

2011 年東北地方太平洋沖地震による津波と 道路橋の被害との関係に関する分析

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概要

平成 23 年(2011 年)3 月 11 日に発生した東北地方太平洋沖地震では津波により広い範囲で道路構造物にも甚大な被害が発生した。道路橋では、上部構造の流出、橋脚の倒壊、橋台背面土の流出などの深刻な被害が多数見られた。日本では、今後も巨大津波が発生する可能性は否定できず、道路橋の整備や管理にあたっては、津波による被害を抑制するためにも、その影響を適切に評価できる技術の確立が求められる。

本研究は、地震発生直後からの現地調査や情報収集による津波による道路橋 200 橋の被害状況、構造条件、架橋条件を整理するとともに、津波伝播逆上解析により架橋位置における浸水高や流速等の津波特性を推算し、構造条件や架橋条件と津波による被害の関係を分析したものである。また、本資料では、今後の津波による道路橋の被害と各種要因との詳細な相関を分析するにあたっての基礎資料として諸元等の基本データをとりまとめている。

キーワード：道路橋，津波，東北地方太平洋沖地震

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Damage to Road Bridges by the 2011 off the Pacific coast of Tohoku Earthquake and Tsunami

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Synopsis

The tsunami due to The Great East Japan Earthquake in 2011 brought down huge damages on road structures in vast area. As for road bridges, severe damages such as washing out of superstructure, collapse of piers, and running out of backfill of abutments were observed. In Japan, possibility of the recurrence of such a huge tsunami cannot be denied. Therefore, regarding the construction and maintenance of road bridges, the establishment of technique which can reduce damages due to tsunami is required.

In this study, following data such as the damages, structural conditions, and site conditions of 200 road bridges were collected and summarized as a first step. The data was obtained based on field survey, public literature and internet. Then, the tsunami propagation and run-up simulation was carried out in order to estimate the characteristics of tsunami such as immersion height and current velocity and so on at each site. Lastly, the relationship between structural and site condition and the damage due to tsunami were investigated. In the appendix, in order to contribute to future study, basic data which could be valuable for detailed analysis of the correlation between damaged road bridges and several contributory factors are summarized.

Key Words: highway bridge, tsunami , the 2011 off the Pacific coast of Tohoku Earthquake

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