

**High Pressure Blast Loading Of Reinforced
Concrete Building Columns**

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Jeffrey M. Thomsen, Craig S. Sheffield and Barry L. Bingham,
Applied Research Associates, Inc.
4300 San Mateo Blvd., Suite A-220
Albuquerque, NM 87110

And

Audrey M. Kersul
Defense Threat Reduction Agency
1680 Texas Street, SE
Kirtland Air Force Base, NM 87117-5669

Introduction

A series of tests have been performed where large explosive charges were detonated very close to building columns. These tests were performed to provide information on column retrofit methods that can be used on existing buildings to prevent the failure of building columns that are attacked with explosives. The columns used in these tests were typical of the types used in column and slab building construction. These tests were not conducted in a building, however, but within a specially built column reaction structure (CRS) test facility. Test columns were installed within the CRS and statically loaded in the axial direction to simulate a realistic building load prior to each blast test. The explosive charges were then placed at two different distances relative to the front faces of the test columns. Active instrumentation was recorded to measure the environment acting on the test column and also how the column responded to the blast loading. Various column sizes were tested in this series of eight tests.

This paper discusses the measured airblast loading on the tested columns. The loading environment will be compared to a three dimensional (3-D) pretest prediction calculation for one of the tested ranges. Other papers to be presented will discuss the test methodology and damage to both the bare and retrofit test columns (Reference 1 and 2).