Investigation of Closure Pour Elimination for Phased Construction of Steel Girder Bridges

Description

Meta Fields
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Project Starting Year : 2012
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Primary Sponsor Contact Info : Nebraska Department of Roads P.O. Box 94759 Highway Building Lincoln, NE 68509-4759 USA
Project Length : 6
Budget : 75000.00
Key Words :

Bridge construction; Bridge decks; Girder bridges; Traffic flow

Abstract :

Phased construction is a common practice used by State Departments of Transportation (DOTs) during the replacement of a bridge. This method allows for the traffic flow to be maintained during construction. Traffic is allowed to operate on half of the bridge while a new deck is placed on the other half. An issue that often arises during the construction sequence is differential elevation of the phases. The difference in elevation often prevents the second half of the deck from being poured in one step. Instead, a portion of the second half of the deck is poured and then a third, "closure pour" is used to connect the first two poured slabs. This closure pour significantly extends construction time and greatly increases the cost of the deck. It is desirable to develop a method for eliminating the differential elevation in order to eliminate the need for the costly third closure pour. The objective of the proposed project is to develop a construction technique that will eliminate the need for a third phase, closure pour. The technique will provide a method to control the height difference between the deck placed during the first pour and the height of the girders supporting the second portion of the slab. State DOTs will have the option of eliminating a costly third closure pour phase during the construction sequence. The new procedure will produce significant cost savings and reduced construction times. Reduced construction duration will also produce significant reductions in traffic exposure to construction and thereby reduce the number of construction related highway crashes. Further, the research findings

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have the potential of advancing knowledge of constructability issues associated with phased construction of steel girder bridges. Proposed Implementation Phase construction of bridges is an often used procedure in the state of Nebraska. The findings of this research will address the common problem that occurs during these construction procedures, end deflections causing differential deck elevations between concrete pours. The resulting remediation techniques can be implemented immediately upon completion of the study. In order to facilitate rapid implementation of study findings, the PI proposes to conduct one or more seminars to inform NDOR construction personnel and construction company engineers about the new procedure.

Group : Joints
Category : Completed Projects

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