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DEPARTMENT OF THE ARMY
HEADQUARTERS, 39TH ENGINEER BATTALION (COMBAT)
APO San Francisco 96325

31 October 1969

SUBJECT: Operational Report of 39th Engineer Battalion (Combat)
for Period Ending 31 October 1969, RCS CSFOR-65 (RI)

THRU: Commanding Officer
45th Engineer Group
ATTN: S-3
APO 96308

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

Commanding General
United States Army, Vietnam
ATTN: AVHGC (DST)
APO 96375

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

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

Classified by Cdr, 39th Engr BN
SUBJECT TO GENERAL DECLASSIFICATION
SCHEDULE OF EXECUTIVE ORDER 11652
AUTOMATICALLY DOWNGRADED AT TWO
YEAR INTERVALS
DECLASSIFIED ON DECEMBER 31 1975

DOWNGRADED AT 3 YEAR INTERVALS
DECLASSIFIED AFTER 12 YEARS

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(C) SECTION I

A. (C) GENERAL:

1. (U) Organization:

During the report period, the 39th Engineer Battalion (Combat) consisted of Headquarters and Headquarters Company and four lettered line companies. The 511th Engineer Company (Panel Bridge) and the 137th Engineer Company (Light Equipment) remained attached to the Battalion throughout the report period. The Quarry Section of the 517th Engineer Company (Light Equipment) remained attached to Company D, 39th Engineer Battalion until 1 September 1969 when it was transferred to the 20th Engineer Brigade. With the departure of the 19th Engineer Battalion (Combat) from I CORPS on 14 September 1969, Company C, 19th Engineer Battalion was placed under the operational control of the 39th Engineer Battalion and the 73rd Engineer Company (Construction Support) was attached to the 39th Engineer Battalion. With the closing of LZ HIGHBOY (BS913145) on 10 October 1969, Company C, 19th Engineer Battalion reverted back to its parent unit. The 73rd Engineer Company (Construction Support) remained attached through their maintenance stand down at QUI NHON from 10 October 1969 through 24 October 1969 and were attached to the 35th Engineer Group on 24 October 1969.

2. (U) Command:

The 39th Engineer Battalion (Combat) remained under the command of the Commanding Officer, 45th Engineer Group. The Battalion remained in support of the Americal Division throughout the report period, with Headquarters and Headquarters Company at the same location within the CHU LAI Base (BT534036). Incumbent commanders at the close of the report period were as follows:

CO, 39th Engr Bn	-- LTC Thomas A. Ghormley
CO, Co. A, 39th Engr Bn	-- CPT Charles R. Eller
CO, Co. B, 39th Engr Bn	-- CPT Harry O. Taylor
CO, Co. C, 39th Engr Bn	-- CPT Larry D. Warren
CO, Co. D, 39th Engr Bn	-- CPT Larry W. Tidwell
CO, HHC, 39th Engr Bn	-- CPT Terrence A. Graham
CO, 511th Engr Co (PB)	-- CPT Robert J. Reilly
CO, 137th Engr Co (LE)	-- CPT Fernand A. Martineau

3. (C) Major Activities:

During the report period, the Battalion continued to concentrate its effort on the upgrade and maintenance of QL-1 south of CHU LAI. In addition to the LOG projects, a land clearing platoon was formed by Headquarters Company and operated under the operational control of the 9th Engineer Battalion (USMC). Other projects included the completion of the DUC PHO Helipad renovation (RS807378), the resumption of the 27th Surgical Hospital revetment project at CHU LAI, repair of water damage and minesweeps of 58 kilometers along QL-1.

a. The upgrade of QL-1 from QUANG NGAI (BS645728) to MO DUC (BS737530) was continued with the base course being completed on 10 August 1969, leaving the

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paving by FMK and shoulder work remaining prior to the completion on 3 October 1969. It was accepted as complete on 25 September 1969 by the Senior Advisor, Danang Highway District and all work was completed on 3 October 1969.

(b) The upgrade of QL-4 from DUC PHO to MO DUC continued, with the base course complete for 11.2 kilometers and pavement complete for 9.25 kilometers of the 16.0 kilometers of highway. The paving was performed by the Battalion with assistance from the 73rd Engineer Company (Construction Support) and Company C, 19th Engineer Battalion (Combat) from 14 September 1969 to 9 October 1969. When these units departed, a paving train was provided and the Battalion continued paving operations.

(c) The Land Clearing Platoon (Provisional) was formed on 24 August 1969 and placed under the operational control of the Land Clearing Company, 9th Engineer Battalion (USMC) on 1 September 1969. In two months the platoon has cleared 3276 acres at 3 different areas for the Americal Division.

(d) The DUC PHO Helipad renovation was completed on 19 September 1969 which included resurfacing the 14,000 square yard helicopter taxiway and a 40 foot by 40 foot M8A1 matting helipad.

(e) A total of 17 culverts, with 27 CMP tubes were to be installed on QL-1 between BINH SON (BS601922) and QUANG NGAI to replace destroyed and buried culverts. The project was begun on 2 September 1969 and was 72% complete at the end the report period. These culverts had been damaged due to enemy activity.

(f) A considerable portion of the construction effort during October was devoted to repairing water damaged areas of QL-1 and keeping the road open to traffic. This involved hasty placement of culvert wingwalls, placement of blast rock on shoulders, and other steps to reduce and repair the water damage. The Battalion assumed the mission of maintaining QL-1 to construction standards from BINH SON to I/II Corps border, a distance of 88.8 kilometers on 3 October 1969.

(g) After occupying LZ GOLDIE (BS680658) for six months, the LZ was closed on 5 September 1969. Company A and Company D began in earnest on 29 August to disassemble bunkers and salvage all reusable material. Material which could not be salvaged was buried and the entire LZ was cleared. Both units relocated to CHU LAI on 5 September 1969.

4. (C) Activities of Headquarters Company:

Throughout the report period, Headquarters Company, 39th Engineer Battalion was located at CHU LAI (BT534036) with the 39th Engineer Battalion. Headquarters Company continued its mission of supporting the line companies and accomplishing engineer support tasks for the Americal Division within the CHU LAI base area. Headquarters Company supported the 511th Engineer Company (Panel Bridge) for messing from the beginning of the report period until 5 September and supported Company D from 5 September 1969 through the end of the report period.

Throughout the period, the Heavy Equipment Platoon has been employed to assist the line companies as needed. Located at LZ GOLDIE (BS680658) at the start of the

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period, the Heavy Equipment Platoon remained to operate the LA HA Borrow Pit and to assist the closeout of the LZ on 5 September 1969. Upon returning to CHU LAI on 5 September, the platoon undertook the upgrading of bridge approaches in preparation for the completion of QL-1 from QUANG NGAI (BS645728) to MO DUC (BS737530).

During August, the formation of a Provisional Land Clearing Platoon was accomplished. Seven of the nine dozers in the platoon were equipped with tree dozer kits. The platoon was organized to be under the operational control of the 9th Engineer Battalion (USMC) which performs tactical land clearing for the Americal Division. From 1 September 1969 to 7 September 1969, the platoon operated northwest of TAM KY (BT325215) and left the area due to unsuitable working area caused by the heavy rains. The unit then moved to an area south of the SONG TRA KHUC, 9 kilometers west of QUANG NGAI on 10 September 1969. This operation lasted until 27 September 1969 and a total of 975 acres were cleared. After a 6 day maintenance stand down and an 8 day delay due to high seas, an amphibious landing was made along the coastal area just north of DUC PHO (BS807378) and the third area begun on 14 October 1969. To date, the Land Clearing Platoon has cleared a total of 3276 acres at the three different locations. Over 8000 meters of tunnels and trenches and 456 bunkers have been destroyed. The platoon has found and destroyed 736 artillery rounds, mortar rounds, and mines and have had only 6 personnel wounded in action.

During the report period, a self-help program was started which involved improvement of the maintenance area drainage, construction of additional maintenance buildings, improvement of living areas and construction on new showers. At the end of the period, a vehicular wash rack had been built, the new EM shower had been built, and fill had been placed in the motor pool for elevating the area.

5. (C) Activities of Company A:

At the beginning of the report period, Company A was located at LZ GOLDIE (BS680658). The assigned missions included the construction of an 80 foot, class 60, timber pile bridge at BS685658; essential facilities at engineer base camps; repair of enemy damage on QL-1 from BS728556 to BS685658; the maintenance and improvement of culverts along QL-1 from QUANG NGAI (BS642747) to MO DUC (BS737530); and supporting Company D, 39th Engineer Battalion with dump trucks for their rock haul.

Company A had started construction of an 80 foot, class 60, timber pile bridge during the previous report period. Construction slowed several times due to unusually high water and incidents of piles breaking and splitting. The bridge was completed on 7 October 1969.

Beginning 29 August 1969, maximum effort was devoted to the closeout of LZ GOLDIE. The second platoon was sent to CHU LAI (BT534036) with the mission of constructing living, mess and maintenance facilities in preparation for the move to that location. The dump trucks assisting Company D on the rock haul were released and utilized to transport materials to CHU LAI. The closeout of LZ GOLDIE was completed on 5 September and Company A relocated to CHU LAI, where it has remained throughout the rest of the report period.

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On 17 August the north span of the 39 foot, class 60, timber pile bridge at BS706618 was destroyed by enemy activity. Repair of the bridge was started immediately. Several piles, five stringers and the decking and treadway were replaced. The bridge was completed and opened to traffic 10 days after it was destroyed.

Company A also had the mission of maintenance and improvement of culverts along QL-1 from QUANG NGAI to MO DUC. This included the upgrade and repair of the wingwalls and headwalls on the culverts. The Company constructed defensive positions for the bridges at BS685658 and BS707617. The defensive positions were constructed with unserviceable CONEX containers reinforced with sandbags.

On 15 September 1969, the first and second platoon were placed under the operational control of the 137th Engineer Company (Light Equipment) and Company C, 39th Engineer Battalion, respectively. The first platoon moved to LZ MAX (BS763472) to assume the mission of security of work parties on QL-1 upgrade operations. The second platoon relocated to LZ BRONCO (BS815383) to support the minesweep of QL-1 from DUC PHO (BS807378) north to vic BS789417 and the repair of enemy damage in that area. On 3 October the second platoon moved to LZ MAX.

Company A completed two civic action projects. They consisted of the repair of the QUANG NGAI Hospital Helipad and the donation of unusable lumber, salvaged from LZ GOLDIE, to the QUANG NGAI Orphanage.

On 9 October 1969, the bypasses for the bridges at BS593933 and BS577964 were removed to allow proper drainage during the monsoon floods.

Company A provided dump trucks, under the operational control of the 511th Engineer Company (Panel Bridge), for rock and asphalt hauls from CHU LAI to the work site on QL-1. Security for the rock and asphalt haul was also provided in the form of vehicle mounted patrols.

Enemy activity was relatively light during the report period. On 1 August 1969, the minesweep team received sniper fire at BS723597 with no casualties or damage. The second platoon minesweep team found a damaged culvert at BS725562 due to enemy damage on 12 August 1969. Several leaflets and a hand grenade were found at the site. On 25 August 1969, a phoney minefield was discovered and removed at BS720586. The following day a 5 pound mine was found and destroyed at BS692647. The second platoon found and destroyed 4 mortar rounds at BS886291 during a minesweep on 13 October 1969. An infantry minesweep team came upon a 45 pound anti-tank mine at BS886283 on 23 October 1969. The mine was blown in place by Company A.

During the report period Company A closed out LZ GOLDIE and relocated to CHU LAI. The construction of an 80 foot, class 60, timber pile bridge at BS685658 was completed and the north span of the timber pile bridge at BS706618 was repaired. The Company repaired and upgraded the culvert headwalls and wingwalls from QUANG NGAI to MO DUC. Although the first and second platoons were under the operational control of other units for half of the report period, Company A completed the construction of the Company area at CHU LAI and provided security for the rock and asphalt hauls.

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6. (C) Activities of Company B:

At the start of the report period, Company B, 39th Engineer Battalion (Combat) was located at LZ DOTTIE (BS627854) with the mission to maintain and upgrade the bridges and drainage structures on highway QL-1 from QUANG NGAI (BS642747) to BINH SON (BS601922) a total distance of 18 kilometers. First Platoon, Company B was located at LZ SNOOPY (BS700607) to provide a defense for the LZ and to conduct minesweep operations between LZ SNOOPY and bridge QL1-404 (BS728556). In addition, Company B conducted a daily minesweep of QL-1 between BINH SON and the SONG TRA KHUC River. At the start of the report period, major emphasis was placed on repair of enemy damage, the upgrade of highway QL-1, and the preparation of LZ DOTTIE for the monsoon season.

Projects under construction at the start of the report period were as follows: a daily rock haul of two inch minus rock from CHU LAI (BT534036) to the base course laydown site on QL-1; the renovation of 19 old living/fighting bunkers and the construction of 19 new (16'x20') living/fighting bunkers at LZ DOTTIE. Projects initiated during the report period consisted of the construction of a 16'x20' concrete pad for the 39th Engineer Battalion stabilization plant at CHU LAI; the construction of a TOC bunker (12'x16') for the CHU LAI Defense Command at the Combat Center; the construction of a 16'x32' vehicle wash rack at CHU LAI; the construction of four gun pads for A Battery 1/82 Artillery at LZ DOTTIE; the hydroseeding and penepriming of the banks along QL-1 from QUANG NGAI to MO DUC (BS737530); the repair and replacement of 27 damaged culverts along QL-1 from BINH SON to QUANG NGAI; and upgrading the drainage structures along QL-1 from QUANG NGAI to MO DUC.

The rock haul of two inch minus rock from CHU LAI which started on 6 May 1969, continued through the report period with Company B trucks hauling 2884 cubic yards of rock to the laydown site and to a stockpile at LZ SNOOPY.

The reconstruction of 19 living/fighting bunkers which started on 28 July 1969, was partially completed as 12 new bunkers were built. In addition, to prepare the LZ for the monsoon season, the mess hall was renovated, 104 feet of culvert was installed for drainage, and deep drainage ditches were cut along all interior roads.

On 6 August 1969, work was started for the placing of a 15'x20' concrete pad for the 39th Engineer Battalion stabilization plant at CHU LAI. The pad was completed on 10 August 1969.

On 14 August 1969 four gun pads were built for A Battery, 1/82 Artillery at LZ Dottie. Seven holes were excavated for living bunkers and 500 square meters of land was cleared, graded and leveled. Parapets were built around the gun pads and all work was completed on 20 August 1969. Work started on 19 August 1969, to construct a 12'x16' TOC bunker for the CHU LAI Defense Command and the bunker was completed on 22 August 1969.

On 2 September, two major projects were started: (1) the hydroseeding and penepriming of the banks and shoulders of QL-1 from QUANG NGAI to MO DUC, approxi-

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mately 22 kilometers; and (2) the repair of 27 damaged culverts between BINH SON and QUANG NGAI. At the end of the report period the banks and shoulders had been completed from QUANG NGAI to LZ SNOOPY, approximately 13 kilometers. Also, all of the culverts except three have been installed and the remaining work from BINH SON to QUANG NGAI included building headwalls and patching the asphalt on QL-1.

On 9 September 1969, work began on the construction of a 16'x32' concrete vehicle wash rack at CHU LAI. The wash rack was completed on 23 September 1969.

On 23 September 1969, Company B was assigned the mission of repairing and improving all of the drainage structures from QUANG NGAI to MO DUC. Wingwalls were reconstructed on two bridge sites, four culvert bypasses were dismantled and four culvert headwalls were constructed. The project was completed on 26 October 1969.

On 30 September 1969, the first platoon relocated from LZ SNOOPY to LZ DOTTIE and the Company Area of Operations increased in size. Company B is now responsible for maintenance and repair of QL-1 from BINH SON to the north bank of the SONG VE River (BS694636), approximately 28 kilometers; and responsible for minesweep operations from LZ DOTTIE to MO DUC (LZ DRAGON access road, BS737530) approximately 40 kilometers.

In addition to the assigned projects, Company B undertook many daily repair jobs to keep QL-1 open. Five bypasses were cut to allow free flow of water at five bridge sites; approaches to bridges were excavated, recompact, and asphalted at 2 bridge sites; QL-1 was patched in 7 places where enemy and water damage was incurred between BINH SON and QUANG NGAI; headwalls were built on 5 culverts; assistance was rendered in the construction of a 45 foot dry span over a washed out bypass at BS638781.

Enemy activity during the report period was moderately light with the first platoon at LZ SNOOPY involved in most of the incidents. During this period the first platoon at LZ SNOOPY was involved in one light mortar attack, 2 ambushes along QL-1, and 5 sniper incidents. The rest of Company B was involved in 2 sniper incidents, 2 mining incidents and a heavy ground and mortar attack on LZ DOTTIE on 12 August 1969.

At 0040 hours, 12 August 1969, LZ DOTTIE came under a heavy ground and mortar attack which resulted in two friendly casualties. The enemy force, consisting of two reinforced sapper companies, suffered 23 confirmed KIA's and 2 prisoners captured. Weapons captured included four AK-47 rifles, 300 Chicom grenades, several 81mm mortars, 4 bangalore torpedoes, a B-40 rocket launcher and several B-41 rockets.

During the report period, Company B placed 58 cubic yards concrete, assembled and installed 942 feet of culvert for drainage, hauled 4375 cubic yards of base rock for drainage and road upgrade, rebuilt 12 (16'x20') living/fighting bunkers, and filled and placed 24,000 sandbags on bunkers at the LZ.

7. (C) Activities of Company C:

Throughout the report period, Company C was located at LZ Max (BS763472).

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Attachments included: First Platoon, Company B, 39th Engineer Battalion, located at LZ SNOOPY (BS700607), from 2 September 1969 to 28 September 1969 in support of minesweeps, and Second Platoon, Company A, 39th Engineer Battalion at LZ MAX from 14 September 1969 to the present, for support of minesweeps, security, and culvert repair. Projects in progress at the beginning of the report period included minesweeps in AOR, repair of enemy damage on QL-1 from PS728556 to BS805382), repair of damaged culverts on QL-1 from MO DUC (BS727530) to DUC PHO (BS807378), security for 137th Engineer Company (Light Equipment) work parties on QL-1, essential facilities at engineer base camps, and civic actions in AOR.

Projects initiated during the report period were combat support operations, tactical bridge responsibility on QL-1 from BS728555 to DUC PHO, and waterproofing the ASP berm at DUC PHO.

Company C was responsible for minesweep operations from MO DUC to DUC PHO, a distance of 16 kilometers. In conjunction with minesweep operations, a civic action program was underway. This program included the hauling of 36 cubic yards of fill to the villages of CHAU ME (BS745516) and THACH TRU (BS767474), the treatment of 305 sick and wounded Vietnamese nationals and providing the local nationals with 98 MEDEVAC's to the 11th Infantry Brigade clearing station at LZ BRONCO (BS815383).

A total of 12 mines were detected and 4 were detonated on minesweeps during the report period. The minesweep team was ambushed on 12 August 1969.

The second platoon was sweeping QL-1 from LZ MAX to MO DUC on 12 August 1969, when they were ambushed in the village of TU SON (BS758488). The attack began when two Chicom claymore mines failed to detonate. Heavy automatic small arms fire and RPG's from four distinct locations pinned down the entire sweep team and disabled all of the vehicles. The enemy force consisted of a reinforced NVA platoon. A reaction force was dispatched from LZ MAX despite a diversionary attack on the LZ. The Second Platoon was in danger of being overrun when the RECON chopper from the 19th Engineer Battalion arrived and pinned down the attackers until gunships could arrive. MEDEVAC's were made with gunship conver. The enemy was finally driven off by gunships and ground forces. A sweep was made of the area and four rockets with prepellant, 4 AK-47 magazines, and 2 Chicom claymores were found. The enemy had been located in houses as close as 15 feet from the highway. Following ammo resupply and troop reinforcement, the minesweep continued to MO DUC without further incident.

At the end of the last report period, construction of the 50 foot, three span, timber pile bridge at BS736533, was completed. On the morning of 12 August 1969, Company C, while on their minesweep, found the north span had been destroyed by the enemy during the night. As there was no bypass, Company C immediately began construction of a M4T6 float bridge. It was completed and opened to traffic on 13 August 1969. Work began in earnest to replace the north span. The damaged material was removed and the new bridge completed on 19 August 1969. The float bridge was dismantled on 20 August 1969.

On 5 August 1969, Company C completed the construction of a three span, 58 foot, class 60, timber pile bridge at BS771461. Construction of the bridge had started 4 July 1969.

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Waterproofing of the ASP berms at DUC PHO was started on 4 September 1969 and completed on 11 September 1969. The project consisted of waterproofing 5200 square yards of berm.

Company C provided security for the upgrading operations being performed by the 137th Engineer Company (Light Equipment) along QL-1. On 15 September 1969, the attachment of elements to the 137th Engineer Company (Light Equipment) for the purpose of providing security, allowed Company C to use part of their security force on the repair of enemy and water damage.

A great deal of emphasis was placed on the improvement and renovation of LZ defenses during the report period. "Second line of defense" positions were constructed around the LZ. This included the clearing of brush and undergrowth to afford better fields of fire. All of the towers, bunkers, and secondary positions were repaired and reinforced. The defensive wire was improved with some of the old wire replaced.

On 11 October 1969, a 9700 pound rice cache was uncovered while investigating the area where a 5-ton dump truck was destroyed by a mine. The rice was evacuated to LZ BRONCO where it was turned over to MACV.

Heavy rainfall in early October made it necessary for Company C to divert their resources to water damage repair. Bypasses, that were inhibiting drainage, were removed at four locations on QL-1 and repairs at culverts and bridge approaches were quickly made, thereby keeping the highway open to traffic.

Enemy activity was at its highest level during the month of August. There were 16 mining incidents of which 12 were detected and 4 were detonated. One 5-ton dump truck was destroyed when it hit a mine while being used as a proof truck on a minesweep. The ambush occurring on 12 August 1969 during a minesweep, resulted in 1 US killed and 10 US wounded. Equipment destroyed in the ambush included a 5-ton dump truck, a 3/4-ton truck, and 1/2-ton truck. Company C was credited with one enemy kill. At the same time as the ambush, there was a diversionary attack of the LZ that resulted in no damage or casualties. Five sniper incidents occurred and five barricades were disposed of by minesweep teams. Combat sweeps around LZ MAX found and destroyed a short tunnel, one fighting position, and 5 dud mortar and artillery rounds. The north span of the timber pile bridge at BS736533 was destroyed on 12 August 1969, but was opened for traffic the next day. The enemy destroyed five culverts during this period.

At the end of the report period, the construction of a 58 foot, 3 span, timber pile bridge and a 50 foot, 3 span, timber pile bridge had been completed. The Company accomplished the waterproofing of the DUC PHO ASP berms and an extensive upgrade of drainage and defensive facilities at LZ MAX. In conjunction with the daily minesweeps, sick and wounded Vietnamese nationals were treated under the Medical Civic Action Program. In addition to providing security for the upgrading operations on QL-1, Company C had installed 522 feet of culvert, used 15,708 board feet of lumber and placed 1,240 cubic yards of rock and fill in the repair of damaged culverts and water damage.

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8. (C) Activities of Company D:

At the beginning of the report period, Company D was located at LZ GOLDIE (BS-680658). The Quarry Section of the 517th Engineer Company (Light Equipment), the Heavy Equipment Platoon, Headquarters Company, 39th Engineer Battalion (Combat) and an Air Compressor Section were under the operational control of Company D. The Air Compressor Section consisted of four 250 GPM air compressors drawn from the Battalion line companies and Headquarters Company.

The assigned missions of Company D were the placement of the base rock on QL-1 from the bridge at BS642745 to MO DUC (BS737530); the repair of enemy damage and the maintenance of all bridges and culverts from LZ GOLDIE north to BS642747; daily minesweeps from LZ GOLDIE to QUANG NGAI (BS645728), a distance of 6 kilometers; daily operational sweeps of the LZ GOLDIE perimeter; the operation and security of LA HA Borrow Pit (BS677683); the operation and security of the GOLDIE Quarry; and the security of job site along QL-1.

The Voluntary Informant Program initiated during the previous report period proved to be so successful that it was continued this quarter, but to a lesser degree. This was due to the many moves made by Company D and the fact that the establishment of definite contacts with the local populace was restricted.

The Civic Action Program was continued during the report period. The largest project completed was the irrigation canal system in the vicinity of LZ GOLDIE. The completion of this project, initiated to provide a water source for farmers in the TU NGHIA District, received wide publicity through the QUANG NGAI Province Officials, TU NGHIA District MACV, and the 39th Engineer Battalion PIO.

The placement of base rock on QL-1 from BS642747 to MO DUC was completed on 12 August 1969, two days ahead of schedule. On 14 August 1969, the placement of base rock south of MO DUC was turned over to the 137th Engineer Company (Light Equipment). During August, a total of 11,898 cubic yards of base rock was placed, graded, and compacted by Company D. The Company used 30,000 gallons of water to aid compaction and utilized 10,012 cubic yards of fill and blast rock to widen the shoulders and complete approaches to bridges and culverts.

The improvement of LZ defense continued with the replacing of 100 meters of triple concertina fence and numerous perimeter lights. In addition, 21,000 square feet of foliage was cleared from around the perimeter.

Daily minesweeps of QL-1 from LZ GOLDIE to QUANG NGAI were conducted. The LA HA Borrow Pit and the borrow area were swept daily. Thirty-five combat sweeps were conducted around LZ GOLDIE and LA HA Borrow Pit.

The operation of the GOLDIE Quarry was brought to a successful completion during August. Blast rock for the crusher had to be obtained from boulder formations. Therefore no face could be established. A total of 4000 feet of holes were drilled using pneumatic rock drills to produce 3650 cubic yards of blast rock. A total of 3000 cubic yards of rock was crushed during August. The other 650 cubic yards of blast rock was used to riprap the shoulders on QL-1, at culvert and bridge sites.

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On 29 August 1969, maximum effort was devoted to the closeout of LZ GOLDIE. During the final week of August, 11 each 16'x16' living/fighting bunkers were completely dismantled. The supply room, CP, 2 tool rooms, 2 paint sheds, a maintenance tent, a latrine, and a shower were dismantled and all material hauled to CHU LAI. Also, the 75 ton per hour rock crusher was disassembled and returned to CHU LAI. A total of 10,800 full sandbags were removed from bunkers and transported to CHU LAI.

A forward element was sent to CHU LAI to handle the stockpiling of material and the establishment of a forward area. By the end of August, eight floors for GP medium tents were constructed, two tents erected, and a shower completed.

The Air Compressor Section was released by Company D and returned to their respective companies.

The remaining fortification and buildings at LZ GOLDIE were dismantled during the first five days of September. A total of 21 each 16'x16' living/fighting bunkers, 8 guard bunkers, and 2 ammo bunkers were dismantled and hauled to CHU LAI. In addition, 30,000 filled sandbags were removed from fortified positions and transported to CHU LAI. While the closeout of LZ GOLDIE continued, the forward party at CHU LAI constructed 15 GP medium tent floors and erected 17 GP medium tents. A 16'x32' SEA hut was constructed to be used as a CP.

On 5 September 1969, Company D departed LZ GOLDIE enroute to CHU LAI. LZ GOLDIE was officially closed out.

Upon arriving at CHU LAI, Company D immediately started work on the new area. Four tool rooms, two ammo bunkers, two demo bunkers, a generator shack, a PILL building, a grease rack, and electric wiring were completed in the new company area. Also, 6000 sandbags were placed on bunkers with overhead cover. This work was completed during the first week Company D was in the CHU LAI area.

While work on the new unit area continued, Company D compacted the shoulders of QL-4, improved the bridge approaches and headwalls, and constructed culvert and bridge wingwalls from QUANG NGAI to MO DUC.

On 13 September 1969, Company D was alerted to move to LZ HIGHBOY (BS913145) with the mission of securing the LZ during close out, conducting combat sweeps around the LZ during the initial closeout phase of operations, providing security for and conducting the daily minesweep from LZ HIGHBOY to DUC PHO (BS807378), dismantling all structures in a specified section of the LZ, and the manning of a 24 hour outpost in the vicinity of LZ HIGHBOY. On 14 September 1969, Company D moved to LZ HIGHBOY leaving all 5-ton dump trucks and maintenance personnel at CHU LAI to conduct a crushed rock haul from CHU LAI to QL-4 in the vicinity of LZ MAI, a distance of 61.7 kilometers. A total of 550 cubic yards of rock was hauled by this convoy during the last two weeks of September.

While at LZ HIGHBOY, Company D was responsible for moving approximately 3000 cubic yards of crushed rock from the LZ HIGHBOY stockpile to QL-4 in the vicinity

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of LZ MAX, approximately 40 kilometers.. The Company was assisted with vehicles from the 511th Engineer Company (Panel Bridge) and the mission was completed in three days. LZ HIGHBOY closed on 10 October 1969 and Company D departed to return to CHU LAI. Approximately 30 inches of rain had been recorded during the first ten days of October. Several bridges and portions of the road north of LZ MAX were under water. This made it necessary for the Company to stay at LZ MAX until 13 October 1969 when they returned to CHU LAI.

Once back in CHU LAI, the Company went to work installing a drainage system to combat the water problem caused by the heavy rains. The system included the installation of culvert, headwalls and drainage ditches. The interior roads were graded and compacted.

The rock and asphalt hauls from CHU LAI to QL-1 in the vicinity of LZ MAX continued through October. Company D hauled 553 cubic yards of rock and 1160 tons of asphalt during the month.

On 17 October 1969, Company D was inspected by the 18th Engineer Brigade CMI team. The Company received passing scores in all areas and an overall average of 84%. On 23 October 1969, Company D started construction of 4100 linear feet of M8A1 matting revetment wall around the 27th Surgical Hospital at CHU LAI.

Enemy activity during the report period was very light. On 2 August 1969, LZ GOLDIE received one sniper round. The minesweep team found a 10 to 15 pound mine in the center of the road at BS672654 on 18 August 1969, and blew it in place. On 20 August 1969, a D7E dozer hit an anti-personnel mine at BS705602 with negative damage or casualties and a 5-ton dump truck hit an anti-personnel at BS705602. The most serious incident occurred on 17 September 1969, at BS877305 when the minesweep team was returning to LZ HIGHBOY. As the team passed a convoy heading in the opposite direction, the convoy was ambushed, resulting in 3 US personnel wounded and two convoy vehicles being combat losses. Company D sustained no casualties or damage.

At the end of the report period Company D had closed out 2 LZ's, GOLDIE and HIGHBOY, and the quarry at LZ GOLDIE. The quarry had produced 3650 cubic yards of rock during this report period. In addition Company D had hauled a total of 24,910 cubic yards of blast and crushed rock to QL-1. The new Company area in CHU LAI had been established and work had started on the 4100 linear feet of revetment walls to be built around the 27th Surgical Hospital at CHU LAI.

9. (C) Activities of 137th Engineer Company (Light Equipment):

Throughout the report period, the 137th Engineer Company (Light Equipment) was located at LZ MAX (BS763473). The Quarry Section of the Support Platoon was located at LZ HIGHBOY (BS913145), with the mission of operating the crusher and quarry for the 19th Engineer Battalion until 28 September 1969, when it returned to LZ MAX. At the beginning of the report period, the missions of the Company were the upgrading of QL-1 from MO DUC (BS740525) to DUC PHO (BS807378) and the upgrade of the taxiway and parking aprons for the 174th Aviation Company at DUC PHO.

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The primary mission of the 137th Engineer Company (LE) was the upgrading of 16.0 kilometers of QL-1 from MO DUC to DUC PHO. At the beginning of the report period, the Company was completing the subbase in preparation for the placement of the base course. On 11 August 1969, the rock haul for this portion of the road was started. The base rock was being hauled from the RMK-BRJ Quarry at CHU LAI (BT534036). At the same time the 19th Engineer Battalion was nearing the completion of paving QL-1 south of DUC PHO. Therefore the north portion of the 137th Engineer Company's base rock laydown site came to a halt and was moved to DUC PHO to prepare QL-1 from that location, north for paving by the 19th Engineer Battalion. Because of the availability of base rock and the shorter haul distance, some base rock was hauled from LZ HIGHBOY to the laydown site north of DUC PHO. On 21 September 1969, the paving train began paving the road north of DUC PHO. The paving continued for three days, completing 1.3 kilometers of road, at which time the asphalt plant at LZ HIGHBOY was shut down. On 24 September 1969, the asphalt convoys started hauling from CHU LAI. Paving continued from the south as this was a frequently mined area and it was anticipated that the paving would reduce these incidents. Paving was halted on 1 October 1969 due to rain and was not resumed until 17 October 1969. When paving resumed, the paving train had moved to MO DUC and started working south. Paving continued at a rapid rate for the next 10 days, completing 6.0 kilometers before the operation was again halted due to rain.

The renovation and upgrade of the taxiway and parking aprons at DUC PHO was in progress at the beginning of the report period. The remainder of the 14,000 square yards of taxiway and parking aprons was scarified, graded and recompact. When the area was prepared, MC-30 was sprayed on the compacted surface to stabilize the soil. Progress was slow due to the priority requirements of the QL-1 upgrade operation for the bituminous distributor and compaction equipment. Work was completed on 19 September 1969.

During the first two weeks of October, the 137th Engineer Company (LE) Area of Operations received 22.4 inches of rain. This caused flooding and the erosion of shoulders on QL-1 in several locations. The area again received a large amount of rain the last week of October resulting in extensive water damage to QL-1 between MO DUC and DUC PHO to include an 86 foot section of road that was completely washed out. Repair of the damage had not started at the end of the report period due to continuing rain.

Enemy activity was relatively heavy during the first part of the report period. As a result of enemy mines, 1 US personnel killed and 6 wounded in action. Equipment losses included a scraper, a 3/4-ton truck, a 290M, a 5-ton tractor and a D7E dozer.

During the report period, the 137th Engineer Company (LE) completed the subbase between MO DUC and DUC PHO, graded and compacted 39,500 cubic yards of base rock and placed 9,844 tons of asphalt on QL-1 to complete 14.6 kilometers of base course and 9.6 kilometers of paving. A total of 22,100 gallons of MC-30 had been used on the 14,000 square yard taxiway and parking apron at DUC PHO and QL-1.

10. (C) activities of the 511th Engineer Company (Panel Bridge):

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Throughout the report period, the 511th Engineer Company (PB) was located at CHU LAI (BT534036) with the mission of supporting the 39th Engineer Battalion. During this period the 511th Engineer Company (PB) continued its mission of hauling rock from RMK, in CHU LAI, to the work site on QL-1. In September the 511th Engineer Company (PB) was tasked with the following missions: to organize and supervise asphalt haul convoys from RMK to the asphalt laydown site between MO DUC (BS740525) and DUC PHO (BS807378), to provide organizational maintenance support to all OPCON vehicles, and to provide security vehicles for the asphalt haul convoy.

During the period of 29 September through 4 October 1969, the 511th Engineer Company (PB) was tasked with the mission of hauling 2483 cubic yards of base course from the quarry site at LZ HIGHBOY (BS913145) to the laydown site on QL1. A provisional platoon was formed using the organic hauling assets of the Battalion and placed under the OPCON of Company D, 39th Engineer Battalion until completion of the mission.

During the quarter, the 511th Engineer Company (PB) hauled 27,600 cubic yards of rock and 9460 tons of asphalt.

On 21 September 1969, the Company with its OPCON vehicles began hauling asphalt to the laydown site between MO DUC and DUC PHO. The operation was halted on 3 October 1969 through 7 October 1969 due to inclement weather. On 8 October 1969, the Company hauled blast rock to LZ DOTTIE (BS627856) and LZ SNOOPY (BS700607) for use on rain damage along QL-1. On 17 October 1969, the 511th Engineer Company (PB) resumed its asphalt hauling mission.

During this quarter the 511th Engineer Company (PB) was involved in no enemy activity.

B. (C) INTELLIGENCE:

1. (C) Reconnaissance:

During the report period, the Battalion Reconnaissance Section provided the necessary route information so the Battalion could plan its future route maintenance and upgrade programs.

A. Battalion representative flew a daily helicopter reconnaissance of QL-1 in the Battalion's AO, checking for enemy and water damage. Through this early morning reconnaissance, information was received at Battalion Headquarters early enough in the day so that plans could be made for repair of any road or bridge damage. Prior to the Battalion's beginning a road repair or major upgrade project, the reconnaissance section made either an aerial or ground reconnaissance of the project. Based on the information gathered, the plan for the project and the necessary materials could be determined. During the period, 80 aerial recons and 25 ground recons were made of routes in the Battalion's AO.

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2. (C) Enemy Activity:

Enemy activity during August was moderate, dropping off during September and October. The only significant enemy activity during September and October was the Land Clearing Platoon's frequent encounters with booby traps.

a. Mines: During the report period the Battalion encountered 32 mines within its AO. The majority of these mines consisted of bamboo type firing devices, flash-light batteries and electrical blasting cap attached to explosives. Charges ranged in sizes from 5 to 40 pounds. A total of 11 mines were detonated during this report period, resulting in 9 US wounded in action and 1 US killed in action. Vietnamese casualties due to mines during the report period were 12 KIA. The following is a breakdown of mines detected versus mines detonated:

<u>MONTH</u>	<u>DETECTED</u>	<u>DETONATED</u>	<u>TOTAL</u>
August	11	5	16
September	5	3	8
October	<u>5</u>	<u>3</u>	<u>8</u>
TOTAL	21	11	32

b. Booby Traps: During this period the Battalion encountered 15 booby traps. These booby traps resulted in 6 US wounded in action. The following is a breakdown of booby traps by month:

<u>MONTH</u>	<u>DETECTED</u>	<u>DETONATED</u>	<u>TOTAL</u>
August	1	0	1
September	1	1	2
October	<u>3</u>	<u>9</u>	<u>12</u>
TOTAL	5	10	15

c. Other enemy initiated activities during the report period were as follows:

<u>TYPE</u>	<u>AUGUST</u>	<u>SEPTEMBER</u>	<u>OCTOBER</u>	<u>TOTAL</u>
Sniper Attacks	12	10	1	23
Ambushes	2	2	0	4
Mortar Attacks	3	3	0	6
Bridges Blown	3	0	0	3

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<u>TYPE</u>	<u>AUGUST</u>	<u>SEPTEMBER</u>	<u>OCTOBER</u>	<u>TOTAL</u>
Culverts Blown	5	0	1	6
Ground Probes	1	0	0	1
Road Obstacles	5	2	7	14

3. (U) Weather Data:

During the report period, rainfall was heavy near the end of the quarter. Rainfall during the month of October was 24% higher than that reported during October 1968. Rainfall by month was as follows:

<u>MONTH</u>	<u>RAINFALL</u>
August	45
September	12.14
October	<u>52.16</u>
TOTAL	64.75

C. (C) CASUALTIES:

During the report period, the Battalion suffered the following casualties:

	<u>KIA</u>	<u>WIA</u>	<u>KMH</u>
HHC	0	7	0
Co A	0	1	0
Co B	0	2	0
Co C	1	14	0
Co D	0	0	0
137th (LE)	1	6	1
511th (PB)	<u>0</u>	<u>0</u>	<u>0</u>
TOTAL	2	30	1

D. (U) OPERATIONS AND TRAINING:

1. (U) Operations:

The Battalion continued to operate on a six and one-half day work week with

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Sunday afternoon used for maintenance, training and recreation when possible.

a. The combat and operational support missions were conducted in coordination with Americal Division to assist in providing this type support in Southern I Corps Tactical Zone. This consisted chiefly of minesweeps and minor construction of defensive structures, and accounted for approximately 50% of the Engineer effort expended.

b. The LOC upgrading projects were originally assigned by USAECAV and are part of the overall MACV-LOC program. Approximately 45% of the Engineer effort of the Battalion was devoted to the LOC program.

c. The land clearing mission, which was initiated during this period, was coordinated through the III Marine Amphibious Force and provided for the 9th Engineer Battalion (USMC) and the 39th Engineer Battalion (C) to form a Provisional Land Clearing Company to support Americal Division tactical operations. This accounted for less than 5% of the Engineer effort expended throughout the period. The company headquarters was provided by the 9th Engineer Battalion (USMC).

2. (U) Training:

Aside from the regularly scheduled weekly training during the period, special training was planned for the monsoon season. In accordance with an 18th Engineer Brigade letter, each company was to prepare 15 days of training to be given on days that projects could not be worked due to weather. This Consolidation Month Training offered a means for more adequately instructing the troops in the field without reducing the commitment to the projects. With the rain, however, came a considerable amount of water damage which kept most units adequately employed. At the end of the period, approximately 33% of the training had been conducted. The program will be completed as additional inclement weather is encountered.

E. (U) MOVEMENTS:

1. (U) Company Moves:

a. 5 September 1969, Company A relocated from LZ GOLDIE (BS680658) to CHU LAI (BT534036).

b. 5 September 1969, Company D relocated from LZ GOLDIE (BS680658) to CHU LAI (BT534036).

c. 14 September 1969, Company D(-) relocated from CHU LAI (BT534036) to LZ HIGHBOY (BS913145).

d. 10 October 1969, Company D(-) relocated from LZ HIGHBOY (BS913145) to CHU LAI (BT534036).

e. 10 October 1969, 73rd Engineer Company (Construction Support) relocated from LZ HIGHBOY (BS913145) to QUI NHON (CRO82225).

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2. (U) Platoon Moves:

a. 15 September 1969, 2/A/39 relocated from CHU LAI (BT534036) to DUC PHO (BS815383).

b. 15 September 1969, 1/A/39 relocated from CHU LAI (BT534036) to LZ MAX (BS763472).

c. 30 September 1969, 1/B/39 relocated from LZ SNOOPY (BS700607) to LZ DOTTIE (BS627856).

d. 30 September 1969, 1/A/39 relocated from LZ MAX (BS763472) to LZ DRAGON (BS725538).

e. 3 October 1969, 1/A/39 relocated from LZ DRAGON (BS725538) to LZ MAX (BS763472).

f. 28 October 1969, 3/A/39 relocated from CHU LAI (BT534036) to LZ MAX (BS763472).

g. 29 October 1969, 1/A/39 relocated from LZ MAX (BS763472) to CHU LAI (BT534036).

3. (U) Moves of the Land Clearing Platoon (Provisional):

a. 1 September 1969, relocated to site west of TAM KY (BT309227), first night defensive position vic BT230250.

b. 9 September 1969, relocated to CHU LAI (BT534036).

c. 10 September 1969, relocated to site west of QUANG NGAI (BS645728), first night defensive position vic BS542738).

d. 27 September 1969, relocated to CHU LAI (BT534036).

e. 14 October 1969, completed relocation to site north of DUC PHO (BS807378), first night defensive position vic BS784535.

F. (C) SUPPLY:

1. (U) General:

During the report period Companies A, B, and D continued to be supplied through CHU LAI (BT534036) and Company C supplied Class I, III, and IV through DUC PHO (BS807378).

2. (U) Logistics Support:

Logistics support was provided by the following organizations:

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a. 23rd Supply and Transportation Battalion, located at CHU LAI (BT534036), organic to the Americal Division.

b. 588th Maintenance Company (DS), located at CHU LAI (BT534036), organic to the 80th General Support Group.

d. 6/61st Ordnance Company (Ammo), located at CHU LAI (BT534036) and DUC PHO (BS807378), organic to the 528th Ordnance Battalion at Da Nang (BTO275).

3. (C) Equipment Status:

Several major end items of equipment were received during the report period which greatly assisted the Battalion in the performance of its assigned missions. Many of these items were received on a lateral transfer. The following list of equipment transactions reflect greater on-hand balance at the end of the report period:

<u>NOMENCLATURE</u>	<u>BEGINNING BALANCE</u>	<u>TURNED-IN</u>	<u>RECEIVED</u>	<u>END BALANCE</u>
Truck, Dump	46	8	18	56
Water Purification Equipment Set	3	1	3	5
Truck, 2½ Ton	23	1	5	27
Truck, 3/4 Ton	19	2	7	24
Truck, ¼ Ton	22	6	9	25
Grader	3	0	1	4
Distributor, Bituminous	0	0	1	1
Detector Set	49	0	1	50
Generator, 3KW	3	0	3	6

4. (C) Equipment Shortages:

Critical shortages of equipment within the Battalion and attached companies continued to hamper operational capabilities. These shortages are as follows:

<u>NOMENCLATURE</u>	<u>QUANTITY</u>
Truck, Tractor, 10 Ton	3
Semi-trailer, 25 Ton	3
Truck, Utility, ¼ Ton	4
Crane	1

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5. (C) Combat Losses:

Combat losses during the period were as follows:

<u>FSN</u>	<u>NOMENCLATURE</u>	<u>USA/SER#</u>	<u>QTY</u>	<u>DATE</u>
2320-055-9262	Truck, Dump, 5 Ton	5F8178	1	9290
2320-055-9262	Truck, Dump, 5 Ton	5F9089	1	9231
2320-763-1092	Truck, Util, $\frac{1}{4}$ Ton	2L4163	1	9231
2320-542-4636	Truck, Cargo, $\frac{3}{4}$ Ton	3D6830	1	9231

6. (U) Water Supply:

During the report period the Battalion operated water points at four different locations: CHU LAI (BT534036), LZ DOTTIE, (BS627856), LZ GOLDIE (BS680658), and LZ MAX (BS763472). At the beginning of the period four units were in operation with a total output of 31,000 gallons of water daily. With the closeout of LZ GOLDIE one water point was closed down. Presently there are three water points in operation with a total daily output of 38,000 gallons of water.

G. (C) MAINTENANCE:

1. (C) General:

The maintenance program has shown increased effectiveness. The overall deadline rate decreased from 12.0% during the last report period to 8.1% during this report period.

During the middle of the report period, when the AO received heavy rainfall, the overall deadline rate decreased to below 5%. The decrease was partly due to the increased maintenance time available during the inclement weather periods.

There is presently a critical shortage of parts for 10-ton tractors and 20 ton (RT) cranes. Cranes will be especially critical to this Battalion during the upcoming construction season due to the large amount of bridge work scheduled and the poor condition of cranes on hand.

2. (U) Supports:

The 596th Light Maintenance Company provided direct support during the report period. A total of 77 job orders were completed during this period; with an average down time of 15.2 days for each item of equipment. Fifty job orders were processed through the Automotive Section and 27 job orders through the Engineer Section.

3. (U) Prescribed Load List (PLL) and Repair Parts Summary:

a. PLL. The zero balance of repair parts in this Battalion is 37%. This

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figure reflects the improved support from our Direct Support Unit. The zero balance for last report period was 42%.

b. Requisitions:	<u>REGULAR</u>	<u>RED BALL</u>
Number Submitted	2546	36
Number Cancelled	197	0
Number Filled	483	10
Per Cent Filled	21	28

These percentages are based on uncancelled requisitions. An increase of 2% filled was noted during this reporting period while Red Ball requisitions filled decreased 5%.

H. (U) MEDICAL:

During the period 31 July through 31 October 1969, skin infection within the units assigned to this Battalion showed an increase over previous months especially among troops living on the LZ's. It was noted that a number of cases of infection did not respond to local treatment by medical aidmen. The more severe cases were referred to the Battalion Surgeon, some cases were hospitalized and others given extended time in quarters. It was learned that by removing infected personnel from the LZ's to a cleaner atmosphere where close supervision of personal hygiene could be maintained, the response to treatment was better and recovery time decreased.

Surgeon (Comments?)

I. (C) CIVIC ACTION:

1. (U) Civic Action:

During this period, the orphanage at QUANG NGAI (BS645728), that was started last quarter, was completed.

2. (C) Voluntary Informant Program:

During the report period turn-ins under the Voluntary Informant Program amounted to a total of 22,500 \$VN. The following is a breakdown of turn-ins:

<u>TYPE</u>	<u>AUGUST</u>	<u>SEPTEMBER</u>	<u>OCTOBER</u>	<u>TOTAL</u>
Grenades	7	6	2	15
60mm. RDS	10	1	2	13
81mm. RDS	1	9	0	10
155mm. RDS	2	0	0	2
Plasters Paid	14,700	6,000	1,800	22,500

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SECTION II Lessons Learned: Commanders Observations, Evaluations and Recommendations.

A. (U) PERSONNEL: None.

B. (C) OPERATIONS:

1. (U) Replacement of Damaged Culverts:

a. OBSERVATION: The removal of interior culverts for replacement in a multiple culvert site is a time consuming project.

b. EVALUATION: The need to leave adjacent culverts undamaged require precision digging when removing damaged OMP.

c. RECOMMENDATION: Rather than using time consuming hand labor a method was devised for using an AC scoop loader to accomplish the task. As much fill as practicable is removed by a D7E, the loader operator then takes over until the grade becomes too steep for the loader to negotiate under its own power. At this time the D7E is brought into position and its winch cable is attached to the pintel of the loader, thus enabling the loader to easily get out of the hole. This method has been field tested and has proven to be a safe and very effective way of quickly completing the culvert repair with a minimum of wasted time and disturbance of subbase.

2. (U) Expedient Culvert Headwall:

a. OBSERVATION: At new culvert sites or sites where the headwalls have been destroyed, there is great danger of erosion during the monsoon season.

b. EVALUATION: Design a quick and easy way to install headwalls that will endure until concrete headwalls can be placed.

c. RECOMMENDATION: An expedient headwall for smaller culverts (up to 36 inches) is easily constructed using 4"x6" material approximately ten feet long as small piles. These may be driven utilizing a scoop loader or an expedient pile driver. Once these posts are in place, 3"x12" rough lumber is used to form the headwall and deadmen are attached, needing only backfilling and compaction to complete the project. For large culverts, this same procedure may be used, substituting regular piles for the 4"x6" posts. (See Incl 2).

3. (U) Mine Probes:

a. OBSERVATION: Constant bending and stooping while probing leads to fatigue on long minesweeps.

b. EVALUATION: Mine probes should be made from a light yet hard material such as fire hardened bamboo and be long enough so that the individual is not forced to bend and stoop constantly to probe every possible mine location. By cutting down on fatigue, this would make possible a faster and more positive minesweep. Probes of this type have been in use in this unit for a considerable amount of time and they have greatly enhanced the overall effectiveness of the sweep operation.

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c. RECOMMENDATION: That long mine probes made of a non-metallic material should be fabricated of a strong, wear resistant material such as fire hardened bamboo to increase the effectiveness of the minesweeps.

4. (U) Mining Above Culverts:

a. OBSERVATION: The paving of the road has greatly reduced the mining incidents on the travelled portion of the road. However, in this AO the enemy has placed several mines on the shoulders directly above culverts.

b. EVALUATION: Placing the mine directly above a culvert makes it more difficult to detect and also damages the culvert when the mine is detonated.

c. RECOMMENDATION: At culvert locations, pave the entire area between the headwalls. This makes it more difficult to mine and greatly reduces the erosion around the headwall.

5. (U) Culvert Protection:

a. OBSERVATION: During heavy enemy activity, it has been found that a favorite VC tactic is to blow or booby trap culverts.

b. EVALUATION: Culverts afford the enemy excellent opportunity to easily place explosives under a road. A mesh cover over the culvert ends would make it difficult for the enemy to place charges under the road. The mesh also acts as a warning device if it is disturbed.

c. RECOMMENDATION: Weld rebar to form a barrier or use cyclone fence as a barrier over the culvert ends. See Inclosure 3. The restriction of water flow by the gates should be considered. Use oversized culverts to allow adequate water flow. Also, it must be realized that the gates will make culvert maintenance more difficult. The gate does, however, prevent large debris from entering the culvert.

6. (U) Concrete Dehydration Prevention:

a. OBSERVATION: Many times when assigned tasks of pouring large concrete pads for buildings, helipads, etc; tarps, burlaps, or straw are not available for cover.

b. EVALUATION: It has been found that placing dirt or sand around the edge of the pad and pouring water in prevents dehydrating.

c. RECOMMENDATION: Prevent dehydration by using sand or other soil placed around the edge to form a water retaining wall. Water, two or three inches deep is poured on top of the pad within the wall. During very hot, sunny period, water replenishment may be required several times daily.

7. (U) Landing Zone Roads:

a. OBSERVATION: It has been observed that many landing zone roads, constructed of locally available material, are inadequate during the rainy season.

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b. EVALUATION: Fines and wastes from rock crushers increase the durability of roads during the rainy season.

c. RECOMMENDATION: Units fortunate enough to have a rock crusher in their area can use fines and wastes collected from the primary conveyors to spread on road surfaces. Heavy traffic will eventually compact it, and with adequate drainage, the rock should last through several heavy rains.

8. (U) Damage of 5-ton Dump Trucks Used in Quarries:

a. OBSERVATION: The beds of 5-ton dump trucks are damaged when loaded with rocks and boulders with sharp edges caused by blasting.

b. EVALUATION: Damage is caused during loading because the bucket loader operator has to raise the load to a height at which he can observe his own operation.

c. RECOMMENDATION: Scrap planking attached to the bed of the truck will prevent punctures and dents. This material should be replaced as required.

9. (U) Loading Paving Machines on a Lowbed:

a. OBSERVATION: Due to the inability of a paving machine to load itself onto a lowbed using ordinary loading ramps, a crane is used to load and off-load the paver.

b. EVALUATION: As there is a shortage of operational cranes and many missions requiring the use of a crane, a different method of loading and off-loading the paver would release a very critical piece of equipment for other projects.

c. RECOMMENDATION: By using a second set of loading ramps, blocks, and loose gravel, the angle between the lowbed and the ground can be reduced to such a degree that the paving machine can self-load. (See Inclosure 4.) This eliminates the need for a crane when loading and off-loading the paver.

10. (U) Substituting Tire Tubes:

a. OBSERVATION: Due to logistical tie-ups, shortages of tire inner tubes are a common occurrence.

b. EVALUATION: Some tire tubes may be substituted with different sizes.

c. RECOMMENDATION: When tube shortages have occurred, it has been found that $\frac{1}{2}$ ton tire tubes can be used in the cement mixer tires; $\frac{3}{4}$ ton tire tubes can be used in lowbed trailer tires; and $2\frac{1}{2}$ ton tire tubes can be used in 5 ton tires. When a bucket loader tubeless tire is damaged, a 10 ton tire or grader tire tube can be used in the bucket loader tire until the tire is replaced.

11. (U) Bunker Construction:

a. OBSERVATION: An exceedingly large amount of sandbags are required to place

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around a protective personnel bunker to provide necessary protection.

b. EVALUATION: Because of the great cost of and the variety of requirements for sandbags, a bunker design using readily available materials, while retaining the necessary strength, is needed.

c. RECOMMENDATION: Using tin or available lumber, build revetment walls, a minimum of two feet thick, on each side of the 72 inch culvert used for the ceiling of the bunker. (See Inclosure 5) Fill the walls with sand or available fill. Also place a minimum of two feet of sand or fill on top of the 72 inch culvert to strengthen the roof. Place membrane or other waterproofing material on top of the roof to provide protection against the monsoons. This provides a strong, but simple protective bunker without the use of costly sandbags.

12. (U) Dozer Recovery Operations:

a. OBSERVATION: A 1 inch cable was broken three times in trying to pull a D7E out of mud.

b. EVALUATION: Due to the nature of weather and soil conditions in our AO, heavy Equipment can often become mired past the point of being easily retrieved by straight-line winching or pulling operations.

c. RECOMMENDATION: Use snatch blocks to create a mechanical advantage greater than one (straight-line pull). Increased mechanical advantage results in easier pulling and safer operations, since the likelihood of a cable or chain breaking is reduced. (See Inclosure 6).

13. (C) Hauling Asphalt Through Hostile Territory:

a. OBSERVATION: During the construction of QL-1, it has been necessary to haul asphalt loads for relatively long distances through roads which account for a high percentage of enemy activity. The long haul makes it extremely difficult to maintain the asphalt temperature near the optimum level.

b. EVALUATION: A canvas cover over the bed of the truck acts as an insulation to diminish heat loss. Instead of placing gun vehicles within the convoy, they are used as roving patrols constantly on the move within their assigned sectors. This enables the asphalt trucks to move out in small serials without waiting for large convoys to form.

c. RECOMMENDATION: When faced with a long hauling distance through hostile territory the use of roving gun vehicles will facilitate the use of small serials of dump trucks thereby enabling the hot asphalt to reach the laydown site at a satisfactory temperature. The use of canvas covers over the hot asphalt will act as an insulator and maintain a high mix temperature.

14. (U) Culvert Installation:

a. OBSERVATION: Trouble is sometimes encountered when joining two culverts.

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together when they have to be installed in two sections to keep traffic moving.

b. **EVALUATION:** Along busy roads, such as QL-4, it is necessary to keep the road open at all times. In order to do this, when installing culvert, it becomes necessary to install only half of a culvert at a time. It is also necessary to fill in the culvert site upon completion of one-half. This weight of the unfinished culvert creates bending and makes it hard to join the two sections of culvert.

c. **RECOMMENDATION:** Before backfilling the culvert, install 4x4 bracing in the end of the culvert to prevent bending. This is in addition to the normal strutting and can be removed to facilitate joining the culverts.

15. (U) Hydroseeding Operations:

a. **OBSERVATION:** Observation of the high water mark has necessitated portions of QL-1 to be raised 5 to 10 feet above the rice paddy level.

b. **EVALUATION:** The newly placed fill on the high banks is very susceptible to erosion during the monsoon season.

c. **RECOMMENDATION:** To expedite the growth of vegetation, a seeding operation using a commercial hydroseeder to spray rice, grass, and fertilizer proved very successful. On steep banks it proved advantageous to follow the hydroseeding with a bituminous distributor using the hand spray bar to distribute peneprime over the seeded area to act as a mulch. The recommended time to begin operations is just prior to the monsoons. At this time large quantities of chaff left on the road by the Vietnamese after their harvest also serves as mulch.

16. (U) Hydroseeding Operations:

a. **OBSERVATION:** When using the commercial hydroseeder long delays have been experienced due to clogging of the pump and nozzle. These delays were caused because the fertilizer hardens and blocks the flow of seed and water.

b. **EVALUATION:** Since long delays decrease the efficiency of hydroseeding operations, it has been found that to eliminate such delays, the fertilizer must be kept dry and screened before being put into the hydroseeder.

c. **RECOMMENDATION:** That fertilizer be dried and screened before being introduced into the hydroseeder.

17. (U) Bunker Construction:

a. **OBSERVATION:** A direct hit on a bunker roof may cause timbers to buckle and injure personnel inside by the secondary effects of the explosion.

b. **EVALUATION:** A direct impact should be hampered.

c. **RECOMMENDATION:** By placing a corrugated tin roof with dead space between the tin and the bunker roof you create a detonating surface and allow the bunker roof to absorb the shrapnel with minimum damage. The tin roof also serves to waterproof the bunker. (See Inclosure 7).

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18. (U) Loading 10-ton, 3-wheeled Rollers onto Lowbeds:

a. OBSERVATION: It is sometimes difficult to load 10-ton, 3-wheeled rollers on lowbeds for travel to and from the work sites.

b. EVALUATION: The 10-ton roller is a critical piece of equipment. A safe and efficient method of loading would give the roller more time on the job and would release other people and equipment for other projects.

c. RECOMMENDATION: The 10-ton, 3-wheeled roller can be loaded safely and quickly by using a tractor with a winch to pull it onto the lowbed. If none are available, a block, cable, and another vehicle can be used. This requires a minimum of equipment and will avoid unnecessary wear on the clutch and engine of the roller.

19. (U) Culvert Installation:

a. OBSERVATION: Difficulty is sometimes encountered when attempting to join two culverts together when they have to be installed in two sections to keep traffic moving.

b. EVALUATION: It is necessary to keep the road open at all times along CL-1. Therefore it becomes necessary to install only half of a culvert at a time and fill in the culvert site upon completion of one half. The weight and pressure of the fill and the two culverts sections when installing the second half makes it hard to align the holes on the culvert to be fastened with bolts.

c. RECOMMENDATION: The joining of the two culvert sections may be facilitated by the use of 2 to 3 inch bolts to draw the culvert flanges together until regular culvert bolts may be used to complete the coupling. These bolts can be fabricated in a shop truck if not readily available through supply channels.

20 (U) Emergency Means of Off-loading Asphalt:

a. OBSERVATION: When hauling asphalt, which must be placed on the road at a certain temperature, several loaded dump trucks have arrived at the laydown site and discovered that the pump on the dump was not operational, therefore not allowing the operator to dump the load.

b. EVALUATION: Because of the great haul distance and cost of the asphalt to the military, approximately \$160 per load, the inability to off-load and place the asphalt before it cools to below the allowable temperature and thus rendering it unuseable, is quite costly.

c. RECOMMENDATION: In order to save the load of asphalt before it becomes too cold for placement, a crane or wrecker can be used to lift the bed of the dump truck to dump the load.

C. (U) TRAINING: None.

D. (U) INTELLIGENCE: None.

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E. (U) LOGISTICS:

1. (U) Leaking Seals:

a. OBSERVATION: During the monsoon season rapid build-up of mud on the power train and chassis components has been associated with leaking oil and grease seals.

b. EVALUATION: The accumulation of mud on the undercarriage, clogs breather vents and forms an insulation shield around gear cases. This action causes the leaking of seals.

c. RECOMMENDATION: Operators should pay special attention to washing and chipping away the accumulation of mud from the undercarriage to allow heat to dissipate from gear cases and to insure that breather vents are open.

2. (U) Brake Wear During Monsoon Season:

a. OBSERVATION: With the onset of the monsoon season a high mortality rate of vehicular brake systems components was experienced. The useful life of brake lining material is drastically reduced due to the abrasive action of sand, silt, and water within the brake drum assembly.

b. EVALUATION: The frequent adjustment of brake systems necessary to compensate for increased lining wear add to the wear and tear of the brake system. As wear of the lining increases, the stroke of the pistons within the hydraulic wheel cylinders increases proportionally. The combination of increased stroke and corrosion within the wheel cylinders result in a rapid deterioration rate for the cylinders.

c. RECOMMENDATION: Equipment operators must be instructed to avoid water and mud holes where tactically possible. When equipment must be operated in water or mud, at a depth that allows dirt to enter the brake drums, the equipment must be delivered to the organizational maintenance shop as soon as possible to allow the mechanics to remove the brake drums and clean the abrasives from the brake assemblies.

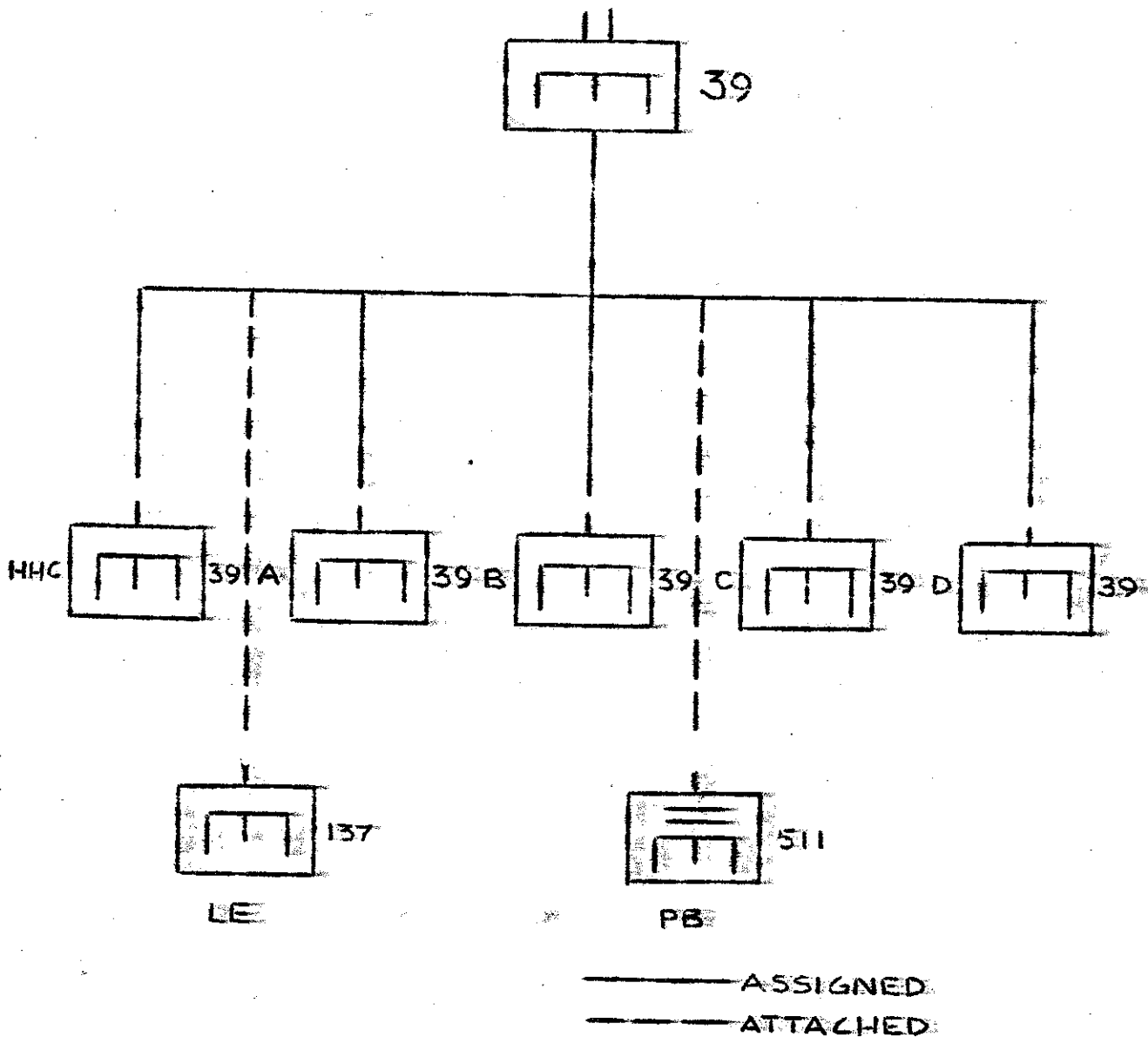
F. (U) ORGANIZATION: None.

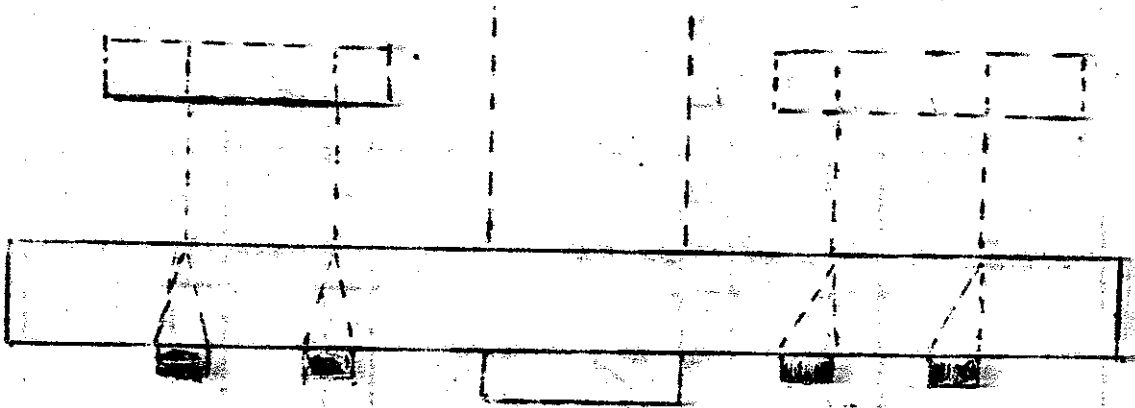
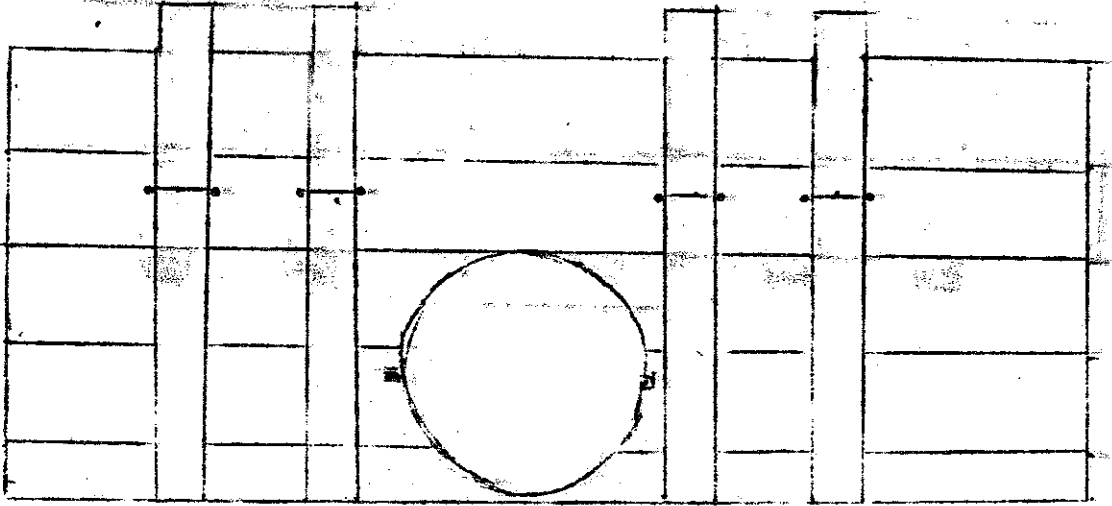
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Thomas A. Ghormley
THOMAS A. GHORMLEY
LTC, CE
Commanding

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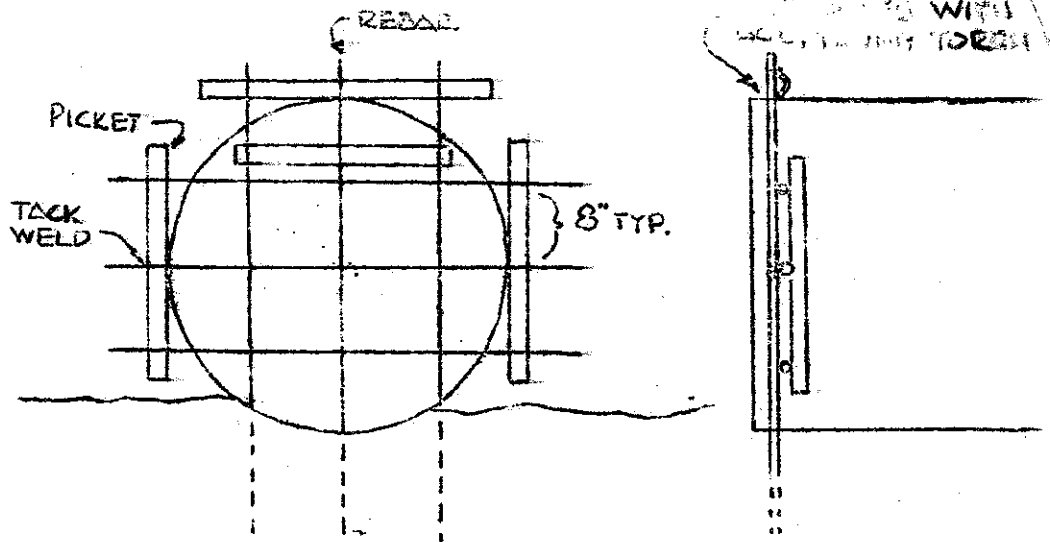
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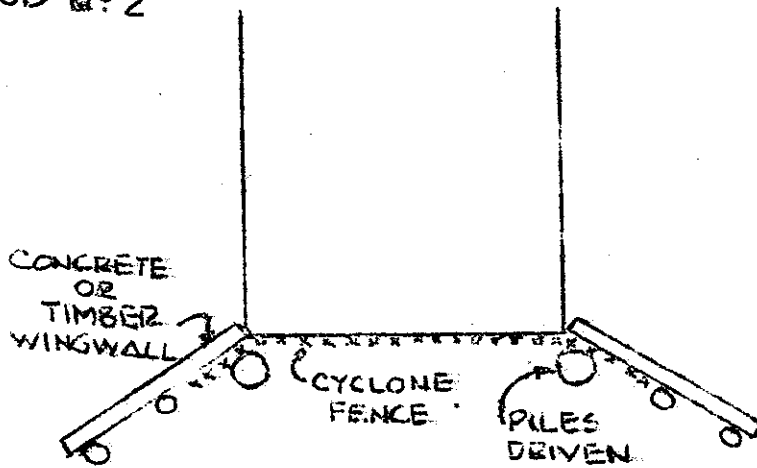


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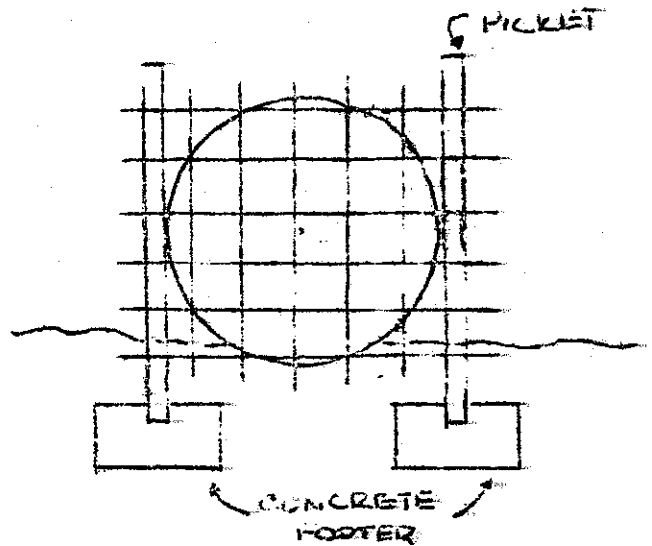
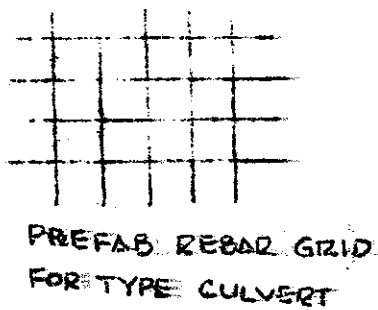
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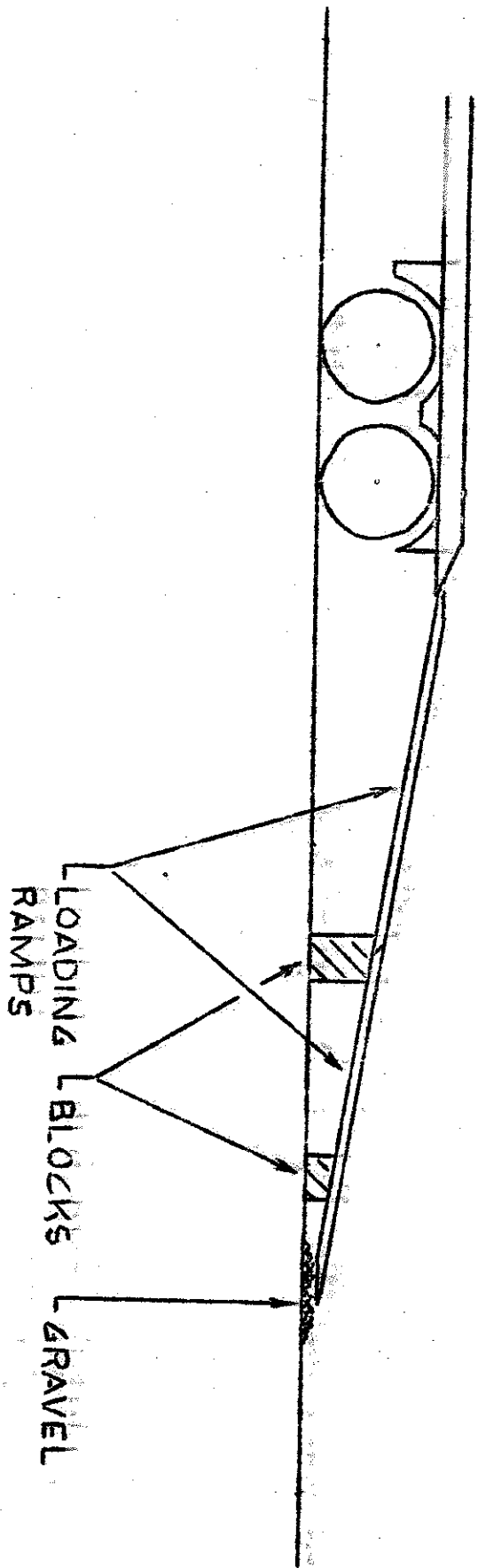


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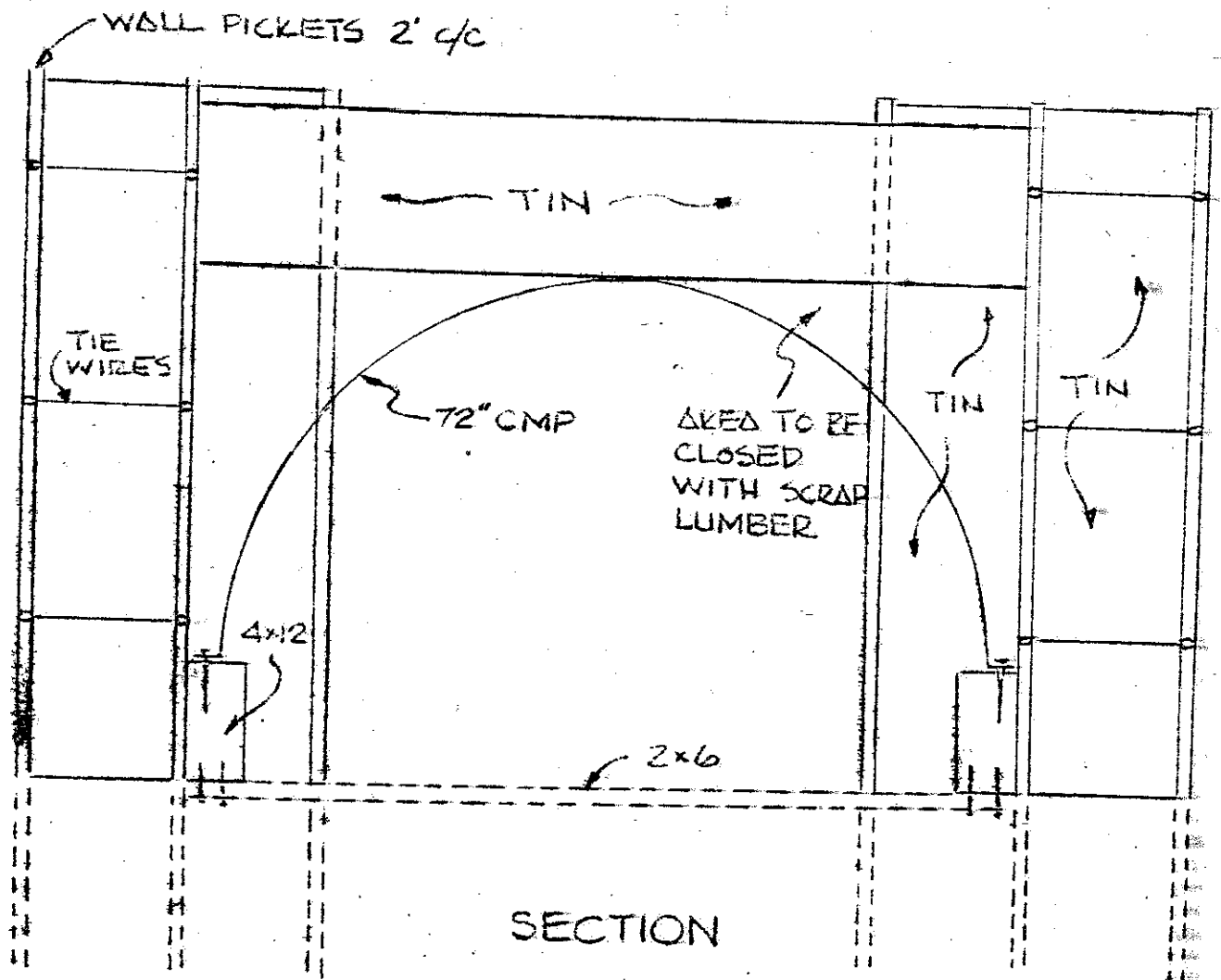
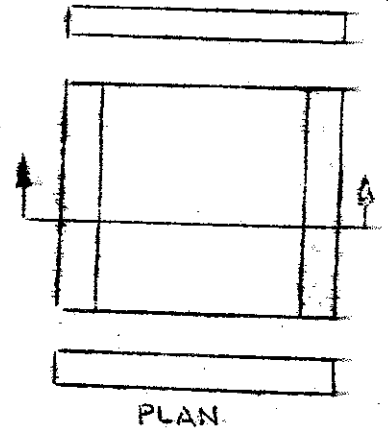


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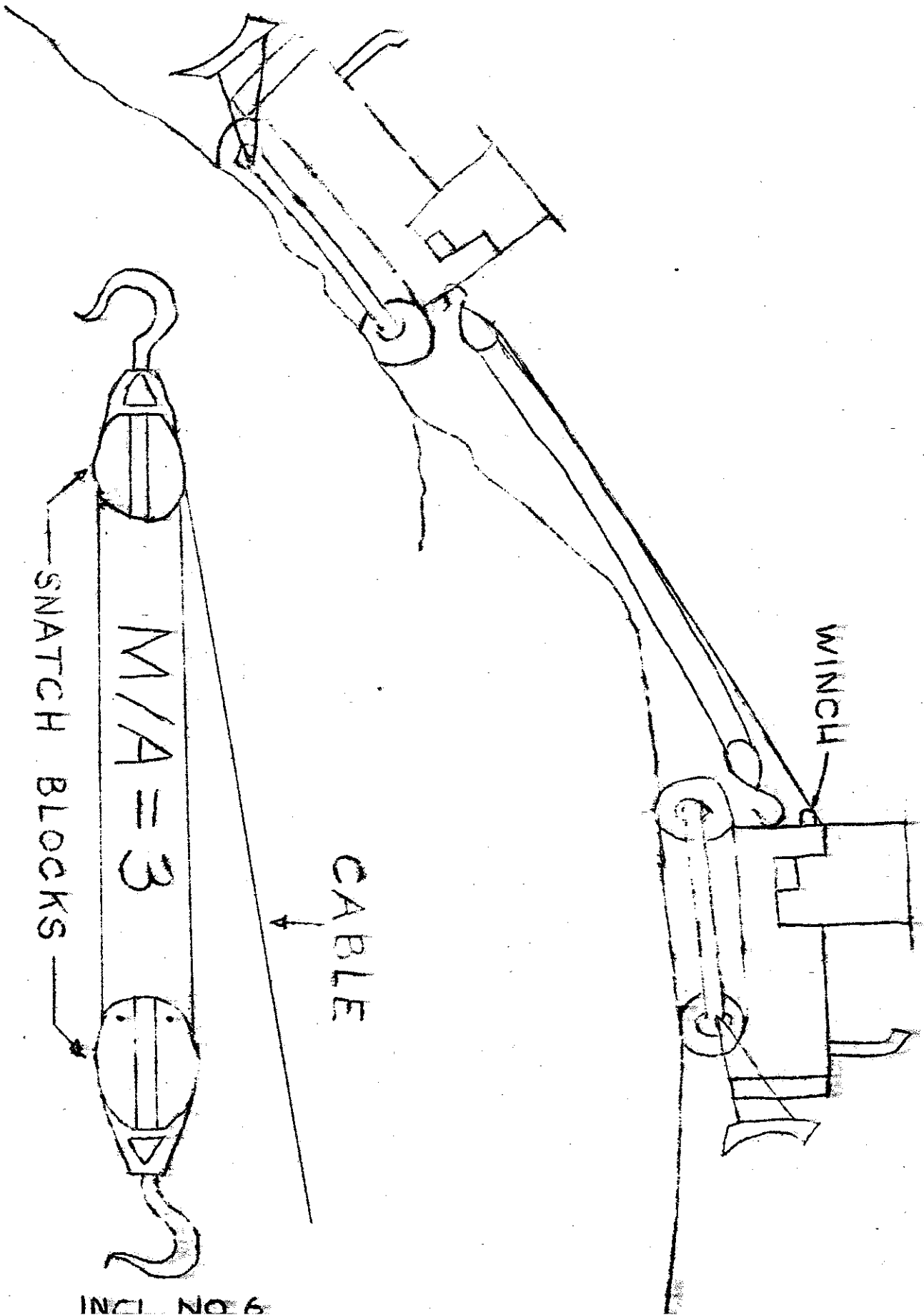


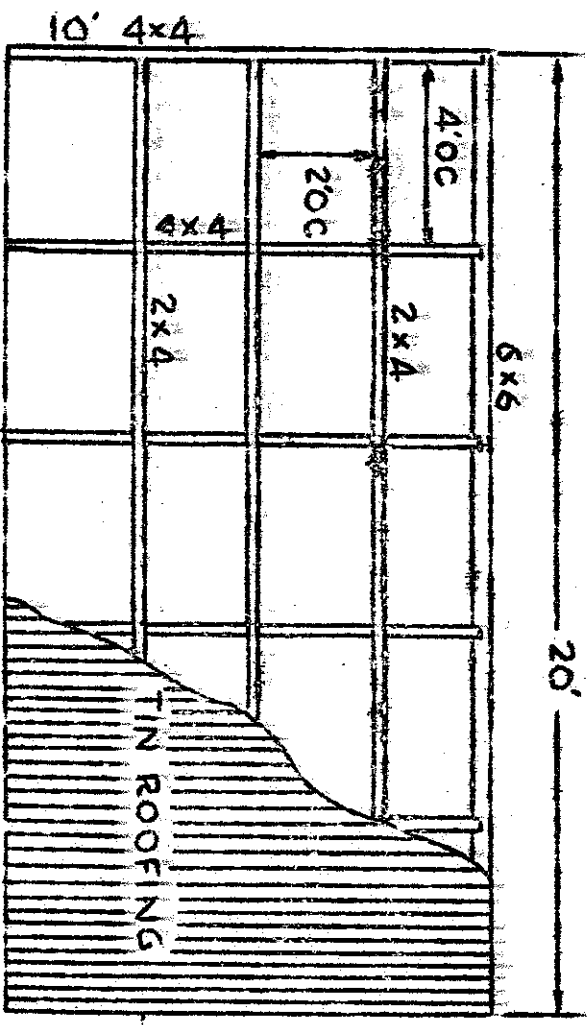
INCL 4



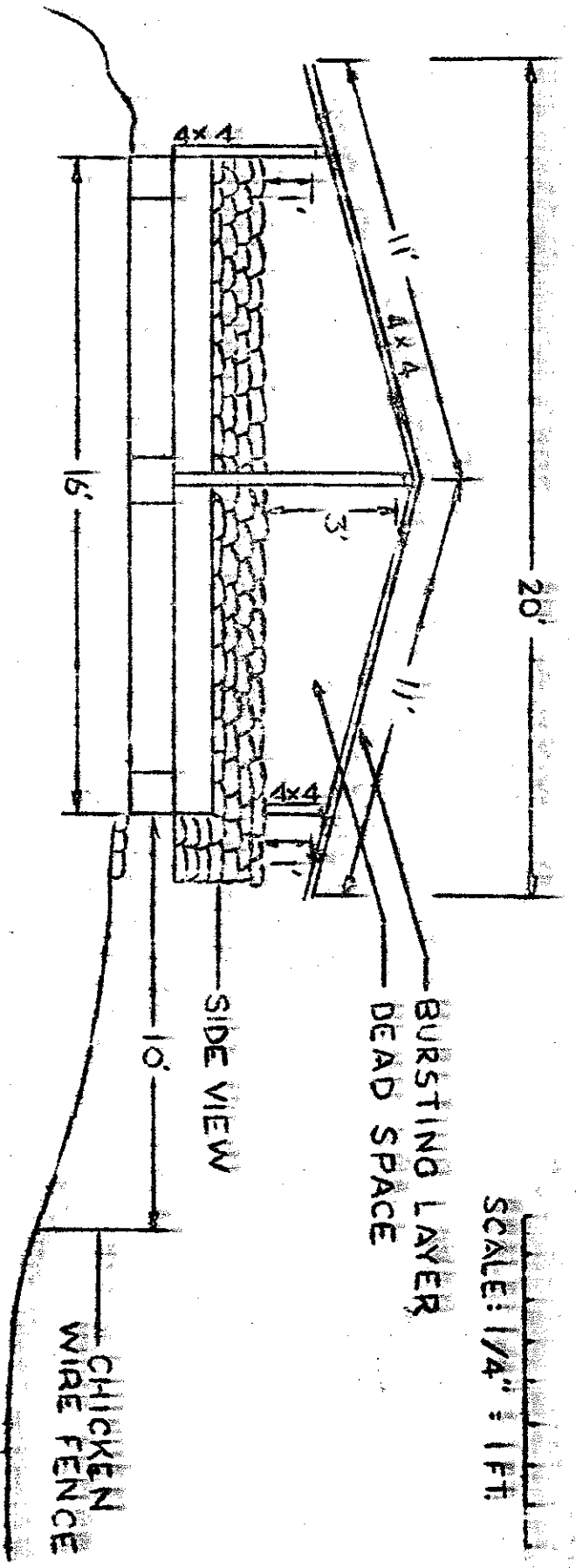
NOTE: ALL TIN IS HEAVY GAUGE
ALL PICKETS ARE 3'

INCL 5





TOP VIEW



SCALE: 1/4" = 1 FT.

