

Abstract Submission Form



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Paper Title:

System architecture for wireless communication to remote DMS sites during a drawbridge operation event

Relevant Session/Topic:

ITS Application/Research
Information Gathering and Dissemination to Users
Traffic Operations and Management

Author:

Name: Abhro Mitra, CAPM

Employer: DKS Associates

Mailing Address:
719 Second Avenue
Suite 1250
Seattle, WA 98104

Phone #: (206) 382-9800

e-mail: axm@dksassociates.com

Co-authors:

Co-author: Chris Long, P.E., PTOE
DKS Associates
cal@dksassociates.com

Abstract: 250 words maximum. Use 12 point Arial font, single space.

Increasing availability of a wide variety of wireless technology solutions has reduced the need for adding additional physical infrastructure to provide smart traffic solutions. With that said it is important for an engineer to identify the system requirements such that it not only serves the desired objective but also seamlessly integrates with the existing infrastructure in place. This paper will discuss a case study of the Ballard Bridge in Seattle located across the Lake Washington Ship Canal. The primary objective of this study was to be able to trigger a message to the remote dynamic message signs (DMS) at either ends of the bridge, warning commuters of the bridge opening/closing events. The bridge being old and having historical significance, offered limited capacity for adding additional infrastructure to support a physical communication link from the bridge tower to the DMS sites. Hence the need to identify a solution with wireless communication that could serve the purpose.

A detailed traffic study was performed to gauge the extent of the queue length during a bridge opening/closing event. This helped to determine the location where the DMS signs could be installed and also the appropriate hardware needed to transmit signals for long distances without much interference. The Ballard Bridge itself spans approximately 3000 feet. In addition to establishing the communications to the DMS sites there was also a need for integrating the new hardware with the existing fiber network to establish a link with the city's traffic management center. This paper will discuss the planning of the overall system architecture and identify the needs & requirements to implement this type of remote messaging system.