DDESB Technical Paper 15 "Approved Protective Construction"

DDESB TP 15 The purpose of this publication is to document historically significant information about the origin and evolution of protective construction design and the explosives safety criteria associated with them, as well as to provide a consolidated listing of DDESB-approved protective construction. Its purposes are to: (1) educate and enhance, from an historical perspective, an understanding of how criteria developed and were influenced; and (2) to document approved protective construction designs to provide the explosives safety community common information for their use and benefit.

TP 15 will be updated periodically, however beginning with this revision of TP 15, Appendices AP1 and AP2 are treated as living documents to allow the DDESB to update them more frequently as new approvals are given. For this reason, they have been posted separately from the rest of TP15. With respect to Appendix AP1, each of its four tables (i.e., AP1-1 through AP1-4) are also posted separately for the same reason given above. This arrangement will better fit the needs of the explosives safety community by providing the most current information on DDESB protective construction approvals.

The DDESB provides update protective construction related information to Naval Facilities Command (NAVFAC), Atlantic Division, for posting onto the Whole Building Design Guide's (WBDG) webpage dedicated to ammunition and explosives storage magazines: http://www.wbdg.org/design/ammo_magazines.php. This webpage is dedicated to providing Service planners the necessary information they need for the design and planning of new magazines. NAVFAC serves as the DDESB's POC for the addition of the latest TP 15 information into the above section, which was developed to complement the magazine listings found in Appendix AP1 of TP 15.

The current versions of TP 15 related files:

All files listed below can be downloaded in the attachment area of this PDF document

a. **Complete TP 15, Revision 3, May 2010 Caution**: If this file is downloaded, occasionally check the below individual appendices to ensure you have the latest AP1 tables and the latest AP2, as they will be updated on a more frequent basis that the rest of TP15

b. **TP 15, Revision 3, May 2010 (less AP1 and AP2) Caution**: If this file is downloaded – be sure to download the latest versions of Appendices AP1 and AP2, as they will be updated on a more frequent basis that the rest of TP15.

b. **Appendix AP1**

Table AP1-1, 6 January 2011: Lists 7- and 3-Bar ECM designs approved for new construction. These are designs that are being maintained by DoD Components, therefore are kept current to reflect the latest explosives safety criteria (e.g., explosives safety, construction, specifications).

Table AP1-2, 6 January 2011: Lists existing 7- or 3-Bar ECM designs that users may find in the field. These designs are no longer maintained and will more than likely not reflect current criteria. **Caution:** These designs can be considered for new construction, as approved on a case-by-case basis by the DoD Component, provided the designs have been thoroughly reviewed and the design drawings updated to reflect current criteria.]

Table AP1-3, 6 January 2011: Lists ECM designs determined to be Undefined structures. A design is placed in this category when it is either known to be structurally weaker than a 7- or 3-Bar ECM design (through a structural assessment, analysis or test), or if insufficient information is available to indicate its strength. When testing is being considered, it should be coordinated through the DDESB to ensure the proper testing is being conducted. **Caution:** These designs can be considered for new construction, as approved on a case-by-case basis by the DoD Component, provided they have been thoroughly reviewed and updated to reflect current criteria.]

Table AP1-4, October 2010: Lists magazine (both ECM and aboveground) designs and transportation containers that have reduced QD and/or reduced MCE.

b. Appendix AP2

Appendix AP2, "Operation Field Storage". This appendix has been prepared to specifically address ammunition and explosives (AE) operational storage in the field. It is applicable to all AE storage scenarios in the field environment and is meant to support the application of criteria in DoD 6055.9-STD, in particular for reduction of maximum credible event (MCE) and associated quantity distance (QD) criteria. The information contained in the appendix is derived from: a) DoD 6055.9-STD; b) elsewhere in DDESB TP15; and c) select DDESB approval memoranda, all of which has been consolidated into this appendix to assist operational field storage personnel

The objectives of Appendix AP2 are to:

1. Provide an overview of AE explosion effects from which to protect against so as to prevent prompt propagation (the foundation for minimizing MCE).

2. Provide a discussion of the methods that can be used for minimizing MCE and its associated QD.

3. Provide specific information on techniques and construction methods that have been approved by the DDESB for the reduction of MCE and QD.

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Documentation Associated with AP2. DDESB approval memorandums, technical data packages, technical reports, and other pertinent documentation associated with AP2 are provided below. Simply select the appropriate link to obtain a copy of the document desired. **All files listed below can be downloaded in the attachment area of this PDFdocument**

BRL-SP-46 105mm HEAT Rack 1985
DDESB approval 105_120mm Tank Ammo Download Rack.pdf
DDESB approval 4.2 inch Mortar Rack Sep 1991.pdf
DDESB approval for ASP Walling System_Barriers for Truck Protection.pdf
DDESB approval Geotextile Stabilized Sand Walls as Barricades.pdf
DDESB approval MCE for WAU-10 AUR Container.pdf
DDESB approval NOBLE EAGLE MCE_aircraft missile loads.pdf
DDESB approval Revised TDP for QD Reduction_Concertainer Barricades.pdf
DDESB approval Sand Grid Wall.pdf
DDESB approval TOW Missile Rack.pdf

DDESB approval_aircraft MCE for missile loads.pdf
DDESB approval_improved Loading Configuration for 8-inch Artillery.pdf
DDESB approval_Reduced MCE_Mixed AIM120&AIM9 trailer storage.pdf
DDESB Approvals_105mm HEAT Rack.pdf
DDESB approvals_buffered storage.pdf
DDESB approvals_Storage of Mixed Munitions in CONEX Containers.pdf
Evaluation of ARMCO Revetments for Prevention of Sympathetic Detonation TR-2059-SHR 051996.pdf
Jungle Density.pdf
Munitions suitable for storage in ARMCO revetments.pdf
Noble Eagle MCE Rationale.pdf
TDP-4.2 inch Mortar Rack Sep 1991.pdf
TDP-Barriers for Truck Protection_6 Aug 1990.pdf
TDP-Geosynthetic Reinforced Barricades Oct 1992.pdf
TDP-Revised Hesco Bastion Concertainer.pdf
TDP-Sand Grid Wall Dec 1991.pdf
TDP-Storage of Mixed Munitions in CONEX Nov 1991.pdf
TDP-Tank Ammo Download Rack_Jun 1989.pdf
TDP-Tow Missile Rack Nov 1988.pdf
TDS-Recommended config_Combat Loads M106 8-inch rounds.pdf
Tech Report BRL-TR-3203_Fragment Hazards from Munitions in Containers 0291.pdf
USACOE definitive barricade design dwg-M149-30-01.pdf