

### BURNS SERVICES

- Power and Site Selection Study
- Design of New DC Traction Power Substations
- Construction Supervision Services

### PROJECT OVERVIEW

SEPTA, owner of one of the oldest subway lines in the U.S., purchased 240 new, heavier subway cars featuring amenities new to the SEPTA system such as air conditioning. Designed prior to World War II, the subway system itself required significantly increased power to accommodate all cars on the lines simultaneously. SEPTA's specific goal for this expansion was improving transportation service while intensifying train frequency and reducing construction and operating costs.

Burns Engineering staff was commissioned to perform a power study to determine locations where the existing traction system was weak. After recommendation of several options via cost evaluation and technical benefit methods, the agreed-to option was then executed including the design of three new traction power substations with complex electrical power equipment.

An additional challenge involved designing these stations to conform to the Philadelphia Arts Commission's criteria for the City's public buildings regarding aesthetics, landscaping, and signage.

Moreover, two of the stations, which were highly visible and located in residential areas, were



designed as pre-engineered substations to blend seamlessly into the surrounding residential architecture and environment, as well as meeting the Arts Commission's requirements.

Burns staff provided pre-design architecture and engineering services for Phase I, a "power study" – or feasibility study – as well as site selection and other related services.

Phase II involved architecture, engineering and traction power substation design. During the design phase and after completion of Final Design, the traction power team regularly visited the site to verify all engineering criteria and arrangements that were devised as part of the drawing and specification development process.

During Phase III, Burns staff provided construction supervision services to assure that the traction stations were installed, energized, and brought on line in appropriate staging sequences and within allotted time-sensitive construction windows