Version		
90 kW	50 kW	20 kW	
22 kW	43 or 22 kW	43 or 22 kW	
150-920 Vdc	150-920 Vdc (HV), 150-500 Vdc	150-500 Vdc	
Up to 2 (CCT, CJT models) Up to 1 (C, CJ models)	Up to 2 (CT, CJT, CG, CJG models) Up to 1 (C, CJ models)	Up to 2 (CT, CJT, CG, CJG models) Up to 1 (C, CJ models)	
3.9 m	3.9 m	3.9 m	
Optional: 6.0 m / 8.0 m	Optional: 6.0 m / 8.0 m	Optional: 6.0 m / 8.0 m	
Standard: 200 A High current: 300 A	125 A	125 A	
200 A	125 A	125 A	
TN-S, TN-C, TN-C-S, TT (Requires external RCD)	TN-S, TN-C, TN-C-S, IT, TT (Requires external RC	D) TN-S, TN-C, TN-C-S, IT, TT (Requires external R	
3-phase, neutral, protective earth (CE models) 3-phase, protective earth (UL models)	3-phase, neutral, protective earth (CE models) 3-phase, protective earth (UL models)	3-phase, neutral, protective earth (CE models) 3-phase, protective earth (UL models)	
Overcurrent, overvoltage, undervoltage, ground	d fault including DC leakage protection, integrate	d surge protection	
Type II	Type II	Type II	
> 0.96	> 0.96	> 0.96	
< 4.5%	< 5%	< 5%	
> 95% (peak)	> 94% (peak)	> 94% (peak)	
80 W 980 W (with heater active)	80 W 980 W (with heater active)	80 W 980 W (with heater active)	
10 kA (CE models) 65 kA (UL models)	10 kA (CE models) 65/10 kA (UL models)	10 kA (CE models) 65/10 kA (UL models)	
< 1 A	< 1 A	< 1 A	
< 100 A	< 100 A	< 100 A	
0.8 mA	0.8 mA	0.8 mA	
Optional: MID metering for AC and DC outlets Optional: Eichrecht/PTB compliant metering solution for AC and DC outlets			
GSM / 4G / LTE	GSM / 4G / LTE	GSM / 4G / LTE	
Internet access via 4G / 3G / Ethernet (RJ45)	Internet access via 4G / 3G / Ethernet (RJ45)	Internet access via 4G / 3G / Ethernet (RJ45)	
App, ISO 15118 Plug'n'Charge, RFID, PIN code	App, ISO 15118 Plug'n'Charge, RFID, PIN code	App, ISO 15118 Plug'n'Charge, RFID, PIN code	
7" LCD high-contrast touchscreen	7" LCD high-contrast touchscreen	7" LCD high-contrast touchscreen	
OCPP 1.5 / 1.6 and OPC-UA	OCPP 1.5 / 1.6 and OPC-UA	OCPP 1.5 / 1.6 and OPC-UA	
ISO 14443 A + B to part 4 and ISO/IEC 15693, M	ifare, NFC, Calypso, Ultralight, PayPass, HID; and ı	more	
Yes. The button can be removed with a retrofit	kit.		
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Technical specification

	Terra 184	Terra 124	
Multilanguage system	English, Italian, Spanish, German, French, configurable via ABB Web Tool	ish, Italian, Spanish, German, French, and more than 50 languages available and new languages igurable via ABB Web Tool	
General characteristics			
IP and IK rating	IP-54 and IK-10 (cabinet) / IK-8 (touchscre	een)	
Enclosure type	Stainless steel 430 and Aluminium		
Operational altitude	Up to 2000 m	Up to 2000 m	
Operating temperature range	-35 °C to +55 °C	-35 °C to +55 °C	
Storage temperature range	-40 °C to +70 °C	-40 °C to +70 °C	
Humidity	20-95 % Rh non-condensing	20-95 % Rh non-condensing	
Mounting	Free-standing cabinet	Free-standing cabinet	
Dimensions (H x W x D)	1900 x 565 x 880 mm	1900 x 565 x 880 mm	
Mass	395 kg	365 kg	
Certification and standards			
Charging system	IEC 61851-1 ed 3, IEC 61851-21-2 ed 1, IEC 61851-23 ed 1, IEC 61851-24 ed 1, IEC 62196-2, IEC 62196-3, IEC 61000		
Communication to the EV	DIN 70121, ISO/IEC 15118 series ed 1 with PnC and EIM, CHAdeMO 1.2		
Communication to the backend	OCPP 1.6 JSON		
Safety	Risk assessment		
Warranty	Base warranty 24 months after Site Acceptance Test or 30 months after factory delivery. Warranty extensions available		

Terra 94	Terra 54	Terra 24			
<u> </u>	English, Italian, Spanish, German, French, and more than 50 languages available and new languages configurable via ABB Web Tool				
IP-54 and IK-10 (cabinet) / IK-	IP-54 and IK-10 (cabinet) / IK-8 (touchscreen)				
Stainless steel 430 and Alumi	nium				
Up to 2000 m	Up to 2000 m	Up to 2000 m			
-35 °C to +55 °C	-35 °C to +55 °C	-35 °C to +55 °C			
-40 °C to +70 °C	-40 °C to +70 °C	-40 °C to +70 °C			
20-95 % Rh non-condensing	20-95 % Rh non-condensing	20-95 % Rh non-condensing			
Free-standing cabinet	Free-standing cabinet	Free-standing cabinet			
1900 x 565 x 880 mm	1900 x 565 x 780 mm	1900 x 565 x 780 mm			
350 kg	325 kg	275 kg			
`					
IEC 61851-1 ed 3, IEC 61851-2	IEC 61851-1 ed 3, IEC 61851-21-2 ed 1, IEC 61851-23 ed 1, IEC 61851-24 ed 1, IEC 62196-2, IEC 62196-3, IEC 61000				
DIN 70121, ISO/IEC 15118 ser	DIN 70121, ISO/IEC 15118 series ed 1 with PnC and EIM, CHAdeMO 1.2				
OCPP 1.6 JSON	OCPP 1.6 JSON				
Risk assessment, Fire analysi	Risk assessment, Fire analysis				
Base warranty 24 months after	Base warranty 24 months after Site Acceptance Test or 30 monhts after factory delivery. Warranty extensions available				

Designed for flexibility

A configuration for every use case



Terra 94/124/184 CSingle outlet CCS with cable management system



Terra 94/124/184 CC Dual outlet CCS with cable management system



Terra 94/124/184 CJ
Dual outlet CCS and CHAdeMO
with cable management
system and credit card reader



Power levels

- 50 kW
- 90 kW
- 120 kW / 60 kW shared
- 180 kW / 90 kW shared



Charging standards

- CCS+CHAdeMO
- CCS-only single outlet
- · CCS-only dual outlet



Cable management

- Reliable, tested system
- Factory or field install



User access / payment

- OCPP Integration
- Credit card reader
- PIN via Web Tools
- Autocharge/ISO 15118





For more information please contact:

ABB EV Infrastructure

Heertjeslaan 6, 2629 JG Delft The Netherlands

Phone: +31 88 4404600 E-mail: info.evci@nl.abb.com

abb.com/evcharging

