

Explosion Effects and Structural Design for Blast

A two-day training course
Drury Inn Airport, St. Louis, MO
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Instructors: Sam A. Kiger, Ph.D., P.E.¹ and Stanley C. Woodson, Ph.D., P.E.²

Course Outline

1. Introduction

- Course Overview
- References
- Earthquake vs Blast Design

2. Explosion Effects

- Blast Wave Phenomena
- Explosive Types
- Cube Root Scaling
- Cratering/Truck Bombs
- Blast/Barrier Walls

3. Loads on Structures

- Wall and Roof Loading
- CONWEP Software
- Pressure Fill through Opening
- Internal Explosions
- BlastX Software

4. Behavior of Structural Elements

- Material Properties
- Resistance Functions
- Flexural Resistance
- Shear Resistance
- Tensile and Compressive Membrane Resistance
- Failure Criteria

5. Structural Dynamics

- Simplified Analysis Models
- Elastic Analysis/Dynamic Load Factor
- Elasto-Plastic Analysis
- Response Charts

Structural Dynamics Continued

- Idealized Systems
- Transformation Factors
- Dynamic Reactions
- Limiting Cases of Impulse and Peak Pressure sensitive Systems

6. Response Calculations

- Span 32
- WAC
- PSADS
- P-I Diagrams
- Wall Systems and Retrofit Designs

7. Design Examples

- Walls
- Roofs

8. Window Glazing

- Hazards
- WinDas
- HAZL
- Retrofits

9. Other Design Aids/Criteria

- TM5-1300
- Unified Facilities Criteria
- Progressive Collapse

1. Dr. Sam A Kiger, PE, Director, Center for Explosion Resistant Design, University of Missouri, Columbia, MO 65211, Ph: 573-882-3285, Email: kigers@missouri.edu, <http://www.missouri.edu/ncerd/>
2. Dr. Stanley C. Woodson, P.E., US Army Engineer Research and Development Center, Vicksburg, MS, Ph: 601-636-4429, Email: WoodsonEng@netzero.com