



## Examples of Polish Extradosed Bridges – Design and Construction

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### Abstract

The road and railway infrastructure in Poland has been intensively developed and modernized for the last years. Around 300 new bridges are built annually. Among the new structures there is a group of modern extradosed bridges.

This paper presents examples of short-, medium- and long-span extradosed bridges designed and built in recent years in Poland. The following structures are described:

- the first Polish extradosed bridge;
- two-span landmark viaducts over motorways;
- multi-span curved motorway bridge;
- the largest Polish extradosed bridge;
- conceptual designs.

Structural details and construction technology of the above mentioned bridges are described. The paper is concluded with a comparison of basic geometrical characteristics of presented bridges.

**Keywords:** extradosed bridge; prestressed concrete; design; construction technology.

## 1 Introduction

The extradosed bridge is a relatively new type of structure that has been developed since the 90s of the last century. It can be defined as the structure intermediate between the girder and the cable-stayed bridge [1]. The key feature visually distinguishing extradosed from cable-stayed bridge is the low tower height above the deck and hence shallow stay angles. Another specific feature of the extradosed bridges is the larger girder stiffness in comparison to those of the cable-stayed bridges. Stays in extradosed bridges

are stressed to relatively high level, similar to used in prestressing and has low stress variation under live loads. This paper presents selected examples of extradosed bridges designed or built in recent years in Poland.

## 2 Short-span bridges

### 2.1 Bridge in Konin (2007)

The bridge over the Warta River in Konin was the first extradosed bridge built in Poland [2]. It is located along the road connecting urban street network of the city of Konin with the A2