SEISMIC RISK CONSIDERATIONS FOR TRANSPORTATION SYSTEMS

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ABSTRACT

During the recent Loma Prieta Earthquake, major damage to certain key transportation elements greatly affected operations of major transportation systems within the San Francisco Bay Area. This experience has underscored the need to utilize seismic risk analysis concepts to optimize the planning and implementation of seismic risk reduction measures for transportation systems. Accordingly, this paper summarizes how seismic risk analysis can be applied to transportation system networks, and discusses the potential benefits of such analysis applications.

BACKGROUND

One of the most significant aspects of the Loma Prieta Earthquake of October 17, 1989 (Magnitude 7.1) was its severe impact on the transportation system of a major metropolitan area. Direct damage costs to the transportation system in the region of strong shaking totalled $1.8 billion, of which damage to state-owned viaducts totalled $200 million and damage to other state-owned bridges totalled $100 million (SCOPR, 1990). Indirect losses (i.e., costs associated with lost time and business productivity in the affected areas) have

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