e. Cantonment Construction, Valley A, Bde 66-142DC-45

Initially this directive called for design of self-help construction for a 3000-man cantonment in Valley A. Presently approved plans call for construction of 22,400 SF of community facilities, 214,000 SF of troop housing, 28,000 SF of mess halls and 76,410 SF of administration-supply buildings. To date 28,183 US and 31,446 Vietnamese man-hours and 4385 equipment hours have been expended to render this project 16% complete.

f. Cantonment Construction, Valley F, Bde 66-143DC-45

This project was transferred to 84th Engr Bn from 19th Engr Bn in Dec 66. Scope of work is indefinite at this time, pending approval of one of two cantonment areas in Valley F presently under the sponsorship of 84th Engr Bn.

g. Cantonment Construction, Bde 65-15C-45

This directive covers self-help construction throughout the Qui Nhon area. Presently approved plans call for the construction of 441,600 SF of troop billets, 27,600 SF of mess halls. 111,400 SF of administration-supply buildings and 5976 SF of maintenance buildings. To date 71,792 US engineer and 72,378 Vietnamese and approximately 267,000 self-help man-hours have been expended. This project is approximately 35% complete.

h. Phu Tai Construction Support Complex. GP 45-16DC-66 and GP 45-18DC-66

During the month of Dec 66 a decision was made to combine construction support facilities of this battalion. The commanding officer of 73rd Engr Co (CS) was designated as officer in charge of Support Complex. The Complex includes a 225 TPH crusher, two (2) 75 TPH crushers, an asphalt plant and a concrete batch plant, to be constructed. Personnel supporting Complex include elements of 73rd Engr Co (CS), A Co, 84th Engr Bn, 19th Engr Bn and 444th Engr Det (CM&P). The Complex presently supports all 45th Engr Gp (Const) projects in the Qui Nhon area requiring crushed rock and/or asphalt surfacing. A monthly production goal of 36,000 CY of crushed rock has been set for this facility. To-date figures, including effort expended before separate facilities were combined, include 79,423 US and 31,757 Vietnamese man-hours and 45,611 equipment hours. A maintenance facility is also being constructed in Complex area, and when completed, it will include a 20' x 60' administration building, a 26' x 39' maintenance building and a grease rack and lubricator pad.

i. Qui Nhon Depot, Bde 66-27DC-45

This project includes construction of open storage areas, shed storage, prefabricated metal warehouses, administration, security fencing, roads and drainage facilities. During this reporting period the foundation was poured for a 50' x 140' Pascoe warehouse, although further work on this facility is presently suspended. In addition, a 20' connection was built between two existing administration buildings. The project is approximately 81% complete, and since starting date of 1 Aug 65, 239,192 US and 38,693 Vietnamese man-hours and 37,061 equipment hours have been expended.

j. Port Access Road (Interim), GP 45-21DC-66

Phase I of this project consisted of construction of a 4000-foot long laterite road placed over hydraulic fill. Minimum compacted thickness of laterite is 18", and the road has a 48' traveled way with 6' shoulders for approximately the first half of its length; at this point the traveled way narrows to a width of 24 feet. Phase I also includes associated facilities, such as grade crossings and drainage. Phase II as originally defined consists of completion of interim access road by placing a select base of rock on the laterite subbase and then applying a double bituminous surface treatment as the wearing course. During this reporting period the only work done was placement of two (2) 80' long corrugated metal pipe culverts across the road 75 feet north of the railroad tracks. Purpose of culvert was to drain water which had been standing on the west side of the road. To date 17,748 US and 2990 Vietnamese and 12,103 equipment hours have been expended. 62% of project is complete.

k. 540-Bed Hospital, 85th Evacuation, Bde 65-7DC-937

In addition to the 540-bed facility with its associated structures, covered walkways were constructed between and alongside hospital quonsets. Project was terminated on 2 Nov 66 with completion of drainage facilities. Under a separate directive, a scullery was added to existing H-type mess hall which had been constructed by 84th Engr Bn under the original hospital directive. Total effort expended on this project includes 127,777 US and 19,235 Vietnamese man-hours and 29,107 equipment hours.

l. Rehabilitation of Roads 1 & 2 and Villa Road, Bde 65-20DC-45

Although initial plans called for eventual surfacing of these roads with a double-surface treatment, engineer effort has been confined to maintenance of these roads. Most of the effort expended to date has been limited to temporary measures such as filling potholes, shaping roads, cutting ditches and installing culverts. At present, however, measures are being taken on Qui Nhon Road #1 (Red Beach Road) in vicinity of Qui Nhon Depot to provide a lasting solution to the drainage problem. A 360-foot long corrugated metal pipe culvert has been installed from the east side of the road to RVN beach. Culverts are being installed under

driveways, ditches are being rip-rapped to prevent deterioration due to weather and traffic conditions, and the road itself is being re-shaped to eliminate standing water. This continuous maintenance has required over 25,000 CY of fill and has resulted in expenditure of 24,859 US, 9941 Vietnamese man-hours and 11,869 equipment hours.

m. Pontoon Pier LCU, LCM & LST Ramps, Bde 66-37DC-45

This project as originally defined called for construction of a 500-foot pontoon finger pier and four (4) LCU, LCM & LST ramps plus required mooring facilities. Two of the ramps were built, one being 210' x 58' with a granite cube stone surface and the other 120' x 58' with an 8" reinforced concrete surface. With the departure of the port construction unit attached to this battalion in Sep 66, this headquarters requested cancellation of further responsibilities under this directive. Request is presently being considered by higher headquarters. As a result of the recent monsoon season, an additional requirement has been placed on this unit to rehabilitate the LST beach area and repair the rain damage. To date, 63,000 US and 22,073 Vietnamese man-hours and 16,375 equipment hours have been expended. Project is 63% complete.

n. Refrigeration Facilities, Bde 66-61C-45

This project consists of construction of 9' x 32' concrete pads and erection of 1600 CF prefabricated reefer units upon these pads. Fifty-nine (59) of these units have already been installed in the Qui Nhon Log Depot and are presently operational; thirty-four (34) units are programmed for the Class I yard in Phu Tai. Completion of the latter requirement has been delayed due to shortages of reefer components (13 reefer boxes and 66 cooler units). To date 19,204 US and 20,316 local national man-hours and 3749 equipment hours have been expended. Work accomplished thus far makes this project 89% complete.

o. 4" Submarine Pipeline, Bde 66-177DC-45

Under the provisions of this directive, an existing 4" pipeline in Qui Nhon harbor was extended to a length of 5500 feet to an existing four-point mooring system. In addition, two other 5500-foot 4" submarine pipelines were to be installed alongside the existing pipeline. One of these lines was completed, although heavy seas soon rendered it inoperable. An attempt was made to launch a third pipe, but the heavy seas and inclement weather which were prevalent throughout this reporting period caused work to cease. Pipeline requirements and commitments remaining under this directive are presently being reevaluated by higher headquarters. To date 13,030 US and 990 local national man-hours and 1145 equipment hours have been expended. 82% of project is complete.

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p. 314-Man Cantonment, Bde 66-159DC-45

This directive provides for construction of a 314-man cantonment adjacent to 67th Evacuation Hospital. Engineer troops to date have been used to construct a 20' x 120' DS tropical frame building, two (2) each 20' x 48' quonsets, and to provide adequate drainage facilities throughout the area. A recent amendment to the directive calls for construction of a WOQ with complete facilities. Effort expended to date includes 9354 US and 5191 Vietnamese man-hours and 1532 equipment hours. Project is 99% complete.

q. Qui Nhon Log Depot Reefer Storage, Bde 65-158DC-45C

Under this directive this unit was originally charged with responsibility of constructing 456,000 CF of cold storage, 400,000 SF of covered storage, and 512,000 SY of open storage. In Dec 66, this project was transferred to 19th Engr Bn with the exception of a 40' x 110' refrigerated warehouse. Facilities include a 20,800 CF freezer room at -20.6°C, a 9800 CF dairy products room at 1.7°C, a 5900 CF fruit and vegetable room at 4.5°C, and a 3580 CF receiving room. Warehouse is prefabricated and of Japanese manufacture. Two compressors, each having a 30 KW motor, use Freon 12 to provide refrigeration for this facility. Work to date has involved expenditure of 20,705 US and 7566 Vietnamese man-hours and is presently 52% complete. Equipment hours have totaled 2792.

r. Well-Water Points, Command Directive 65-200-01-T-MA

This project has been limited to design only. A ground water storage tank has been designed and six (6) proposed sites have been laid out. Work is being held up pending definition of scope of work by higher headquarters.

s. Rehabilitate Tank Farms, Bde 66-165C-45

This project consists of repairing damage done to Tank Farms East and West by recent monsoon rains. Work is confined to reshaping and rip-rapping fuel tank berms, replacing old culverts and adding new ones where necessary, and resharing roads throughout the farms.

t. Operational Support

Under this project heading, emergency drainage repairs were performed at PX Storage Area, and access road to Vung Chua Signal Mountain was repaired to provide fair weather access to light traffic.

Incl 1

u. Road Surfacing, CP 45-10-67

Provisions of this project call for surfacing of approximately 18 miles of road in the Qui Nhon area. Specifications call for a 6" base course of 3" minus rock covered with a 22 foot wide surface of 3" hot mix asphalt. All surfacing will be done by the asphalt platoon of 73rd Engr Co (CS). Base preparation for 5 of the 10 sections of road to be surfaced will be done by D Co, 84th Engr Bn; the remainder will be done by elements of 19th and 35th Engr Bns. Throughout all aspects of construction adequate drainage facilities will be provided. Approximately 2% of project is complete.

v. ADPS Facility Expansion, 91-937/V-66

This project, started on 1 Nov 66 and completed 7 Dec 66, required a total of 2285 US and 250 Vietnamese man-hours. Work included placing a six-inch concrete floor slab with 3 foot walls, erecting a standard 20' x 48' quonset on top of the wall, and placing a six-inch reinforced concrete pad 10' x 35' adjacent to the building for an equipment van. Along with seven air conditioners, electrical wiring was installed for all ADPS facilities.

w. Port Facilities (Increment 1), Command Directive 65-201-05-T-65

Work on this facility has been limited to placement of two (2) 48-inch CMP culverts each 300 feet long. Included under scope of work are 14,000 SY of Portland Cement concrete LST and Wharf Aprons; grading and surfacing an all-weather, well-drained access road 48 feet in width and two miles in length on causeway leading to DeLong Pier abutment; grading and surfacing an all-weather, well-drained system of roadways 24 feet in width within the port area; 65,000 SY of open storage hardstand and three miles of security fencing.

x. Combat Support - Operation Duke

Provisional Detachment #1 left Headquarters, 84th Engr Bn, Qui Nhon, Vietnam on 15 Sep 66. Men and equipment were loaded on U.S.S. Gunston Hall (LSD-5), a landing ship dock. After unloading from the LSD by means of LCU's, the Detachment conducted a tactical road convoy and arrived at their job site on 18 Sep 66.

English Field, the object of Operation Duke, was physically in existence and was being used for light aircraft at the time this operation started. Its length was 2000 feet over a varied grade. In order to meet specifications, it was necessary to improve the existing 2000 feet of runway and extend it 2200 feet. A parking apron to accommodate five C-130 aircraft and a 75' x 300' cargo handling ramp were

Incl 1

constructed. In addition, a road was constructed around the runway extension and a security fence was installed around the airfield. Construction was scheduled such that an operational runway was in existence at all times.

Return to home station was by land convoy on 11 Nov 66. Peak personnel strength during the operation amounted to seven (7) officers and 138 enlisted men.

y. Training

The battalion engaged in training for 13 days during the reporting period. Training subjects stressed were as follows:

(1) Survival, Evasion and Escape

(2) Combatives

(3) Driver Training and Vehicular Safety

(4) Character Guidance

(5) CPR

(6) Prevention of Venereal Disease

(7) Geneva Convention

(8) Military Justice

(9) Clandestine Surveillance & Listening Devices

(10) Document Security

Section 2, COMMANDER'S OBSERVATIONS AND RECOMMENDATIONS

a. Part I; Lessons Learned

GENERAL OPERATIONS

(1) ITEM: Road Maintenance

(a) DISCUSSION: Continuous maintenance necessary during the rain season causes rapid wear of grader blade cutting edges and scarifier teeth.

(b) OBSERVATION: Prior to the rainy season additional cutting edges and scarifier teeth should be requisitioned. Maximum usage

rate was one set of cutting edges and one set of scarifier teeth per grader per day.

✓ (2) ITEM: Crushed Rock for road maintenance

(a) DISCUSSION: Road maintenance during the rainy season is difficult. It requires large quantities of crushed rock. Grading of dirt roads during rain creates soury mud which does not drain readily.

(b) OBSERVATION: Prior to the rainy season roads should be prepared so as to minimize necessary road maintenance during the rainy season. Preparation should include sharing to a minimum crown of 1/2" per foot and clearing and repairing drainage and culverts.

(3) ITEM: Combat Support Convoys

(a) DISCUSSION: Minor breakdowns often occur during combat support convoys.

(b) OBSERVATION: At least one organizational mechanic should accompany all combat support convoys.

(4) ITEM: Equipment for medium- and thin-section vertical concrete

(a) DISCUSSION: Significant difficulty has been encountered when placing concrete into heavily reinforced 8-foot high, thin sections because of non-availability of a concrete bucket and thin vibrator. These items of equipment are not currently TO&E to the engineer construction battalion.

(b) OBSERVATION: One each 0.5 cubic yard concrete bucket and 1 1/2" diameter self-powered concrete vibrator should be added to TO&E 5-118D, engineer construction company.

(5) ITEM: Drainage of areas of laterite-capped sand

(a) DISCUSSION: Concrete forms and low areas on laterite-capped sand are often difficult to drain.

(b) OBSERVATION: These areas are easily drained by digging a drywell into the underlying sand and filling it with large rock.

(6) ITEM: Bridging short spans

(a) DISCUSSION: Difficulty has been encountered in moving equipment over concrete forms without damaging the forms.

(b) OBSERVATION: A good expedient bridging material is a set of lowbed ramps.

(7) ITEM: Cold mix asphalt

(a) DISCUSSION: One and one-half inch minus crushed stone has been found to be unsuitable for asphaltic cold mix. Heavy traffic loads and high number of loading cycles tend to break it down and eject it from potholes.

(b) OBSERVATION: Optimum size crushed stone for asphaltic cold mix has been found to be 3/4-inch to 1/4-inch. Crushed stone of size within this range used with a sand filler makes a dense mix which can withstand repeated loading.

(8) ITEM: 10-ton tractor mated with 25-ton lowbed

(a) DISCUSSION: In many instances large bulky loads are loaded on the combination of 10-ton tractor and 25-ton lowbed. Incorrect loading causes lack of traction for the driving wheel of the tractor.

(b) OBSERVATION: It has been found that by placing heaviest loads close to the gooseneck of the trailer, traction will be increased.

(9) ITEM: 5-ton dumps operation

(a) DISCUSSION: During and immediately following every haul and spread operation involving 5-ton dump trucks, the direct support maintenance activities receive a substantial number of job orders for repair or replacement of dump lift cylinders and broken mountings.

(b) OBSERVATION: Many breakdowns can be eliminated if drivers and supervisors review methods of dumping as in para 20, TM 9-2320-211-10. Drivers should never accelerate quickly while the dump bed is in the raised position. This improper operating procedure causes bent cylinders and cracked welds.

ASPHALT/CRUSHER OPERATIONS

(10) ITEM: Clogging of crusher jaws and rolls

(a) DISCUSSION: During the rainy season, crusher production was cut due to mud and wet fines piling up in the vibrating screen of the primary crusher and coating the secondary rolls.

(b) OBSERVATION: Since waste from the primary is needed for washed chip and stone, a water line is run from the wash plant and a high pressure jet is used to keep the mud from piling up. An air compressor can also be used. All end products are taken off the primary and sent through a screening unit. The screening unit is set up in line with the primary and fines and 1 1/2" minus stone are taken off. Stone over 1 1/2" is sent through the secondary unit and then into the wash unit, yielding washed 1 1/2" minus, 3/4" minus and 1/4" and chip. Use of a 60-ton storage bin and an additional conveyor allows recirculation of the waste product through the wash plant. This increases the yield of 3/4", 1/4" and chip. The bin also can be loaded by front loader so that bank run gravel or river sand can be washed when needed. The mud problem in the secondary is thus eliminated by recirculating the primary waste so as to by-pass the secondary. 80% of the primary waste is salvaged when washed.

(11) ITEM: Headwall failure

(a) DISCUSSION: Many problems have been encountered in crusher operations due to excess leaning or complete failure of headwalls. This is due primarily to a water head building up behind the wall.

(b) OBSERVATION: A simple headwall can be built by use of steel WF beams used as columns. Four columns, 12 feet O. C. are set vertical in a trench 5 feet deep filled with concrete. Reinforcing dowels are allowed to project out of the trench to allow an 18" wall to be placed around the columns for a height of 4 feet. Weep holes are provided every 3 feet along the wall. This design provides a durable toe for the headwall. The weep holes allow water to drain through the toe eliminating a build-up of water pressure at the toe. Pierced steel plank is then welded to the steel columns and braced with timber. The timber is wedged against the web of the column between the flanges. The first 10 feet of the headwall must be backfilled with over-sized blast rock to allow proper drainage. The columns are further strengthened by use of 9/16" cable fastened to deadmen, which are placed at 4-foot intervals during backfilling.

(12) ITEM: Asphalt spillage

(a) DISCUSSION: The asphalt plant layout, TM 5-337-1, shows a mixer supported by jack legs set back one foot from headwall. With the mixer positioned this way, the discharge chute extends only 3 feet from the headwall. This does not allow enough room for loading of 5-ton dump trucks, causing spillage problems. The chute cannot be extended, as it is a drop type chute.

Encl 1

(b) OBSERVATION: The mixer was supported on H-beams placed under the tandem axle assembly and rear axle. This allowed positioning of the mixer so as to have the front of the chassis 16" over the headwall. Thus, the mixer discharge chute is now positioned 6 feet 3 inches beyond the headwall, resulting in center loading of 5-ton truck bodies. The headwall must be strong, since the center of gravity of the machine is now 28 inches from the headwall.

(13) ITEM: Asphalt leakage in headwalls

(a) DISCUSSION: Due to the presence of large quantities of diesel fuel, asphalt products, and other POL products in the plant area, much leakage of spilled products was found to be seeping through headwalls, causing a sludge to be formed in the truck loading area.

(b) OBSERVATION: A simple solution was found by using sheet pile. Corner sections of sheet pile were erected as columns in concrete filled holes. Regular sheet pile was then fitted and welded to the columns horizontally. This caused a tight wall without the need of driving piles. One hundred feet of headwall was erected and backfilled in a 24-hour period.

(14) ITEM: Crawler mounted rock drills

(a) DISCUSSION: Breakage of the chuck in Japanese crawler drills caused loss of drilling capacity.

(b) OBSERVATION: Wagon drills were found to be slow and inefficient due to the immobility of such drills in uneven terrain. Since there is an abundance of wagon steel and bits on hand, a method is now being studied which utilizes the hammer from the wagon drill mounted on the mast of the crawler drill. The RPM of the wagon drill hammer is slower, so care must be taken during drilling operations to control drill speed. This utilizes the best feature of the crawler drill: mobility. The time saved utilizing this mobility makes the one hour conversion practical. Wagon drills have also been towed using crawler drills which were down for chucks. This conversion makes possible the use of a piece of equipment that would have otherwise been deadlined for inability to drill.

(15) ITEM: Secondary blasting

(a) DISCUSSION: Mudcapping, snakeholding, and blocking of secondary blast rock is a time consuming process.

(b) OBSERVATION: Use of C-4, placed on top of boulders to be blasted, was found to be quick, efficient, and practical.

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Two pounds of C-4 on a 1 cubic yard rock will reduce the rock to useable size. The preparation time is very quick and inspection for unspent explosives after blasting is much safer.

(16) ITEM: Replacement of striker bars in Chicago-Pneumatic drills

(a) DISCUSSION: Deadline time for Chicago-Pneumatic drills is due primarily to failure of striker bars.

(b) OBSERVATION: Striker bars can be made on machine lathes using axle steel from salvaged vehicles. Carbide lathe tools are necessary, but heat-treating of the finished product is unnecessary when using high grade axle steel. Fabrication of one bar takes 6 hours.

b. Part II: Recommendations: None

1 Incl
84th Engr Bn Organizational Structure

WILLIAM A RANK
LTC, CE
Commanding

15

EOD-3 (14 Feb 67) 1st Ind SGM Winter/wdc/QNL 131
SUBJECT: Operational Report - Lessons Learned (RCS CSFOR-65), for Quarterly Period Ending 31 January 1967

HEADQUARTERS, 45th Engineer Group (Construction), APO 96238, 22 Feb 67

THRU: Commanding General, 18th Engineer Brigade, APO 96377
Commanding General, United States Army Engineer Command, Vietnam, APO 96491
Commanding General, United States Army, Vietnam, ATTN: AVC-DH, APO 96307
Commander in Chief, United States Army, Pacific, ATTN: GPOP-MH, APO 96558

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

Concur with observations of Commanding Officer, 84th Engineer Battalion (Construction).

GEORGE M. BUSH
Colonel, CE
Commanding

1 Incl
nc

14

Incl 1

16

AVBC-C (14 Feb '67) 2nd Ind Cpt Mills/hwg/DBT-163
SUBJECT: Operational Report - Lessons Learned (RCS ACSFOR - 65) for Quarterly Period Ending 31 January 1967.

Headquarters, 18th Engineer Brigade, APO US Forces 96377 13 MAR 1967

TO: Commanding General, U.S. Army Engineer Command, Vietnam, (Prov), APO US Forces 96491

1. This headquarters has reviewed the Operational Report - Lessons Learned for the period ending 31 January 1967, as indorsed, and considers it an excellent report of the unit activities and accomplishments.

2. Concur with the observations of the Commanding Officer, 84th Engineer Battalion (Construction).

JAMES B. MEAHOR
Colonel, CE
Deputy Brigade Commander

15

17

AVCC-AHD (14 Feb 67) 3d Ind MAJ Fowler/wgk/BH 478
SUBJECT: Operational Report-Lessons Learned (RCS CSFOR-65) for Quarterly Period Ending 31 January 1967

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

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

1. This headquarters has reviewed the Operational Report-Lessons Learned for the period ending 31 January 1967 of the 84th Engineer Battalion (Construction) as indorsed and considers the report satisfactory.

2. This headquarters concurs in the information provided subject to the following comments:

a. Section 1, paragraph 1r, page 6. Command directive 65-200-01-T-MA, dated 16 December 1966, defines the scope of the work in detail.

b. Section 2, Part I, paragraph a(2). A road upgrading program is planned and envisions raising all essential roads to all-weather standards to minimize maintenance requirements during the rainy season.

c. Section 2, Part I, paragraph a(4). The concrete vibrators in the TOE are a general purpose type and are considered adequate for placing thin wall concrete sections. Concrete buckets of the type mentioned are within the capabilities of the unit to construct.

d. Section 2, Part I, paragraph a(8). This observation will be brought to the attention of all Engineer units.

FOR THE COMMANDER:

RICHARD J. DUCOTE
Colonel, CE
Chief of Staff

USARV, ATTN: AVHGC-DH

Encl 1

[illegible] (14 Feb 67) 4th Ind
[illegible]: Operation[illegible] Report-Lessons Learned for the Period Ending 31 January 1967 [illegible]-65)

[illegible] VI [illegible], [illegible] San Francisco [illegible]
9 APR 1967

TO: Commander in Chief, United States Army, Pacific, ATTN: [illegible] 96558

1. This Headquarters has reviewed the Operational Report-Lessons Learned for the period ending 31 January 1967 from Headquarters, 84th Engineer Battalion (Construction) as indorsed.

[illegible]. The report is considered [illegible]. The [illegible] observations [illegible] prove helpful to other engineer units in [illegible].

[illegible]:

STANLEY E. SCHULTS
Major, AGC
Asst Adjutant General

1 Incl
nc

19

GPOP-OT (14 Feb 67) 5th Ind
SUBJECT: Operational Report-Lessons Learned for the Period Ending 31 January 1967 (RCS CSFOR-65) - Hq 84th Engr Bn (Constr)

HQ, US ARMY, PACIFIC, APO San Francisco 96558 4 MAY 1967

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

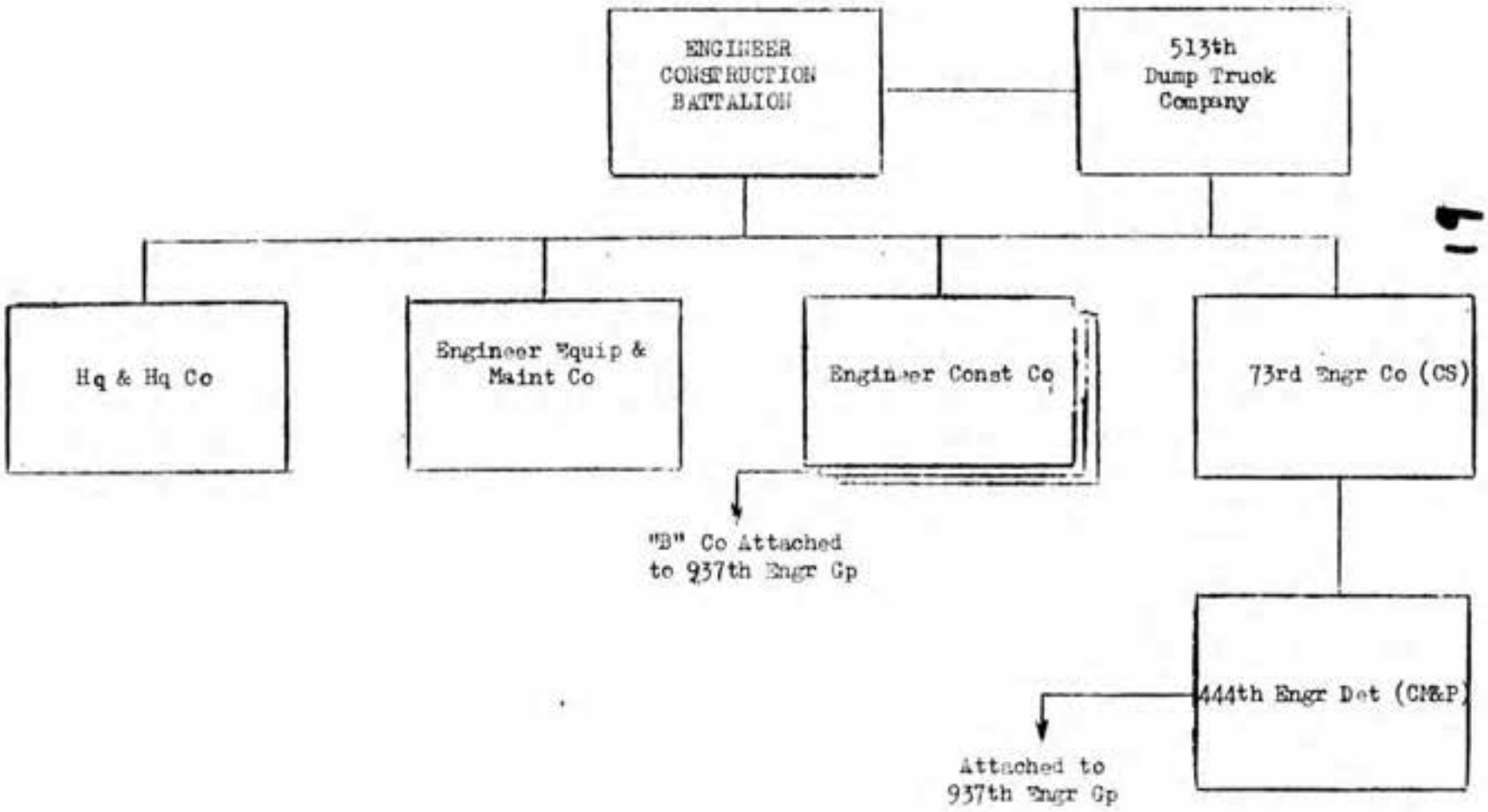
This headquarters concurs in the basic report as indorsed.

FOR THE COMMANDER IN CHIEF:

G. R. KOBALY
CPT, AGC
Asst A

1 Incl
nc

84TH ENGINEER BATTALION (CONSTRUCTION) ORGANIZATIONAL STRUCTURE



Inclosure 1 to Operational Report-Lessons Learned (RCS CSFOR-65) for Quarterly Period Ending 31 January 1967

EOR-3 (14 Feb 67) 1st Ind SGM Winter/wdc/CML 131
SUBJECT: Operational Report - Lessons Learned (RCS CSFOR-65), for Quarterly Period Ending 31 January 1967

HEADQUARTERS, 45th Engineer Group (Construction), APO 96238, 22 Feb 67

THRU: Commanding General, 18th Engineer Brigade, APO 96377
Commanding General, United States Army Engineer Command, Vietnam, APO 96491
Commanding General, United States Army, Vietnam, ATTN: AVC-DH, APO 96307
Commander in Chief, United States Army, Pacific, ATTN: GPOP-MH, APO 96558

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

Concur with observations of Commanding Officer, 84th Engineer Battalion (Construction).

1 Incl
as

GEORGE M. BUSH
Colonel, CE
Commanding

AVBC-C (14 Feb '67) 2nd Ind Cpt Mills/hwg/DBT-163
SUBJECT: Operational Report - Lessons Learned (RCS ACSFOR - 65) for Quarterly Period Ending 31 January 1967.

Headquarters, 18th Engineer Brigade, APO US Forces 96377 13 MAR 1967

TO: Commanding General, U.S. Army Engineer Command, Vietnam, (Prov), APO US Forces 96491

1. This headquarters has reviewed the Operational Report - Lessons Learned for the period ending 31 January 1967, as indorsed, and considers it an excellent report of the unit activities and accomplishments.

2. Concur with the observations of the Commanding Officer, 84th Engineer Battalion (Construction).

JAMES B. MEANOR
Colonel, CE
Deputy Brigade Commander

20 apr 67

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VII-147F

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

IN REPLY REFER TO
AGAM-P (M) (10 Oct 67) FOR OT RD-670295 19 October 1967

SUBJECT: Operational Report - Lessons Learned, Headquarters, 84th Engineer Battalion (Construction)

TO: SEE DISTRIBUTION

OPS-65-009

1. Subject report is forwarded for review and evaluation by USACDC in accordance with paragraph 6f, AR 1-19 and by USCONARC in accordance with paragraph 6c and d, 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 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. STANFIEL
Colonel, AGC
Acting The Adjutant General

1 Incl
as

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11th Infantry Brigade (Sep)
Commanding Officers
198th Infantry Brigade
Hq, 84th Engineer Battalion (Construction)

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HEADQUARTERS
84TH ENGINEER BATTALION (CONSTRUCTION)
APO 96238

EGD-BB-CO

14 May 1967

SUBJECT: Operational Report-Lessons Learned (RCS CSFOR-65) for Quarterly Period Ending 30 April 1967

THRU: Commanding Officer
45th Engineer Group (Const)
ATTN: EGD-3
APO 96238

Commanding General
18th Engineer Brigade
ATTN: AVBC-C
APO 96377

Commanding General
United States Army Engineer Command, Vietnam (Prov)
ATTN: AVCC-P&O
APO 96491

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

Commander In Chief
United States Army, Pacific
ATTN: GPOP-OT
APO 96588

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

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670295

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EGD-BS-CO 14 May 1967
SUBJECT: Operational Report-Lessons Learned (RCS CSFOR-65) for Quarterly Period Ending 30 April 1967

Section 1, Significant Organization or Unit Activities.

During the reporting period the 84th Engineer Battalion (Construction) was active on the following projects:

a. Phu Tai Construction Support Complex, GP 45-18DC-66

The Support Complex is a combination of construction support capabilities of this battalion and includes a 225 TPH crusher, two 75 TPH crushers, and an asphalt plant. Current plans are to construct a concrete batch plant in the near future. During the period 1 February through 30 April approximately 61,000 tons of rock and 18,650 tons of hot mix asphalt were produced by the Support Complex with the expenditure of 65,865 US man-hours and 16,387 Vietnamese man-hours.

b. Eight-inch POL Pipeline, CD 65-204-06-T-5S

The project consists of two each eight-inch POL pipelines extending from a POL jetty located near the DeLong Pier in the inner harbor at Qui Nhon over a distance of approximately 4.1 miles along the beach facing Qui Nhon outer harbor to POL Tank Farm East. A pump station was erected near the POL jetty which consisted of four each, two-stage, six-inch POL pumps with accompanying fuel tank and administrative buildings. One eight-inch line has been completed and turned over to Quartermaster for use while construction of the second eight-inch line is held up pending selection of a new route. The completed line consists of coupled POL pipe along approximately two-thirds of its length with the remaining one-third being welded and buried. All road crossings are welded and buried. A major setback in construction was encountered when approximately 3000 feet of coupled line were destroyed by high seas along the beach. This section was replaced by welded and buried line, as it was impossible to move the line any higher on the beach due to the presence of a fishing village. In addition to the eight-inch line, two each six-inch spur lines have been constructed, connecting the POL center located at Qui Nhon Army Airfield to the newly constructed eight-inch line. This has been turned over to Quartermaster. To date 12,123 US man-hours and 1360 Vietnamese man-hours have been expended on the project.

c. 314-Man Cantonment (67th Evacuation Hospital), Bde 66-159DC-45

Work during this quarter consisted primarily of construction of a WOQ (65 women) which is nearly complete at this time. Project includes water-born sewage, hot and cold running water, and an air conditioned lounge. Drainage facilities, one each 20' x 120' double story tropical frame building, and two each 20' x 48' quonsets have been completed by engineer troops. An additional 20' x 120' double story

tropical frame building was constructed under the self-help program with engineer advisors. Total engineer effort expended to date consists of 21,074 US man-hours, 8980 Vietnamese man-hours, and 3166 equipment hours.

d. Qui Nhon Log Depot Reefer Storage, Bde 66-158DC-45C

The 40' x 110' refrigerated warehouse was completed during this quarter and turned over to depot personnel. A total of 33,942 US man-hours were expended on this project.

e. Well Water Fill Points, CD 65-200-01-T-MA (Qui Nhon) and CD 65-202-1-MA (Phu Tai)

Construction of one well water fill point located on the 85th Evacuation Hospital compound has been completed with the installation of the well with one each 79 GPM electric pump, one each 3000-gallon Japanese erdlator, one each 10,000-gallon elevated storage tank, one each 3000-gallon standard rubber storage tank and fill stand for trucks and water trailers. Plans for seven remaining well water fill points have been completed and construction will begin in the near future. A total of 828 US man-hours, 96 Vietnamese man-hours and 182 equipment hours have been expended to date on these projects.

f. Port Facilities (Increment 1) Road System, CD 65-201-05-T-6S

This project has consisted of clearing a 40-meter right-of-way from Route 440 to the sand causeway in Qui Nhon inner harbor and constructing a laterite road base eighteen inches deep and sixty feet wide. The two-lane road from DeLong Pier to the intersection with the causeway was widened to sixty feet. Total length of the road from Route 440 to DeLong Pier is 10,100 feet. Fill work remaining to be done consists of completing the approaches to the bridge under construction by the 523rd Engineer Company (PC). To date a total of 71,920 cubic yards of laterite have been hauled, compacted, and shaped. A total of 24,163 US man-hours, 1240 Vietnamese man-hours, and 11,737 equipment hours have been expended on the project. Future plans call for a six-inch lift of three-inch minus crushed rock in preparation for four each two-foot lanes of hot mix asphalt.

g. Road Surfacing, GP 45-1C-67A

The project calls for paving approximately forty miles of road in the Qui Nhon area. To date the following roads have been paved: Phu Tai Quarry Access Road, QL-1 from Quarry Access to intersection with Route 440, Qui Nhon By-Pass I from Route 440 to 84th Engineer Battalion camp, and Qui Nhon By-Pass II from the battalion camp to the PX Storage Depot. This represents approximately ten miles of road which have now been paved. The standard roadway is 22 feet of hot mix asphalt with five-

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foot rock shoulders. For certain roads prefabricated concrete curbs will be placed beside 24-foot wide pavements to channel water run-off to drainage systems. This is necessary where narrow right-of-way and proximity of Vietnamese housing preclude construction of normal ditches. To date a total of 75,534 US man-hours, 12,462 Vietnamese man-hours, and 51,946 equipment hours have been expended on the project.

h. Qui Nhon Drainage System, GP 45-15DC-67

This project to date consists of construction of two storm drainage systems. The 85th Evacuation Hospital drainage improvement will be a 24-inch corrugated metal pipe starting at a depth 3.7 feet below ground level on a 0.3% slope and proceding through Qui Nhon Logistical Depot to the ocean. Approximately half way the culvert is enlarged to a 36-inch culvert. The outfall will be approximately eleven feet below ground on the beach in the vicinity of the BARC ramp. This system is designed to collect hospital drainage from a stagnant sump now in use and run-off from the Logistical Depot which has an inadequate ditching system. A second storm drainage system runs the length of Villa Road from a point 500 feet west of 41st Signal cantonment, discharging into the sea at the south end of Qui Nhon Army Airfield. This system consists of 24-inch culvert for two-thirds of its length and changes to 36-inch culvert for the remaining distance to the outfall. Construction of these systems is scheduled to begin immediately.

i. 85th Evacuation Hospital WOQ, GP 45-18DC-67

Construction of the WOQ (65 women) is approximately 97% complete. This facility is nearly identical to the WOQ constructed at the 67th Evacuation Hospital. Design criteria were the same, but changes in the configuration were necessary due to real estate available. A total of 14,506 US man-hours, 2616 Vietnamese man-hours, and 1320 equipment hours have been expended to date.

j. Six-inch Pipeline Qui Nhon - Phu Cat, CD 65-208-06-T-6S

This project required construction of approximately twenty miles of six-inch POL pipeline to reach from Qui Nhon's 193,000-barrel tank farm to the Air Force Tank Farm at Phu Cat. The pipeline route follows existing highways along Qui Nhon By-Pass I to Route 440, along Route 440 to the intersection with QL-1, north along QL-1 to the intersection with QL-19 and north along rail line to Phu Cat. A pump station is being constructed on Qui Nhon By-Pass containing four each, six-inch, two-stage centrifugal pumps. The piping for the pump station is arranged so that the station can pump to Phu Cat or to An Khe as needed. (An Khe pipeline follows the same route described above to the intersection of QL-1 and QL-19). An eight-inch pipeline connects the

193,000-barrel tank farm to the pump station. Approximately 7500 feet of the six-inch line is welded and buried underground. A total of 21,945 US man-hours, 72 Vietnamese man-hours, and 4759 equipment hours have been expended to date. The project is estimated to be 90% complete.

k. Qui Nhon Logistical Depot, Bde 66-27DC-45

This project includes construction of open storage areas, shed storage, prefabricated metal warehouses, administration, security fencing, roads and drainage facilities. During this reporting period construction was completed on a 50' x 140' Pascoe warehouse, and the foundation was poured and initial construction was begun on another Pascoe warehouse of the same size. Since starting date of 1 Aug 65, 248,728 US man-hours, 37,743 Vietnamese man-hours, and 37,793 equipment hours have been expended.

l. Cantonment Construction, Bde 65-15C-45

This directive covers self-help construction throughout the Qui Nhon area. Presently approved plans call for the construction of 290,000 square feet (SF) of troop billets, 9200 SF of mess halls, 8400 SF of administration-supply buildings, and 10,860 SF of maintenance buildings. To date 75,275 US engineer man-hours, 78,942 Vietnamese man-hours, and approximately 444,046 self-help man-hours have been expended.

m. Cantonment Construction, Bde 66-142DC-45

Initially this directive called for design of self-help construction for a 3000-man cantonment in Valley A. Presently approved plans call for construction of 201,100 SF of troop billets, 9200 SF of mess halls and 1700 SF of administration-supply buildings. To date 32,891 US man-hours, 40,780 Vietnamese man-hours, and 5227 equipment hours have been expended.

n. Cantonment Construction, Valley F, Bde 66-143DC-45

This project covers self-help construction within Valley F. Presently approved plans include construction of 73,000 SF of troop housing, 4800 SF of mess halls, 1200 SF of administration-supply buildings, and 2490 SF of maintenance buildings. To date 26,574 US man-hours, 15,381 Vietnamese man-hours, and 211 equipment hours have been expended.

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EGD-BB-CO 14 May 1967
SUBJECT: Operational Report-Lessons Learned (RCS CSFOR-65) for Quarterly Period Ending 30 April 1967

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

OPERATIONS

1. ITEM: Erection of 10,000-gallon storage tanks

a. DISCUSSION: Accompanying instructions to the 10,000-gallon steel storage tank prefabricated by Butler state that vertical staves should overlap the bottom staves by two (2) bolts. However, this causes the inner neoprene lining not to line up.

b. OBSERVATION: Experience proved that such a small overlap produces leaks. An overlap of sixteen bolts has proven a better guide for overlapping bottom and side staves.

2. ITEM: Laying pipe in sand

a. DISCUSSION: A vehicle capable of moving easily on sand was a problem while laying pipe on the beach.

b. OBSERVATION: A 5-ton bridge truck proved to work well in sand.

3. ITEM: Marking buried POL pipe

a. DISCUSSION: A permanent type marking system was found necessary to mark buried pipe, since temporary marks were usually stolen.

b. OBSERVATION: Welded pickets on the pipe provided a permanent marking system.

4. ITEM: Subgrade moisture content when placing concrete in hot weather.

a. DISCUSSION: Cracks in concrete slabs may result from evaporation and seepage of water into the subsoil.

b. OBSERVATION: Subsoil should be wetted to prevent unusual loss of water into the subsoil.

5. ITEM: Entrenching machine bucket line adjustment

a. DISCUSSION: It has been learned while digging in hard laterite that the adjustment on the bucket line should be six inches rather than four inches as called for in TM 5-3805-212-10. This adjustment will prevent bucket line breakage and bending.

b. OBSERVATION: Maintenance personnel and operators should be made aware of this adjustment for digging in laterite.

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6. ITEM: D7E dozer track adjustment arm

a. DISCUSSION: It has been learned that the track adjustment arm lube fitting on the D7E dozer collects foreign matter and leaks, causing incorrect adjustment on tracks. Lube fitting should be kept as clean as possible at all times. Particular attention should be paid when greasing to prevent foreign matter from being pumped in with grease.

b. OBSERVATION: A regular lube fitting (FSN 4730-050-4230) should be used and an adapter can be made for the fitting.

7. ITEM: Prefabricated refrigerated warehouse testing

a. DESCRIPTION: Upon testing of the refrigerant piping system of a prefabricated refrigerated warehouse, several valves were found to be blocked and the heat exchanger was not completely assembled internally.

b. OBSERVATION: Neither the plans nor the instructions noted this fact. Detailed component inspection should be made prior to assembly and installation.

8. ITEM: Installation of a large culvert

a. DISCUSSION: Construction of permanent major culvert (three or more 48" or 60" diameter pipes) was hindered by water seepage into culvert beds.

b. OBSERVATION: Extreme care must be taken to provide satisfactory alternate stream flow during construction. Upstream damming, including sandbags and major fill, if necessary, must be sufficiently solid to prevent seepage into the culvert bed.

9. ITEM: Tack coating of base course

a. DISCUSSION: When all traffic could not be halted on roads being prepared for paving, some of the compacted three-inch minus base course areas had to be finish rolled several times due to the traffic during a period when the paving section was considerably behind the base course crew.

b. OBSERVATION: It was found better to apply several tack coats than to regrade and reroll. Initial tack coat should be applied as soon as possible after completion of base course. This permits traffic flow without deterioration of the base course.

10. ITEM: Water supply for earthwork compaction

ECD-BD-CO 14 May 1967
SUBJECT: Operational Report-Lessons Learned (RCS CSFOR-65) for Quarterly Period Ending 30 April 1967

a. DISCUSSION: Due to rapid evaporation of water during dry season, it has been found that current truck mounted water distributors augmented by gravity flow distributors made from Navy cubes cannot provide sufficient quantities of water over a sufficiently large area to achieve desired compaction of laterite surfaces.

b. OBSERVATION: A 5000-gallon POL semi-trailer with a gravity feed spray bar was used because its greater capacity permits several applications per tank load over a given area. This will assure sufficient retention of water by laterite while tanker is being refilled.

11. ITEM: Unsafe pintles on Chicago-Pneumatic crawler drills

a. DISCUSSION: An unsafe condition exists due to lack of hole for a safety pin on the pintle of Chicago-Pneumatic crawler drills.

b. OBSERVATION: A small electric drill with high speed metal cutting bit drilled through the pintle and latch to a diameter of 1/4" will permit a slightly kinked cotter pin to be used as a safety pin. An Equipment Improvement Report (EIR) is being submitted.

12. ITEM: 1000-gallon water distributor pump seals

a. DISCUSSION: Due to long waiting time for seals on the pumps of the 1000-gallon water distributor, a need for an expedient seal existed.

b. OBSERVATION: By machining the bakelite knobs used on 5-ton shifting levers, a very durable and reliable seal can be produced.

13. ITEM: Ram breakage on HD-16 dozers

a. DISCUSSION: Use of a dozer in quarry work created a continuous problem with rams being placed under undue stress, causing bending or breaking. There are two causes for breakage. One results from a rock being overridden, causing the saddle blocks to hang up with the push arm modification caught over the saddle block. If down pressure is applied while the ram is under this stress or if the ram catches on the upper grille hinge, it may be bent or broken.

b. OBSERVATION: The saddle block may be extended by welding short plates of steel to the existing saddle block. The upper grille hinge is simply taken off by an acetylene cutting torch and the grille tacked in place.

14. ITEM: Idler sprocket mount breakage

ZGD-DB-CO 14 May 1967
SUBJECT: Operational Report-Lessons Learned (RCS CSFOR-65) for Quarterly Period Ending 30 April 1967

a. DISCUSSION: The bolts which hold the idler sprocket on the Barber-Greene 837 dryer drum have loosened and/or sheared on several occasions.

b. OBSERVATION: The problem can be eliminated by drilling out the holes in the idler mounting plate and gearbox to accept 5/8" track bolts.

15. ITEM: Utilization of compaction equipment

a. DISCUSSION: Due to space limitation, it is often impractical to use the 13-wheel pneumatic tired roller on hot mix asphalt.

b. OBSERVATION: As soon as the asphalt reaches a temperature of 135° F, traffic should be placed on the road. Tests show densities are comparable to those obtained after rolling with a 13-wheel roller.

ORGANIZATION

16. ITEM: Requirement for a wrecker

a. DISCUSSION: An engineer construction company in the theater of operations generally has equipment at two or more field locations plus its base camp. Additional (mobile) maintenance lifting and recovery equipment is required. This need can best be met by a five-ton wrecker. The wrecker capability of the field maintenance unit is not sufficient to meet the requirements of three line companies in the theater of operations.

b. OBSERVATION: One truck, wrecker, 5-ton, M62A2, should be authorized for issue on modified TOE to each engineer construction company (TOE 5-118D) in the theater of operations.

LOGISTICS

17. ITEM: V-belt shortages for 75 TPH washing and screening plants

a. DISCUSSION: Due to the scarcity of vibrating screen drive belts for the Barber-Greene washing and screening plant, considerable down time would be expected.

b. OBSERVATION: Other belts of similar width but different lengths may be used if an extension to the mounting bracket for the electric motor is added, thereby permitting the motor to slide closer

EGD-BB-CO 14 May 1967
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(or farther) from the vibration head pulley.

18. ITEM: Non-availability of UD-18 diesel engine fuel injector pumps

a. DISCUSSION: An extensive search of supply channels revealed that UD-18 injector pumps were not available.

b. OBSERVATION: It was noticed that the injector pump from a TD-18 dozer could be modified to successfully adapt to the UD-18 by adding larger fittings to the fuel lines and reshaping the lines.

19. ITEM: By-Pass of fuel transfer pump on UD-18 diesel engine

a. DISCUSSION: Due to non-availability of fuel transfer pump for UD-18 diesel engine, an extended down time could be expected in the event of pump failure.

b. OBSERVATION: The transfer pump may be by-passed by placing a fuel tank on a higher level than the fuel surge tank and gravity feeding to the surge tank.

Section 2, Part II, Recommendations.

None.

1 Incl
Organizational Structure

WILLIAM A RANK
LTC, CE
Commanding

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EGD-3 (14 May 67) 1st Ind SGM Winter/cwt/QNL 133
SUBJECT: Operational Report-Lessons Learned (RCS CSFOR-65) for Quarterly Period Ending 30 April 1967

HEADQUARTERS, 45th Engineer Group (Construction), APO 96238, 20 May 1967

THRU: Commanding General, 18th Engineer Brigade, ATTN: AVBC-C, APO 96377
Commanding General, United States Army Engineer Command, Vietnam (Prov), ATTN: AVCC-P&O, APO 96491.
Commanding General, United States Army, Vietnam, ATTN: AVHGC-DH, APO 96307
Commander in Chief, United States Army, Pacific, ATTN: GROP-OT, APO 96558

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

1. Operational Report-Lessons Learned of the 84th Engineer Battalion (Construction) for the Quarterly Period ending 30 April 1967, is forwarded.

2. Concur with observations. Additional comments are submitted below:

a. Items 13. and 14. EIR's (DA Form 2407) should be submitted on improvement's of this category.

b. Authorization of motorized rubber-tired rollers would permit better compaction of hot mix asphalt.

c. Item 16. MTO and E action should be initiated by unit when sufficient justification exists.

K. T. SAWYER
Colonel, Corps of Engineers
Commanding

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AVBC-C (14 May 1967) 2nd Ind Cpt Mills/hwg/DBT-163
SUBJECT: Operational Report - Lessons Learned (RCS CSFOR-65) for Quarter Period Ending 30 April 1967

Headquarters, 18th Engineer Brigade, APO US Forces 96377 7 JUN 1967

TO: Commanding General, U.S. Army Engineer Command, Vietnam (Prov), ATTN: AVCC-P & O, APO US Forces 96491

1. This headquarters has reviewed the Operational Report - Lessons Learned submitted by the 84th Engineer Battalion (Construction), as indorsed, and considers it an adequate account of the unit activities and accomplishments during the period ending 30 April 1967.

2. Concur with the observations and comments of the battalion commander, as indorsed by the commanding officer, 45th Engineer Group (Construction), with the following additions:

a. Page 3, paragraph f, Road System, CD-65-201-05-T-6S, last sentence should read, "Future plans call for a six inch lift of three inch (minus) crushed rock in preparation for four each ten feet lanes of hot mix asphalt".

b. Page 6, item 4, Subgrade Moisture Content - subgrades should be sprinkled with sufficient water to provide a good reserve of moisture to aid in curing the concrete. This is especially important in these cases where the subgrade consists of a finely divided material to prevent the absorption of an appreciable amount of water from the concrete. If available, it is highly recommended to utilize polyethylene or building paper to provide a vapor or capillary water barrier and a surface to retain concrete laitance.

c. Page 6, item 5, Entrenching Machine - Adjustment should be maintained at 3 - 4" sag as per TM-5-3805-212-10. Crowding speed should be slowed to prevent over taxing the bucket line as described on page 18 of TM-5-3805-212-10.

d. Page 7, item 6, D7E Dozer Track Adjustment Arm - The 87th Engineer Battalion (Construction) has submitted an EIR on this item to replace the fitting with a regular zirk or common grease fitting. The installed fitting is cut off, and the common fitting is then brazed on. This procedure has worked well in all cases where the 87th Engineer Battalion has performed this modification.

e. Page 8, item 10, Water Supply for Earthwork Compaction - The 5,000 gallon semi-trailer is a salvage item obtained from the local property disposal officer as no longer usable for POL transport.

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CRC-C
SUBJECT: Operational Report - Lessons Learned (RCS CSFOR-65) for Quarterly Period Ending 30 April 1967

f. Page 9, item 15, Utilization of Construction Equipment - if working space is a problem two or three axle tandem rollers should be utilized. Traffic should not be used for corrective effort since it normally cannot be regulated in regards to completeness of coverage or in time frame required for correction.

g. Page 10, items 18 and 19, Fuel Pumps for MD-18 Diesel Engines, 2-9-3895-208-35S, gives the following information concerning engines for MD-18 to assist in determining correct part number for fuel injector pump. Engine model numbers for these items are: MD-18A-L28, MD-18A-L28-, and MD-18A-L43. Same diesel injection, twin, part number (42679) 2537 16392 is listed for all of the above listed engines.

C.N. DUKE
Brigadier General, USA
Commanding

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AVCC-P&O (14 May 67) 3d Ind CPT Hubbard/ccb/EH 404
SUBJECT: Operational Report-Lessons Learned (RCS CSFOR-65) for Quarter
Period Ending 30 April 1967

HEADQUARTERS, UNITED STATES ARMY ENGINEER COMMAND
VIETNAM (PROV), APO 96491 14 JUN 1967

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

1. The subject report, submitted by the 84th Engineer Battalion (Const), has been reviewed by this headquarters and is considered adequate.

2. The comments made by the submitting and Indorsing commanders have been reviewed and this headquarters concurs, subject to the following added comment:

Section 2, Part I, paragraph 16, page 9 and paragraph 2c, 1st Indorsement. Unit now has approved MTOE authorizing 2 additional wreckers above TOE 5-115D for an Engineer Construction Battalion.

FOR THE COMMANDER:

RICHARD J. DUCOTE
Colonel, CE
Chief of Staff

USARV, ATTN: AVHGC-DH

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AVHGC-DST (14 May 67) 4th Ind
SUBJECT: Operational Report-Lessons Learned for the Period Ending 30 April 1967 (RCS CSFOR-65) (U)

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 30 April 1967 from Headquarters, 84th Engineer Battalion (Construction) as indorsed.

2. Pertinent comments follow:

a. Reference item concerning ram breakage on HD-16 dozers page 8: Concur with recommendation in 1st Indorsement. This headquarters will disseminate this information.

b. Reference item concerning non-availability of UD-18 diesel engine fuel injector pumps, paragraph 1C, page 10: Concur. This headquarters will disseminate this information to units operating crushers. Additionally it will be recommended to the unit to submit an MIR on the modification and V belt substitution.

c. Reference item concerning MTOE, paragraph 2, 3d Indorsement: This MTOE is at DA pending approval. When MTOE 5-117D is approved this authorization will be two wreckers above TOE 5-115D.

FOR THE COMMANDER:

1 Incl
nc

E. T. KENNEDY
Capt, AGC
Assistant Adjutant General

[illegible]

SUBJECT: Operational Report for the Quarterly Period Ending 30 April 1967 from HQ, [illegible] (Const.) [illegible]

HQ, US ARMY, PACIFIC, APO San Francisco 96558

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:

[illegible]
MAJ, [illegible]
[illegible]

1 Incl
nc

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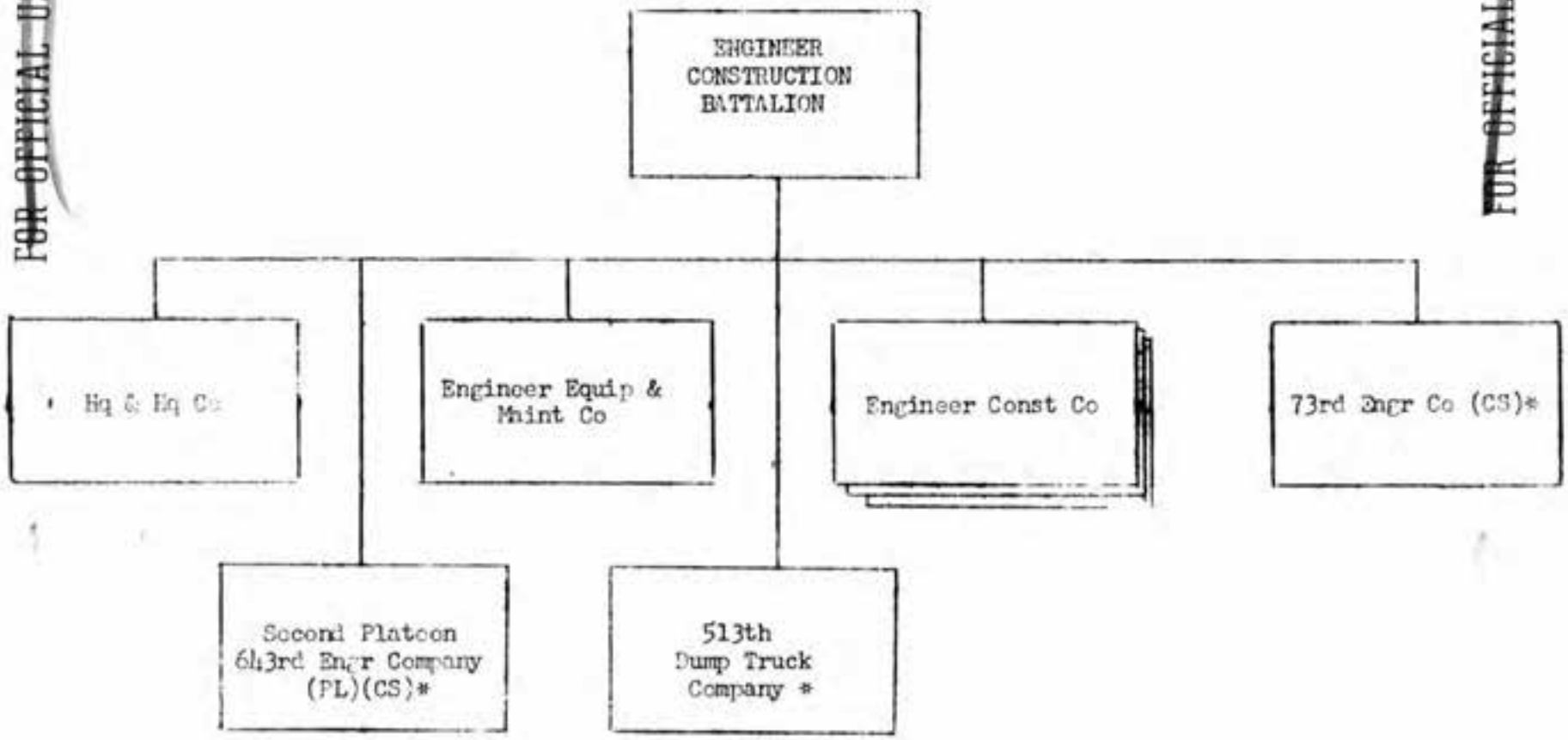
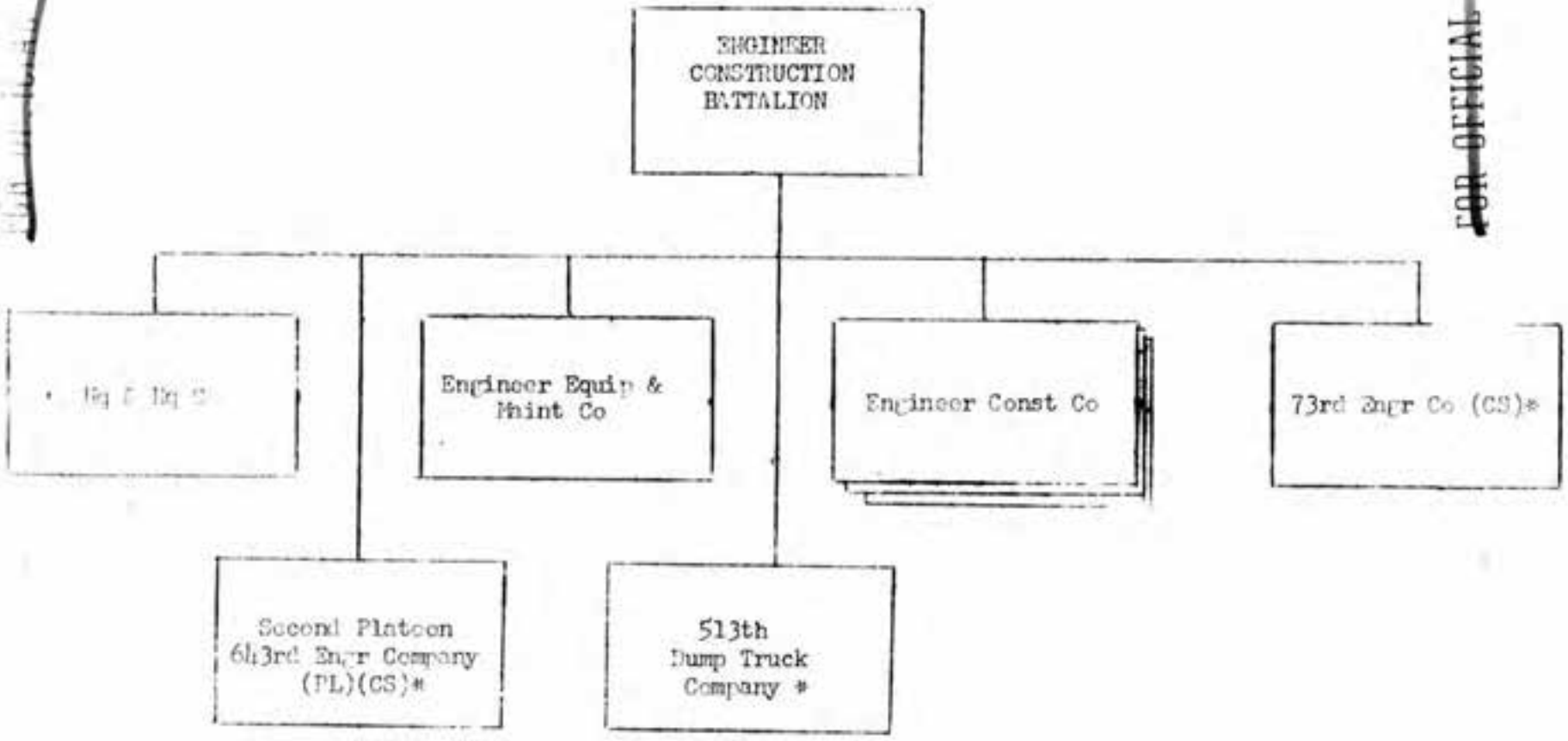
ORGANIZATIONAL STRUCTURE
84TH ENGINEER BATTALION (CONSTRUCTION)



* Attached

Inclosure 1 to Operational Report-Lessons Learned (RCS CSFOR-65) for Quarterly Period Ending 30 April 1967

ORGANIZATIONAL STRUCTURE
84TH ENGINEER BATTALION (CONSTRUCTION)



* Attached

Enclosure 1 to Operational Report-Lessons Learned (RCS CSFOR-65) for Quarterly Period Ending 30 April 1967

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DEPARTMENT OF THE ARMY
HEADQUARTERS, [illegible] ENGINEER BATTALION (CONSTRUCTION)
APO 96238

EGD-BB-CO

22 November 1967

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

THRU: Commanding Officer
45th Engineer Group (Const)
APO 96238

Army

Commanding General
18th Engineer Brigade
APO 96377

Commanding General
US Army Engineer Command, Vietnam (PROV)
APO 96375

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

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

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

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22 November 1967

AGT-AB-O
SUBJECT: Operational Report-Lessons Learned (RCS CSFOR-65) for Quarterly Period Ending 31 [illegible] 1967 (Corrected Copy)

Section I: Significant Activities, Problem Areas, and Observations.

1. Organization: The 84th Engineer Battalion (Construction) was composed of the following assigned and attached units during the reporting period:

a. Hq & Hq Co, 84th Engr Bn.

b. Co A, 84th Engr Bn.

c. Co B, 84th Engr Bn. (Co B, 509th Engr Bn, which was attached in April 1967, was redesignated as Co B, 84th Engr Bn on 23 October 1967.

d. Co C, 84th Engr Bn.

e. Co D, 84th Engr Bn.

f. 73rd Engr Co (CS).

g. 513th Engr Co (DT).

h. 3rd Platoon, 517th Engr Co (LD).

i. 2nd Platoon, 554th Engr Co (FB).

j. 2nd Platoon, 643rd Engr Co (PL).

k. Co C, 19th Engr Bn (Cbt). Co C was attached to the 84th Engr Bn in July and was returned to the control of the 19th Engr Bn on 16 October 1967.

l. Co D, 19th Engr Bn (Cbt). Co D was attached during the month of July and returned to the 19th Engr Bn on 15 August 1967.

2. Unit Operations:

a. Hq & Hq Company: The utilities section, augmented with Vietnamese laborers, continued work on the improvement of the Camp Williams Cantonment Area. Several new self help billets were constructed and drainage within the area was improved. Shower and washing facilities were improved with the introduction of an all potable water system and hot water heaters.

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DGD-BB-CO 22 November 1967

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

b. Company A: During the reporting period the quarry platoon was attached to the 73rd Engr Co (CS) to operate their quarry. The company has placed DBST at the Sea-Land Containership Service terminal, Long My Log Depot, Aviation Depot, and the Direct Support Maintenance Complex. It has also provided asphalt for berm stabilization at the Phu Tai ASP. Part of the equipment platoon was also engaged in hot-mix patching of failures on LOC's.

c. Company B: Company B has been working on two projects this period - The Phu Tai ASP and the Direct Support Maintenance Complex. At the ASP, 72 of 72 berms have been raised to 12 feet on all four sides; 33,000 of 50,000 linear feet of roads have been built; drainage is 95 percent complete; 72 pads have been expanded to 60 feet by 100 feet; and work has begun on the vehicle holding and assembly area, the motor pool, and the helipad. At the direct support maintenance facility, nine of 14 40-foot by 96-foot enclosed Pascoe buildings are complete. 16,000 square feet of DBST and one standard maintenance building are complete. Four Pascoes and two wood frame buildings are under construction.

d. Company C: During the reporting period Co C completed the Wung Chun access road - a 2.6 mile road with a vertical rise of 1,800 feet. The Sea-Land Containership Service Terminal was completed and occupied by the user. The terminal provides DBST hardstand and lighting for parking 800 semitrailers and parking space with electrical distribution for 60 refrigerator semitrailers. The prefab yard operated by Co C has prefabricated an average of one 20-foot by 100-foot double story standard tropicalized building per day. In late October the company began expansion work on the ARVN ASP near Qui Nhon. Other projects include a 3,000-foot storm sewer system for the City of Qui Nhon, Armed Forces Radio Station, upgrading of Qui Nhon city roads, and the Qui Nhon PX Shopping Center.

e. Company D: During the reporting period Co D completed the Long My Aviation Depot, begun by the 19th Engr Bn, with the exception of 20,000 square yards of DBST hardstand. The other project they have worked on is the Long My Log Depot. The project consists of erecting 12 each 120-foot by 200-foot prefabricated buildings, laying 312,000 square yards of DBST open storage hardstand, erecting 28 each 40-foot by 100-foot prefabricated buildings, and providing drainage and interior roads for the depot. All buildings except one of the 120-foot by 200-foot buildings are complete except for interior lighting. The drainage and interior roads are complete.

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f. 70rd Engineer Company (CS): The company's primary effort was the operation of the Phu Tai Construction Support Complex for the production of aggregate and hot-mix asphalt to support construction in the Qui Nhon area and the upgrading of QL#1. The rock crushing capability consisted of one 75 TPH and one 225 TPH primary units, and two 75 TPH and one 225 TPH secondary units. The unit paved 25 miles of road and produced over 60,000 cubic yards of aggregate during the reporting period.

g. 513th Engineer Company (DT). Primary support was in road rehabilitation, horizontal construction at the Phu Tai ASP, Long My Depots, Sea-Land Containership Area, and primary LOC's. One squad of trucks was attached to the 19th Engineer Battalion (C). Fifteen Euclid dump trucks from the company supported the 35th Engineer Battalion (C), the 84th Engineer Battalion (Const), and the 589th Engineer Battalion (Const) quarry crusher operations during the reporting period. The company compiled over 379,000 miles on the dump trucks and over 5,200 miles on the Euclids during the reporting period.

h. 3rd Platoon, 517th Engineer Company (LE). The effort of this platoon has gone almost entirely to construction support for the 84th Engineer Battalion (Const) in the Qui Nhon Area. Work areas include the Phu Tai ASP, Long My Depots, 5th Maintenance Battalion Maintenance Area, rock and asphalt hauling for the LOC program, Sea-Land Containership Service area, and Vung Chua road project.

i. 2nd Platoon, 554th Engineer Company (FB). During the reporting period this platoon had a continuous mission of inventory and maintenance of tactical bridging within the Battalion Area of Operation. In addition the platoon supported both the 19th Engineer Battalion (C), and the 35th Engineer Battalion (C) in their QL#1 upgrading program.

j. 2nd Platoon, 643rd Engineer Company (PL). This platoon has been under the operational control of the 523rd Engineer Company (PC) since 21 August 1967. It has participated in the construction of a POL tank farm (Location AV35) just outside Qui Nhon City.

b 3. PERSONNEL, ADMINISTRATION, MORALE, DISCIPLINE: During the reporting period administrative changes were made in the Personnel Office designed to keep the personal touch in the personnel section (See Section 2, Part I). Religious service attendance increased toward the latter portion of the quarter. The Battalion's religious activities have also expanded and now include a small choir and mid-week study session. Overall morale remains high.

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4. INTELLIGENCE AND COUNTER INTELLIGENCE: Base camp security was incorporated in the Qui Nhon Installation defense plan. Therein, offensive operations and outer security were provided by tactical FWMF; artillery, flareships, and gunships were available on call; and local and physical security were provided by [illegible] units. This unit experienced considerable loss of manpower in providing local and physical security. Tactical security was not required but was available on request from FWMF. Enemy situation intelligence was provided in the form of intelligence summaries from Capitol ROK Division, USSF, I FFORCEV, USARV, and Binh Dinh Province. Personal contact was also maintained with the 22nd ARVN Infantry Division, 1st Air Cavalry Division , Capitol ROK Division, USSF, Binh Dinh Province, Qui Nhon Installation, and 45th Engineer Group.

5. PLANS OPERATIONS, AND TRAINING: This reporting period covers the last portion of the dry season in this battalion's Area of Operations. Construction weather remained good resulting in maximum production on the part of all units. Work was continuous during the period with the exception of Sunday mornings which were reserved for religious services and mandatory training. Two small rifle ranges were established within the battalion's area for the purposes of weapons training and zeroing.

6. LOGISTICS: During the reporting period a complete inventory of all on hand construction material was accomplished and items were indexed on stock record cards. The only critical continuous shortage that exists in the class IV area are electrical supplies. The battalion consumed in excess of 105,000 gallons of MO Gas and 130,000 gallons of diesel fuel. An average of more than 500 requisitions were processed each week of the reported quarter.

7. CIVIC AFFAIRS: Most of the civic action projects performed by this battalion during the reporting period were not of the type that warrant civilian participation. The projects were oriented more toward service to the Vietnamese. The projects included the distribution of food and medicine, mosquito spraying in selected areas, monetary support of the Holy Infant Orphanage, scrap lumber given to St. Joseph School for desks and chairs, clothing given to the Kim Chau orphanage, dozer work for the new Khu Tam Cu orphanage, and support of the Qui Nhon Ministry of Public Works. This battalion also employed in excess of 400 Vietnamese Nationals daily.

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EGD-RB-CO 22 November 1967
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Section 2, Part I, Observations (Lessons Learned).

OPERATIONS

1. ITEM: Steel pipe concrete screed

a. DISCUSSION: When placing concrete in 20-foot wide forms with a scoop loader, considerable effort was required to operate a screed made from 2-inch by 6-inch lumber. To reduce man power requirements, a piece of 4-inch steel pipe filled with scrap steel was used. The pipe was pulled by the scoop loader as it backed out of the forms for another load of concrete. The pipe was allowed to roll freely.

b. OBSERVATION: Use of a pipe screed resulted in a savings of manpower and left a smooth, easy-to-finish surface.

2. ITEM: CMP Manholes

a. DISCUSSION: In the construction of a corrugated metal pipe (CMP) storm sewer system, it was necessary to close sections of the trench as soon as possible to open the road to traffic. The system was under a road subject to heavy traffic to include loaded BARC's (Barge, Amphibious, Resupply, Cargo). Manholes were made by welding a prefabricated section of 36-inch CMP (the same size as the main sewer) to the top of the main line and then backfilling. In this way, the trench could be backfilled within 2, 3 or 4 hours after the main line was laid. The top of the manhole was reinforced concrete with a steel plate for a cover. The size of the top was calculated to resist the traffic load by bearing on the soil around the manhole. The top had 2-inch clearance between the CMP and the concrete to prevent loading the CMP. See inclosure one.

b. OBSERVATION: The manhole has been subject to BARC traffic for about four months with no apparent damage.

3. ITEM: Missing components of prefabricated buildings

a. DISCUSSION: Eve struts and sway braces for a 120-foot by 200-foot prefabricated steel Butler building were missing from the building kit and could not be obtained through the supply system. Eve struts (8ES) for a 20-foot by 48-foot Pascoe building were substituted after drilling about 110 holes in each to match the Butler bolt pattern. For the sway braces, bolts were welded to rebar of the same size as the missing sway braces.

b. OBSERVATION: The adapted eve struts and expedient sway braces proved effective and enabled the building to be completed.

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4. ITEM: Skip divider for 16S concrete mixer

a. DISCUSSION: During extended concrete mixing using a 16S mixer, it was found that troop fatigue reduced production toward the end of the day. This was mainly due to double handling caused by 2 cubic foot measuring boxes. To eliminate this a steel divider was welded into the skip so that proper mix proportions were obtained without using the measuring boxes.

b. OBSERVATION: Placing a divider in the skip of a 16S mixer caused a significant decrease in troop fatigue and a corresponding increase in production. The divider is effective when large amounts of concrete are to be produced without changing the mix design.

Section 2, Part II, Recommendations.

None.

James T Fraser
JAMES T FRASER
LTC, CE
Commanding

1 Incl
CIP Manhole

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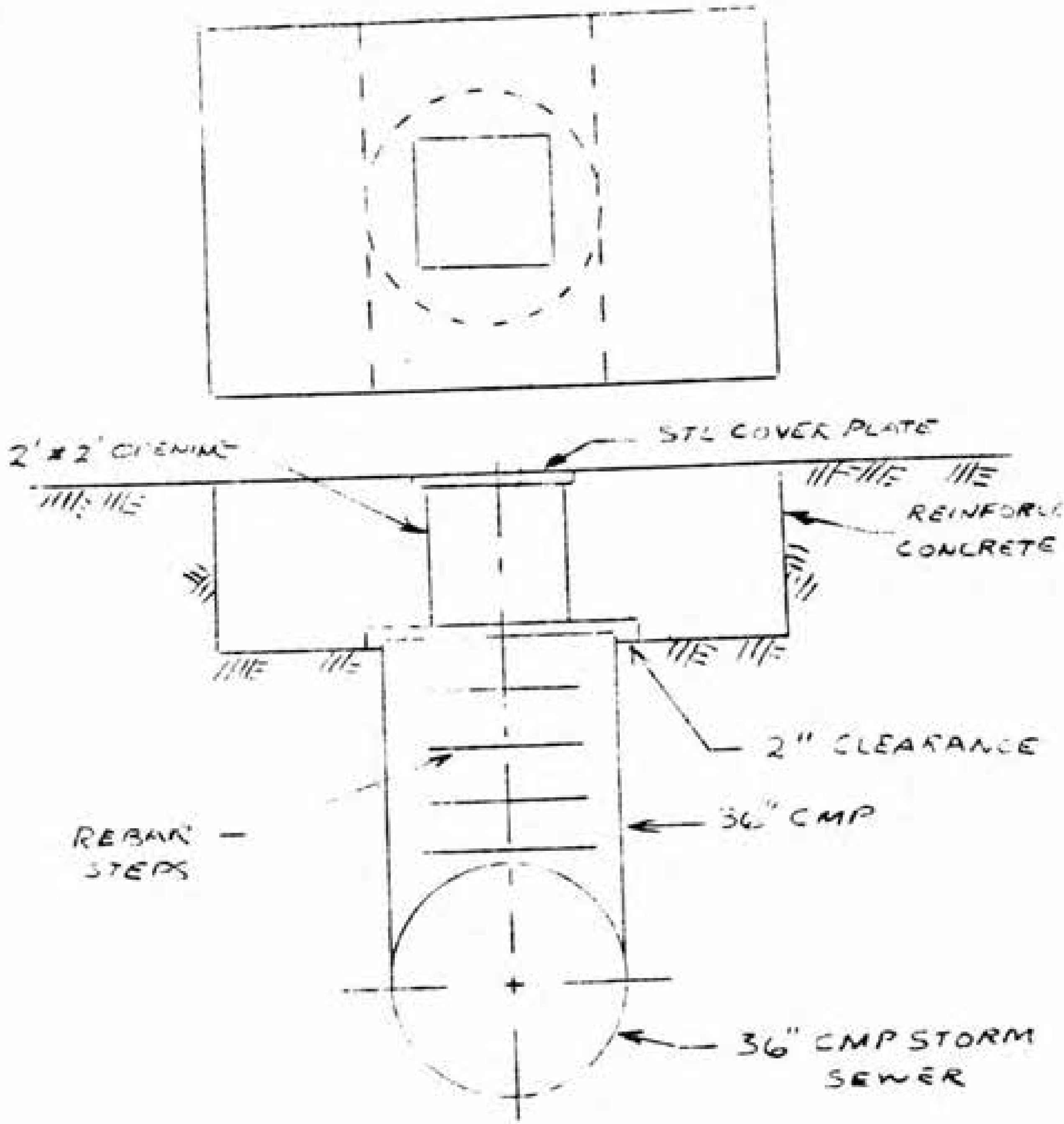

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DEPARTMENT OF THE ARMY
HEADQUARTERS 84TH ENGINEER BATTALION (CONSTRUCTION)
APO 96238

EGD-BB-CO

10 February 1968

SUBJECT: Operational Report Lessons Learned (RCS CSFOR-65) for Quarterly Period Ending 31 January 1968

THRU: Commanding Officer
45th Engineer Group (Const)
APO 96238

Commanding General
18th Engineer Brigade
APO 96377

Commanding General
US Army Engineer Command, Vietnam (PROV)
APO 96375

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

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

TO: Assistance 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.

a. Command

(1) Organization

(a) Headquarters & HQ Co, 84th Engr Bn

(b) Co A, 84th Engr Bn

(c) Co B, 84th Engr Bn

(d) Co C, 84th Engr Bn

(e) Co D, 84th Engr Bn

(f) 513th Engr Co (DT)

(g) 3rd Platoon, 517th Engr Co (LE)

(h) 73rd Engr Co (CS)
Unit departed this command on 15 Dec 67

(i) 2nd Platoon, 554th Engr Co (FB)
Unit departed this command on 10 Dec 67

(j) 2nd Platoon, 643rd Engr Co (PL)
Unit departed this command on 15 Jan 68.

(2) Unit Operations

(a) HQ & HQ Company: The utilities section, augmented with Vietnamese laborers continued work on the improvement of the Camp Williams Cantonment Area. Construction included a 3200 SF junior NCO billet, a new mess hall area, a concrete grease rack and two machine gun emplacements. Other projects included maintenance of all buildings and clearing fields of fire.

(b) Company A: The efforts of Company A included the maintenance and repair of battalion ordnance and engineer equipment, the production of rock and the distribution of asphalt to improve LOC's. Some of the major accomplishments included: paving 8.4 miles of [redacted] north of Phu Cat, surfacing 31,600 SY of storage area at Long My Depot with DBST, surfacing 9724 SY of parking area at the Phu Thanh Milk Plant with hot mix asphalt, and producing 35,172 tons of crushed rock.

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(c) Company B: Construction continued this period at the Phu Tai Maintenance Complex with the completion of the remaining five Pascoe buildings and four wood frame buildings as well as the ½ mile of road network and accompanying drainage system. Accomplishments at the Phu Tai ASP included completion of a helipad, completion of 17,000 SY of roads, installation of 3716 FT of culvert and installation of electrical and compressed air systems in the Ammunition Renovation Building. Earthwork at the Long My Depot resulted in the completion of 23,000 SY of laterite hardstand. Other smaller projects include a 7680 SF medical depot, the Phu Thanh water point, and maintenance of 32.8 miles of roads in the Qui Nhon area.

(d) Company C: Company C accomplished a variety of projects this period. The AFRT radio station, Qui Nhon was completed and included laterite fill, an air conditioned transmitter building, generator and tuning sheds, tower bases and guyline anchors, and transmission cable poles. The Qui Nhon Post Exchange building was completed consisting of two Pascoe buildings (7600 SF) with plywood interior walls, flourescent lighting and tile floor. A cantonment area was prepared on top of Vung Chua Mountain by assembling five quonsets (4800 SF) on a prepared ledge. The ARVN Ammunition Supply Point was upgraded to include enlarging 40 ammo pads, installing 43 culverts and shaping 4 miles of roadway. Projects which are well under construction include a 3340 SF maintenance building located at the 5th Transportation Command, a 55,000 SY hardstand area for the Qui Nhon Harbor and a 180 thousand gallon per day well water fill point.

(e) Company D: Four major projects have continued this period. Efforts at Long My Depot resulted in the completion of the last of seven Butler buildings (24,000 SF), the initiation of electrical installation in all buildings, the completion of a four unit reefer shed, and the preparation of the subbase for all interior roads. Repair continued on the Aviation Depot, Long My and resulted in the improvement of the electrical system and relocation of the generator shed. Road construction was begun on QL#1 south of the Phu Tai ASP. Blasting and cutting operations have continued along a two mile stretch of road in order to widen the roadway to two lanes. Construction effort was also placed on the new Long My Cantonment Area and resulted in completion of two 4000 SF barracks and a 5600 SF mess hall.

(f) 73rd Engineer Company (CS): The company's primary effort was the operation of the Phu Tai Construction Support Complex for the production of aggregate to support construction in the AOR and the upgrading of QL#1. The company left the command of the 84th Engr Bn on 15 Dec 1967.

(g) 513th Engineer Company (DT): During this period dump truck support was given to four different Engineer Battalions and two separate Engineer Companies within the II Corps Area. Three quarries, Phu Tai, Tam Quan & An Khe, have used Euclid dump truck support to haul over 100,000 CY of rock. Road construction on QL#1 from Bong Son to Duc Pho required hauling 25,000 CY of fill. The majority of the company supported 84th Engr Bn projects to include hardstands at Long My Depot, road construction on QL#1 South and in the ASP, and surfacing of QL#1 North.

[redacted]

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(h) 3rd Platoon, 517th Engineer Company (LE): The effort of this platoon went almost entirely to construction support for the 84th Engineer Battalion (Const) in the greater Qui Nhon area. Work areas included Transit Storage Area, ARVN ASP, Phu Tai/ASP, Long My Depot, and QL#1 South.

(i) 2nd Platoon, 554th Engineer Company (FB): During this reporting period the platoon had a continuous mission of inventory and maintenance of tactical bridging within the Battalion Area of Operations. In addition the platoon supported both the 19th Engineer Battalion (C) and the 35th Engineer Battalion (C) in their QL#1 upgrading program. The platoon departed this command on 10 December 1967.

(j) 2nd Platoon, 643rd Engineer Company (PL): This platoon was under the operational control of the 523rd Engineer Company (PC). It participated in the construction of a POL tank farm (Location #35) just outside of Qui Nhon. The unit departed this command on 15 January 1968.

b. PERSONNEL, ADMINISTRATION, MORALE AND DISCIPLINE: During this reporting period the battalion continued its record of over 90% participation in the Savings Bond program. There were a total of 65 recommendations for awards submitted for deserving individuals for outstanding performances. Three deaths occurred during this time as a result of two accidents.

c. INTELLIGENCE AND COUNTERINTELLIGENCE: There was greatly increased enemy activity in the area resulting in a much bigger commitment for security of job sites and base camp security. The provisional platoon controlled by this unit on Ke Sein mountain came under enemy attack several times; the most serious occuring on 30 January resulting in 7 friendly KIA and 4 enemy dead. Also a patrol from this unit on 12 December killed one VC and captured several documents which had considerable intelligence data on VC activities in the Qui Nhon area. Good intelligence liaison was maintained by this unit with Binh Dinh Province, Capital ROK Division, 22nd ARVN Infantry Division, 1st Air Cavalry Division, and 5th Special Forces Group.

d. PLANS, OPERATIONS, AND TRAINING: Monsoon weather hampered operations during November and early December, but good construction weather was enjoyed during the latter part of the quarter. Planning was accomplished for several possible shifts of AOR's, and coordination was made with 6th ARVN Engineer Group as both units worked on projects in the same area. Training during this period emphasized OJT of many newly assigned personnel and also weapons familiarization of all people.

e. LOGISTICS: The index card system of stock control which had been initiated last quarter was updated daily and is proving to be an efficient management tool. The only critical continuous shortage that existed in the class IV area was screen wire and electrical supplies. The battalion consumed in excess of 100,000 gallons of MO Gas and 120,000