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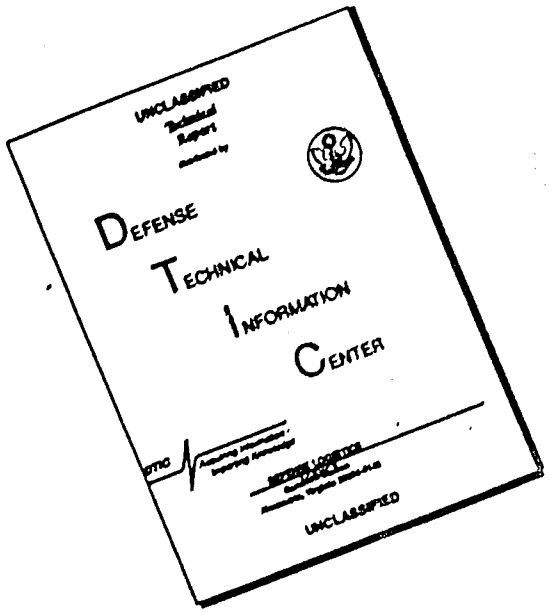

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DEPARTMENT OF THE ARMY
OFFICE OF THE ADJUTANT GENERAL
WASHINGTON, D.C. 20310

IN REPLY REFER TO
AGAM-P (M) (16 Jun 67) FOR OT 21 June 1967

SUBJECT: Operational Report - Lessons Learned, Headquarters, 169th Engineer Battalion (Construction)

TO: SEE DISTRIBUTION

1. Forwarded as inclosure is Operational Report - Lessons Learned, Headquarters, 169th Engineer Battalion (Construction) for quarterly period ending 31 January 1967. Information contained in this report should be reviewed and evaluated by CDC in accordance with paragraph 6f of AR 1-19 and by CONARC in accordance with paragraph 6c and d of AR 1-19. Evaluations and corrective actions should be reported to ACSFOR OT within 90 days of receipt of covering letter.

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

BY ORDER OF THE SECRETARY OF THE ARMY:

Kenneth G. Wickham

KENNETH G. WICKHAM
Major General, USA
The Adjutant General

1 Incl
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(Continued on page 2)

HEADQUARTERS
169TH ENGINEER BATTALION (CONSTRUCTION)
APO 96491

31 January 1967

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

THRU: Commanding Officer
159th Engineer Group (Const)
APO 96491

THRU: Commanding General
US Army Engineer Command Vietnam (Prov)
ATTN: AVCC-EC
APO 96491

THRU: Commanding General
United States Army, Vietnam
ATTN: AVC-DH

THRU: 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

Part I: SIGNIFICANT ORGANIZATIONAL ACTIVITIES

1. Unit Employment

a. Assignment: Located at same base camp as previously reported and Commanded by LTC Marvin W. Rees.

b. Mission: Our construction mission has been extended to include not only our area of responsibility in the Long Binh area and Saigon Military District, but also Long Thanh (and Nhan Trach).

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c. Attachments or Detachments: On 16 January 1967 the 551st Engineer Detachment (ell Drilling) arrived in Long Binh from Fort Belvoir, Va. and was attached to this battalion by General Order #4, Headquarters, 159th Engineer Group. Unit is organized under TOE 5-550 C, Team G2 with authorized strength of 2 EM. Their equipment should arrive in country in February.

d. Unit Operations: All unit activities are described in the Functional Activities and Projects described below.

e. Movements: On 16 December 1966, the Earth Moving Platoon of Co B, with two DT sections from the 43d Engr Co (DT) was ordered to Bear Cat in support of the 15th Engineer Battalion (Combat) horizontal construction effort. The areas were to be prepared immediately for 9th Div troop cantonments since elements of the Division were to arrive in country within two weeks. On 9 January 1967, an additional plt with an additional 2 DT sections from the 43d Engr Co (DT) were sent to Bear Cat. At this time the 169th Bn had been assigned the vertical as well as the horizontal construction effort for the complete post. Two additional plts are working in support of construction effort, but commute daily.

2. Functional Activities:

a. Organization: No TO&E changes, and no personnel augmentations have been made or requested during this period.

b. Personnel Strengths:

Average Daily Assigned Strength:	EM 882	Officers 42
Average Daily Present for Duty:	EM 862	Officers 40
Average Daily Work Force:	410 EM	
Average Daily Security Requirements:	51 EM	
Average Daily Admin Overhead:	401 EM	

c. Morale and Welfare: Troop and officer morale remained high and all actions relating to troop welfare were expedited.

d. Administration: Normal Operation.

e. Intelligence and Security: Cantonment and bridge reconnaissance in selected areas were performed as engineering assistance to combat support units. Security was normal (without incident) during reporting period.

f. Operations and Training: Operations were conducted on a 10 hour shift on a 7 day basis, (which includes training of mandatory DA & USARV subjects during a two hour period per week on Sundays). Our peneprime (dust control), quarry, crusher and laterite pits were operated on a two shift basis.

g. Logistics: The logistics activities in the battalion have been overall satisfactory during the period. The battalion provided assistance and support to the 62d Engineer Battalion, that was restationed from Phan Rang, in moving equipment and supplies from the Saigon Port to the Long Binh Area. Bn S-4 is supporting the 62d EBC on supplies for their Bn Cantonment Area and their projects. Bn messhalls provided messing facilities for the 62d EBC personnel and units provided equipment in support of their construction effort.

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h. Labor: Approximately 290 Vietnamese laborers were utilized daily on various battalion projects except on Sundays. Vietnamese trucks were utilized to haul laterite, but the Bn Commander requested cancellation of contracts since the trucks delivered an average of 1-1½ loads per day. The VN drivers were being paid on a full day basis and not by the load which would be a benefit to the US Government.

i. Maintenance: The average maintenance deadline rate for ordnance equipment was 2.0% and the average deadline rate for engineer equipment was 4.9%. This reflects a vigorous maintenance program that is strictly enforced. The unit presently has 283 major ordnance and 250 major engineer items. No unusual problems have been encountered in the maintenance area.

j. Medical and Dental: No significant medical or dental events. General health of the Command is excellent. The Bn experienced two deaths due to accidental causes. One EM was slightly wounded by a command detonated claymore mine.

k. Communications: In general, no problems were encountered with wire communications. Radio has been limited during this period, but due to our expansion of areas of responsibility greater use of radio communications is now required. Bn is endeavoring to obtain newer more powerful units to replace existing radios due to their range limitations.

l. Water Supply: The 169th Engineer Battalion water point produces an average of 74,000 gallons of potable water daily for units in the Long Binh area. No unusual problems have been encountered.

m. Relationship with Installation: Very good due to our all out construction effort and helping hand assistance as our construction schedules permit. The Bn has worked out a night utilization schedule of TO&E equipment in assisting units in need of self help support for development of their cantonment areas.

n. Civic Action: The 169th Engineer Battalion has been actively engaged in the Civic Action program. It has assisted the Vien Giac School by hauling laterite for the school area. This will provide better drainage and possible area for expansion. In the month of November, construction continued on the schools at Vien Giac and Bui Thai. A portable generator was purchased for the refugee parrish of Da Minh to provide a source of electricity. Approximately 40 loads of laterite for fill and sub-flooring were hauled to schools by the 43d Engr Co (DT). The Bui Thai school was opened and dedicated on 8 Dec 66 with a ceremony attended by Group and Battalion personnel. English classes were initiated at Da Minh and Vien Giac schools on Sunday mornings. The instructors are volunteers from Bn Hqs and H/H Co EM. Approximately 70 Vietnamese attend these English classes. On Christmas Day the Tan Mai Orphanage was treated to a Christmas party and dinner in the En area as well as at the orphanage. Clothing, toys and candy were distributed to 100 children. The older children were taken to company mess halls for dinner. The Vien Giac school was dedicated on 18 January 1967 with a feast held in honor of the occasion. English classes are being continued in both schools.

o. Inspector General: The annual General Inspection for FY 67 for the 169th Engineer Battalion was conducted on 24 to 26 January with an exit briefing on 28 January 1967. The AGI Team consisted of six officers and nine noncommissioned officers. In addition, the USAECV (P) IG and a USARV IG in training inspection team were present during the inspection. The battalion received a rating of excellent. The detailed report has not been received as of this reporting period.

p. Command Management: Due to the amount of personnel actions concerning extensions, transfers, reenlistments, court martials, article 15's, appeals, etc., a close system of control has been initiated in this headquarters by use of log books. These logs are used to control flow, suspense dates, and location of paperwork. This has reduced the number of misplaced documents and provides the commander with an instant reference on personnel action status.

q. Force Development: None during this period.

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3. Significant Unit Activities:

a. A Company

(1) During the reporting period another rock crusher was assigned to A Co bringing the total to two on hand. The quarry continued to operate on two ten hour shifts with quarry blasting scheduled every other day. This quarry supports the A Co crushers and also the crusher of the 46th Engineer Battalion. It also provides quarry rock for self help construction to all units in the Long Binh Sub Area.

(2) Korean rock unloading: The company was assigned the responsibility for unloading Korean rock at the Thu Duc barge site. The rock was delivered initially in sampans and finally in flat bottom barges. Unloading of the barges was accomplished using a 40 ton crane and two cubic yard clam shell. To completely clean the barge, the clam shell was lowered in the barge, it was closed and the remaining rock was shoveled by hand into the clam shell. Initially sampans were unloaded as much as possible with a 3/4 cubic yard clam but the sampans were too small to allow complete unloading. The sampans were then moved to two conveyors placed on the edge of the river. The remainder of the rock was then unloaded on the conveyors by Vietnamese labor and dumped into a truck.

(3) This unit continues to apply peneprime on a two ten hour shift basis. Notable areas that have been peneprimed or are being peneprimed are the Ho Nai Class II & IV Storage Area, 9th Division cantonement area at Long Than , and all roads and areas in the Long Binh Area. This operation is the most effective means of controlling dust in the Long Binh Sub Area.

b. B Company

(1) 784 Man Cantonment Area (Project Directive 66-170DC-159): During this period, the company has completed construction of this cantonment area. This includes completion of a 40'x150' messhall, one water tower (4,200 gallon tank capacity), one 20'x100' battalion headquarters buildings, and pouring the remaining concrete slabs for Adams huts. A total of 500,000 sq ft of operational hardstand (laterite) was also constructed by the Earth Moving Platoon, with necessary drainage.

(2) Class II & IV Storage Yard (Project Directive (66-185DC-159): During this period, the company has completed construction of 165,000 sq yards of laterite hardstand to be used as storage pads for Class II and IV supplies. Accompanying drainage facilities, in particular, scraper cut ditches were installed as well. The laterite pads were treated with peneprime.

(3) Radio Receiver Site (Project Directive 65-59DC-159, change 1): During this period, the company begun and completed construction of this project. An area 500 meters by 700 meters was cleared. A laterite road, 24 ft wide and 350 ft long was constructed out of compacted laterite. In addition, a 150 ft square elevated laterite hardstand was constructed at the end of the access road.

(4) Concrete Batch Plant (GP task Assignment 159-47): During this period, the company completed this project. Included was the construction of a timber tower to support an aggregate and sand bin made

of welded steel [illegible]. Volumetric measuring buckets were also constructed and placed for batching. A timber pad was built to support the 34' concrete mixer. Accompanying earthwork, to include 550 ft of laterite road, was also accomplished.

(5) Ho Nai Security Fence (Project Directive 43-200-10-T-58

During this period, the company constructed approximately 8,000 ft of triple concertina fence and 9,8000 feet of standard barbed wire fence (5 ft) using "U" type pickets. This project was later transferred to another unit.

(6) Rehabilitation of USARV HQ (Gp Task Assignment 159-56)

During this period the company installed a total of 74 timber columns in the USARV HQ building to reinforce the existing upper structure which was failing. This involved columns constructed of: 12x12, 8x12 timber, and 8x8 timber. 6,150 US man hours were expended.

(7) Bien Hoa Communications Bldg (Project Directive 66-122DC-159)

During this period the company continued work on the communications building. Interior partitions and doors were installed. A water tower (500 gallon tank) with accompanying plumbing was installed. Interior walls were lined with plywood as well. A 20'x30' concrete pad to support the central ventilation system was also constructed. Final completionhinges on arrival in country of air conditioning unit.

(8) Task Assignments

During this period the company worked on task assignments in addition to the above projects. These included: Installation of 159th Engr Gp air conditioning and wiring (159-81); construction of 169th Engr Bn Wash Rack (169-21); construction of 169th Engr Bn (Const) Dispensary Bunker (169-22); and construction of 169th Engr Bn Electrical Shop (169-25).

C. Company

(1) 169th Engr Bn Gp Task Assignment #159-49: The Fab Yard requires (35 VN and 5US) to operate the yard efficiently. The VN are used as supervisors and Dewalt saw operators. The yard was originally set up to prefab pr latrines and showers. At the present time it is used for prefabing structure members and sections which are utilized in the vertical construction effort of the battalion. During this period 90 latrines and 2 showers have been constructed. Four 2-story hutments precut and the roof trusses assembled. Fifty messhall tables were constructed for the Engineer Command. Twenty 4'x8' movable partitions on 1'-6" legs were constructed for HQ Company 159th Engr Gp. A 40'x40' battalion carpenter shop was constructed in the prefab yard. At the present time girths and studs are being precut and trusses prefabbed for 30 messhalls (20'x100') to be erected at Long Thau by B Co. 169th Engr Bn. To date 200 trusses have been prefabbed and 325 studs and 700 girts have been precut.

(2) Quarry Road, (Bn Task Assignment 169-12). Installed a bank of 6 each 18" culverts 30' on an exisitin road which is 100 meters long. The road bed was raised 5' from exsisting level.

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(3) PX [illegible] and Operations Building, Gp Task Assignment (159-53). Construct[illegible] 40'x50' tropical wood frame building with a wooden floor was used in lieu of concrete because this is a temporary building. The floor consisted of 2x8 joints and 1x6 flooring. A triple concertina fence was erected around the perimeter (500 meters) to provide protection against pillferage.

(4) Two Story Hutment, (Gp Task Assignment 159-43). The building which was constructed for C Company of the battalion as a model for other two story hutments to be erected in the future in the Bn area and Long Binh Sub Area. Profab Kits will be assembled with instruction, so as to assist non-engineer units in their constructions. The ground floor is constructed of 2"x10" joints with 2"x10" bridging.

(5) Mallard, 500 man cantonment area, (Project Directive 66-20[illegible]-159 constructed for 2/34 Armor and 5/2 Arty. Project was started on 24 Oct 66. EDC is 1 March 67. The following items have been constructed:

(1) Roads 30' - 2,2000 linear yards
(2) Tank Trails - 2,400 Linear yards
(3) Hardstans - 84,000 sq yds
(4) Buildings - 32,000 sq ft (Concrete)
a. 20X160 messhall w/20x50 scullery - 1 ea.
b. 40x150 messhall w/20x70 scullery - 1 ea.
c. 12x26 latrine - 8 ea
d. 12x24 Shower - 8 ea.
e. 20x50 Admin - 4 ea
f. 20x100 Admin - 1 ea.
g. 20x80 Disp - 1 ea.
h. 20x100 Bn Hq - 2 ea.
i. 20x100 S-4 - 2 ea.
All buildings are tropical wood frame construction.

d. D Company

(1) 24th Evacuation Hospital (Project Directive 66-135DC-159): The BOD of 15 Dec 66 was set for the hospital. At that time the Administration Bldg., two WD Bldgs, five Ward Bldgs, three Nurses Quarters Bldgs, the Mess Hall, the showers, the latrines, the laundry, and the initial seven air conditioned Hospital Bldgs were turned over to the hospital for use. At the present time, work is nearing completion on the remaining Nurses Quarters and Lounge, as well as the seven remaining wards, the personnel building, dental building and the pharmacy. Construction is proceeding rapidly on the Supply Bldg, PX, Chapel Bldg, and the Classroom bldg. Work on the power system and water distribution system is underway at present. The roads in the hospital have been paved and the drainage system is essentially completed. Work has begun on sidewalks.

(2) Non-Potable Water Storage Facilities - Long Thanh (Project Directive 66-219-159): Air lift pumps were installed on two existing wells within the cantonment area at Long Thanh. Two 5500 gallon storage tanks were designed and constructed by this unit and an access road was constructed at well site #1. The project was completed on 20 Nov 66.

(3) Water Fall Facility - Long Thanh (Project Directive 66-248DC-159): This project included building a pump house, installing a hydrochlorinator, assembling and erecting a 21,000 gallon water tank and tower, constructing three fill stands with six discharge points and laying pipeline to connect the various sections of the system. The system is presently in

operation and is [illegible] for Mess Halls and showers at Long Thanh.

(4) Thu [illegible] Wharf - Thu Duc Barge Site (Op Task Assignment 150-55): A timber pile wharf was designed and constructed at the Thu Duc Barge Site in just 15 days. The project involved driving 55 timber piles and putting a superstructure capable of supporting Class 70 loads on them. The facility has been operational since 14 Dec 66 and has materially aided rock unloading operations at the barge site.

(5) Water Well Facility - Bien Hoa (Project Directive 07-200-01-T-1A): Construction was recently completed on a water well facility in Bien Hoa which will serve the Engineer Command and units of the 173rd Airborne Brigade. It includes a pump house with hydrochlorinators, a 21,000 gallon water tank and tower, 1,000 feet of 4" pipe and three fill stands with 5 discharge points as well as two access roads.

(6) LZ31 Asphalt Paving (Op Task Assignment 159-39): At present 52,800 SY of asphalt pavement have been laid within the Long Binh area. Expect to pave this year approx 52 miles of road in this area.

o. 43rd Engineer Company (DT)

(1) Support to Tay Ninh: The 43rd Engr Co (DT) began support to the 196th Infantry Brigade at Tay Ninh on 7 November 1966. Ten (10) trucks were utilized on each trip hauling ammunition and POL. Crushed rock was also delivered to the Phillipine Civic Action Group at Tay Ninh

(2) Support of the 25th Infantry Division at Binh Chen on 20 November 1966, hauling lumber, PSP, and laterite. The project was completed on 19 December 1966. Ten trucks and drivers were utilized per day. One trip was made per day.

(3) Support to My Tho: On 21 January 1967 a detachment from the company left Long Binh, Vietnam enroute to My Tho, Vietnam. Twelve trucks and fourteen men were in the detachment. The detachment was attached to the 617 Engineer Company (FB), commanded by CPT Vernon. On the first day the convoy Long Binh at 1400 hours and arrived at New Port Compound. At 0600 hours the following morning, the convoy left New Port Compound enroute to My Tho, Vietnam. Arriving at My Tho at 1300 hours on the 22nd of January 1967. On the 31st of January 1967 the detachment left My Tho in convoy at 0900 hrs and arrived at Long Binh at 1200 hrs the same day, at which time the trucks were released and returned to the 43rd Engineer Company (DT) motor pool. The haul on this combat mission consisted of aluminum foot bridge and Bailey bridge.

(4) The company has been hauling in support of the 169th Engineer Battalion and the 46th Engineer Battalion since their arrival in Vietnam. Projects that have been supported are; the Class II/IV storage Yard at Ho Nai, the Hemco Cantonment Area, Long Binh Ammunition Depot, Tan Son Nhut Air Base and numerous other smaller projects.

Section 2 Part I [illegible]ions (Lessons Learned):

1. Logistics

a. Item: Transportation of 60' Piles

b. Discussion: This unit was given a task assignment to construct a finger pier at Thu Duc. The plan called for 12 ea 40' piles and 36 ea 60' piles. The problem was to move the 60' piles from FA&E Construction Materials Yard #206 down Highway 1 and Highway 1A to the construction site at Thu Duc Island; a distance of about 8 miles. The longest carriers in the battalion are 22' low bed trailers. The pipe trailers belonging to the Engineer Pipe Line Co and the pole trailers of the Signal Construction Battalion are not long enough to handle 60' piles.

c. Observation: Two solutions were arrived at and used

(1) A 2' high stack of dunnage lumber was placed across the end of a standard low bed trailer. Then seven 60' piles were laid on the low bed trailer, butt end forward. The piles were chained in three places to the low bed trailer. The tip ends were bound with an additional chain. The piles were carried at a speed of 5-10 mph to the job site. A safety vehicle followed the trailer.

(2) A commercial logging truck, under contract to the 4th Transportation Terminal Command, Saigon, was available for hauling on the second day. The required number of piles were moved to the project site. From a safety point of view, the first solution is a marginal method for moving these piles. Lists of available carriers having special equipment for over-length, over weight or over sized loads should be on hand at depot yards for customer information.

a. Item: Resupply of Detonating Cord

b. Discussion: A Co, 169th Engr Bn, operates a quarry in the Long Binh area. An average of 15,000 feet of Detonating Cord, Reinforced, FSN 1375-204-6851, DODAC M456 is used per month in the quarry. Our direct support unit for this item is the 3rd Ord Bn. Due to the speed at which detonating cord is consumed, due outs are not established by 3rd Ord Bn stock control. Thus a unit is likely to receive an issue, only if it has a representative standing by when a shipment arrives at th depot. By finding out when the next shipment was due in and having a supply representative there at that time was the only method whereby the monthly supply of detonating cord could be obtained.

c. Observation: This poor supply procedure causes needless travel and waiting, resulting in unnecessary expenditure of man hours. It also forces the using unit to conform to the schedule of the service unit instead of being able to pick up supplies when time and its mission permit.

2. Communications

a. Item: Radio Communication in a Construction Engineer Battalion

b. Discussion: The AN/GRC-19 is a main element of the radio communication network of a construction engineer battalion. The T-195/GRC is the transmitter for this radio and has proven very difficult to keep operational. The air filters on the T-195 require cleaning at least twice a day and even so, the dynamotors and blower motors keep burning out.

c. Observation: The mission of the construction engineers in Vietnam demands a flexible, responsive radio communication system. The outdated radio equipment that this unit is operating with should be replaced by the new series radio sets. 10

3. Maintenance

a. Item: Tractor Wheeled Industrial FSN 2420-088-9384

b. Discussion: This unit was issued 22 ea tractors during the month of January. Unit pick up at Saigon Port was arranged. Some of the problems encountered by personnel making pick up these tractors were: Fan belt tension was released in an improper manner. On several of the tractors, fan adjusting screws had been backed completely out of the fan bracket support and an attempt made to drive the bracket downward with a hammer without loosingthe bracket. This action required parts to be made before operating the tractors. Seats, fire extinquishers, etc, were packed in the overpac kits. This required the kits to be opened in order to get the tractors operational. The boxes containing the overpac kits are not easily closed and once they are opened the contents which include Publications, filters, etc, are exposed to the weather and will deteriorate.

c. Observation: Due to the crowded condition of the Saigon Port and the need for items of equipment to be made operational in as little time as possible, equipment should be shipped as near ready for operation as possible. OEM could be mounted and protected by a plastic covering. Mechanical adjustments should be made prior to shipment which will allow machinery to be placed in a limited operational condition as soon as possible after unloading.

a. Item: Tractor Full Tracked D7E FSN 2410

b. Discussion: This unit has received 13 ea Model D7E tractors during the past three months. All 13 tractors were received with puller type fans installed. Conditions in Vietnam do not allow use of the puller fans mainly due to operator discomfort. Pusher fans are available and shipped with the tractors. To install the pusher fan required the expenditure of 12-24 mechanic hours at unit level.

c. Observation: Pusher fans should be installed prior to shipment of tractors in Vietnam. The use of cold weather equipment is not required in Vietnam.

a. Item: Repair parts for special purpose equipment

b. Discussion: Repair parts for low density high usage engineer equipment i.e. rock crushers, earth augers, asphalt distributors, etc, continues to be a problem. Many of the parts required are not stocked in support units and depots in Vietnam. This causes long down time and loss of considerable construction effort due to lack of relatively minor parts such as clutches, bearings, special bolts, drive belts, etc. This unit requested repair parts of this nature more than three times per item, to include follow up action to no avail.

c. Observation: More emphasis should be placed on recording fringe demands and an attempt made to stock these repair parts rather than relying on only those items listed as stockage items in 35P manuals.

Section 2 Part II UNIT OBSERVATIONS (LESSONS LEARNED)

3. Unit Lessons Learned

a. Item: Operations--Hydraulic Swivel Guard

b. Discussion: The hydraulic swivel connection on the bucket of the H 90 CM scoop loader is unprotected. Operation around large rock would sometimes cause the rock to strike the connection, causing failure. To prevent this, a guard was fabricated from ¼ inch plate - 6 inches wide and 2 feet 2 inches long. This plate was then bent in a U-shape to fit from the scoop runner or skid up to the clam activating cylinder mounting bracket.

c. Observation: The incident of hydraulic connection failure was greatly reduced by the innovation.

a. Item: Operations - Brake adjusting tool

b. Discussion: In order to make it easier to adjust the brakes on a Huber Warco model 4D, a special tool was fabricated from 2½ feet of steel stock for the body. The adjusting end was a 2½ inch flat steel, 3/4 inch wide. This was welded on the body of the tool along with a handle. A sketch of the tool is enclosed.

c. Observation: The use of this tool will save almost 45 minutes work.

a. Item: Operations - Unloading of rock from barges

b. Discussion: Tests were made on different methods of unloading rock from small barges or sampans. Test methods included the use of full and half CONEX'S, 5 ton dump beds and fifty five gallon drums.

c. Observation: Results of the study were forwarded under separate cover.

a. Item: Use of Grubbing Plows

b. Discussion: The grubbing plow, a crawler tractor attachment with large teeth resembling those of a pitch fork, is a valuable piece of equipment for clearing operations. This type of plow enables the operator to grub out roots from the ground and push the roots and other vegetation into piles without stockpiling dirt in front of the blade. The dirt simply passes between the teeth of the plow. By eliminating the stockpiling of dirt along with grubbed vegetation, the piles can be completely and effectively burned. This reduces the size of the piles as well, enabling the dozer to operate more efficiently since it would only push vegetation and not dirt.

c. Observation: Recommend that the US Army issue to its construction units in Vietnam this type of plow. The grubbing plow has proven to be an invaluable piece of equipment in Vietnam. It is currently a standard piece of equipment on all clearing and grubbing operations conducted by RMK-BrJ civilian contractors.

a. Item: Two Story Hutment

b. Discussion: Present plans call for bridging between floor joists. Bridging and joists are of the same material. It is very time consuming to cut 375 individual pieces for bridging and place them. At the present there is a severe shortage of 2" X 10" and 2" X 12" lumber.

c. Observation: Diagonal bracing (1 X 4) in lieu of 2x10 or 2x12 bridging would conserve lumber which is in short supply. This will not reduce the design strength of the ceiling. Ends of joists should be boxed in with 1" material.

a. Item: Standard Tropical Buildings

b. Discussion: Problems arise with the ventilator on the peak of the roof. When it rains there are accompanying winds. These winds cause water to blow under the ventilator.

c. Observation: Advantages of the vent are countered by the water problem. The alternative is either to delete the roof ventilator or raise the pitch of the roof.

a. Item: Trash being pulled into HD-16 dozer engine compartment

b. Discussion: As trash is pulled into the engine compartment it tends to build up in the under pad cover. The heat from the engine ignites this trash which then burns the electrical system of the engine.

c. Observation: This unit lost two days work due to this hazard. The fire caused severe damage to the hydraulic hoses and electrical systems. It is recommended that screens be placed on engine ventilator compartments and over the access hole to the radiator cap on these reactors.

a. Item: Bolts on 5 Ton Dump Trucks

b. Discussion: Due to the rugged terrain in Vietnam, it has been noted that all bolts on the 5 Ton Dump Trucks become loose and eventually are lost without a very rigorous and well supervised maintenance program.

c. Observation: The 43d Engr Co (DT) placed its forty-eight dump trucks into six truck sections, assigning one mechanic to a section. This has given a closer driver-mechanic relationship. It affords more attention per truck and provides the mechanic with a working knowledge of each truck. This is evident by the low deadline rate of 4.2% in the company.

a. Item: Safety

b. Discussion: Safety is a major problem encountered by a driver with road conditions and terrain in Vietnam.

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Observation: The 43d Engr Co (DT) instituted a safety patrol within the company utilizing two jeeps with safety patrol markings. These jeeps are kept on the road to enforce speed limits, prevent tailgating, and enforce safe driving procedures. Through this and strict supervision by section NCO's the company has held accidents to a minimum.

a. Item A: Corrugated Tin Cutters

b. Discussion: In constructing tropical type buildings it was found to be rather difficult to cut corrugated tin roofing into desired lengths. Most roof vents on these type buildings make use of 4 foot lengths of tin, whereas the most common lengths of tin available in the supply yards are 6,8, and 9 feet long. An oxyacetylene cutting torch was used to cut some pieces to correct length, but it was found that the galvanized coating on the tin caused damage to the tip on the torch. TO&E tin snips available in the construction platoons were found to be too light to cut the heavy guage metal. SSG William H. Feeback suggested making a large cutter similar to that used in cutting paper. SSG Feeback fabricated the corrugated tin cutters in one afternoon. (See Incl # 1.)

c. Observation: The corrugated tin cutters have proven invaluable in that they have speeded up construction on roof vents considerably and saved man-hours expended. Also because of the ruggedness and durability of the cutter it has been found that local nationals can operate it without difficulty.

a. Item B: Use of crane with Extended Boom

b. Discussion: In recent construction at the 24th Evacuation Hospital a problem was encountered which required the use of a 20 ton truck mounted crane with an extended boom. The problem arose with the erection of a 40 foot prefabricated steel tower, on which had to be placed a 21,000 gallon water tank. Because of the weight of the tank and the height of lift required, it was decided to erect the tank in place on top of the tower. In order to handle the erection of the upper sections of the tower, as well as lifting components of of the tank onto the completed tower, two 10 foot boom extension sections, with cable "eyes", were added to the normal 40 foot boom on our 20 ton truck crane to give a 60 foot boom with which to work. The crane with concrete bucket attachment was also utilized as an elevator for personnel and equipment to travel to the top of the tower.

c. Observation: The use of the crane with an extended boom proved to be the exact answer to the problem at hand. Careful handling of the piece of equipment by an experienced operator precluded any unusual problems arising. It should be stated, however, that the extra weight of the boom sections should be taken into account when calculating safe lifting capacity, as well as the fact that the lifting radius is greatly reduced for a crane with a boom of this length. If at all possible, cranes with extended booms should be operated in one location or one area only because traveling on the roads may damage the boom and cables. It also presents a greater hazard to power and telephone cables to maneuver at sharp corners or short radius turns.

a. Item C: Asphalt Sidewalks

b. Discussion: In recent work at the 24th Evacuation Hospital, the question of paving sidewalks has arisen. The following factors would seem to favor asphalt rather than concrete sidewalks. Extensive form work is required for concrete sidewalks; asphalt sidewalks can be laid by setting two string-lines and laying a 2 X 4 next to these lines. Minimum thickness of concrete walks should be three inches to avoid cracking caused by curing too rapidly; a 1½ inch compacted thickness of asphalt is more than enough to meet foot traffic requirements (drive ways in the States are normally 2" thick). Concrete required personnel to place and finish it and is usually transported from a batch plant. Asphalt can be brought to the site in a 5 ton dump truck and hand tamped or rolled. Both asphalt and concrete result in acceptable surfaces if placed properly. Asphalt is less expensive per unit than concrete. Asphalt can be ready for traffic one hour after compaction.

c. Observation: In view of the above discussion, it is recommended that, where both asphalt and concrete are available, asphalt be used for sidewalk paving. Both surfaces use critical materials such as rock; the fact that about ½ the volume of asphalt is required as compared with concrete makes it much more economical. This plus the ease of forming for asphalt sidewalks, makes asphalt the more desirable of the two materials.

Part III, Recommendations

1. Operations: Air Conditioning Construction requirements to include fabrication of duct work and installation has been placed on this Bn and other Construction Battalions in Vietnam. Bn's do have two (2) MOS 51J20 sheet-metal workers, but not skilled for engineering projects. The reason these two (2) 51J20 are assigned is strictly for 3d maintenance shop body repair and one in the utility section for installation and repair of asphalt equipment.

2. Airconditioning duct work requires a highly trained sheetmetal worker, whom has had many years of experience. The tools of the trade, such as a press, cutter, soldering equipment and clamps, are not organic TOE equipment. The only tools we are authorized is a Tool kit, sheetmetal workers, hand, FSN 5180-596-1510, which do not include the tools to prefab duct work, diffusers, and vents.

3. It is recommended that cutter, press, clamps, and soldering kit be made an organic part of our TOE Construction Equipment along with qualified sheetmetal workers.

4. If TOE changes cannot be made, it is recommended that Sonoair duct or Herman Nelson flexible duct be utilized. This type duct does not require any tools or skilled labor to install.

MERVIN J. REES
LTC CE
Commanding

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EOB-3 1st Ind CPT HARMON/rls/LB543
SUBJECT: Operational Report - Lessons Learned (RCS FOR-65) for Quarterly Period Ending 31 January 1967

DA, Headquarters, 159th Engineer Group (Const), APO 96491, 20 February 1967

TO: Commanding General, United States Army Engineer Command Vietnam (Prov)
ATTN: AVCC/RC, APO 96491

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

1. This report is considered comprehensive and of value for documentation and review of the reporting units activities and experiences.

2. This Headquarters concurs with the Observations and Recommendations in Section 2, with the following comments:

a. Item C. a. Radio Communication in a construction Engineer Battalion: The operation and maintenance of the outdated radio equipment throughout this Group has been a continual problem. In addition to the poor radio communications in general, there is the additional problem of insufficient FM radios to net with the newer model radios of other tactical units.

b. Part III, Recommendations: The use of a prefabricated or flexible duct for air conditioning systems would be very advantageous in our construction. This solution should be investigated for general application.

FOR THE COMMANDER:

WILLIAM G. FLOURNOY
1Lt, GS
Acting Adjutant

REGRADED UNCLASSIFIED WHEN SEPARATED
FROM CLASSIFIED INCLOSURES

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AVCC-MHD (31 Jan 67) 2d Ind
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 16 MAR 1967

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

1. The subject report, submitted by the 169th Engineer Battalion (Const), has been reviewed by this headquarters and is considered adequate.

2. The recommendations and comments of the indorsing and submitting commanders have been reviewed and this headquarters concurs, subject to the following added comments:

a. Section 1, paragraph 3b(7), air conditioning equipment has arrived in-country.

b. Section 2, Part I, paragraph 1a, Item: Transportation of 60' Piles. This headquarters does not concur using unsafe field expedients when requests for special equipment can be made through local transportation offices.

c. Section 2, Part I, paragraph 1a, Item: Resupply of Detonating Cord. Better forecasting of requirements are being established by the 1st Logistical Command.

d. Section 2, Part I, paragraph 2a, Item: Radio Communication in a Construction Engineer Battalion and paragraph 2a, 1st Indorsement. The AN/GRC-19 radio is being replaced by the new AN/GRC-106 radio as they become available. An MTOE request to change all engineer battalions to the E series TOE has been submitted to higher headquarters. Upon approval all battalions will be authorized the new series of FM tactical radios.

e. Section 2, Part I, paragraph 3a, Item: Tractor Wheeled Industrial. A letter has been forwarded to CG, 1st Logistical Command concerning deficiencies found during deprocessing of the 290M tractor.

f. Section 2, Part I, paragraph 3a, Item: Tractor Full Tracked D7E. Newer models have variable blades that can be adjusted wit out having to change the unit.

g. Section 2, Part I, paragraph 3a, Item: Repair Parts for Special Purpose Equipment. A letter will be sent to the unit concerned, requesting specific information on repair parts required.

USAHV, ATTN: AVHGC-DH

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AVCC-MHD (31 Jan 67) 2d Ind 16 MAR 1967
SUBJECT: Operational Report-Lessons Learned (RCS CSFOR-65) for Quarterly Period Ending 31 January 1967

h. Section 2, Part I, paragraph 3a, Item: Use of Grubbing Plows. This headquarters will investigate and evaluate the use of these plows, and initiate procurement action if appropriate.

i. Section 2, Part I, paragraph 3a, Item: Standard Tropical Buildings. This headquarters has issued instructions to delete roof ventilators from all tropicalized wood buildings.

j. Section 2, Part II, (labelled "Part III"), and paragraph 2b, 1st Indorsement. This headquarters will study the proposal of the MTOE when submitted and justified by the unit. As an immediate solution this headquarters is currently redesigning the duct work required for air conditioning with emphasis on simplicity of construction. A program has also been initiated to train personnel in the fabrication and installation of this duct work.

FOR THE COMMANDER:

RICHARD J. DUCOTE
Colonel, GS
Chief of Staff

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AVHGC-DH (31 Jan 67) 3d Ind
SUBJECT: Operational Report-Lessons Learned for the Period Ending 31 January 1967 (RCS CSFOR-65)

HEADQUARTERS, UNITED STATES ARMY VIETNAM, APO San Francisco 96307
25 APR 1967

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

1. This headquarters has reviewed the Operational Report-Lessons Learned for the period ending 31 January 1967 from Headquarters, 169th Engineer Battalion (Construction) as indorsed.

2. Pertinent comments follow:

a. Reference Paragraph 1a, Page 9, and Paragraph 2b, 2d Indorsement, concerning transportation of 60' piles: Concur in the proposal to establish lists of materials handling and transport equipment capable of handling unusual loads or lengths of materials. A letter will be forwarded to 1st Logistical Command requesting that they compile lists of this type equipment at each of their depots for customer reference.

b. Reference Paragraph 1b, Page 9, and Paragraph 2c, 2d Indorsement, concerning the short supply of detonating cord: Concur. Detonating cord has been in short supply for some time and extensive effort has been directed to this problem. As a means of improving the RVN stockage position, detonating cord has been placed under Available Supply Rate (ASR) control for a thirty-day period. Engineer units which use or have anticipated requirements for large quantities of detonating cord have been requested to provide a reasonable forecast of their 6-month requirements. This will assist the 1st Logistical Command in requisitioning and maintaining proper stock levels at desired locations.

c. Reference Paragraph 1c, Page 9, and Paragraph 2d, 2d Indorsement, concerning the need for new series radios: The MTOE referred to in 2d Indorsement was forwarded by USARPAC to DA on 19 December 1966.

d. Reference Paragraph 3, Page 10, and Paragraph 2e, 2d Indorsement, concerning wheeled tractors: Concur with action taken in 2d Indorsement.

e. Reference Paragraph 3, Page 10, and Paragraph 2g, 2d Indorsement, concerning repair parts for special purpose equipment: Concur with proposed action in 2d Indorsement.

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AVHGC-DH (31 Jan 67)
SUBJECT: Operational Report-Lessons Learned for the Period Ending 31 January 1967 (RCS CSFOR-65)

f. Reference Paragraph 3, Page 11, concerning hydraulic swivel guard: Concur; however, if the improvement is considered feasible for adoption on all H 90 CM scoop loaders, the unit is encouraged to initiate a request for modification work order along with a suggestion citing tangible or intangible benefits expected or derived from the modification.

g. Reference Paragraph 3, Page 11, concerning the brake adjusting tool: Concur; however, the suitability of the fabricated tool will be investigated by AMC technical representatives who will initiate procurement action and issue maintenance instructions.

h. Reference Paragraph 3, Page 11, and Paragraph 2h, 2d Indorsement, concerning the use of grubbing plows: Concur in action proposed in 2d Indorsement.

i. Reference Paragraph 3, Page 12, concerning hutment diagonal bracing: Concur. The recommended use of 1" x 4" or any other small dimension scrap lumber for floor joist bracing is considered desirable in light of material economy and will in no way degrade the construction standards of the hutment.

j. Reference Paragraph 3, Page 12, and Paragraph 2i, 2d Indorsement, concerning standard tropical buildings: Concur in 2d Indorsement comment. Engineer Command has taken necessary action to eliminate roof ventilators.

k. Reference Paragraph 3, Page 13, concerning the use of crane with extended boom: Nonconcur. The concrete bucket attachment was designed to move concrete or other similar material. The use of such equipment or attachments thereto, for other than its intended purpose is prohibited.

l. Reference Part III, Page 14, and Paragraph 2j, 2d Indorsement: Concur with action taken and proposed by Headquarters, US Army Engineer Command, in 2d Indorsement.

FOR THE COMMANDER:

STANLEY E. SCHULTS
Major, AGC
Asst Adjutant General

2 Incl
nc

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GPOP-OT (31 Jan 67) 4th Ind
SUBJECT: Operational Report-Lessons Learned for the Period Ending 31 January 1967 (RCS CSFOR-65) - Hq 169th Engr Bn (Constr)

HQ, US ARMY, PACIFIC, APO San Francisco 96558 1 0 JUN 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:

R. SNYDER
CPT, AGC
Asst AG

2 Incl
nc

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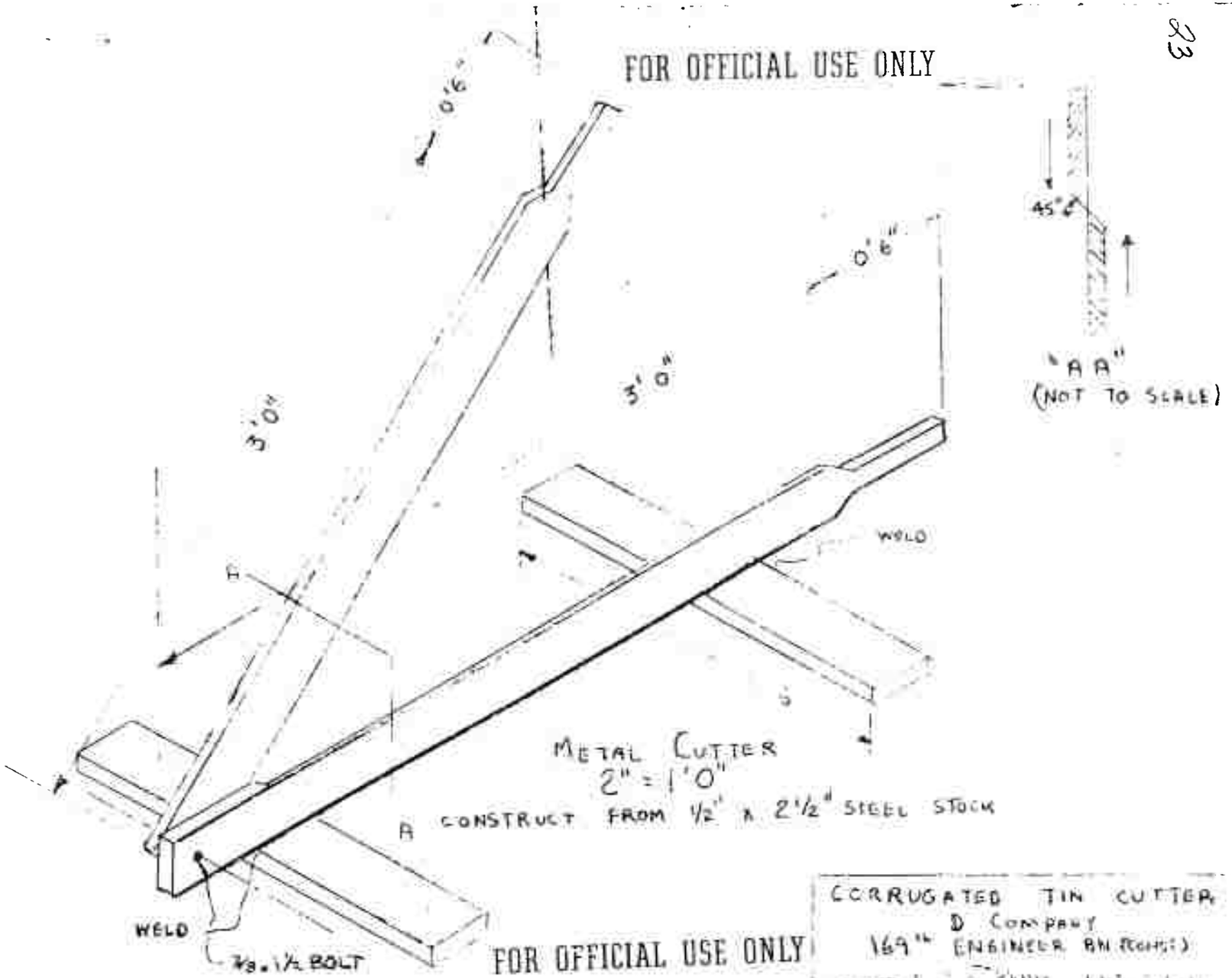

METAL CUTTER
2" = 1'0"

CONSTRUCT FROM ½" x 2½" STEEL STOCK

CORRUGATED TIN CUTTER
D Company
169th ENGINEER BN (Const)

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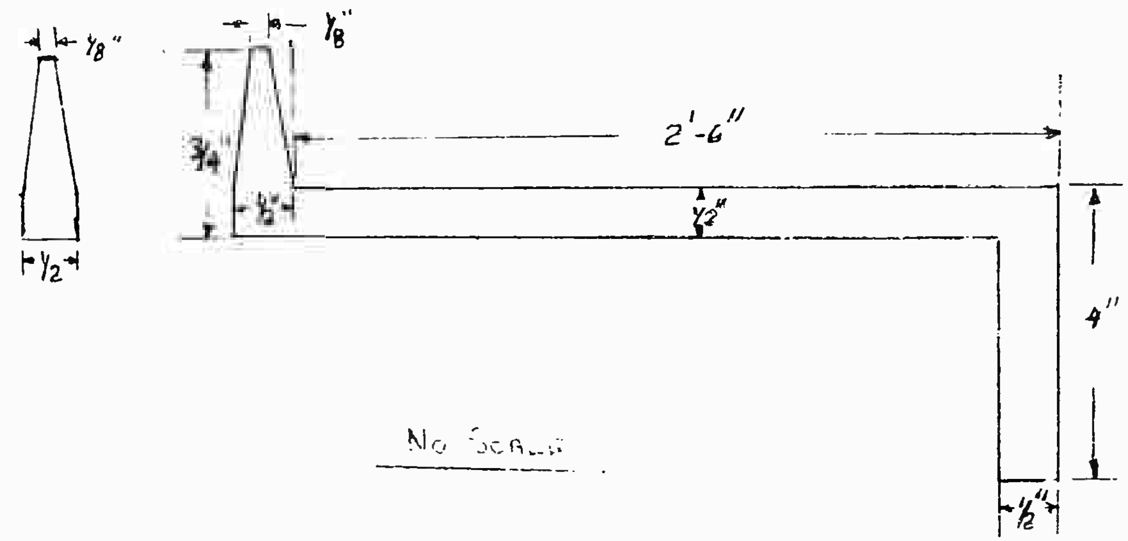
BRAKE ADJUSTING TOOL

HUBER WACO MODEL 4D GRADER
FABRICATED OF OF STEEL



NO SCALE

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169TH ENGINEER BN (CONST)
DRAWN BY R LEHMAN DATE 15 FEB 67