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INSTITUTE OF STEEL STRUCTURES

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LECTURE ANNOUNCEMENT

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Lecture Hall of the Institute of Steel Structures, NTUA

Development of a Blast and Ballistic Resistant Insulated Wall Panel System

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Abstract

Accidental and intentional detonations of high explosives are an unfortunate reality for not only military facilities, but any building. In the United States, designing for blast loads is required of all military and government structures. Additionally, there has been a recent emphasis on constructing energy efficient, sustainable buildings. Insulated concrete wall panels can meet both requirements due to the blast resistance of reinforced concrete and the thermal properties of the interior insulation layer. This research project focuses on improving the response of an insulated concrete panel to explosions at both larger and small scaled distance, as well as the ballistic resistance of the panel. Emphasis is placed on innovative, emulative reinforcement detailing to improve far scale explosions, while shock resistant materials are utilized within the insulation layer to improve small scale explosions and ballistic response. Static tests are conducted under both point and uniform loading to obtain resistance functions to predict the dynamic response of the insulated panel. Experimental, numerical, and analytical results will be discussed.



Short Biographical Note of the Speaker

Professor Naito is a licensed professional engineer in the states of California and Pennsylvania. He is an Associate Editor of the ASCE Bridge Journal and the Chair of the Precast/Prestressed Concrete Institute Committee on Blast Resistance and Structural Integrity. Prof. Naito's research focuses on experimental and analytical evaluation of reinforced and prestressed concrete structures subjected to extreme events including earthquakes, tsunamis, and intentional blast demands.

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