

The Development and Application of a Long Span Spliced Girder with Joint Block

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Summary

In this paper, the development of a spliced girder which is called ‘SegBeam’ is introduced. SegBeam use the ‘joint block’ which composes the splicing end part of a segment and is made of higher strength concrete than the other part of segment. The joint block is used for easy match casting and resisting the stress concentration during splicing process with post tensioning. Also, joint block enables to make a variable length of segment as the joint block fabricated in advance can be moved in the form of the segment. To verify the performance, full-scale load test of a 60m-long SegBeam is carried out. The structural safety of SegBeam is guaranteed under the load exceeding the ultimate design load of the girder. The applications of the SegBeam in the real construction field are also introduced.

Keywords: Prestressed concrete girder bridge, Spliced girder, SegBeam, Joint block, full-scale load test.

1. Introduction

The study of long span bridges has continued endlessly. The efforts to make PSC-I type girder bridge longer have also continued because PSC-I type girder bridge has the advantage of low price and easy construction. To make this girder bridge longer, the high strength concrete is indispensable. However, it is difficult to maintain the quality of high strength concrete at the construction site. In addition, recent infrastructure and rehabilitation of existing infrastructure has insufficient working space and calls for faster on site construction to minimize total construction time or traffic obstruction. To overcome these problems, a spliced girder can be a good alternative. The spliced girder consists of several pre-fabricated segments. Each segment is made with high strength concrete in a plant and then transported to construction site and assembled with post tensioning.

In this paper, the structural safety and application of a spliced girder which is called ‘SegBeam’ are introduced.

2. The Concept of ‘SegBeam’

SegBeam is a PSC-I type spliced girder. Each segment of the spliced girder is made of transportable size and weight in a plant and then transported to construction site and assembled. SegBeam targets on a low height girder bridge or long span bridge of more than 50m. So, the high strength concrete is required. For the segment a concrete strength of 70MPa is used. Transportation