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ENGINEERING AND CONSTRUCTION BULLETIN

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Subject: PDC-TR 06-08, “Single Degree of Freedom Structural Response Limits for Antiterrorism Design”

Applicability: Guidance

1. Purpose: This bulletin announces the availability of the PDC-TR 06-08 for use in the design of structures to resist airblast effects of terrorist explosives. PDC-TR 06-08 can be downloaded from the USACE Protective Design Center (PDC) website: <https://pdc.usace.army.mil/>.

2. Background: UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings, provides baseline minimum levels of protection with which all DoD inhabited buildings must comply as long as they meet specific “triggers”. Those levels of protection can be achieved using conventional construction if certain minimum standoff distances are provided. The process in UFC 4-020-01, DoD Security Engineering Facilities Planning Manual, may determine that a facility requires a higher level of protection or must address threats beyond those considered in UFC 4-010-01, in which cases the structure must be specifically analyzed for blast loading. Structural engineers need guidance for the design of buildings required to resist the airblast associated with terrorist explosive threats where the minimum standoff distances for conventional construction are not available or where higher levels of protection are required and/or where more severe threats need to be considered.

3. Applicability: The prevalent method used in DoD to design structures to resist the airblast loading from terrorist explosive threats is the single degree of freedom (SDOF) process. Specific details of the SDOF methodology and airblast loading are provided in PDC-TR 06-01, Single Degree of Freedom Blast Design Spreadsheet (SBEDS) Methodology Manual available from the PDC website: <https://pdc.usace.army.mil/>. The PDC has researched existing criteria, researched available test reports, and consulted with technical experts in the field of blast design to develop the response limits contained in this report. Limits to band the four levels of protection defined in UFC 4-010-01 are provided. These limits should be used in the design of facilities with less than the conventional construction standoff distance defined in UFC 4-010-01, or where otherwise required to resist terrorist explosive threats. The intent of this report is to provide structural engineers basic information on the application of these response limits.

4. Distribution: PDC-TR 06-08 is approved for public release; distribution unlimited.

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5. POC: The HQUSACE point of contact for this bulletin is Mr. Peter Rossbach, CECW-CE, 202-761-4352.

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