PROJECT OF THE YEAR:
HISTORICAL RESTORATION/PRESERVATION
MORE THAN $75 MILLION

Longfellow Bridge Rehabilitation Design-Build

Managing Agency: Massachusetts Department of Transportation Highway Division
Primary Contractors: J.F. White Contracting Company/Skanska/Consigli Construction Co. JV
Primary Consultant: STV
Nominated By: New England Chapter

A vital transportation link between Boston and Cambridge, the historic Longfellow Bridge carries Route 3 and the Massachusetts Bay Transportation Authority's Red Line subway over the Charles River. The four signature neo-classically inspired granite towers give the bridge its popular nickname, the Salt and Pepper Bridge. The steel and granite structure was completed in 1907 and last rehabilitated in 1959. By 2013, it experienced deterioration of its arches, columns, ornate masonry and unique metal casting features. Massachusetts Department of Transportation Highway Division (MassDOT) decided a major rehabilitation was required and contracted the design-build team of the WSC joint venture of J.F. White Contracting Company/Skanska/Consigli Construction Co. and STV, as the lead designer. The project was one of the five largest in the state's $3 billion Accelerated Bridge Program.

The Longfellow Bridge is a contributing feature of the Charles River Basin Historic District, so MassDOT had to comply with strict federal and state historic rehabilitation standards. Several factors contributed to the project's complexity. Since it is an important regional connection, MassDOT had to maintain MBTA Red Line service for 90,000 transit users and access for a significant number of bicyclists and pedestrians who use the bridge daily. Developing a traffic plan to manage 28,000 motor vehicles per day was critical.

The bridge's location in a dense urban area with hospitals, hotels and residences in very close proximity required intensive outreach and issues resolution during overnight work and activities that generated vibration. The scope encompassed the complete reconstruction of the original 11 arch spans and a 12th span installed later; the seismic retrofit of 12 masonry substructures; and the reconstruction of the four signature "salt and pepper" towers flanking the main span. Concrete and masonry repairs were critical elements of the overall rehabilitation.

Several unique construction methods were used to complement the bridge's historic character, including riveting on exterior steelwork. The Red Line's center tracks were improved with new traction power, communications and signals modifications. Red Line service was maintained during construction through a staging plan that made maximum use of construction windows during weekend closures and allowed the rapid return of revenue service in time for the Monday morning commute.

The bridge is now fully AASHTO compliant with two inbound travel lanes, one outbound lane, two rebuilt MBTA Red Line tracks, two bicycle lanes and two widened ADA-compliant sidewalks. The $305 million project not only restored and preserved a jewel of the Boston skyline, it also allowed the bridge to meet 21st century transportation demands, all while honoring the structure's original architectural grandeur.

Photo credit: Mark Flannery