



DEPARTMENT OF THE NAVY
ATLANTIC DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORFOLK, VIRGINIA 23511

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IN REPLY REFER TO

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11010/MCAS (H)
NEW RIVER
4 OCT 1982

From: Commander, Atlantic Division, Naval Facilities Engineering Command
To: Commanding Officer, Marine Corps Air Station, Helicopter, New River,
Jacksonville, North Carolina 28545

Subj: FY 83 MCON Project P-354, High Explosive Magazines, Marine Corps Air
Station, Helicopter, New River, Jacksonville, North Carolina; Second
Revised Final Safety Approval

Ref: (a) DOD ESB-KO ltr of 16 Oct 1981

Encl: (1) Documentation for Amended Final Safety Submittal
(2) Proposed New Standard for Earth Covered Concrete Arch Magazine,
NAVFAC Dwgs 104310, 104312, 104315, 104317, 104319 and 104321
through 104324

1. The subject project includes five high explosive, earth covered, concrete magazines (two 10' x 14' box type units with explosive limit of 15,000 lbs (NEW) each, one 20' x 25' arch type unit with explosive limit of 75,000 lbs (NEW) and two 25' x 50' arch type with explosive limit of 100,000 lbs (NEW) each). Both siting and final safety approval have been received from the Department of Defense Explosive Safety Board (DDESB) by reference (a).

2. The original standard for the earth covered concrete arch is being updated to reflect revised designed features that result from application of the latest blast and security requirements. NAVFACENGCOM is presently reviewing the final submission for the updated arch magazine. The design will be completed in time for use on this project; however, it will not have been processed through DDESB for approval to be used as a standard.

3. In order for the updated arch magazine to be utilized for this project, prior to DDESB's acceptance, proper documentation must be submitted to DDESB to amend the previously submitted data for the siting and final safety approval. Enclosures (1) and (2) are forwarded for documenting and amended final safety submittal for DDESB approval.

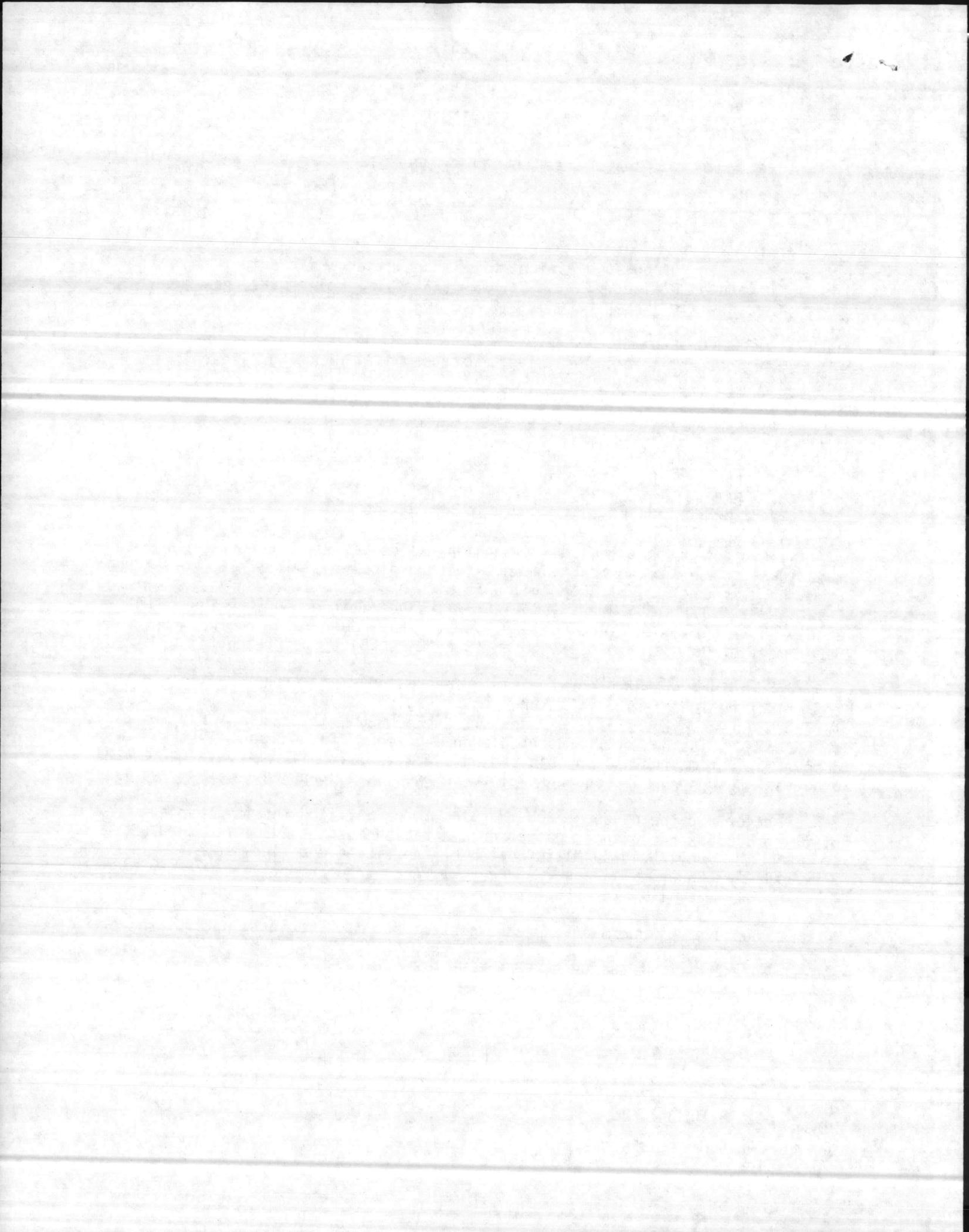
4. If you have any questions, please contact Mr. M. L. Bryant, P. E., Project Manager or Mr. B. R. Jenkins, P. E., Engineer in Charge, of this Command, telephone 444-9670 or 444-9919, area code 804 respectively.

Autovon 564-9670

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D. R. Phelps
D. R. PHELPS
By direction

Copy to:
CMC
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DOD Explosive Safety Board



DOCUMENTATION FOR AMENDED FINAL SAFETY SUBMITTAL

The magazine is an updated version of NAVFACENGCOM's original (1954) Standard Earth Covered Concrete Arch Magazine (NAVFAC Dwgs. 649602 through 649605, 793748 and 803060). NAVFACENGCOM plans to formally submit this updated design to DDESB in the near future for approval. The purpose for updating the magazine is to: (1) utilize the latest blast loading data available in redesigning the headwall and door; (2) change the door from hinged to sliding; (3) incorporate the latest methods and materials for waterproofing; and (4) to incorporate the latest requirements for physical security.

Magazine constructed according to this updated design will be equivalent in strength or stronger than the original design. The following lists the basis of design for the updated concrete arch magazine.

Blast Loading Parameters

The design loading shown on NAVFAC Drawing 1404322 represents the latest blast loading parameters obtained from C. Kingery of Ballistics Research Laboratory, Aberdeen Proving Ground, Maryland (BRL). These parameters are based on data from Mr. Kingery's February 1979 report titled, "Blast Loading on Model Munition Storage Magazines".

Blast Door Design

The sliding door is designed for the latest blast parameters using latest design procedures and failure criteria established by Naval Civil Engineering Laboratory (NCEL). The door is "sliding type" and will span horizontally.

Headwall Design

The headwall is also designed for the latest blast parameters using failure criteria established by NCEL. The primary supporting elements of the headwall (i.e., pilasters) provide continuous edge support for the blast resistant door, and in turn are supported by the floor slab and concrete arch. Maximum deflection is limited to support rotation of 5 degrees. Secondary element (i.e., wall sections spanning between the concrete arch and pilasters) are designed for a more liberal support rotation of up to 12 degrees. The headwall element above the door is designed as a cantilever supported at the concrete arch. Excessive support rotation of this element is prevented by the soil material behind the headwall.

Arch Design

The arch design remains unchanged from the original standard arch magazine except to reflect the latest concrete code requirements for lapping reinforcement.

NAVFACENGCOM and NCEL have reviewed and concur with the updated design.

