



## DEPARTMENT OF DEFENSE EXPLOSIVES SAFETY BOARD

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ALEXANDRIA, VIRGINIA 22350-3606

05 AUG 2024

DDESB-PE

MEMORANDUM FOR DIRECTOR, U.S. ARMY DEFENSE AMMUNITION CENTER  
(ATTENTION: ATCL-ACE)

SUBJECT: Approval of 7-Bar Structural Strength Designation for Earth-Covered Magazine (ECM) Series 421-80-07 Revision 1

References: (a) U.S. Army Defense Ammunition Center ATCL-ACE Memorandum, 15 March 2023, Subject: Request DDESB Final Approval for the Earth-Covered Magazine (ECM) Series 421-80-07 Revision 1 as a 7-bar magazine.

- (b) Modular Storage Magazine, Box-Type STD 421-80-07 with 10'-8" Door (Revision 1), U.S. Army Corps of Engineers, Engineering and Support Center, Huntsville, January 2024
- (c) Defense Explosives Safety Regulation 6055.09, Edition 1, Change 1, 23 February 2024
- (d) Email from J. Umphrey (CEHNC), 10 July 2024, Subject: ECM STD 421-80-07 Revision 1
- (e) Box-Type STD 421-80-07 with 10'-8" Door, U.S. Army Corps of Engineers, Engineering and Support Center, Huntsville, Modular Storage Magazine, December 2011
- (f) DDESB Technical Paper 15, "Approved Protective Construction," Revision 4, 26 July 2020

As requested by reference (a), we have reviewed the reference (b) drawings for compliance with Department of Defense explosives safety criteria found in reference (c). Reference (d) provided the updated design incorporating our review comments, along with attachments describing the modifications from the previous standard that have been incorporated into those drawings. Based on our evaluation, the design contained in reference (b) is approved as a 7-Bar earth-covered magazine (ECM). This new design supersedes the original 421-80-07 magazine design of reference (e).

The maximum allowable Hazard Division (HD) 1.1 explosive limit for the reference (b) design is 500,000 pounds net explosive weight (NEW).

The revised drawing set of reference (b) incorporates lessons learned from previous construction projects, corrects omissions within the drawings, and improves constructability of the structure. The design includes modifications to the blast door detailing for an updated

locking system and revised welded connections between door components. Structural steel with a minimum yield strength of 50 ksi is specified for the blast door based on current industry standards and material availability.

The design of reference (b) will be added to Table AP1-1 of reference (f) as approved for new construction, and reference (e) will be relocated from Table AP1-1 to Table AP1-2 and considered not approved for new construction.

Point of contact is Mr. Ryan Bowers at Commercial: (571) 372-6706; DSN: 372-6706; or E-mail: [ryan.w.bowers.civ@army.mil](mailto:ryan.w.bowers.civ@army.mil).



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