



In order to increase capacity and more efficiently move passengers between the main terminal and the concourses at Washington Dulles International Airport, MWAA contracted with a Design/Build Team led by Sumitomo Corporation, which included Mitsubishi Heavy Industries (MHI) and Railworks/Comstock to add an Automated People Mover (APM) system at the airport. The contract included the design, engineering, construction, and vehicle delivery as well as operation and maintenance of the new system for five years. The APM system consists of a new underground train system that connects the airport's main terminal with Concourses A, B and C. The system features a driverless, totally automatic train with state-of-the-art command, control and communications systems. The electric-powered, rubber-tired vehicle system replaced the Mobile Lounge service dating from the 1960s.

The project included six miles of tunnels and eight stations. Two separate APM systems were constructed: one for domestic passengers and one for arriving international passengers. To ensure safety, departing passengers clear security before boarding the train and remain "secure" during the brief journey. **Burns Engineering, Inc.** was the prime engineering, design and interface consultant on the Design/Build team for the guideway, power substations and distribution system, and systems integration/coordination for elements of the work. Burns tasks included:

#### **Fixed Guideway System**

- Alignment, profile and interior dimensions for contract document conformance and acceptance
- Associated mounting systems and supports for collector rail, guide rail and switches

- Walkways, handrail, stairs, access/egress and all structural supports
- Cable trays and duct banks including supporting structures
- Equipment/housekeeping pads in substations, station equipment rooms, UPS room and maintenance facility, and equipment and transformer rooms
- Supports and embedment details for power distribution system, conduit/pipe and duct bank installations
- Guideway design/construction interface document (D/CID) and participation in D/CID reviews and updates

#### **Power Distribution System**

- Comprehensive single line design for system DC substations and traction power distribution networks
- Substation plans, arrangements, sections and data wiring diagrams, conduit plans, panel schedule and lighting and grounding plans
- UPS and blue light system plans and arrangements
- Positive and negative power rail feeder and jumper diagrams, segmentation plans and installation sheets
- Maintenance & Service Facility AC & DC power distribution, stinger system and power schedules
- Cathodic protection plans, wiring diagrams and electrical specification sections
- AC/DC studies for short circuit, load flow and voltage drop, protective device coordination
- Stray current analysis, power factor correction study and harmonic analysis
- Power distribution system C/CID document and participation in reviews and update