



Bristol Temple Meads Railway Station roof refurbishment project

Peter Chong CEng FStructE MICE FGS, Stephen Wren CEng MICE, Gabor Galyasz MAPM, Duncan Woolsmith CEng MStructE MICE, Omar Hindi GMICE

Stantec, Reading, UK

Contact: gabor.galyasz@stantec.com

Abstract

This paper focuses on the Bristol Temple Meads station roof refurbishment project, which involves metalwork repairs, painting and re-glazing of the main shed and canopies in this Historic England Grade I Listed Building. The project is presented from a designer's point of view.

The paper focuses on lessons learnt by the design team that could be applied to similar future refurbishment projects.

Keywords: roof refurbishment, historic building, heritage, repairs, structural assessment, defects, analysis, tie bars, forge weld, Non-destructive testing (NDT).

1 Introduction

The Bristol Temple Quarter project will transform over 130 hectares of brownfield land over the next 25 years into a series of thriving, well-connected mixed-use communities.

The regeneration builds on the UN's Sustainable Development Goals to put low-carbon, climate-friendly homes, jobs, and opportunities at the heart of the city, alongside new green spaces.[1]

The Bristol Rail Regeneration Programme is closely linked to the above project. This programme includes projects that are closely related to the Bristol Temple Meads (BTM) station: refurbishing the station roof, improving reliability and efficiency of the station's electrical system, constructing new station entrances, and improving passenger facilities. [2] Network Rail (NR) has also upgraded the track and signalling at Bristol East Junction.

A refurbished BTM will build on its role as the region's largest transport hub. Work will preserve the heritage of this historic station while creating a

gateway to Bristol and the West of England fit for the 21st century. [1]

This paper describes how the designers addressed various challenges on the Bristol Temple Meads station roof refurbishment (BTMRR) project. These include how their analysis reduced the capital carbon of the refurbishment, how the design team addressed the potential presence of latent defects in critical structural components of the arched roof, and how the collaborative approach of designer, contractor, client project team and client asset manager contributed to an efficient design process.

2 Project introduction

Bristol Temple Meads station is a Grade I listed structure owned by NR. Main areas of the station are on Figure 1. The last refurbishment was in the early 1990's.

The BTMRR project involves metallic and woodwork repairs, painting and the complete re-