

Condition Assessment of Steel Riveted Roof of Heritage Building in Sofia, Bulgaria

Dimitar Dakov, Borislav Belev

University of Architecture, Civil Engineering and Geodesy, Sofia, Bulgaria

Contact: borisbelev@gmail.com

Abstract

The findings of a recent survey on the steel roof structure of an early-twentieth-century building located in Sofia, Bulgaria are reported. The steel roof structure is supported by solid masonry walls around the building perimeter and on slender cast-iron columns along two interior longitudinal lines. The south part of the building was severely damaged during the bombing raids over Sofia in WWII. The building underwent a major refurbishment within the 1995-2000 period accompanied by detailed survey and condition assessment of the steel roof structure. In 2020 the authors carried out a survey for condition assessment of the steel roof structure including checks of riveted connections, analysis of chemical composition by OES metal analyser and inspection of the roof cladding components by endoscopic device.

Keywords: riveted steel structure; condition assessment; structural repair; renovation.

1 Introduction

The paper presents and discusses the findings of a recent survey on the steel roof structure of a heritage building located in Sofia, Bulgaria. The building was originally designed to host the central market of the town and its construction was completed in 1911 (Fig. 1).



Figure 1. Authentic photo of the building

The steel riveted roof structure was fabricated abroad. It is supported by solid masonry walls around the building perimeter and by slender cast-iron columns arranged along the two interior longitudinal lines (Fig. 2). The roof framing in the transversal direction has a three-span layout and consists of three duo-pitched rafters with horizontal tie-rods spaced at 4,0 m bays.



Figure 2. Interior view of the building