

CASE STUDY

JE DUNN POWERS UP:

Scalable and Flexible Electric
Vehicle Supply Equipment (EVSE)
Infrastructure with Starline
Series-S Track Busway

EXECUTIVE SUMMARY



CUSTOMER

JE Dunn Construction, one of America's largest general contractors, decided to install an electric vehicle (EV) charging station in the parking garage next to its world headquarters in Kansas City, Missouri.

CHALLENGES

- Installing power panels on the EV charging station walls would have been costly, disruptive, time-consuming, and very visible to drivers and pedestrians in the garage. There was also a lack of wall space to accommodate the panels.
- The chargers were located a considerable distance (270 feet) from the distribution power panel, which would have required extensive cabling to create a circuit for each charger.
- Power panels and traditional wiring did not allow for easy scalability when the customer was ready to install additional EV chargers.

SOLUTION

- Series-S Track Busway system, 250 amps, with ingress protection (IP54 rating)
- Two 100-amp Series-S plug-in units to feed wall-mounted Level II EV chargers

BENEFITS

- Faster and simpler installation over traditional pipe and wire
- Eliminates the need for sub-panels and additional wiring while reducing overall labor required
- Flexible, low-profile power distribution that is unobtrusive and safe from accidents that might be triggered by drivers, or someone tampering with the system
- Continuous operations even in harsh weather or when exposed to water or dust
- Easy scalability through adding new busway sections and plug-in units

RETROFITTING A GARAGE FOR ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE)

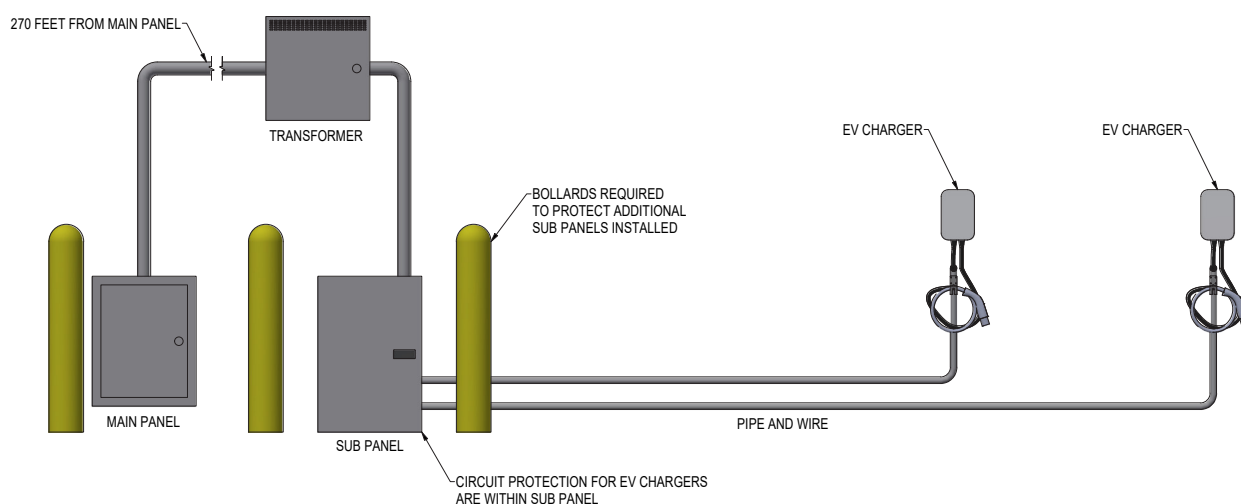
With 4,800 employees and 26 offices nationwide, JE Dunn Construction is the seventh-largest domestic general contractor in the United States. Founded in 1924, the company provides construction management services spanning multiple industries – from office buildings, research labs, and retail/mixed-use establishments to hospitals, airport concourses, sports arenas, and data centers.

“We are a customer-centered business that really cares for its clients and its employees,” explains Mike Fernholz, Engineering Services Director for Mission-Critical Facilities Construction. “Our goal is to build buildings and structures that can be actively used by the communities we serve.”

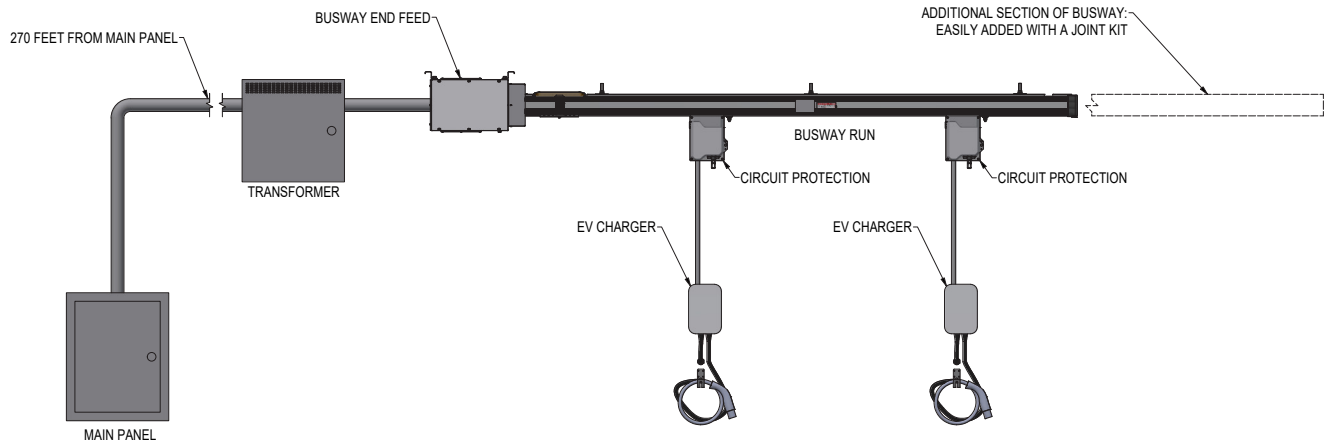
JE Dunn recently purchased its first electric vehicles (EVs) – two battery-powered Ford F-150 Lightning trucks. Fernholz was asked to supervise the installation of an EV charging station in the parking garage next door to JE Dunn’s downtown Kansas City, MO, headquarters. Originally, the charging station would include two Level II wall-mounted chargers. JE Dunn also wanted the option to expand their EVSE to accommodate chargers in the future.

JE Dunn considered installing a panelboard, but with the wall-mounted chargers, they didn’t have much additional wall space. A panelboard would have required installing additional separate sub-panels for each charger, and adding three overhead feeders - one for the panel, and two for the sub-panels - running from the electrical main to the transformer 270 feet away, using expensive copper cabling. Also, JE Dunn would have had to install bollards, or barrier posts, blocking off the front of the EV station parking area, to prevent drivers from accidentally hitting the panelboard. The installation would have been complex, disruptive, time-consuming, and very noticeable to drivers and pedestrians coming in and out of the garage.

Proposed Pipe and Wire Layout



Series-S Track Busway Layout



AN INNOVATIVE SOLUTION: SERIES-S TRACK BUSWAY

While evaluating power distribution options, Fernholz found an alternative solution in the Starline Series-S Track Busway – a splash-proof electrical track busway with ingress protection that makes it suitable for covered outdoor installations like a parking garage.

"I was already familiar with Starline's track busways, since our mission-critical clients use them in their facilities, and highly recommend them," says Fernholz. "When I saw the Series-S Busway demonstration at a road show, it was like serendipity! I knew it was a perfect fit for our needs."

WHAT IS TRACK BUSWAY?

Track busway is a power distribution system that uses a continuous open-channel rail design to provide power at the exact point of use. Commonly used in data centers and manufacturing facilities, track busways provide the same high-performance power delivery as traditional pipe and wire systems, but also offer scalability and flexibility for power load changes and system reconfiguration.

JE Dunn worked with their local Starline representative, Mike Lux of Central Power Systems & Services, to purchase a Starline Series-S 250S (250a/240V) Track Busway. They also hired an electrical contractor, who preassembled the 10-foot busway section and suspended it from the garage ceiling above the EV charging station. The contractor ran a single feeder from the garage's main distribution panel to a ceiling-mounted, dry-type transformer (which provides a step-down from 480V to 240V), and then to the busway. Each charger utilizes a plug-in unit, which is inserted into the busway track, and each plug-in unit has a 100-amp circuit breaker rated at 80%.

"Starline's representatives actually came to our facility and showed us how to install the Series-S Busway correctly," says Fernholz. "They inspected everything, and it went off without a hitch. The entire installation took about a day and a half. Thanks to the Series-S, we were able to use a single circuit as a power feed. And with the plug-in units, we were able to feed the EV chargers without installing a bunch of overhead and roundabout ways on the conduit."

According to the contractor's cost comparison, installing the busway system was roughly the same cost as installing panels and sub-panels. The main differentials were that the busway offered faster installation time, and lower cost for adding additional circuits in the future due to its scalability.

BENEFITS

A Safer, "Out-of-the-Way" Solution

The Series-S Track Busway is streamlined and ergonomic, with a very small footprint, allowing JE Dunn to install it behind the garage's fire sprinkler system. The overhead setup also means there's no risk of a driver accidentally knocking out the power distribution system.

"If we'd gone with panelboards, it would have looked very noticeable to passers-by," says Fernholz. "But with the Series-S, it's an out-of-the-way solution. The busway is suspended from the ceiling, so you don't have to worry about people walking by and messing with it."

The Starline Series-S Track Busway has built-in safety features, including a ground path (earthing) system that runs throughout the enclosure. The plug-in units include a grounding feature that connects to the ground path when you insert them into the busway's open channel, ensuring that the unit is grounded before it connects to the busway. The Series-S Track Busway is UL and IEC certified for both operator and equipment safety.

Reliable, Flexible Power Distribution

The Starline Series-S Track Busway features lightweight aluminum housing and roll-formed 99% copper or copper/aluminum busbars for reliable and flexible power delivery. JE Dunn can install plug-in units anywhere along the busway, and shift units left or right to align wall chargers exactly with the parking spots. If needs change or parking spaces are realigned, the busway gives JE Dunn the flexibility to reconfigure the chargers.





A Durable, Weather-Resistant Solution

With an IP54 rating, the Starline Series-S Track Busway has been individually tested and certified to withstand water splashes and dust intrusion. The IP54 rating also applies to the plug-in units that connect the busway to the EV chargers. Additionally, the Starline Series-S Track Busway has been tested and certified to withstand high humidity and freezing temperatures.

"The Series-S is a natural fit for a protected outdoor environment, like the Kansas City garage," says Lux. "We're able to install it in wet or corrosive environments, and in places that don't normally accommodate electrical applications. As for maintenance, the Series-S more or less maintains itself. The busway joints are pressure-fit instead of bolted, so they don't require regular maintenance to ensure tightness."

WHAT IS AN IP54 RATING?

An IP54-rated device provides ingress protection (IP) and resistance against dust and water or other liquid splashes, making it safe to use in semi-outdoor and limited weather hazard environments. The devices are tested by third-party laboratories, according to International Electrotechnical Commission (IEC) specifications.

Easy Scalability

At their EV charging station, JE Dunn originally installed a 10-foot Starline Series-S Track Busway section, with two plug-in units to serve as breakers for wall-mounted chargers. Three months later, they added a second 10-foot busway section to the first one, and inserted two additional plug-in units, to serve a total of four EV chargers.

"The Series-S Busway made it easy for us to scale up," says Fernholz. "If we'd gone with the panelboard, we'd have to install an additional sub-panel and circuit for each new EV charger that we wish to add. But with the busway, we don't have to run any more feeders overhead to add two more circuits."

CONCLUSION

Thanks to the Series-S Track Busway, JE Dunn was able to install an EV charging station in a garage that wasn't originally designed for electric vehicles. The Series-S fit perfectly as a safe, low-profile solution in a public environment, and its IP54 ingress protection rating ensures its resilience against dust and water.

"As we set up new charging stations at other offices, to handle more EVs, I would certainly recommend using the Starline Series-S Busway for power distribution," says Fernholz.

"The Series-S Busway is inexpensive and easy to install, and the installation doesn't interfere with your day-to-day operations," adds Lux. "As an alternative to traditional panelboards and conduit, the Series-S Busway is a cost-effective way to size your power distribution up front while keeping your options open for scaling up in the future."

The Starline Series-S Track Busway is available from 100 to 1200 amps.

For more information, visit starlinepower.com/busway/series-s/.

To learn more, visit
starlinepower.com

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