

CASE STUDY



CRUM CREEK VIADUCT - PHILADELPHIA T-MAT 260 EXPANSION JOINT INSTALLATION



Job Brief

Scope: Supply of and installation supervision of 2 Ekspan T-Mat 260 expansion joints

Project Team

Client: SEPTA (Southeastern Pennsylvania Transportation Authority)
Main Contractor: Walsh Construction Group
Sub Contractor: Ekspan
Ekspan Start Date: November 2015
Ekspan Completion Date: Late August 2016

Background Information

The Crum Creek Viaduct, originally a pre-Civil War era five-span timber arch truss rail bridge on tall masonry piers, was re-built in 1895 as a steel viaduct with the line electrified in the late 1920's by the Pennsylvania Railroad. The Viaduct carries the Media/Elwyn commuter rail line and is located between Swathmore and Wallingford stations, Delaware County.

This rail structure, spanning an approximate length of 915ft and standing 90ft high, was acquired by SEPTA in 1983. At this time, emergency repair works on the structure had been undertaken to resolve the severe steel corrosion issues and extend the life of the bridge. Despite additional repairs performed in 2002, 2013 and 2014 the existing viaduct had reached the end of its serviceable life and required replacing to ensure continued safe and efficient rail service. SEPTA had partnered with Walsh Construction, who were employed to build the new viaduct at Crum Creek. Construction works by Walsh Construction were to take 2 years, commencing in March 2015 with substantial completion by Labour Day 2016.

Ekspan's Workscope

After being specified by Figg Engineering, Walsh Construction contracted Ekspan to design, manufacture, supply and supervise the installation of two T-Mat 260 expansion joints on Crum Creek Viaduct. The joint installation was carried out on the west and east abutments after the foundation work for the new sub-structure had been built. The bridge consisted of two abutments and four sets of piers - with 5 span continuous deck girders and a pre-cast post tensioned deck.

Ekspan's programme of works included, supervising the installation of the joint sub-structure steel work; installation of a secondary seal; installation of the T-Mat 260 joint and Stirling Lloyd nosing mortar including associated primer and footway joint cover plates supplied by Ekspan. Walsh Construction carried out the installation under Ekspan's methodology and supervision. A 3-month rail possession was allocated for the installation of the expansion joints and completion of the superstructure, making timing for all operation stages very critical.

This international project presented its own challenges, including arranging logistics for supply and transport of goods to site and mutual co-operation in achieving design/supply approvals, including the use of US approved construction materials and US/metric conversion factors for dimensions/quantities. All works were carried out during the height of the summer season, where temperatures sometimes exceeded 100°F (36°C).

This was a very successful installation, especially as this type of joint was the first to be installed in the USA by Ekspan.



Lifting into position of joint steel sub-structure ready for installation



Welding together of steel sub-structure plates



West Abutment - New installed T-Mat 260 expansion joint