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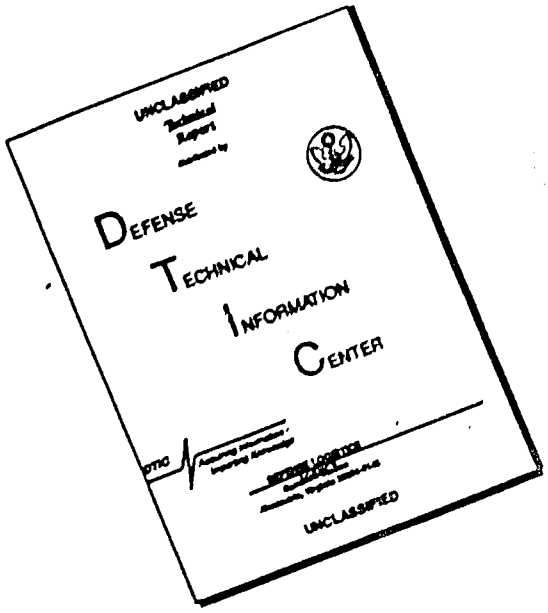

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DEPARTMENT OF THE ARMY
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IN REPLY REFER TO

AGAM-P (M)(20 Feb 69) FOR OT UT 684134 25 February 1969

SUBJECT: Operational Report - Lessons Learned, Headquarters, 864th Engineer Battalion (Const), Period Ending 31 October 1968

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Kenneth G. Wickham

KENNETH G. WICKHAM
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DEPARTMENT OF THE ARMY
HEADQUARTERS, 864TH ENGINEER BATTALION (CONST)
APO 96240

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SUBJECT: Operational Report of the 864th Engineer Battalion (Construction) for Period Ending 31 October 1968, RCS CS FOR-65 (R1)

THRU: Commanding Officer
35th Engineer Group (Construction)
APO 96312

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

Commanding General
United States Army, Vietnam
ATTN: AVHGC(DST)
APO 96307

Commander in Chief
United States Army, Pacific
ATTN: GPOP-DT
APO 96588

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

1. <u>Section 1, Operation: Significant Activities.</u>

a. Battalion Narrative

Changes in the command and staff elements of the 864th Engineer Battalion occurring during this reporting period included the Battalion Commander,

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Battalion Executive Officer, Battalion S-3, Battalion S-4, Company Commanders of A Company, C Company, and D Company, Engineer Equipment Maintenance Officer, and Communication Officer. LTC Ralph A. Karst assumed command of the Battalion vice LTC Donald A. Wisdom on 28 August 1968 who assumed command of the 19th Engineer Battalion (Combat). On 29 October 1968 LTC Arthur Daoulas assumed command vice LTC Karst who moved to a position on MACV staff. MAJ Paul Bazilwich arrived 1 September 1968 replacing MAJ Hugh P. Johnson who assumed duties as the Operations Officer. CPT Richard Anderschat, the previous operations officer, was reassigned to the S-3 section, 35th Engineer Group. 1LT Nicholas H. Koch vacated the Battalion S-4 position to assume duties as a platoon leader in B Company on 27 August 1968. CPT Paul M. Smeltzer arrived in this unit on 12 September and assumed the duties of Engineer Maintenance Officer on 24 September. 1LT Timothy J. Asher assumed duties as the Battalion S-4, vacating his position as A Company Commander to CPT L. William Kehe on 24 September. CPT Robert J. Wilder assumed command of C Company on 14 August vice CPT Daniel H. Hornberger who was reassigned to the 19th Engineer Battalion. 1LT Charles E. Graham assumed command of D Company upon the departure of 1LT Oren for CONUS. The Battalion received a new Chaplain, CPT Robert L. Ritter, who arrived on 13 September 1968, replacing MAJ Harold E. Nunemaker, who was reassigned to the 35th Engineer Group. On 26 September 1968, 1LT Donald A. Mazzeo was assigned as the Battalion Communication Officer. At the end of the reporting period, CPT Robert W. Scapy reported into the unit as Battalion Surgeon, a position that had been vacant since 21 June 1968. The Battalion engaged in 26 company days of training during the reporting period. This training included Command Information, Character Guidance, Safety, and individual and crew served weapons firing for familiarization and qualification. During this period the Battalion also undertook a vigorous program of replacement training. This training included Gas Chamber Exercises, Viet Cong Tactics, Interior Guard, Convoy Procedures, Ambush and Counter Ambush measures, Immediate Action, PW and Detainee Handling, and Familiarization and Zero Firing of individual weapons. These classes were conducted on a weekly basis for all replacements received during the previous 7 days.

In preparation for rehabilitation of QL-1 North of Nha Trang, Company C relocated the balance if the unit to the cantonment area established by the First Construction Platoon in Ninh Hoa. This move was accomplished in the first week of September with no significant problems encountered.

There were no changes in attachments for the period August through October.

Despite the influx of new personnel, the Battalion continues to experience shortages in assigned personnel. The average aggregate strength during the quarter was approximately 167 less than the authorized strength. Two areas of special interest concerning shortages are the medical specialists slots, and personnel clerks. Of the eight (8) medical specialists authorized, only three (3) positions were filled. With regard to personnel clerks occupying positions in the battalion of the ten (10) authorized and assigned, only four (4) are school trained. Consequently, this battalion has had to select other personnel, i.e., pioneers, carpenters, etc., who possessed acceptable clerical aptitude scores and retrain them

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through OJT to avoid critical vacancies resulting from losses of qualified personnel.

The Battalion continues the implementation of the Engineer Force Structure Program discussed in the last period's report. Specifically, of the 306 civilian spaces authorized, 158 are now filled by Vietnamese Civilian workers.

Two (2) internal changes in organization were effected during the reporting period. The special mission "base course" platoon organized by pooling select items of equipment within the battalion was disbanded. Since each line company now has a section of road to upgrade most of the pooled equipment was returned to assigned units. Maintenance and operations have improved considerably with the change. With the assignment of a Utilities NCO to this organization, the Utilities Section in Headquarters and Headquarters Company was reformed.

The major construction effort for the Battalion continues to be rehabilitation of National Highway QL-1 and Provincial Highway HL-1. No major vertical projects were undertaken during this reporting period.

Enemy action did not cause any delays in the Battalion's construction program.

Weather, however, caused a significant delay in the Construction progress. The Nha Trang area was subjected to a severe tropical storm on 19 and 20 October. The high volume of rain falling in a short period of time caused widespread flooding. Flood damage included 3 bridges washed out, 1 bridge badly damaged, 6 bypasses washed out or badly damaged and several sections of road which had not been upgraded were damaged or rendered impassable in the 864th Area Of Responsibility.

Bypasses were opened and the road net made passable due to the quick response of the Battalion in getting equipment on the road as soon as the subsiding flood waters allowed. Two (2) of the three (3) bridges washed out were small spans and were easily replaced. A 415 foot section of bridge on HL-1 (HL1-1 at BP 938558) washed out the evening of 19 October. Waters subsided adequately for B Company and D Company to commence work on repair of this bridge on 25 October. The operation was conducted on a 24 hour basis with no significant problems encountered. The bridge is a 692 foot long timber trestle bridge with pile piers. Due to the outstanding drive and team work displayed by all personnel and units involved the bridge was completed and open to traffic by 1530 hours on 31 October 1968.

An indication of the Battalion's achievements is given by the following statistics for the period:

Crushed Rock Produced	4,451 cu yds
Unsuitable Fill Removed	9,500 cu yds
Fill Hauled	183,806 cu yds.

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Base Course Spread	33,300 cu yds
Highway Completed to MACV Standards	6.76 km
Subbase Prepared	3.78 km
Subgrade Prepared	3.46 km
Maintenance of Roads	204 km
Concrete Placed w/o Reinforcement	291 cu yds
Concrete Placed w/ Reinforcement	296 cu yds
Wood Frame Buildings Constructed	36,169 sq ft
Wood Hutments Constructed	7,200 sq ft
Open Storage Stabilization	4,720 sq ft

PACEMAKER support of the civic action program was continued in several areas. Donations were made to inhabitants of Cai Cai village. These donations, made by dependents of the 864th Engineer Battalion, included such items as clothing, food, candy, and toilet articles. Donations of scrap lumber and unsuitable fill material were made several times during the reporting period.

An act of special interest to every man in the Battalion occurred on 5 September 1968 when the Department of the Army designated the 864th as the "PACEMAKERS".

Morale continued to be high in the Battalion as indicated in part by the high overseas extension rate of personnel to fill their own vacancies.

Attached as inclosure number one (1) is a listing of organic and attached units of the Battalion.

b. Headquarters and Headquarters Company Narrative

During the reporting period, Headquarters and Headquarters Company continued to support the unit administratively.

The S-1 section and Personnel continued to execute normal function effectively to include procurring military and local National replacements.

The S-2/3 section continued its normal operations during this reporting period. Replacements were received for several key positions during the reporting period CPT William R. Ledbetter arrived in this unit the last week in August and replaced 1LT Cranor who departed for CONUS shortly thereafter. 1LT Dennis M. Wolf arrived in the Battalion on 14 September and assumed the duties of the Civil Engineer, replacing 1LT Albert B. Coltrane. 1LT Robert N. Carnahan arrived from CONUS the

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second week in September and brought the S-3 section up to strength in officers. MSG Donald V. Stock was reassigned as the Operations Sergeant on 6 August, filling a critical position which had been vacant since 12 June 1968. Survey and Soil's specialist continued to insure the high quality of our upgrading program on highways QL-1 and HL-1. Designs were completed for the following:

1. Two Concrete Culverts (QL-1, HL-1)

2. Timber Trestle Bridge (Bridge #1, HL-1)

3. Officer's Club - Camp McDermott

4. Maintenance Facilities

5. Bunker Complex

6. 50' Steel Stringer, Concrete Deck Bridge

The S-4 section continued to fill requests for construction materials and supplies expeditiously. No major delays to the Battalion construction effort were experienced due to lack of construction supplies.

The Battalion Aid Station activities were normal during the period. Through coordination with the 43rd Medical Group, the enlisted men of the Battalion were given two lectures by CPT Kunkel, the Preventive Medicine Officer. These lectures concerned the use of marijuana, opiates, and also preventive measures to be taken to preclude venereal disease infections. Both lectures were very informative.

c. A Company Narrative

During the first month of the reporting period, A Company continued operation of the multi-unit rock crusher site at Nha Trang. Production was hampered by the lack of non-standard parts necessary to keep the crusher operational. Production totaled 4451 cubic yards for the period 1 August through 4 September 1968. On 4 September the entire rock crushing facility was turned over to R.K/BRJ.

With the loss of the 200 TPH crusher at Nha Trang, all effort was directed to opening the quarry at Thon Tan Thuy. The initial plan is to install two (2) 75 TPH primary and one (1) 75 TPH secondary at a site immediately adjacent to the railroad (BP 981737). The first primary crusher will be operational 15 Nov 68. The remaining crushers are still enroute from Qui Nhon. Transportation problems encountered by low bridge capacities over the Song Cai River were solved by transporting the heavy equipment via LCU. An adequate high tide landing site was established south of Thon Tan Thuy at (CP 045691). Crawler tractors were required to unload the crusher.

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The new quarry facility will be operated by a crew of 48 men billeted initially with Company C, 864th Engineer Battalion. At a later date, it is intended to locate personnel at the site since a ROK unit located directly across the highway from the quarry face can provide any reaction force or artillery support required. The reliability of the ROK support has already been tested, hence, a two shift operation appears feasable. Lessons learned from previous quarry operations have been applied to the layout of the new quarry. Initial blast rock will come from a knoll directly over the crusher site. Material from this knoll is blue granite and in sufficient quantity to last about six months. It will be used in construction support and to upgrade the haul road to the major quarry face located directly behind the knoll from the crusher site. Material at the quarry face is blue granite of high quality. It's future worth is now being tested by Quinton Engineering. Present indications are that the quarry should provide good rock for a long time to come, hence, the haul road and service areas for the quarry face are being constructed with a long range plan in mind.

Engineer Direct Support Maintenance became involved in extensive overhaul of non-standard equipment necessary to complete the battalion mission. Standard military parts were used in non-standard equipment by adaption when non-standard parts were not available. In particular, a 2½ ton truck engine and transmission were installed in a Tampo Roller when a replacement engine and transmission for the roller could not be obtained. The conversion was relatively simple. Gears had to be eliminated from the transmission for safety reasons.

The Battalion Maintenance Section developed a plan for inspection of all Battalion equipment and to expedite dispatch of all deadlined equipment to direct support units for repair. However, a shortage of personnel and great traveling distance between units has hampered the effectiveness of the plan. Efforts to expedite evacuation continue.

Key personnel positions for the quarter were adequately filled. 1LT Vernon T. Blankinship arrived 8 August and was assigned to the Maintenance Platoon Leader position. SFC Billy Denny moved to the Equipment Platoon as Platoon Sergeant while SFC Theodore Patton was assigned to the Engineer Direct Support Maintenance Section.

d. B Company Narrative

Rehabilitation and maintenance of National Highway QL-1 from Suoi Vinh (BP 995375) to Dien Khanh (BP 938558) dominated Company B construction efforts for this quarter. The company was assigned an additional three miles of road for upgrading to MACV standards. The company completed 3.12 miles of subbase reconstruction and continued placing base course on the previously prepared subbase in the battalion's area of responsibility. The composite "base course platoon" formed during the last quarter was disbanded. Nine (9) dump trucks were assigned to a vertical construction platoon, in addition to the six (6) it normally has, to support base course and asphalt hauling operations. All spreading and compacting equipment from the "base course" platoon was attached to the Grading and Compaction Section of the Earthmoving Platoon for ease of control. Continued paving

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support was received from the 610th Engineer Company (Construction Support). Heavy rains beginning in the second week of October have thus far resulted in approximately two weeks of lost productivity on the rehabilitation project. One vertical construction platoon and a small earthmoving detachment continued vertical construction in the Nha Trang area.

Subgrade construction on QL-1 for the period involved the removal of 4,700 cubic yards of waste material and the placement of nearly 43,400 cubic yards of fill material to complete the original 3.12 miles of upgrading assigned to this unit in March. One borrow pit was established during this quarter to provide material for the additional three miles of upgrading recently assigned.

The Earthmoving Platoon, along with the "Base Course Platoon" before it was reorganized, also placed and compacted 33,300 cubic yards of base course. The combination of dump trucks and a grader to place and initially spread base course material was largely replaced by 18 cubic yard scraper pans hauling and spreading base course in a single, faster, operation.

The 610th Engineer Company (Construction Support) has completed an additional 6.76 KM of asphalt paving this quarter, bringing the total amount paved to 9.33 KM since mid-July. A reevaluation of the pavement design resulted in a change from two each, 1½ inch compacted lifts to a single 2 inch compacted lift of asphalt.

In support of the QL-1 restoration project the First Construction Platoon neared completion of one of two 15-foot long prefabricated concrete bridges included in the project. Construction involved placement of 18 inch thick footers on a stabilized foundation, forming and pouring two 11-foot high, 1½ foot thick, steel reinforced concrete abutments, and precasting and placing of reinforced concrete treadway and walkways. Major construction problems encountered were stabilization of platforms for the abutments and placement of the treadways. The former was overcome by excavating twelve feet below footer elevation and backfilling with clean blast rock ranging in size from 48 inch diameter down to 8 to 10 inches. The requirement for clean blast rock is essential as excessive saturated fines offer little support. The problem of treadway placement was overcome by acquiring a 40 ton crane from A Company in lieu of the company's organic 20 ton crane which was not capable of handling the heavy concrete sections. In addition to the bridge, the First Platoon placed approximately 60 feet of 36 inch corregated metal pipe culvert on the QL-1 upgrade project. They also completed four (4) sets of masonary headwalls for culverts, began construction of a rip-rap wall for erosion control, and removed a fractured concrete deck from a 30 foot MPW bridge. The First Construction Platoon also expended effort in upgrading the company's base camp. Tasks accomplished included improvement of guard bunkers rehabilitation of shower facilities, repair of tent frames, reconstruction of personnel bunkers, and initiation of construction of a new mess hall.

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The Second Construction Platoon continued its efforts on a varity of vertical construction projects in Nha Trang. Primary effort was devoted toward completing the AUTOSEVOCOM facility, a 20 by 50 foot concrete block building located on the Nha Trang Air Base. Work accomplished this quarter included completion of concrete block walls, corrugated abbestos roofing, interior partitions, 75% of acoustical wall tiling, installation of air conditioning ductwork and hanging of all doors. Work remaining includes installation of the air conditioner, floor tile, remaining acoustical ceiling tile and most of the electrical work. Work continued on the Nha Trang Communications Center, a 40 by 60 foot frame building erected on a concrete slab. The continued non availability of some specialty items and the proper air conditioning unit has prevented 100% completion of this project. Work continued on the Camp McDermott Cantonment with the prefabrication and erection of three 20 by 120 foot, two story, tropicalized troop billets complete with squad leader rooms. Work also began on two 13-man latrines.

The company's earthmoving detachment in support of the Camp McDermott Cantonment project hauled approximately 11,000 cubic yards of fill to bring the area to grade prior to initiation of vertical construction. One source of fill material was the excavation of a large drainage ditch on the Nha Trang Air Base. The company combined efforts with RMK, the prime contractor, in excavating the ditch. The remaining fill was obtained from the Hawk Hill borrow pit located at the end of Nha Trang peninsula.

The entire company was extensively engaged in LOC Restoration and Maintenance projects during the last three weeks of the quarter as a result of heavy rains and flood damage. The First and Second Construction Platoon worked on a 24-hour basis to reconstruct a portion of Bridge #1, HL-1, a 692 foot timber trestle bridge spanning the Song Cai River at Dien Khanh, RVN. Approximately two-thirds of the bridge was washed out by flood waters. With Delta Company working from the North and Bravo Company working from the South, the bridge was reconstructed in five days. Bravo Company's efforts included replacement of four timber-pile piers, placement of 8" X 14" stringers over thirteen spans averaging 20 feet in length, placement of 4" X 12" decking and treadway, and placement of standard curbing and handrail. The Earthmoving Platoon, with assistance from the First Construction Platoon on culvert installation, repaired four temporary bypasses damaged by flood waters. The total effort involved the placement of 1840 cubic yards of rock fill and nearly 1800 cubic yards of select 2½ inch minus base course material plus the installation of 60 feet of 24 inch culvert and 80 foot of 48 inch culvert. Additional LOC Maintenance projects included replacement of 375 square feet of bridge treadway, repair of curbing and handrails, and continuous pothole repair.

Bravo Company supported Charlie Company on several occasions with dump trucks and a front loader for Operational Support Missions involving LOC Maintenance of of National Highway QL-21 between Ninh Hoa and Ban Me Thout, RVN. The Earthmoving Platoon also performed missions in support of Republic of Korea and United States artillery units on two occasions, constructing gun emplacements, pits for fire direction centers, and clearing fields of fire.

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e. C Company Narrative

A large portion of available effort during this reporting period was devoted to Combat Support Missions on National Highway QL-21 from Ninh Hoa to Ban Me Thuot.

Prior to the institution of regular supply convoys, the majority of supplies brought into Ban Me Thuot were transported by aircraft. Due to increased tactical importance of the area, the need for an all weather highway is critical. The increased size and frequency of the convoys traveling QL-21 required an aggressive program of engineer surveillance and maintenance of the route. Both of these elements were provided by this unit.

The engineer escort element preceeds the convoy by approximately one half hour to clear the route of any obstacles, either natural or enemy initiated. The escort element is composed of the necessary heavy equipment to insure that the road can be made passable to the convoy with minimum delay. Total effort expended on QL-21 for the reporting period was 16,482 man hours and 5,363 equipment hours. This included 21 escort missions to Ban Me Thuot, special missions to repair damaged bridges, and periodic maintenance of the route in C Company AOR.

Bridge #12, QL-21 was damaged by enemy action on 23 August 1968. The engineer escort element made hasty repairs to the bridge by placing 9 yards of base course and M8A1 matting against the blown abutment. On 27 August, a timber bent was placed under the beams which were blown from the existing abutment.

The typhoon which hit the area on 19 and 20 October 1968 caused severe damage to three bridges on QL-21. Bridge #9 was impassable because the southern headwall had given way, and there was a 9' X 4' X 10' hole on the western end of the bridge The 2nd Construction Platoon built a retaining wall using 6" X 12" X 6' timber as vertical stanchions and 3" X 12" as the lateral walls. Three (3) sections of 5/8" cable were used to secure the headwall. On Bridge #13 a headwall was constructed and a ½" cable used to secure the headwall. On Bridge #8, two (2) 48" culverts, 20' long were installed. Retaining walls 40 feet long and 8' high were installed on both sides of the culvert and ½" cable used to secure them. A total of 315 cubic yards of fill were used on these three (3) bridges.

By the 19th of October, construction at the new cantonment area at Thon Tan Thuy (TTT) coordinates BP 000735, was 90% completed. That week Charlie Company and the Alpha Company Quarry Section were to begin relocating to TTT. The living quarters for all officers and enlisted men were completed. There were two different types of tent frames constructed. Both shared the same 16' X 32' base. The original 14 tent frames were designed with high angle ceiling rafters for use with a GP Medium tent. The remaining 12 tent frames had low angle rafters and roofing tin was used in place of canvas. The mess hall was completed and ready for occupancy. The service building, i.e. showers and latrine were completed and ready for use. The first row of triple concerting wire was 90% completed and the main defensive position 80% completed.

The typhoon that hit the Ninh Hoa area raised wind velocities at TTT to gusts of

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60-65 knots. Approximately 8-10 inches of rain fell within a 24 hour period. The wind gusts caused half the mess hall roof and the entire shower roof to blow off. These crashed into nearby tent frames. Four (4) other tent frames were collapsed by high winds. For the reporting period, a total of 14,941 man hours and 4,994 equipment hours were expended on TTT. Total amount of material removed was 44,040 cubic yards. The area has since been evacuated in favor of the Ninh Hoa Cantonment.

The QL-1 Road Rehabilitation project was transfered from Charlie to Bravo Company on 30 September 1968. During the month of August, C Company's Earthmoving Platoon worked on ditching, shaping of shoulders along QL-1 in B Company's AOR from BP 911451 to the Suoi Vinh Bypass. During the first part of September, part of the platoon relocated to Ninh Hoa and began work on the motor pool area at TTT. The remainder continued the ditching and shaping of QL-1 hauling base course material for B Company to bring the road to grade in the area of the Ables' Bridge. At the end of September, the remainder of C Company's earthmoving platoon moved to the Ninh Hoa cantonment area. After relocation, earthmoving began work on QL-1 between TTT and Ninh Hoa. During the week of 27 September 1968, 7500 feet of road in the TTT area was ripped, reshaped and compacted. Because of the high traffic density along QL-1 in the Ninh Hoa area, earthmoving work was done during the nights of 8 and 9 October on QL-1. Using a security force of 2 reinforced ROK squads, the road between Ninh Hoa and the ROK 9th Division base camp, some 7100 feet, was ripped, reshaped and compacted.

The 48th Assualt Helicopter Company project was 90% complete at the end of the reporting period. The administration building, which includes the Orderly Room, Operations Office, was completed and is in use. The supply building and dispensary were completed and are in use. Construction of the BOQ's and EM billets were completed except for roofing material and electrical wiring.

f. D Company Narrative

This unit was engaged in training for fourteen half days during this period. This included Command Information Topics, 39 hours of Mandatory Training, two hours of Integrated Training, and fourteen hours of Battalion directed training. Mandatory Training included Weapons Qualification and Familiarization with the M-14 Rifle, and the .45 Caliber Pistol for the Officers. This training was held at Sip Ja Sung, ROK Compound Range.

During this period, 1LT Donald J. Lauterbach was awarded the Bronze Star for Meritorious Performance of Duty from February, 1967 to October, 1968. SP5 Robert B. Cole was awarded the Army Commendation Medal for outstanding performance of duty while serving with this unit for two consecutive years in Vietnam.

The Earthmoving Platoon continued in the rehabilitation of Provincial Highway, HL-1. Having completed 800 meters of subbase and 2300 meters of subgrade in the previous quarter, the platoon completed construction of eight temporary bypasses.

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These enabled placing of culverts in the existing highway. The Second Platoon aided the construction effort by placing a total of 840 lf of 48 inch culvert, 210 lf of 36 inch culvert, 132 lf of 30 inch culvert, and 186 lf of 24 inch culvert. Vietnamese masons followed the culvert crew, building masonry headwalls. Vietnamese laborers filled over 20,800 sandbags for temporary headwalls and bunkers. The Earthmoving Platoon completed 800 meters of subbase for a double lane, Class 50 highway during this period. A total of 13,560 USMH, 6,870 VNMH, and 11,490 Equipment Hours were expended plus 61,370 cubic yards of fill and sand were hauled, and 418,900 gallons of water were used for dust control.

This period also saw the completion of the 200 Man Cantonment Area with the exception of remaining Personnel Protective Revetments to be constructed around each tent. Included in the wrap up of the area were the Maintenance Shed, a Dispatch Office/Parts Room, an EM lounge, three more Tent Frames, five Personnel Protective Bunkers, three Defensive Bunkers, two berms around one-half of the perimeter and a Grease Rack.

Two. 16 X 32 foot Tent Frames were constructed for Battalion's Surveyors and Soils Specialists who recently moved into the cantonment area. These buildings are shiplapped to a height of four feet and screened from that point, then topped with corrugated roofing. Also constructed for and by the Surveyors was a 16 X 32 foot Soils Lab and Storage Room for their equipment. This building is shiplapped all the way to the roof to keep the wind and rain out of the soils tests.

Five Personnel Protective Bunkers were built in the cantonment area. Four of these 12' X 50' bunkers are located in the EM living area of the compound.

Two 10' X 4' berms were constructed along the entire length of the East and North sides of the cantonment. These berms proved beneficial in that flood waters were kept out of the area. The South side, which is most vulnerable to enemy attack, had a ten foot wide and five foot high berm with three Defensive Bunkers. The bunkers were constructed of 6" X 6" material; M8A1 Matting for the retaining walls, and three layers of sandbags placed on the roof.

During the past reporting period, the Maintenance Section performed an outstanding job of keeping equipment operational, in particular, the 5 ton Dump Trucks which were continually on Operational Support Missions.

The First Platoon of Delta Company has effected repairs to Bridges 167, 168, 175, 182 and 197 on National Highway QL-1, and Bridge #1 on Provincial Highway HL-1. Some 1,313 USMH, 133 VNMH, and 424 Equipment Hours were expended in keeping vital convoy traffic flowing from the depot at Cam Ranh Bay. To prevent traffic congestion at each bridge site, work was done during the hours of darkness when possible.

During the period of 18 to 21 October 1968, heavy rains caused flooding in the area of Bridge #1, on HL-1. The flow of the river destroyed 415 feet of the actual bridge.

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Reconstruction work by Delta and Bravo Companys was started immediately after the river had receeded to its banks. On Delta's side of the bridge, a 20 ton R/T Crane was rigged with a 50 foot boom for pile driving. As quickly as material arrived, 12 inch X 40 foot piles were driven 20 feet into the river bed. Each pile bent consisted of three piles plus a short pile was placed upstream for cross bracing purposes. Delta Company replaced four complete pile bents in addition to rebracing and recapping existing bents. Bents were recapped with 12 X 12 inch material which acted as a bearing surface for the seven 8 X 14 inch stringers used to span each gap. Also 4" X 12" material was used to cap the seven concrete piers in the center of the river. The caps were bolted to the piers by using ½" X 2" flat bar iron formed to fit over both the concrete and the cap. The 8 X 14 inch stringers were secured to the bents at each end with 26 inch drift pins as were the curb and curb risers. Holes for the drift pins were prepared by the use of a drill 1/8th inch smaller than the pin in diameter to ensure a tight fit and to avoid splitting the lumber. The decking and treadway were constructed of 4 X 12 inch material. The bridge curbing and handrail system were of standard design. Six days and five nights of effort consisting of 3,040 USMN, 208 VNMH, 1,160 Equipment Hours, were finally rewarded as LTC Daoulas cut the ribbon and re-opened this important supply route on 31 October 1968.

Due to the flood conditions existing from 18 to 21 October 1968, it was found necessary to redesign portions of National Highway HL-1 from Dien Khanh bypass to Sip Ja Sung. From station 2+800 to station 4+100 the elevation was raised 1.12 meters. From station 6+000 to station 7+425 the elevation was raised 0.5 meters. Approximately 2,725 meters of road were redesigned.

2. Section 2, Lessons Learned: Commander's Observations, Evaluations, and Recommendations.

a. Personnel.

(1) Shortage of Civilian Personnel

(a) OBSERVATION: Recent civilianization of the TO&E is adequate in theory, but the majority of positions remain vacant.

(b) EVALUATION: The pool of younger, inexperienced labor that could be trained in quarry and other operations is virtually non-existent due to the ARVN draft. Moreover, older skilled men are reluctent to work because of relating low wage scales. Replacement of civilian positions by the military would be contrary to the revolutionary development program plus the program offers a tremendous chance to train indigenous personnel and thus lessen the U.S. military commitment.

(c) RECOMMENDATION: Establish a co-operative program with the GVN whereby draftees would be assigned to U.S. Army units after completing basic training. Service with U.S. units would be credited towards their service obligation. Over a period of time, the entire complement of U.S. personnel in a unit could be replaced.

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b. Operations

(1) Movement of Over-sized Loads

(a) OBSERVATION: Due to the high volume of military and civilian traffic on portions of the National Highway system not upgraded to MACV standards, movement of slow moving over-sized loads is not feasible during daylight hours.

(b) EVALUATION: Many bridge restrictions and narrow roads lend themselves to creating massive traffic jams if the flow of traffic is halted for even short periods of time.

(c) RECOMMENDATION: Movement of loads, such as a 40 ton crane, can best be accomplished at night after the roads are closed to normal traffic. The extra security precautions required for movement at night are offset by the rapidity and ease of movement.

(2) Night Operations

(a) OBSERVATION: Working with heavy earthmoving equipment in high density traffic areas is inefficient as well as dangerous.

(b) EVALUATION: When security conditions permit, it was found that working during the hours of darkness can be advantageous. Due to minimum or lack of traffic, the equipment operators can manage their equipment more effectively and in some cases have been able to triple production. Working at night on repair of heavily traveled bridges has also proved beneficial.

(c) RECOMMENDATION: Consideration should be given to working at night on heavily traveled routes when the nature of construction and security conditions permit.

(3) Traffic Control

(a) OBSERVATION: During recent repairs to flood damaged roads, traffic congestion was a major problem in effecting timely repairs. Vehicles would pull up in double lanes on both sides of a wash out on narrow roads. It would take three or four hours to clear a lane for equipment to get to the worksite. Once the lane was clear, a large contingent of soldiers was required to maintain a clear lane.

(b) EVALUATION: Working at night on these particular roads was not feasible because of security restraints, hence, work has to be accomplished during daylight hours and provisions made for traffic control.

(c) RECOMMENDATION: When road repairs will block or severely limit traffic flow, careful plans must be made to insure immediate access to the work site. Physical barricades to include Military Police assistance for control and co-operation from all agencies with jurisdiction over convoys traveling the

highway are minimum essential requirements.

(4) Stabilization of Saturated Subgrade

(a) OBSERVATION: After flood waters had subsided from a recent storm, several failures developed in the surface of portions of the existing non-upgraded road net.

(b) EVALUATION: High water levels will saturate the subgrade of the existing road and subsequently the road will quickly fail under traffic. The necessity to keep the road open and magnitude of the saturated material make removal unfeasible.

(c) RECOMMENDATION: A fill operation is necessary. The first lift of fill should consist of clean blast rock (6 inch minus is best). This lift will minimize pumping action of the fine material, provide drainage for the subgrade, and help distribute the traffic load. Subsequent lifts can be of a base course material to provide a wearing surface.

(5) Fines in Base Course

(a) OBSERVATION: A section of road where proper compaction techniques had been applied failed the compaction tests taken along the center line.

(b) EVALUATION: Along this particular section of highway, the base course material had been hauled by commercial contractor and placed along the center line. These stockpiles remained on the road for several weeks before being spread and compacted. Heavy rains during the period washed away the fines and caused poor gradation.

(c) RECOMMENDATION: Plan the construction sequence such that small stockpile of base course material remain in that state a minimum amount of time.

(6) Pooling of Equipment and Personnel

(a) OBSERVATION: The practice has been to form provisional units to accomplish certain portions of LOC upgrading by pooling equipment and personnel from all companies in the Battalion. The leadership was also provided by pooling resources. While effective for very short term projects, overall progress was less for projects of significant magnitude.

(b) EVALUATION: This method of operation destroys unit integrity and good team work must be redeveloped. Augmenting the company to which the unit is attached with additional maintenance personnel to offset the large increase in equipment does not fully solve the inherent maintenance problems. Additional maintenance supervisory personnel and facilities are not available without seriously impairing the maintenance capability of the other companies. While progress is seemingly high in one company AOR overall Battalion progress suffers.

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(c) RECOMMENDATION: Careful consideration should be given to alternatives available in accomplishing high priority missions. Only as a last resort should a provisional unit be formed. Unit pride in a job done by provisional organizations is virtually absent, hence, productivity is usually far below optimum.

(7) Repair of Power Steering Pumps on 5-Ton and 10-Ton Tractors

(a) OBSERVATION: The power steering pump, FSN 2530-075-3329, for a 5 ton tractor can be built with parts of a 10 ton power steering pump, FSN 2530-924-3075, and vice versa.

(b) EVALUATION: The parts for the above cited pumps are interchangeable.

(c) RECOMMENDATION: This alternative on repair should be considered when an urgent need exists for the tractor.

(8) Modification of 10-Ton Tractor

(a) OBSERVATION: Tanker trailers and other type trailer with non-removable 5-Ton King pins are necessary to accomplish the mission of this Battalion.

(b) EVALUATION: Five ton tractors are not readily available to pull these trailers whereas 10-ton tractors are more readily available. The 10-ton tractors cannot be used with its original fifth wheel, however, a 5-ton fifth wheel with spacers can be mounted on the 10-Ton tractor for this purpose.

(c) RECOMMENDATION: Ten ton tractors should be modified to accomodate the subject trailers.

(9) Widening Shoulders on Existing Roads

(a) OBSERVATION: A past policy has been to rip up the old road and spread this material in the process of wideing the road. A quicker and more efficient method is to cut the existing shoulder down to a 3:1 slope from the existing road bed and dump fill along the edges. The fill is then windrowed over the side and compacted with a sheeps foot roller.

(b) EVALUATION: This method increase compaction, improves stability, and increases road construction progress.

(c) RECOMMENDATION: This method of fill operation should be evaluated and utilized where appropriate.

(10) Siting of Tropicalised Buildings

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SUBJECT: Operational Report of the 864th Engineer Battalion (Construction) for Period Ending 31 October 1968, RCS CS FOR-65 (R1)

(a) OBSERVATION: Incorrect placement of tropicalized buildings can result in wind damage to the building itself and rain damage to the contents.

(b) EVALUATION: Due to the nature of construction, tropicalized buildings will not withstand very high winds or be water tight from wind-borne rains. Placement of this type building in elevated, exposed areas is not feasible due to severe storms experienced during the monsoon season.

(c) RECOMMENDATION: Careful consideration be made with regard to location and orientation of tropicalized buildings.

c. Training. None

d. Intelligence. None

e. Logistics. None

f. Organization. None

g. Other. None

Arthur Daoulas

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as

ARTHUR DAOULAS
LTC, CE
Commanding

EGA-3 (31 Oct 68) 1st Ind
SUBJECT: Operational Report of the 864th Engineer Battalion (Construction) for Period Ending 31 October 1968, RCS CS FOR-65 (R1)

DA, Headquarters, 35th Engineer Group (Const), APO 96312, 24 November 1968

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

1. This headquarters has reviewed the Operational Report - Lessons Learned for the 864th Engineer Battalion (Const) for the quarterly period ending 31 October 1968. The report is considered an excellent summary of the battalion's activities for the reporting period.

2. This headquarters concurs with the remarks of the Battalion Commander.

GILBERT M. FOWLER
Colonel, CE
Commanding

AVBC-CS (31 Oct 68) 2nd Ind
SUBJECT: Operational Report of the 864th Engineer Battalion (Construction) for the Period Ending 31 October 1968, RCS CSFOR - 65 (R1)

DA, Headquarters, 18th Engineer Brigade, APO 96377 23 DEC 1968

TO: Commanding General, U.S. Army Vietnam, ATTN: AVHGC-DST, APO 96375

1. This headquarters has reviewed the Operational Report - Lessons Learned for the 864th Engineer Battalion (Construction) as indorsed by the 35th Engineer Group. The report is considered to be an excellent account of the battalion's activities for the reporting period.

2. This headquarters concurs with the observations and recommendations of the Battalion and Group Commanders, with the following comments added:

a. Reference: Section 2, paragraph a (1). This program has been recommended by the Commanding General, 1st Field Force, and is presently under study.

b. Reference: Section 2, paragraph b (4). Care must be taken to use choke stone when placing a subbase of blast rock. Otherwise traffic will cause movement of the base course material into voids in the blast rock subbase and cause subsequent failure of the road.

Jesse L. Fishback Col CE
for DOUGLAS K. BLUE
Colonel, CE
Acting Commander

CF: CO, 35th Engr Gp
CO, 864th Engr Bn

AVHGC-DST (31 Oct 68) 3d Ind
SUBJECT: Operational Report of the 864th Engineer Battalion (Construction) for the Period Ending 31 October 1968, RCS CSFOR - 65 (R1)

HEADQUARTERS, UNITED STATES ARMY, VIETNAM, APO San Francisco 96375 8 JAN 1969

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

This headquarters has reviewed the Operational Report-Lessons Learned for the quarterly period ending 31 October 1968 from Headquarters, 864th Engineer Battalion (Construction) and concurs with the report as modified by the 2d Indorsement.

FOR THE COMMANDER:

A.R. GUENTHER
CPT. AGC
ASST. ADJUTANT GENERAL

Cy furn:
HQ 18th Engr Bde
HQ 864th Engr Bn

GPOP-DT (31 Oct 68) 4th Ind
SUBJECT: Operational Report of HQ, 864th Engr Bn (Const) for Period Ending 31 October 1968, RCS CSFOR-65 (R1)

HQ, US Army, Pacific, APO San Francisco 96558 27 JAN 1969

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:

C. L. SHORTT
CPT, AGC
Asst AG

EGACBC-3 31 October 1968

SUBJECT: Operational Report of the 864th Engineer Battalion (Construction) for Period Ending 31 October 1968, RCS CS FOR-65 (R1)

ORGANIC UNITS

Headquarters and Headquarters Company, 864th Engr Bn (Const)

Company A, 864th Engr Bn (Const)

Company B, 864th Engr Bn (Const)

Company C, 864th Engr Bn (Const)

Company D, 864th Engr Bn (Const)

ATTACHED UNITS

569th Engineer Company (TOPO)(CORPS), Administrative Control

23rd Engineer Detachment (Well Drilling), Administrative and Operational Control

40th Engineer Detachment (Well Drilling), Administrative and Operational Control

588th Engineer Detachment (Well Drilling), Administrative and Operational Control

Incl #1

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CO, 864th Engineer Battalion (Const)

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