

# **SIMULATION OF STRUCTURES SUBJECTED TO SHORT DURATION DYNAMIC LOADS**

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Short duration and high peak dynamic loads may affect the performance of already existing structures such as bridges, high-rise buildings, and other reinforced concrete facilities. This class of loads and its effect on structures became of extreme interest after the tragic events of September 11, 2001. This study provides a suite of simulations for two such structures. Local and global results are shown as well as alternative scenarios, which may improve the survivability of these structures.

The finite element analysis (FEA) code PapaDyn, a derivative of the Lawrence Livermore code ParaDyn, is exclusively used for this work. Some of the aspects of this code, such as auto-contact and modified constitutive models, will be briefly addressed. All FEA work was carried out at the DoD's supercomputing facility at ERDC, Vicksburg, MS.