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DEPARTMENT OF THE ARMY
 OFFICE OF THE ADJUTANT GENERAL
 WASHINGTON, D.C. 20310

IN REPLY REFER TO

AGAM-P (M) (23 Feb 67) FOR OT P

3 March 1967

SUBJECT: Operational Report - Lessons Learned, HQ, 35th Engineer Group
 (Construction)

TO: SEE DISTRIBUTION

1. Forwarded as inclosure is Operational Report - Lessons Learned Headquarters, 35th Engineer Group (Construction) for quarterly period ending 31 October 1966. Information contained in this report should be reviewed and evaluated by CDC in accordance with paragraph 6f of AR 1-19 and by CONARC in accordance with paragraph 6c and d of AR 1-19. Evaluations and corrective actions should be reported to ACSFOR OT within 90 days of receipt of covering letter.

2. Information contained in this report is provided to the Commandants of the Service Schools to insure appropriate benefits in the future from lessons learned during current operations, and may be adapted for use in developing training material.

BY ORDER OF THE SECRETARY OF THE ARMY:

C. A. Stanfield
 C. A. STANFIELD
 Colonel, AGC
 Acting The Adjutant General

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 a/s

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HEADQUARTERS
35TH ENGINEER GROUP (CONSTRUCTION)
APO 96312

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SUBJECT: Operational Report - Lessons Learned (RCS CSFOR-65), for Quarterly Period Ending 31 October 1966

TO: Commanding General
18th Engineer Brigade
APO 96307

TO: Commanding General
United States Army, Vietnam
ATTN: AVC-DH
APO 96307

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

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

Section 1. Significant Organization or Unit Activities

1. During the period from 1 August 1966 to 31 October 1966, the 35th Engineer Group (Construction) was responsible for all non-divisional troop construction in the following area: that portion of the Republic of Vietnam bounded by the South China Sea, and the line formed by the western boundary of the Binh Thuan Province, western and northern boundary of Lam Dong Province, the northern boundary of Tuyen Duc Province, the northeastern boundary of Ninh Thuan Province to 12 degrees North Latitude and thence eastward to the South China Sea.

2. The main construction effort continued to be concentrated at Cam Ranh Bay for the development of the Cam Ranh Bay Logistics Area, Depot, and Port Facilities. Additional effort was employed at Phan Rang, RVN in the construction of an expeditionary airfield, a 4700 Man Cantonment and Port Facilities. Construction forces were also employed at Nha Trang, Bao Loc, Phan Thiet, Ambre Brove (Preline Mountain), Long Bian Mountain, and Dalat.

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3. During the period from 1 August 1966 to 4 October 1966, the following units were attached to and under operational control of the 35th Engineer Group (Construction):

<u>UNIT</u>	<u>LOCATION</u>
62d Engineer Battalion (Construction)	Phan Rang
87th Engineer Battalion (Construction)	Cam Ranh Bay
864th Engineer Battalion (Construction)	Cam Ranh Bay
497th Engineer Company (Port Construction)	Cam Ranh Bay
Support Platoon of 553rd Engineer Company (Float Bridge)	Cam Ranh Bay

The 102d Engineer Company (Construction Support) and the 171st Engineer Detachment (Well Drilling) were attached to and under operational control of the 864th Engineer Battalion (Construction).

4. On 11 September 1966, the 39th Engineer Detachment (HO) was attached for all purposes to the 864th Engineer Battalion (Construction). On 4 October 1966, the support platoon of the 553rd Engineer Company (Float Bridge) was attached for all purposes to the 864th Engineer Battalion (Construction).

5. This report will include only activities of the Headquarters, 35th Engineer Group (Construction) and the 497th Engineer Company (PC), as the assigned battalions prepare individual reports.

6. The current strength of the 35th Engineer Group (Construction) is 3,184 present for duty out of an authorized 3,326.

7. The SI Section processed, hired and controlled an average of 700 indigenous laborers throughout the 35th Engineer Group's area of responsibility.

8. During this reporting period the main construction emphasis was placed on road and hardstand construction. 5.2 miles of road were stabilized and paved with an additional 3.5 miles of road stabilized. 122,000 square yards of hardstand were constructed. Construction effort was concentrated in these two areas to allow the Logistical units located at Cam Ranh Bay to remain fully operational during the Northeast Monsoon Season.

9. On 5 September 1966, the 35th Engineer Group (Construction) was allotted \$289,623.00 for equipment rental from the civilian contractor RMK-BRJ. This equipment greatly increased the available construction effort of the Group and was instrumental in the increase in the amount of hardstand constructed. The following is a list of the equipment rented:

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- a. Tractor, D-8 - 6
- b. Scraper, TS-24 - 2
- c. Roller, 30 Ton Self-Propelled - 2
- d. Crane, 40 Ton - 1
- e. Trucks, Transit Mix - 2

The roller, 30 Ton Self-Propelled rented from the contractor proved very efficient for use in sand-cement stabilization operations. It is strongly recommended that consideration be given to adding one (1) each of this type roller to the TO&E of the Construction Battalion's Equipment and Maintenance Company.

10. During this reporting period, liaison and coordination with the civilian contractors Vinneill Corporation, Alaska Barge and Transport Corporation, RMK-BRJ, etc has increased considerably. Contracts awarded stipulate in some cases, that all supplies and materials will be delivered on-site to civilian contractors. At times, this has proved difficult to accomplish taking into consideration that men and equipment are committed to assigned missions within their own units. There is a definite shortage of material handling equipment within Cam Ranh Bay Depot and engineer units. This problem can be alleviated in part by the acquisition of attachments to the Loader, Scoop thus enabling it to function as a forklift. These kits are now on request. Also battalions have requested Rough Terrain Forklift for this purpose. Except for the above, normal S-4 supply activities were accomplished during the reporting period.

11. 497th Engineer Company (PC):

a. The projects listed below do not include those accomplished by the 1st Construction Platoon deployed at Qui Nhon under operational and administrative control of the 937th Engineer Group. This platoon was released from Qui Nhon this quarter except for eight (8) general construction personnel and three (3) divers. The platoon was alerted for the move about 20 September and was loaded aboard LST 435, 13 October 1966. The LST departed 14 October and arrived in Cam Ranh Bay 15 October 1966. Off-loading was completed 20 October 1966. From 20 October to the end of this period, the platoon's major activity has been in equipment review, tool storage, billet construction, and preparation for sheetpile construction.

b. Project, Cam Ranh Bay, Vung Ro Bay:

(1) Design and Construct Sheetpile Bulkhead (Bde 65-42DC-35):
Construction of the 550 Linear Feet (LF) of sheetpile bulkhead between

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USOM Pier and DeLong Pier #2 was initiated at the end of last quarter. This quarter, 150 linear feet (LF) of sheetpile was set and driven. The sheetpile wall from DeLong Pier #2 to the POL Jetty was started and 50 linear feet (LF) of pile was set and driven north of the DeLong Pier #2 cofferdam. This short distance was completed to minimize erosion to the causeway by wave action. Time was lost on this project this period due to a freighter running through the bulkhead, destroying 50 feet of previously driven pile. The wreckage was cleared on 29 October 1966 and driving of sheetpile was resumed.

(2) Design and Construct Sheetpile Bulkhead (Bde 66-182DC-35):
This unit received the above directive during this quarter. It was divided into three phases. Phase I, 200 feet on the centerline of DeLong Pier #3. Phase II is the sector from DeLong Pier #1 to DeLong Pier #3, and Phase III is from DeLong Pier #3 to the Cam Ranh Village. Phase I was started and completed this quarter. The completion date was 18 October. The second phase is to be constructed by the platoon just returned from Qui Nhon, and their barges are presently being prepared to move into location.

(3) Floating Pier and Submarine Pipeline at Vung Ro Bay
(Gp 35-59-66):

(a) Three separate Navy Pontoon Barge sections were constructed (3 x 6, 3 x 15, 6 x 15) to form a floating pier. The construction was completed in this quarter and a ramp designed and prefabricated. This entire assembly was towed to Vung Ro Bay on 17 August and installed the following day. Problems developed in the anchorage system which consisted of spuds driven in the ground. The surf was too heavy for the design, and the anchorage had to be modified in the following week. At last inspection, the pier was performing the mission although minor damage and wear were evident. Steps are being taken to assume maintenance of the facility.

(b) The pipeline design was finished, materials collected, and the component parts shipped to Vung Ro Bay. The pipeline was installed along with the two-point mooring system for a T-1 tanker by 25 August. This pipeline consists of 960 feet of four (4) inch assault line and eight (8) inch flexible hose in excess of 150 feet. Leakage occurred, but the problem was solved by tightening the connections in the length of flexible hose.

(4) Barge Off-Loading Facility at Phan Rang:

(a) Project Nrs: Bde 66-161DC-35: During this quarter a two alternative permanent facility designs and recommendations were submitted.

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(b) Project Nr: Bde 66-229DC-35: Since both alternatives required a large effort, a solution using Navy Cube Barge sets was investigated and favored. The above Brigade directive was received to initiate construction of two (2) 6 x 15 sections, a 3 x 15 section, and a ramp. Work on the pontoon sections has been started but currently is stopped due to material shortages. The critical item is P5F and P5M articulating cubes. Supply action has been initiated and the needed items are enroute from Qui Nhon.

(c) A question was raised on the depth of the Dam Nai Channel. A sounding team from this unit determined that the channel was not deep enough to allow half-tide usage by craft of 12' draft. Presently a dredging requirement is pending, and the completion date of 24 November 1966 is suspended until dredging can be scheduled.

(d) Sunken Barge Facility: This unit was assigned the mission to locate and design a sunken barge facility on the open beach at Phan Rang. Two (2) alternative designs were submitted subsequent to a reconnaissance trip to Phan Rang. Dredging requirements in The Dam Nai Channel changed the scope of work for the sunken barge facility. At the close of this quarter, a new design is pending instruction from higher headquarters.

(5) Repair and Maintenance of Port Facilities (Bde 66-200C-35):

(a) Barge Off-Loading Facility - South Beach CRB: This facility has been in constant hard use since its completion and shows significant wear and tear. To protect the facility from the use and abuse being received, several dolphins were planned along the face and sides. Work started in the first week of September. This quarter, four (4) twelve (12) pile dolphins were driven. An additional three are pending on the western portion.

(b) Permanent LST Ramps - South Beach CRB: Construction on repair of the eastern LST ramp was started 27 September and completed 12 October 1966. Approximately 90% of the concrete portion of the ramp was replaced and the design slopes and dimensions slightly altered. The armor rock in the sheetpile crib around the ramp was picked up and repositioned.

(c) POL Jetty Dolphins: In the latter part of August the stern line mooring dolphin was snapped when a tanker left with its lines still tied. Immediately, a crew constructed a new nineteen (19) pile dolphin to replace the one destroyed. A few weeks later the facility was cleared of traffic and one twenty-seven (27) pile breasting dolphin was constructed on the north side of the jetty. Following that dolphin, an existing breasting dolphin to the south was strengthened

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by adding eighteen (18) additional timber piles on a new outer ring. This was completed 20 September 1966. An additional 27 pile dolphin is planned for the immediate front of the jetty but is in suspense due to continual traffic and presently the lack of available construction effort.

(6) LST Ramps at Ammo Pier (Bde 66-15DC-35): A directive to design and construct two (2) artificial LST ramps in the vicinity of the Ammo Pier was received 20 October 1966. Planning for soundings and design are in progress. The target completion date is 26 February 1967.

(7) Roll-On, Roll-Off Facility (Bde 66-25DC-35): A directive to construct this facility, already designed, north of DeLong Pier #1 was received 30 October 1966. Modifications to the design are to be investigated.

(8) Mooring Facilities for DeLong Pier #2 (35th Engineer Group Letter dated 19 September 1966): This unit was directed to design a mooring system for ships using DeLong Pier #2 which would allow mooring lines to run forward of the ship. A design was produced and submitted along with with a bill of materials to effect that design.

(9) Diving Support: From time to time the diving section is called upon for miscellaneous diving operations. They perform various ship maintenance missions at scattered intervals in support of the 1st Logistical Command. An obstacle removal mission is continuous. The divers supported the 864th Engineer Battalion (Construction) by inspecting a submarine pipeline in Nha Trang, and made minor repairs on the submarine pipeline at Phan Rang.

(10) Design and Construct 497th Engineer Company Cantonment Area (Bde 66-29C-35): The company area construction project is in the Standard IV phase. Corrugated metal roofing has replaced the tents previously used. Two new billets were constructed for the 1st Construction Platoon returning from Qui Nhon. A maintenance pad was poured to get vehicles under repair out of the sand, two tool rooms and a dispatch office were constructed, and a third tool room is presently underway. Company road stabilization was initiated and is a continuous project.

c. The company conducted 20 hours of training in the following subjects: Code of Conduct, Safety, In-Country Orientation, Geneva Convention, "Why We Are Here", Basic Port Construction Terminology, Skid Mounted Pile-driving and Savings Programs. In addition, the company added to its classroom training with a continuous On the Job Training (OJT) program.

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Section 2, Part I, Observations (Lessons Learned)

1. Operations

Item: Operational Support Mission

Discussion: During this reporting period, units of the 35th Engineer Group have been committed to three operational support missions. Problems encountered in these operational support mission were: (1) initial arrangements for the security force for movement to the site, (2) the length of time required to finalize the arrangements for the security force, (3) adequate support in Class I, Class II, and Class IV supplies upon arriving at the construction site. Movement of construction parties has been delayed for up to four (4) days because the unit furnishing the security force did not receive a directive through appropriate channels. Construction progress has been delayed due to the low priority given resupply of Class II and IV construction materials to the project site.

Observation: The Group was able to eliminate most of the problems in obtaining timely and adequate security forces for movement to the construction site by coordinating directly with the Headquarters directed to furnish security and down the chain of command to the unit furnishing the security. The supply of Class II and IV construction materials to the project site has been eliminated somewhat by the construction party taking along on the initial move the maximum amount of construction materials possible. Action has been taken to increase coordination among the combat organization, constructing organization and logistic support organization to reduce resupply problems.

Item: Testing of all locally available natural construction materials.

Discussion: The stabilization of road subbase courses has been a continuing problem on the Cam Ranh peninsula. Many combinations of cement with the various sands encountered here have been tested with similar results. The generally available sands are the yellow dune sand and the reddish, so-called "lateritic sand". During development of the area another "red sand" was encountered which differed in its mode of occurrence but upon casual observation looked generally like the "lateritic" sands. The "red sand" was tested in sand-cement mixtures even though it looked like other types already encountered. Test results showed that these mixtures developed compressive strengths over twice as high as previous mixtures, and have since been used as soil-cement base course materials.

Observation: Every possible source of construction materials should be investigated so that a useful material is not over looked.

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Item: Road way drainage construction and ditch lining.

Discussion: Considerable success has been derived from use of the sheet flow method of roadway drainage where roads are constructed on sand. The typical roadway cross-section was revised by eliminating the cut section ditch and merely increasing the crown slope across this area. The fill section foreslopes were revised by decreasing the maximum slope to approximately 6:1. The changes eliminate canalizing of water in cuts and slow the water down on fill slopes.

Observation: The above concept has greatly reduced road maintenance expenses where roads are constructed entirely upon clean poorly graded fine sand having no cohesion.

Item: Lining of ditches in sand areas.

Discussion: It has been necessary at Cam Ranh Bay to line ditches that have been constructed in the sand areas. The use of sandbag riprap has proven successful as well as economical. Also the use of the gunite method to line ditches has proven successful, but costly. On ditches of lower volume and lesser gradient, penepreme and cut-back asphalts have proven satisfactory. However, repair required by the least disturbance of the asphaltic film necessitates successive applications of penepreme or cut-back asphalt and renders this method expensive.

Observation: Sandbag riprap on larger ditches, and penepreme or asphalt on smaller ditches, have come to be the generally accepted methods of ditch stabilization at Cam Ranh Bay.

Item: Drainage Ditches

Discussion: The 35th Engineer Group is responsible for the maintenance of roads which are located and run through low areas having a high water table. The ditches along these roads are very difficult to keep open and cleaned out. The method being used at the present time is digging out the ditches with a 20 ton crane and clamshell.

Observation: Graders presently available within the 35th Group are not capable and cannot be used in keeping these ditches open during the present Monsoon Season. A towed grader could be used and would be an efficient method for keeping ditches open in this type area. It is recommended that towed graders be included in the TO&E's of construction support type units.

2. Logistics

Item: Class IV Supplies

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Discussion: Projects have been designed, based on requirements established by Cam Ranh Bay Depot and Support Command. Requisitions are then submitted to Depot for the required construction materials established by approved BOM lists. Difficulty is being encountered in cross referencing electrical and plumbing hardware items. There are materials which could be substituted which will do the job.

Observation: Due to inexperience of supply personnel in the Depot and engineer units, it would be beneficial to have a trained construction material expeditor to identify and make substitutions as required.

Item: Class IV Supplies

Discussion: Due to the increased construction projects assigned this headquarters, construction materials of all types, i.e., lumber, plumbing and electrical supplies are in short supply. At present, three million, five hundred thousand (3,500,000) board feet of various size lumber is due out to units for assigned projects. During this reporting period, construction standards have been upgraded from Standard 3 (tent frames) to Standard 4 modified (austere wooden frame buildings). This upgrading has increased requirements for construction materials considerably.

Observation: The present ASL is being updated to conform with the increased requirements of construction materials, however, it will be several months before the supply system becomes responsive to needs.

Item: Engineer Construction Tools

Discussion: During the reporting period there has and still is a critical shortage of construction tools, carpenters hammers, Dewalt saws, skill saws and blades etc. At one point it became necessary to initiate procurement action for hammers to continue the construction missions.

Observation: The quality of tools locally purchased is very poor and they have a very short life. Most of the items required are not available for purchase from the local economy. A red ball system for construction tools and critical items of construction materials should be implemented.

Item: Special Engineer Construction Tools

Discussion: During the reporting period there has been a need for special construction equipment such as ramsets and bowstitch nailers which are not yet on TOE's.

Observation: Some method should be devised for local purchase of such construction supplies, either in-country or in the Southeast Asia Area.

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Item: In-Country Procurement

Discussion: Operational support missions at sites in the interior provinces of RVN require local procurement of crushed rock and sand as transportation from Army sources is impracticable. The time element between the operational support directive and the Beneficial Occupancy Date is not sufficient to allow processing of the Purchase Requests and Commitments for the receipt of supplies.

Observation: Sufficient advance notice of operational support missions and/or expedient measures should be taken by Army Procurement Agency to process priority Purchase Requests and Commitments.

3. Other

Template Design

Item: The template must provide support at the sheetpile center of gravity when set.

Discussion: The most desirable waler position is at mean high water. This minimizes underwater maintenance and keeps the anchor system in the backfill saturated zone. The waler and a second horizontal member have formed the templates for past construction. However, at that elevation, the center of gravity of the set sheetpile was significantly above the cross-members. When a slight lean to that pile developed perpendicular to the shore, a large moment about the template members was developed by the driving force. As driving proceeded, the lean became critical.

Observation: If a third horizontal beam is placed at approximately the center of gravity of the set pile, the development of such a large harmful moment can be checked.

Leaning Sheetpile

Item: Tapered sheetpile can be effectively used to eliminate sheetpile leans parallel to the shoreline.

Discussion: Sheetpile leans both parallel and perpendicular to the shoreline have been a time consuming problem. Once a lean develops in the wall, continual driving aggravates the situation.

Observation: Although sheetpile can maintain a lean and not be structurally critical, the strength is reduced and can become critical if allowed to continue and increase in magnitude.

Various methods were tried to eliminate the parallel leans. Tapered sheetpile were prefabricated by cutting individual pile at an angle from

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top to bottom and re-welding. After experimentation it was discovered that the tapered pile had to be driven side-by-side until the lean was eliminated. Interspersing the prefabricated pieces at random intervals does not help.

To eliminate a lean perpendicular to shore, one observation was made previously in this report. In addition, the distance between horizontal guides at the same elevation must be tight to be effective. Once a lean of this nature develops, the next piles must be set, individually bolted to the template members before ground contact, and pulled from the top. With each successive pile the lean will be reduced, and when a plumb position is reached, the next several piles should be driven before releasing the bolted piles for driving.

To preclude leans, about ten pile should be set, and the last one secured in its plumb position with bolts. Then the intermediate nine should be driven down three to four feet at a time until the final elevation is reached. Driving each pile to finished elevation before starting the adjacent one leaves too much freedom of movement and precipitates leaning. The tenth pile in a bolted plumb position should not be driven until the next ten are set, the tenth in that frame bolted, and the intermediate nine driven. Then the bolted pile in the first frame can be driven. This method provides stability at both ends of the frame being driven and prevents leaning.

Selected Backfill

Item: Coarse backfill is necessary behind sheetpile bulkheads.

Discussion: Backfill behind the existing walls has been fine sand. Problems have developed due to sand leakage through the pile interlocks.

Observation: Coarse material, preferably crushed rock, should be placed immediately behind the wall for a thickness of two to three feet. It should be layered or graded so as to provide a filler to hold the fill material. This procedure will minimize backfill losses caused by tidal and wave action.

Spud Collars

Item: A spud collar anchorage system is not recommended for collars subject to heavy wave action.

Discussion: The pontoon pier installed at Port Lane originally used a prefabricated collar and spud system for anchorage. With wave action and use, the spuds bound in the collars and caused damage to both.

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Observation: The design tolerance was too small and binding became a problem. In addition, the using barges tended to tie off to the spuds. Movement of the barges pulled the spuds against the collars. The barges also bang into the collars, and the combination of pulling the spuds and hitting the collars aggravated the binding problem.

A conventional system using marine anchors and shore deadmen would have allowed the pier to move freely and to absorb the barge shocks more easily.

Pier and Wharf Protection

Item: Dolphins should be used liberally to protect piers and wharfs FROM damage by the user.

Discussion: Two facilities constructed by this unit have sustained considerable damage due to a combination of user carelessness, overloading and inadequate protection. The protection originally constructed consisted of fender pile systems. These fender piles were utilized by barges for mooring, and the result was their destruction. Once destroyed, the structural members of the facility were open to destructive forces.

Observation: Combination breasting and mooring dolphins placed around and adjacent to the facility will absorb the user shock and provide adequate mooring points. For normal barge operations, twelve (12) pile dolphins should be adequate.

Dolphins

Item: Timber pile for dolphins driven in shallow water must be close together.

Discussion: Experience showed that timber piles driven in shallow water can not be set as far apart as they can be in depths of over 10 feet. If a ring of timber pile is driven at large intervals, the piles will crack when pulled together by cable wrapping. The length above the ground is not sufficient to allow the timber to bend until pile-to-pile contact is established.

Observation: The length of the timber pile above the ground level must be determined, and then spacing calculated so that the length available will produce the deflection required for pile-to-pile contact before failure stresses develop.

Section 2, Part II, Recommendations

1. Additional diving sections are needed in this theater to maintain 1st Logistical Command facilities. Requirements to use the Port

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Construction Company divers for maintenance of submarine pipeline, inspections, and repair of Transportation Corps (TC) Vessels, is jeopardizing successful accomplishment of diving section's primary mission of underwater construction. Recommend that 1st Logistical Command be allocated diving sections on TD basis as required for efficient maintenance of Transportation Corps and Quartermaster (submarine petroleum lines) facilities.

2. There is an urgent need for modifying the TOE of Port Construction Companies. The present TOE 5-129E is excessively conditioned by operational requirements of World War II and does not afford the flexibility required for supporting port construction work at separate coastal bases. Recommend that the MTOE being submitted through command channels for approval by Headquarters, USARV be considered as the basis of a new TOE for new port construction companies being activated.

3. During the first part of the reporting period the progress on surfacing roads at Cam Ranh Bay with asphaltic concrete was seriously hampered. The Asphalt Plant TOE to the 102d Engineer Company (CS) is old and worn out and with repair parts supply not being adequate, the operation of the plant was completely unpredictable. Many manhours and materials were lost due to the plant going down in the midst of paving operations. This problem was eliminated by the contract purchase of approximately 12,500 tons of asphaltic concrete from the civilian contractor RMK-BRW. The receipt of this asphaltic concrete was a great help to the Group and allowed the road construction program to proceed on a scheduled basis. It is strongly recommended that support of this type be continued in the future.

4. It is recommended that a fiber-glass placing machine be issued to and utilized by engineer groups in Vietnam. This group came into contact with such a machine owned and operated by the U. S. Air Force during recent tests on the Cam Ranh Bay Army Airfield. The machine is designed to place a coating of fiber glass over any surface in an extremely rapid manner. It is merely sprayed over the surface. It has been used by the Air Force to stabilize sand berms and is apparently effective. Berms sprayed in this manner showed no signs of deterioration. The fiber glass also makes excellent dust proof helipads quickly. It can be applied directly to a soil or sand surface and is highly effective in reducing dust and blowing sand when helicopters land. The machine is in an experimental stage in the Air Force and undoubtedly other uses will be found which will be beneficial and time saving to Army Engineer Units.

5. It is recommended that Engineer Construction Units in Vietnam be issued radios down to squad level. Squad, Platoons and Company sized units are regularly assigned to combat support operations. Having an adequate number of radios would greatly increase their effectiveness.

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EGA-3

31 October 1966

SUBJECT: Operational Report - Lessons Learned (RCS CSFOR-65), for
Quarterly Period Ending 31 October 1966

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Presently the limited number of radios available are redistributed for each operation. One battalion of the Group is engaged daily in a transportation operation which requires conveying engineering materials through insecure areas. Additional radios would give them greater convoy control and contact with units which could send aid in event of an emergency. The current supply of radios does not provide radios for the convoy purpose. As operations move inland it is becoming more necessary to convey materials and equipment to job locations. Radios are necessary for convoy control and communication with observer planes flying cover. In day to day operations, many unnecessary vehicle trips are made to convey information which could have been radioed. Scheduling and job located at scattered points sometimes require units to break into their smallest working units to accomplish assigned tasks. Usually there are no telephones at these sites, and if they are available, they often do not function properly. Under the current system, runners in vehicles are the only means of communications. Radios at squad level would give a Platoon Leader greater control and increased productivity from his personnel. It would eliminate many vehicle miles and remove military traffic from crowded roads. In turn, control and efficiency would increase upward throughout the chain of command.

6. It is recommended each Engineer Group have an organic air section. Aircraft continue to be a major factor in command control. With three major Military Construction Army (MCA) construction sites at different locations in the Group and three operational support missions scattered in the Group area, it is imperative for successful command control to utilize aircraft. During the reporting period a combination of circumstances "grounded" the Group for approximately three weeks. Command supervision was severely curtailed. Logistic problems developed out of proportion to the situation, and the morale services of mail periodically were lost. The net result was a decrease in operational effectiveness of the outlying units. It is therefore recommended each Engineer Group have, as a minimum, organic aircraft, consisting of one fixed wing craft and two rotary wing craft.

7. Morale within the 35th Engineer Group (Construction) remains high. All units have ready access to clubs, canteens, PX's, movies, special service activities. A recently opened amphi-theater, constructed by the 87th Engineer Battalion (Construction) will now allow USO shows to be viewed in Cam Ranh Bay. During the period, two (2) battalions stood their AGI inspection, both passed satisfactorily and few IG complaints were received.

8. Chapel facilities in the area are adequate and work is underway on improving these facilities on a self-help basis. All Group and battalion TOE Chaplain positions are filled. Each battalion has an operating dispensary with a surgeon on duty.

W. L. STARNES
W. L. STARNES
Colonel, CE
Commanding

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- 1 - ACSFOR DA (Through Channels)
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- 1 - S3, 35th Engr Gp File

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AVBC-C (31 Oct 66)

1st Ind

SUBJECT: Operational Report-Lessons Learned (RCS CSFOR-65) for Quarterly Period Ending 31 October 1966

Headquarters, 18th Engineer Brigade, APO 96307

14 DEC 1966

TO: Commanding General, United States Army, Vietnam, ATTN: AVC-DH,
APO 96307

1. The subject report, submitted by the 35th Engineer Group (Const), has been reviewed and is considered adequate for the subject quarter.

2. This headquarters concurs with the observations of the submitting commander, subject to the following comments:

a. Section 1, para 9, (30T Roller). Unit has been readvised that additional equipment must be requested by MTOE with clearly stated justification.

b. Section 2, Part I, para 1, page 10, Item: Drainage Ditches. There are no towed graders presently in the Army Supply System. A towed grader is a particularly valuable item of equipment when working under extremely saturated soil conditions. A request for certain items of special application engineer type equipment is being developed by this headquarters. When staffing is complete and approved, in-country assets will be applied against the selected list. Future requirements will be forwarded to the Commanding General, US Army, Vietnam for augmentation consideration.

c. Section 2, Part I, para 2, page 8-9, Item: Class IV Supplies. Concur with the recommendation to have a supply expeditor at depots servicing a large number of engineer units. An individual familiar with substitute items, that would serve the basic utility purpose of those requisitioned, could substitute when any one item is not in stock, and the project slippage time could be greatly reduced.

d. Section 2, Part I, para 2, page 9, Item: Engineer Construction Tools. Red Ball Express for construction materials has been implemented. Hand tools are presently the subject of a special study by G4, USARV.

e. Section 2, Part I, para 2, page 9, Item: Special Engineer Construction Tools. Unit is informed that special tool procurement requests may be submitted at any time.

f. Section 2, Part I, para 2, page 10, Item: In-Country Procurement. Advance notice is not always available to the Army Procurement Agency; however, requests can be expedited within the minimum time-frame for procurement prescribed by law, when the requesting unit makes their urgent needs known to the contracting office.

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AVBC-O (31 Oct 66)

1st Ind

SUBJECT: Operational Report-Lessons Learned (RCS CSFOR-65) for Quarterly Period Ending 31 October 1966

3. This headquarters concurs with the recommendations of the submitting commander, subject to the following comments:

a. Section 2, Part II, para 1. Requests for additional diving sections have been forwarded to the Department of the Army. Concur in recommendation that the 1st Logistical Command be given maintenance capabilities for their responsible facilities.

b. Section 2, Part II, para 2, Concur. Recommendations in this respect have been submitted to G3, USARV.

c. Section 2, Part II, para 3. Purchase of materials, not readily producible at unit level, is resorted to when funds, priorities and available effort have been balanced.

d. Section 2, Part II, para 4. This recommendation is under study.

e. Section 2, Part II, para 5, Concur. However, since all units will rarely have identical needs, it would be impractical to have a fixed issue to all units. For this reason, the USARV Form 47R is provided for requesting equipment excess to TOE. This unit has been directed to reinstruct their units in the use of the above form for requesting additional equipment necessary to unit operational needs.

f. Section 2, Part II, para 6. This headquarters has submitted a letter requesting the minimum necessary aviation assets to meet operational commitments within the brigade.

4. This headquarters is consolidating lessons learned from the quarterly reports submitted by brigade units; distribution will be in a pamphlet form, providing information and guidance to all engineer units.

FOR THE COMMANDER:

Wayne J. Reynolds
WAYNE J. REYNOLDS

Major, GE
Adjutant

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AVHGC-DH (31 Oct 66) 2d Ind
SUBJECT: Operational Report-Lessons Learned for the Period Ending
31 October 1966 (RCS CSFOR-65)

HEADQUARTERS, UNITED STATES ARMY VIETNAM, APO San Francisco 96307

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

1. This headquarters has reviewed the Operational Report-Lessons Learned for the period ending 31 October 1966 from Headquarters, 35th Engineer Group (Construction) as indorsed.

2. Pertinent comments are as follows:

a. Reference Paragraph 2, Part I, Section 2, Page 8; and Sub-paragraph 2c, 1st Indorsement, Page 16, as pertains to an expeditor for Class IV supply: Concur with unit's and indorsing headquarters' observation/recommendation. Either an expeditor or a liaison NCO would be beneficial to both depot and customer, and would facilitate rapid substitution. This manning can be accomplished from unit resources.

b. Reference Paragraph 2, Part I, Section 2, Page 8, as pertains to an increase in material requirements due to upgrading of construction standards: This headquarters has informed the Engineer Command (Provisional) that information regarding upgrading of construction standards should be rapidly disseminated to initiate the requisitioning of additional materials as soon as possible.

c. Reference Paragraph 2, Part I, Section 2, Page 9; and Sub-paragraph 2d, 1st Indorsement, as pertains to a shortage of engineer construction tools: Concur in the unit's recommendation insofar as implementing a system similar to Red Ball Express for critically needed minor hardware items peculiar to engineer construction. Such a system is, in fact, being implemented; however, use of Red Ball or a similar system for hand tools is not in accordance with present USARV policies. It would tend to overburden the system beyond its capacity, thereby impairing the accomplishment of that segment of the RVN Supply System for which it was designed. Although tools of many types have been in chronic short supply within RVN, aggressive actions have been initiated at depot level, by the 14th Inventory Control Center, and by the 1st Logistical Command to purify ASL's update RO's, and requisition sufficient replenishment quantities of those items previously fringe to depot

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AVHGC-DH (31 Oct 66)

18 JAN 1967

SUBJECT: Operational Report-Lessons Learned for the Period Ending
31 October 1966 (RCS CSFOR-65)

stockage lists. Continuing improvements in these areas are expected to soon fill the pipeline, thereby ensuring minimal reaction time in the routine supply of these items.

d. Reference Paragraph 2, Section 2, Part II, Page 13 and Paragraph 3b, 1st Indorsement: Requirements for the port construction company have been discussed within the Engineer Command; however, no MTOE has been submitted to Headquarters, USARV.

FOR THE COMMANDER:



R. J. THORNTON
1st Lt, AGC
Asst Adjutant General

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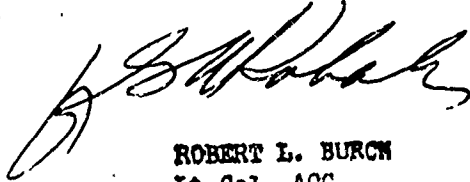
GPOP-OT (31 Oct 66) 3d Ind (U)
SUBJECT: Operational Report-Lessons Learned for the Period Ending
31 October 1966 (RCS CSFOR-65), HQ 35th Engr Gp (Const)

HQ, US ARMY, PACIFIC, APO San Francisco 96558 16 FEB 1967

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

This headquarters concurs in the basic report as indorsed.

FOR THE COMMANDER IN CHIEF:



ROBERT L. BURCH
Lt Col, AOC
Asst AG

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