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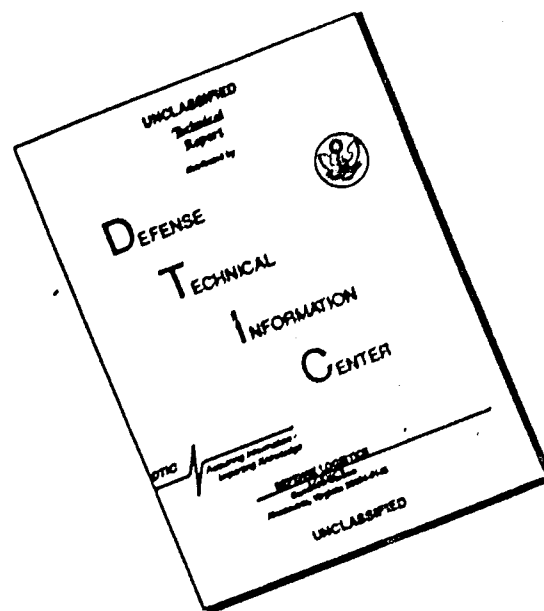
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DEPARTMENT OF THE ARMY
HEADQUARTERS, 69TH ENGINEER BATTALION (CONSTRUCTION)
APO San Francisco 96215
"BUILDERS FOR PEACE"

27

EGFA-CO

4 November 1967

SUBJECT: Operational Report-Lessons Learned (RCS CSFOR-65) for Quarterly
Period Ending 31 October 1967.

THRU: Commanding Officer
34th Engineer Group (Const)
APO 96291

Commanding General
20th Engineer Brigade
APO 96491

Commanding General
USA Engineer Command Vietnam (Prov)
ATTN: AVCC-P&O
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OCT 31 1968

TO: Assistant Chief of Staff for Force Development
Department of the Army (ACSFOR DA)
Washington, D. C. 20310

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Section 1. Significant Organization or Unit Activities.

1. General. This period saw the 69th Engr Bn (Const) run through a cycle of troop construction and combat support missions, preparation for unit movement by four of the five companies, the move itself, organization at the new locations, and resumption of construction. Of a 92 day reporting period 62 days were spent performing troop construction and combat support mission 10 days preparing for movement, and 20 days in moving and re-establishing new unit areas.

2. Command. The period was one of growth and maturity for all concerned in the combat theatre. Of particular importance was increased responsiveness shown by the junior Non-Commissioned Officers. Many Sergeant E-5's and acting Sergeants matured and aggressively pursued their duties. Both groups have been doing outstanding jobs. A dilemma emerging, however, is the short period remaining for these young leaders to serve in their positions before rotation time arrives.

3. Personnel, Administration, Morale, Discipline. There have been relatively few problems in this area since the last report. Probably the most outstanding are monthly pay problems and other seemingly regular personnel problems. Difficulties have been encountered in the exchange of personnel with other units in order to eliminate foreseen rotational humps. Moving upwards of 200 people to a new unit and receiving the same amount in two or three days taxes all concerned for a brief period. The most effective measure to keep these problems to a minimum is some very thorough prior planning. This can be done effectively at Battalion level or higher.

4. Operations. On 31 August 1967 the Battalion was alerted for movement to the Delta. HQ Co, A Co and the remainder of D Co were to be relocated at Can Tho while C Co was to move to Dong Tam. The 36th Engr Bn (Const) was to replace the 69th Engr Bn at Vung Tau. All Company moves were planned as three separate moves, i.e., an advance party, followed by the main body, with the remainder of the unit's men and equipment closing as a trail party. The first move was to commence on 10 Sep 1967 with the Battalion scheduled to close at all locations by 10 Oct 1967. Initially, transportation control movement documents (TCMD's) were prepared by the Companies, consolidated by the S-4, and submitted. Specific unit moves were requested on specific dates. In actuality, because of the tight transportation problem in the Delta, unit movement dates slipped 5 to 20 days. The 36th Engr Bn arrived on 20 Sep 1967 with the bulk of the 69th Engr Bn still waiting in Vung Tau for transportation. Since the new Battalion was to occupy the old Battalion's area, considerable crowding of facilities occurred for a short period of time. To compound matters even more, the first of the 36th Engr Bn's equipment ships arrived shortly after arrival of their advance party and well before the arrival of the 36th Engr Bn's main body on the 20th of Sep.

5. The transportation logjam broke finally in late Sep. Three to four LST's were assigned to move the Battalion with the bulk of the sailings scheduled for Can Tho in the latter part of Sep and early Oct. By 15 Oct

over 90% of the Battalion was closed at its new locations. With the movement of most of the Battalion complete, the IST support withered to approximately one sailing a week. It was not until 27 Oct that the last Company (A Co) fully closed at Can Tho and the Battalion was 100% relocated. Thus, the unit move was spread over approximately 50 days instead of the planned 30. The move was characterized by little activity at the beginning, a great flurry for 15 days or so in the middle of the period, and finally a sudden of support toward the end. At one time three of the four LST's involved in the move were awaiting off-loading at Can Tho. One was being off-loaded while the other two (along with a third IST being used for some other purpose) were moored in the Bassac River awaiting their turn. Except for this one period, the off-loading went smoothly at Can Tho, considering the difficult ramp and stream current conditions prevailing. No delays were experienced off-loading at Dong Tam, primarily because of the ready availability of the beach in the turning basin. In addition to the 12 or so LST trips (a few trips involved only partial loads of 69th Engr Bn equipment) approximately 15 loads were carried by LCU's and LCM's. No equipment moved by road to the new locations. Almost all EM moved by water. Most Officers and key NCO's moved by air.

6. On 2 Sep 1967 the 544th Engr Co (CS) arrived in-country and was assigned to the 69th Engr Bn. Operational control of the 544th Engr Co passed to the 36th Engr Bn on 20 Sep 1967. While assigned to the 69th the 544th Engr Co received its main body and equipment (less asphalt plant), settled in its field cantonment, and began assisting the 69th Engr Bn in four projects.

7. During August and the first part of September the Battalion was involved in 27 projects at Vung Tau, 7 at Dong Tam, and 5 at Can Tho. All projects at Vung Tau were officially transferred to the 36th Engr Bn by 1 Oct 1967.

8. The operations in Vung Tau were characterized by an ever increasing commitment caused by continuous receipt of new project directives while retaining a little better than half the Battalion's construction capability. The Battalion was able to cope with almost all the horizontal work required. With only 1 1/2 Companies' vertical effort available, adequate response to vertical construction requests became increasingly difficult. A narrative summary of the work done on projects in Vung Tau for the month of August and the beginning of September follows:

a. Quarry Operations: Quarry operations continued to be supported by the quarry platoon of the 103d Engr Co (CS) until September. In early September the 103d Engr Co's (CS) personnel and equipment were withdrawn. The overall quarry mission was assigned to the 544th Engr Co (CS) on 12 Sep 1967. On 20 Sep 1967 all responsibility for the quarries was formally turned over to the 36th Engr Bn along with OPCON of the 544th Engr Co. Some 20,000 CY of rock were crushed in August, principally 3" open and 1 1/2" minus. Approximately 40,000 CY of blast rock were produced. The period, although having a considerable amount of rainfall, saw a gradual diminishing of the rains in September with improved conditions for crushing. Four Euclid Quarry Dump Trucks arrived during August. They were put to work (following driver training) even though no repair parts were on hand. Six five ton dump trucks which were being used to haul blast rock to the crusher were thus replaced. The Euclid's were considered a great asset to the operation during the short period they were used.

b. Barge outloading operations: During August seventeen barges were loaded with sand or gravel and shipped to the Delta. The overall operation ran much smoother than the previous period, as all concerned gained and profited from prior experience. Barges which were leaking and about to sink were quickly spotted and beached for repairs. Movement of barges from moorings to the loading pier was coordinated better although at times the operation was held up for four to six hours for lack of tug boat support. Also during this period Vung Tau Sub Port added military tugs to the fleet at Vung Tau.

c. Rehabilitation of POL Tank Farm: The scope consisted of removing, refurbishing, and relaying 9000 LF of 8" pipeline, rebuilding a truck loading stand and construction of a 48-8" valve manifold system. During the period all buried lines leading to the port were removed and reworked. Some welding was begun. Restoration of the intra-farm nine piers was started. Observations were initiated to determine the cause of ground and drainage system contamination from POL products. Hauling of fill for construction of the 50,000 BBL tanks was also begun.

d. Construction of Cau Cay Khe Causeway, OL 15: Consisted of constructing a 32' x 415' causeway on Route OL 15 at Cau Cay Khe. Excellent progress was made on this project as the Battalion continued hauling on a 24 hour, 7 day week schedule. At times some 20-25 dump trucks were effectively used on the 16 mile round trip haul. Some 15,000 CY of fill was hauled. In late August the far (north) shore was reached with the causeway some 20' in width.

e. ASP: Consisted of construction of 30 ea M&A pads with aprons (total dimensions each pad 100' x 100'), 800 SF of administrative space, 2220 SY roads, fencing and lighting. The period saw construction move into a swampy area, an inside perimeter road pushed across the swamp, and three pads placed in the swamp. Heavy rains and initial settling of the fill in the swamp caused the work to progress slowly. The project was 78% complete, with four pads remaining to be bermed and matting placed when the Battalion departed.

f. Emergency repair of runway at Vung Tau Airfield: Consisted of repairing the existing double bituminous surface treatment runway as failures occurred. Some 2,000 SF of runway were patched at various times. One third of the runway was given a sand-asphalt seal coat in early Sep.

g. Miscellaneous Projects: Numerous other projects received some effort during the construction period. These included construction of AFRT facilities, rehabilitation of Eiffel trusses, completion of contractor (RMK-BRJ) projects, aircraft parking areas, revetting all Army aircraft, installation of water well pumps, MER for incoming units, construction of port facilities and repair and modification of the barge fleet.

9. Construction operations in the Delta increased in tempo for the Battalion toward the end of the period as more effort was made available at Dong Tam and Can Tho. A narrative description of the projects follows:

a. Dong Tam:

(1) 7500 Man Cantonment: Consisting of billets, messhalls, administration buildings, and community facilities for the 9th Infantry Division. Heavy rains in August virtually halted all vertical construction as maximum emphasis was placed on drainage structures and stabilization of roads. With the arrival of better weather and Co C in September, vertical construction was again begun in earnest. Approximately 135,000 SF of hutments and mess facilities were completed, as well as many administrative and community facilities. Included in the latter were a swimming pool complete with bathhouse, post office, NCO Club, and theater/chapel. As the month of October closed, the hydraulic filling of Dong Tam was virtually complete and the construction crews were able to proceed (finally ahead of the occupying troops. Construction on a block basis, rather than in many scattered locations around the post, began with the attendant efficiency inherent in centralized operations.

(2) Port Facilities: These consist of an articulated LST ramp, three LCU ramps, a barge finger pier with four discharge points, and miscellaneous sheds and administrative buildings. In late August a platoon of the 41st Engr Co (Port Construction) arrived and began driving sheet piling for the LCU ramps. The LCU ramp is now in use and work progresses on the remainder of the project.

(3) Personnel Air Cushion Vehicle (PACV) Site: The work consists of opening an 1100' x 75' ramp from the river back to a clear area with a 300' x 400' hardstand and various maintenance buildings. Construction started in early October on the hardstand, ramp, and maintenance buildings. Two prefabricated maintenance buildings were erected, the entire hardstand area made ready for matting, and work progresses on the ramp. Ramp construction was slowed due to the large amount of clay pumped into the site. With the onset of dry weather this condition should prove less of a hinderance.

(4) Ammunition Storage Area: Consists of 14 pads with road network and clearing fields of fire. Work progressed slowly due to the wet weather. In October the hydraulic fill began drying out sufficiently to begin tractor-scraper haul operations into the area. Some 3300 CY of fill were hauled; one pad was completed.

(5) Additional projects worked on included a kennel for a Scout Dog Platoon, sewage facilities for the 60 Bed Surgical Hospital, Minimum Essential Requirements (MABOC tents, latrines and showers) for incoming units, and a combat support mission consisting of hauling fill to reopen National Highway QL-4.

b. Can Tho:

(1) 1359 Man Cantonment: Consists of constructing a temporary standard cantonment with central water and sewage, air conditioned avionics buildings, motor pool repair sheds, and miscellaneous administrative and supply buildings. To date, eight of twenty-six billets have been completed and six of twelve latrines started.

(2) Completion of Contract Projects: Consists of completing FMK/BRJ contracts involving aviation support and communications buildings. During the period a secondary 400KW power plant was installed. The Dial Central building was completed and put into operation. Work continued on the communications building and aircraft hangers.

(3) Minimum Essential Requirements: The equipment and maintenance Co (A Co), which had signed over all its quarry equipment to the 36th Engr Bn in Vung Tau, began construction of twenty-five helicopter pads in a swamp adjoining the runway. The quarry and equipment platoons demonstrated their versatility by taking on this high priority project and working on a 24 hour day basis. Over 75% of the earthwork and revetment construction has been completed in a twelve day period.

10. Logistics. The primary logistical problem encountered during the time period was that of transportation. Because of the short time allocated to procure transportation for the unit movement, sufficient transportation was not available for both equipment and normal Cl IV shipments. When enough transportation was finally provided, shipments - both air and water - of construction materials and other Class II and IV supplies, of a lower priority, had all but stopped. This slowed construction at the Unit's destination site and resulted in a backlog of material at the embarkation points. Material requisitioned on an urgent priority had to be left in storage or awaiting shipment for periods up to 60 days. At the present time transportation between the segments of the battalion is difficult to arrange and movement of material and equipment is difficult and time consuming.

11. Maintenance. During the unit move, considerable maintenance effort was lost due to non-availability of parts and transit time of the equipment itself. Several items were deadlined for up to five days when parts were on hand but not available because they were packed. The problem was anticipated and was partially overcome by stocking a few critical parts on the first vehicles to be shipped in each Company. Evacuation of vehicles and delivery of parts has also become a significant problem as the battalion moves further and further from the depots.

Section 2, Part I, Observations (Lessons Learned).

1. Personnel:

a. ITEM: Separation of Companies from the Battalion Headquarters for long periods of time causes increased difficulty in handling routine personnel actions.

(1) DISCUSSION: The mission often requires Companies to be separated from the unit personnel section at Battalion Headquarters. Actions which would normally be routine take three to four times longer. Problems bearing significantly on morale, such as pay discrepancies and personal problems which require guidance through administrative channels, can become unduly worrisome to the troops.

(2) OBSERVATION: A continuous endeavor to send a team from the unit personnel section to all outlying units at least twice a month will help eliminate hardship and morale problems. It also saves the man hours lost by men having to travel to and from Battalion Headquarters.

b. ITEM: Last minute assignments and hold baggage orders.

(1) DISCUSSION: When assignment and hold baggage orders are issued within a few days of a soldier's DEROS, they present unsurmountable personal problems to the soldier. The last thirty days in-country are usually the busiest and most challenging as far as personal affairs are concerned. Without knowledge of his stateside assignment and a means to ship his belongings at the earliest possible date, a soldier cannot make any advance plans. His family affairs become disorganized, and many times hardships ensue.

(2) OBSERVATION: A soldier deserves a proper reward for a year of separation and hard work. Continued command emphasis is required to see that he obtains the necessary orders for returning his hold baggage to CONUS on a timely basis and relocating himself and family as conveniently as possible.

c. ITEM: Infusion as a means of solving the rotational hump problem.

(1) DISCUSSION: It should be recognized that infusion as a solution to the hump problem has certain inherent problems. At least two weeks of a man's effectiveness is lost during the transfer for clearing of the unit, awaiting transportation and orientation by the gaining unit. The control of the infusion at Group level or even Battalion level generally ignores the fact that the loss of even one person at Company level creates a hump problem. Example, the loss of a maintenance Warrant and the maintenance Sergeant of one Company can cause unsurmountable problems to the Company Commander and reduces the efficiency of the Company for a period far longer than the two week period mentioned above.

(2) OBSERVATION: Once the infusion program is implemented, transportation must be immediately available. The requirements at Company and Section level should be considered and actual movement of personnel should be scheduled over as long a period of time as is practical to allow orientation of incoming key personnel.

2. Operations:

a. ITEM: Acoustical Tile.

(1) DISCUSSION: High humidity and heat make adhesives for acoustical tile ineffective.

(2) OBSERVATION: Using 2d nails at the corners of each tile is an effective substitute for adhesive.

b. ITEM: Reference Manuals.

(1) DISCUSSION: The majority of technical questions developed within this unit have been solved by referring to FM 5-34.

(2) OBSERVATION: Continuing emphasis should be given to acquainting personnel, especially junior NCO's, with the contents of this indispensable manual.

c. ITEM: Vapor-Block Insulation.

(1) DISCUSSION: Aluminum-backing insulation could not be made available for the insulation of the air conditioned duct system of the Dial Central and Commo buildings at Can Tho Airfield.

(2) OBSERVATION: Polyethelene-wrapped rock wool proved adequate for the duct system.

d. ITEM: Adobe Bricks.

(1) DISCUSSION: This unit constructed 50 "Adobe" type bricks (18" x 12" x 4") using various blends of clay, sand, silt and cement. Mixing was done by a 6-S mixer. The experiment was conducted at the height of the rainy season in the Delta. It was found that by using combinations of sand, silt, and clay it was possible to make bricks of a very low breaking strength. However, exposure to the rain resulted in deterioration. Adding cement to the mix resulted in a brick with better breaking strength but even these bricks tended to suffer from the effects of weathering. No protective sealant was applied to the surface of the bricks. All the bricks were heavy, weighing 40 - 50 lbs each, and cumbersome to handle.

(2) OBSERVATION: Although possible in the southwestern United States, it is not practical to make pure adobe bricks in the southwestern Delta of Vietnam. It would appear to be more profitable to make the usual cement blocks rather than heavy cumbersome "Adobe" cement bricks if a requirement for this material exists.

e. ITEM: Self-Help Construction.

(1) DISCUSSION: Self-help projects were found to consume many more man hours than they should have. This was because either an insufficient number of self-help personnel were provided, different self-help was provided from day to day, or inadequate supervision for the self-help was provided.

(2) OBSERVATION: The constructing unit should meet with the self-help unit prior to construction and ask that the following conditions be met as a minimum.

(a) Provide a pre-arranged number of self-help workers every day along with good, enthusiastic leadership.

(b) Insure that the workers are the same people from day to day.

f. ITEM: Sophisticated Construction Projects:

(1) DISCUSSION: On projects that require special materials (i.e., floor and acoustical tile, air conditioning with duct work, insulation and complicated electrical circuits) many man hours have been wasted while trying to work around the phase of the project being held up pending receipt of materials.

(2) OBSERVATION: On projects of this type it is of utmost importance to delay the start of construction until all materials are on hand.

g. ITEM: Contraction of Wet Laterite During Rainy Season:

(1) DISCUSSION: When using laterite as a substance for the finish grade of an airfield parking apron it was difficult to contract the wet laterite or to salvage what you had accomplished when a heavy rain came.

(2) OBSERVATION: It was found that by approaching the final grade in 3" lifts and compacting with a sheep's foot roller, one could make fairly fast progress. Almost everything placed could be saved with a pass of a grader and a 13 wheeled roller when the rains came. This would seal the surface so that the rains drained quickly with little adverse effect.

h. ITEM: Working hydraulic fill containing a high percentage of clay is difficult in the rainy season.

(1) DISCUSSION: When attempting to work a freshly filled area and bring it to grade it was found that the area would not support earthmoving equipment because large amounts of clay below the existing grade prevented water from draining away.

(2) OBSERVATION: It was found by putting dozers on the best parts of the area and cutting deep ditches, the water would drain from the clay areas; when drained sufficiently the clay could be removed and replaced with good fill.

i. ITEM: Aircraft Revetments (59'L x 12'H) using walls of M8A1 matting filled with sand.

(1) DISCUSSION: Problems encountered in construction of revetments were cutting the tie wire and bolt holes, setting panels and utilization of self-help labor.

(2) OBSERVATION: An oxygen-acetylene cutting torch is much faster and more efficient than electric drills in cutting holes. Bolting only the end posts to the panel prior to erection made it much easier to align the panel than when all posts were on. An experienced crane operator should be available due to hazardous working conditions during erection. It was found that the utilization of local nationals was more efficient than the self-help provided by using units. Tie wire should be replaced with $\frac{1}{4}$ " or $\frac{3}{8}$ " steel cable to strengthen the revetment.

j. ITEM: Curbing Forms.

(1) DISCUSSION: In placing great quantities of concrete curbing it was found that forms made of lumber and/or plywood were uneconomical and would not last more than 4-5 placements.

(2) OBSERVATION: 450 linear feet of discarded heating vents from CH-47 (Chinook) aircraft were acquired. These vents with a 4" x 4" whaler were fabricated into 15' lengths. Holes drilled through 4" x 4"s allowed drift bolts to be driven into the ground, thus securing them. The rounded top edge of the form eliminated the need for an edging tool.

k. ITEM: The movement of an entire Company from one location to another in-country normally poses many transportation problems.

(1) DISCUSSION: This unit moved from Vung Tau to Can Tho by LST. Several problems were encountered loading LST's due to different loading ramp height and weight limitations on different ships.

(2) OBSERVATION: Because different ships have different height and weight limitations it is recommended that coordination be made with port authorities to determine the maximum height and weight figures for the smallest possible LST. By packing to these requirements, a commander can be certain that all equipment can be loaded without reacking, regardless of which size ship is available.

3. Training and Organization:

a. ITEM: Cross-training of personnel.

(1) DISCUSSION: By training personnel to work in two or three MOS categories, this unit has been able to produce construction effort of one particular type (electrical, plumbing, masonry, etc) in increased quantity during given periods of time.

(2) OBSERVATION: This capability has enabled this unit to produce construction quantity whenever required, though at the cost of quality. Employing this ability demands the utmost skill in supervision. It should be employed only under exceptional conditions.

4. Maintenance:

a. ITEM: Battalion Maintenance.

(1) DISCUSSION: The status report for this unit maintenance platoon for the period 1 August through 31 October 1967 is as follows:

(a) Third echelon work orders:

Total Received:	209
Total Completed:	174
Total Outstanding:	35

(b) Repair Parts:

Total Submitted:	1878
Total Completed:	620
Total Cancelled:	60
Total Outstanding	1198

(c) Red Ball Express Requisitions:

Total Submitted:	493
Total Completed:	70
Total Cancelled:	11
Total Outstanding:	412

(2) OBSERVATION: The total number of work orders received by this unit decreased from the first Quarter in-country. Additionally, the percentage of work orders completed this Quarter was up 66% to 83%. This is due primarily to the experience gained and a more established operation. The total normal and Red Ball requisitions submitted doubled over the previous Quarter. The total normal requisitions filled showed a marked increase, with approximately 33% of requisitions submitted this quarter being completed. The Red Ball requisitioning system showed no improvement, with only 14% of Red Ball requisitions submitted this month being filled.

b. ITEM: Oil pans on D7E Tractors assigned to quarry operation are often cracked or broken.

(1) DISCUSSION: Rough terrain and large rocks in quarries dented "belly" pans and cracked or broke the oil pans.

(2) OBSERVATION: Cracked oil pans can often be repaired with fiberglass while pans that are completely broken normally must be replaced. Units with 3d echelon maintenance capability should review, record and stock at least one oil pan for every four tractors expected to work in quarries.

c. ITEM: Use of Maintenance Couriers.

(1) DISCUSSION: This Battalion had equipment operating at two locations while the maintenance shop was located with the majority of equipment at still a third location. When maintenance problems with equipment arose, motor pool personnel in outlying areas would call the Third Shop and explain the problem and specify repair parts needed. Invariably a misunderstanding would arise, and the wrong parts would be shipped. Realizing a continuing problem, this unit instituted a courier system of maintenance personnel instead of relying on telephonic communications.

(2) OBSERVATION: The use of maintenance section couriers reduced equipment downtime for repair by as much as 50%.

5. Logistics:

a. ITEM: Fork Lift.

(1) DISCUSSION: Lack of TO&E fork lift has severely hampered this unit's ability to handle construction materials quickly and efficiently and has required the expending of several hundred man hours of physical labor by highly skilled construction workers.

(2) OBSERVATION: Each construction company should have a TO&E fork lift.

b. ITEM: Construction supplies in the Delta.

(1) DISCUSSION: The problem of obtaining construction supplies at the Battalion level on a timely basis in the Delta is all but unsolvable for many critical items. Plumbing and electrical items for uncompleted contractor projects and other than standard tropical construction are virtually impossible to obtain. Many critical shortage lists have been developed with very, very little to show for the effort expended.

(2) OBSERVATION: Continuous command emphasis is required to overcome the bottlenecks in the supply system.

c. ITEM: Requisitioning of materials.

(1) DISCUSSION: Filling of materials requisitions placed by this unit with Class IV Depot, Vung Tau, has been erratic at best. No information has been obtained as yet on many items ordered over 100 days ago. Requisitions that have been processed are still awaiting transportation to Can Tho weeks after their RDD. Materials shortages have affected the efficiency of this unit, requiring the installation of substituted or temporary items which must be replaced whenever the specified items become available, thus increasing man hours required for the project.

(2) OBSERVATION: The establishment of a construction materials section under the S-4, to consist of at least a senior First Lieutenant and two competent enlisted assistants, which would coordinate the requisitioning of and implement the delivery of construction materials, should alleviate the burdens placed on the construction companies, especially if this section is given enough independence and authority to deal at all levels of the supply chain.

Section 2, Part II, Recommendations.

1. Logistical Support in the Delta. This battalion has maintained construction units in the Delta for a period of six months. During most of this time supply of CL IV materials has been inadequate. On numerous occasions supplies have been requisitioned and staged for shipment at depot only to be delayed for long periods awaiting surface transportation to become available. Costly cargo space on aircraft has been used to ship bulk CL IV material such as cement and lumber to avoid stoppage of work.

Recommendation: That additional emphasis be placed on supply of CL IV materials to the Delta. Consideration should be given to faster transportation response and/or increased local logistical support capability.

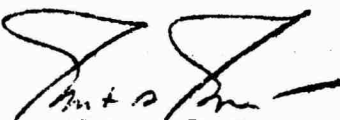
2. Organic Airlift Capability. Movement of personnel and critical equipment repair parts between various unit locations in the Delta is time consuming and wasteful of manpower, particularly officers and key NCO's. Surface transportation has proven to be completely inadequate, and available air transport support unresponsive to the needs.

Recommendation: That an organic airlift capability be made available to the Battalion and/or Group.

3. Special Equipment Pool. Special items of engineer equipment, which are not TO&E, are frequently needed or useful for efficient conduct of construction projects. Mechanical finishers have been obtained from RMK assets and proved invaluable for speedy completion of many "self-help" concrete jobs. D-4 tractors have been borrowed from ARVN to work on rice paddies. Additional cranes have been obtained to aid in building roads on rice paddies.

Recommendation: Obtaining special items of equipment to date has depended upon local availability and cooperation of all interested parties. It would appear that a better system would be to establish a special equipment pool in the theatre (complete with repair parts) which would be responsive to the peculiar needs of the user.

1 Incl
Adobe Brick Report


ROBERT A. POTTS
LTC, CE
Commanding

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SUBJECT: Operational Report-Lessons Learned (RCS CSFOR-65) for
Quarterly Period Ending 31 October 1967

Headquarters 34th Engineer Group (Const), APO San Francisco 96291,
21 November 1967

TO: Commanding General, 20th Engineer Brigade, ATTN: AVBI-OPN,
APO 96491

This headquarters concurs with the 69th Engineer Battalion's
ORLL Report subject to the following comments:

- a. Reference Section 1, paragraph 10, page 6: In some cases delays were realized because of error on the unit's part in not submitting Transportation Control Movement Documents (TCMD) with sufficient lead time. The inadequate port facilities at Can Tho was a major contributing factor in delivery of construction supplies. This headquarters has designed a complete port for Can Tho and is awaiting a directive for construction.
- b. Reference Section 2, Part I, paragraph 2d, page 8: Non concur: This headquarters was not satisfied with the completeness of the Adobe Brick Test Program and has directed further investigations before final recommendations are made.
- c. Reference Section 2, Part I, paragraph 5a, page 12: Each construction battalion is authorized two, 10,000 lb, forklifts. The 69th Bn has just received one and continuing efforts are being made to provide the additional forklift.
- d. Reference Section 2, Part II, paragraph 3, page 13: Non concur. Assets available within the Group are sufficient to do the job in most cases.

FOR THE COMMANDER:

1 Incl
no

W C TOMSEN
Major, CE
Adjutant

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AVBI-OPN (4 Nov 67)

2nd Ind

SUBJECT: Operational Report - Lessons Learned (RCS-OSFOM-65) for
quarterly Period Ending 31 October 1967

DA, Headquarters, 20th Engineer Brigade, APO 96491, 27 Nov 67

TO: Commanding General, USABGV(P), Attn: AVCC-P&O, APO 96491

1. The subject report submitted by the 69th Engineer Battalion has been reviewed by this Headquarters and is considered comprehensive and of value for documentation and review of the reporting units activities and experiences.

2. This Headquarters concurs with the submitted report, with the following comments:

SECTION 2, PART I

Ref para 2a: Adobe Bricks

This experiment was conducted at the request of US Army Engineer Command, Vietnam (Provisional). It was part of a series of experiments to determine which locally available materials can be used for construction in the Delta region and under what conditions shall they be used. Although many failures are expected, savings to be made by using locally available materials over imported ones warrant more experimentation. The adobe bricks were intended for use as revetments for protection of personnel in billets and offices instead of using sandbagged walls.

Ref para 2e: Self Help Construction

This is Military Construction, Army funded work which is performed by unskilled personnel with engineer troops in an advisory and technical assistance role. In addition to materials, some engineer troop labor is provided. Each engineer unit must develop its own techniques to handle self-help construction so that it meets standards of sound engineering practice.

Ref para 3g: Compaction of Wet Laterite

Many construction supervisors believe that sheepfoot rollers are useless in compacting laterite. Others believe differently. However, two points are highlighted by both sides, moisture control is essential and constructing unit must be ready to crown and seal-roll the lateritic surface at the approach of rain.

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AVBI-OPN (9 Nov 67)

2nd Ind

27 November 1967

SUBJECT: Operations Report - Lessons Learned (MCS-CSFOR-65) for
Quarterly Period Ending 31 October 1967

SECTION 2, PART II

Ref para 1: Log Support in the Delta

Concur. This headquarters has recommended that 1st Logistical Command or other appropriate agency be made responsible for a logistical system which can provide the increased quantities of materials, delivered to the user at the desired point in the delta.

Ref para 2: Organic Airlift Capability

Concur. General Order 246, HQ's, USARV, dated 13 Nov 67 organized the 34th Engineer Group at full strength under TOE 5-112E. This TOE provides for an organic airlift capability at Group level.

Ref para 3: Special Equipment Pool

Although desirable, numerous problem areas will arise if an equipment pool were to be established. Among these would be the determination of the type and quantity of equipment needed and the establishment of an organization to control and maintain the equipment.

FOR THE ADJUTANT:



CECIL D. CLARK
Major, CE
Adjutant

1 Incl
as

COPY FORWARDED:
39th Engineer Battalion

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AVCC-P&O (4 Nov 67)

3rd Ind

SUBJECT: Operational Report - Lessons Learned (RCS CSFOR-65) for
Quarterly Period Ending 31 October 1967

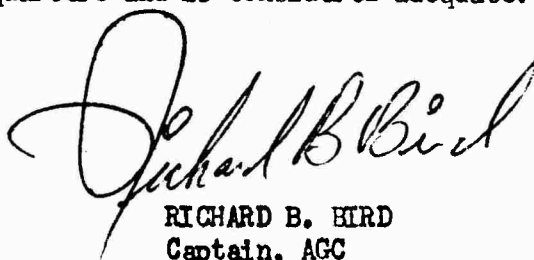
HEADQUARTERS, UNITED STATES ARMY ENGINEER COMMAND
VIETNAM (PROV), APO 96491

21 DEC 1967

TO: Commanding General, United States Army Vietnam, ATTN: AVHGC-DH,
APO 96375

The subject report, submitted by the 69th Engineer Battalion, has
been reviewed by this headquarters and is considered adequate.

FOR THE COMMANDER:



RICHARD B. BIRD
Captain, AGC
Assistant Adjutant General

1 Incl
nc

Cys Furn:

CG, 20th Engr Bde
CO, 34th Engr Gp
CO, 69th Engr Bn

THIS MARKING IS CANCELLED
WHEN SEPARATED FROM THE
MATERIAL BEARING A PROTECTIVE
MARKING

AVHGC-DST (4 Nov 67)

4th Ind

SUBJECT: Operational Report-Lessons Learned (RCS CSFOR-65) for Quarterly
Period Ending 31 October 1967.

HEADQUARTERS, UNITED STATES ARMY VIETNAM, APO San Francisco 96375 19 JAN 1968

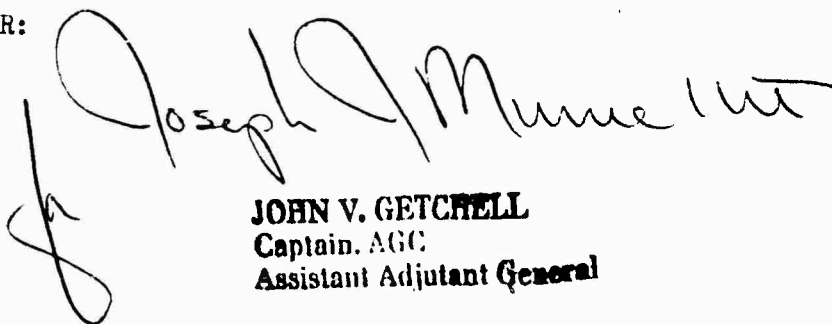
TO: Commander in Chief, United States Army, Pacific, ATTN: GPOP-DT,
APO 96558

1. This headquarters has reviewed the Operational Report-Lessons Learned for the period ending 31 October 1967 from Headquarters, 69th Engineer Battalion (Construction) (DZKA) as indorsed.

2. Pertinent comment follows: Reference item concerning logistical support in the Delta, page 13, paragraph 1: Concur. The inadequacy of transportation facilities in the Delta area and the impact of seasonal environmental factors on transportation operations in the Delta are acknowledged. The Delta Transportation Plan recognized the need for additional facilities and increased facilities will be phased in to meet support requirements.

3. A copy of this indorsement will be furnished to the reporting unit through channels.

FOR THE COMMANDER:



JOHN V. GETCHELL
Captain, AGC
Assistant Adjutant General

1 Incl
nc

cy furn:

HQ, USAFECV (P)

HQ, 69th Engr Bn (Const)

GPOF-DT(4 Nov 67)

5th Ind

SUBJECT: Operational Report for the Quarterly Period Ending 31 October
1967 from HQ, 69th Engr Bn (VIC: WDZKAA) (RCS CSFOR-65)

HQ, US ARMY, PACIFIC, APO San Francisco 96558 30 JAN 1968

TO: Assistant Chief of Staff for Force Development, Department of the
Army, Washington, D. C. 20310

This headquarters has evaluated subject report and forwarding
indorsements and concurs in the report as indorsed.

FOR THE COMMANDER IN CHIEF:

1 Incl
mc

HEAVRIN SNYDER
CIT, AGC
Asst AG

DEPARTMENT OF THE ARMY
HEADQUARTERS, 69TH ENGINEER BATTALION (CONSTRUCTION)
APO San Francisco 96215
"BUILDERS FOR PEACE"

SUBJECT: Construction of Adobe Bricks

9 November 1967

1. This battalion was tasked to study the feasibility of adobe brick manufacture in the Delta of South Vietnam. Subject construction was done during early September 1967 at Can Tho Army Airfield, Can Tho, RVN.

2. A total of fifty 18"x12"x4" bricks were manufactured using various sand, silt, clay and cement mixtures. The sand was a contract fill sand, fine with some silt. The silt and clay soil was the fill (surface) material commonly found in the Delta, i.e., either siltv clay or highly compressible clay found near the surface. No attempt was made to control the fill material to any great extent, instead, ~~that which was readily available~~ was used. All materials were mixed in a 6-S mixer, placed into slip forms, and sun dried. Of the fifty bricks removed from the slip forms, only thirty-seven had sufficient cohesive strength to stand on end for adequate drying to take place.

3. The bricks were sun dried for 48 hours then tested by rapping each with an ordinary carpenter's hammer. A six inch blow appeared to have little effect. The initial impression seemed to be that the bricks were durable and curing into hard cement-type blocks. As time passed and the bricks became exposed to the rains it was observed that they readily absorbed water. Edges began eroding. The hammer test on a brick two weeks after alternate drying and wetting easily chipped the brick or caused complete fracture. After two months of weathering nine bricks remain of a sufficient size to be useful.

4. The effectiveness of the various mixes is as follows:

a. 90% fill - 10% cement	50% usable
b. 60% fill - 40% sand	40% usable
c. 60% fill - 20% sand - 20% cement	25% usable
d. 50% fill - 50% sand	20% usable
e. 40% fill - 60% sand	0% usable

5. Manufacture of the bricks was cumbersome and time consuming. They are heavy, 40-50 lbs apiece, and require drying and setting time before they can be handled. Handling causes extensive damage and it can be expected that perhaps as many as 50% of the bricks would be damaged if they were to be transported from one point to another.

INCL 1

9 November 1967

SUBJECT: Construction of Adobe Bricks

6. In conclusion, it is observed that construction of pure adobe brick in the Delta is of little value. Although the strength of the brick is low, this is to be expected. The biggest drawback lies in the brick's inability to withstand weathering. The sealants for adobe as used in protecting some of the adobe National Monuments in the Southwestern United States are expensive - about \$18 per gallon. Without some protective coat the outside walls will weather at an unacceptable rate. In addition to weathering, the blocks are heavy and cumbersome in transporting and handling. It is recommended that if bricks or blocks are required, they be made from sand/cement mixtures so that a more easily controlled and durable product can be made.

INCL 1