

Development of Precast Bent Cap Systems for Seismic Regions; NCHRP 12-74; Report 681

Description

Meta Fields

Category : Completed Projects

Group : Seismic

Subject : Precast Cap

Abstract :

Precast bent cap systems are of increasing utility in highway construction. Precasting moves concrete forming, pouring, and curing operations out of the work zone, making bridge construction safer and more environmentally friendly, and it removes bent cap construction from the critical path. Precasting also improves quality and durability because the work is performed in a more controlled environment. The accelerated construction benefits of precast bent cap systems support the philosophy of "get in, get out, stay out." Successful use of precast bent caps relies on proper design, constructability, and performance of the connections. Early uses of precast bent caps were limited to applications where minimal moment and shear transfer were required at connections. In seismic regions, provisions normally must be made to transfer greater forces through connections. Research is needed to examine the constructability of precast bent cap connections, connection behavior (including the effects of joint reinforcement and other detailing requirements), and girder continuity. Bent cap systems for both steel and precast concrete superstructures are needed. Guidelines for design, detailing, and construction must be developed so that precast bent cap technology can be used in all areas of the United States where seismic loading is an issue. The objective of this project is to develop a design methodology, connection details, and design and construction specifications for precast bent cap systems under seismic loading. The specifications shall be in a form suitable for consideration by the AASHTO Highway Subcommittee on Bridges and Structures (HSCOBs).

Key Words :

Bridges; Concrete curing; Concrete forms; Construction; Design methods; Methodology; Precast concrete; Seismicity

Budget : 598916.00

Project Length : 60

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Project Completion Year : 2010