

MEDIUM VOLTAGE PROJECTS

	<u>Completion Status</u>
<p><u>SWITCHGEAR CT REPLACEMENT</u> <i>Logan International Airport</i> <i>E. Boston, MA</i></p> <p>As Prime Consultant, TMP surveyed switchgear at 12 buildings on the airport and then prepared bid documents to replace the 15kV metering CT's, PT's, and meters. New electronic meters with remote reading capabilities via radio frequency were provided. Shutdowns were scheduled with the users and rental generators were obtained for large users like the Hilton and Hyatt Hotels.</p>	2007
<p><u>SHORT CIRCUIT AND COORDINATION STUDY</u> <i>Logan International Airport</i> <i>E. Boston, MA</i></p> <p>As Prime Consultant, TMP prepared one-line diagrams of the entire 13.8kV distribution system including four NSTAR Stations, switching stations, substations and outdoor switchgear for the 70 buildings at the airport. TMP surveyed existing relay settings for 15kV breakers and 480V trip settings for 600V switchgear. The information was run on SKM software. The results, including recommended settings for better coordination and recommended replacements for overdutied breakers, was presented to Massport. A one day training session was given to the senior staff electricians.</p>	2007 S
<p><u>TERMINAL A REDEVELOPMENT</u> <i>Logan International Airport</i> <i>E. Boston, MA</i></p> <p>TMP designed a new 15kV NSTAR Substation utilizing vacuum breaker switchgear with two new incoming lines, as part of the design services for the new terminal project including replacement of the old terminal with a new Main Terminal Building, Satellite Terminal Building, and Connecting Tunnel. Each building has two double-ended substations with cast coil transformers. The NSTAR Substation has intertie feeders which enable transfer of power to other NSTAR Substations at Logan in event of service loss. Bus protection schemes include full bus differential and partial bus differential, as well as stuck breaker protection.</p>	2004
<p><u>NEW TERMINAL A STUDY</u> <i>Logan International Airport</i> <i>E. Boston, MA</i></p> <p>TMP prepared a study for Massport to increase the service capacity at Logan by adding a fourth NSTAR Substation and increasing from 6 to 8 the number of 13.8kV incoming services to the Airport, all in preparation for the new Terminal A.</p>	2000
<p><u>CONLEY TERMINAL</u> <i>S. Boston, MA</i></p> <p>As Prime Consultant, TMP designed new 13.8kV incoming NSTAR services and 13.8kV dual loop distribution for this container port facility, removal of overhead utilities on Day Boulevard, new substation and distribution for refrigerated containers, and new high mast lighting.</p>	2000
<p><u>CONCORD MILLS</u> <i>Concord, N.C.</i></p> <p>Design included dual 13.8kV primary selective loops and double ended substations at 4 service locations for total service capacity of 32,000A (8 services at 4,000A) at 480/277V. Total project cost \$140M.</p>	1999

D – Design in Progress
C – Construction in Progress

S – Study
Date – Occupancy Date

DH – Design on Hold
CH – Construction on Hold

MEDIUM VOLTAGE PROJECTS (Continued)

**Completion
Status**

MISCELLANEOUS ELECTRICAL UPGRADES

1998

Logan International Airport

MPA 1.724

E. Boston, MA

As Prime Consultant to Massport's Logan 2000, design included replacement of 15KV air breakers with new vacuum breakers with solid-state trip units and upgrade of solid-state control and monitoring system at 2 of 3 major substations. Project was carefully phased to minimize outages. Cost \$3.5M.

D.O.T. SWITCHGEAR REPLACEMENT

1998

Department of Transportation

Cambridge, MA

Existing 15kV, 500 MVA metal clad air circuit breakers were retrofitted to state-of-the-art vacuum breakers with 750 MVA interrupting rating and with new solid-state relays. Also designed a back-up UPS and emergency generator system for Apollo Computer System.

NEW MAXIMUM SECURITY FACILITY SHIRLEY CORRECTIONAL COMPLEX

1998

PROJECT P96-8 MD1

Shirley, MA

The medium voltage portion of this \$90M 500 KSF project involved revising the 13.8kV service entrance and providing new 15kV Primary Metering Switchgear with Paralleling Switchgear for 2 - 1,500kW, 13.8kV diesel generators which provide 100% back-up for the facility. Double-ended substations with draw-out power air breakers were located around the facility.

NCCI GARDNER, EMERGENCY GENERATOR

1991

MSP P86-7, Contract #2

Gardner, MA

A new 1,500KW back-up diesel generator was provided in a pre-cast concrete housing.

NCCI GARDNER - NEW 15KV ELECTRIC DISTRIBUTION

1990

MSP P867-7 Contract #1

Gardner, MA

Old 2,400V distribution system was upgraded to new primary selective, underground system with primary metering switchgear, 15kV cables and new transformers at various locations. As the Prime Consultant to the DCPO, we redesigned the study and saved the Commonwealth \$1M on the project.

REPLACEMENT OF 13.8KV INTERTIES / PORTER STREET AND WOOD ISLAND SUBSTATIONS

1990

Logan International Airport

MPA 1.473

E. Boston, MA

As Prime Consultant to Massport we designed new 13.8kV feeders at various locations around the airport.

HARVARD UNIVERSITY CRUFT - LYMAN SUBSTATION

1988

Cambridge, MA

A double-ended substation, 13.8kV to 480/277V. was installed in a new underground room to replace the existing 2400V. service and transformers.

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ELECTRICAL DISTRIBUTION IMPROVEMENTS NORTH TERMINAL

1991

Logan International Airport

MPA 1.459A

E. Boston, MA

As a sub-consultant, we designed 15kV vacuum breaker switching stations and doubled-ended 13.8kV sub-stations with cast-coil transformers to replace old kV system in Terminal C. Penthouses were designed to accommodate new equipment. Primary underground feeders were brought from four existing 15kV substations.

MCI CONCORD ELECTRICAL SYSTEM IMPROVEMENTS

1988

MSP P86-25, Contract #1

Concord, MA

As the Prime Consultant to the DCPO, we designed a second 1,000kW, diesel generator with closed transition kV paralleling switchgear. We had previously designed a new 13.8kV to 4,160V. primary substation and a 1,000kW diesel generator as a Subconsultant.

ELECTRICAL DISTRIBUTION SYSTEM IMPROVEMENTS

1987

Logan International Airport

MPA 1.237CC

E. Boston, MA

As a prime consultant to Massport, we designed a second Boston Edison feeder to the BIF substation and modifications to the protective relaying scheme. A short circuit study was performed for entire kV and 15kV system.