The Tri-M Group, LLC

Bringing You the Power to Achieve

Our Mission ...
To be the preferred employer of a highly skilled and trained workforce. We strive to exceed all expectations by professionally designing, installing and maintaining electrical technology and network service in partnership with our customers.

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An ABC Member Company

The Tri-M Group, LLC is a full service electrical contractor providing quality service for 40 years in the Mid Atlantic Region, and now expanding to serve its customers nationally.

We focus on your Facility Life-Cycle costs by providing quality up front to minimize your long term maintenance issues.

Tri-M Electrical Construction
Design and construction of state-of-the-art electrical installations - from sophisticated manufacturing and process control systems to high voltage power lines and substations, all in close cooperation with the design and construction teams of industrial and commercial clients.

- Commercial Electric
- Industrial Electric
- High Voltage
- Critical Power

Tri-M Network Services
A full range of vendor-neutral network and system services to help customers build, secure, and manage premium performance IT infrastructures.

- Structured Cabling
- Computer/Communications
- Business Telephone Systems
- Paging Systems
- Design/Consulting Services
- Engineering Services
- Maintenance Services
- Help Desk

Tri-M Building Automation Systems
Quality engineering and installation of integrated facility management systems to ensure long term, low maintenance building operation and maximize occupant comfort, security, and productivity.

- Andover Controls
- System Integration
- Engineering Services
- Maintenance Services

Tri-M Security Systems
Comprehensive planning and implementation of scalable security management systems to control video recording, door access, and alarm monitoring for all types of clients.

- Access Control
- Electronically Controlled Barriers
- Electronic Article Tagging & Tracking
- Instrusion Detection Systems
- Command & Control Consoles
- CCTV Systems

CS-CPS-001 (04/04)

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Tri-M Critical Power Services

Sprint

Tampa, Florida
EF&I 10kA DC Power Plant

In March 2003 the Tri-M Critical Power Division completed a 10,000 Amp busbar plant installation for Sprint's Long Distance Division in Tampa, Florida, at the time the furthest project from home base in the company's history. The project was a complete EF&I project that involved engineering the plant to Sprint standards and specifications, furnishing all necessary equipment and material, installing the equipment and material, and transitioning loads from the existing plant to the new one.

The new plant was installed in the POP expansion area in a first floor wing of the Hyatt Regency Hotel in downtown Tampa. Located on the second floor, the existing DC plant consisted of a 1,200-amp power plant feeding three secondary power distribution units. The major challenge of the project was to transition those three SPDUs to the new plant with no downtime whatsoever.

The equipment in the new DC plant consisted of two power bays, one secondary power distribution unit, six 800-amp ferro-resonant rectifiers, and 12 strings of –48V, 1500-amphour, VRLA batteries. The power plant was a bus configuration consisting of 6 laminations of ¼"x8" copper bars per polarity that tied together the power bays, rectifiers and batteries.

The project was built to zone 4 earthquake standards, the standard for all Sprint installations. Weight limitations of the ceiling prohibited installation of the overhead support structure from the ceiling. Instead cable rack and buss bar were supported from the floor using auxiliary channel mounted on stanchion poles. The layout of the stanchion poles was designed to not block access to any equipment and to utilize the existing equipment for support where possible. In consideration of future growth great care was taken to position stanchion poles so that they could be easily dismantled to accommodate placement of additional equipment. To meet zone 4 standards the aux channel grid was anchored to batten board along the walls or directly to the building steel. Where those structures were not available, the aux frame was tied into the ceiling using approved seismic bracing fixtures.

The existing overhead structure on the second floor was not built to Sprint's current seismic zone 4 standards. Since replacing the overhead structure was not a viable option, modifications were implemented. The existing half-inch diameter threaded rod supports were replaced with 5/8" rod, and 2" solid auxiliary channels with seismic junction kits were added to create a grid layout and to strengthen the structure. Due to the locations of the new and existing SPDUs and the resultant directions of the cable runs, the overhead structure had to be reinforced in an approximate 530 square foot area.

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The cable hole between the first and second floor was installed prior to Tri-M arriving on site and, although the floor space was wide open, the ceiling space on the second floor was another story. Halon tanks mounted in the ceiling did not allow for the wide bend radius necessary when installing layers of 750-kcmil conductors. Tying into the existing overhead structure of the second floor from the first resulted in somewhat unconventional runs of cable rack through the cable hole. Although the cable racks were not installed side-by-side, they were installed with both future growth and aesthetics in mind.

A team of up to seven technicians was required to safely and efficiently reinforce the second floor structure and to pull 8,700 feet of 750-kcmil cable from the first floor power plant to the second floor SPDUs. ***All-in-all over 1,200 man-hours were spent in the ceiling overtop live equipment with zero outages and no damage to any equipment, cable, or building structures.***

With the cables in place the remaining challenge was to transfer each load on the existing SPDUs to the new plant without any loss or degradation of power. In preparation, the new plant was turned up and the batteries charged. The rectifiers were set to load share and each were load tested to 110% capacity. The fuses feeding the new SPDU on the second floor were load tested to verify each fuse's ampacity and to ensure less than 1.0 VDC voltage drop between the power plant and the SPDU. Meanwhile on the second floor both the conductors from the new plant and those from the existing plant were prepared for H-tapping. Small fuse alarm fuses were installed in the new power board to verify fuse position and polarity of the cable being H-tapped. After verification the fuses were removed and the H-taps installed. At this point the only thing separating the new and existing power plants were the missing fuses in the new power board. This method now allowed for all transition activities to take place in one location and in one small time frame during which large fluctuations in current draw would not be likely. While one technician monitored the second floor plant, another brought the potential difference across each open fuse position in the new power bay within spec and then installed the fuse. Once each fuse was installed and the two plants were completely married together the fuses in the old power plant were removed and the cables cut-off and capped at the H-tap. The process to install the fuses and transition each of the six loads took less than two hours total. In total though approximately 120 man-hours were spent working in a hot environment with zero outages.