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Section I Africa

- A - Formation of 5th Army Eng Section
- B - Training Program and schools

Section II Salerno and Naples

- A - Tactical situation
- B - Work at Engineer Headquarters
- C - Unit Operations
- 531st Engineer Shore Regiment
- 16th Armored Engineer Battalion
- 56th British Infantry Division Royal Engineers
- 46th British Infantry Division Royal Engineers
- British X Corps
- Royal Engineers
- 451st Engineer Depot Platoon
- 337th Engineer General Service Regiment
- 2616th Engineer Utilities Platoon
- 111th Engineer Combat Battalion
- 120th Engineer Combat Battalion
- 540th Engineer Combat Battalion
- 36th Engineer Combat Regiment
- 405th Engineer Water Supply Battalion
- 39th Engineer Combat Regiment
- 7th British Armored Division Royal Engineers
- 1712th Engineer Map Depot Detachment
- 10th Engineer Combat Battalion
- 66th Engineer Topographic Company
- 109th Engineer Combat Battalion
- 472th Engineer Dump Truck Company
- 343rd Engineer General Service Regiment
- 307th Airborne Engineer Battalion

Section III Volturno to May 11th 1943

- A - Tactical situation
- B - Work at Engineer Headquarters
- C - Unit Operations
- 109th Engineer Combat Battalion
- 10th Engineer Combat Battalion
- 16th Armored Engineer Battalion
- 120th Engineer Combat Battalion
- 111th Engineer Combat Battalion
- 307th Airborne Engineer Battalion
- 313th Engineer Combat Battalion
- 310th Engineer Combat Battalion
- 19th Engineer Combat Regiment
- 36th Engineer Combat Regiment
- 39th Engineer Combat Regiment
- 1108th Engineer Combat Group
- 175th Engineer General Service Regiment
- 337th Engineer General Service Regiment
- 343rd Engineer General Service Regiment

344th

Engineer General Service Regiment
531st Engineer Shore Regiment
540th Engineer Combat Regiment
92nd Engineer General Service Regiment
387th Engineer Battalion (Separate

)

405th Engineer Water Supply Battalion
85th Engineer Heavy Ponton Battalion
423rd Engineer Dump Truck Company
425th Engineer Dump Truck Company
427th Engineer Dump Truck Company
Companies "A" and "B", 84th Engineer Camouflage Battalion
469th Engineer Maintenance Company
451st Engineer Depot Company
46th Survey Company, South Africa Engineer Corps
661st Engineer Topographic Company
66th Engineer Topographic Company
1712th Engineer Map Depot Detachment
46th British Infantry Division Royal Engineers
56th British Infantry Division Royal Engineers
6th British Armored Division Royal Engineers
7th British Armored

Division Royal Engineers

5th British Infantry Division Royal Engineers

British X Corps Royal Engineers

571st Army Field Company

572nd Army Field Company

573rd Army Field Company

570th Corps Field Park Company

French Expeditionary Corps Engineers

Section IV The Anzio Beachhead

A - Tactical situation

B - Work at Engineer Headquarters

C - Unit Operations

540th Engineer Combat Battalion

36th Engineer Combat Regiment

10th

Engineer Combat Regiment

307th Airborne Engineer Battalion

16th Armored Engineer Battalion

39th Engineer Combat Regiment

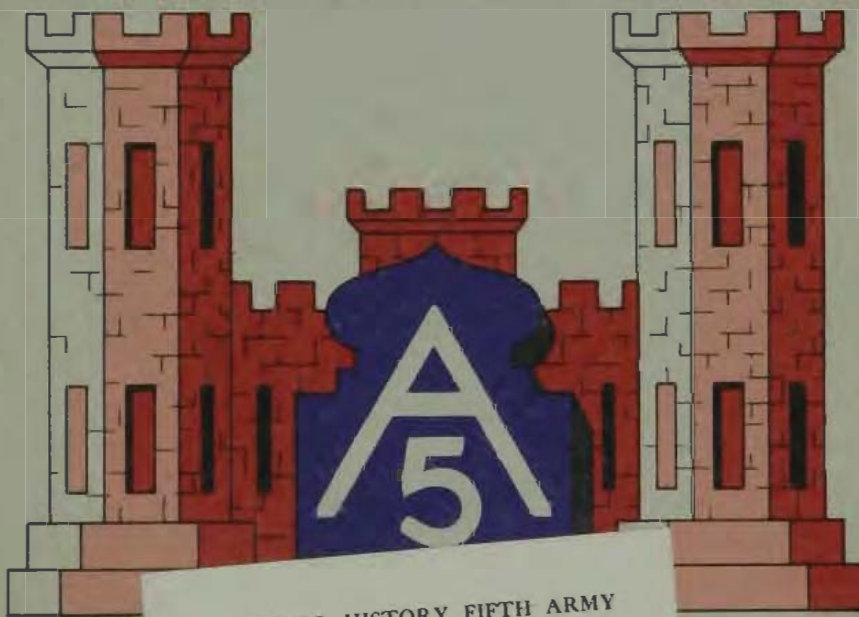
387th Engineer Battalion (Separate)

120th Engineer Combat Battalion

109th Engineer Combat Battalion

ENGINEER HISTORY

MEDITERRANEAN THEATER



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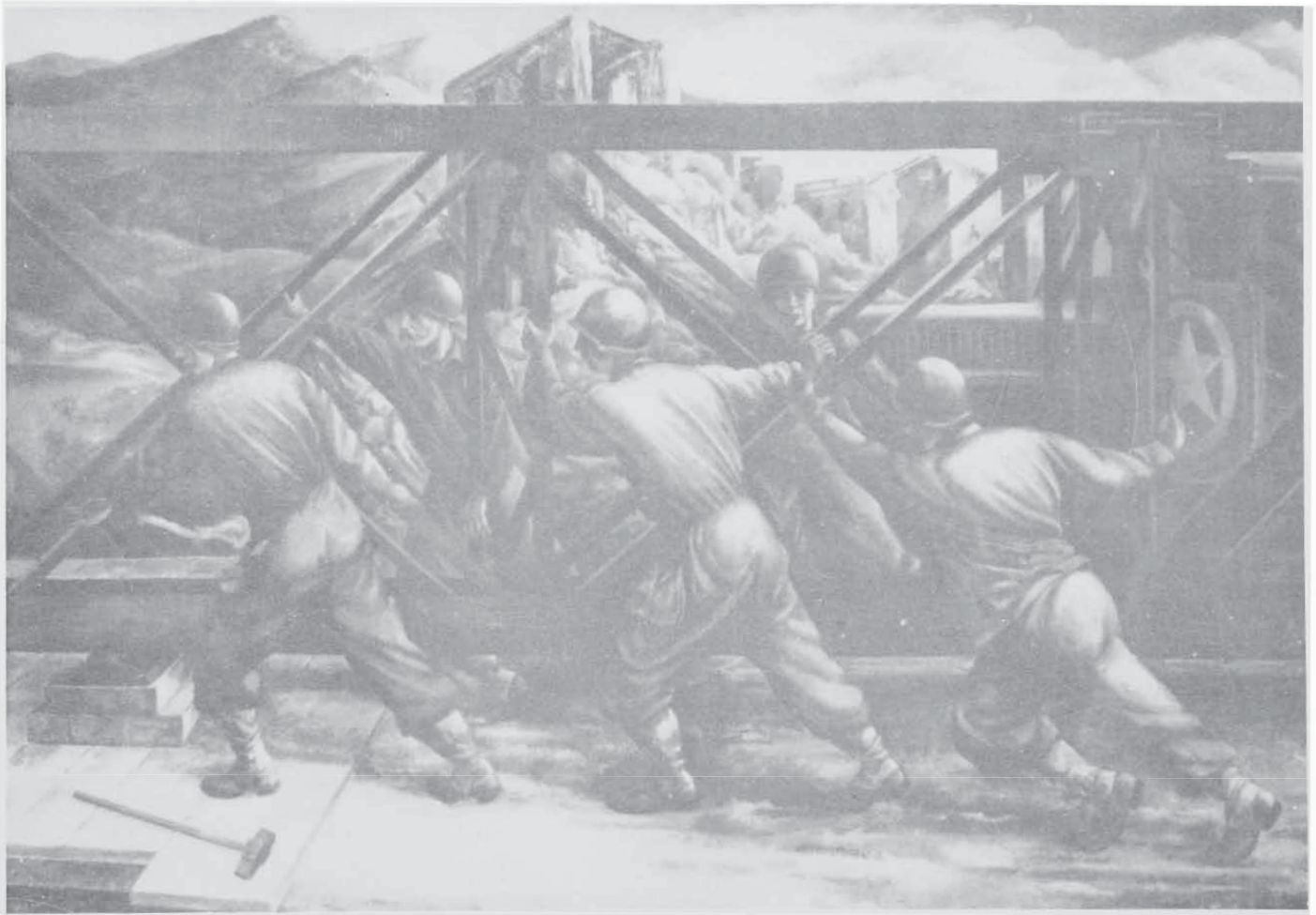
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ENGINEER HISTORY - FIFTH ARMY - MEDITERRANEAN THEATER

TABLE OF CONTENTS

VOLUME ONE

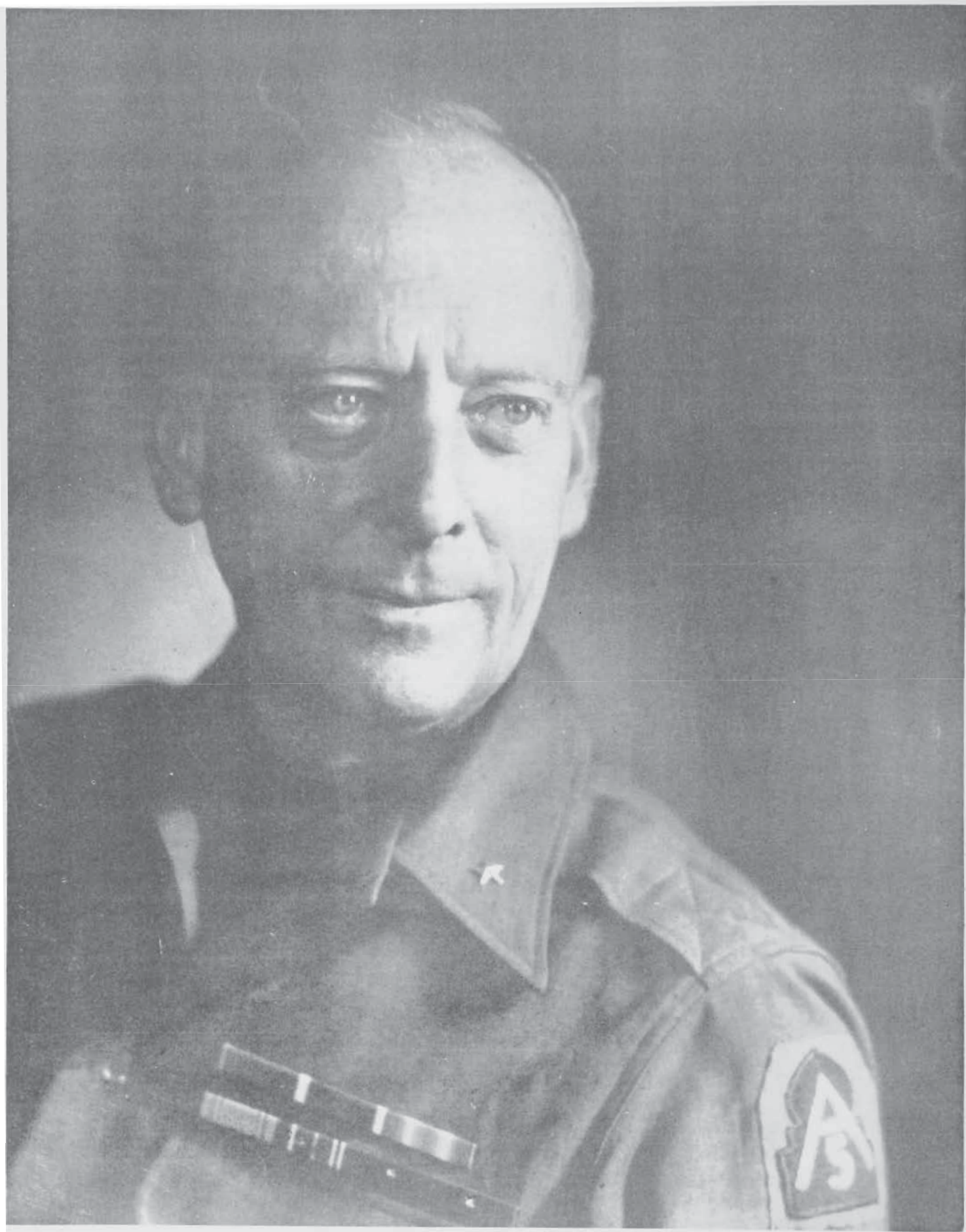
	<u>Pages</u>
I. AFRICA	1 - 6
A. Formation of Fifth Army Engineer Section	1
B. Training Programs and Schools	2
C. Initial Plans	3
D. The Final Plan	3
II. SALERNO AND NAPLES	7 - 26
A. The Tactical Situation	7
B. Work at Engineer Headquarters	9
C. Unit Operations	12
III. VOLTURNO TO MAY 11TH	27 - 80
A. The Tactical Situation	27
B. Work at Engineer Headquarters	29
C. Unit Operations	32
IV. THE ANZIO BEACHHEAD	81 - 104
A. The Tactical Situation	81
B. Work at Engineer Headquarters	82
C. Unit Operations	85
V. MAY 11TH TO THE ARNO	105 - 159
A. The Tactical Situation	105
B. Work at Engineer Headquarters	105
C. Unit Operations	109

VOLUME TWO

VI. THE ARNO THROUGH THE WINTER STATIC PHASE	160 - 229
A. The Tactical Situation	160
B. Work at Engineer Headquarters	161
C. Unit Operations	166
VII. THE PO CAMPAIGN	230 - 264
A. The Tactical Situation	230
B. Work at Engineer Headquarters	232
C. Unit Operations	235
VIII. LESSONS LEARNED IN THE ITALIAN CAMPAIGN	265 - 268

VOLUME THREE

APPENDICES



BRIGADIER GENERAL FRANK OTTO BOWMAN

This is the story of the Fifth Army Engineers. No campaign in military history has presented more engineering problems than the battle of Italy. No one contributed more to the successful conclusion of this campaign than the Fifth Army Engineers. I am proud of them; their country is proud of them; they should be proud of themselves.

Frank O. Bowman
Brig. Gen. U.S.A.
Army Engineer

ENGINEER HISTORY - FIFTH ARMY - MEDITERRANEAN THEATER

VOLUME ONE

SECTION I

AFRICA

	<u>Page</u>
A. Formation of Fifth Army Engineer Section	1
B. Training Programs and Schools	2
C. Initial Plans	3
D. The Final Plan	3



OUJDA - THE FIRST FIFTH ARMY COMMAND POST

SECTION I

AFRICA

A. Formation of Fifth Army Engineer Section

At one minute past midnight on 5 January 1943, Lieutenant General Mark Wayne Clark activated and assumed command of the United States Fifth Army in a school for French mesdemoiselles in Oujda, Morocco. Preparation for this action had begun on 1 December 1942 when the Fifth Army was constituted by a War Department letter to the Commanding General, European Theater of Operations. On 12 December, Headquarters, European Theater of Operations, named General Clark commander of the Fifth Army.

The Fifth Army was to have a two-fold task: (a) territorial responsibility, in cooperation with the French forces, of much of North Africa (French Morocco and Algeria west of Orleansville); and (b) occupying Spanish Morocco in the event relations with Spain were strained too far. Its most important mission, however, was "to prepare a well-organized, well-equipped, trained, and mobile striking force--fully trained in amphibious operations". This meant getting ready for one of the most difficult operations in the art of war--an over-water attack on a defended hostile shore.

On the same day as he activated the Fifth Army, General Clark published an order naming his staff officers. Colonel Frank Otto Bowman was designated as the Army Engineer. Colonel Bowman (now a Brigadier General) had been with the Corps of Engineers since his graduation from West Point in 1918 (see "Appendix A" for a brief resume of his Army career).

In December 1942, before the Fifth Army was activated, Colonel Bowman began to organize the Engineer Section on paper, using Table of Organization 5-200-1 as a model. On 11 December 1942, the first of several provisional Table of Organizations was submitted to the Army G-1. This was rejected on the ground that it was too large for an army that was not scheduled to begin combat operations for many months. Succeeding Table of Organizations were continually whittled down until the one finally approved on 5 January 1943 provided for only twelve officers, one warrant officer and eleven enlisted men (Table of Organization 5-200-1 authorized twenty-eight officers, one warrant officer and forty-three enlisted men). Major reduction in personnel was in the proposed Supply and Construction Sub-sections, whose work was to be largely handled by Base Sections during the Army's training period. To compensate for this, a few specially qualified Construction and Supply officers were requested from Allied Force Headquarters to form a nucleus for the future expansion of these Sub-sections when combat operations should begin. These and most of the other officers and enlisted men of the Engineer Section came from II Corps, which had been greatly reinforced for the landing at Oran.

When first organized, the Engineer Section had eleven officers, one warrant officer, and nine enlisted men--one officer and two enlisted men short of the personnel authorized in the provisional Table of Organization (see "Appendix B" for original personnel). The Headquarters Sub-section of the Engineer Section consisted of the Army Engineer and his Executive Officer. The Engineer was advisor to the Army Commander, and also supervised the Engineer Sub-sections, all Army Engineer work, and recommended Engineer policies. The Executive Officer was to assist the Engineer with this work, and be prepared to take over the duties of the Army Engineer in his absence. In addition to the Headquarters Sub-section, there were Administrative, Intelligence and Mapping, Operations and Training, Engineering, and Supply Sub-sections (see "Appendix C" for diagram of Original Organization).

The collection of tactical and engineering intelligence, both friendly and enemy, and its evaluation and dissemination were taken care of by the Intelligence and Mapping Sub-section, as well as the preparation and distribution of maps and charts, and supervision of topographical units.

The Operations and Training Sub-section used the information gathered by the Intelligence and Mapping Sub-section to make recommendations regarding the training and employment of Engineer troops by the Army Commander. Its other duties were the maintenance of an Engineer troop list, the study and dissemination of field defenses and demolition methods, and the supervision of Army camouflage.

The Engineering Sub-section had a purely advisory mission. It was to keep the Army Engineer informed on the progress of Engineer work, on water supply, on traffic circulation, on construction methods, on the distribution of engineer troops, and on the nature and capabilities of beaches and ports in probable operational areas.

The Supply Sub-section was to advise on all matters relating to Engineer equipment and supplies. It was also to recommend dump locations, supply priorities, and to handle all real estate problems (for the complete Engineer Section Duty List see "Appendix D").



Officers of the Engineers Section (photographed in March, 1943): First row, left to right: Major Harold E. Wetzel; Lieutenant Colonel John G. Ladd; Colonel Mark M. Boatner, Jr.; Colonel Frank O. Bowman; Lieutenant Colonel Harry O. Paxson; Major I. W. Finberg; Major Ernest C. Adams. Second row, left to right: Captain Herman H. Vanderveer; Captain Otto Dreydoppel; Captain Joseph R. Steele; Captain Bayard F. Wombacker; First Lieutenant John W. Graham, Jr.; Warrant Officer (jg) Samuel D. Jones. Third row, left to right: Captain Eric H. Yeo; Major Cecil L. Stephenson; Major Stanley J. Hawkins; Captain Robert B. Hoskyn (last four are members of the Royal British Engineers).

B. Training Programs and Schools

The first major operation by the Fifth Army was not undertaken until 9 September 1943. The time that elapsed between the Army's activation and that date was spent in planning and in training.

As part of a Fifth Army program, the Fifth Army Engineer Training Center was activated 12 March 1943. The school was started as a seven-day course for officers and non-commissioned officers and stressed the engineering subjects of mines, demolitions, and booby traps, with some additional training in camouflage, military courtesy and discipline, and physical conditioning. This was not at all in accord with the Army Engineer's original plan, however. Colonel Bowman had desired to send one regiment at a time to the Center for at least a month of vigorous training in mines, demolitions and the building of bridges and roads. That this could not be accomplished was due to the Base Section's reluctance to release Engineer troops wanted for its construction program. From the time of the School's activation until the Fifth Army relinquished control on 21 August 1943, nineteen classes were held with a total attendance of 1,538. Two hundred and twenty-two French troops and two British are included in this total (see "Appendix E" for attendance break-down).

The site of the school was a barren, desolate area ten miles from a main highway, about forty miles west of Oujda, Morocco. There were a few stunted trees by the side of an old Arab well and an abandoned railroad line with its decrepit station, the old Fortress of Ain Fritissa. There was also sand and heat. By this meager oasis, war was simulated--battles that must have seemed uncomfortably realistic to the shades of Beau Geste, the English Legionnaire whose famed stand had been made at this very spot. Once again this stretch of desert took on the aspects of a battle ground, for realism was the Center's keynote. Again men drilled on the blistering sands; again a bugle's tone disappeared into the desert waste.

The School's culminating demonstration was the night removal of a mine field. One half of the class laid the field, the other half had the task of neutralizing it. Realism was achieved by the utilization of smoke and tanks. As the removal parties lifted the field (sown like wheat with anti-personnel mines and booby traps), thirty and fifty-caliber weapons kept an erratic fire three feet above the sands in infiltration course style. For good measure, demolitions were set off from a control tower; ignited charges were thrown onto the field; and the demonstration tanks fired thirty-seven millimeter shells across the area. To be effective, these demonstrations had to be dangerous; yet only two men were killed during the whole series of seven-day, and later nine-day classes. Both these men were from the 111th Engineer Combat Battalion. Lieutenant Thomas A. McLeer was killed 24 June 1943 during the final night problem of the eleventh course. The faulty trajectory of a thirty-caliber machine gun was responsible. Sergeant Kenneth C. Swartz was instantly killed on 30 July while lifting an M1A1 mine. Few live mines were used in the fields; most of them were chargeless training mines containing only igniters.

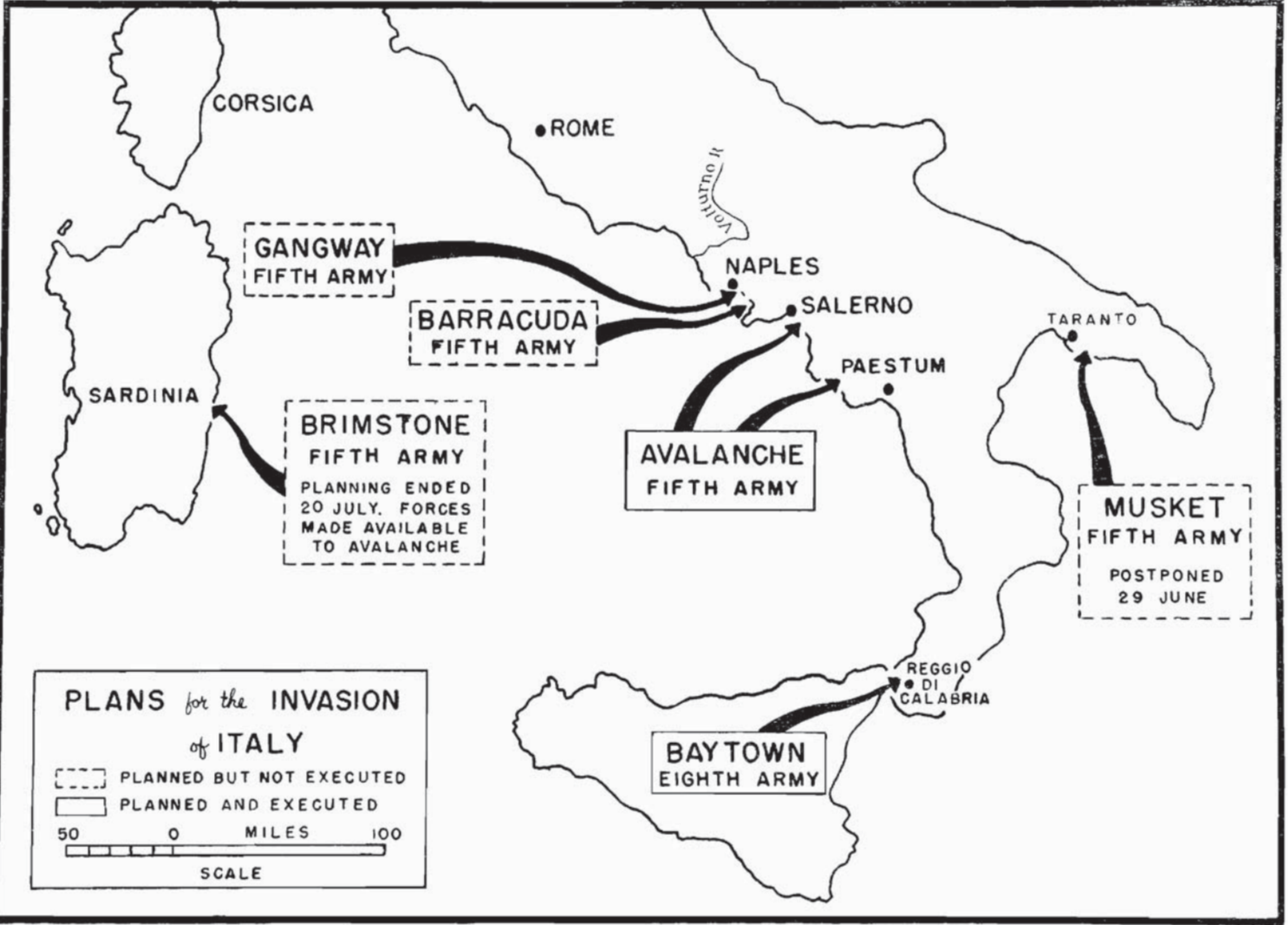
The Engineer Training Center was under the command of Lieutenant Colonel A. W. Wyatt (famed for his fatiguing "Wyatt's Run" at the Center), formerly the Executive Officer of the 20th Engineer Combat Regiment. He later left the school and went to Italy with the Engineer Section of Fifth Army. He was in command of the 141st Infantry Regiment of the 36th Infantry Division when killed by a shell near Cassino.

To establish the Center, four experienced officers were obtained from the British Eighth Army: Major C. L. Stephenson, Major S. J. Hawkins, Captain E. H. Yeo and Captain R. R. Hoskyn. They had all been fighting with the Eighth Army from El Alamein through Gafsa and were old hands with enemy mines, patterns and techniques. One company of Engineers was kept at the school for use as demonstration and administrative personnel, guards, etc.

The Army Engineer, after approving the curriculum, kept in close touch with the school through three Engineer Section officers stationed there and by frequent inspection trips--at least one each week--as well as inspection by others of his staff.

The officers from the Engineer Section were: Major H. E. Wetzel, the Executive Officer; 1st Lieutenant L. A. Caldwell; Warrant Officer (jg) S. D. Jones (for a roster of the school's staff see "Appendix F").

Considerable difficulty was experienced in getting the Training Center into operation. Although Allied Force Headquarters had promised all kinds of help, no one, or nothing was available. To confuse the situation further, Allied Force Headquarters suddenly ordered the Army Commander to open the school as soon as possible. The Army Engineer had to make his own arrangements. The British officers were borrowed; the site selected; and plans, sometimes rather fantastic, were made for supplies. For example:



SECTION I

Training Programs and Schools (cont'd).

it was impossible to obtain any appreciable amounts of enemy mines or demolition equipment. Consequently, Lieutenant Caldwell was ordered to Tunisia for reconnaissance purposes. Next, permission to use General Clark's personal C-47 was granted. In this manner, enemy mines were conveyed to the school as soon as Lieutenant Caldwell had located caches of them in the Tunisian battle ground.

In addition to the Engineer Training Center, the Arzew Amphibious Training Center was constructed for Fifth Army by engineer troops. The engineers also built instruction centers for other branches, such as the Battle Training School for Infantry and Artillery.

C. Initial Plans

The first operational task on the Army's agenda was the preparation for an attack against Spanish Morocco. Later, plans were prepared for an attack on Sardinia. These two operations were known as "BACKBONE" and "BRIMSTONE". The Engineer Section wrote terrain studies and prepared map and supply plans for both. "BACKBONE" rapidly lost consideration as the Allied hold on North Africa became more firm. After the visit of General Orgez in June, it appeared the Spanish Government had no desire for a break with the United Nations. "BRIMSTONE", however, was long considered, and plans were carefully drawn up for G-2, G-3 and G-4. It was not until 20 July 1943 that the operation was discarded entirely. Two other operations, "GANGWAY", a landing in the North Naples Bay, and "BARRACUDA", a direct entrance into the harbor of Naples, were to be used in the event the Italians capitulated and no enemy resistance was found on the mainland. Less planning was done for these operations as the projects were considered for only a short period of time. The supply plans for "BRIMSTONE" were used as a basis for all other proposed operations, with modifications made to fit each new situation. Terrain studies, and map and supply plans were also made for "MUSKET", another proposed attack on Italy, this time near the port of Taranto (see Map #1).

Then came "AVALANCHE", the final plan, the plan that was to launch the Italian campaign, the plan that was to bring about the first successful landing by the Allies of World War II on the mainland of Europe. General Eisenhower discarded operation "MUSKET" on 29 June. On 20 July, he cancelled "BRIMSTONE" (Sardinia). On 26 July, the combined chiefs of staff, Washington, D.C., cabled General Eisenhower urging "AVALANCHE", a landing on the West Italian coast, somewhere in the vicinity of Naples. And on 27 July, General Clark was instructed to prepare to take Naples and the nearby airfields "with a view to preparing a firm base for further offensive operations".

D. The Final Plan

Planning for Operation "AVALANCHE" was started immediately. The heads of all Fifth Army General and Special Staff Sections were formed into a planning group which left Oujda by plane during the last days of July, and flew to Bouzerrea, a suburb of Algiers. From 12 April until 17 August, Colonel M. M. Boatner was the Army Engineer. On 17 August, Colonel Bowman reassumed command. To assist him in the planning group were Colonel H. O. Paxson, Lieutenant Colonel J. G. Ladd, Major I. W. Finberg, 1st Lieutenant J. W. Graham, Master Sergeant J. R. Lackey, Staff Sergeant D. M. Hansen and Technician Fourth Grade J. G. Duffy.

The first British Engineer Officer to join the Engineer Section was Major G. K. Benn, R.E., who reported for duty at Planning Headquarters, Algiers, on 20 August 1943. He was joined a week later by Lieutenant Colonel B. B. Smith, R.E., who had been appointed Assistant Director of Works in command of the British Increment Engineers. On 1 September, the staff was completed by the arrival of Major H. R. G. Clements, R.E. In addition to the officer personnel, were four clerks, one a Staff Sergeant, one a Corporal, and two Lance Corporals.

Prior to the landing at Salerno, the staff was principally engaged upon clarifying the Engineer plan in respect to X Corps (British), particularly in respect to supply. There was no concrete plan from higher headquarters, and in the absence of any firm direction it was difficult to decide upon any definite plan of action. As the Chief Engineer, X Corps, had already submitted a request for supplies up to D plus 35, it was hoped that this would suffice until the situation became more clear. Major Benn left Planning Headquarters on 1 September to embark with the advance party, with which he landed on D Day at Paestum. The remainder of the section was engaged in collation of intelligence until 17 September, at which time it embarked at Oran for Italy. It landed on 21 September on the Paestum beaches.

The Final Plan (cont'd).

The Engineers in the Algiers planning group had the responsibility for making terrain studies covering beaches, airfields and maneuver spaces for armored units. Exhaustive research was undertaken and many information sources investigated. As in the case of the other projected operations, the Engineer Intelligence Sub-section relied heavily upon ISIS (Inter Service Information Series) Reports supplied by the British through the Assistant Chief of Staff of Allied Force Headquarters. ISIS books were invaluable. The moment war was declared in 1939, the British War Office had gathered together every bit of information obtainable concerning countries in which the Empire might some day be forced to fight. Included in the ISIS Reports were the country's history, politics, culture, habits, communication systems, statistics on weather and rainfall, topography, population, business, and export products. Pictures were added, mostly scenic snapshots to illustrate the general terrain, or to show harbor installations, dams, etc.

Aerial photos were intently studied during the planning. Although they were very difficult to obtain--the flight to Italy was long and dangerous at that time--their importance was such that the actual choosing of the landing beaches was made from them. As the photographic supplies were critically limited, the emphasis was on pictures of the beaches and harbors, or on such points of interest as communication centers and important bridges.

After a preliminary study by his staff, the Army Engineer recommended that the "AVALANCHE" landing be made either in Salerno Bay or along the beaches just north of Naples, both feasible sites for an amphibious assault. Salerno had the advantage of being a relatively undefended bay, at least in regard to permanent fortifications. The Salerno beach was preferable to the one north of Naples because of better offshore beach slope conditions and because the sand dunes, which stretched along the shores, were narrower and thus more convenient for exit routes. Also, Salerno was closer, easier to supply, and better for air support (which later became the deciding factor). Salerno's main defect was the mountainous perimeter of the beachhead arching from the shore inland, and back to the shore again. The mountains would certainly afford excellent observation posts and artillery positions for the enemy. Moreover, astride the route from Salerno to Naples was Sorrento Ridge which made a very difficult passage for any invader. The great advantage of the beaches north of Naples was a broad plain stretching inland, across which were numerous good roads for supply routes and movement. A foothold in this sector would cut Naples off from the German forces in Central and Northern Italy. To offset this, however, was the fact that the Germans expected that any attack by the Allies might likely be made between Naples and Gaeta and, therefore, the area was heavily mined and prepared for defense. More important, there were forces nearby to man these defenses. Also, in the event the Germans were forced to cede the territory, they could easily flood the area and seriously hinder the movement of any attacking army. Both the Naples and Salerno sites were approved by the Navy, which studied the coast line with a view to its part in landing the Army. The Army Commander favored the landing north of Naples, but the Air Force Commander stated that he could not guarantee air cover that far north. It was, therefore, decided that Plan "AVALANCHE" was to be executed at Salerno.

Fifth Army Headquarters and its personnel moved 480 miles from Oujda to Mostaganem while the planning group continued its labors at Bouzerrea. As soon as the exact site had been chosen, the planners went into much greater detail on "AVALANCHE". A large volume of material was assembled, evaluated and coordinated, and great cooperation was effected in integrating the varied activities within the Engineer Section, as well as between it and all other Army sections. The Intelligence Sub-section's terrain studies described the general nature of the area, the ridge system, drainage system, communications, water supply, ports and beaches. The land aspects that have a bearing on military operations were also stressed. Finally, the military significance of these facts was explained (see "Appendix G" for Terrain Study "AVALANCHE").

Accompanying the terrain study were specialized map series. These series had been annotated for concealment, communication, water lines and ridge lines. Map plans also had to be prepared. Coverage had to be provided for the geographical areas to be included in the initial operations, and it had to be decided which scales were to be used. Plans had to be made for depots and for distribution down through the normal communication channels. The initial supply of maps was furnished by Survey Directorate, Allied Force Headquarters. Maps with scales of one to twenty-five thousand, one to fifty thousand, one to one hundred thousand, and one to two hundred and fifty thousand were requisitioned, covering an area from south of Salerno to north of Anzio, and from the west coast east over most of the peninsula. In addition, one to five hundred thousand and one to one million scales from south of Salerno up to Rome and north were ordered. Finally, special outline and road maps of the Naples area were provided, as well as special beach and defense overprints. Provision for a hundred per cent replacement stockage of initial issues had to be planned for by the Army Engineer for needed distribution on the assault beaches. This, of course, meant the establishment of a map depot on the beachhead. Any one, by merely glancing at map orders, the copies themselves, or by overhearing references to maps, can immediately arrive at a fairly accurate conclusion as to the location of planned operations. For this reason, all map and photo work had to be handled with utmost secrecy. To insure this, the Map Depot Detachment worked, ate and slept under guard in a building which the men were not permitted to leave until the landing at Salerno.

SECTION I

The Final Plan (cont'd).

From the start of the planning, the Supply Sub-section had been working on its own plans. As a new operation was considered, the previous supply estimate was retained and then revised. In this way, the plan for "AVALANCHE", which was completed by the end of August, was actually a continuation of the work begun in the spring. In the same manner, the requisitioning was little more than the routine work required by any moving condition. Varying with the troop list, enough equipment had to be on hand to supply all the engineer units. The terrain study dictated the probable amount of bridging and defense materials that would be needed, and also made possible the selection of future dump and depot sites.

The corrected Operations Plan was published 26 August. D Day was set for 9 September 1943, H Hour for 0330. G-2 had reported that the enemy strength at Salerno could be anticipated to be about 39,000 troops on D Day, and that by D plus three that number could be increased to 100,000. The Allied plan was to land 125,000 troops; the British X Corps north of the Sele River, the American VI Corps south of the river. X Corps was to make the main assault towards Naples. Its immediate objective was Salerno, the Montecorvino Airfield, the rail and road center of Battipaglia and the Sele bridge. On the right, VI Corps was to take the mountain arc Altavilla - Albanella - Rocco d' Aspide - Mount Vesole - Magliano around to Agropoli at the southern end of the Bay of Salerno

The troops given to the Fifth Army for "AVALANCHE" were as follows:

VI Corps (AMERICAN):	34th Infantry Division
	36th Infantry Division
	45th Infantry Division
	1st Armored Division
	82nd Airborne Division
X Corps (BRITISH):	46th Infantry Division
	56th Infantry Division
	7th Armored Division
	1st Airborne Division

Fifth Army Engineer troops for "AVALANCHE" were as follows (see "Appendix H" for thumb-nail histories of Fifth Army Engineer units):

<u>Engineer Units</u>	<u>Assigned or Attached</u>
531st Engineer Shore Regiment	VI Corps
540th Engineer Combat Regiment (-Company "F")	VI Corps
Company "F"	82nd Airborne Infantry Division
10th Engineer Combat Battalion	3rd Infantry Division
16th Armored Engineer Battalion (-Company "B" and Detachment Company "E")	1st Armored Division
Company "B" and Detachment Company "E"	VI Corps
109th Engineer Combat Battalion	34th Infantry Division
111th Engineer Combat Battalion	36th Infantry Division
120th Engineer Combat Battalion	45th Infantry Division
307th Airborne Engineer Battalion	82nd Airborne Infantry Division
46th (Br) Infantry Division Royal Engineers	46th Infantry Division
56th (Br) Infantry Division Royal Engineers	56th Infantry Division
7th (Br) Armored Division Royal Engineers	7th Armored Division
X Corps (Br) Troops Royal Engineers	X Corps
36th Engineer Combat Regiment (-Company "H")	VI Corps
Company "H"	82nd Airborne Infantry Division
39th Engineer Combat Regiment (-2nd Battalion)	VI Corps
337th Engineer General Service Regiment	Fifth Army
343rd Engineer General Service Regiment	Fifth Army
Company "A", 405th Engineer Water Supply Battalion (-1 Detachment)	
Detachment, Company "A"	Fifth Army
Company "C", 405th Engineer Wat Sup Battalion	VI Corps
427th Engineer Dump Truck Company	Fifth Army
1202nd Engineer Fire Fighting Platoon	Fifth Army
1st Platoon, 451st Engineer Depot Company	Fifth Army
Detachment (Reconnaissance) 696th Petroleum Distributing Company	
2616th Engineer Utilities Platoon	Fifth Army
661st Engineer Topographic Company	Fifth Army
2690th Engineer Map Detachment	VI Corps
	531st Engineer Shore Regiment

The Final Plan (cont'd).

While all these Fifth Army engineer units were feverishly preparing for the Italian campaign, the engineer planning group returned to the Command Post at Mostaganem. Their work finished, the planners packed their things, sat down and waited.

In the first days of September, the ports of French North Africa passed from a stage of hectic activity to a state of tense inactivity. The men and the machines were poised and ready. From Oran and Mers-el-Kebir, the operation's two westernmost ports, the ships pulled out on 5 September. The beaches of Ain-el-Turk and the sunbaked backs of bathing nurses faded into the horizon. The casino on the bluffs of Canastel, where the Commandoes lived, slipped behind. Last to disappear was the rockbound fortress of Santa Cruz. Au revoir, Africa. The Avalanche rolled eastward and with its ever increasing bulk of ships and guns and supplies crashed into the Bay of Salerno in the late evening of 8 September. Ciao, Italy.

SECTION II

SALERNO AND NAPLES

	<u>Page</u>
A. The Tactical Situation	7
B. Work at Engineer Headquarters	9
C. Unit Operations	12

SECTION II

SALERNO AND NAPLES

A. Tactical Situation

Numerous peculiarities beset the landing at Salerno. At 1830 hours on 8 September, General Eisenhower had broadcast the news that hostilities between the United Nations and Italy had been terminated effective at that moment. The Italian representatives had met with the Allied leaders some months before, and the Italians had capitulated--but all news of the agreement was to be hushed up until the Allies decided to make it public. It was hoped that the coming of the announcement so shortly before the attack would cause the Italians to cease resistance and deprive the Germans of needed time to reorganize their defenses. Faces were tense as the moment of landing neared. Would the strategem succeed?

The moon went down just before midnight, yet the vessels could not enter the bay of Salerno--minefields blocked a close approach to shore. As a result, the ships were anchored twelve miles from the beaches until the mine sweepers had opened gaps into the bay.

The landing craft of the first wave neared shore without a shot from the enemy. Then, after a short, tense quiet, what sounded like a public address system was heard, "Come on in and give up. We have you covered!" With all possible dispatch the forces landed. The first amphibious attack on the Axis mainland was being made. But the landing was no surprise to the Germans, and within a matter of seconds the beaches were subjected to a withering fire. Rumor even has it that the German forces had staged a practice defense at this spot only the previous day. It was not too unlikely, as the invasion had been a rather poorly kept secret; all Algeria had buzzed and rumored for some weeks.

Both Corps quickly deployed and consolidated their gains throughout the first four days; both striving to gain their initial objectives, but against mounting enemy resistance. A curious situation existed on the beach. The Rangers had landed further north and were gaining the *Corrento* heights above Naples. Their needed reinforcements and supplies were taken from the Salerno beachhead. Thus, there was a situation of landing supplies and troops and of loading them from the same beaches at the same time.

A decisive period was reached on 13 and 14 September, when the British and American forces went over to the defensive. They lost considerable amounts of previously taken ground under the pounding of heavy enemy counterattacks. The greatest danger was the threatened separation of the two Corps along the Sele River. It was at this time that the Army Command Post was forced to move back; the only occasion that this happened during the war in Italy. After landing on D plus 1, the Army Engineer and the Signal Officer reconnoitered for an Army Command Post area. A suitable site was located in the home of Baron Roberto Ricciardi. If it had not been for the battle drumfire, General Bowman might have been on one of those romantic pre-war Cook's tours of the Mediterranean. He made his bed under a rosebush in the Italian garden, where a bright moon reflected silver off the rose petals as they showered down around him. Faintly the air stirred; water splashed in the fountain. A rugged war!

The idyl was shattered on D plus 4. Army Headquarters, which was in front of the division command posts, moved back into the brush as the enemy approached to within 1000 yards of the site.

On 15 September, the crisis had passed, and the enemy changed to the defensive. The British Eighth Army had advanced rapidly the first half of September and had reached Sapri, a town only forty miles south of the beachhead.

Slowly at first, the Avalanche regained its strength and started toward Naples. It moved over pitted roads and blown bridges. The Germans had started their demolition work five miles north of Salerno and from there on to Naples and the north all bridges were down and all routes blasted with craters. On 26 and 27 September, the fall rains began and washed down dirt and rocks on the roads and damaged several key bridges that the two Corps were using. But Naples was reached. On 1 October, the damaged city was taken. Between Allied air-raids and German demolitions, most of the harbor installations were destroyed; ships had been wrecked and scuttled at piers and in the harbor; docks and warehouses were piles of crumbled stone and fire-twisted steel. The city had no electricity, no transportation, no sewage, little water.

SECTION II



LST'S ARRIVE



DUKW'S UNLOAD THEM



LCI UNLOADS AT BEACH

SECTION II

Tactical Situation (cont'd).

But Naples was soon left behind as the Fifth Army advanced to the Volturno River. Again road blocks, blown bridges and minefields were met in profusion. Booby traps were everywhere. The Fifth Army had sustained many losses--so when the Volturno was reached on 6 October, the advance stopped. Units had to be regrouped, before the difficult river crossing was attempted in strength. The first mission had been accomplished; the Army had seized the Port of Naples and the airfields in the Naples area; a firm base for further offensive operations had been secured.

B. Work at Engineer Headquarters

On D Day at Salerno, Major George Boylan of the Engineer Section landed in Italy to locate a site for the Fifth Army Command Post. He was followed the next day by an advance group of the Engineer Section consisting of Colonel Frank O. Bowman, Army Engineer, Colonel Mark M. Boatner, Jr., Deputy Engineer, Lieutenant Colonel Henry C. Rowland, Jr., Operations Officer, and Captain Louis L. DeNoya, Assistant Supply Officer. That same day, 10 September, Major Boylan was killed in an air raid while at the Command Post of the 2nd Battalion, 531st Engineer Regiment. Colonel Bowman took over the reconnaissance for the Army Command Post and located a site at Paestum.

The Engineer Section began functioning immediately upon arrival in Italy. Four days later, the advance group was joined by Lieutenant Colonel John G. Ladd, the Intelligence and Mapping Officer. Nearly all of the remainder of the Section disembarked on 21 September.

Lieutenant Caldwell was administrative officer of the Engineer Section until October, at which time he was replaced by Captain Charles R. Rosenbaum. Nothing noteworthy occurred in the Administrative Sub-section during this period. Very little trouble was encountered in procuring either enlisted or officer replacements since the depots were adequately stocked.

The Operations and Training Sub-section assigned separate areas to the engineer units directly under the command of the Army Engineer. All work in the assigned sectors was initiated by the Commanding Officers concerned. This system was rarely changed. A few exceptions: the 337th Engineer General Service Regiment was specifically told to construct a bridge across the Sele River, and the 343rd Engineer General Service Regiment was similarly instructed to build a bridge at Battipaglia. Mine clearing on the beaches was performed mostly by the forward engineer units, but Army units did clear and mark some sections of the Salerno beach, and checked bridge sites and a few dump locations as the advance began. As Naples was reached, booby trap inspection crews were furnished to check the city.

Up and through Naples, 227 miles of roads were maintained, most of which had asphalt surfaces. Route marker signs were erected; hairpin curves widened; potholes filled; demolished vehicles dozed to the side; and mud brought in from access roads bladed from the pavement. Debris from bombing and shelling had created traffic blocks in Avellino, Salerno, and particularly at Battipaglia, where considerable work was required to open the streets for 2-way traffic. Appreciable damage to roads by demolition, shelling, and bombing totalled about three or four continuous miles. On these roads were constructed eight Bailey bridges totalling 620 feet, five steel treadway bridges totalling 495 feet, and one infantry support bridge 120 feet in length, in addition to 4 semi-permanent bridges with an accumulated total of 335 feet.

During this period, a chart was developed by Captain Kenyon to classify the American design of timber bridges in accordance with the British system. The American "H" system was not as flexible or accurate as the British method, and it was impossible to synchronize the two, a necessary feature in an Army composed of one American and one British corps. While the Army was still in Africa, Allied Force Headquarters had published a crude handbook that allowed a very limited transposition of values. The chart developed in the Operations Sub-section provided rules for the classification of any fixed bridge, and developed the one-way, two-way system (for load classification chart for American fixed bridges see "Appendix I", Diagram #1; for number of bridges constructed by Army Engineer units in Italy see "Appendix J", Part #1).

During the Salerno and Naples phase, cemeteries, railroads, and powerlines were continually worked on and rehabilitated. The members of the Operations and Training Sub-section made reconnaissance for local material when supplies, especially for fixed bridges, were not available. The Water Supply Officer coordinated the production of water by divisional, corps and Army engineer units. Plans were made for rear echelon units to take over the best of the divisional water points without a break in operation. Also, water supply had to be planned for many immobile installations such as hospitals and bakeries. During this period, engineer units in Italy produced 2,300,000 gallons of potable water (for a report on difficulties encountered in the operation of water supply units see "Appendix K").

By the time Italy was invaded, the camouflage responsibility had been switched to the Operations and Training Sub-section from the Intelligence Sub-section. Little camouflage inspection work was done before the Volturno was reached, as the Camouflage Officer did not arrive until 3 October. On that date, he landed at Naples with the Army Fire Fighting Units, of which he was also in charge. Two fire stations were immediately put into operation in Naples to protect Army installations in the city and its environs.

SECTION II

Work at Engineer Headquarters (cont'd).



THE 337TH'S BRIDGE ACROSS THE SELE--ORIGINAL BRIDGE IN FOREGROUND

The mapping department of the Engineer S-2 Sub-section organized and supervised the Army Map Depot, which was first built up from stocks sent in over the Salerno beaches, and later by additional stocks received through the port of Naples. The stock had been arranged for in North Africa to arrive in increments every ten days. The distribution of these maps to combat troops and Army Headquarters was supervised. In addition, the map department supervised and directed the Army topographical units in all their work of revision and reprinting of old maps, and other miscellaneous printing. Finally, all Army survey (triangulation) work in support of Army and Corps artillery was supervised and directed.

The Engineer S-2 Sub-section maintained files of data on enemy terrain north of the front lines, engineering resources, enemy engineer equipment and techniques, etc. This information was disseminated at the proper time to the Fifth Army General Staff and to Corps Engineers. Minefield records were kept, including detailed records of friendly minefields, and as much as was known of enemy minefields, in the Fifth Army Area.

At the Photo Interpretation Center, always set up at the northernmost airport in use by the Fifth Army, aerial reconnaissance photos were studied by the Engineer Photo Interpreter. Road classification maps for the area ahead of the front line were printed; details of day-by-day road and bridge demolitions by the enemy were issued in General Interpretation Reports; and Engineer Route Reports, as well as Special Engineer Reports, were published, the former giving details of all existing bridges on main roads in the enemy territory, and the latter describing main river lines and suitable crossing places over them (for sample Engineer Reports see "Appendices L and M"). By the time the Volturno was reached, the S-2 Sub-section had turned over to G-3 its recommendation on crossing sites and approaches to the river. The photo interpretation studies were made to a depth of fifty miles into enemy territory.

There were no supply functions for the Engineer Section until D plus 10, at which time the responsibility for the supply dumps was taken over. From that time on, the supply officer kept the Engineer advised as to the status of supplies. The first big headache in Italy of the S-4 Sub-section was the fact that Bailey bridges for use in the campaign had not arrived. For some weeks, the Army had only five Baileys in stock. Acetate and grease pencils were in great demand, and of the thousands of Engineer

SECTION III

Work at Engineer Headquarters (cont'd).

items stocked, were of the few found to be short. Numerous troops arriving in Italy had no idea of the type of country they were to fight in, or even in which direction they were going to move. Because of this reason, the paper and pencils were wanted for orientation of troops in addition to the anticipated demand for situation maps.

About 21 September, a program of beach checking for lost equipment was begun. Naval beach masters were continually contacted and manifests of all arriving ships examined. Whenever critical items were aboard one of these ships, their unloading was expedited when possible, and higher headquarters approached for a priority rating if necessary. During the first days of October, Lieutenant Caldwell was relieved of his administrative duties and was switched to the Supply Sub-section and put in charge of all engineer dumps. Throughout this period, the Supply Officer remained in North Africa as Engineer Representative at Fifth Army Headquarters, Rear Link.

The British increment landed at Paestum on 21 September, following the operations officer, Major Benn, who had landed on D Day. The first phase of the Italian Campaign was largely spent in sorting out the many new problems arising out of the employment of a British Corps in an American Army. The difference in organization between British and American Corps and Army engineer units brought about many initial difficulties, particularly in the taking over of road and water supply commitments behind corps boundaries. With the fall of Naples, utility services assumed greater importance, particularly rehabilitation of the electrical system which was urgently required for operation of the docks, and of water and sewage pumping stations.



RUBBLE CLEARING OPERATIONS



ENGINEER INSTALLATIONS ON D + 4 — SALERNO BEACHHEAD

C. Unit Operations

531st Engineer Shore Regiment

At H Hour (0330), D Day (9 September 1943), reconnaissance parties of the 531st Engineer Shore Regiment, commanded by Lieutenant Colonel Russell S. Lieurance, landed with the initial assault waves. Strong and determined resistance was encountered; casualties mounted up almost immediately. The heavy fire of the enemy--artillery, automatic weapons, mortars and tanks--scattered the small landing craft of the assault waves and, as a consequence, mine clearing teams, road construction crews, and equipment did not land as units. The result was a delay of approximately three hours in the opening of the beaches.

At 0530 hours, Company "E" reported to the control ship that Red Beach was ready for traffic. The resulting concentration of landing craft and DUKW's soon drew heavy fire from artillery. By 1000 hours, three of the dozers working on the beach and many of the DUKW's and small craft had been knocked out. Continuous bombing and strafing raids added to the difficulty of beaching and unloading craft.

About daylight, one enemy tank reached the shore between Yellow and Blue Beaches, bringing each craft under fire as it approached. Point blank fire from anti-aircraft guns on LST's, and from 40 mm anti-aircraft guns and 105 mm howitzers set up at the water's edge succeeded in driving off or knocking out the enemy tanks firing on the beach from the main road in the rear of the dune line. An engineer dozer pulled these guns into position, and in so doing the operator was wounded by machine-gun fire. He continued to operate his dozer, however, until it was put out of action by bullets puncturing the gas tank.

On 13 September, the 2nd Battalion was sent inland as reserve for the infantry and was relieved by a Parachute Battalion of the 82nd Airborne Division the morning of the following day. The 3rd Battalion was called off beach work on the same day, and took up defensive positions on high ground south and southeast of the beachhead where it constituted the Army front line until relieved on 15 September by units of the 82nd Airborne Division. On that day, Lieutenant Francis B. Rumpfheldt of Company "G" contacted elements of the British Eighth Army south of Agropoli.

The abundance of shrapnel from the continuous artillery fire in the early stage of the beachhead made the use of the magnetic mine detector difficult. The pattern of beach minefields usually consisted of four rows of mines, three paces between rows, and approximately three paces between mines. These minefields were usually indicated by one strand of barbed wire stretched about thirty inches above the ground. In one case, on Green Beach, a diamond-patterned trip wire covered a minefield.

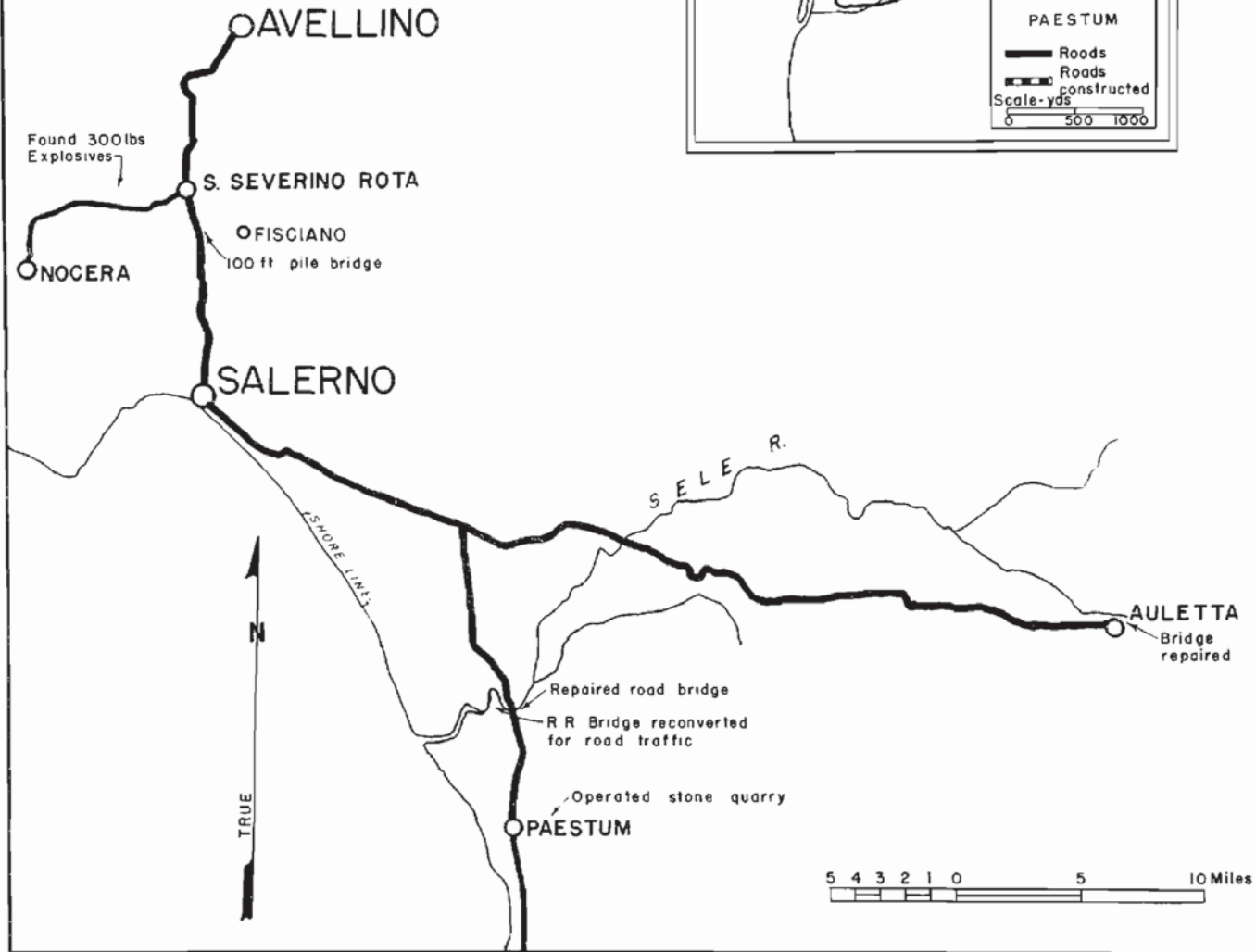
During the latter part of September, the 1st Battalion was ordered to maintain the main supply routes from the beaches to the front lines. This was an important task, as the beaches continued to be the main source of supplies for the Fifth Army even for a considerable time after the capture of Naples. A stone quarry near Paestum was operated to provide crushed rock for road surfacing and also for surfacing nearby air strips under construction.

In early October, the fall rains brought high water levels in all streams. The trestle-bent bridge over the Sele River was undermined and began going down. The 531st altered the railroad bridge over the Sele River so that it would take vehicular traffic, while the road bridge was saved by driving piling through the floor and jacking the bridge up level again and onto the new pile bents. This work was of the highest priority; at that time the highway was the sole link between the frontline troops and the source of materials at the beach dumps.

Upon completion of this project, another bridge was repaired near Auletta. A 100-foot, pile-bent bridge was constructed between Avellino and Salerno, near Fisciano. No pile driver was available for this job, so one was improvised from a German 155 mm gun barrel and a D-4 tractor. Also, a trestle bridge 45 feet long was constructed south of Avellino as an overpass over a railroad.

On the night of 29 September, a heavy wind and rain storm stopped all beach operations and stranded many craft high and dry, including a 5,000-ton coaster on Red Beach and numerous Rhino Ferries. Before normal beach operations could be resumed, these craft had to be salvaged. The 2nd Battalion assisted the Navy and Seabee salvage crews in their removal. Rhinos were floated by digging channels with dozers on either side of the ferry to enable partial floatation, and then pushing out with dozers. The small

SALERNO AND NAPLES PHASE



531 ST. ENGINEER SHORE REGIMENT
OPERATIONS

SECTION II

531st Engineer Shore Regiment (cont'd).

craft were pushed into the water, where tugs could tow them to their mother ships. The 5,000-ton coaster was floated by channelling on either side with dozers, and keeping the propellers going to keep the channels open. After suitable channels had been dug, tugs were able to pull the ship out to sea, where she continued on her journey.

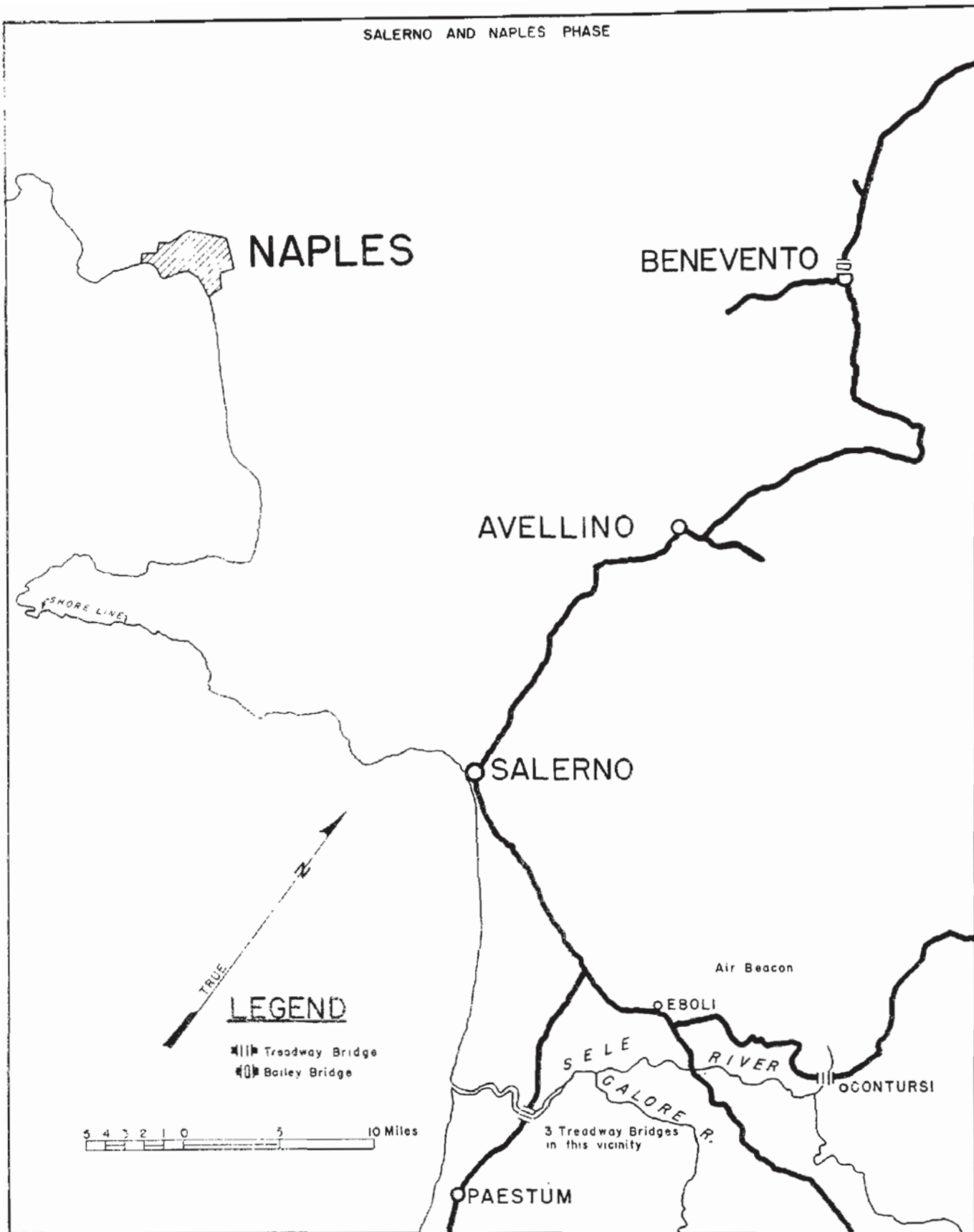


MARKING THE BEACHES

16th Armored Engineer Battalion

The 16th Armored Engineer Battalion, under the command of Lieutenant Colonel John Inskeep, was represented in the Salerno landing by Company "B", which arrived on the beaches of Paestum with the 142nd Infantry Regiment (36th Infantry Division). The 1st and 3rd Platoons and Headquarters Section of Company "B" landed at 1700 hours on D Day. The company's principal mission was to construct treadway bridges for VI Corps. The first bridge (Class 10) was placed over the Sele River on 10 September. This was replaced the following day with a 120-foot trestle treadway bridge to carry Class 40 traffic. Thereafter, the company constructed an average of one bridge every three days over the Sele and Calore Rivers and numerous canals.

SALERNO AND NAPLES PHASE



16TH. ARMORED ENGINEER BATTALION
OPERATIONS

SECTION II



16TH'S FLOATING TREADWAY BRIDGE OVER SELE RIVER



16TH'S FIXED TREADWAY BRIDGE OVER SELE RIVER



56TH. DIVISION ROYAL ENGINEERS
OPERATIONS

56th British Infantry Division Royal Engineers

The British X Corps landed at 0330 hours on 9 September 1943 with the 56th Division on the right. The Commander of the Royal Engineers of the division was Lieutenant Colonel Blenkinsop, R.E. The landing did not entail too much work for the engineers, for no underwater obstacles were encountered and there was little wiring on the beaches. The only mines were two rows of "S" mines and a stack of some 2,000 unladen Tellermines. The bridges over the canal, just beyond the beach exits, were found to be intact. The 220th Field Company recovered seven bogged-down Sherman tanks the first morning, using three angledozers.

Soon after landing, the 221st Field Company received a report from an Italian civilian that there were fuzed demolition bombs on Montecorvino airfield, and promptly some sappers were sent to disarm them. As they reached the southwest corner of the aerodrome at about 1100 hours, they ran into a German infantry patrol, and were forced to withdraw. The 563rd Field Park Company came ashore during the morning and established a supply dump by early evening.

For the first few days, the field companies were occupied mainly with the widening of roads, the construction of small culverts for entry to dumps and the operation of water points. As a precautionary measure, the bridges over the river Tusciano were prepared for demolition and mats of anti-tank mines were made ready to be pulled across the roads. When on 12 September, counterattacks against the bridgehead gained in strength, the 220th Field Company took up defensive positions under the command of the 167th Brigade.

On 14 September, when the enemy drove X Corps back out of Battipaglia and threatened to drive a wedge between the British and American forces, the 221st and 42nd Field Companies also went into the line as infantry. Hawkins anti-tank grenades and shrapnel mines were laid and wire erected to cover their positions. On 15 September, contact was made between an officer of the 220th Field Company and the commanding officer of the 141st United States Infantry Regiment, which was holding the line further to the right. This contact was maintained despite several attacks, and after the attack on the morning of 16 September had been driven back it became evident that the enemy could not now drive our forces into the sea.

On 17 September, the Royal Engineer Field Companies were relieved and were again placed under the command of the Division Engineer, preparatory to the break-out from the beachhead. A pursuit force was formed consisting of a platoon from the 220th Company and various other units, all under the command of the 44th Reconnaissance Regiment. Their task was to advance eastwards along Route #18, then through Olevano and Montecorvino, joining up with the advance of VI Corps and Eighth Army. This advance was first held up by fire at a blown bridge in Battipaglia. The gap produced by allied bombing, which had been 35 feet when the company had first occupied the town, had now been enlarged. Here the 220th Field Company built an 80-foot, double-single Bailey, the first Bailey bridge to be constructed in Italy by the Fifth Army. Here a few mines were lifted, also, and about 1,000 unladen Tellermines found. Meanwhile, the troops had advanced some five miles further up the road when they were again held up by a blown bridge. The 220th made a by-pass around this while the 221st began building a bridge.

As X Corps moved northward, the 56th Division protected its right flank and advanced generally along Route #88. In order to supply the troops fighting in the hills, the 220th Field Company began opening up "W tracks" from Pontecagnano via S. Mango and Ogliara to Route #88 at Ponte Fratte on 22 September. At S. Mango, a Bailey bridge was built well forward under mortar fire, and it was subsequently learned that the covering party had been wiped out, which emphasized the importance of close liaison between the infantry and the local protecting parties.

The road through Ogliara was blocked by heavy street demolitions and a one-way road was opened during the early hours of 23 September by bulldozing; this time an engineer platoon was detailed for local protection. The 169th Brigade, with the 221st Field Company in support, then passed through and drove the enemy back along Route #88. During the next few days, the road through Ogliara was widened and improved, the road through Ponte Fratte was cleared of felled trees and the craters along the route were filled. The road through Pellezzano, west of Highway #88, was cleared by the 42nd Field Company.

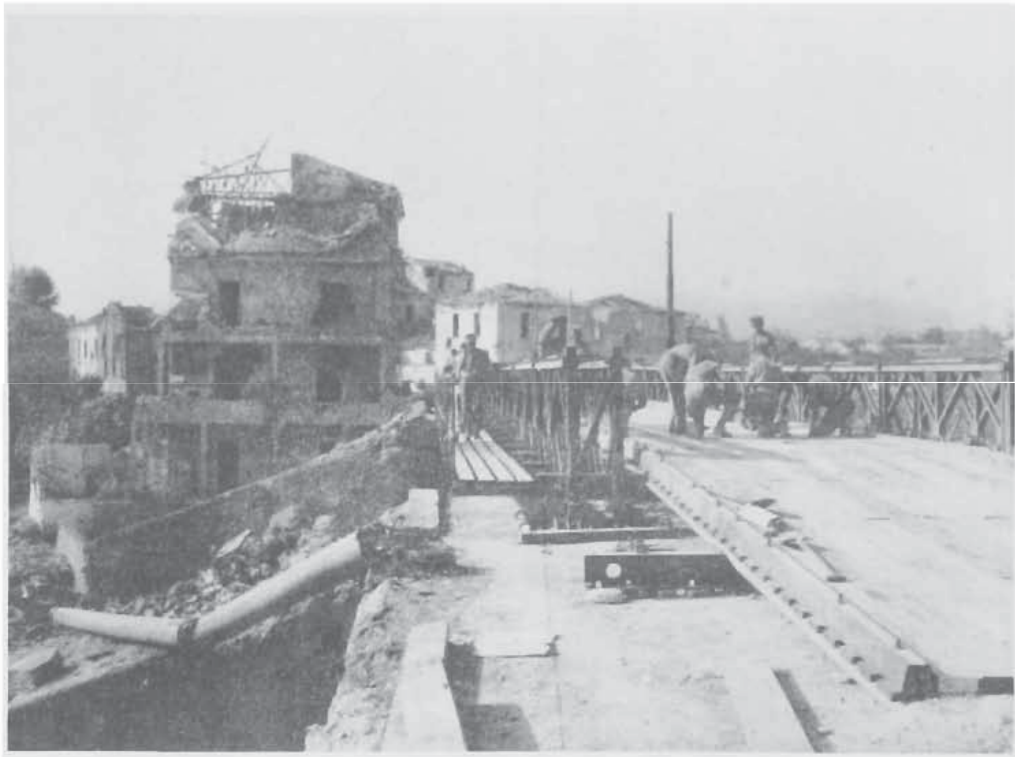
After the Plain of Naples was reached, few demolitions were met that could not be overcome with a bulldozer. A gap between Baronessi and S. Severino Rota was unbridgeable, but a detour was found through Fisciano. The road was badly blown again at S. Severino, but again bypasses were found that required little clearance. In Nocera, heavy street demolitions were cleared by dozing and demolition charges were removed from a railroad tunnel to allow telephone lines to be laid through it. Along the Nocera - Sarno road, two small Bailey bridges were erected and several craters filled.

SECTION II

56th British Infantry Division Royal Engineers (cont'd).

About this time the rains began, and the enemy mines in potholes became submerged and difficult to find. At Sarno, a number of mines were lifted from the approaches to the town, and again street demolitions had to be cleared. The bridge on the main road west of the town had been destroyed but, as the river passed under the town in a tunnel, this did not produce any serious obstacle. Between Sarno and Palma, several small bridges were blown; bypasses were made in every case. Mines were found in the main road and in many bypass sites. The main road through Palma was solidly blocked with rubble for about a hundred yards, but a detour was made using other streets. Two small Baileys were built, and at Nola further street clearance was necessary, particularly at the main road exits.

The division then turned westwards through Pomigliano, where mines were lifted from the Acerra airfield, and on through Caivano to Route #87. All bridges along Route #87 were blown, but most of these were bypassed by bulldozer work; the others required only short Bailey bridges. When Caserta was reached early on 8 October, a solid mass of burning rolling stock was found on the level crossing in front of the palace. A temporary bypass was found nearby for infantry and support vehicles, and so the troops passed through and reached the Volturno at Capua the same morning. Reconnaissance was begun that night for a crossing site.

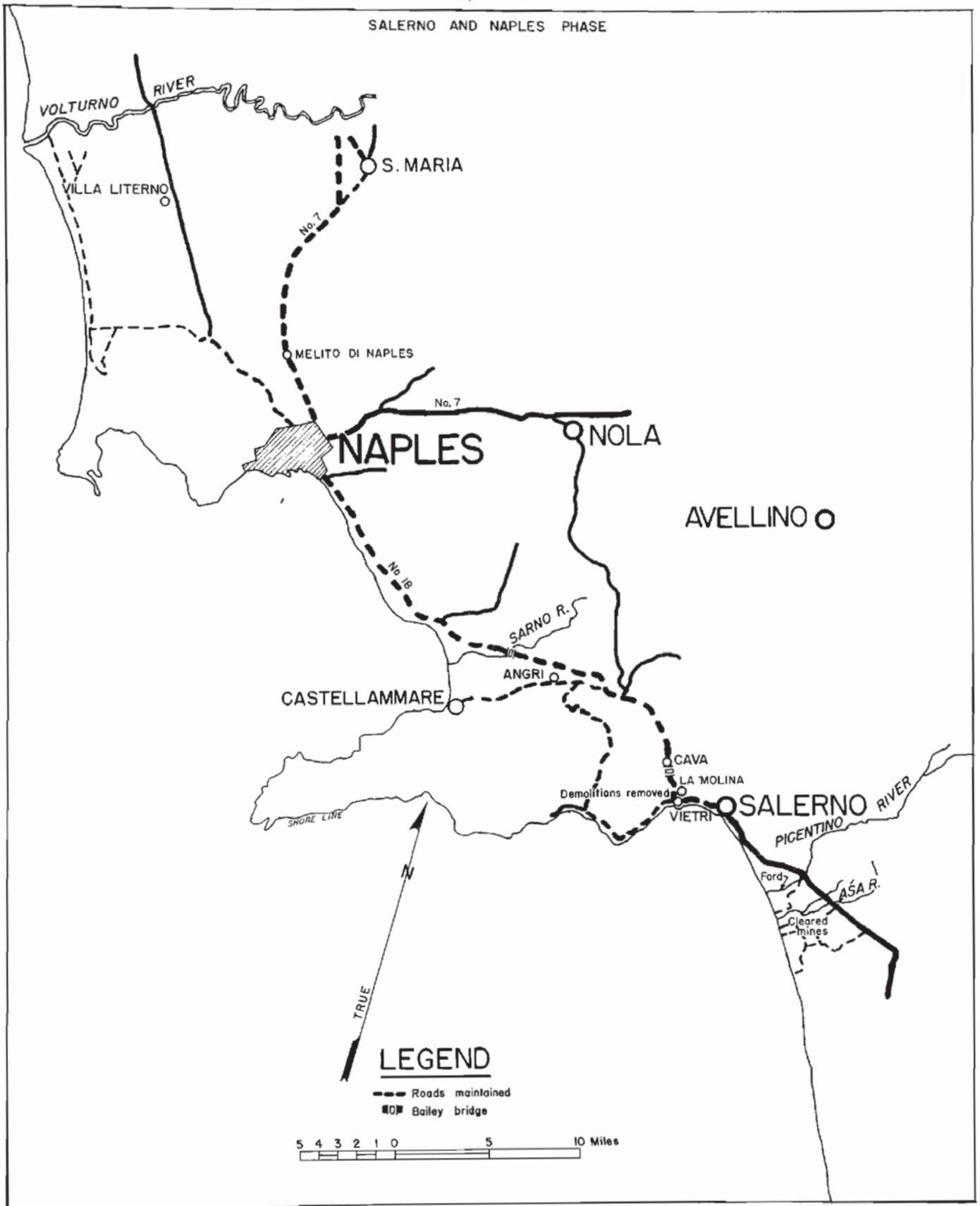


BRITISH ENGINEERS BUILD FIRST BAILEY BRIDGE IN ITALY

46th British Infantry Division Royal Engineers

The 46th Division landed on the left of the X Corps front with the 128th Brigade as the assault brigade, and the 272nd Field Company under its command until such time as the Commander, Royal Engineers, Lieutenant Colonel J. C. Walkey, took control of the engineer operations. The assault engineer plan called for one platoon to land with each of the two assault battalions and clear the beach and exit routes of mines for the passage of the first vehicles of the brigade. The 3rd Platoon landed a little later at H plus 70, as a reserve.

SALERNO AND NAPLES PHASE



46TH. DIVISION ROYAL ENGINEERS
OPERATIONS

46th British Infantry Division Royal Engineers (cont'd).

Operations went successfully on Red Beach; mines were cleared and vehicles put ashore and moved forward very quickly. On Green Beach, however, most of the assault wave was landed in the 56th Division sector. This resulted in the assault wave being blocked from its objective by the Asa River. The engineers did not do any effective work on Green Beach. Owing to enemy shell fire, work was discontinued on this beach on D Day, the landing craft being switched to Red Beach. Casualties were light--one enlisted man killed and five wounded. The work on Green Beach was eventually carried out by the Beach Group Field Company.

The second initial task to be done was the construction of a ford by the 270th Field Company over the Picentino River for support of the infantry mopping up beach defenses to the north of the landing beaches. In preparation for this ford, a D-7 bulldozer was landed early. It had been previously fitted with a special bracket to carry a pair of tracked bridges, coir matting and chespaes. These preparations proved most valuable, and a crossing for tracked and wheeled vehicles was constructed according to schedule.

The 271st Field Company landed on D Day, but did only negligible engineer work on the beachhead. During the heavy German counterattacks a few days later, the unit took up infantry positions to help repel the enemy. Seven days after the initial landing at Salerno, the 273rd Field Park Company arrived at Red Beach. A heavy air attack delayed its landing for some hours. The first engineering job done by the 271st Company was the removal of charges from La Molina bridge.

Before the attack broke out from the beachhead, the 46th Division engineers spent most of their time on the construction of roads for trucks and jeeps through the mountains for the movement of ammunition and rations and for water supply. There were two main bridges in the Cava defile which, if demolished, would have presented serious obstacles. One was at La Molina and one at Cava. Every effort was made to capture these bridges intact. Selected Royal Engineer parties were attached to the assaulting infantry, which was assigned the definite task of getting these parties to the site. The road north of the La Molina bridge was successfully cut and held, but owing to well sited machine guns in pillboxes, the engineers were unable to move or clear the area of the bridge in daylight. The leader of the detachment from the 271st Field Company crawled alone to the bridge and found both piers had been prepared with special mine chambers, each containing 400 pounds of Italian explosives. The firing circuits (cordtex) had been laid, but were not connected up. The detachment leader removed the circuits and charges. The area was mopped up that night and the bridge captured intact.

Reports that the bridge at Cava was blown were received at 138th Brigade Headquarters in the morning. The 271st Field Company had been standing by with the bridge section of the 273rd Field Park Company in readiness for work on either the Cava or La Molina bridges. The advance party with the leading infantry reached the site two hours after the report was received and found the center span blown. Work was immediately begun at the site to construct an 80-foot, double-single Bailey. Reconnaissance for bypass locations had proved unsuccessful. Despite the shelling, which began at noon and steadily increased in intensity and accuracy, the bridge was completed and open to traffic by 1500 hours.

After two weeks on the beach, the 273rd Field Park Company moved inland for its first action in Italy, the Cava crossing, where it sustained several casualties. After the action was completed, the company remained in Salerno until the capture of Naples. One crater was filled and one 60-foot, single-single Bailey was erected at Cava, in addition to many mine clearance tasks.

The tanks progressing slowly north from Cava met many mine belts and craters. At each, the 272nd was called. It seemed hard to persuade the Armored Force that engineers with mine detectors were not as impervious to bullets as tanks. As efforts to produce smoke in the right places were unsuccessful, the mines were not cleared until night at which time the tanks were unwilling to move. When the fields were cleared in the morning, however, the tanks began their advance before the enemy could infiltrate and again place obstacles in their path.

After Naples fell on 1 October 1943, the 272nd was attached to the Commander, Royal Engineers, X Corps Troops, and moved to Angrì near Castellamare and worked on road maintenance and bridge building. On 6 October, the 272nd Field Company reverted to the control of the Engineer of the 46th Division, and was employed to open a route forward to the Volturno between Villa Literno and the sea. Two Baileys were erected on the route.

The 271st remained in Cava for a week after the bridge there was repaired, then moved to Melito di Napoli. Roads were swept and maintained up to the Volturno in preparation for the crossing. Over a canal, an 80-foot, double-single Bailey was needed, and as preparations were being made for the bridge, the workers were surrounded and attacked by a patrol of Germans, estimated between forty and fifty strong. There were twelve casualties before the bridging material was rescued by the Durham Light Infantry.

SECTION II

46th British Infantry Division Royal Engineers (cont'd).

After the battle for Naples, the 273rd Field Park Company followed the rapid advance through and beyond Naples, which brought the unit to a location seven miles north of the port. From there, equipment was sent forward in preparation for the crossing of the Volturno.



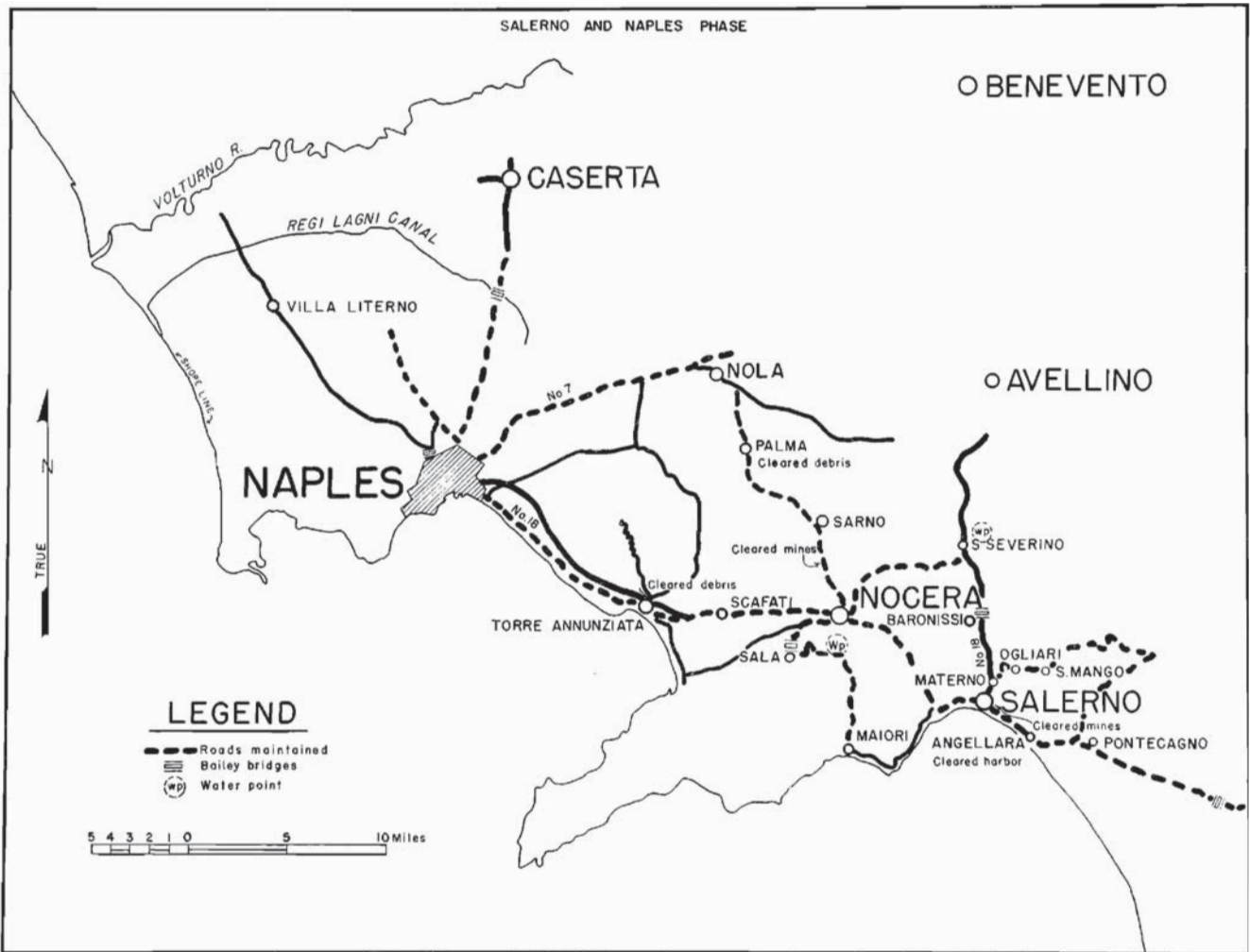
BRITISH OFFICERS INSPECT GERMAN BEACH DEFENSES

British X Corps Royal Engineers

The remainder of the British Engineer troops to land were the X Corps Troops, R.E., commanded by Lieutenant Colonel K. Brinsmead. The advance party of the 571st Army Field Company landed on D Day, but due to enemy interference was unable to make anything but a hasty reconnaissance before returning to the ship. The next morning, after preliminary mine clearance and work on approaches, it landed again, this time with its vehicles. The remainder of the company and the equipment were unloaded on D plus two. Work was done to clear the harbor, and by D plus four, an oil tanker had come in and partially unloaded, and a 200-foot berth prepared for an ammunition ship.

The area had been quiet until D plus 5, at which time the entire company was called out to defend the town. The 571st was about 500 yards from the center of town and was never engaged by the enemy, the only trouble being snipers and intermittent periods of harrasing by a battery of nebelwerfers. After being relieved of its infantry role, most of the company returned to a position about a mile north of Red Beach, with road maintenance as the chief task. The platoon which was separated from the company remained in Salerno and was employed in the harbor and on various jobs in the town itself. By the end of September, the 571st was on the move again and was employed largely on road maintenance.

The 572nd Army Field Company landed on Green Beach near Salerno on the morning of 16 September, and by afternoon was settled in its bivouac area. At this time, there was some spasmodic shelling which continued for a few days. The company was occupied with road construction in the X Corps maintenance area, but progress was slow due to the numerous road blocks. On 19 September, mines were cleared along the southern outskirts of Salerno at sites chosen for gasoline storage. Additional work was also done on entrances to dumps in the 56th Division area, where the farm roads were becoming unpassable under the heavy volume of traffic. In places, the ditches were converted into culverts by using 44-gallon fuel drums and the roads widened by several feet for passing.



X CORPS ROYAL ENGINEERS
OPERATIONS

British X Corps Royal Engineers (cont'd).

Additional work was undertaken on the Mango road, a third-class supply route running from Ponte Cagnano through the village of Ogliara to Salerno. On 25 September, the unit moved to a new location near Ponte Cagnano and the 47th Company Pioneer Corps was attached to the 572nd for operations. The work consisted of widening hair-pin turns, filling shell holes and watering roads to prevent excessive dust. On 1 October, the unit constructed its first operational Bailey bridge in Italy, a 120-foot, double-single bridge north of Baronissi. At the north end of the bridge, a crossing was made over the railroad where a masonry arch had been blown. At the time the Volturno was reached, the 572nd was occupied in operating water points at S. Severino and Nocera, maintenance of the S. Severino-Nocera and the Nocera-Sarno roads, lifting minefields in that area, and clearing debris in Palma and Nola.

The 573rd Army Field Company also landed at Salerno on 16 September. Soon after landing, the company was attached to the 23rd Armored Brigade and moved with it to a bivouac concentration area at Maiori. The first few days were spent preparing for the advance through the mountain pass north of Maiori. After reconnaissance was made, the hilly road to the top of the pass was improved. Roads were swept as the troops advanced. By 27 September, the troops had reached Sala, where a bridge had been destroyed. A 40-foot, single-single Bailey was open to traffic by 0700 hours the next morning.

The brigade pushed rapidly on and captured the bridge at Scafati before it could be demolished. The only serious blocks from there to Naples occurred at Torre Annunziata, where many houses had been blown onto the road. These were cleared by bulldozers without much difficulty, but the extensive demolitions on the Autostrada compelled the troops to use the inferior coast road as their axis.

Only minor obstacles were encountered until the Corps reached a blown bridge a few miles north of Naples. This was bridged the same night with a 60-foot, double-single Bailey, and, except for scattered mines, the road was clear from there to within a mile or two of Villa Litterne. The first crater on this road required two small Bailey bridges, but, as the equipment was so scarce, a detour was made which was not very satisfactory, though enabling guns and the leading elements of the brigade to get through. The same practice was followed at the next large crater. Just at that time, however, the rains started and the company had to start bridging gaps. The final obstacle before reaching the Volturno was a bridge over the Regi Lagni, which was replaced at night under harrassing small arms fire. No casualties were sustained, however, and the 573rd Company was then withdrawn for rest, leaving the command of the 23rd Brigade.

A detachment of the 570th Corps Field Park Company was ashore on D Day to handle engineer supplies and equipment. On subsequent days, the remainder of the company joined it and bivouacked in the tobacco factory on the beachhead. The 570th continued to run supply dumps, repair numerous machines of all types, and its mechanical equipment shifted many thousand cubic yards of Italian soil. The first dump to be opened was in the tobacco factory behind the Salerno beachhead lines, where thousands of tons of supplies and Bailey bridging were handled. A mobile workshop detachment was among the first groups to enter Salerno itself, and there it helped with the harbor work and town utilities. For a short period, it defended a sector of the line; one workshop officer afterwards proudly displayed a bullet hole in his trousers.

About this same time, the driver and assistant driver of one of the engineer trucks came across an ambulance which had just been hit. They carefully picked their way over to investigate and found the driver wounded. They gave him what first aid they could, then put him in his ambulance. Although the radiator had been hit and the water had run out, they managed to get the ambulance through the shellfire to the main beach hospital. No one would take over the ambulance, so after the wounded driver had been put into the hospital, they drove it back, still without water, to where they had found it. Later, these same two engineers were charged with illegally driving an ambulance.

The Royal Engineers, now up to the Volturno, prepared for the next attack—the river crossing.

451st Engineer Depot Platoon

At 0930 hours on D Day, six enlisted men of the 1st Platoon, 451st Engineer Depot Company landed at Salerno. They were followed about four hours later by the remainder of the first section of the platoon, consisting of one officer, First Lieutenant Donald L. Brown, and five enlisted men. Two engineer depots were immediately set up, one on Red Beach, the other on Green Beach. Very little supplies arrived until D plus 1, however, when material was brought in by DUKW's. The first item ashore was a 40-gallon fire extinguisher. For the most part, the rest of the early supplies were sandbags for fortification work, lumber for bridges, tools and sign painting equipment.

The depot was under the control of the 531st Engineer Regiment, but the only accounting necessary was a record submitted of the incoming and outgoing tonnage. On D plus 3, a main depot was opened near the railroad station at Paestum, but the issue of supplies from the beach dumps continued.

SECTION II

451st Engineer Depot Platoon (cont'd)

On 21 September, the remaining twenty-nine men of the 1st Platoon arrived from Africa, and helped to consolidate the first three dumps into one near the Sele River. The first Allied rail shipment in Italy was made to this dump from Paestum. Four railroad cars were pulled by a locomotive made out of a 2½-ton truck with train wheels attached. In October, the dump was moved from the Sele River to Avellino. Italian civilians were hired during the latter part of September, and this greatly facilitated depot operation, since the 451st platoon was not a very large unit.



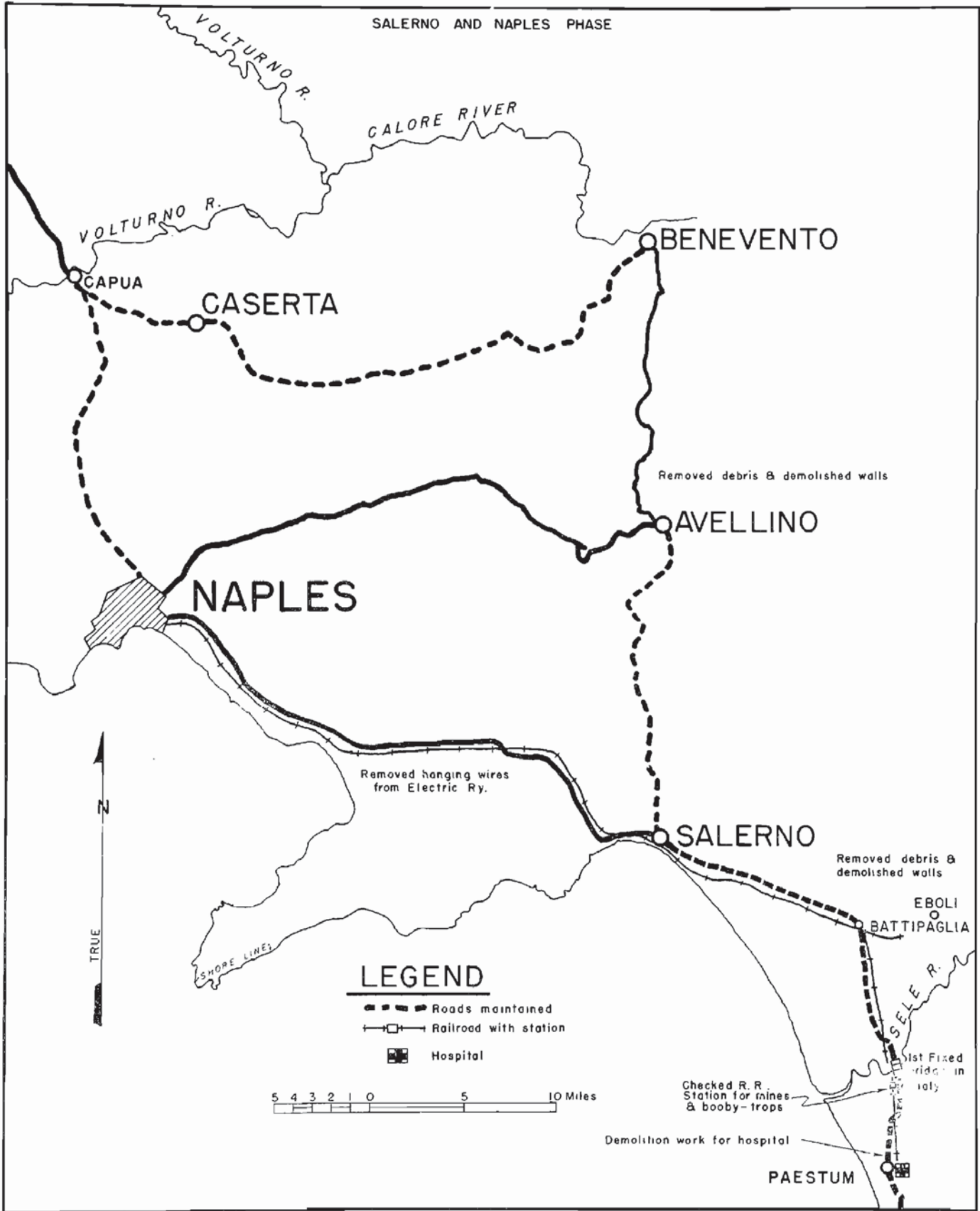
THE FIRST ALLIED RAILROAD ENGINE IN ITALY

337th Engineer General Service Regiment

The 2nd Battalion of the 337th Engineer General Service Regiment landed on Red Beach, near Paestum at 1630 hours on D Day. The battalion was employed primarily to assist in the unloading of supplies on the beaches and the setting up of dumps, as well as the maintenance of roads, clearance of mine fields, and the expedition of troop and supply movements. It was not possible to do much the first few days, because of delay in landing the battalion's equipment. When it finally was unloaded, the individual companies of the battalion were assigned work in the forward areas where occasional small arms fire by snipers was encountered, but no casualties were suffered.

On the third day, the 2nd Battalion was alerted for combat duty; information had been received that the enemy was preparing a counterattack to eliminate the beachhead. Accordingly, the units of the battalion took up defense positions. On 14 September, Company "D" moved to an area about one and one-half miles east of Paestum, near the foot of the Mount Soprano Range, and "dug in". The following day, during an air raid, an enemy plane was forced to escape over the range, and on its way, dropped a 500-pound bomb in the bivouac area, resulting in the death of four enlisted men and the wounding of seventeen others. Active combat, however, did not become necessary and the menace of the approaching Eighth Army caused the enemy to pass to the defensive. The battalion then resumed its engineer work.

The 1st Battalion and Regimental Headquarters left Mers-El-Kebir, Algeria, on 15 September and arrived in Italy on 21 September, promptly joining the 2nd Battalion. The regimental commander was Colonel W. L. Medding.



337 TH. ENGINEER REGIMENT
OPERATIONS



RAILROAD STATION AT BATTIPAGLIA



33RD'S BRIDGE AT GOTTOMINARDO

SALERNO AND NAPLES PHASE



IIITH. ENGINEER COMBAT BATTALION
I20TH. ENGINEER COMBAT BATTALION
OPERATIONS

337th Engineer General Service Regiment (cont'd).

During the drive from the beachhead to the Volturno River, the 337th maintained Route #18 from Paestum through Salerno to Avellino, Route #7 from Benevento to Naples and numerous laterals involving approximately 180 miles of road. The maintenance of this road network required the operation of three separate quarries, and the repair of an Italian rock crusher and its accessory hydro-electric power plant. In all, approximately 3,000 cubic yards of rock were produced and used on the road system. On these routes, the unit constructed fourteen fixed bridges with a total length of 956 feet (average length: 68 feet). Of these, the Sele River bridge was a major construction job and the first fixed bridge constructed in Italy by United States Army units. It was of trestle bent construction, sixteen spans, 240 feet long, and was constructed between 22 and 28 September 1943. The greatest problem was the lack of heavy equipment and bridge-building material.

The unit was also called upon to mark an extensive minefield, and to clear mines for exit roads on the beach north of Agropoli. The Albanella Railroad Station was checked for mines and booby traps. The 337th performed demolition work for the 16th Evacuation Hospital near Paestum, removed hanging wires from approximately sixty miles of electrified railroad between Battipaglia and Naples, repaired tracks in the Battipaglia railroad yards, removed debris and demolished walls in Battipaglia, Eboli and Avellino, and constructed and painted 541 road signs.

2616th Engineer Utilities Platoon

The forward echelon of the 2616th Engineer Utilities Platoon, under command of 1st Lieutenant Oliver W. Leonard, landed at Paestum on D Day. The duties on the beachhead differed little from its previous tasks. The platoon supplied the Army Command Post with lights, phones, signs, etc. On 21 September, thirty-one men of the rear echelon landed and joined the forward echelon of the platoon and among many other projects they installed a 32-man portable shower unit, operated a water point dispensing 30,000 gallons daily, painted numerous signs, and constructed fly-proof mess huts for both the forward and rear echelons of the Army Headquarters. Civilization did not ever quite disappear - not even on a beachhead.

111th Engineer Combat Battalion

The 111th Engineer Combat Battalion, commanded by Lieutenant Colonel Oran P. Stovall, landed with the 36th Division on D Day near Paestum. The battalion helped open the beach exits and the roads beyond, and the division was able to reach Altavilla, Roccadaspide, and Agropoli, the immediate objectives, by 12 September. For the next two days the 111th was employed as infantry until the enemy counterattacks were repulsed. Defensive wire was put up and fortifications installed for the artillery. As the main part of the Army advanced northward, the 36th Division was made Army Reserve to guard the beaches at Salerno.

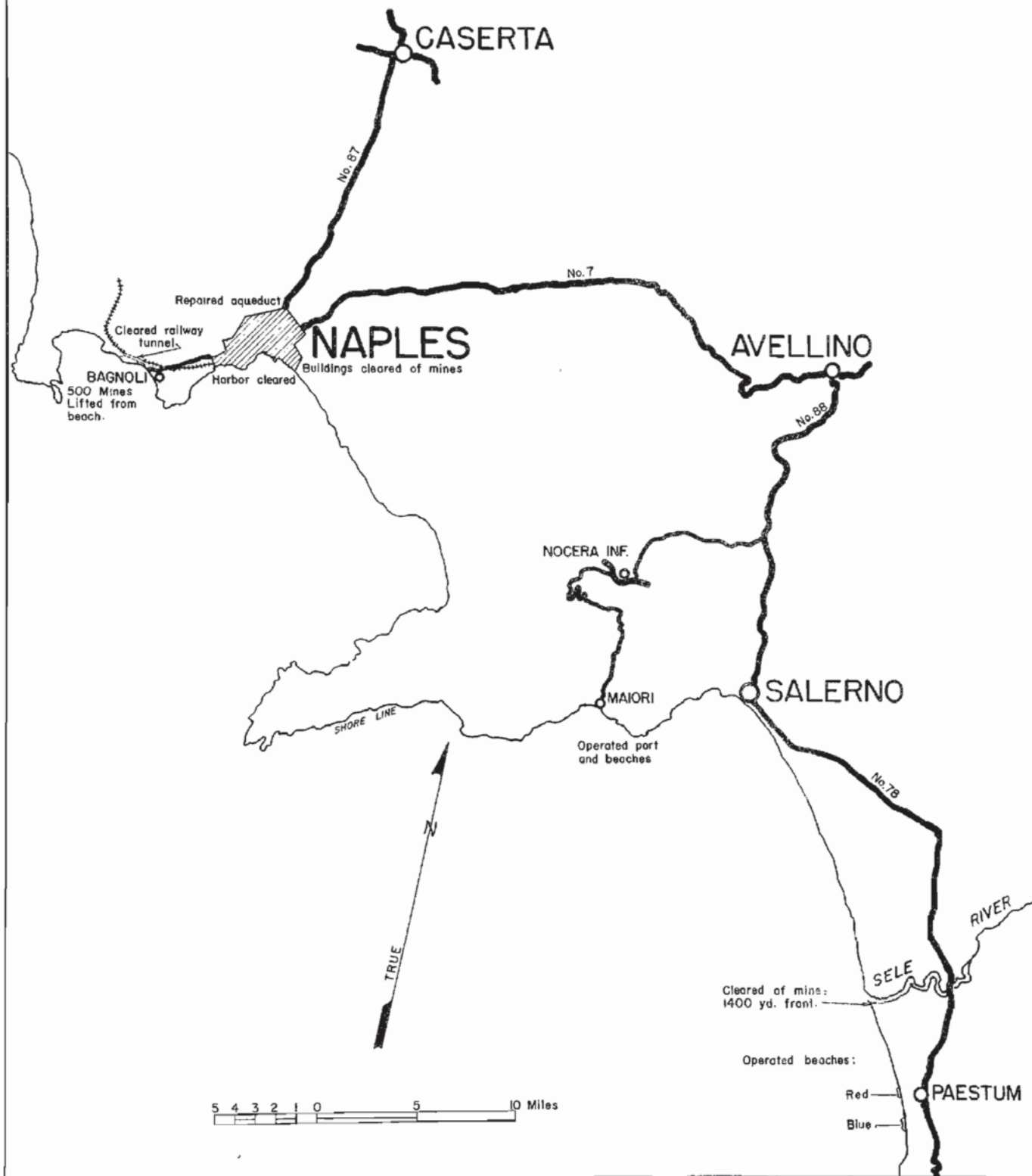
120th Engineer Combat Battalion

The 120th Engineer Combat Battalion, under the command of Lieutenant Colonel Franz, landed with the 45th Division near Paestum early in the morning of D plus 1. The 120th made the first Allied crossing of the Sele River and aided the movement of the division toward Persano and Battipaglia. During the counterattacks on 13 - 14 September, the entire battalion was used as infantry to help repel the enemy. Then, in the subsequent advance, the 120th opened up Route #91 up to the junction with Route #7, Route #7 to S. Angelo, the Torella - Mirabella road, and Routes #90 and #7 to Benevento. The 45th Division was a short way north of Benevento when the forces further to the west hit the Volturno on 6 October. Throughout the length of this road net, the 120th Battalion had cleared mines, created bypasses, and, when necessary, built bridges.

540th Engineer Combat Regiment

On 9 September, the ships carrying the troops of the 540th Engineer Combat Regiment, commanded by Colonel George W. Marvin, sailed into the Gulf of Salerno for the invasion. As the regiment formed the landing party for the 45th Division, which was in reserve, it did not land until D plus 1. There, it debarked and assisted in the landing of the initial troops and equipment, organized Red and Blue Beaches and operated them until the end of September.

SALERNO AND NAPLES PHASE



540TH. ENGINEER COMBAT REGIMENT
OPERATIONS

540th Engineer Combat Regiment (cont'd).

All the necessary engineer work essential to an amphibious operation was accomplished with dispatch. The beaches were heavily mined, and at the mouth of the Sele River, on a 1400-yard frontage, 2,200 Tellermine and improvised wooden box mines were lifted. Although approximately six per cent of them were booby-trapped, the regiment suffered no casualties.

During the initial phase of the operation, the 540th was under heavy artillery fire, in addition to almost hourly bombing and strafing attacks by enemy aircraft. On 12 September, Company "F" of the 2nd Battalion participated in a special mission with the Rangers under command of Colonel Darby. The landing took place at Maiori, Italy, a few miles from the town of Salerno, and Company "F" operated the small port and beaches, unloaded huge quantities of supplies and equipment and aided in establishing a firm foothold.

On 13 September 1943, the unit was released from attachment to the 45th Division, and attached to VI Corps. On 2 October, the day after Naples was taken, the regiment entered the city and bivouacked in the Villa Aquario, a city park located on the waterfront, overlooking the Bay of Naples. Colonel Marvin reported to the Commanding General, 6665th Base Group, and the regiment was assigned the task of clearing the harbor of Naples.

The port had not only been bombed by Allied planes, but the enemy, in its retreat, had demolished nearly all of the remaining port facilities. With dynamite, bulldozer, crane and shovel, the regiment filled craters, hacked roads through debris, cleared the docks and levelled the buildings for storage space. Within twenty-four hours, ships were being unloaded in the harbor, and the Port of Naples once again came to life. The normal pre-war tonnage for the harbor was 8,000 tons. Twelve days after Naples was captured, its facilities had been restored to the extent that its capacity was 3,500 daily.

By 9 October, the 60 feet of destroyed aqueduct had been repaired. The railway tunnel near Bagnoli was cleared, and many buildings were checked and deloused for booby traps. On the beaches of Bagnoli, a suburb of Naples, approximately 500 Tellermine were lifted. This particular minefield contained two mines for every yard of frontage, and also contained 29 "S" mines. This was considered by the regiment as the most difficult minefield it ever encountered, because of the great number of booby traps. But the minefield was cleared in record time with only one minor casualty. The 540th remained in Naples until its work was accomplished and Base Section troops took over the remaining engineering projects.



540TH ENGINEERS CLEARING NAPLES

36th Engineer Combat Regiment

The 36th Engineer Combat Regiment, commanded by Lieutenant Colonel George W. Gardes, did not come ashore at Salerno until 10 September. Shortly after, it got its first taste of infantry combat. Company "H" was designated to accompany a small task force to effect a landing in the vicinity of Amalfi with the Rangers and embarked from the beaches the morning of 11 September. Late that evening, the regiment received orders to alert a battalion for infantry combat, and the 3rd Battalion (less Company "H", with Company "D" attached) was selected for the job.

Other units of the regiment were immediately put to work on engineer missions. Company "A" was assigned construction of a bypass around the Route #18 bridge over the Sele River. Company "B" worked on Sele Airport runways and guards. Companies "C" and "E" were sent to reinforce the 531st Engineer Shore Regiment, which had received heavy casualties during the initial stages of the assault. Company "F" was assigned to work the ammunition dump.

The 3rd Battalion moved out about 0300 on 12 September and took position on the left flank of the 45th Division in an area approximately three miles north of the Sele and astride Route #18. The attack was launched at 1000 hours and immediately met with strong enemy resistance; the enemy counterattacked with tanks and artillery. The following day was confined principally to a heavy artillery duel and patrolling activities. During 14 September, the artillery fire continued and the enemy launched a tank attack which was beaten back, Company "D" accounting for one M-IV German tank with light weapons. During the evening a patrol under Captain Lombard captured a German scout car with three German soldiers who had wandered a bit too far behind our lines. On that day, the battalion was reinforced by Company "B" of the 120th Engineers. After six days in the line, the 3rd Battalion was relieved and returned to the regimental bivouac.

On 12 September, the regiment was assigned the task of crossing the Sele River. The 1st Battalion, with the assistance of Company "B" of the 16th Engineers, put in a floating bridge about 300 yards upstream from the blown highway bridge. Another bridge was built about 200 yards downstream from the highway bridge. Rails were removed from the railway bridge at that point, and additional ballast was added for the roadway. This work continued during 13 September. At 2100 hours that day, the regiment was called upon for another battalion for combat. The 2nd Battalion (less Company "D", with Company "A" attached) was alerted and moved out about midnight to take position with the 36th Division in a sector 2500 yards long, about three and a half miles east of Route #18 on the south bank of the Sele.

During 14 September and throughout the morning of the next day, the enemy placed this position under heavy shell fire and made one tank attack in some strength. The line held and the tanks were repulsed by the action of a heavy weapons squad with a 37 mm gun. The enemy again resorted to artillery shelling which lasted through 16 September. Late that day, the Germans brought up reinforcements which proceeded to detruck on the north side of the river in plain sight of the battalion's position. The enemy was immediately brought under fire and suffered several killed and wounded. The fact that no enemy attack developed was probably due to this action.

During this period (14 - 16 September), the regiment's patrols operated from one to two miles into enemy territory and gathered much valuable information. In darkness, Companies "B" and "C" laid mines and strung wire in front of the 36th Division positions. On the morning of 17 September, the 2nd Battalion was relieved by the 141st Infantry and returned to the regimental bivouac.

By 19 September, the initiative was definitely in the hands of the Allied forces and an advance to the north began. The 36th Engineers followed directly behind the division engineers on road and bridge work. The missions for the 36th on roads extended through Battipaglia, north and west. Elements of the regiment were working on restoration of the railroad line between Paestum, Battipaglia, and Eboli. Headquarters and Service Company personnel successfully constructed two railroad prime movers out of 2½-ton trucks, by replacing regular wheels with railroad flatcar wheels. Clearing towns of debris from our own bombings constituted a fair portion of the engineer work done.

On 24 September, the 3rd Battalion was assigned a road building job over the mountain pass northwest of Montecorvino. The 2nd Battalion was attached to the 3rd Infantry Division to support its advance from Montecorvino to Acerno. The 1st Battalion continued with its road maintenance work. On 30 September, the 3rd Battalion was relieved of the road work north of Mercato and moved up to take over maintenance of roads north of Montella. The progress between Montecorvino and Montella was extremely slow and laborious. The enemy had destroyed every bridge which had no natural bypass and left behind many mines. Even without any obstructions, this section of road would have been very difficult for passage of army supplies because of the steep grades and hairpin turns. Work was continued on the "Burma Road" from Acerno to Montella, and during the first days of October the 2nd Battalion pushed on further north with the 3rd Division to the vicinity of Montemarano.

SALERNO AND NAPLES PHASE

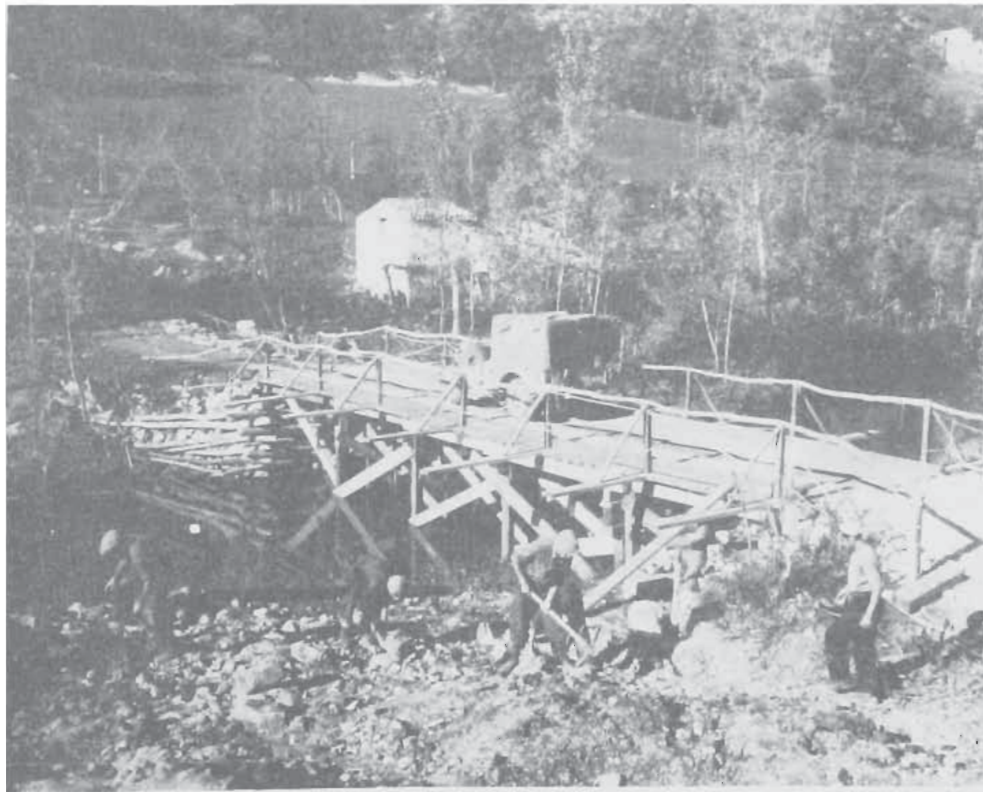


36 TH. ENGINEER COMBAT REGIMENT
OPERATIONS

SECTION II



36TH ENGINEERS BUILD BRIDGE NEAR PRATA



ITALIANS CLEAN UP AFTER CONSTRUCTION

SECTION II

36th Engineer Combat Regiment (cont'd).

On 3 October, the 2nd Battalion was relieved of attachment to the 3rd Division, but continued its mission of road repairs up to Avellino. The 3rd Battalion moved north to take over the roads north of Montella. The enemy had done a thorough job of demolitions along Route #7 (east of Avellino). With drainage becoming a serious problem, it became necessary to bridge or culvert every road block. On 4 October, the 3rd Battalion moved two miles north of Atripalda, and took up road work on the north branch of Route #7. Several large demolitions on this road made it necessary to bypass substantial portions of it in order to reach Benevento. To accomplish this, the 1st Battalion was moved to the vicinity of Montesarchio to develop the required road net. The regiment was in this position when the Volturno was reached.



405TH TANKER SPRINKLING AN AIRFIELD

405th Engineer Water Supply Battalion

Company "A" of the 405th Engineer Water Supply Battalion, commanded by Lieutenant Colonel Milton P. Barschdorf, landed on the beach at Paestum on 11 September 1943. With Company "A" came a crew from Headquarters and Service Company and a rotary well drilling rig. A bivouac area was selected and water supply operations begun. On 14 September, the 405th established its first water point on the continent. At this time, landing strips and airfields became virtually untenable because of the accumulation of dust. Company "A", attached to VI Corps, placed all available tank trucks on a 24-hour schedule hauling and spraying water.

On 28 September, the Company, less a detachment of one officer and thirty-four enlisted men who remained attached to VI Corps, reverted to Army control. On 25 September, a detachment of two officers and sixty enlisted men from Company "C" arrived to assist Company "A" until after the fall of Naples. On 3 October, the Company "C" detachment moved into Naples, attached to a provisional group that later became the Peninsular Base Section.

In Naples, the Balla, an industrial underground aqueduct, was the only remaining source of water, the other aqueducts supplying the city system having been destroyed by the retreating enemy. The civilian population (600,000 had remained throughout the devastation) was desperately in need of water. Three thousand gallon capacity canvas tanks were immediately set up at strategic spots within the city and water was hauled from a point on the Balla aqueduct to these civilian water points. It was necessary to hand-chlorinate directly into the tank trucks as the detachment had no purification equipment.

SECTION II

405th Engineer Water Supply Battalion (cont'd).

On 4 October, the balance of Company "C" arrived. As troops moved into the city, more water points had to be established, and the distribution platoon began hauling water on a 24-hour schedule. Many German 3,000-liter steel tanks were found and used to supplement the fast-dwindling supply of canvas tanks. Because of the unusually large number of distribution points, it was often impossible to assign more than one or two men to operate the points, and for the first week this personnel was kept busy from early in the morning until late at night trying to satisfy a never ending line of civilians armed with buckets, jugs, "vino" bottles, and any other type of container that could hold water. The water operators weren't too happy--they agreed unanimously that the largest containers always had the smallest necks.

As the Army moved up to the Volturno, Company "C" continued to supply the city of Naples, and Company "A" to supply Army troops.

39th Engineer Combat Regiment

The 39th Engineer Combat Regiment, commanded by Colonel Thomas C. Green, began landing at Paestum on 15 September 1943, and two days later started operations. Companies "A" and "B" furnished outguard patrols, emphasis being placed on the protection of the VI Corps Command Post. The regiment took over the repairing and clearing of Highway #19 from Eboli to Auletta and some of the smaller roads through and near Eboli. Bypasses were built over canals and streams, using culverts for the passage of water. At the crossing of Route #19 over the Sele River, a Bailey bridge was replaced with the first timber bridge the regiment constructed in Italy.

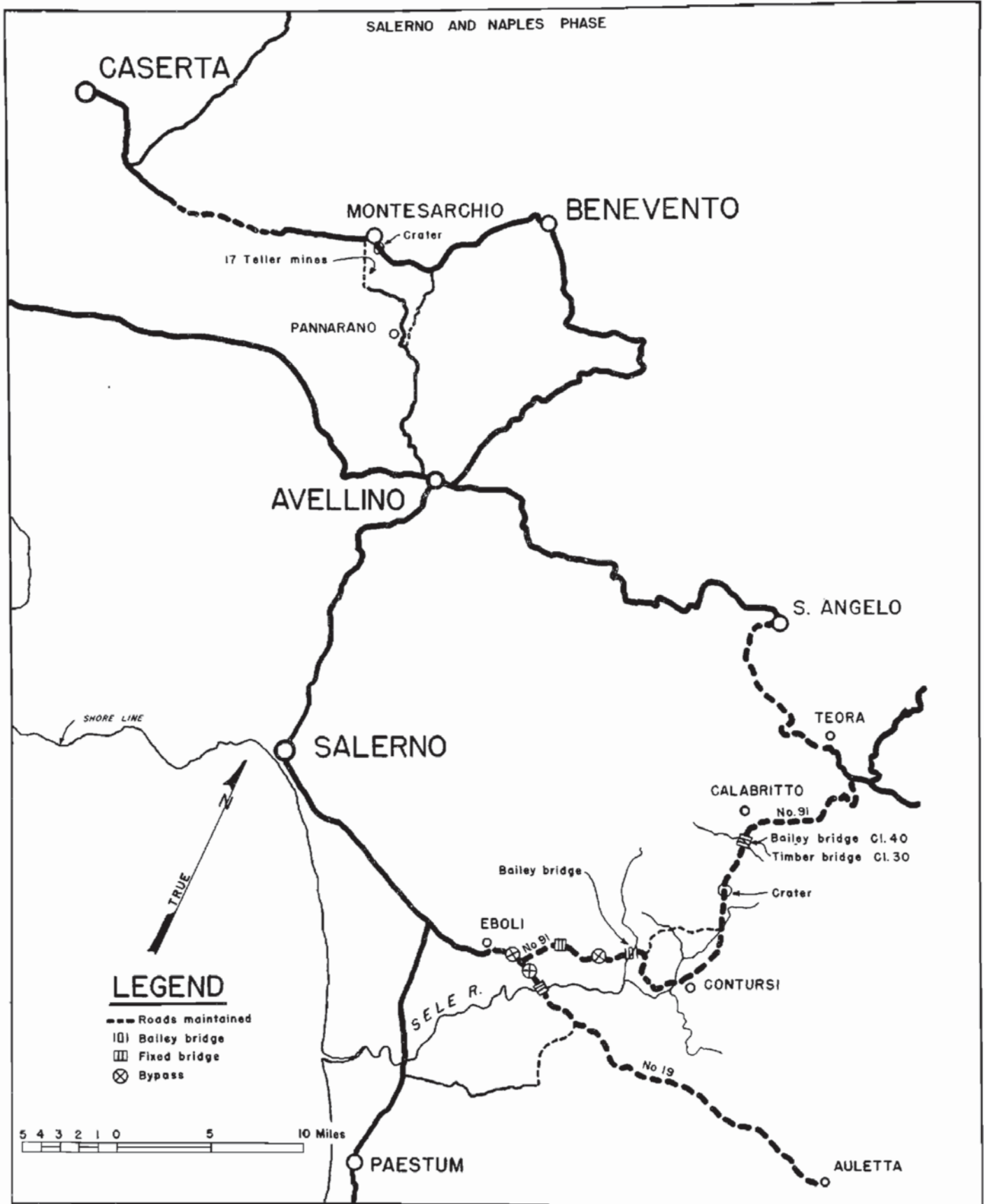
By 25 September, the road net had been expanded to include Route #19 from Eboli through Contursi and north to Calabritto; bypasses installed along the route; and a 100-foot, Class 40, triple-single Bailey at Contursi replaced with a Class 30 timber bridge. On 4 October, the road net included the main route Avellino - S. Angelo - Pannarano - Rocca Bascherana. Mines had to be removed, abatis cleared, bypasses and culverts constructed. From the time the 1st Battalion landed in Italy until 6 October, the 39th erected two Bailey bridges and three fixed bridges (one of which had steel stringers; the others wood). Three culverts were built; three large craters filled; and seven bypasses totalling 1,900 yards constructed.

7th British Armored Division Royal Engineers

The 7th British Armored Division began landing on the beaches of Salerno on D plus 5. The division engineer units, under the command of Lieutenant Colonel Hunter, were the 4th and 621st Field Squadrons and the 143rd Field Park Squadron. The 7th Division followed the 46th Division up Highway #18 to Nocera, at which point the armor spearheaded the advance. The plain was crossed, then the division turned north and advanced through San Giuseppe and Nola on Highway #7 and on to Naples. From Naples the division swinging north on Route #7, went through Fertilia to the Volturno River at Grassanise. All along the route, the engineers had cleared the obstacles from the path of the advancing armor, filled craters, constructed bypasses and lifted mines.

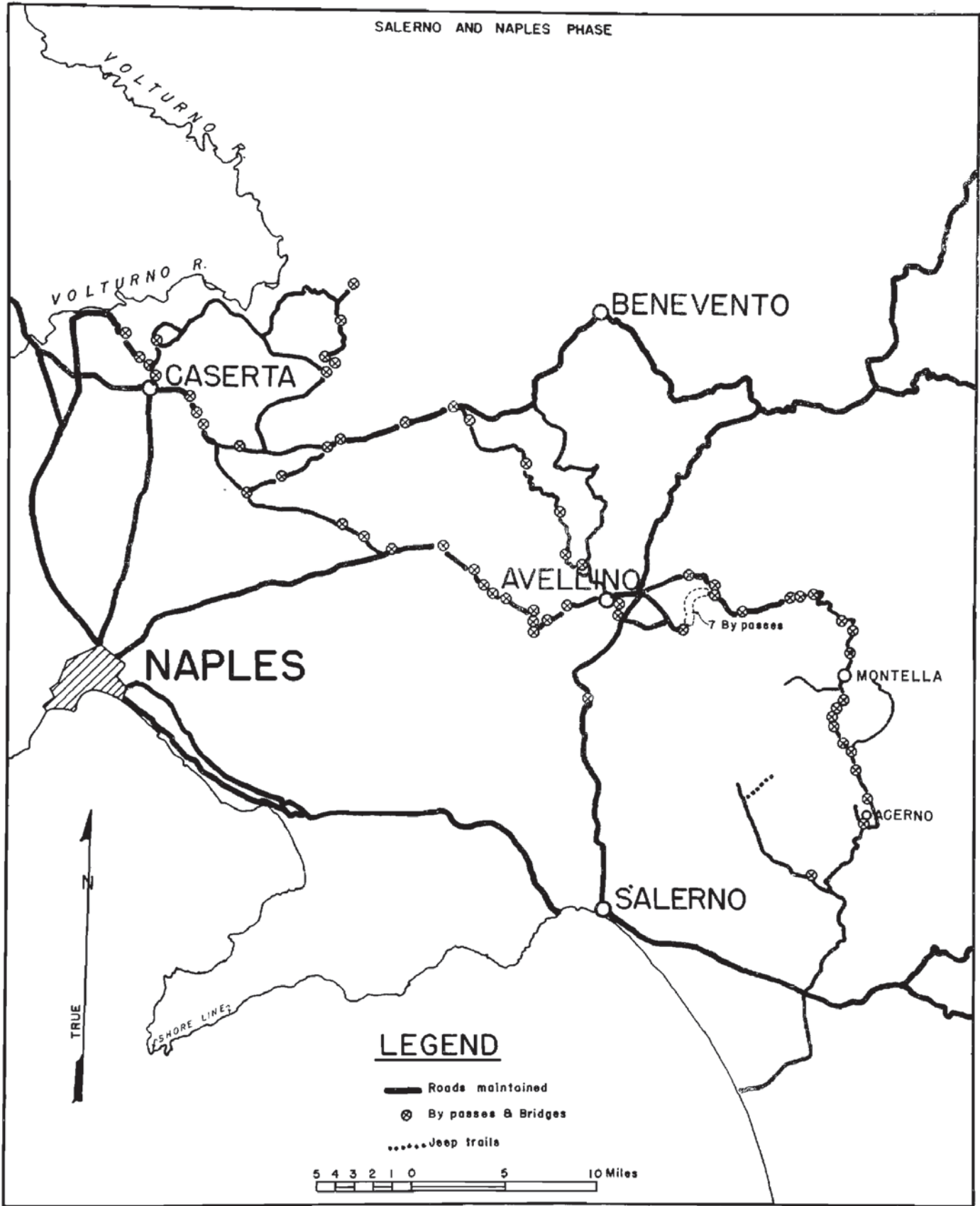
1712th Engineer Map Depot Detachment

On D plus 7, the 1712th Engineer Map Depot Detachment, commanded by 1st Lieutenant E. D. Parks, landed near Paestum and established a temporary depot in a railroad station. Two days later, it moved to a large tobacco warehouse and started setting up the depot that was to handle the maps until after the fall of Naples. For the first time, the unit was entirely on its own. There were no ranking "non-coms" with the detachment, so a temporary chain of responsibility had to be inaugurated. Over 100 tons of maps had to be transferred from aboard ship to the depot, properly sorted, inventoried and stored. Next, a system of stock records was devised. In spite of all this, the depot received and issued map stocks without a break.



**39TH ENGINEER COMBAT REGIMENT
OPERATIONS**

SALERNO AND NAPLES PHASE



10TH. ENGINEER COMBAT BATTALION
OPERATIONS



109 TH. ENGINEER COMBAT BATTALION
 OPERATIONS

10th Engineer Combat Battalion

On 18 September, the 10th Engineer Combat Battalion arrived in Italy and assembled near Battipaglia. By this time, the campaign was one of pursuing a retreating enemy. As the 10th went up the road through Acerno and Montella, nearly every bridge and culvert had been destroyed--mines, road craters, tree blocks, booby traps and demolished buildings blocked all roads. It seemed only the weather was in the Allies' favor. Owing to the absence of rain, vehicles were able to move off the roads, making it possible to "bulldoze" bypasses adjacent to the obstructions. It was only when the traffic was canalized to the road by rugged terrain that difficulties were encountered.

Several timber and Bailey bridges were built, but only when absolutely necessary. Because of the rapidity of the advance, the extra hours required to bring up bridging could not be spared. The pace for the whole advance was set by the mine detector operators and bulldozers. From the time of its landing in Italy until the Volturno was reached, the 10th Engineer Battalion constructed sixty-nine bypasses, three Bailey, two treadway and three wooden trestle bridges. It was impossible to keep a record of the number of mines and road blocks removed.

66th Engineer Topographic Company

The Survey Platoon of the 66th Engineer Topographic Company, under the command of Captain Vernon E. Woodard, arrived in Italy from Sicily on 20 September. It worked with artillery units until 5 October, when it rejoined the balance of the company which had by now arrived in Italy as part of the Fifth Army. The company as a unit did not function during the first phase of the Italian campaign since it was not set up and ready for operations until 7 October 1943.

109th Engineer Combat Battalion

The 109th Engineer Combat Battalion (less Company "A") landed in Salerno harbor on 21 September 1943, and assembled in the vicinity of Coffi to await its equipment. The battalion commander was Lieutenant Colonel Robert E. Coffee. Company "A", combat loaded, arrived the next day and moved north with the 133rd Infantry Combat Team on 26 September. From 27 September to 1 October, the company maintained the road from Teora through S. Angelo and Torella to the Calore River, cleared mines along this road, and prepared the major ford across the Calore River southeast of Montemarano.

By now, the rest of the battalion had received its equipment and, at the time of the fall of Naples, was moving north into the lines with other elements of the 34th Division. During the first week of October, the division headed northeast from the area near S. Angelo and Montemarano to the banks of the Volturno just south of Caiazzo. The division moved over two main routes, one running from Montemarano through S. Giorgio, Benevento, Montesarchio, and Airola, and the other from Montemarano through Altavilla, Irpina, Cervinara, and Airola. The 109th repaired and maintained these two routes during a week of continuous rain. All bridges had been destroyed by the enemy and it was only the most strenuous exertion on the part of all elements of the battalion that made it possible for the division to reach the Volturno by 6 October.

472th Engineer Dump Truck Company

The 472th Engineer Dump Truck Company, commanded by Captain James M. Copeland, arrived at Salerno Bay on 27 September. Most of the company debarked that day, but the terrific rains, which had started the day before, together with the choppy water, prevented the landing of all the motor vehicles. Four vehicles and a few men had to remain aboard ship until the next day, when they joined the company at the bivouac area a few miles inland. The company's work assignments were to assist general service and combat engineer units in the task of keeping supply and communication routes open from Army Rear up to the front lines, to transport engineer supplies and equipment from base dumps to forward dumps and to work sites, and to haul other materials for the construction of dumps and hospitals. This work was well organized by the time the Fifth Army reached the Volturno.

343rd Engineer General Service Regiment

The 343rd Engineer General Service Regiment, commanded by Colonel R. B. Dunbar, made a landing approximately twelve miles south of Salerno on 28 September 1943. It took over the road and bridge maintenance on the Eboli, Teora and Romita roads. Bridge construction was begun at Battipaglia with a Class 40, 50-foot, timber bridge to replace the existing Bailey bridge. As VI Corps moved north to Benevento and the Volturno River, the regiment moved with it, keeping the lines of communication open under the adverse conditions of weather and terrain.

SECTION II

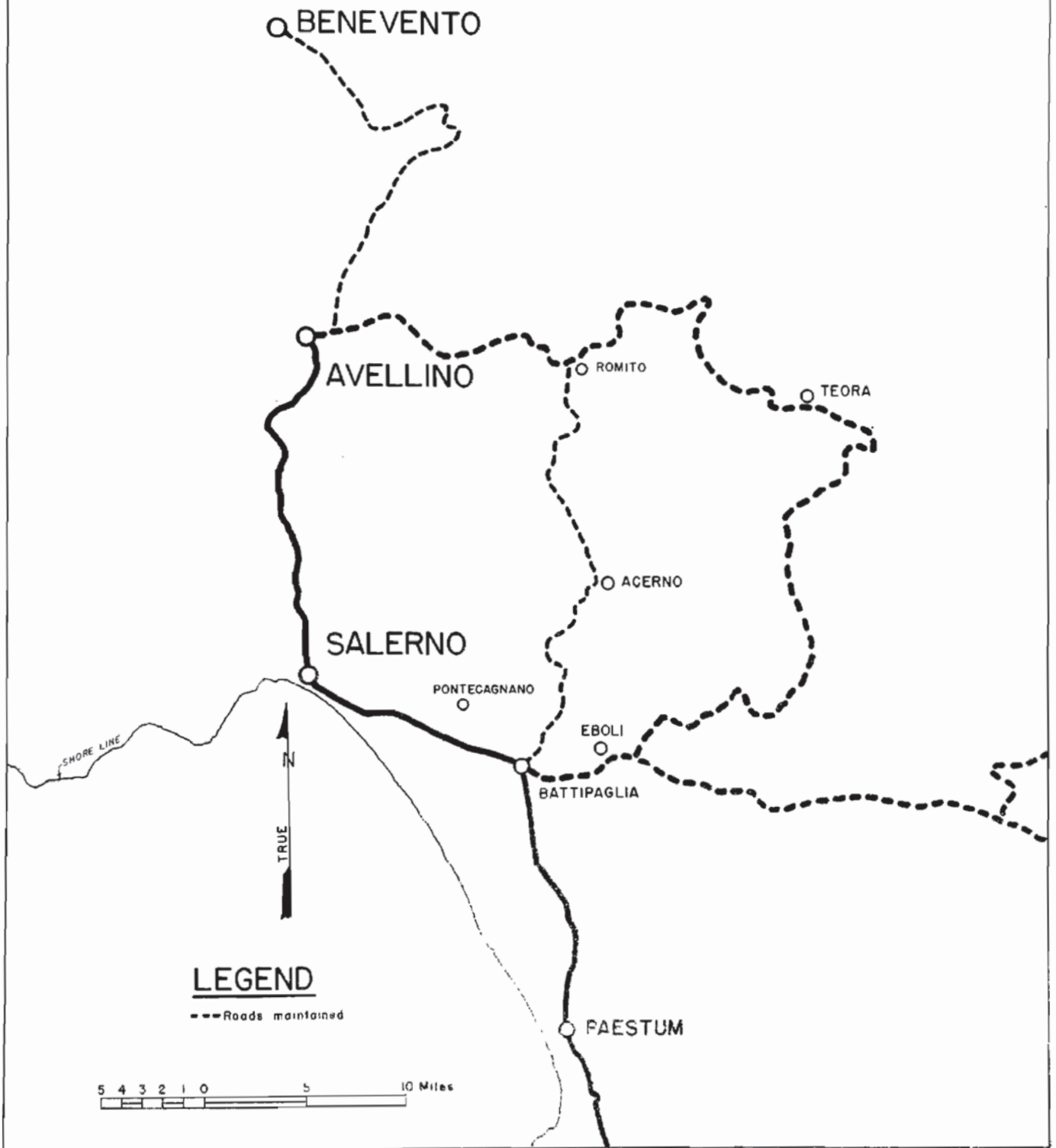


ENGINEERS CUTTING BRIDGE TIMBERS



A FORD NEAR PRATELLA

SALERNO AND NAPLES PHASE



343 RD. ENGINEER GENERAL SERVICE REGIMENT
OPERATIONS

SECTION II

307th Airborne Engineer Battalion

The 2nd Platoon, Company "A", 307th Airborne Engineers, landed at Maiori with the Ranger Force on 10 September. Lieutenant Tribe, platoon commander, was Town Major of Maiori during the period 13 - 23 September. Starting on 24 September, the Rangers pushed north, the platoon assisting in the advance. The Rangers met the 325th Combat Team in San Egidio on 29 September.

The rest of Company "A" had landed with the 325th Combat Team at Salerno on 14 September and had moved to Albanella on 17 September. On 21 September, Company "A", less the 2nd Platoon, loaded on LCI's, went to Maiori and pushed inland to San Egidio on 29 September, meeting up with the 2nd Platoon. The next day, Company "A" moved to Castellamare, where it rejoined battalion headquarters.

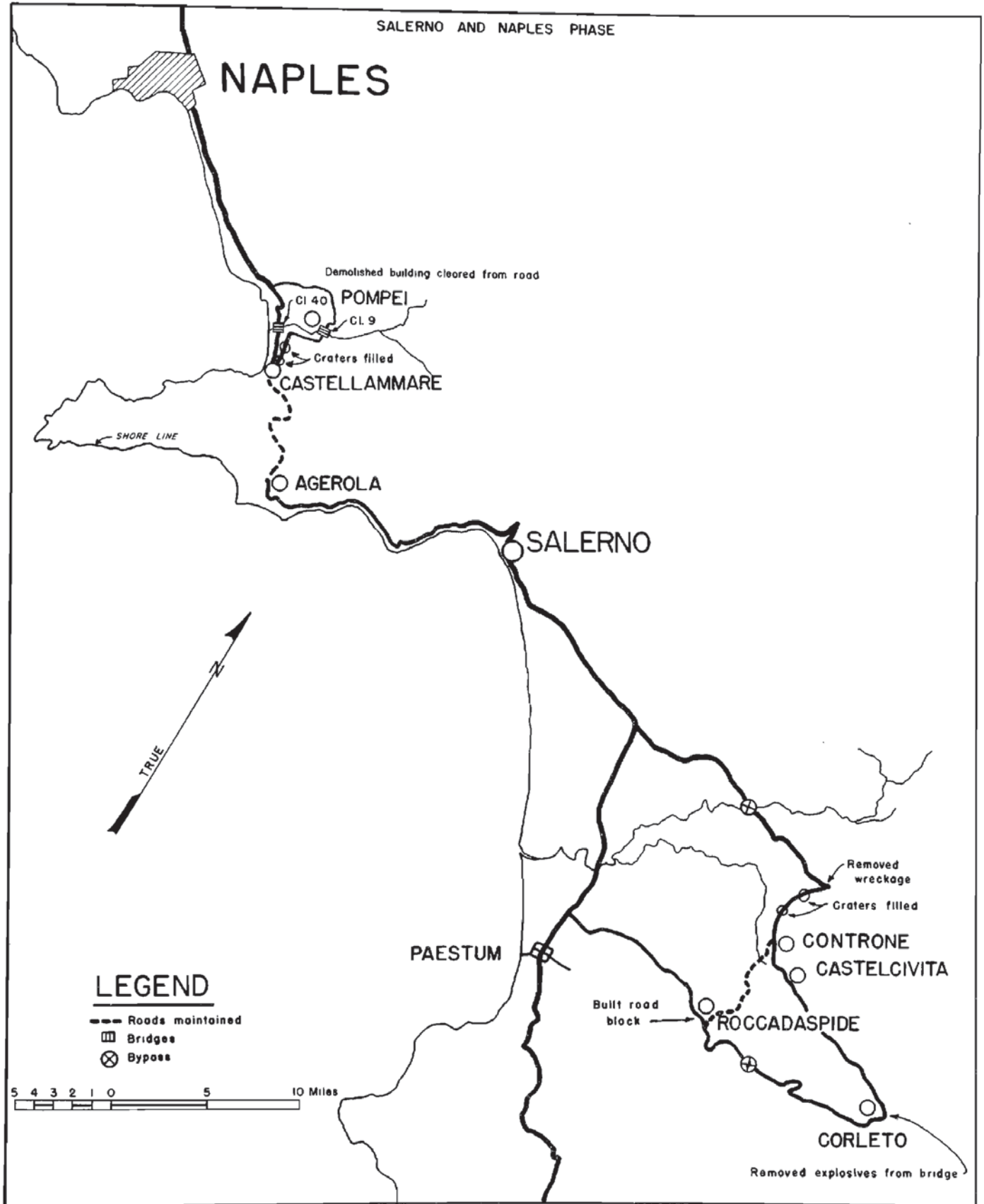
Company "C", less the 1st Platoon, reinforced the beachhead at Salerno on 13 September. The company arrived at the 504th Combat Team's objective near Altavilla on 17 September and stayed there until the Combat Team was relieved by the 36th Division two days later--at which time it reverted to battalion control. The 1st Platoon of Company "C" jumped the night of 14 September, one group near the town of Frigento, well behind the German lines, the other group just southwest of Solofra. For fourteen days, the first group wandered around in enemy territory, cutting railroad tracks and wires, planting mines and causing general confusion. On 28 September, the group bivouacked at Montella, where it joined up with the beachhead forces. The smaller group conducted reconnaissance behind the enemy lines until 20 September, when it met some British patrols five miles east of Salerno.

Company "B", after going to Sicily, had jumped near Salerno early in the morning of 16 September to assist the 505th Combat Team in reinforcing the beachhead. The company was released from attachment to the Combat Team on 21 September and reverted to battalion control.

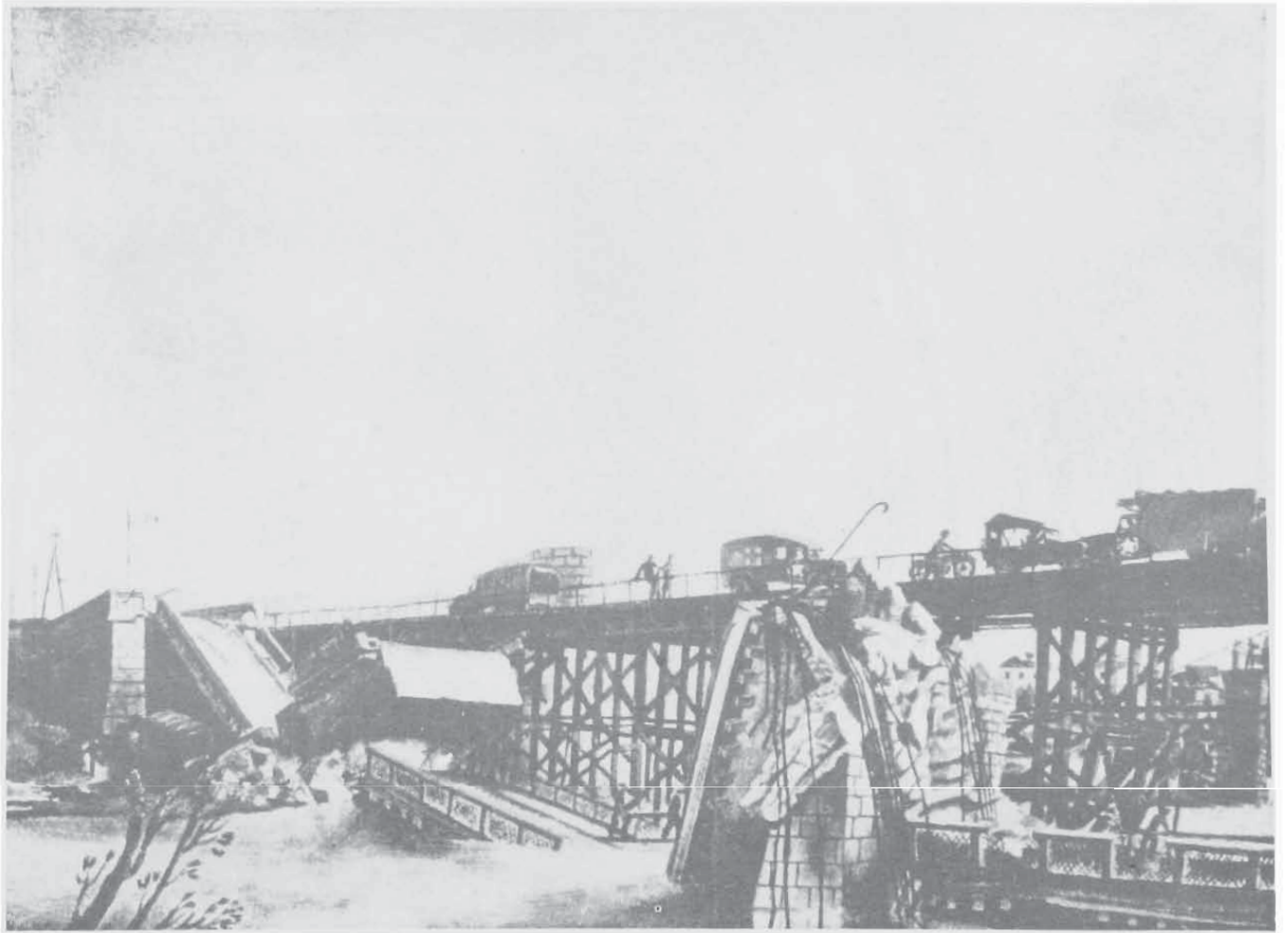
307th Battalion Headquarters, preceded by the battalion commander, Lieutenant Colonel Robert S. Palmer, had landed at Salerno on 23 September. It then moved inland by truck to Controne, remained there until 26 September, and then went to a location near Paestum. On 28 September, the headquarters proceeded to Argola, where a detachment from Headquarters and Service Company built a bridge over a gorge on the division's main axis of communication. The bridge was later strengthened to carry 2½-ton trucks.

On 29 September, the battalion went into bivouac in Castellamare. Roads leading north were cleared and craters filled, and a Class 40 and a Class 9 bridge were built over the Sarno River to replace demolished spans. On 1 October, Battalion Headquarters moved into Naples, and the next day was joined by Companies "A", "B", and "C". The units bivouacked in Italian infantry barracks in Naples. Checking for mines and booby traps and utility reconnaissances were done by the 307th in every part of the city.

SALERNO AND NAPLES PHASE



307TH AIRBORNE ENGINEER BATTALION
OPERATIONS



CAPUA BRIDGE CONSTRUCTED BY 1ST BATTALION, 343RD ENGINEER GENERAL SERVICE REGIMENT

Original Water Color by
T/3 Frank D. Duncan, Jr.

SECTION III

VOLTURNO TO MAY 11TH

	<u>Page</u>
A. Tactical Situation	27
B. Work at Engineer Headquarters	29
C. Unit Operations	32

SECTION III

VOLTURNO TO MAY 11TH

A. Tactical Situation

Beyond the Volturno, the outlook for the Fifth Army was not very reassuring. To the north, stretched the most difficult terrain (tactically speaking) in Italy--about as fine a defensive sector as could be found in Europe. After reaching the river on 6 October, the Army spent a week regrouping for the attack. The British X Corps was on the left flank: the 46th Infantry Division next to the sea; the 7th Armored Division in the middle; the 56th Infantry Division on the right flank next to the American VI Corps' 3rd Infantry Division. To the east of the 3rd Division, the 34th Infantry Division held the center, and the 45th Infantry Division the right. Further east was the British Eighth Army.

The attack was scheduled for the night of 12 - 13 October 1943, and at 2000 hours on the 12th six hundred guns along the 40-mile front started firing. The Germans were set on their heels. At first, they did not have time to set off their demolition charges. As their retreat became slower, however, they had much more opportunity for destruction and used it to the greatest advantage. Abatis, booby traps, "S" mines and Tellermines, new undetectable mines of concrete, wood and plastics were the order of the day. In many places, Tellermines could not be detected because of the highly mineral soil content and the abundance of shell fragments. Nevertheless, the Allies slogged on through the fall rains and mud and edged around the persistent and omnipresent obstacles.

Soon the Volturno was crossed a second time (in its upper reaches, the river flows south before it turns and goes westward to the sea). The rain continued, washing out temporary bridges and bypasses, flooding roads and bivouac sites. Naturally, the advance was slow; so again, as had happened so often in Italy, the Germans had time to construct a defensive line. The Winter Line, which the enemy was now finishing, was contacted early in November when Fifth Army forces reached the lower Garigliano River and the mountains above Mignano and Venafro.

The drive from Salerno to the Winter Line had progressed slowly but relentlessly. The position of the Fifth Army at the beginning of November, seemed an appropriate spot in which to stop, rest and regroup. The attack on the Winter Line was scheduled for 1 December, but before that time a third corps supplemented the Army's forces. II Corps was brought into the line between the British X and the American VI Corps on 17 November 1943. The line-up then, from left to right, was as follows:

X Corps	46th Infantry Division 7th Armored Division 56th Infantry Division
II Corps	36th Infantry Division 3rd Infantry Division
VI Corps	34th Infantry Division 45th Infantry Division

Later in November, the 1st Armored Division was added to II Corps. When the attack was made, the main force was exerted up the Liri Valley. The effort was begun with an even larger artillery concentration than the one which preceded the Volturno crossing. Eight hundred guns barked out as the Allies moved forward. The Fifth Army again advanced slowly, painfully. Often the terrain prevented the vehicular movement of supplies, so mules were used. Often the mule trains could not go forward, so pack trains of soldiers were formed. In this manner, food moved to the front and casualties were carried back to the hospitals, until Cassino was reached about 15 January. When the Fifth Army arrived below Mount Cassino, it had been still further augmented, this time by the French Expeditionary Corps, consisting of the 2nd French Moroccan Infantry Division and the 3rd Algerian Infantry Division. The Fifth had now become a cosmopolitan army with four nationalities: American, British, French and Italian.

SECTION III



THE ROYAL PALACE AT CASERTA

Tactical Situation (cont'd).

On 17 January, X Corps launched an attack along the lower Garigliano in an attempt to take the high ground across the river. The river was crossed and bridges erected, but the offensive force was not powerful enough to maintain the complete bridgehead and was forced to make a partial withdrawal. A synchronized attack across the Rapido by Combat Command "B" on 20 January met a similar fate. By 23 January, the Fifth Army units in both sectors were again in much the same positions that they had occupied before the attack began.

On the top of Mount Cassino, the aged monastery of the Benedictines kept a vigilant eye on the fortified town below and the Garigliano and Rapido River valleys. Cassino became the keystone of the entire operation. Spearheads dashed forward, only to be dulled and bent by German counterattacks. The enemy also successfully parried all out-flanking attempts. After weeks of fighting, the Liri Valley was renamed "Purple Heart Valley".

It was during this period that the operation on the beaches near Anzio was inaugurated and many Allied troops were diverted to that sector. The troops left on the Cassino front were, by now, dog-tired. They had worked and fought under the most difficult of conditions. In January and February, Cassino was rubble-ized; from 15 February on, the monastery itself came under fire, as the Americans, and then the New Zealanders, continued to try to force the strong point.

On 15 March, the largest attack yet attempted was unleashed against Cassino. All the air power in the Mediterranean Theater was turned loose in an attempt to smash to bits the enemy's greatest strong point. A vicious bombing a month before had done the defenders no apparent harm. Now all along the front the war on the ground paused. This was the Great Experiment. On the one hand, the classic defense of commanding terrain, seemingly impregnable to ground attack; on the other, the greatest massed air onslaught of the war in direct tactical support of ground forces.

Below on the battlefield, doughboys waited hopefully; artillerymen, ammunition piled high beside their pieces, anticipated their turn; and engineers on the muddy roads laid down their tools and halted the dump trucks. Every ear in the valley was cocked to catch the sound. A locust-like drone came from afar. An uncertain murmur swelled gradually; a steady, pulsing throb came from the south, as the specks began to appear, high and small against the sky.

First came the mediums, B 25's and B 26's, in flights of a dozen or more. High above them the fighters flashed like quicksilver, trailing vapor. The bombers came over the target and the flights turned left. Bellies opened, the planes dropped their loads, then wheeled south once more and were gone, only to be replaced by another flight. After the mediums came the heavies, the Fortresses, and around and through them pierced the endless stream of dive bombers. All morning, the hill and the valley across the river were livid with the bright orange of bursting explosives. The strikes of the first bombs were visible, but those that followed were hidden in the billowing ocean of grey and white smoke. There were more than three thousand sorties that morning, and it was hard to believe than any human being could survive such punishment and retain his sanity.

After the bombing, the cannonade began. Every field piece in the valley (American, British, New Zealand, French), ranging from 75's to 240's, joined in one of the greatest concentrations of firepower ever directed on one target. For sheer intensity, the papers said, the barrage surpassed El Alamein, Sevastopol, Stalingrad. It was an artilleryman's dream. The target was in plain view, the range point-blank, the calibration exact, the registration perfect. For over an hour, the artillery continued, until the gunners dripped sweat in the chill air. Monastery Hill seemed to jump with the terrible detonation, seemed to writhe as if under the blows of a massive club. Great holes appeared in the 16-foot-thick walls of the Abbey; its towers crumbled, and huge chunks of masonry flew through the shrapnel-laden air.

When the barrage ceased at noon, the doughboys moved in. Surely there were no defenders left with any fight in them; surely it would be but a question of bodies and prisoners, perhaps very few of either. But it did not turn out that way. Plenty of defenders remained; plenty of fight, plenty of guns, ammunition, OP's and plenty of perseverance. Machine pistols and Spandaus hemstitched patterns up and down the draws to greet the Allied infantry; the mortar crews brought out the nebelwerfers from sheltering caves; the 88's were once again ready for business as if nothing had happened. The resistance, if anything, was more spirited than before. On the night of 17 March, for example, a New Zealand captain, haggard and grey after two nights and a day of house-to-house, room-to-room fighting said, "I started out with one hundred and fifty blokes yesterday. I'm down to forty-seven now. One sniper got thirty-four of my men in a single day before we could reach him." Allied troops were still unable to capture the Cassino stronghold.

Tactical Situation (cont'd).

II Corps was now strengthened by the arrival of the 85th and 88th Infantry Divisions. The static period that followed was marked only by patrol activity probing the enemy defenses, and rest and preparation for a new assault. During the winter, the army had not moved north appreciably, but the terrain that was taken should not be measured by a mileage scale. The weather had been miserable, both for personal comfort and for communication. The enemy had been strong and determined. The fighting had taken place in terrain that had served the Italian War College as an army maneuvering ground. The Italians had used this area and practiced defending it, for they considered it the ideal terrain for defense. It was impregnable. No one had ever penetrated this defense. The Germans were determined that no one should now. Those were the conditions which the Allied armies in Italy had to contend with; it was through such a defense that the Fifth Army had inched.

B. Work At Engineer Headquarters

The period from 6 October 1943 to 11 May 1944 showed an increase in both engineer troop strength and casualties, and at the same time a lessening of the available replacements. During this period, forty-eight officers of company and field grade were sent to the United States as cadres for new engineer units. It was agreed that these officers would be replaced with 1st and 2nd lieutenants from the United States, but only fifty per cent of the expected replacements arrived. A shortage was thus created which was never wholly rectified, because unit shortages caused by the shipment of these officers were made up from the monthly quotas allowed the theater. Lack of Engineer Officers effected even the redeployment program over a year later.

Engineer Headquarters, Fifth Army, was activated, by General Order #46, Fifth Army Headquarters, on 26 March 1944 at Presenzano, Italy, and the personnel of the Engineer Section, Headquarters, Fifth Army assigned thereto. All engineer units in Fifth Army other than divisional units were assigned to the headquarters which was designated a major command of the Army with an operational and administrative status similar to a division.

Before moving to Presanzano on 15 January, Fifth Army Headquarters had been at the Royal Palace at Caserta (since 23 October) and before that at Naples (10 - 23 October), the next stop after Paestum. The day after the reorganization of the Engineer Section, on 27 March, the Army Command Post moved to San Marco, where it was located at the time of the final attack on the Garigliano River line. On 29 December 1943, Colonel Boatner left the Engineer Section and his position of Deputy Engineer was taken over by Colonel Paxson. Lieutenant Colonel Rowland became the Executive Officer.

During the first part of the campaign, engineer units under direct control of the Army Engineer had been assigned areas, and all work in these areas was initiated by the commanding officers responsible. Shortly after the Volturno was crossed, this system was changed. Often the engineer units had done work beyond what was considered military necessity, and had sometimes been unaware of work priorities. To rectify this, a system was initiated whereby all work to be done by the units was specifically allocated by the Operations Section. For this purpose a work order form and a progress report form were devised (see "Appendix I", Diagrams #2 and #3 for Engineer Work Order and Unit Progress Report Form).

In addition to the written information kept in the files, the newly organized Operations and Engineering Section kept a series of maps showing roads maintained and fixed bridges built by Army Engineer units and an album of photographs of jobs done. Each Sub-section officer kept his own file of material.

While the Army Command Post was at Caserta, a road numbering system was devised. The main highways had Italian numbered designations and these were adhered to throughout the campaign, but the numerous secondary (and smaller) roads had no simple identification. At first, towns on the routes were used, but this proved inadequate. The new system employed offshoot numbers. The main highways provided the basic number, and to these were added additional numbers of two digits. Below the Volturno, numbers below twenty were used; above the river numbers larger than twenty. In this way, a separate number was given to every road. Whenever a secondary road intersected two main highways, the westernmost highway provided the base number. All roads planned for use were numbered well ahead of the front lines (for a sample Operation and Engineer road number map, see Appendix I, Diagram #4).

Work at Engineer Headquarters (cont'd).

During the phase from 6 October 1943 to 11 May 1944, 968 miles of roadway was maintained. Although the principal roads were asphalt surfaced, many were narrow gravel and rockbound macadam roads. Effective damage by bombing, demolition, and shelling occurred on about 10 miles of roads, particularly in and around the cities of Naples, Capua, Benevento, Vairano, Avellino, Cancellor-Annone, Venafro and Isernia. Until these areas were cleared up and repairs made, it was often necessary to open parallel secondary roads or construct detours to pass traffic (for a complete list of all work orders issued during the entire Italian Campaign, see "Appendix J", Part #2). Two hundred fifty-one bridges of all types were constructed. Captain Kenyon devised a second classification chart during the winter of 1943-44, this one a load classification chart for fixed bridges made with steel stringers (see "Appendix I", Diagram #5).

During this time, the units developed expert mine and booby trap teams. These teams cleared thirty-one dumps, hospitals, cemeteries, and bivouac areas, conducted ten mine schools, and removed demolition charges from three bridges, in addition to checking and marking minefields within their own areas.

The city of Naples had depended upon the blown Serino Aqueduct for its water. A preliminary reconnaissance by the 109th Engineer Battalion had disclosed three major destroyed sections. At these three sites, the 540th and 343rd Engineer Regiments and a group of Italian laborers were put to work simultaneously. On 11 October, after four days work, the aqueduct was operating again.

During the half-year spent between the Volturno and Garigliano Rivers, Army installations produced 96,839,000 gallons of water. During this same time, the Army Fire Marshal had the problem of protecting scattered built-up dump and troop areas without the necessary equipment. However, with one Peninsular Base Section fire unit attached to Fifth Army, and with close support of other Peninsular Base Section units, five stations were operated. One British station and six Quartermaster gas dump fire trucks gave close support and cooperation.

After the arrival of Company "A", 84th Engineer Camouflage Battalion, in October and Company "D" in January, the Camouflage Officer coordinated their activities and inspected their work. In addition, the Camouflage Officer worked with the Engineer to advise on camouflage potentialities for cover plans of future operations. He then supervised the camouflage units' execution of the cover plan directives.

The Operations and Training Sub-section changed in form considerably during the winter. On 14 November, Lieutenant Colonel William F. Poe joined the Section and took charge of it when Lieutenant Colonel Rowland left. The Sub-section dropped the "Training" from its title and became "Operations and Engineering" (O. & E.) on 19 January 1944. When the detachment of the 85th Engineer Heavy Ponton Battalion arrived on 16 October, its commanding officer, Major L. A. Perdue, became the Tactical Bridge Officer of the Engineer Section and worked out of the Operations Sub-section. The Tactical Bridge Officer's duties were to know the disposition of all tactical bridging, the Engineer's policy on the use of tactical bridges, and to allocate the materials accordingly. With Major Perdue's departure in December, Captain Porter, Commanding Officer of Company "A", 85th Engineer Heavy Ponton Battalion, took his place. To do much the same work for engineer equipment, an Equipment Officer, Captain Reuther, was added to the section. The Equipment Officer continuously inspected equipment to insure its correct maintenance and usage. During the winter, 1st Lieutenant John T. Strittnatter joined the Section. After a month, he changed to supply work. Captain DeNoya from Supply worked in the Operations Section until Engineer Training became an S-2 Section responsibility.

On 20 January 1944, the functions of mapping and intelligence were divided. In the mapping department, Lieutenant Colonel A. H. Dowson and Captain J. A. Adderly, both British officers, worked under Lieutenant Colonel Ladd. The mapping duties continued as in the beginning of the campaign. In this Sub-section a drafting pool was established for the entire Engineer Section.

The Plans, Intelligence and Training Sub-section was organized under Lieutenant Colonel William P. Jones, Jr. Captain Colvocoresses and 1st Lieutenant Henry L. Clark worked at the Fifth Army Photo Center and disseminated day-by-day interpretation reports to combat elements. 1st Lieutenant Shirley later replaced Captain Colvocoresses when the latter returned to the United States in February. Lieutenant Graham worked in the Engineer Office preparing 1:50,000 road and trail maps of all the Fifth Army Area between the Garigliano River and Rome. Detailed terrain studies were prepared for inclusion in all Army Field orders issued during the period. More and more photo interpretation reports were used as a basis for preparing these terrain studies. Captain DeNoya, in charge of training, aided in the reorganization and training of engineer units, supervised research on equipment and recommended changes in Tables of Organization and Equipment. He also supervised the operation of Fifth Army Engineer Schools, and was in charge of the Engineer Section Library.

Work at Engineer Headquarters (cont'd).

The Supply Sub-section continued the same work it had done in the previous period. After the Anzio beachhead was established, a supply representative joined the Army Anzio Staff to take charge of the engineer depot and to supervise engineer supply on the beachhead. During the period up to 11 May, there were a few personnel changes in the supply section. Captain Gustav E. Peterson joined the section, 1st Lieutenant Strittnatter went to Supply from Operations, and after a short period, left the Engineer Section entirely. In January, Captain DeNoya went to Operations, as mentioned above, and Captain Moore joined Supply. Mr Raymond F. Jewett, Warrant Officer (Jg), was assigned to the section in March.

In addition to its normal work, the Supply Sub-section took charge of all Army Real Estate. Too many cooks, both in the Army Headquarters and the Engineer Section, finally made it necessary to make Real Estate the responsibility of one Sub-section. As the work became more complex, more time was demanded for the job. On 24 December, Captain Robert R. Steckroth was assigned to the Engineer Section as Real Estate and Assistant Supply Officer. His work was done under the supervision of Captain D. M. Bradley, Assistant Supply Officer, who had previously handled the Real Estate work. By May, forms had been developed for the requisition of property and certificates printed for Italians, whose property had been used, to present as claims against the Italian Government, which was to pay the occupation expenses.

Italian Artisans were hired in accordance with theater policies to aid the engineers. Each unit recruited its own laborers with the help of Allied Military Government. Where transportation was necessary, the workers were taken to and from their jobs in trucks belonging to the individual organizations. Noon meals were given in addition to a regular wage. The money was furnished the engineer units through the Engineer Supply Sub-section.

The British Increment had a new problem after the advent of the autumn rains. In rainy weather, the standard 3-ton General Service Bridge Truck (lorry) was incapable of using the bypasses built by United States engineers for 6 x 6 2½-ton trucks. At every demolition on the X Corps main supply routes, it either became necessary to expend a large amount of manpower and materials in constructing and maintaining all-weather bypasses or to erect a bridge. Within the Corps area, the only solution was the erection of numerous Bailey bridges, each a one-way bottleneck. During the autumn, X Corps expended approximately three times the amount of Bailey bridging used by VI Corps.

The problem of road maintenance continued to cause difficulty in the Corps rear areas until 15th Army Group placed British 14th Group Headquarters troops with four Army Field Companies under command of the Army Engineer. With the arrival of the II New Zealand Corps, comprising the 2nd New Zealand Division and the 4th Indian Division, a problem arose as to its support, for the formation had no corps engineer troops at all. To mitigate this, the 1108th Group, consisting of the 48th and 235th Engineer Combat Battalions, was placed in support, together with a British Corps Field Park Company.

After launching the attack across the Garigliano on 18 January and maintaining a shallow bridgehead over the river for ten weeks, X Corps left the command of the Fifth Army at the end of March, as did the New Zealand Corps. The 1st and 5th Infantry Divisions were the only large British units left in Fifth Army.

Before the Volturno-Cassino phase ended, several staff changes were made in the British Increment of Engineer Headquarters. Major Clements was replaced by Major Dryland; Captain Dearman took over operations; and Major Bruce was attached to VI Corps at Anzio, being replaced by Major S. B. Smith. At the end of March, Major Benn was released by Major R. T. Brain who remained until the end of April.

In January, when the French Expeditionary Corps joined the Fifth Army, Major Robert P. Prieur went to the Engineer Section as Liaison Officer between the Army Engineer and the French engineer units. With him were two enlisted men clerks. The Liaison Officer had no supply functions. In addition to coordinating the work of the French engineers and the American engineer units working with the French Expeditionary Corps (Company "F" of the 175th Engineer General Service Regiment and the 1st Battalion of the 344th Engineer General Service Regiment), he did all the requisite translation work; information bulletins and manuals were translated into French, and progress reports and requisitions into English.

C. Unit Operations109th Engineer Combat Battalion

From 6 October to 12 October, the 109th Engineer Combat Battalion, commanded by Lieutenant Colonel Robert E. Coffee, conducted reconnaissance, prepared plans and constructed approaches for the first crossing of the Volturno. On the night of 12 - 13 October, the 34th Division successfully crossed the river with the assistance of Company "C" of the 109th Engineers. Very close coordination was effected by different engineer units for this crossing. With some personnel of Headquarters and Service Company of the 109th, Company "A" of the 36th Engineers constructed an infantry assault bridge. The floats were inflated in the rear area and carried by a bridge train to the site.

Company "B" of the 109th worked with Company "B" of the 16th Engineer Battalion to construct a 30-ton treadway bridge. The engineers from the 109th Battalion moved to the site, prepared the approach and exit while the pre-inflated floats were moved to the river. The 16th Engineers then went in and constructed the bridge without incident. This bridge, named "Gopher Bridge", was 255 feet long and was constructed at night in four hours.

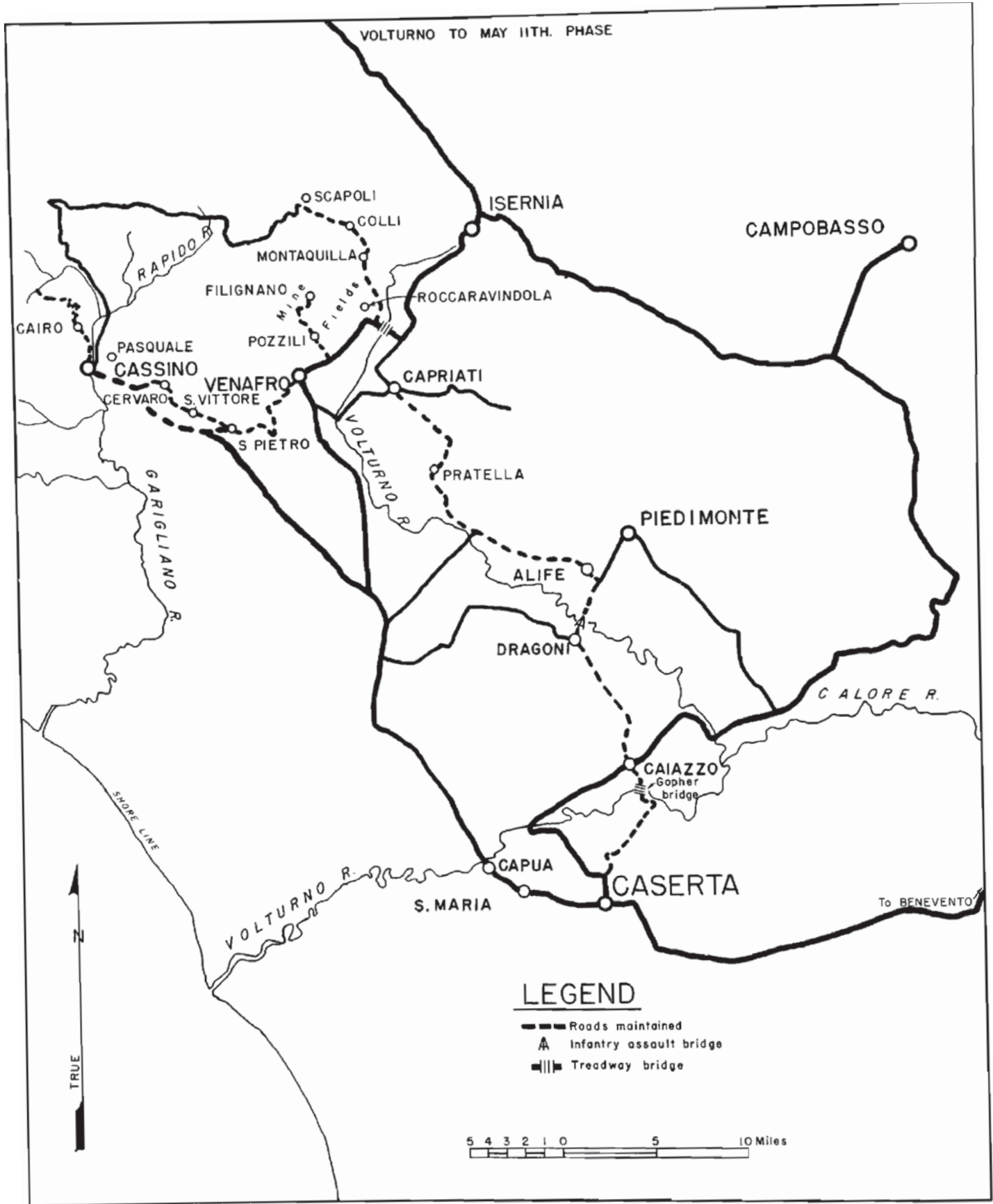
After the first crossing of the Volturno, it became the mission of the 109th to expedite the movement of the 34th Division northward through the Volturno River Valley. From 13 to 19 October, the division operated on the west bank of the river between Caiazzo and Dragoni. The unit cleared mines, repaired and maintained the Main Supply Route between the two above-mentioned towns, and began to prepare the approaches for the second crossing of the Volturno which took place on 20 October. On that date, Company "A" constructed an infantry assault bridge across the Volturno southeast of Alife, and Company "C" prepared approaches and exits for a 30-ton floating treadway bridge in the same vicinity.

From 20 October to 2 November, the division advanced from Alife to Capriati. The 109th cleared mines, repaired and maintained the Main Supply Route, and opened and improved infantry trails into the mountains east of the Volturno. This operation included a crossing of the Lete River, south of Prattela. The third crossing of the Volturno took place on 2 November, north of Capriati. The 109th supported the crossing by clearing lanes through minefields on both sides of the river, by constructing and maintaining approaches and exits to two fords, and by constructing a 30-ton floating treadway bridge.

After the third crossing of the Volturno, the 34th Division advanced as far as Filignano and Colli. From these two points it attacked toward the west, but continuous rains, rough terrain, and determined opposition from the enemy prevented other than local advances until the division drew back for a rest period on 12 December 1943. During the time the division was fighting in the mountains north of Venafro it was necessary to keep two routes of supply open, one running through Pozzili to Filignano, the other from Roccaravindola through Montaquila to Colli, thence across the Volturno to the eastern bank, across again to the western bank and west to Scapoli. Both roads were supplemented by numerous mountain trails to infantry positions.

Two additional crossings of the Volturno were initially effected by the construction of two fords, a foot bridge, an infantry assault bridge and a ferry. While Companies "A" and "B" worked on the Colli - Scapoli Main Supply Route, mountain trails, and the above-mentioned crossings, Company "C" repaired and maintained the Pozzili - Filignano road and the trails in that area. In both sectors, numerous minefields were encountered. During this period, engineering operations were handicapped by twelve days of continuous rain which flooded fords and bridges, washed out roads, bogged down transportation, and prevented necessary road and bridge construction.

From 12 December to 28 December, the 34th Division rested and trained in the vicinity of Alife. The 109th Engineer Battalion conducted courses in mine warfare for the infantry in addition to its own training program. On 28 and 29 December, the division moved to an assembly area near Venafro and prepared to re-enter the lines. During the period from 28 December to 22 February, the Battalion went with the advance from S. Pietro across the Rapido River to a point in the hill mass well beyond Cassino. The Main Supply Route, which was developed into two, one-way roads, went through S. Pietro, S. Vittore, Cervaro, S. Michele, Portella, and Cairo.



109TH. ENGINEER COMBAT BATTALION

OPERATIONS

SECTION III

109th Engineer Combat Battalion (cont'd).

Not only the 34th Division, but also the 36th Infantry Division, 4th Indian Division, II Corps, and elements of the French Division on the right flank used this route as the only one available to them. A crossing of the Rapido had to be made on this route and, to accomplish this, a 10-ton infantry assault bridge was constructed on the Pasquale - Cassino road about one quarter of a mile north of Cassino. Five miles of new roads were constructed, as well as jeep and mule trails.

In addition to its road work, the 109th constructed air strips and observation posts, cleared S. Vittore and parts of Cassino of rubble, removed about one hundred mines, assisted infantry patrols and furnished water to the division and its attached units. A great deal of this work was under direct enemy observation, and consequently the fire was heavy. From 22 February until 17 March 1944, the 34th Division underwent a period of rest and training. On 17 March, the first units of the 109th Engineer Battalion arrived at the Naples staging area enroute to the Anzio beachhead.

10th Engineer Combat Battalion

In common with the other engineer units, the 10th Engineer Combat Battalion was faced with two main obstacles after 6 October: the river and the weather. The crossing of the Volturno was started early on the morning of 13 October 1943. The assault units of the 3rd Division were put across by using assault and rubber reconnaissance boats, pneumatic floats, Navy rafts and ropes. Tanks used a ford, an improvised light bridge of pneumatic floats carried the jeeps and other divisional traffic passed over an 8-ton pneumatic float treadway bridge.

After the river had been crossed, "Husky Bridge" was constructed by the 16th Armored Engineers north of Trafilisco with the approaches prepared by the 10th Engineers. It was a 30-ton bridge, 270 feet long, constructed in daylight under a blanket of smoke. Into this smoke, the Germans poured a continuous stream of artillery, but at no time was the construction halted because of the shelling. When the unit boundaries were later changed, this bridge served most of the tanks and heavy vehicles of the British X Corps.

While the 3rd Division was moving forward, a new problem was encountered. All demolished bridges had to be reconstructed for flash floods (the days of bulldozing the banks in and bypassing the obstacles were gone). Because of the number of demolished bridges and the shortage of bridging equipment, it was necessary to improvise. The 10th Engineers usually placed culverts of steel or wood positioned to carry the water and covered them with earth.

Culvert construction became extremely common throughout Italy. But blown bridges were not the only problem. The 3rd Division was advancing almost entirely on secondary roads which the continuing rains made almost impassable. Hundreds of truck loads of rock from quarries and demolished Italian houses were spread on the road surfaces to keep traffic moving. From the Volturno on, the 10th constructed two bridges and 67 bypasses. On New Year's Day, 1944, after months of wading around in the mud, the unit moved to Pozzuoli, in preparation for the move to Anzio.

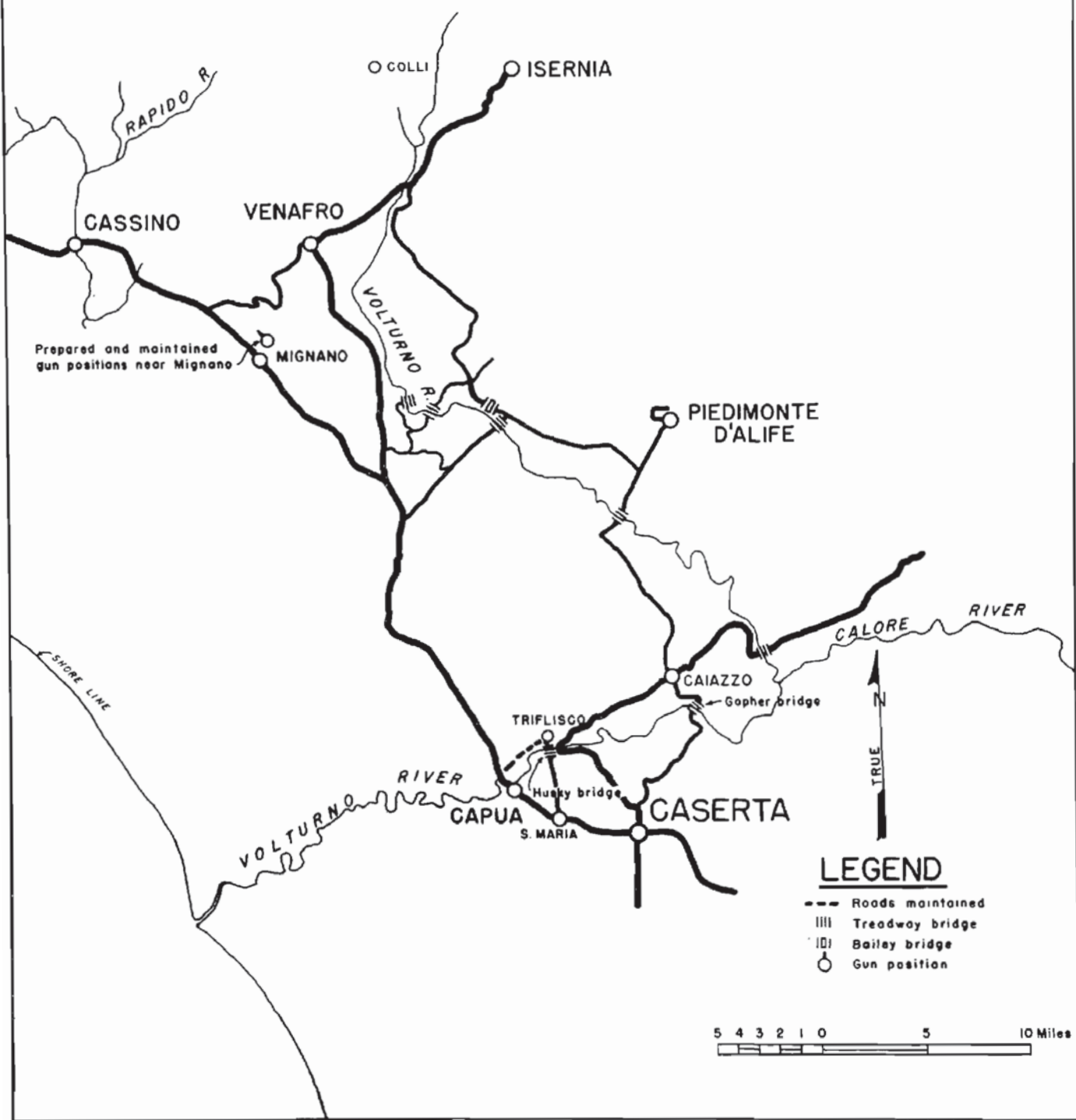
16th Armored Engineer Battalion

By 21 October 1943, the rest of Company "E" of the 16th Armored Engineers had joined Company "B" in Italy. When VI Corps crossed the Volturno, north of Caserta, one platoon of Company "E" and one platoon of Company "B" constructed the first treadway bridge across the river. The "Husky" and "Gopher" bridges, mentioned previously, were built as well as thirteen others. On 15 November, the Volturno flooded its banks after the heavy rains, and as a result, all of the upper Volturno bridges near Venafro had to be reconstructed and another bridge built near Colli. All of these bridges except the Colli bridge were washed out when high water came again on 5 December.

An air beacon was constructed and operated for a short time at Eboli, mainly, for air-ground recognition at night. Seventeen flare pots were laid out on the ground in a pattern. The pots were 7½-gallon aviation gasoline drums filled with Diesel fuel and spaced ten feet apart. Sandbags were placed in the fuel to act as wicks.

Well over half of the bridges the unit built were constructed at night, thereby saving many lives at the price of a small increase in working time. It is an old engineer axiom that abutments must be solid, yet time after time abutments gave way largely because no one seemed to realize what punishment a bridge in the Italian Theater had to undergo. German dynamite, heavy rains, bad roads, and poor planning were factors which often added up to where one bridge had to carry an entire army's vehicles for several days. At Caserta, for instance, 7200 vehicles passed over the treadway bridge "Husky" in five days.

VOLTURNO TO MAY II PHASE



16 TH. ARMORED ENGINEER BATTALION
OPERATIONS

SECTION III



16TH ENGINEERS TRY TO SAVE TREADWAY



BUT THE VOLTURNO WAS TOO STRONG

16th Armored Engineer Battalion (cont'd).

Even more harrassing than the traffic, however, was the fact that many of these "hasty" treadway bridges were not replaced for more than forty days. After three months of constructing and maintaining bridges, Company "B" was detached from VI Corps on 5 December 1943 and rejoined the 16th Engineer Battalion Headquarters near Capua the next day.

Meanwhile, the Bridge Company, Company "E", was detached to Fifth Army and left battalion control on 2 October 1943. The remainder of the battalion was shipped to Italy in many small groups with the advance detail arriving three days after the main party had landed. All vehicles and equipment were completely unloaded by 10 November. The battalion bivouacked three miles north of Capua in the 1st Armored Division area. Work was immediately started on maintaining division roads, setting up water points and a division shower. The necessary housekeeping work was supplemented by a training program, specializing on bridge work and culverts.

On 6 December, Company "A" was attached to the division artillery in the vicinity of Mignano for the purpose of building and maintaining gun positions and ammunition roads and moving the artillery pieces. It continued this work until attached to Task Force Allen on 1 January 1944 for engineer support in the attack on Mount Porchia. Very little work was accomplished because squads and platoons were attached to infantry companies and there were not enough engineers at one place to do the engineer jobs that should have been done.

The anti-personnel Schumine was met for the first time by the 16th in this action. Five road blocks were installed in front of the infantry and many minefields were cleared. Supply lines were opened and continually maintained. On 15 January 1944, Company "A", Company "B", and detachments of Headquarters Company and Company "E", were attached to Combat Command "B", which was preparing to attack in the Cassino area. The detachment of Company "E" had 18 Brockway bridge trucks with a total of 720 feet of Bailey bridge.

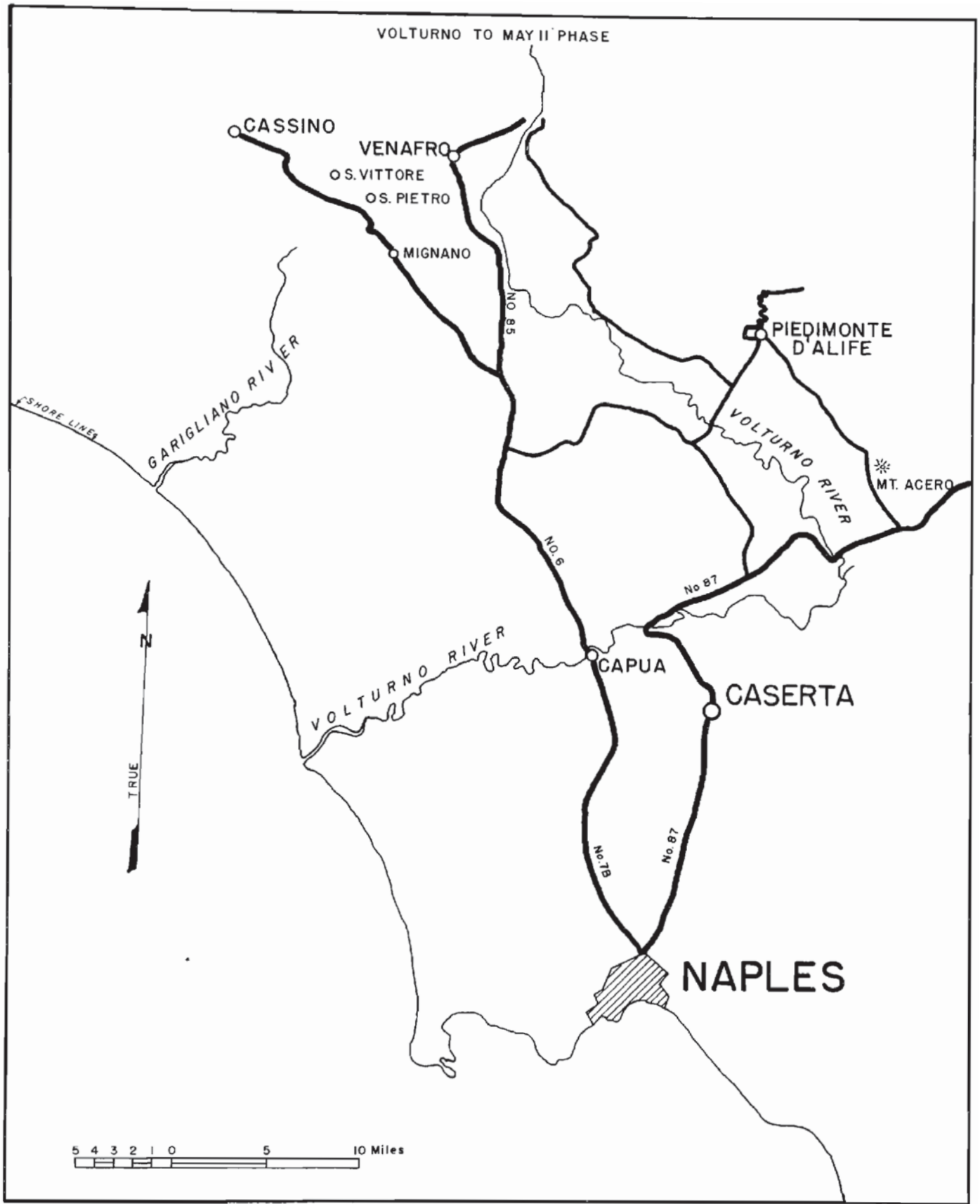
For the crossing of the Rapido River, Companies "A" and "B" were attached to the 19th Engineers. They were to build Bailey bridges but were always interrupted by mortar and small arms fire. With the collapse of the infantry bridgehead, the plan was abandoned. Casualties for the period were three officers and seven enlisted men.

Company "A" was then attached to Combat Command "B" again, and Company "B" was attached to the 34th Division on 25 January for purposes of constructing tank crossings over the upper Rapido River. Company "B" worked in clearing mines and building corduroy roads until 28 January when this assignment was switched. Company "A" then prepared a successful tank crossing of the river. After the completion of these operations, Companies "A" and "B" were attached to the 13th Armored Regiment for further operations. On 25 March, Company "A", and detachments of Headquarters and "E" Companies moved to Villa Literno in preparation for the move to the Anzio Beachhead, and Company "B" went directly to the staging area near Naples. On 27 March, Company "B" embarked on an LST for Anzio. Company "A", plus the detachments of Headquarters and "E" Companies, remained with Combat Command "B" and did road maintenance, until also embarking for Anzio on 30 April.

120th Engineer Combat Battalion

As the 3rd and 34th Divisions forced a crossing of the Volturno further to the west, the 45th Division launched an attack on Mount Acero. Past this obstacle, the 45th advanced up the Volturno Valley to Piedimonte d' Alife, keeping in touch with the 34th Division on the west bank of the river. Throughout this advance, the 120th Engineer Combat Battalion under Lieutenant Colonel Franz opened the roads, a job that became progressively more difficult as the weather became worse. Trails were constructed into the mountains on the right flank for the support of the infantry regiments, and culverts and bridges built over each stream.

After the 34th Division had made its second crossing of the Volturno, the 34th and 45th changed sectors. The 120th then participated in the third crossing of the Volturno on 2 November. Two days later, the 120th was ordered to lead the way into Venafro. By the end of the first week in November, the 120th had made the last crossing of the Volturno and had pushed its way into the mountains on the other side. The rains increased, then the snow came as the weather became increasingly colder. Throughout the winter the 120th remained in this sector keeping the roads and trails open into the mountains.



11TH. ENGINEER COMBAT BATTALION
 120TH. ENGINEER COMBAT BATTALION
 OPERATIONS

111th Engineer Combat Battalion

The 111th Engineer Combat Battalion worked in the Salerno area improving roads, bypasses, and bridges. Throughout the fall and into the winter, the 111th continued to do road work in the rear of the Army area as the 36th Division remained in reserve. In December, it returned to the front lines near Mignano, and from 8 to 17 December did engineer and infantry work in the costly assault on San Pietro. After this town was taken, the 36th Division attacked San Vittore on 21 December. On 29 December, the division, in a very depleted state, was relieved by the 34th Division after six weeks of fighting. Later, the battalion was again alerted and, subsequently, went to the Anzio Beachhead with the 36th Division in May.

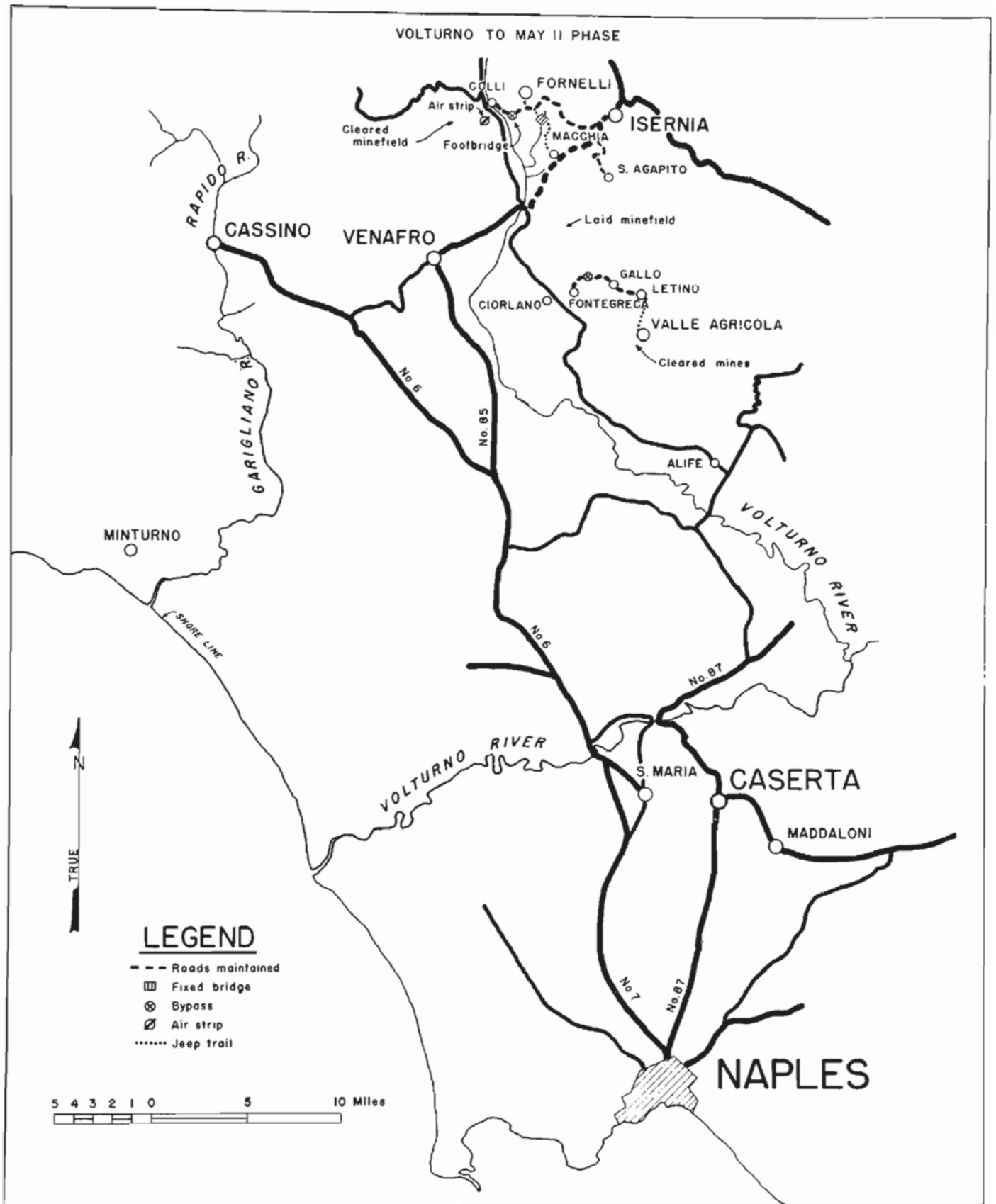
307th Airborne Engineer Battalion

On 10 October, an explosion occurred in the barracks in which the 307th Airborne Engineer Battalion was bivouacking. The south end of the building occupied by Company "B" of the 307th and Company "H" of the 36th Engineer Combat Regiment was demolished and for eight days searching continued for the bodies of the men who were missing. Twenty-three men were killed in the explosion and twenty-two were wounded, sixteen seriously. In October, the battalion conducted mine schools, did mine removal work and built bypasses and jeep trails on the front lines. Then the unit was withdrawn from the line. On 18 November, the 307th Battalion, less Company "C", embarked on the U.S. S. Dickman and sailed to Ireland by way of Oran. The battalion, under the command of Lieutenant Colonel R. S. Palmer, disembarked at Belfast on 9 December and began normal garrison duties.



TRUCKS HAUL CHRISTMAS DINNER TO THE
307TH ENGINEERS ON 3 JANUARY

Company "C" left Naples 27 October and went to Alife, where it joined the 504th Combat Team. Regular engineer work was started, including the construction of jeep trails and removal of mines. In early November, in an advance from Valle Agricola to Gallo, the 3rd Platoon of Company "C" acted as the point of the advance and entered Letina one hour ahead of the rest of the troops. After dark, the march was resumed for Gallo, the engineers still leading and searching for enemy mines. A bypass was constructed at one point where the road had been blown out. The engineers proceeded so far in front of the infantry



307 TH. AIRBORNE ENGINEER BATTALION
OPERATIONS

307th Airborne Engineer Battalion (cont'd).

columns that they were fired upon by their own infantry. The advance was again held up near Gallo by enemy machine-gun fire. The engineers were furnished no security and were in danger of being cut off, but for some reason the Germans ceased fire and the town was entered without further mishap.

On 7 November, the company began the construction of a road from Maccia to Fornelli. Two days later, the road was in fairly good shape and was passable for 2½-ton trucks. The 1st Platoon was in charge of working in the river bed, while the 2nd Platoon constructed a bridge from local lumber and the 3rd Platoon worked on the section near Fornelli. A foot bridge was constructed across the Volturno River, additional road work done and many minefields cleared. While clearing mines, two Germans were captured; Lieutenant Harris, in charge of the mine clearing, walked in on them as they were reading a book in their cozy machine gun nest. On 18 November, the entire company started to help the 36th Engineers construct a bridge across the Volturno River west of Colli, but the work had to be stopped because of the constant shelling. On 4 November, came the long-awaited word that the combat team was being relieved. Until 10 December, the engineers rested, at which time they returned to the front near Ciorlano. Near Venafro defensive minefields were laid, and gun emplacements dug. Mine clearing and laying continued to be the company's task until 3 January 1944, when it was again taken off the line. Christmas dinner was eaten, even though a bit late. The company then went to the Anzio Beachhead.

313th Engineer Combat Battalion

On 16 February 1944, the last troops of the 313th Engineer Combat Battalion arrived in Italy from Africa and bivouacked at Piedimonte d' Alife. The battalion's commanding officer was Lieutenant Colonel Salvatore A. Armogida. The 1st Platoon of Company "C" was called to join the 351st Regimental Combat Team on 13 February 1944 in the attack on Cassino. This platoon was the first unit of the battalion to be baptized in combat. It assisted in road work, in the laying of mines and erected barbed-wire obstacles in front of the infantry positions below Cassino. On 2 March, the platoon was relieved and rejoined the rest of the company.

Preliminary aerial photograph studies were made of the Cassino sector and several officers went to the front to acquaint themselves with the situation. Combat maps were issued by the S-2 Section to the various divisional units. On 5 March 1944, the battalion moved to the vicinity of Carano, and Companies "A" and "B" entered the lines across the Garigliano River below Minturno and Castelforte, where they relieved the engineers from X Corps. A period of adjustment, training, and operations was then started on this relatively quiet portion of the Italian front.

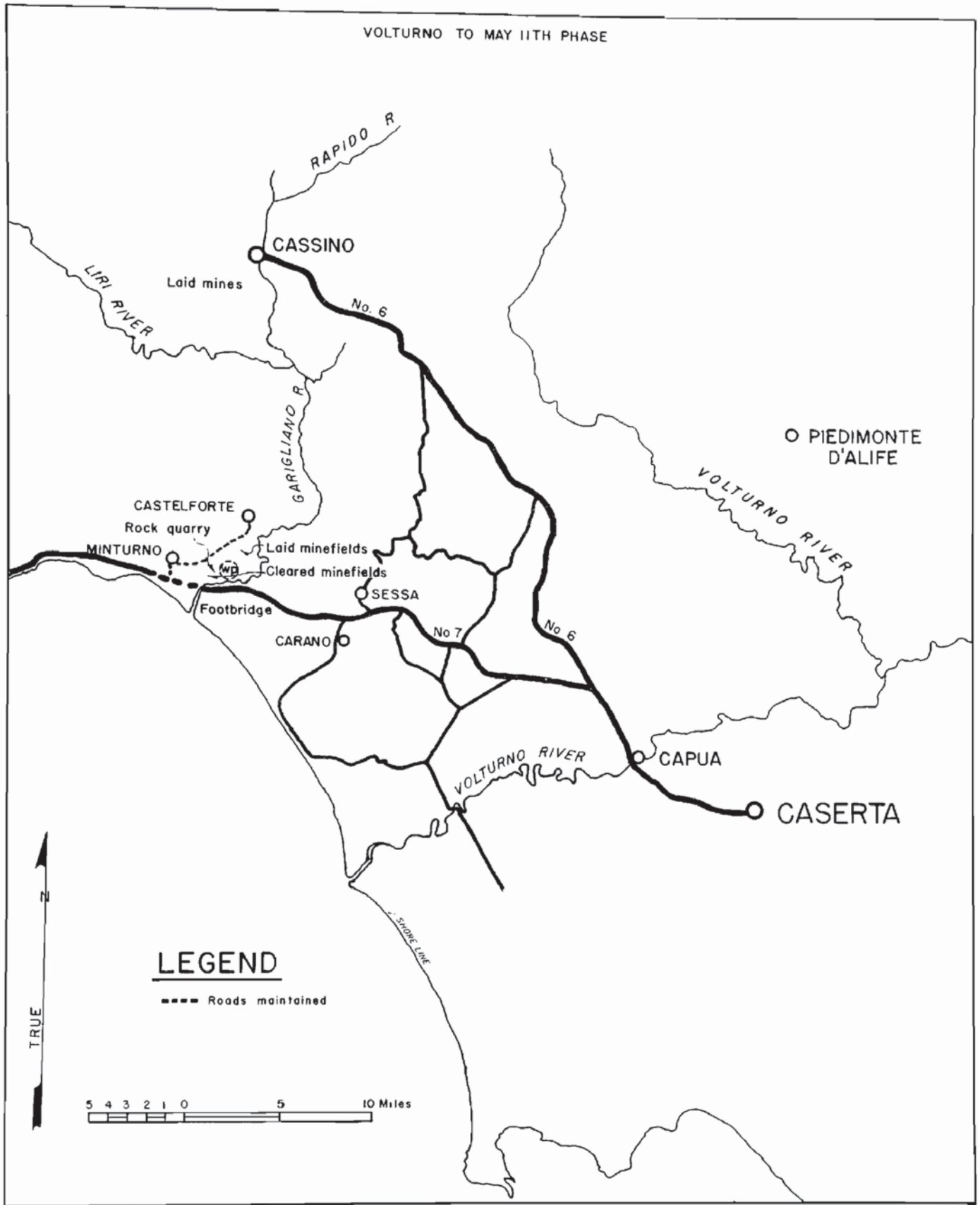
Until 11 May, the battalion stayed in this area, companies being rotated in the line, so that all had nearly equal periods of combat service. The primary mission was the maintenance of roads and trails. In the right sector, an alluvial plain, most of the roads were below ground level, and required almost continuous application of road metal. Large quantities of picket paling were used to provide a surface. The idea of stocking quantities of this material was taken from the British for whom this had been a standard item of engineer issue. Picket paling was easily transported and there was no hold-up for lack of natural timber at the work site.

During April, soldiers from the 525th Infantry Battalion (Italian) assisted the 313th with malaria control projects and with the maintenance of roads in the front line sector. Civilian laborers were also used to some extent in ditching the main roads and filling sandbags for the protection of the Divisional Command Post. A large amount of mine clearing was also necessary. Minefields which had been bypassed during the advance to the Garigliano River were swept. A large number of the mines removed were kept for training purposes. Minefields in the front lines were gapped so that infantry patrols could pass through them and into the German positions. Trip flares were constructed and installed in front of infantry outposts for security purposes.

During one patrol mission, a new type mine was discovered in the foot trail used by infantry patrols. The report was brought back and an officer was sent to reconnoiter. The infantryman led him to the spot by moonlight, and there, half buried, was the lethal mechanism with trip wires and sensitive arms. Carefully, the loose earth was removed and the wires cut. After working for nearly an hour--there was plenty of tension for German patrols were abroad--the mine was removed. It turned out to be a bomb tail-fin with wires tangled haphazardly around it.

During the winter period, 577 Tellermine were removed, plus 169 "S" mines, 19 Italian box mines, 134 Holzmines, 7 Schumines, and 2 British shrapnel mines. Towards the end of the period, the battalion S-2 made camouflage surveys of the division zone of action and insured that reliefs and other troop movements were made in accordance with the established principles, all of which helped to insure the secrecy of the 11 May attack. Three double-single Bailey bridges totalling 220 feet in length, were constructed during the period. A suspension footbridge 204 feet long was erected over the Garigliano River by Company "B". This bridge was constructed of wire cables and Bailey bridge catwalk, the latter suspended by ropes attached to the catenary. Forty-one miles of roads were repaired and maintained during the period.

VOLTURNO TO MAY 11TH PHASE



313TH. ENGINEER COMBAT BATTALION
OPERATIONS

SECTION III

313th Engineer Combat Battalion (cont'd).

Large quantities of picket paling were used and more than 1,500 cubic yards of gravel were hauled from quarries worked by the battalion, and spread on the roads. Thirty-seven culverts were installed to carry the large amount of rain water across the supply arteries. The Supply Section of Headquarters and Service Company kept four water points in almost constant operation.

During March and April, a total of 654,000 gallons of water was distributed, of which more than one-third went to non-divisional units. Every unit possible was accommodated, whether it belonged to the division or not. Two 32-man shower units were constructed, one near division headquarters, the other near the infantry positions, where men out of the lines could use them without being away too long. Over 28,000 board feet of lumber, 1,800,000 feet of tracing tape and 364,000 sandbags were used for the supply of the division. In general, it was fairly easy for the battalion to get re-supplied, since the engineer dumps at Sessa were not far away and the items were plentiful.

Training during the period included the use of flamethrowers and the construction of Bailey bridges. A trail was constructed up a mountainside by Company "C", both for training and to provide some indication of difficulties liable to be encountered during operations. Men learned what materials were needed for each foot of trail constructed, and were able to make estimates of the time and labor involved. The work was well spent. Operations during May showed that plans based on the information gathered while training were quite accurate. An infantry assault course was also built for training in combined operations with tanks and, at the same time, the infantry was trained in the identification and neutralization of enemy mines. Prisoner of war cages were constructed for the Division Military Police Platoon; gun emplacements were dug with bulldozers for various artillery units; and a small fire with serious potentialities was extinguished by the use of explosives in Minturno, just before the attack was made on the Gustav Line on 11 May.

310th Engineer Combat Battalion

The 310th Engineer Combat Battalion arrived in Italy on 29 March 1944 and, after a brief period of reorganization and adjustment, went into the line at Minturno with other elements of the division on 9 April. Here, the battalion, commanded by Lieutenant Colonel John D. Cole, Jr., heard guns fired in anger for the first time. Road maintenance, minefield clearance and construction of hasty fortifications were among the major engineer tasks performed. Company "C", in particular, had rough going. In one instance while marching (dispersed) along a road, the enemy threw over one hundred rounds of artillery in less time than it takes to say "those damn eighty-eights". Not one man was injured, however. The general reaction of the men tended to support the theory that "there are no atheists in fox holes". The time until 11 May was occupied principally with road, mine, and fortification work.

19th Engineer Combat Regiment

On 18 October 1943, Headquarters and the 1st Battalion of the 19th Engineer Combat Regiment ferried across the Straits of Messina and landed in Italy. The 2nd Battalion landed the following day. On the 22nd, the commanding officer, Colonel J. O. Killian, reported to the II Corps Engineer.

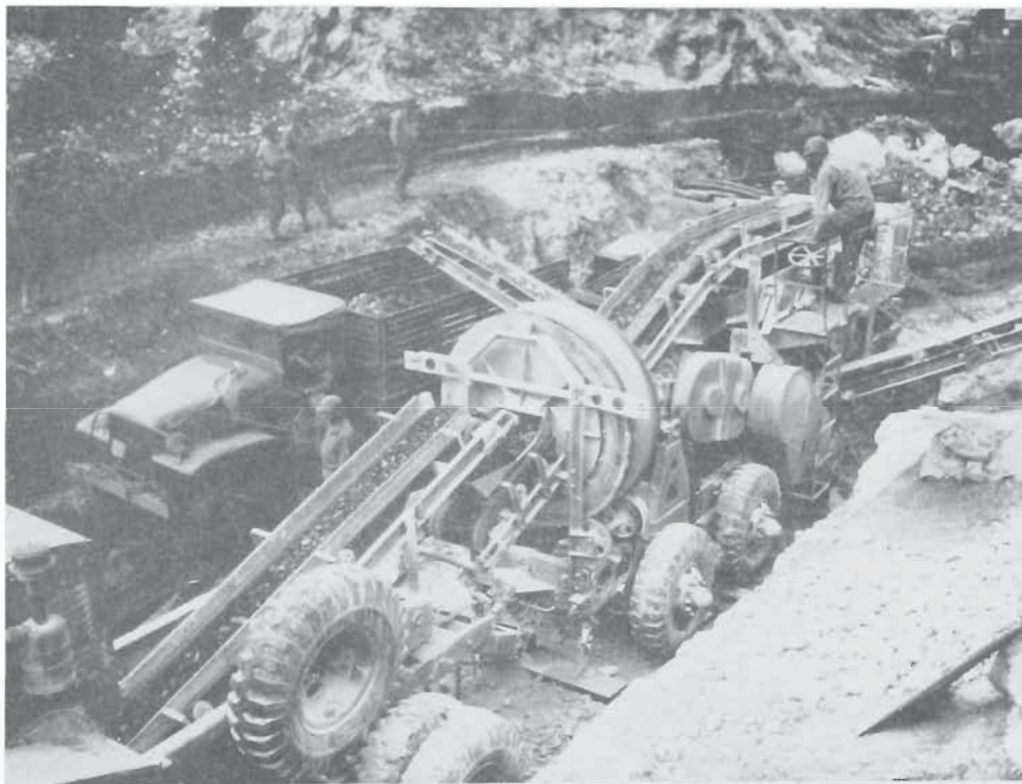
As soon as the regiment closed in the area at Qualiano, a training program was started. Along with the training, the regiment cleared mines and repaired roads in the vicinity. All equipment was checked and showdown inspections made. On 30 October, Major General G. E. Keyes, II Corps Commander, checked every department of the regiment, was satisfied with its condition and pronounced the unit ready for combat duty. On 31 October, the regiment was ordered to move to the vicinity of Limatola, on the Volturno, to practice river crossings in conjunction with combat teams from the 36th Division.

At first, the engineers trained by themselves, some acting as infantry, others as engineers. Due to a shortage of boats for training, only one battalion could work with one infantry combat team at a time. While the 1st Battalion was training with the assault boats, the 2nd was practicing with heavy ponton bridges and ferries. On the night of 6 - 7 November, after training in daylight with the infantry, the 2nd Battalion, and the 141st Infantry Combat Team carried out a night problem of establishing a bridgehead over the Volturno River. The problem was repeated with the 1st Battalion and the 142nd Combat Team participating on 11 - 12 November. The battalions then practiced mine work, road construction, the clearing of damaged towns, and the construction of heavy ponton rafts, the last with special emphasis on the movement of field artillery equipment.

19th Engineer Combat Regiment (cont'd).

About 18 November, the regiment moved to the vicinity of Teano, near Highway #6, and took over the responsibility for roads and bridges in that area from the 39th Engineers. Its mission was to support the 111th Engineer Battalion, plus Corps artillery, tank and tank destroyer units, as well as to maintain the roads in the Corps area. On 22 November, the bridge train operated by the 85th Engineers was attached to the regiment, and on the following day, one platoon of the 242nd Quartermasters was attached. The Quartermaster Platoon was given the mission of loading trucks with rock from the 19th Engineers' quarry. At the end of the month, the regiment received a rock crusher and a power shovel, which helped considerably in the supply of rock and gravel for the roads.

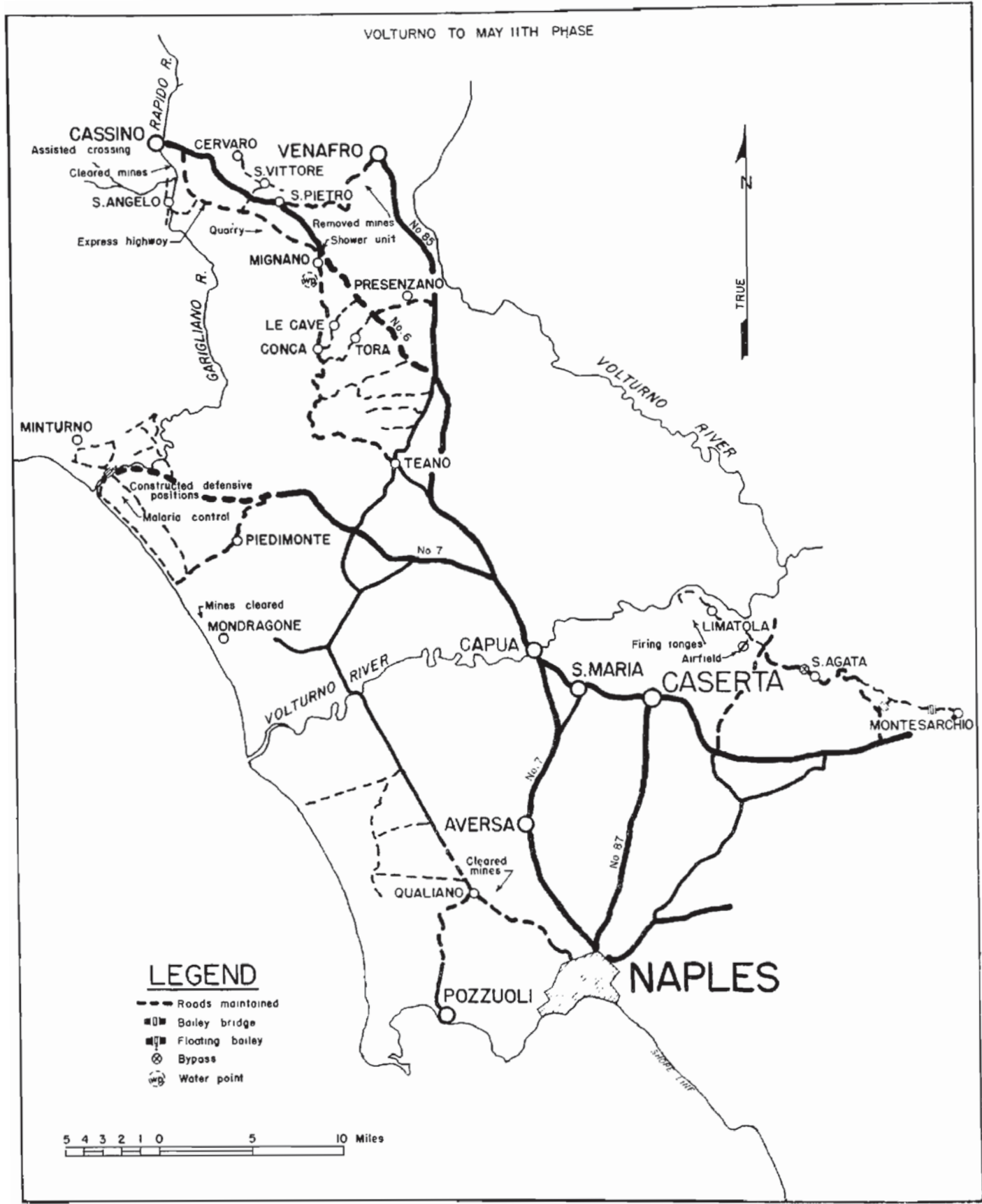
Certain projects such as bridge construction and road maintenance were slowed down by the heavy rains and mud. Bridge materials not being available, it was necessary to locate and salvage timbers and bridge steel from blown bridges before construction could go ahead. Due to the heavy rains and the concentration of artillery along the Tora - Conca - Le Cava road, units of the regiment were shifted until almost the entire regiment was working trying to keep this loop of road open for the ammunition and supply trains. Additional trucks were furnished by the Quartermaster and the men were forced to work day and night hauling rock from demolished buildings and quarries to fill the mud-holes. The ground became so wet and soggy that artillery units bogged down and heavy dozers and vehicles with heavy winches were necessary to help them move either into or out of position. With the enemy slowly being driven back, the artillery moved forward almost continuously, with the engineers clearing the way.



19TH ENGINEERS OPERATE ROCK CRUSHER

On 17 December, the 19th Regiment received orders to remove the rails and ties from the railroad bed, repair the culverts, fill the craters and make a one-way road for heavy traffic and tanks from the railroad station south of Presenzano to the east of the Rapido River. The road was widened and prepared for two-way traffic. This route called the "Express Highway", proved to be an excellent all-weather road and gave the units a good supply axis for the attempted Rapido River crossing. On 1 January 1944, the 2nd Battalion was placed in support of the 34th Division, and Company "B" in support of the Special Service Force to clear mines, improve trails and build jeep tracks in the mountains northwest of Venafro.

VOLTURNO TO MAY 11TH PHASE



19TH. ENGINEER COMBAT REGIMENT
OPERATIONS

SECTION III

19th Engineer Combat Regiment (cont'd).

On 6 January, Companies "D" and "E" began this work and were joined later by Company "F" and a company of the 175th Engineers. Companies "D" and "F" were relieved of their trail work on the 13th to train on the Volturno for the anticipated forced crossing of the Rapido. On 16 January, two battalions, less two companies, were attached to the 36th Division to assist the infantry in the Rapido crossing. Companies "B" and "E" were held in reserve to build two Class 40 Bailey bridges across the river at S. Angelo, as soon as the site had been cleared from observed artillery fire. In addition to the bridge work, these two companies were to maintain supply roads, support the II Corps artillery, and help tank and tank destroyer units as they moved forward.

As mentioned previously, Companies "A" and "B" of the 16th Engineers were attached to the 19th at this time for the construction of two Class 40 Baileys for tank crossings at the main sites. The attack across the Rapido was set for 2000 hours on 20 January 1944, and for three days thereafter attempts were made to cross the river successfully. On 23 January, formal attempts to force the crossing were abandoned. General organization for the crossing was not smooth, and that factor, combined with extensive anti-personnel minefields on both the near and far shores, plus extremely heavy and well directed enemy artillery, mortar, and small arms fire, defeated all the attempts.



19TH ENGINEER CULVERT NEAR TEANO

Great damage was done to the engineer rubber floating equipment. On 4 February, all the units remaining on the alert for a possible new attempt were released from that status. Casualties during the attempt were three officers and seven enlisted men from the 16th Engineers, and three officers and fifty-eight enlisted men from the 19th, one officer and ten enlisted men being killed.

Elements of the 19th Engineers concentrated on road work from 24 January until 24 February, when the two battalions joined near Venafro for a period of rest. During that month, 40 dump trucks were borrowed from the 1108th Engineer Group for hauling rock and gravel to use on the San Vittore - Cervaro road, and the 1st Battalion, which was on an alert status until 4 February, constructed corduroy mats and culverts. The mats were made by wiring together poles 2 - 3 inches in diameter and 12 feet long to form mats about 10 feet long. Easy to roll for transporting, they were laid at the desired site in a short time.

19th Engineer Combat Regiment (cont'd).

On 3 March, the regiment began the maintenance of the roads from Venafro through San Pietro to San Michele and performed numerous other jobs such as building bridges and constructing target ranges. The men worked and trained until 1 April, when the regiment moved to the west coast south of the Garigliano River near Piedimonte to support the 88th Division. The 1st Battalion was assigned the maintenance of a road net on both sides of the lower Garigliano and three bridges and three ferries across the river. The 2nd Battalion maintained roads, cleared mines and worked on a malaria control program south of the river. The malaria control program consisted of draining and spraying with oil all water in the area, cleaning the trash and filth from the nearby Italian towns and destroying any breeding places for flies and mosquitos in the area:

On 10 April, word was received that the Germans were using floating mines in the Garigliano River, trying to blow out our bridges. Chicken wire nets and cables were installed across the river above the bridges, but all the mines were stopped by the French who were maintaining crossings further up the river.

On the night of 28 - 29 April, the 2nd Battalion was relieved of its assignments (being replaced by the 235th Engineers) and moved back near Mondragone for additional training. Because of the necessity of keeping the enemy from suspecting a build-up for an attack in this sector, the move was made at night. The 235th Engineers carefully moved into the same area, placing tents in the exact spots where the 2nd Battalion's tents had been located.

During the early morning hours of 29 April, German artillery fire fell on the floating Bailey bridge across the Garigliano River near Minturno. The bridge was severely damaged (floats were punctured and sunk) and several men injured. As soon as the bridge was repaired, steps were taken to fix the bridge so future shelling would not sink it. This was done by driving piles on either side and at both ends of the floating section, and placing caps on the piles under the bridge. In this way, if the floats were punctured the bridge would only sink until it rested on the cap.

On 1 May, the regiment began constructing a defensive position extending from the sea to a point seven miles inland. The work included the digging of trenches, machine-gun emplacements, mortar emplacements, erection of wire, laying of minefields and the construction of two reinforced concrete pillboxes. Much of this work was done by hired Italian laborers. The 19th continued this work until 11 May 1944.

36th Engineer Combat Regiment

Throughout October, the mission of the 36th Engineer Combat Regiment was substantially road repair and maintenance. Company "H" remained with the Rangers after the landing near Amalfi, and advanced with them to Naples, where the mission was to "delouse" the city of mines, booby traps, etc. On Sunday, 10 October 1943, a delayed action demolition charge exploded in the Italian barracks, which the company was using as a billet. Casualties suffered were twenty-three enlisted men killed and thirteen wounded. In addition, a large part of the company's supplies were lost.

On 12 October, Company "H" rejoined the regiment. The 2nd Battalion, badly battered, had moved to Benevento on the 7th and began a considerable amount of clearing work. From 9 to 12 October, Company "A" prepared for an assault river crossing of the Volturno near Dugenta in support of the 34th Division. This action commenced on the night of 12 and continued through 13 October.

On the first attempt, direct-laid enemy artillery fire knocked out three vehicles and a portion of the bridge equipment, making a withdrawal necessary. During the early morning of the 13th, a second attempt was made and the bridge completed. Company "A" had three men killed, eight wounded, and two missing in action during this operation. At the completion of this job, Company "A" built a treadway bridge across the Volturno southeast of Amorosi on 14 October and then went into rest bivouac.

Meanwhile, other elements of the regiment were performing normal engineer duties on the road net Maddaloni - Benevento. The corps front line advanced quite rapidly following the crossing of the Volturno and the 36th was right behind. Throughout the remainder of the month, the regiment worked on its road assignments, which included the roads north and west of Benevento, as far north as Alife and Piedimonte. During November 1943, it rained almost daily, making the 36th's road missions extremely difficult.

On 10 November, Company "E" constructed an 80-foot Bailey bridge. "Ma's Rugged Kid", one mile north of Montaquila. The 34th Division treadway bridge site was shelled daily by the enemy. This made it necessary to do most of the road work in that area under cover of darkness. German planes dive-bombed this site on 11 November, resulting in seven casualties and damaging a truck, a road grader and a crane. By 15 November, the rain had washed out the 34th Division's treadway bridge.



36 TH. ENGINEER COMBAT REGIMENT
OPERATIONS

SECTION III

36th Engineer Combat Regiment (cont'd).



36TH ENGINEERS BUILDING CULVERT AT MONTAQUILA

Company "G" saved the treadway bridge at Dragoni by anchoring it with half track winches, and then constructed a cableway over the Volturno, south of Colli, to supply airborne troops stranded on the far side of the river. After daily shelling for about a week, enemy artillery finally scored a hit on the 34th Division bridge and damaged one section of treadway. On this same day, 21 November, Company "H" completed a wooden trestle bridge, "Hot Spot", one-fourth of a mile south of Colli. As the site was under artillery fire, most of the work was done in the dark.

On 25 November, Company "E" constructed a 120-foot, double-double Bailey bridge, the first of this type that the regiment had built. Since the site was a difficult one, several days were spent working on the approaches before actual construction began. During the month of December, the Italian campaign moved very slowly.

The 36th Regiment's primary mission was to maintain the main supply route, Prata - Capriati - Venafro - Colli - Scapoli. Rain made this difficult for the first week, but afterwards the weather improved considerably.

Due to the heavy rain on 4 December, both the 34th and 45th Divisions' treadway bridges washed out. This situation was quite a headache for the regiment, since parts of the unit were bivouacked on both sides of the river. A Bailey bridge near the 45th Division bridge was also out of action, for the waters had washed out part of the abutments. The damage to this bridge was repaired in about two days, and the regiment was no longer separated.

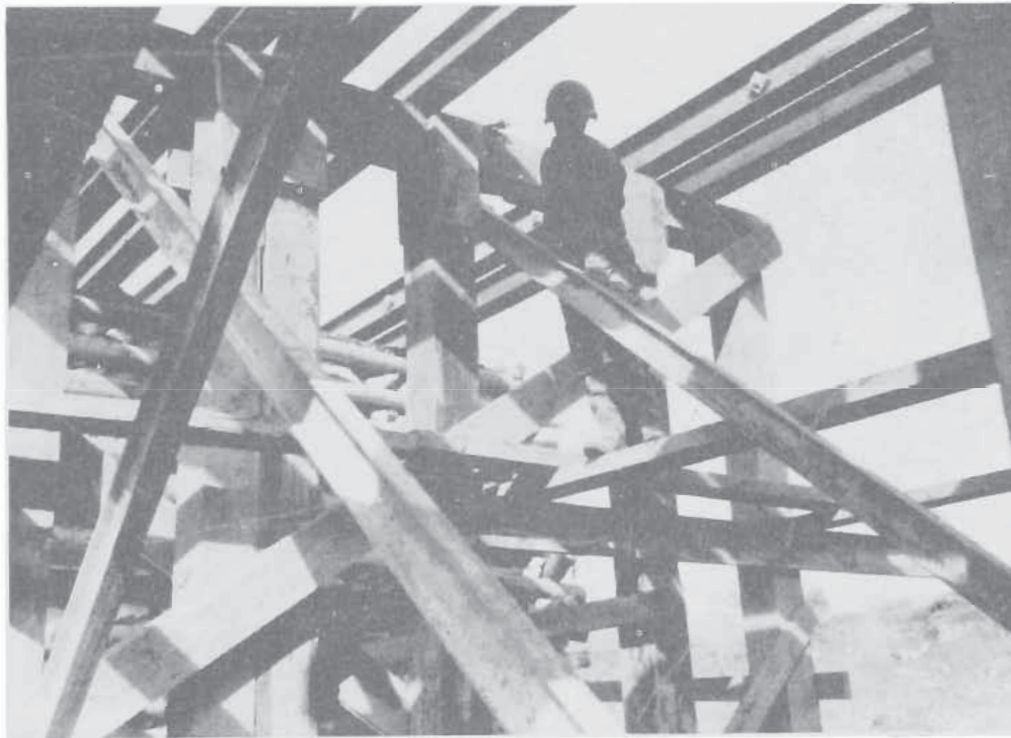
On 18 December, Company "A" constructed a 110-foot, triple-single Bailey bridge in the vicinity of Scapoli, under fairly heavy shell fire. On 5 January 1944, Company "H" moved to Naples to join the 1st Ranger Battalion and shortly thereafter the remainder of the regiment was ordered to Afragola.

39th Engineer Combat Regiment

At the time the Volturno was reached, the 39th Engineer Combat Regiment, commanded by Colonel T. C. Green, was assigned the road net through Orpia, Maddaloni, Caserta, Briano and Ponte Annibale. Across the Volturno at Ponte Annibale, the 39th constructed a ferry on 15 October. On that same day, it began winterization of the 8th Evacuation Hospital. By the end of the month, the regiment had moved forward far enough to have its Command Post at Baia. Roads were still the main job and the net now included Dragoni - Baia - Pietramelara, the secondary route Latina - Roccaromana - Pietramelara, and Highway #6.

The maintenance of these roads included the building of culverts, the widening of bypasses for two-way traffic, the construction of Bailey bridges and timber trestle bridges and the removal of mines. No large fields were encountered in this area. The mines that were found, however, were often booby-trapped, anti-tank mines often being used as anti-personnel mines. Most of the mines removed were Tellers and "S" mines.

In a six-mile stretch of Highway #6, fourteen road blocks were encountered, which had to be filled in, bypassed or bridged. Four Bailey and three timber trestle bridges were constructed on this section of road. Throughout the area west of the Volturno, there were many small streams and canals. These streams were customarily bridged by small masonry arch bridges or stone culverts. The Germans demolished practically all of these crossings and left a ceaseless job of reconstruction for the Allied engineers.

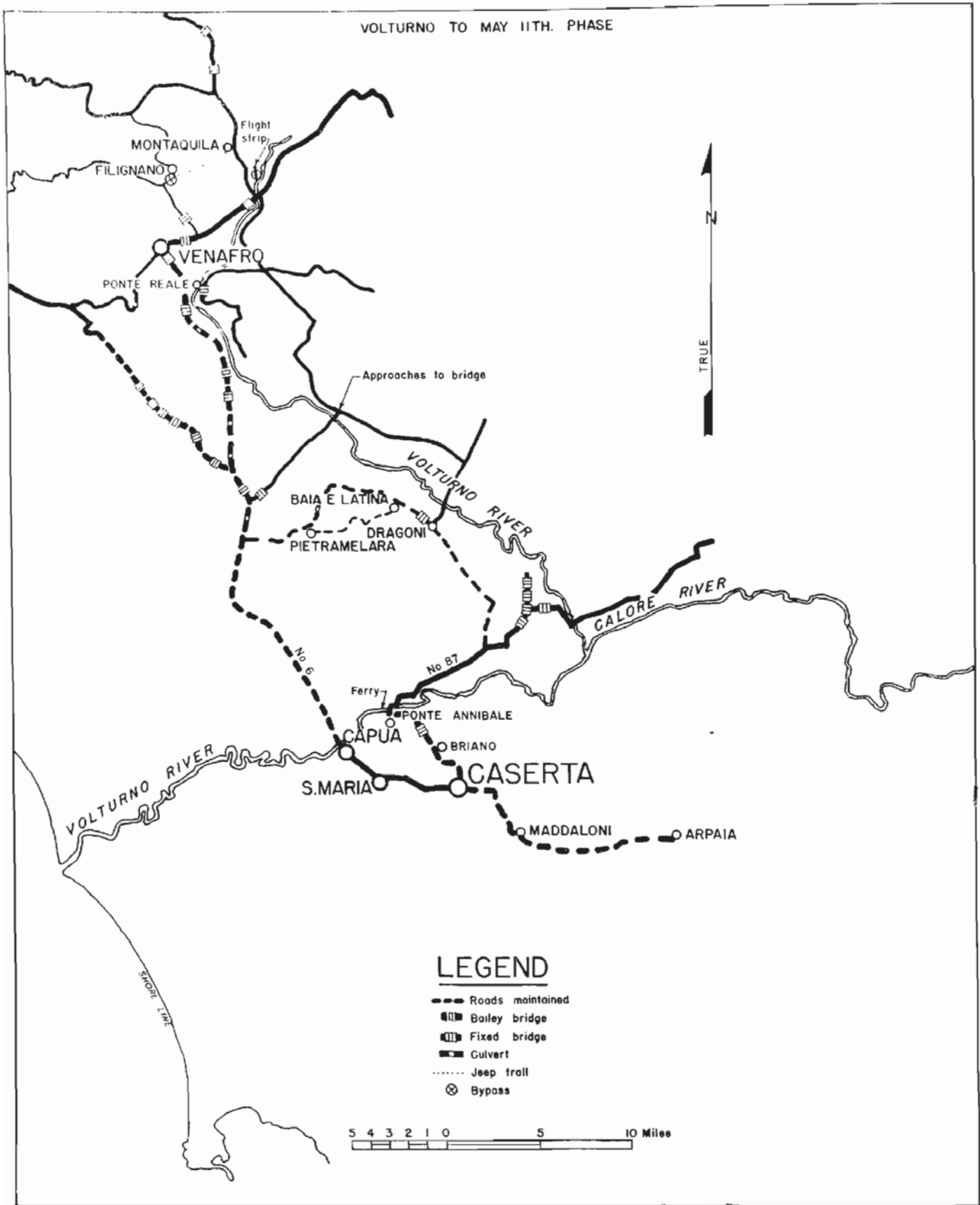


39TH ENGINEER BRIDGE IN CONSTRUCTION NEAR CASSINO

On Highway #85, the 39th Engineers first met the German box mines. Made of wood, with no metal latches or nails, and buried about 6 inches deep, they were undetectable by American mine detectors. In the vicinity of Venafro, a number of fixed bridges were constructed using steel stringers. The stringers were prefabricated for use at the site by putting wooden nailing strips between the channel irons. When needed, they were sent out to the working site, thus saving space there and performing a neater job.

The regiment maintained Highways #85 and #6 through November and into December. On 4 December, a flight strip was constructed for the 13th Field Artillery Brigade. The next day, the 39th began strengthening the bridge at Ponte Reale. A Bailey bridge had been completed there on 1 December. It was now converted into a double-triple, the first 3-story Bailey the regiment had built in combat. Its span of 180 feet was also one of the longest constructed by the Allies.

VOLTURNO TO MAY 11TH. PHASE



39TH. ENGINEER COMBAT REGIMENT
OPERATIONS

SECTION III

39th Engineer Combat Regiment (cont'd).

Until Christmas, the 39th concentrated on roads, replaced Baileys with fixed bridges and increased the loads for other Baileys by adding stories or trusses. From 24 December to New Year's, a jeep trail was worked on from Montequilla to Filignano. The road was to be passable for $\frac{1}{2}$ -ton vehicles and went through wooded and steep terrain, where only cow paths had previously existed. On 6 January, however, this road, together with all other work, was taken over by the newly arrived units of the French Expeditionary Corps.

After being relieved, the 39th Engineer Regiment moved to Afragola to rest, take inventories, and clean and repair equipment until 12 January. The next day, training was started in mine warfare and obstacle tactics. On 15 January, the 2nd Battalion went to Paestum for four days of training exercises with the 3rd Division. First priority vehicles were loaded and sent to the water-proofing area to be prepared for the over-water movement to Anzio. On 25 January, the 39th Regiment embarked at Pozzuoli.

1108th Engineer Combat Group

The 1108th Engineer Combat Group, commanded by Colonel Kingsley S. Andersson, arrived at Bagnoli on 10 October 1943 with the 48th Engineer Combat Battalion. The second battalion, the 235th Engineer Combat Battalion, did not land until 28 October, when it joined the group at Caserta. After a brief attachment to VI Corps, the unit was assigned to II Corps on 1 November 1943. The group's combat baptism was first received when one platoon from each battalion was attached for mine clearance work to the 109th and 120th Engineers, then operating in the vicinity of Venafro. The platoons did road work, placed culverts, cleared mines and swept mountain trails for the Rangers. Much of this work was done while subjected to sporadic enemy shell fire. The lessons learned by both platoons in these two weeks of front line duty were later incorporated into a course in mine warfare given by the group to officers and men of the First Special Service Force immediately prior to that organization's initial attack on Mount Maggiore and Mount La Difensa.

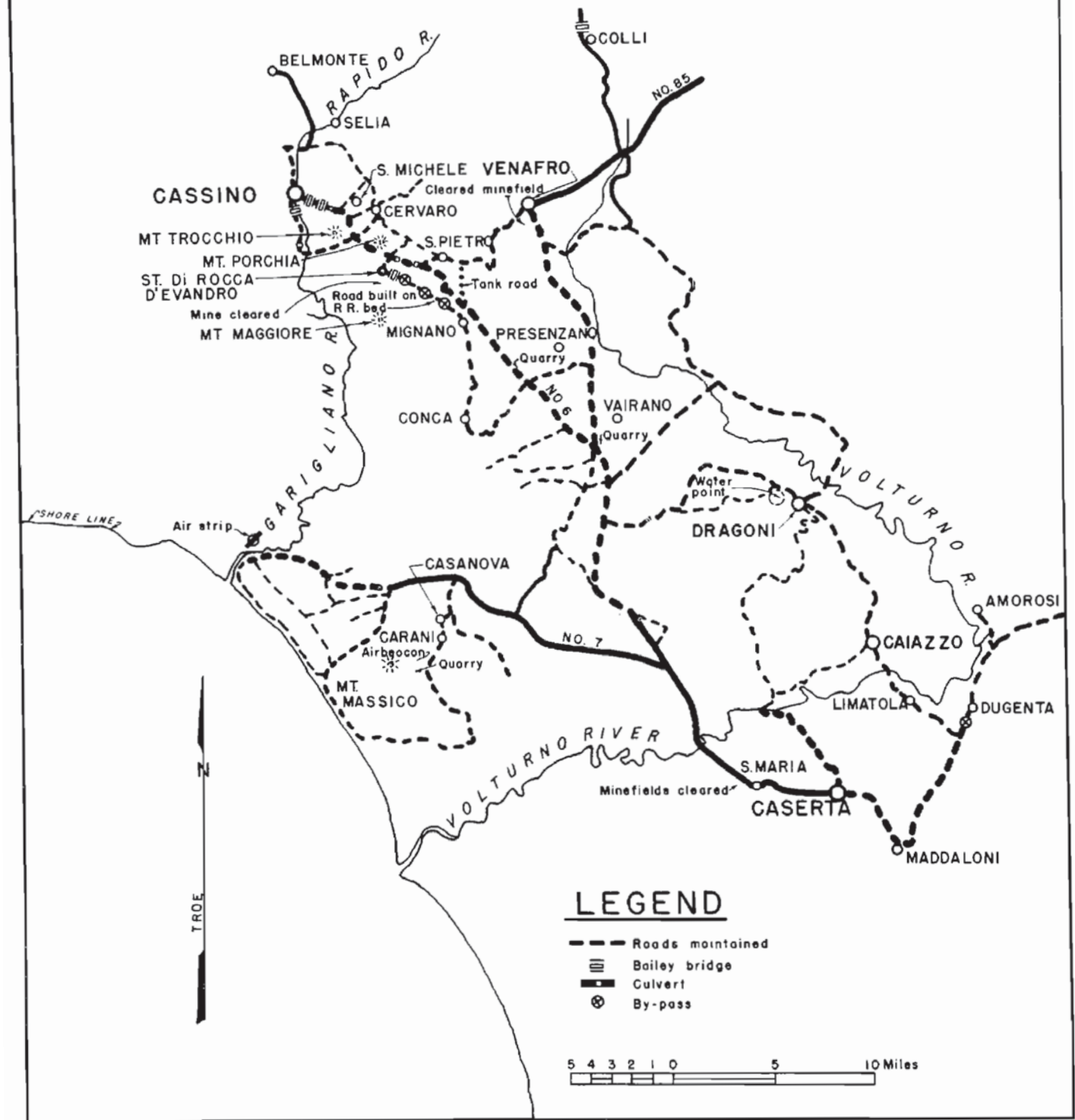
During October, the 48th Engineers, commanded by Lieutenant Colonel Andrew J. Goodpaster, maintained roads in the vicinity of Santa Maria, Maddaloni, Dugenta, and Amorosi, part of the main supply route of the Fifth Army. In November, the group and its two battalions began the maintenance of II Corps' road net and by December had assumed maintenance of all the II Corps roads except the Luora - Gonca route.

The sine qua non of a winter campaign in Italy, as far as engineers were concerned, was rock, plenty of rock. In December, the 235th Battalion operated two quarries, one at Vairano, and one on Highway #6 at the Prezenzano road junction. In early December, the latter pit produced 200 - 400 truckloads of rock daily, which were used on all the road nets in corps and division areas. The battalion reconnaissance section was assigned as a permanent blasting unit to feed the demands of a rock crusher, a shovel and two bulldozers. The quarry functioned 22 hours a day (allowing two hours for servicing equipment), and was illuminated at night by giant torches after the fashion of a Roman festival in Caesar's time. Besides supplying light, however, the torches attracted a not inconsiderable amount of attention from German planes and artillery.

On 14 December, the 48th Battalion undertook the job of making the railroad from Mignano to Rocca di Evandro passable to two-way vehicular traffic. This stretch of railway, running into Cassino along a high embankment in a rough parallel to Highway #6, was at all times under direct enemy observation and heavy fire. The total distance called for was six miles and there were 13 demolitions along the way, including three blown bridges, the shortest of which was 115 feet. The road was often flanked by "S" mines, trip wires and Tellermines. During the construction period, over 300 rounds of artillery fire were received and hits were made on 2 of the 3 Bailey bridges erected. The opening of the road, called "Highway 48", provided an avenue of approach for men and supplies to the areas in front of and to the west of Cassino. This route later became one of the arteries of the attempted Rapido River crossing by the 36th Division in January.

From 20 December to 23 December, the 235th, commanded by Major F. Polich, completed a two-way bypass from Mignano to Route #6, which was the main supply route of the 142nd Infantry, 36th Division. The bypass was constructed through a stream bed in a ravine that was heavily laden with friendly artillery batteries firing continuously. The resultant counter-battery fire made the engineer work highly dangerous. Mount Porchia rose like a huge fist out of the flat plain between Highway #6 and the railroad, halfway from Mignano to Cassino. Except for Mount Trocchio further north, it was the highest terrain in the valley before the ramparts of Cassino.

VOLTURNO TO MAY II PHASE



1108 TH. ENGINEER COMBAT GROUP
 48TH & 235TH. ENGINEER COMBAT BATTALIONS
 OPERATIONS

1108th Engineer Combat Group (cont'd).

On the opening days of 1944, the 34th Division was in the mountains to the right, the British X Corps west of the railroad thoroughfare, and in the center, astride the only two roads into Cassino, the 1st Armored Division had massed Task Force Allen and attachments. The Germans were on Porchia and could see everything below them. The 1108th Group was called to give engineer support to the task force on 4 January. They opened and maintained the main supply routes in the task force sector. Twice it was necessary for the 235th to attack and neutralize enemy strongpoints, so the tanks could continue to roll ahead.



48TH SOLDIER BAILS OUT HIS FOXHOLE

The 48th was busy converting the railroad into the two-lane road, but as the attack progressed a gap developed in the Porchia sector, and the 6th Amored Infantry had tremendous losses. The losses were so great that Companies "A", "B" and "C" of the 48th Battalion was called upon to give infantry support. They were on the mountain for three days and two nights, during which time they helped repel several counterattacks and finally consolidated the important feature. The fight was expensive, and the line companies were ready for reorganization when it was over. The gap in the left flank had been plugged and the enemy driven from the task force objective.

While the 48th was in the line as infantry, the 235th sent its line companies at various times over to the railroad and carried on the engineer work in the face of heavy and continuous fire night and day. In Fifth Army General Orders, 5 June 1944, both battalions were awarded the Presidential Unit Citation for outstanding performance of duty in action.

On 23 January, the 1108th's assignment included the following roads: "Highway 48". (the railroad bed) from Mignano northward, all approach roads to the San Angelo sector of the river west of the railroad bed, and maintenance of the San Pietro - Cervaro road. This work was equally divided until the end of the month, at which time the 235th Battalion was given the task of building a tank road into Cassino. The 48th assumed responsibility for all roads mentioned above, and prepared to build a Bailey bridge across the Rapido River at Highway #6.

1108th Engineer Combat Group (cont'd).

The tank trail into Cassino was made from an old cart track roughly following along the right of Highway #6 from La Postanelle, five miles from Cassino. Three and a half miles north of Cassino, at the town of S. Elia, German engineers had blown the banks of the Rapido with such skill that the waters of the river were completely diverted from their normal course and flowed eastward, inundating all the flatlands south of the river as far as the highway. This resulted in the isolation of some American units, and gravely hindered the flow of supplies forward over the Cassino - Belmonte road.

On the night of 28 January, three companies from the 16th, 48th and 235th Engineers were under the direction of the 235th Battalion to make a corduroy road across 500 yards of the water-soaked fields east of Cassino. Trucks loaded with corduroy mats, hexagonal culverts and sandbags completed the job before dawn, for the site was directly under German observation. Through the dawn mist, the tanks began to move from defilade out onto the exposed corduroy. Six of them bogged down and were shelled by anti-tank fire at point-blank range. The water had by then covered the corduroy and the attack stalled. Round after round slammed into the black and burning tanks that lay broken on the field below.



235TH PUTS UP BAILEY NEAR MIGNANO

On 29 January, another attack was made, this time using the now dry, defiladed river bed that extended from S. Elia almost to the German barracks in Cassino. Seventeen tanks poured through this gap to gain a toehold in the northern edge of Cassino and punch a damaging hole in the city's flank defenses. The enemy was vitally concerned with the maintenance of the gap over the Volturro where the Route #6 bridge had been, and although the two enemy nests on the far side were cleared several times, their paratroopers always filtered in again to hold the gap and prevent any bridge reconnaissance. They successfully prevented a crossing here until the middle of March.

During February, the 48th Battalion continued to maintain its road net. The San Michele gravel pit and an air beacon were operated. The 235th's situation was much the same--maintenance of the tank road down to the river, culvert construction, artillery jobs and ditch drainage. On 15 February, the 235th Battalion was detached from II Corps and attached to the New Zealand Corps for the main effort against Cassino by the Eighth Army. Along with its work, the battalion trained in assault tactics and in attacks on fortified positions. One month later, on the morning of 15 March 1944, Dickens broke loose.

SECTION III

1108th Engineer Combat Group (cont'd).

"Dickens" was the code word for the Cassino assault. That night Company "A" of the 48th was told to erect its bridge across the Rapido into Cassino. The lip of the 60-foot gap had been blown several days earlier, and when the word was given the panel trucks, ready and waiting up the highway, hurried to the site in the jet darkness. At 0430, 16 March, after four hours of work, the 80-foot, double-single Bailey was completed. Although most unpleasantly anticipated, the bridge was not too difficult in actuality and no serious casualties were suffered, only four men being lightly wounded.

Two nights later, Company "B" of the 48th built a corduroy and gravel bypass to the right of the highway bridge. Then Company "A" constructed a second Bailey bridge, a 90-foot, single-single across the Rapido. The work had to be postponed because of enemy fire and was not finished until 2200, 19 March. About 75 yards south of the river on Highway #6, a dirt road wound eastward to a walled cemetery and eventually terminated at the highway near La Postanella. This road was of great value for bridge trains and tanks, for it offered the only covered approach to the river directly in front of the city. A stray bomb on the morning of the 15th had gouged a crater 60 feet wide in this route between Route #6 and the cemetery. The gap had to be bridged and Company "C" of the 235th began work the night of 21 March.

At midnight, everything was going well. The launching nose was underway and the panels were being fixed. Then with terrible accuracy, shells fell, creeping up from the road's intersection with Highway #6. A burst of three tore into the bridge and the men in quick succession. As the engineers tried to pull their wounded from the smoking site, another group of enemy shells poured down upon them from Cassino. The company pulled back; the casualties were nine killed and seventeen hospitalized. For the night's work, forty-four Purple Hearts were distributed in Company "C".

During the month of March, there were nine enlisted men killed, forty-three wounded and one officer wounded in the 235th. The 48th Battalion had two enlisted men killed, fifteen wounded and four officers wounded. But there were two bridges over the Rapido in front of Cassino!

By 25 March, the entire group had been relieved of attachment to the New Zealand Corps and ordered into a period of rest and training at Pirola, near Benevento. The 48th Battalion trained at Airola then at Selice until 12 May, working on Bailey bridges, pneumatic treadway bridges, minefields, flame throwing, rigging, and the construction of jeep trails.

The 235th moved to Casanova on 10 April and spent the rest of the month doing a great deal of bridging and demolition work. Bailey bridges were constructed with gin poles and on wheels. All companies spent time on the Volturno River with the Armored Force treadway bridge. Several hours were devoted to the construction and use of the snake. The battalion maintained an air beacon and operated a quarry on the north flank of Mount Massico. Malaria control in the Garigliano sector was executed by the companies in rotation up to the time of the May attack.

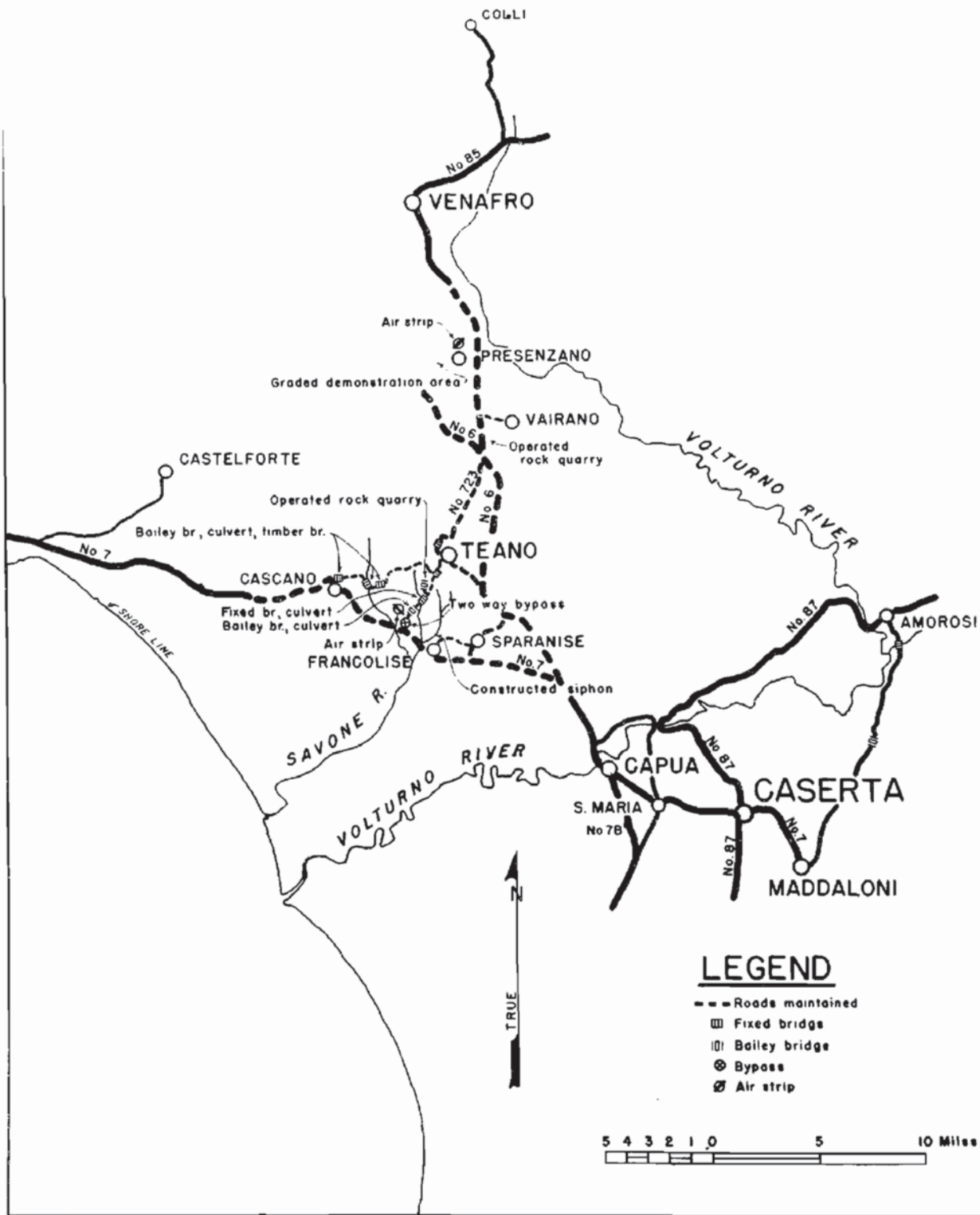
175th Engineer General Service Regiment

When the 175th Engineer General Service Regiment arrived in Italy on 16 November 1943, its commanding officer, Colonel John H. Trescot, established Regimental Headquarters on Route #6, ten miles north of Capua. Company "D" was assigned to assist in the operation of the Fifth Army Engineer Depot and the British depot at Vairano; Company "E" was attached to II Corps for operations as the Corps bridge train; Company "F" was first attached to VI Corps, then on 3 January 1944 to the French Expeditionary Corps to haul bridging.

The 1st Battalion of the regiment had remained in Sicily and with the exception of Company "B" did not arrive in Italy until 20 January 1944. It then took over the repair, maintenance and construction of roads and bridges in the vicinity of Teano. Company "B" joined the regiment on 15 May 1944.

On 28 December, Headquarters and Service Company was assigned the operation of the Fifth Army Engineer Heavy Equipment Pool. There were some 65 pieces of equipment, including shovels of $\frac{1}{2}$ to 2-yard capacity, 8-yard carryalls, portable primary and secondary rock crushers, D-7 and D-8 bulldozers, towed and motorized road graders, concrete mixers, arc welders, rippers, air compressors, trailers and road surfacing distributors. The Service Platoon of Headquarters and Service Company was responsible for the maintenance and operation of this equipment. To aid in the operation, 65 operators were attached to the platoon from other Fifth Army Engineer regiments, and schools were conducted to make these men proficient in their jobs.

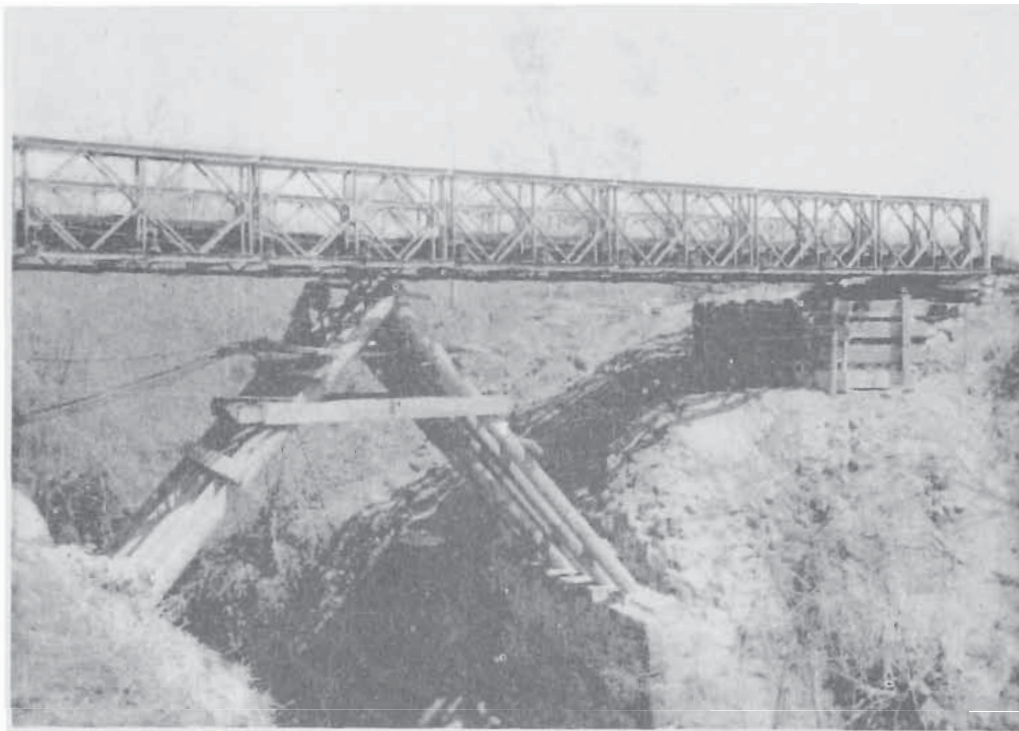
VOLTURNO TO MAY 11TH. PHASE



175 TH. ENGINEER GENERAL SERVICE REGIMENT
OPERATIONS

175th Engineer General Service Regiment (cont'd).

Company "D" was attached to the Fifth Army Engineer Supply Section to operate the advance engineer depot and bridge depot located near Vairano. One platoon was assigned the operation of the depot, which involved the receiving, storing, and dispatching of bridging equipment, including Bailey bridge, steel treadway bridge and various types of assault boats and ferrying equipment. Another platoon was assigned to the engineer depot to receive, store and dispatch the engineer material. The remaining platoon was assigned the operation of the railhead serving these dumps. The work of all three platoons involved the supervision of Italian labor.



175TH ENGINEER BRIDGE NEAR TEANO

One of the major problems of Company "E" with the II Corps bridge train was the lack of operators for the thirty-one 2½-ton trucks and 6 Brockways. The first few weeks were devoted to training drivers and to practice construction of Bailey and treadway bridges. Relieved from duty as the Corps bridge train when II Corps was withdrawn from the line for a period of rest, Company "E" again came under regimental control and operated as a transportation company, assisting in operating rock quarries and road maintenance.

When II Corps was relieved by the New Zealand Corps on the Cassino front, Company "E" was called on to act as a treadway bridge train for the New Zealand Corps for the crossing of the Rapido River. The train consisted of one officer and thirteen enlisted men. While carrying on this task, the detail was cited by the New Zealand Corps for meritorious service. Four men of this group were awarded the Bronze Star Medal and three were awarded Purple Hearts for wounds received during the artillery barrage in the streets of Cassino.

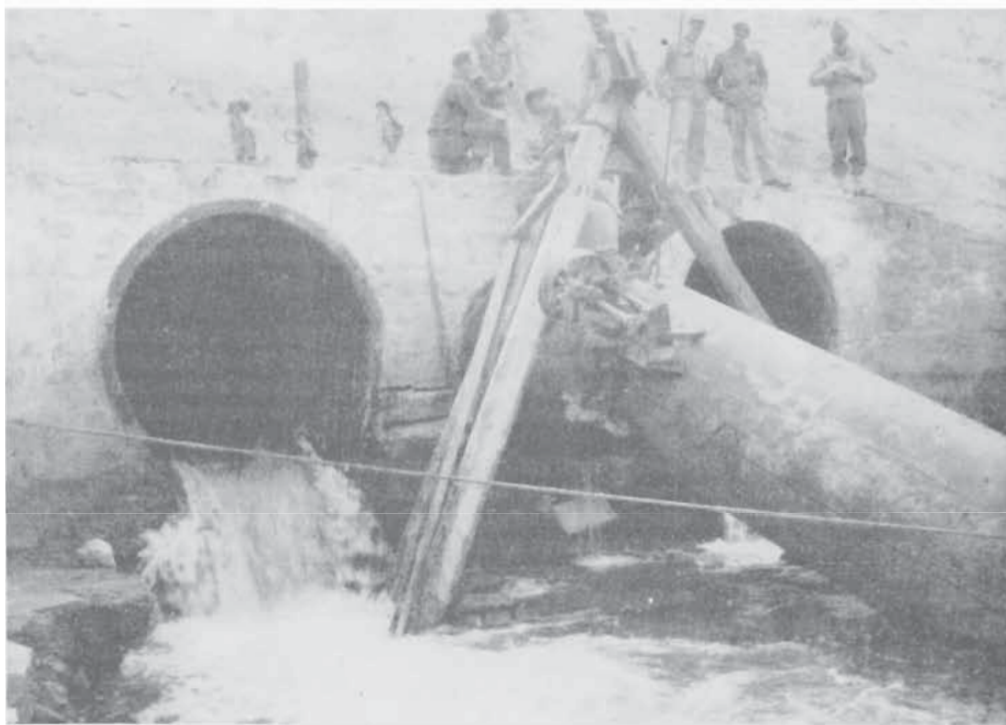
From 1 April to 28 April, Company "E" was again acting as the bridge train for II Corps, taking additional training on bridge train operation with various engineer regiments that were assigned to II Corps. This consisted of many night problems over rough terrain. On 30 April, Company "E" began the first of five bridges across the Garigliano River in preparation for the drive of 11 May 1944. When Company "F" arrived in Italy in December, it was attached as bridge train to VI Corps, relieving the 85th Engineers.

SECTION III

175th Engineer General Service Regiment (cont'd).

On 3 January, Company "F" was attached to the French Expeditionary Corps to transport Bailey and treadway bridges. On 16 January, the first bridge was delivered to the French. Instructing French engineers in the erection of Baileys was started in the last days of the month. On 31 March, the company moved to Teano, which was the new area for the French Engineer Training Center. All of the engineer units of the French Expeditionary Corps were trained on Bailey and M-1 treadway bridges on five nearby sites. The average time spent for each unit was one week, and during that time mine and other engineer training was carried out. All training at Teano was continuous day and night until 11 May 1944.

Other units of the regiment were occupied with general engineering work of varying types. Rock quarries were operated, and roads and bridges built. The 20-mile road net from Teano to Cascano was maintained, with 15 Bailey bridges along the route. During the winter months, until 11 May, the 175th built 6 fixed bridges of wood and steel construction and 6 culverts to replace 670 feet of Bailey bridging.



SIPHON BUILT BY 175TH ENGINEERS NEAR FRANCOLISE

Two cub air strips were constructed for the Fifth Army Command Post. The first one was at Presenzano, with pierced steel plank used for the landing strip. Hard standings were built for parking of the planes. The second cub strip was at the junction of Routes #7 and #723. The grading of the runways presented some difficulties because of the rain. The steel plank used at the first field was moved forward and relaid at the new field. Hard standings were then built for 12 planes. The runways at the two fields were 1140 feet and 1850 feet in length, respectively.

Miscellaneous jobs were done for four hospitals and three dumps during the same period. Transportation provided 12 trucks to help bring supplies for the Anzio beachhead to the landing craft in Naples harbor. The 175th was also assigned malaria control in a sector in the vicinity of Francolise. This was the regiment's most important undertaking, and an interesting one because of its unusual nature. A pool extending about 5 acres was dammed up behind a railway fill and culvert on the site of a bridge demolished by the Germans. The pool was caused by the inlet elevation of the culvert being about 8 feet above the elevation of the original stream bed. After considering all the data collected and the possible methods of draining the pool, it was decided to construct a siphon, using for part of it the center pipe of the existing triple pipe culvert and fastening 48-inch pipe bends to each end of the culvert to form the inlet and outlet of the siphon.

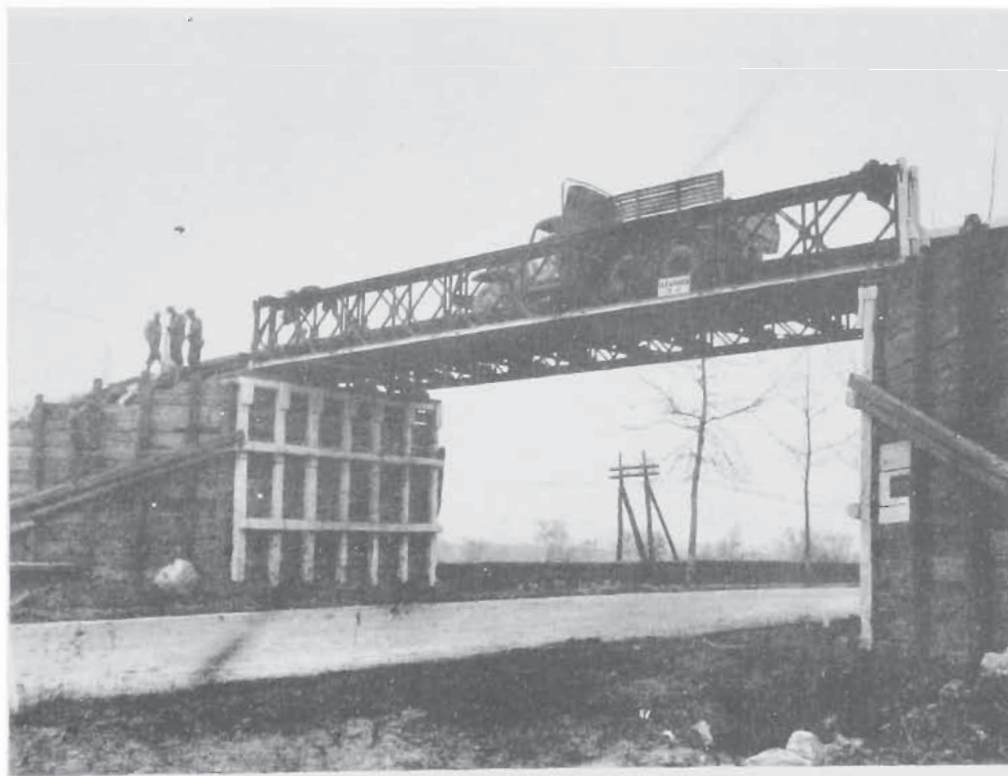
175th Engineer General Service Regiment (cont'd).

Each end of the siphon was submerged in a pit excavated in the stream bed at either end of the culvert. When the downward bent ends had been connected and the leaks caulked, the water flow was started through the siphon by damming the ends of the remaining two pipes, closing the gate on the outlet end of the siphon, opening an air vent at the highest point of the siphon pipe, and allowing the pool to rise high enough to fill the siphon. The gate was then opened, the air vent closed and water began to flow through the siphon. It worked successfully and the operation continued until the pool had gone down eight feet, at which level the siphon had accomplished its purpose in draining, and although it probably lost its prime after the regiment moved elsewhere it could have been put back in operation at any time.

337th Engineer General Service Regiment

During the phase of the Italian campaign from 6 October to 11 May, the 337th Engineer General Service Regiment's major assignment was the maintenance of roads to expedite the movement of personnel and supplies to the forward areas. The regiment, under command of Colonel D. L. Hooper, was faced with the problem of keeping all roads open and in such condition that every type of vehicle could safely use them. In normal weather, this requirement could have been met without undue difficulties, but with the rains during the months of November, December, January and February, and the large quantities of mud deposited on all roads by vehicles leaving bivouac areas, traffic movement was seriously threatened. To solve this problem, the 337th constantly patrolled the roads with motorized road graders, while troops shovelled the mud off the road shoulders. A large number of civilians was employed in this phase of road maintenance in addition to the soldiers of the 210th Engineer Company.

During the winter, the unit's 420-mile road net included main and secondary roads from Avellino and Benevento to Iserna, Teano, and Campobasso. The maintenance of these roads required approximately 30,000 cubic yards of crushed rock and quarry run stone. To obtain this required material, eleven rock quarries were opened and operated. The largest of these quarries was at Francolise, with a production of 21,000 cubic yards of crushed rock--9,500 cubic yards of which was produced in April. Stock piles of 5 cubic yards of the rock and one barrel of bitumen were established every third of a kilometer on Route #7 between Capua and the Garigliano River.



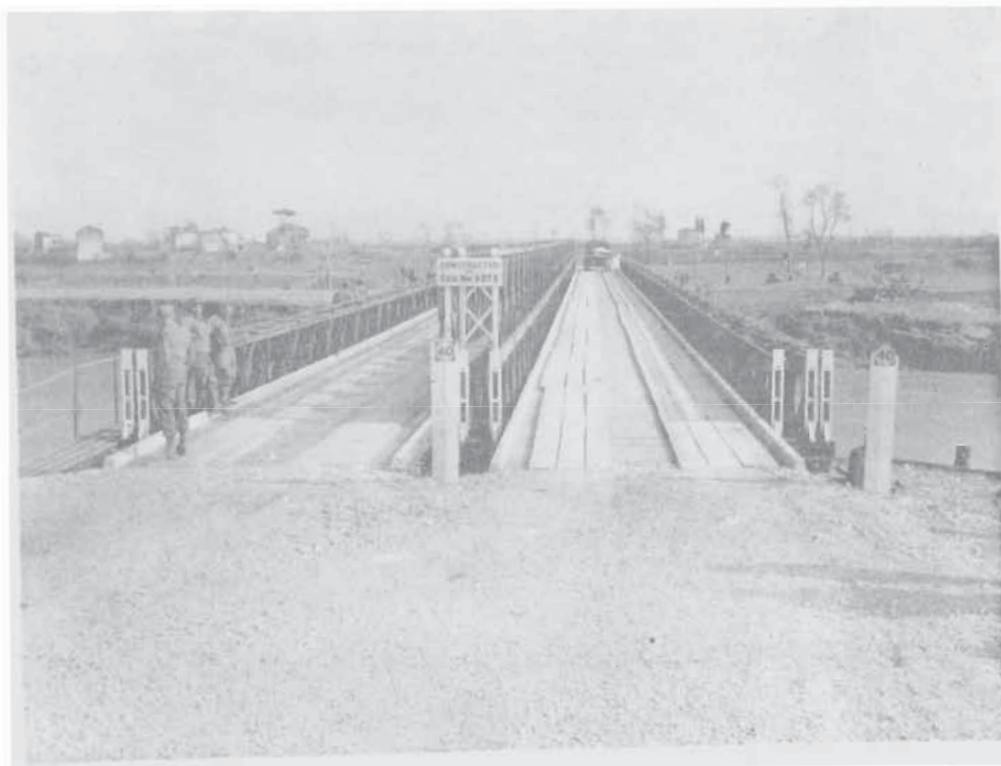
337TH ROAD OVERPASS NEAR CAPUA

337th Engineer General Service Regiment (cont'd).

All other problems of road maintenance caused by the heavy rains were handled in a normal manner: among these were "weep holes" to insure drainage of road surfaces, cleaning all canals, ditches and culverts of obstructions and, whenever possible, the removal of debris from demolished bridge sites. Two overpasses were constructed to eliminate left turns and traffic congestion. One was constructed at the intersection of Routes #6 and #7, the other at the intersection of Route #7 and Route #721. Double-single Bailey bridges were used to bridge the main routes of communication. Both overpasses were just north of Capua; 19,176 man-hours were required to complete the assigned jobs.

Approximately 415,000 man-hours (inclusive of Italian Engineers and civilian labor) were required to maintain all assigned roads during the static phase of this campaign. To insure rapid movement of all traffic and eliminate bottle-necks, 12 semi-permanent wood and steel bridges were designed and constructed, totalling 457 feet. As all of these bridges were of minor proportions, no unusual problems were encountered; standard design and construction was followed in each assignment. Two major and eleven minor Bailey bridges were constructed during this phase, with an aggregate length of 1,610 feet.

At Cancellor-Arnore, the first triple-single, triple-double Bailey type bridge was built across the Volturno. The bridge was a 270-foot Class 40 with a dual carriage-way. Two outer trusses were of triple-single construction, and a center truss, dividing the two lanes, was a triple-double support. It was constructed between 12-20 February 1944.



337TH TWO-WAY BAILEY AT CANCELLO

During the winter campaign, the 337th developed a specialized mine removal and instruction team which cleared or checked twenty-one areas for mines and booby traps, in addition to the regularly assigned minefields and routine checking of all jobs. The team instructed ten units of all branches how to neutralize and remove enemy land mines and booby traps.

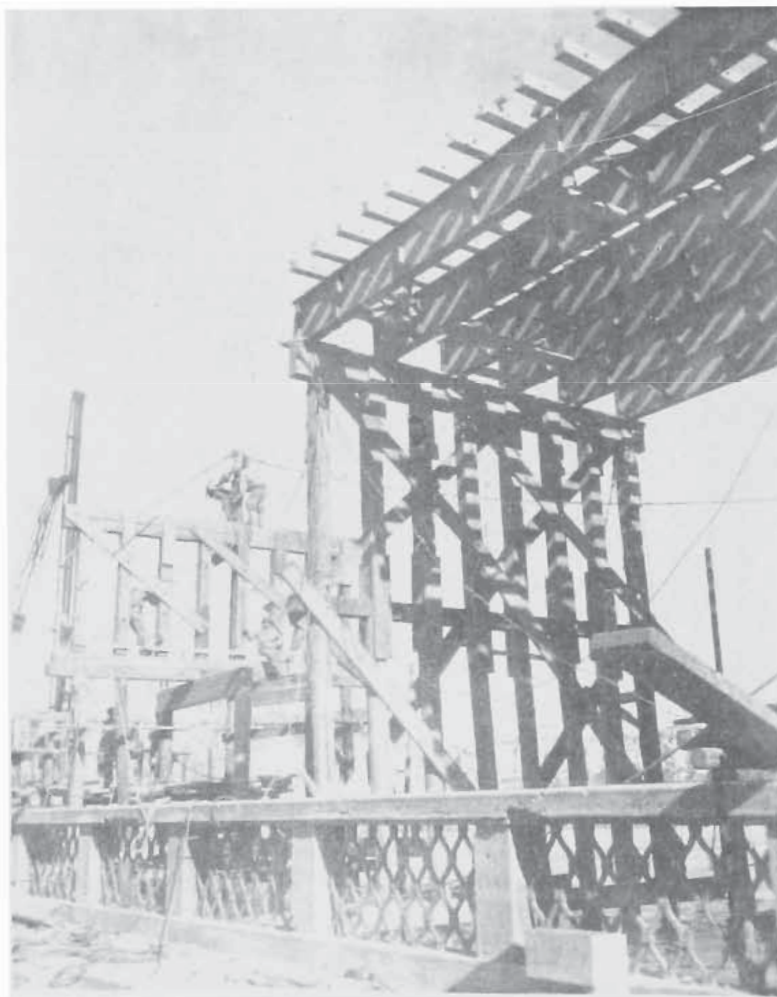
Thirteen medical units were assisted during the October - May phase of the campaign. An Italian hospital was remodeled; buildings and tent areas were checked for mines and booby traps; entrance and access roads were built; tents and pre-fabricated buildings were erected; water and sewage systems installed. During this same period, the 337th worked on forty-eight other assigned jobs for various units, requiring approximately 114,000 man-hours of labor. Included in these assignments were the construction and painting of 10,000 unit designation signs and holders, plus route and direction signs for all roads.

337th Engineer General Service Regiment (cont'd).

A river gauging station on the Volturno River near Caiazzo was provided to protect the floating bridges downstream. The 337th also was engaged in a malaria control campaign. All streams, canals, ditches, culverts and fields were checked to insure that water was not allowed to stand in the vicinity of Francolise. In accomplishing this task, several canals had to be cleared to provide adequate drainage, culverts had to be lowered and all shell and bomb craters filled. The regiment continued this sort of work until the beginning of the next phase of the Italian campaign on 11 May.

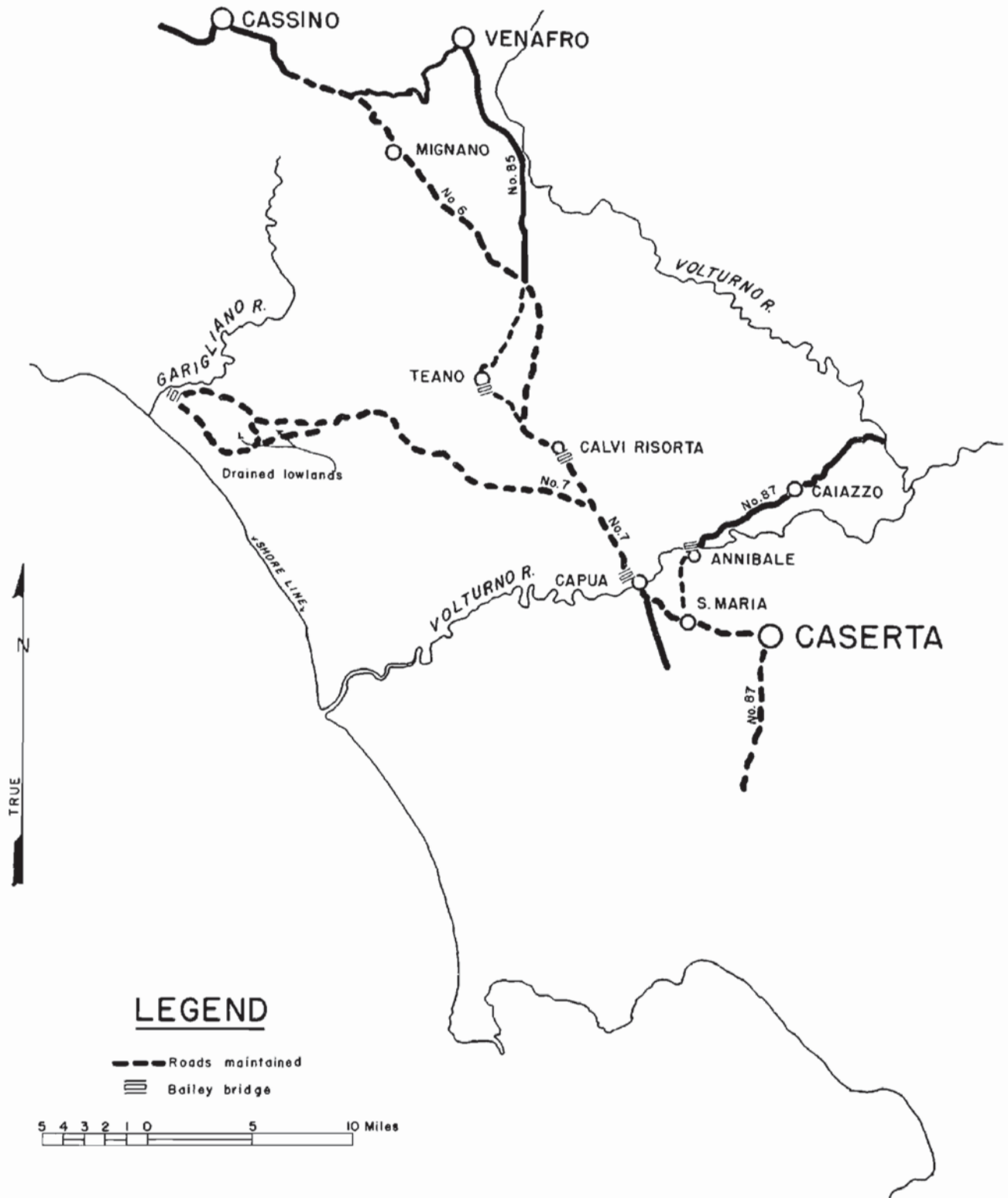
343rd Engineer General Service Regiment

On 17 October, the 343rd Engineer General Service Regiment, commanded by Colonel R. Dunbar, was given the assignment of bridging the Volturno River both at Capua and Ponte Annibale. Operations were started immediately, but were temporarily halted at Capua because of enemy fire. Work was resumed on 21 October by the 1st Battalion, and the bridge was open by Sunday night, 7 November. The bridge at Ponte Annibale, assigned to the 2nd Battalion, was completed on 3 November after fifteen days of construction. A traffic count revealed that an average 10,000 military vehicles of all types crossed the Capua bridge each day. During the flood period in November, this was the only bridge across the Volturno which remained continually open to traffic.



343RD BRIDGE AT CAPUA UNDER CONSTRUCTION

VOLTURNO TO MAY 11TH PHASE



343RD. ENGINEER GENERAL SERVICE REGIMENT
OPERATIONS

SECTION III

343rd Engineer General Service Regiment (cont'd).

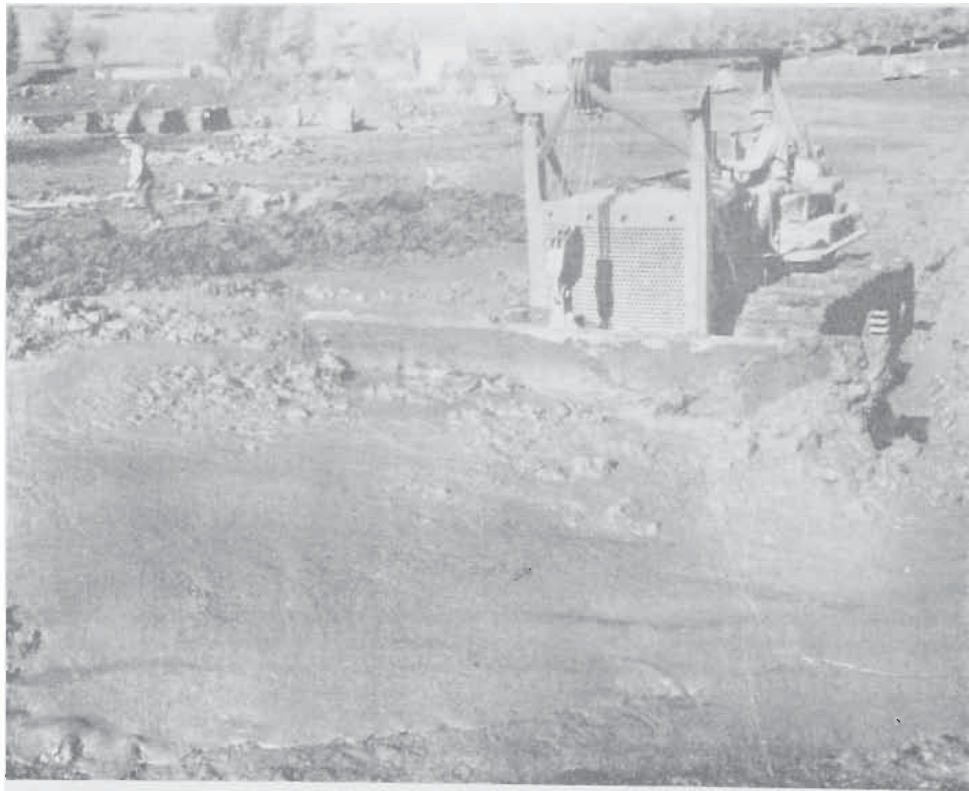
At Calvi Resorti, another important bridge was built. The remaining arches of the badly damaged bridge were used to the best advantage and a 200-foot timber and steel structure built beneath the Bailey bridge already constructed at the site. Later, the road was closed for five hours while the Bailey bridge was removed.

The 343rd constructed numerous smaller bridges on Highways #6, #87 and the secondary routes of communication to facilitate the supplying of the troops moving forward. In addition, the regiment was responsible for the maintenance of routes of communication and construction of hospitals and depots in the Army area.

During the first months of 1944, the regiment was engaged in marking minefields in the heavily mined area from Venafro and Mignano to Cassino, and the maintenance of Highway #6 from Vairano to Mignano, plus all the secondary connecting roads. In Caserta, the regiment remodelled and repaired buildings on the Palace grounds for an Army Rest Camp. In March, the regiment constructed a 330-foot Bailey bridge in Teano to relieve the burden on Route #6.

Meanwhile, one company left for the Anzio beachhead to help construct an underground Army Advance Command Post. During the spring months, as the American forces shifted to the left flank, the regiment was charged with the maintenance of the bridges across the lower Garigliano River. Warmer weather brought with it the threat of malaria and the problem of cleaning miles of small streams and ditches. Other jobs were extending electric power lines and repairing the pumping station to drain the low land at the mouth of the Garigliano.

As spring came and the rains ceased, mud turned into dust. As a dust preventative, oil was spread over the road surfaces, water sprinkled on, and calcium chloride added. Oiled roads were the best, but the supply of oil was limited, often making it necessary to use other methods. The oil that was used was salvaged from the Navy, taken from destroyed or captured German tanks, or reclaimed from Allied vehicles. When it was necessary to thin the oil, gasoline, or preferably kerosene when available, was used.



343RD ENGINEERS IN THE MUD

SECTION III

343rd Engineer General Service Regiment (cont'd).

The water sprayed on the roads was limited in amount only by the number of water trucks available -- most roads could stand sprinkling several times a day. Calcium chloride was most successful when spread fairly heavily over the road surface and given time to set. On an army road, this was not possible; the traffic could not be stopped. The limiting factor, however, was the amount of calcium chloride available -- the amount needed for army roads was prohibitive.

In addition to road work, twenty-seven fixed bridges and culverts were constructed during this period, plus one Bailey bridge erected and eight removed. Mines were picked up from twelve minefields; work done on twenty depots and dumps, and twenty hospitals; a railhead constructed and enlarged; prisoner of war inclosures built; road signs painted and placed. At the beach at Mondragoni, recreational facilities were installed, including a baseball diamond, volley ball court, life guard towers, cold showers, latrines and dressing rooms. There were accommodations for approximately 200 officers, 30 nurses, 20 enlisted men and 20 enlisted women.

While the Army was gathering its forces for the 11 May attack, a complete bridge was assembled by the 343rd and made ready to place across the Garigliano as soon as the military situation would permit pile driving equipment to be used.

344th Engineer General Service Regiment

The 344th Engineer General Service Regiment, commanded by Colonel Ralph H. Cameron, had arrived at Naples 17 November and received its equipment at Bagnoli. Company "C" moved near Triflisco on special duty on 29 November, where it assisted in the operation of an Army bridge dump. The company did not return to the regiment until 7 January 1944.

At the beginning of December, the regiment, less Company "C", began work as Army engineer troops on the roads south of Cancellò, Capua and Caserta. The operations of the regiment moved forward as the situation warranted throughout November and December. This period was considered by the regiment as the most disheartening of its entire service. The rain, the cold and the single-lane macadam roads being beaten to a pulp by the heavy traffic did not make things too cheery. Often the roadside ditches, not running with water, were filled to road level with soft, oozy mud. Men had to stand long hours in knee-deep water without boots or satisfactory raincoats to open drainage ditches or scoop out the mud. At one poor stretch of road, over 300 feet in length, rock to the depth of seven feet had to be laid before the road could be stabilized for traffic.

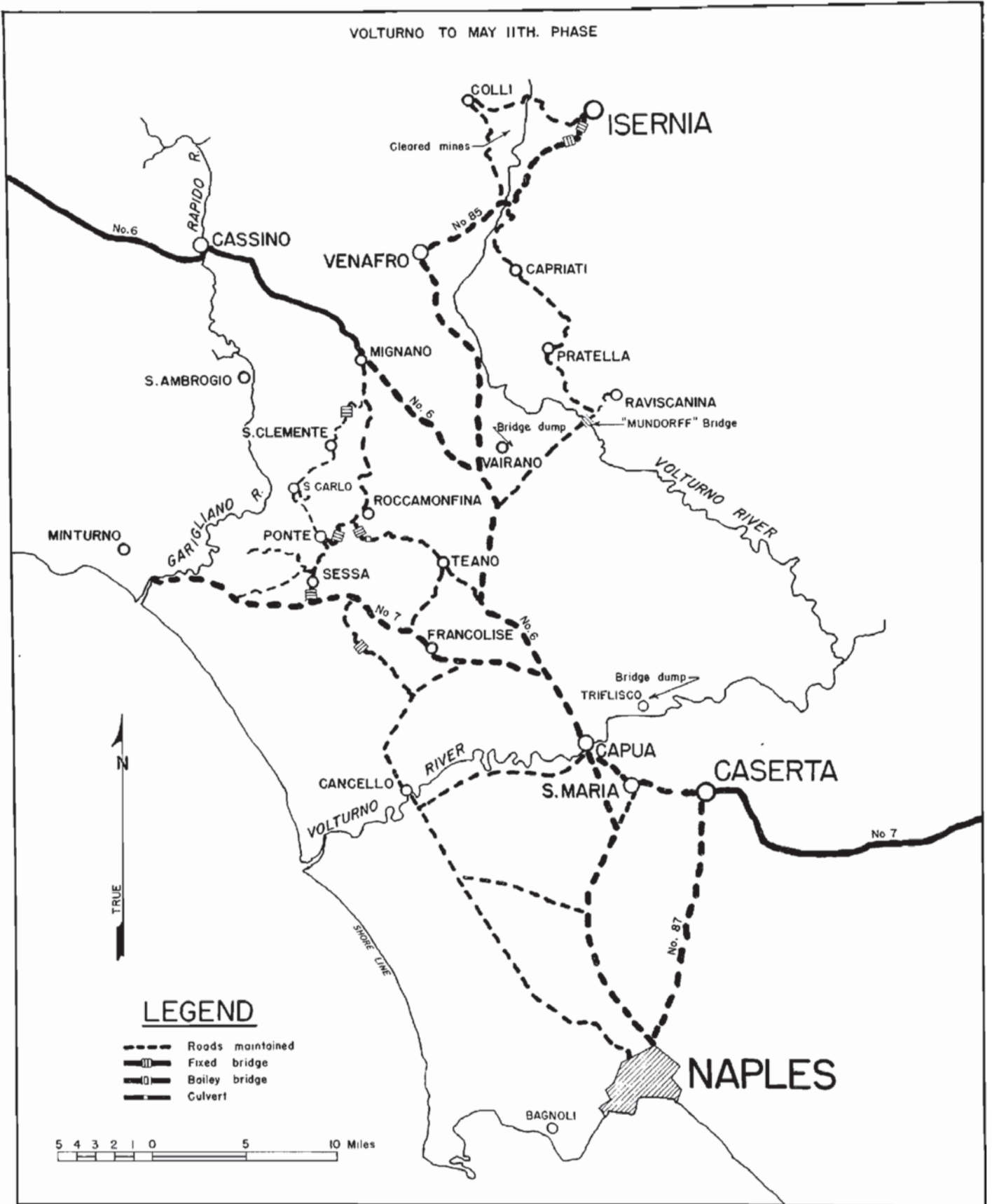
At Christmas time, Companies "E" and "F" undertook the construction of a 530-foot Bailey bridge over the Volturno River near Raviscanina, the longest Bailey erected by American troops up to that time. While the concrete caps were being placed on the six usable piers, a high flood came down the river, washing out a great part of the concrete and much of the equipment. A day later, on 31 December, high winds and sub-freezing temperatures stopped all operations for several days. The winds blew down all tents of the construction companies. Personal equipment that was not blown or washed away was damaged beyond repair. On 15 January, the 1st Battalion of the 344th was assigned the mission of being engineer combat troops in direct support of the Moroccan Division of the French Expeditionary Corps in the Colli area. The French troops were African natives and not well qualified in field engineering. The sector was very mountainous and the macadam roads narrow and winding, making bypasses almost impossible. The weather was uniformly bad; icy cold with rain or snow almost every day.

At the same time, the 2nd Battalion did road work and replaced Baileys on the Venafro-Isernia road. At one time or another, the 1st Engineer Company, 23rd Engineer Battalion and 2nd Section, Gruppo Artiglieria, (all Italian units) were attached to the battalion. Numerous quarries were operated, and all trucks used that could be obtained. One of the new routes built was a concealed road which ran down a stream bed for four miles. Over 2,000 lbs of explosives were used in its construction. In addition, the battalion maintained eleven Bailey bridges, installed five culverts and fenced off and removed several minefields.

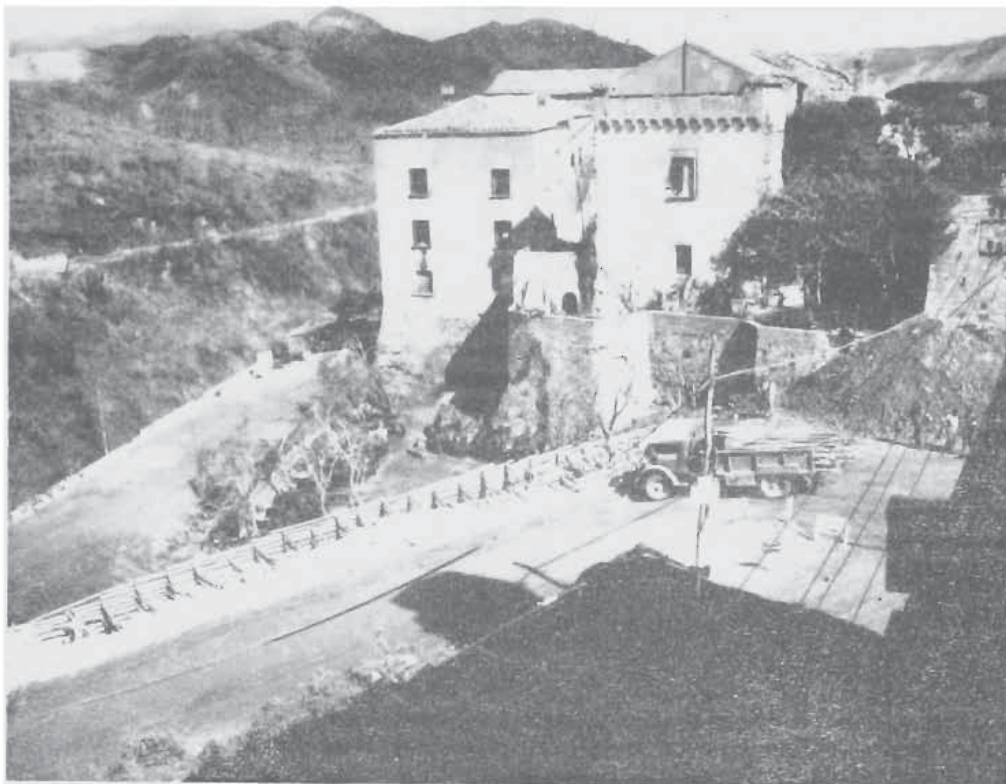
The entire regiment was in the general vicinity of Sessa by 10 March. Here, it operated as Army engineer troops, mainly supporting the French Corps. The road from Sessa to Mignano, which connected Highways #6 and #7, was the most important route maintained at that time. Nearly all roads leading to the Garigliano River were resurfaced or rebuilt, much of the materials being delivered during the hours of darkness, because of enemy observation.

On 27 April, the 1st Battalion assumed the work responsibility of the 2nd Battalion, which then moved to the vicinity of Francolise for a one-week refresher course in basic and technical training. On 5 May, the battalions reversed the procedure and the 1st Battalion began its training. Upon completion of the respective battalion training periods, each returned to its bivouac and reassumed its original work assignment.

VOLTURNO TO MAY 11TH. PHASE



344TH. ENGINEER GENERAL SERVICE REGIMENT
OPERATIONS



ROAD REPAIRED BY THE 344TH

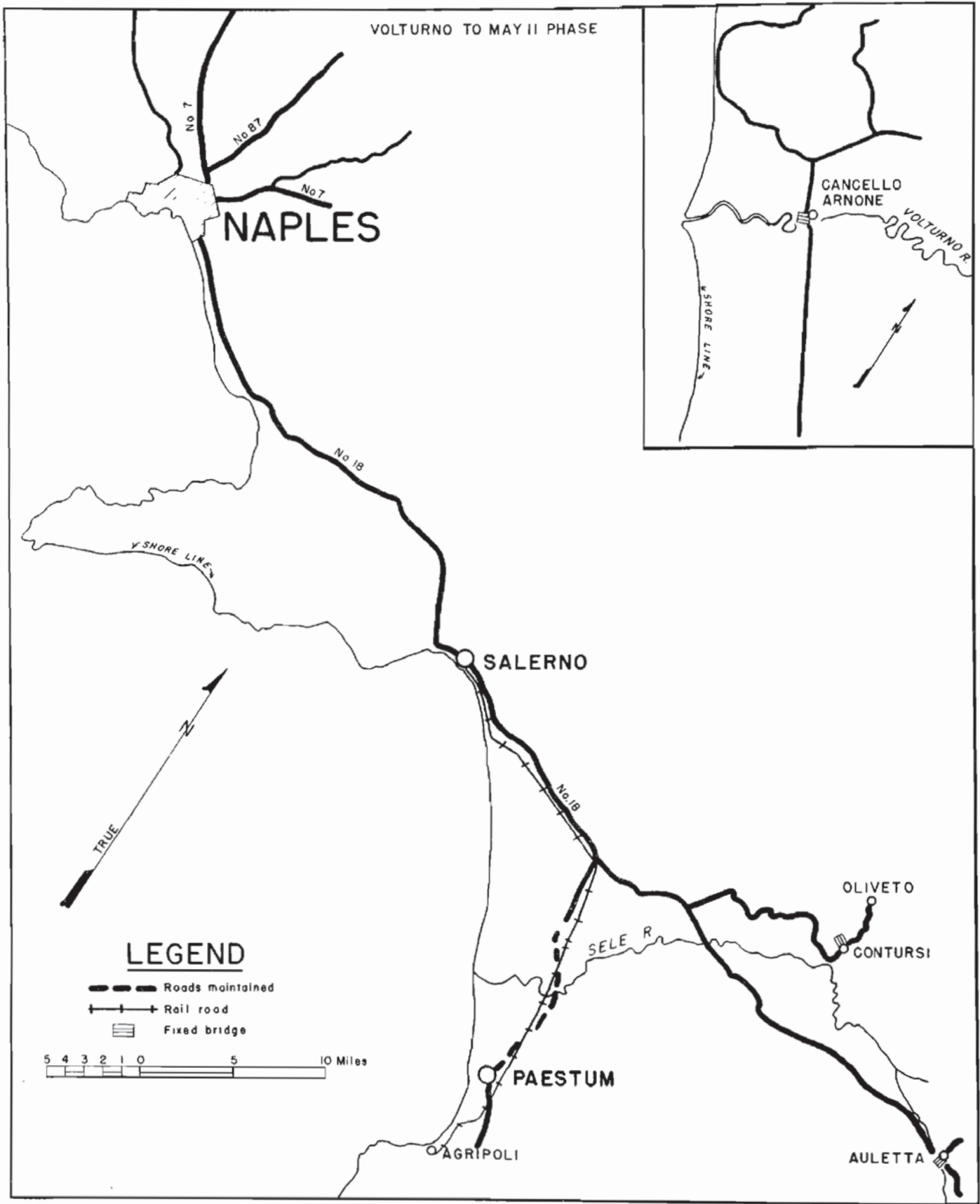
531st Engineer Shore Regiment

On 14 October, the 531st Engineer Shore Regiment constructed a one-way, Class 70 timber and steel stringer bridge near Auletta to carry the main traffic from the south and east to the Salerno front. A damaged arch bridge near Oliveto over the Sele River was repaired and a one-way Class 40 bridge was built near Contursi over the same river. On 31 October, the 3rd Battalion was assigned the construction of a one-way Class 70 bridge on the main supply route across the Volturno River at Canello-Arnone.

Thirteen spans, 16 to 30 feet in length (determined by available I-beams), were required for a total length of 266 feet. The bridge site was within enemy artillery range and sporadic shelling was encountered when equipment started arriving at the site. The bridge was strafed by enemy planes the day it was completed. I-beams were obtained from a steel mill in Naples, piles from engineer dumps and green eucalyptus trees, and lumber from established depots.

Work started on 1 November and was completed on 7 November. A pile driver could not be located at the time and since pile driving equipment for the Quickway crane was not available, one was improvised by using as the hammer the breech and a portion of the barrel from an Italian 240 mm gun. It was guided on small rails fastened to 3" x 12" leads. Piles were driven to 15-foot penetration with this rig. In addition to construction of fixed bridges, Bailey bridges erected by combat engineer units were dismantled by the regiment and returned to engineer depots.

Minefield clearance in the beach area was continuous. The 2nd Battalion removed over 5,000 Tellermines and "S" mines during normal operations, the other battalions removing a slightly smaller number. Mine clearance on a large scale was hampered by the shortage of personnel due to the necessity for using the engineers as labor in unloading supplies and road maintenance.



**531ST ENGINEER SHORE REGIMENT
OPERATIONS**

SECTION III

531st Engineer Shore Regiment (cont'd).

On 5 November, the 1st Battalion was moved to Naples, where it was attached to the Peninsular Base Section and engaged in the task of clearing the dock area of wreckage, chiefly in the vicinity of a giant hangar for amphibian aircraft which had been completely destroyed by enemy demolitions. Several heavy dockside cranes found in a disassembled condition were assembled by the motor section of Company "B", and later used in clearing the dock area and unloading cargo from ships.

The 531st Engineer Shore Regiment, commanded by Lieutenant Colonel Russell S. Lieurance, released from assignment to Fifth Army on 13 November 1943 and embarked from Naples on 18 November for return to England in preparation for the invasion of France. Later in August 1944, it was reorganized and turned into the 1186th Engineer Combat Group.

540th Engineer Combat Regiment

As soon as the work in Naples of the 540th Engineer Combat Regiment, commanded by Colonel George W. Marvin, was accomplished, Base Section troops took over the remaining engineer projects and the regiment moved up in support of the Fifth Army to perform as Army Engineers. Company "E" remained in Naples for a longer period of time, continuing to haul steel from the Ilva Steel Mill in Bagnoli to the Fifth Army Engineer Depot. The principal duties and assignments of the regiment were to construct bypasses, improve roads, clear minefields; erect, maintain, and dismantle Bailey bridges and construct fixed bridges to replace the removed Baileys. A minefield was cleared at Mondragone Beach, where 1050 Tellermine were removed.

The inclement weather and the swollen rivers and streams made construction and maintenance of the various bridges in this sector a matter of vital importance. Nevertheless, all the roads and bridges were kept open to traffic at all times.

Immediately after New Year's Day the regiment was notified that it would serve as Shore Engineers for another amphibious assault, and was attached to the 3rd Division for the operation at Anzio. A portion of the regiment's S-3 section went to Caserta, and there worked closely with the Special Planning Section of the 3rd Division at Fifth Army Headquarters. Prime purpose of this arrangement was the coordination of tactical planning for the forthcoming operation.

On 3 January 1944, the regiment moved to Cuma, and after the addition of numbers of specialized units, and Ordnance, Engineer, Signal Corps, and Navy personnel, the landing party totalled approximately 7,200.

The regiment then made several practice amphibious landings. Considerable time was also spent in thoroughly re-equipping for the anticipated move. Comprehensive study was given to maps and photo layouts of the Anzio beach area in order that location of exit roads, traffic circulation and dump sites might be determined.

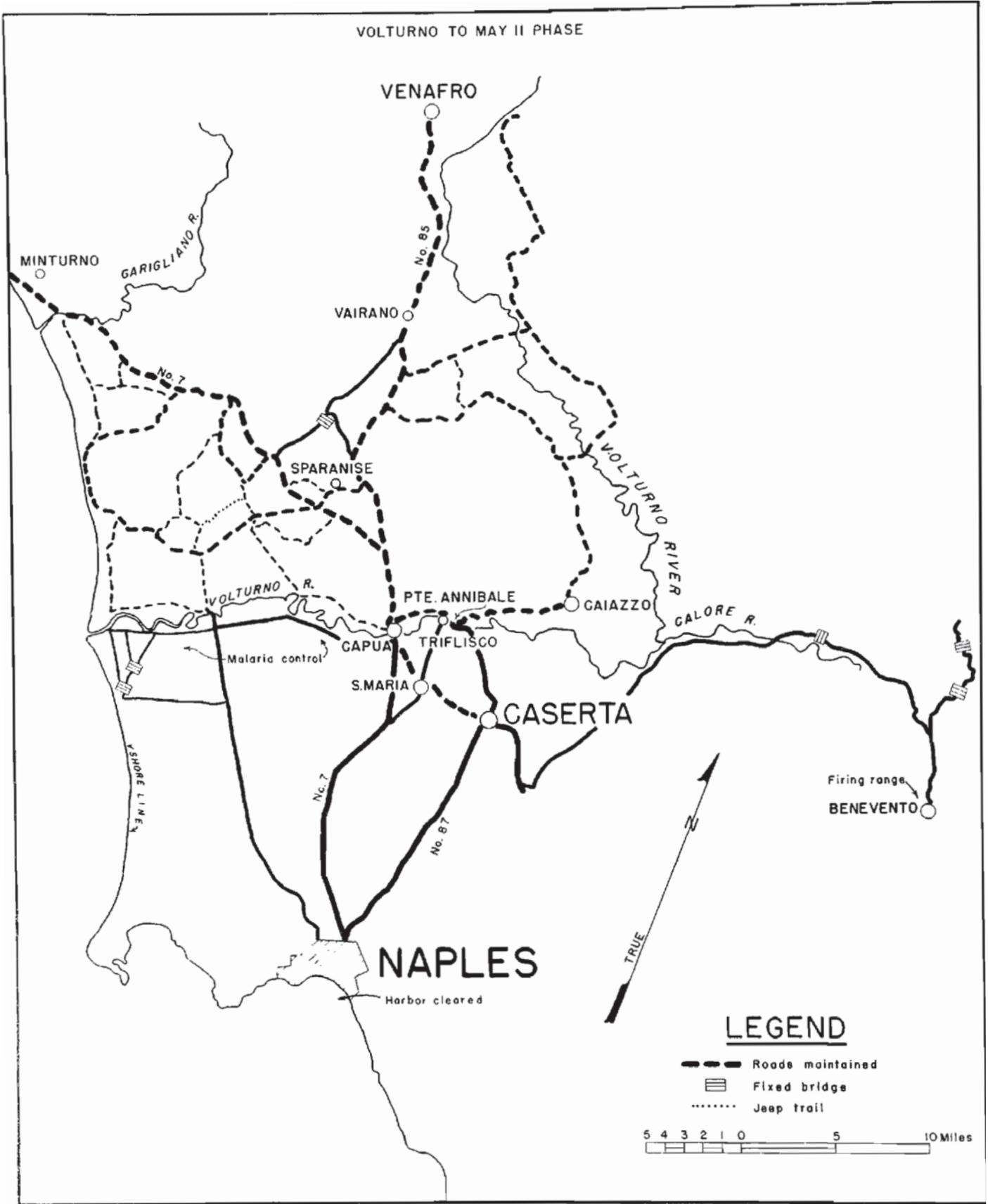
92nd Engineer General Service Regiment

The 92nd Engineer General Service Regiment, commanded by Lieutenant Colonel George W. Bennett, sailed from North Africa and landed at Naples on 17 November 1943. Although assigned to Fifth Army at that time, the regiment was attached to Peninsular Base Section to work on the port facilities in Naples harbor. This work consisted of clearing away wrecked buildings and equipment, building and improving roads, constructing and maintaining fences around the port area, and assisting in the construction of unloading facilities for transports and cargo vessels.

On 20 December 1943, the 2nd Battalion was released from attachment to Peninsular Base Section. On 5 January 1944, the rest of the organization was released, and the entire regiment entered the Fifth Army area north of the Volturno River. The maintenance of roads in the vicinity of Triflisco was taken over, and during the winter the road net was increased to include the main supply road from Capua to Vairano to Venafrò, and the secondary supply road from Capua through Caiazzo to Venafrò, with two lateral roads connecting the two supply roads.

While the Army was stalled before Cassino, the regiment had the job of maintaining the Capua and Ponte Annibale bridges across the Volturno River. This maintenance included major repairs on the Capua bridge, damaged by scour and floating debris. After the winter floods, these two bridges were the only Army bridges left across the Volturno between Naples and the front. Although the Ponte Annibale bridge was closed for a few hours during the worst of the flooding, the Capua bridge, as mentioned in the 343rd Engineers' section, remained open throughout.

VOLTURNO TO MAY II PHASE



92 ENGINEER GENERAL SERVICE REGIMENT
OPERATIONS

92nd Engineer General Service Regiment (cont'd).

On one occasion, the night of 12 February, the river rose to flood height and the rising water and floating debris of all types carried on the crest of the flood jammed against the bridge and cracked one bent. While the fate of the bridge hung in the balance, a detail of men clambered below in the under-structure, and working in total darkness, just above the torrent, cleared the bents and with the aid of cables anchored the bridge to the banks.

In the spring, when the Fifth Army shifted to the left, the regiment was assigned secondary roads. Later, as the push began on the Garigliano, it took over all the Fifth Army road net between the Garigliano and the Volturno. Prior to the May offensive, the regiment constructed 8 steel stringer bridges and 6 Baileys. Also, the 92nd marked and cleared several mined areas and improved the railhead at Sparanise by constructing roads, entrances, hardstandings and drainage facilities.

In April, the 92nd was assigned the job of malaria control in the area along the Volturno from Capua to the Tyrrhenian Sea. The regiment spent over a month in this work. The Italian drainage system had been completely ruined when the departing Germans demolished two pumping stations that drained the main canals. Digging down through the rubble, the sites were found and cleaned, concrete foundations poured and two electrical pumps were installed, one at each station. The main canals were dredged and water at the rate of 4,000,000 gallons per hour was pumped through the system.

Dry land appeared where lakes had been. Drainage ditches were cleaned and demolished bridges were removed where they seriously obstructed the flow of water. In connection with the pumps, it was necessary to repair approximately 15 miles of transmission line in order to have power to operate them. At the foot of the mountains near Benevento, the regiment built a rifle range for training the Rangers. Ranges there were 200, 400, 800 and 1,000 yards in length. During the winter, when all units were fighting rain and mud, the regiment operated five quarries and gravel pits to supply rock for the main roads, access roads to hospitals, water points, dumps and other army installations.



92ND ENGINEERS BUILDING OVERPASS NEAR CAPUA

387th Engineer Battalion (Separate)

On 10 October 1943, the men of the 387th Engineer Battalion (Separate), commanded by Lieutenant Colonel William H. Bender, climbed down from their ship in the Bay of Naples into landing craft and after chugging around in circles for an hour or so landed in the taped-off beach at Bagnoli. The need for engineer troops in Naples resulted in orders moving the unit back to nearby Fuorigrotta. On loan from Fifth Army, the 387th Engineers were attached for three months to Fifth Army Base, which shortly became the Peninsular Base Section. During this time, Major John T. Ortino assumed command of the battalion.

On 12 January 1944, the 387th came under Fifth Army operational control for the first time, although the battalion had been an Army unit for nearly five months. The orders bringing it back to the Fifth Army also attached it to VI Corps. Immediately, the battalion was alerted for a movement by water. Companies "B" and "D", with a small staff detachment, were attached to the 540th Engineer Combat Regiment as part of the initial unloading detail for the landing at Anzio behind the German lines.

405th Engineer Water Supply Battalion

At the time of the fall of Naples, Battalion Headquarters, Headquarters and Service Company, and Company "B" of the 405th Engineer Water Supply Battalion were in North Africa, preparing for a motor movement to Tunisia, and subsequent shipment to Italy. Company "A", less the detachment with VI Corps, continued to operate with Fifth Army. On 18 November 1943, Company "C" was relieved at Naples and reverted to Fifth Army control, moving to Capua in support of II Corps.

On 26 November 1943, Battalion Headquarters, Headquarters and Service Company and Company "B" arrived in Naples under the command of Lieutenant Colonel Milton P. Barschdorf. Company "B" was immediately attached to VI Corps; Company "C" remained in support of II Corps; and Company "A" and Headquarters and Service Company serviced the Army area. The battalion for the first time operated as a complete unit in a campaign with a field army.

During the winter months and until the attack along the Garigliano line on 11 May 1944, the operations of the 405th were normal. A Standard Operating Procedure was pieced together bit by bit, as new and different problems were encountered and solved. Prior to operation of the battalion in Italy, certain policies had been adopted, but the final tests that determined their effectiveness were executed and evaluated during this period. As a part of this Standard Operating Procedure, it was decided that water installations for hospitals, bakeries and certain other fixed installations would be prepared and moved, when necessary, by the water supply battalion.

The winter rains in Italy caused streams to swell and resulted in a high increase in the turbidity--a turbidity that could not be entirely removed by the filter in the Mobile Water Purification Unit when the raw water was introduced to the filter direct from the stream. To overcome this difficulty, it was necessary to use additional pre-settling tanks into which the necessary chemicals were added in sufficient amounts to settle out much of the foreign matter, thereby enabling the filter to operate efficiently.

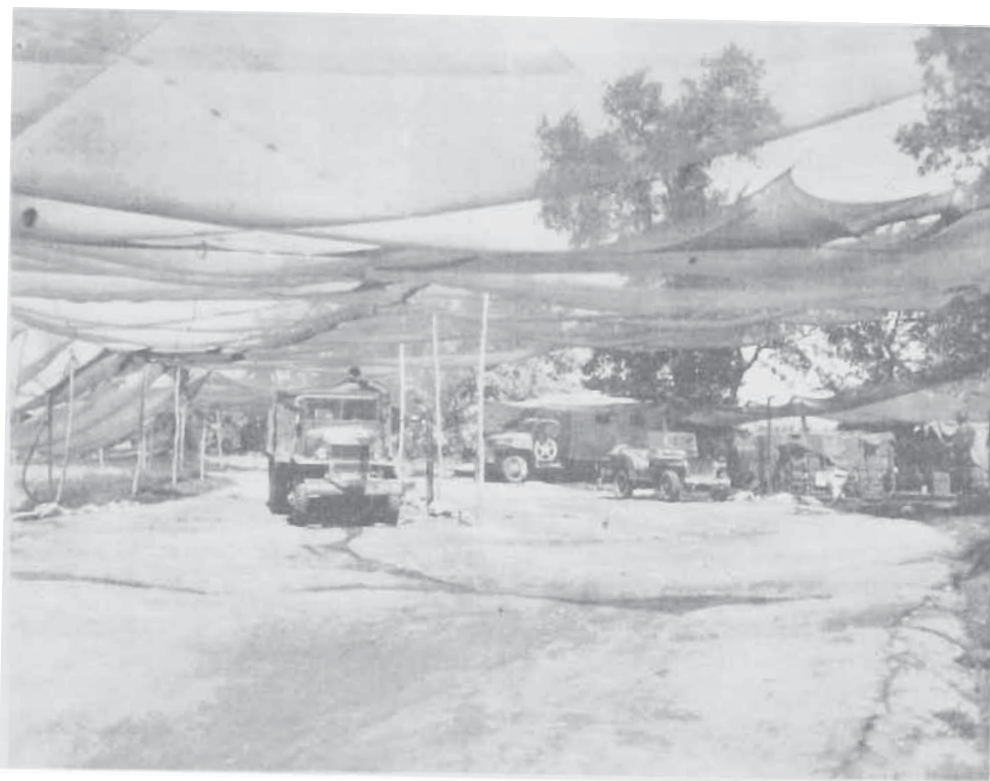
The most serious operational problem confronting the battalion was that of preparing and maintaining adequate turnabout facilities at the water distribution points. No dump trucks were allotted the organization, and though all available cargo trucks were pressed into service hauling stone and rubble, it was necessary at critical times to call upon the general service regiments for aid. This was the only phase of operations wherein the unit was not entirely self-sufficient.

The need for an easily recognized symbol on water point signs became apparent. The motto, "The Camels are Coming", inscribed on the battalion coat of arms, offered a ready solution. The figure of a camel with his head pointing in the direction of the installation was affixed to all water point and bivouac signs. To the troops who made the long trek from Paestum up the boot of Italy, the "sign of the camel" became almost synonymous with water.

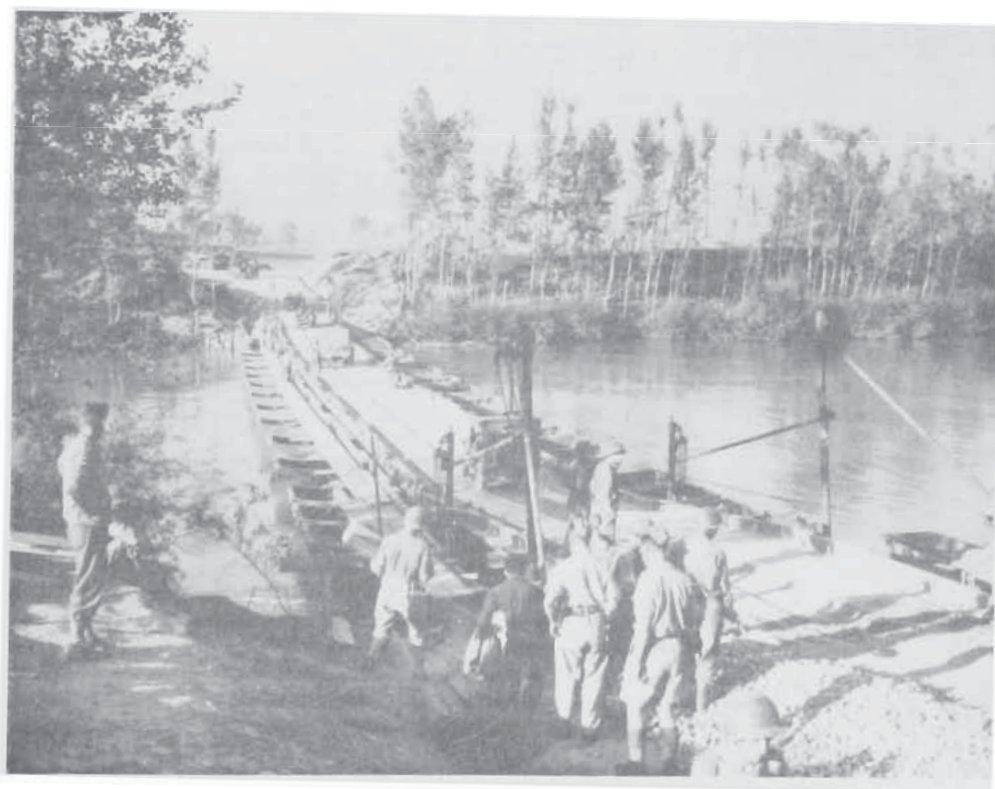
During the winter, a small detachment of men and pigeons from a Signal Pigeon Company were attached to Company "C" for rations, and before long the pigeons were being used to carry daily messages containing water production figures from outlying water points to the company command post.

Well drilling operations were initiated in the vicinity of Pietramelara on 3 December 1943. The first well was drilled to provide water for an army laundry unit which was located beside a stream that proved too muddy for use. In order to furnish the unit with clear water for its operation, more tankers than the battalion could spare were pressed into service. The well, however, the first one attempted in Italy, was not successful. Drilling operations were suspended after a depth of 650 feet had been reached and no water bearing formation encountered.

SECTION III



CAMOUFLAGED WATER POINT OF 405TH ENGINEERS NEAR SESSA



REINFORCED HEAVY PONTON BRIDGE ACROSS VOLTURNO
CONSTRUCTED BY 85TH ENGINEERS

405th Engineer Water Supply Battalion (cont'd).

The second attempt at Presenzano on 27 January, substantiated the old adage, "If first you don't succeed----", because here, at a depth of three hundred thirty feet, all the water that could be desired was found. A deep well turbine was set and a high capacity water point developed. The well came in at the height of the rainy season and greatly relieved the pressure upon a number of stream locations in the vicinity. Shortly thereafter, the well drillers brought in a carbonated well in the vicinity of Mondragone. The water wasn't good for drinking, but could be mixed up into a mean cocktail with the "local poison", as was soon discovered.



405TH WATER POINT NEAR ROCCAMONFINA

85th Engineer Heavy Ponton Battalion

On 17 October 1943, Company "A" of 85th Engineer Heavy Ponton Battalion, assisted by a detachment of Headquarters and Service Company, constructed a Class 40 heavy ponton bridge across the Volturno in the vicinity of Triflisco to replace an M-1 steel treadway bridge already in place. The replacement proved conclusively that the ponton bridge could handle a larger amount of traffic. While the treadway bridge was in place, vehicles had been lined up from two to three miles on both sides of the river waiting to cross. With the ponton bridge, however, the bottleneck was broken. On 22 October 1943, a traffic count was taken for a 24-hour period and it was found that 2,334 vehicles and 1,770 pedestrians had crossed over. This bridge, built under the direction of Major Leonard A. Perdue, was the first heavy ponton bridge put up in the European theater.

On 26 October, the detachment of Headquarters and Service Company established the Fifth Army Tactical Bridge Depot in the vicinity of Triflisco. The depot was operated directly under the Army Engineer and furnished bridging to the corps by means of bridge trains under the control of the Corps Engineer, who designated where the bridges were to be constructed. When the vehicles of the train delivered equipment to the bridge site, they automatically returned to the depot for another load. The depot stocked fixed and floating Bailey bridges, steel treadway bridges, infantry support bridges, heavy ponton bridges and other stream crossing equipage.

85th Engineer Heavy Ponton Battalion (cont'd).

Company "A" constructed a Class 40 trestle bridge, 90 feet long, in the vicinity of Venafro, on 15 November, which was used for seven days and then dismantled. The floods on the Volturno River damaged the fixed pile crib at Triflisco, constructed by the 343rd Engineer Regiment. On 16 November, Company "A" furnished a Class 40 raft to be used in the repair of this bridge. The cribs around the piles were built higher and the raft was used for carrying dump trucks loaded with rocks.

The 1st Bridge Platoon of Company "A" was attached to II Corps to operate the Corps bridge train on 22 November. It was determined by unloading the ponton equipage and reloading with Bailey bridge equipage that either 2 panel loads, 2 decking loads or 2 ramp loads could be carried on one standard heavy ponton semi-trailer. The accessory load could readily be transported in the cargo box of the prime mover. As the standard British Bailey bridge consists of 10 panel loads, 8 decking loads, 4 ramp loads and 2 accessory loads, it was required that 11 prime movers with semi-trailers be used to transport this bridge. With the Standard British Bailey bridge, sufficient equipment is available to construct either one 130-foot, double-double bridge, or two 80-foot, double-single bridges.

A Class 40 raft, used as a ferry, was constructed to aid the 337th Engineer General Service Regiment in the erection of a Bailey bridge in the vicinity of Piedimonte on 27 December. Another Class 40 raft to be used as a ferry was constructed the next day to help the 343rd Engineer General Service Regiment in the erection of a Bailey near Roviscania.

From 26 January to 18 February, the storm boat section of the 85th detachment, in the neighborhood of Castel Volturno, was given the mission of transporting the Commanding General of Fifth Army and his staff to a PT boat anchored off the coast. The PT boat then departed for the Anzio beachhead. When it returned, the storm boats picked up the passengers and brought them back to shore.

During the period from 10 February to 24 April, Company "A" demonstrated the construction of a Class 40, 5-boat ponton raft to the students attending the School of Military Engineering (British) at Capua. Each demonstration lasted one day, and 9 demonstrations were made for the school during this period.

On 11 February under blackout conditions, Company "A" constructed a 7-boat ponton raft, complete with landing stages, for the 337th Engineer Regiment to help with the building of the Bailey bridge near Cancellone over the Volturno. While unloading equipment for the raft, a prime mover and trailer became stuck and a bulldozer was called to the river bank to pull the vehicle up to the hard ground. The bulldozer ran over a double Tellermine, tossing the operator harmlessly up in the air and throwing the sergeant standing next to the dozer into the river. A thorough search of the banks and the river revealed no trace of the sergeant.

From the middle of February, the 85th did various jobs for three weeks, among them the rebuilding of an Italian home to be used as a signal repeater station, the construction of two 5-boat, Class 40 rafts for the 92nd Engineer Regiment, which was repairing a fixed pile bridge at Capua, the erection of two Class 40 Bailey bridges near Teano and the building of three culverts.

On 17 March, one platoon of Company "A" began to maintain a Bailey ponton bridge near Damiano on the Garigliano River. The Damiano bridge was one of the 5 Bailey ponton bridges across the Garigliano, all of which were under spasmodic German artillery fire. In order to avoid detection, a dummy ponton bridge was constructed about 100 yards downstream from the existing bridge. From the time of the completion of the camouflage bridge, the actual bridge received little attention from the enemy. The downstream bridge drew almost all of the fire.

On 2 April, the first platoon of Company "A" started construction of a 180-foot infantry support bridge on the upper Garigliano. The bridge site was under direct enemy observation, which necessitated building the bridge during blackout. The bridge was completed and open for traffic at 0200 hours the following day. During the daylight hours, a smoke screen was utilized and no vehicles were permitted to cross.

In order to facilitate the maintenance of the French engineers who took over the infantry support bridge, a demonstration was given, showing the French soldiers how to replace damaged assault boats and plywood treadways. After the demonstration, a small crew of French soldiers was left at the site to become more familiar with the bridge maintenance. One member of the French maintenance party discovered a German drifting mine along the banks of the river. He picked it up by the aerial and brought it to his officers, a captain and a lieutenant. The captain told the lieutenant to step back while he disarmed the mine. The mine exploded, however, and the French captain was no longer among the living.

SECTION III

85th Engineer Heavy Ponton Battalion (cont'd).

As further protection against drifting mines, 5 barriers made of camouflage nets, were placed upstream at an angle of 45 degrees across the river. Fifty caliber machine guns were set up to explode the mines when they failed to detonate upon hitting the barriers.

The radio operator of headquarters detachment operated a bridge warning system on the Garigliano River. Radios (SCR 284) were placed at every other bridge, while telephones connected the remaining bridges into the warning system. The net control station was located at the Fifth Army bridge depot, from which point materials and men could be expeditiously sent to the river if the need arose. Besides the possibility of the bridges being shelled, there was also the danger of a sudden rise in the water if the Germans demolished the dam on the Liri River (which, incidentally, they did not do).

On 9 April, the 85th was given the mission of making a channel at the mouth of the Volturno River to allow the Commanding General's Chris-Craft to come in and out of the river. A 3-foot channel was blown by detonating Tellermines on the bed of the river. The wave action of the sea would soon refill the channel, and for this reason the operator of the boat was instructed to run back and forth through the channel for 30 minutes each day. The action of the boat passing through the channel kept it open.

Company "A" replaced the infantry support bridge across the Garigliano by constructing a Class 28 heavy ponton bridge on 30 April under cover of darkness. The 180-foot bridge took 4 hours to construct and one platoon remained at the site to maintain the bridge. A German artillery barrage was aimed at the ponton bridge on 5 May 1944, and one shell hit it directly. Five pontoons were replaced and the other boats were repaired in place with temporary patches. As the barrage occurred during the daylight hours, there was no delay in traffic, since the bridge was open by nightfall. This was the last operation of the 85th Engineers until after the May 11th attack had started.



85TH ENGINEER HEAVY PONTON
BRIDGE ACROSS GARIGLIANO

SECTION III

423rd Engineer Dump Truck Company

Headquarters and part of the personnel of the 423rd Engineer Dump Truck Company under the command of Captain Frank E. Seipel arrived at Naples on 14 March 1944 in the midst of an air raid. On 20 March, Headquarters and the 2nd Platoon were moved from the staging area to Falciano-Selice and attached to the 343rd Regiment, while the 1st Platoon departed for the Anzio beachhead. Headquarters and the 2nd Platoon, up to the time of 11 May, were attached to practically every general service unit in Fifth Army, including the 175th, 92nd, 337th, 343rd and 344th. At one time, the 2nd Platoon was working simultaneously for three different regiments.

Principal activities were much the same as for the other dump truck companies; hauling road material for preparation of the supply routes for the coming push. The 2nd Platoon was engaged in this work in an area from Capua along the entire length of the Fifth Army front.

425th Engineer Dump Truck Company

Two days after the 425th Engineer Dump Truck Company arrived in Italy on 11 October under the command of Captain M. E. Pruett, it was attached to the 343rd Engineer General Service Regiment. With the 343rd, the company maintained roads and hauled bridge material for roads in Army and corps areas, including Route #7 from Naples to Avellino, Route #87 from Naples to Ponte Annibale, and Highway 6 from Capua through Vairano towards Cassino. Bridge material was hauled for the Capua and Ponte Annibale bridges across the Volturno.

During this period, part of the company was attached to the 344th Engineer General Service Regiment and maintained roads in the French Expeditionary Corps sector near Venafrò. The company assisted in the construction of the Paestum airfield under the supervision of the 817th Engineer Aviation Battalion. During the early stages of the campaign, it also assisted in moving engineer material such as Bailey bridges to and from engineer depots, and hauled materials for hospitals, ammunition dumps, etc., throughout the road net.

Throughout this stage of the campaign, the company suffered only two casualties. One man was injured at Villa Literno during an enemy air attack. Another struck a mine with his truck near Venafrò. After being blown from his vehicle, he was just a bit excited and tried to pull a glove over his head rather than his helmet. Results: one demolished truck, one scared soldier, no injuries and one stretched glove.

During the period prior to the opening of the May offensive, supply of some automotive parts, tubes, tires and tools was very critical. In a few cases, trucks had to be "deadlined" because of the lack of tires.

427th Engineer Dump Truck Company

During the winter phase after the fall of Naples, the road work done by the 427th Engineer Dump Truck Company, commanded by Captain J. M. Copeland, consisted of repair and maintenance. During this period it worked with many engineer units. In October, one platoon attached to VI Corps assisted the 36th and 39th Engineer Combat Regiment with routes from Avellino to Benevento, from Maddaloni to the Volturno treadway bridge near Amorosi and up to Piedimonte, and from Maddaloni to the treadway across the Volturno to Triflisco. The other platoon was hauling for the 343rd General Service Regiment on the repair of Highway #7 from Avellino east to the Calore, and for the 337th Engineers on Highway #7 north to Benevento. Construction hauling for many fixed bridges on these roads was also done.

From November through January 1944, when the VI Corps had been replaced by the French Corps, the platoon worked with the 36th and 39th Engineers, hauling gravel and stone night and day through bad weather and enemy artillery fire to the roads in the vicinity of Venafrò, including Highways #85 and #6. Meanwhile, the other platoon had moved personnel and equipment of the 531st Shore Regiment on a cross-country haul from Lioni to Cancellò-Arnone. There, the platoon helped in the construction of the first bridge across the Volturno.

Later in November, the platoon was with the 343rd Engineers on the repair of Highway #7 from Capua to Calvi Risorta, and in December with the 337th Engineers working on the roads from Caiazzo to Piedimonte to Benevento, from Alife to Prata. The bridges built by the engineer construction units during this period were aided very often by the personnel as well as the equipment of the 427th. Materials for bridges, whether ponton, fixed or Bailey, were hauled to bridge sites. Use was made of the truck winches to set heavy timbers or steel beams and sections in place, then crushed stone and gravel was hauled for the approaches. Eight Volturno bridges in all were worked upon.

SECTION III

427th Engineer Dump Truck Company (cont'd).



425TH ROCKS ROAD NEAR SPARANISE

For three months, one section hauled engineer supplies daily from base dumps at Naples to forward dumps and to units. The cold, wet and windy winter proved more disastrous against vehicles than men. The 427th's motor maintenance section managed only with hard labor to keep an average of 30 trucks out of 44 on the road, despite the shortage of motor parts, particularly the always breaking, always non-available short rear axles for the Chevrolet dump truck. Hauling through the mud and for long hours proved too much strain for these axles. The Ordnance maintenance units tried hard to solve the problem. Welded axles proved of practical value only on hard surfaced roads.

In January and February 1944, the platoon with the 337th Regiment was switched over to the marshlands on the west coast north of the Volturno, to repair and maintain Route #714 from Cancellone-Arnone through Mondragone to the ancient Appian Way, other roads maintained were Route #722 north to Highway #6, #723 up to Teano, #724 up to Highway #7 and Route #721 to the bridge at Ponte Annibale. While many small fixed bridges were built across the canals in this area, the biggest job was the bridging of the Volturno with a two-way Bailey to replace the fixed bridge that had been washed out. One section took time out from its work with the 337th to dump a few hundred tons of rock around the footing of the fixed bridges at Capua and Triflisco, which the 92nd Engineers were reinforcing against the flooded waters.

With the release of the 2nd Platoon in January from the VI Corps, work was begun in the British X Corps sector under the Commander, Royal Engineers. Crushed rock was hauled for the repair of the roads from Teano to Roccamonfino, from Sessa to Mignano, and for roadways into ammunition dumps near the Teano railhead station. On the night of 13 January, one section of trucks went down into the marshes to attempt to repair the ancient Appian Way running north into Highway #7, a job that had to be done at night because of enemy observation from the hills just north of the Garigliano.

During February and March, when X Corps troops were shifted over to the Eighth Army sector on the east, the 2nd Platoon worked with the 92nd Engineers, aiding in the repair and maintenance of the same roadways that it had worked on while with the VI Corps back in October and November. This time, more pains could be taken and a more lasting result was achieved. The first overpass at the branching of Highway #6 from Highway #7 was completed in February. Over a thousand loads of earth and stone were hauled for the embankments on both sides of the road. Another overpass at the junction of Routes #7 and #721 was built in eight days. It took two, 12-hour shifts well over 2,000 loads to finish this assignment. At this stage, in the first days of May, there remained hardly a route in the province of Naples that the 427th Engineer Company had not had helped repair and maintain.

Companies "A" and "D", 84th Engineer Camouflage Battalion

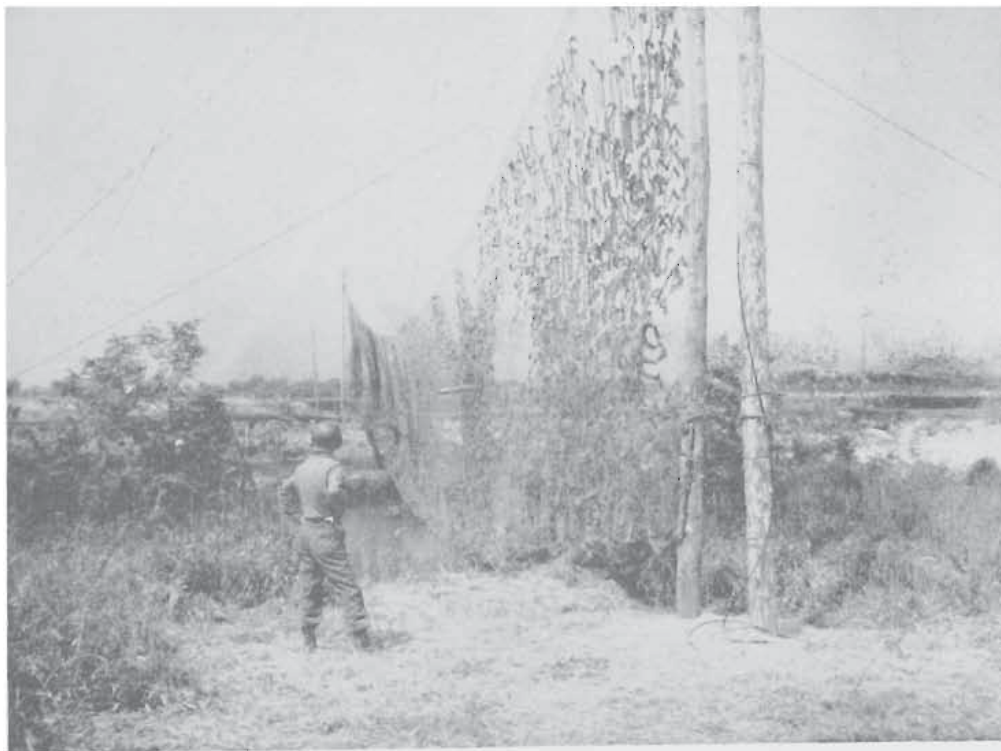
Company "A" of the 84th Engineer Camouflage Battalion (less 2nd and 3rd Platoons) arrived at Bagnoli on 28 October 1943 under the command of Captain Carl M. Moseley. The 2nd Platoon had landed on 10 October before the rest of the company and was attached to the 35th Anti-Aircraft Artillery Brigade in the vicinity of Caserta.

During the last of February and first of March, the 2nd Platoon erected road screens near Cassino, utilizing French Engineer and Pioneer troops of the French Corps. From that time until the May 11 offensive, the platoon was utilized for reconnaissance parties and worked with every AA unit in II Corps, selecting positions north of the Garigliano for 90 mm guns, as well as positions for automatic weapons in the same area. The mission was to move everything north without making a change in the terrain either negatively or positively.

The 3rd Platoon, which the company had left in Africa, arrived at Bagnoli 10 October with the 505th Anti-Aircraft Artillery Regiment. It proceeded to Pontecagnano, there giving instruction and assistance in camouflage of gun positions to the 1st and 2nd Battalions of the 505th, which had the mission of protecting air strips at Montecorvino. The platoon was scattered over a radius of about fifty miles, with one or two of the men working with each battery.

The Table of Organization and Equipment of Company "A" was changed on 15 February to that of a separate camouflage company, reducing the number of men in each line platoon from 14 to 11. The 3rd Platoon experimented with the painting of nets and tents, then was engaged in inspection of French units in the area forward of the Garigliano River prior to the push for Rome. The 4th Platoon was attached to II Corps Headquarters on 16 November 1943, for the purpose of erecting and maintaining for three weeks a dummy corps headquarters in the vicinity of Teano. This dummy installation was successful in drawing enemy fire and in upsetting civilian espionage which was flourishing in that section of Italy.

On 1 January, the platoon moved with II Corps to Presenzano and immediately began work on dummy 105 mm howitzers for the X Corps attack across the river. With the assistance of Company "D", these installations along the river were finished on the night of 25 January. From a tactical standpoint, the decoy guns were immediately successful. The tabulated strength of enemy fire was determined to such a degree as to warrant the moving up of X Corps artillery as support to the infantry advance.



84TH BRIDGE SCREEN AT THE GARIGLIANO RIVER

SECTION III

Companies "A" and "D", 84th Engineer Camouflage Battalion (cont'd).

At the end of January, when II Corps moved to Venafro, the platoon, having again camouflaged the headquarters area, set about constructing hanging-net road screens to confuse enemy fire being directed on the vitally important Bailey bridge connecting the supply route to the Cassino front. This bridge, being under direct observation, had already been destroyed twice in succession by enemy shells. After the screens had been erected, the shelling continued in the area, but no direct hits were made.

When II Corps was withdrawn and replaced by the New Zealand troops in early March, the company was ordered to take down the camouflage on the bridge, which was now considered safe from enemy fire. The concealment was only partially removed when shells began landing in the area, destroying the bridge the next morning.

Early in March, a camouflage school was held for the 91st Reconnaissance Squadron and the 2nd Chemical Battalion. At the end of March, II Corps moved to Piedimonte to relieve the British X Corps in the Garigliano River valley. The bivouac area was under direct enemy observation, which necessitated the extensive use of road screens, drops, and flat-tops. The area was ready for occupancy a week before the move was made. Though the enemy was only from one to five miles away, it apparently had no conception of the amount of equipment being brought into readiness for the drive on Rome.

Throughout March and April, much instructional work was carried on for units, vehicles were painted and dummy gun installations made. On 28 March, Fifth Army assigned the company to Engineer Headquarters for camouflage duties. Working in conjunction with Company "D", 84th Engineers, it concealed the Fifth Army Rear Command Post. This work was completed by 12 April.

Company "D" of the 84th Engineer Camouflage Battalion, commanded by Captain Wayne D. Dunn, landed at Naples on 2 January 1944. Company "D" operated much in the same manner as Company "A"--its four platoons were more often than not attached to other army units and not under direct operational control. Often three or four different projects were being worked on simultaneously.

On 26 January, the II Corps Engineer stated that a Bailey bridge north of Rocca d' Evandro had been knocked out by artillery fire. Enemy observation was located on high ground about 8,000 - 10,000 yards southwest of the bridge and could observe and adjust registration directly upon the bridge. Nets were erected to conceal the approaches. The bridge was not hit again.



DUMMY GUN CONSTRUCTED BY 84TH CAMOUFLEURS

Companies "A" and "D". 84th Engineer Camouflage Battalion (cont'd).

At this same time, part of the company was at Barletta on the east Italian coast, working for the Eighth Army. A number of small vessel hides were constructed in the harbor in conjunction with "A" Force. Flat-tops totalling 74,000 square feet were erected 15 feet above the water's surface. Floating rafts had to be constructed, upon which were masts from which the nets were suspended.

With the approach of the spring and summer season in February and March, new color schemes and patterns had to be established to eliminate the former desert and winter patterns. The paint and pattern on the majority of vehicles in the theater were either damaged by weather or the wrong color. By using lusterless paint and a bold disruptive pattern, successful results were obtained.

Road screens were built on the Cassino front in many places and were placed so as to cut off direct observation by the enemy from distant hills. Roads, bridges, curves and other spots of concentrated activity were screened. The screens were made of steel wool on chicken wire.

The longest screening job done up to that time in Italy was along a jeep track built through the French sector from S. Martino to the Garigliano River at a spot due east of Castelforte. Along much of this 3-mile road, steel wool screens were erected at the trail's edge. Where this trail reached the river, an additional screen was constructed to hide a bridge on the road. The site was a partially demolished dam lying under direct observation from the enemy observation post.

Fish nets were garnished 100 per cent on the sides and were thinned out for blend only above and below the levels of traffic height and bridge depth. Nets were placed between the dam piers and by means of men being lowered from the dam top in a chair were secured to dam-lock chains at intervals from the top to the bottom. The bridge, which was not as high as the tall dam piers, was thus effectively screened. Although nearby bridges were hit and several artillery rounds landed in "Leopard's" vicinity, it escaped untouched.

Another large scheme, and a very successful one, was the concealment of the Fifth Army Forward Command Post. A plan was made to conceal as well as possible all tents, prefabricated buildings and mobile vans throughout the area. All remaining tentage and equipment not covered was dispersed in order to utilize to the maximum the coverage of existing trees. Where natural cover was not available for motor pools and visitors parking areas, flat-tops were erected. The largest of these, 80 by 100 feet, was made of chicken wire garnished with steel wool for fire protection. The top side of this installation was painted to blend as nearly as possible with the surrounding terrain. Meanwhile, artillery positions, command posts, depots and dumps were continually being checked by the officers and non-commissioned officers of the company. Schools were conducted in rear areas, lasting one or two days, or one or two hours. Participating in these courses were an estimated six to eight thousand students.

469th Engineer Maintenance Company

The 469th Engineer Maintenance Company under the command of Captain Clayton H. Cooper disembarked at Paestum on 6 October 1943. The next day, the contact platoon was detached from the company and went to Avellino. The Maintenance Company was immediately busy with the repairing and reconditioning of equipment and was often used as an emergency source of parts for units in the process of effecting second or third echelon repairs. Parts were given freely from the company stock or were secured by the parts courier from the Peninsular Base Section depot.

No discrimination was made between the company's own work and that of other units; a deadlined machine was the only requirement. No parts were given knowingly to units to replenish or build up their authorized parts stock. Approximately forty per cent of the jobs involved major repairs usually done by the base shop. About a third of the machines worked upon were tractors, graders, rock crushers, shovels, etc.

Some machines that could not be repaired promptly were evacuated to Peninsular Base Section, a replacement machine generally being supplied in exchange. The decision to evacuate was almost always due to the impossibility of securing necessary parts promptly from a source in Italy. Neither the size of the machine, nor the seriousness of the repairs to be made was the criterion for evacuation. Other machines whose repair was considered impractical for any shop were stripped of parts. Most major items brought in had been damaged extensively by mines or artillery fire, while most minor items were simply worn out. It was noted that minor items do not have the inherent ruggedness of large equipment and will wear out much sooner.

SECTION III

469th Engineer Maintenance Company (cont'd).

Major items were susceptible to damage from enemy artillery and mines. This damage frequently ruined certain parts, such as track frames, final drive housings, etc., which almost never wear out. Such parts were not stocked as new parts in the Peninsular Base Section depot. Their only source was a machine which was damaged beyond practical repair. The shortage of parts was not, however, allowed to be the primary reason for cannibalization.

Headquarters Platoon moved up to Avellino on 9 October and to Santa Maria on 27 October. Later moves were to Vairano and Sessa on 3 January and 21 March, respectively. When moving, two or three shop trucks would be relieved of all work and dispatched to the new location. From that time on, all new work (except in emergency cases) was directed to the new shop area. As the other shop trucks completed their respective tasks at the old area, each was immediately sent to the new area.

Units were directed to pick up repaired equipment at the shop at which they left it. The time required to move the entire Contact Platoon was one to four days. The time required by the remainder of the company was from seven to fifteen days. This process alleviated the unavoidable confusion, loss of parts, or damage to parts, which results when large and partly disassembled machines are moved.

In April, the 469th Company was awarded the Fifth Army plaque and clasp for especially meritorious service. On 14 October, the Contact Platoon moved from Avellino to Caserta. While it was located there, a tank broke down one side of a treadway bridge across the Volturno. The bridge was under German artillery fire, but supplies were needed across the river, so the platoon quickly welded the broken section to make the bridge once more passable.

On 23 October, the Corps Engineer gave the platoon directions to move across the Volturno and bivouac near the front so that parts could be supplied and repairs effected as quickly as possible. The site chosen was Caiazzo. From its new area, the platoon witnessed several attempts by the Luftwaffe to bomb the newly built bridge which the platoon welders worked on day and night.

As the front moved up the valley, the platoon moved into the vicinity of Dragoni, where it celebrated Thanksgiving. In this area, the trucks went out and performed their work in other engineer unit areas, repairing equipment right where it stood, as the muddy roads almost prohibited heavy traffic. It was also in this area that the platoon received its first casualties. Two men received fragment wounds while cutting armor from a German tank. The tank had been hit and knocked out by artillery. It had burned, but a few shells remained inside unburned. These shells exploded, blowing off the sides of the tank and scattering a considerable amount of shrapnel.

Leaving the Dragoni area, the platoon moved up the main supply route out of Naples, repairing several tractors, doing contact work and spot repairs for different engineer units. The next bivouac site was Venafrò, and there most of the time was spent working on the equipment of the 120th Engineer Combat Battalion. The platoon was ahead of the artillery and had been at the same location a month when the Germans counterattacked Venafrò. The platoon moved back to Presenzano where it repaired several items of equipment and did spot repairs. At this time, the Anzio beachhead was established, and the platoon received orders to move to the Naples staging area in preparation for movement.

451st Engineer Depot Company

The 1st Platoon of the 451st Engineer Depot Company, commanded by 1st Lieutenant Donald L. Brown, had moved the engineer dump to Avellino just before the troops had reached the Volturno. From Avellino, the depot moved to Santa Maria, where it remained until January 1944. At Santa Maria, buildings were obtained to shelter the Class II supply items; the Class IV items remained out of doors. The main thing of significance during the stay here was the separation of the Bailey bridge equipment from the engineer dump. A separate bridge dump was opened and operated by Company "A", 85th Engineer Heavy Ponton Battalion.

The move in January brought the depot to Vairano. The depot was now completely in the field; sheds were built for the protection of the Class II supplies, but again Class IV material remained exposed. Every move involved a great deal of work, as thousands of items had to be collected, moved and then segregated again.

In order to eliminate much of this labor, warehouse trailers were constructed. GMC truck bodies were obtained from Ordnance salvage vehicle dumps and transformed into trailers (14 in all). Items were stored in separate compartments--drill bits, saws, topo supplies, technical instruments, hardware, etc.

451st Engineer Depot Company (cont'd).

At Vairano, there was a scarcity of civilian labor, so a company of Italian soldiers was procured, but did not prove very satisfactory. Lumber and locally secured I-beams were large items at this dump. To take care of these two items alone, a platoon was obtained from the 175th Engineer Regiment.

In March, the depot moved to Sessa in the II Corps area. A very pleasant site was found in a grassy orchard, with a ball diamond, a day room in a nearby farmhouse, and movies available nightly at the 175th Engineer Regiment not far away. The depot was within range of enemy artillery and under direct observation, yet the dump was never shelled.

A railhead was run to the dump by the Military Railway Service of Allied Force Headquarters, and also served the bridge depot managed by the 85th Battalion. The railroad originated in Naples and thus brought supplies directly from the ships to the depots.

46th Survey Company, South African Engineer Corps

When the 46th Survey Company, South African Engineer Corps, landed at Salerno on 8 October 1943, the immediate task was to embark on a very considerable program of map revision. By the time the attack was launched on the Garigliano River line, the revision had been carried forward well north of Rome. Many top secret plans and defense overprints were prepared and reproduced for the Anzio landings, and a block plot laid by Group "B" was used by the artillery on the beachhead.

In Italy, the whole company worked together except Group "A", which operated as a detachment in the field under the command of Captain John Hill, who was directly responsible to the Army Engineer. It should be noted, however, that Group "B", the other survey group, was also capable of operating as a detachment in the field at any time, complete with cooks, clerks, and equipment. Thus, it would have been possible to operate the two survey groups concurrently either in the field or at company headquarters. In fact, personnel was constantly interchanged between the groups, in order to insure that they were kept constantly versatile.

The company did air survey revision work, the revising of maps by the study of air photos and printed the revised maps when needed for issue to the troops. Reproduction of captured maps was also done, and printed maps corrected by one or more of many methods. New maps were printed; mosaics of the Liri Valley made and reproduced at a scale of 1 to 12,500; plaster relief models moulded; and a photograph file of more than 70,000 air photos covering nearly all of Italy was collected.

Group "A" went into the field as a detachment of the unit on 12 October 1943, with instructions to provide and maintain triangulation on the X Corps front. Instructions were received on 27 November 1943, to carry out a survey network of control points throughout the Fifth Army forward area, for the purpose of tying all Fifth Army artillery units into the South Italy Grid. The field work to comply with this instruction was begun immediately, and the network was calculated and results issued in the first week of December.

A central computing section was formed at Group Headquarters, where observations by field sections were coordinated, results calculated and values issued. In this manner, the computations were performed over the army front as a whole, and consistency was assured. By the end of December, control was well forward over the whole front, particularly so in the Liri Valley on the II Corps front.

The mountains on the VI and II Corps fronts were by this time covered with snow, and the bitter weather hampered the observers. Some theodolites froze up, and roads were impassable to the two-wheel drive vehicles with which the group was largely equipped. However, triangulation had been carried up to the front lines, and forward points cut-in behind the front lines, so it was possible to provide all the control required by the artillery.

In the meantime, the landings had been made at Anzio in January. In April, a detachment of the group went to the beachhead to establish control over the Anzio area.

661st Engineer Topographic Company

In October, the 661st Engineer Topographic Company, assigned to VI Corps, arrived in Naples. The unit was commanded by Captain Lowell Newmeyer. The 661st was the only topographic unit in the Fifth Army until the 66th Engineer Topographic Company arrived with II Corps. The 661st, because of this shortage, was therefore called upon to fill the survey and mapping requirements for the Army as well as for VI Corps. One of the jobs done by the 661st was the printing of 10,000 copies of a portion of the sheets covering Salerno to Naples.

SECTION III

66th Engineer Topographic Company

The 66th Engineer Topographic Company under the command of Captain Vernon E. Woodard arrived in Italy when the Volturno was reached. A map revision and map reproduction program was soon under way for Engineer Headquarters, Fifth Army. Photo-mosaics and detailed defense studies were executed and reproduced covering the planned attacks on the Volturno and Sacco - Lari Rivers.

Early in November, the 66th was assigned to II Corps, remaining with it throughout the 1943 - 44 winter campaign. During this period of assignment, the 66th not only operated as an Engineer Topographic Company, Corps, but also continued as a map revision and reproduction unit for Fifth Army Engineer Headquarters.

In order to fully appreciate its operational obstacles in the field, it is necessary to know something of the organization and equipment of the Engineer Topographic Company, Corps. Its four platoons are: (1) Headquarters and Service Platoon, (2) Survey Platoon, basically a field unit used for actual surveying and control work, (3) Photomapping Platoon, responsible for drafting and the planning and revision of maps and (4) Reproduction Platoon, responsible for the execution of the printed sheet.

Being a mobile unit, the company performed its duties in the corps area. It was often bivouacked within walking distance of the II Corps Command Post. During the winter campaign, the enemy continued its air attacks and harassing artillery fire, making it necessary for the unit to observe strict camouflage and black-out discipline. The seven large units of the Reproduction Platoon Train, the two large-wall tents used for the Photomapping Platoon, as well as the Headquarters and personnel tents, were carefully camouflaged from enemy ground and air observation. Numerous times, the company was within enemy artillery range. These conditions existed during the entire period from the Volturno to beyond the Garigliano.

From 5 October 1943, when it landed in Salerno, to the fall of Rome in June, nine months later, the company changed camp sites twelve times, yet the presses averaged one-half million impressions per month. While attached to II Corps, the 66th prepared for the Corps Engineer material such as field orders, engineer responsibility overlays, road network overlays, defense overprints, German defense plans of Cassino, monthly histories of corps activities, disposition of German troops in the corps area, special maps for the Commanding General of II Corps, special terrain studies, photomaps, venereal disease posters, anti-malaria posters, artillery fire control charts, chemical warfare posters, mine warfare booklets, etc.

During the static phase prior to the attack on the Garigliano, the company noticeably increased the map revision and map reproduction program for the Fifth Army Engineer. Extensive graphic plans and other visual aids were prepared for the Corps Engineer to assist in the planning of the push on Rome. The unit was extremely busy trying to do all these varied jobs, and to complete them on time.

Throughout the winter, the survey platoon continued its field work, operating both under the company control, and on detached service with the 2nd Field Artillery Observation Battalion. During this period, surveys were prepared for artillery fire control on the II Corps front as well as surveys for the checking of maps and determination of map constants to apply to scaled coordinates. The only battle casualties suffered by the organization were among members of the survey platoon, engaged in front line surveying. Prior to the push on Rome, this platoon prepared a survey from the existing triangulation net established by the Fifth Army in the vicinity of Minturno. This net was excellently tied in with the Anzio beach surveys at Cisterno, the closure being plus or minus one meter.

1712th Engineer Map Depot Detachment

After the fall of Naples, the 1712th Engineer Map Depot Detachment, under the command of 1st Lieutenant E. D. Parks, moved on 9 October to a military enclosure on the outskirts of Maddaloni. Here, with the campaign more or less static, the unit had the opportunity to take accurate inventory of the stock, complete the organization and build up supplies for future operations. During this period, the breakdown for the Anzio landing was made in the basement of the map warehouse. The security of this breakdown was such that troops quartered in the same area and buildings were unaware of the work until several months after the landing had been made.

On 1 February, the greater part of the depot was moved to a location in the vicinity of Vairano on Highway #6. Two men were left at Maddaloni to operate a small rear depot. Because storage space was not available, it was necessary to set up the depot in tents. It became evident here that a new policy would have to be followed if the depot was to continue to give uninterrupted service to the Army. The lack of warehouse facilities made it necessary to use tents for storage, and the tremendous increase in map stocks made it impossible to move and yet continue to give 24-hour service; hence the decision to mobilize the depot (partially, if not completely).

46th British Infantry Division Royal Engineers

Preliminary reconnaissance for rafting and bridging sites for the 46th Division over the Volturno River from Cancellio to the sea started on the night of 8 October and continued nightly until 13 October, when the assault finally took place. In only a few cases, owing to strong enemy defenses, did patrols succeed in crossing the river, but much valuable information was obtained about the near bank, and three possible infantry crossing and rafting sites were discovered.

On two occasions, Lieutenant D. J. Gear of the 270th Field Company swam the river alone and obtained information as to the width of the gap and the height of the enemy banks. The width varied from 250 feet to 350 feet and the banks were nowhere less than ten feet high. Both road and railroad bridges over the river were demolished, but it was possible to remove the charges from two intact bridges on lateral roads on the south side of the river.

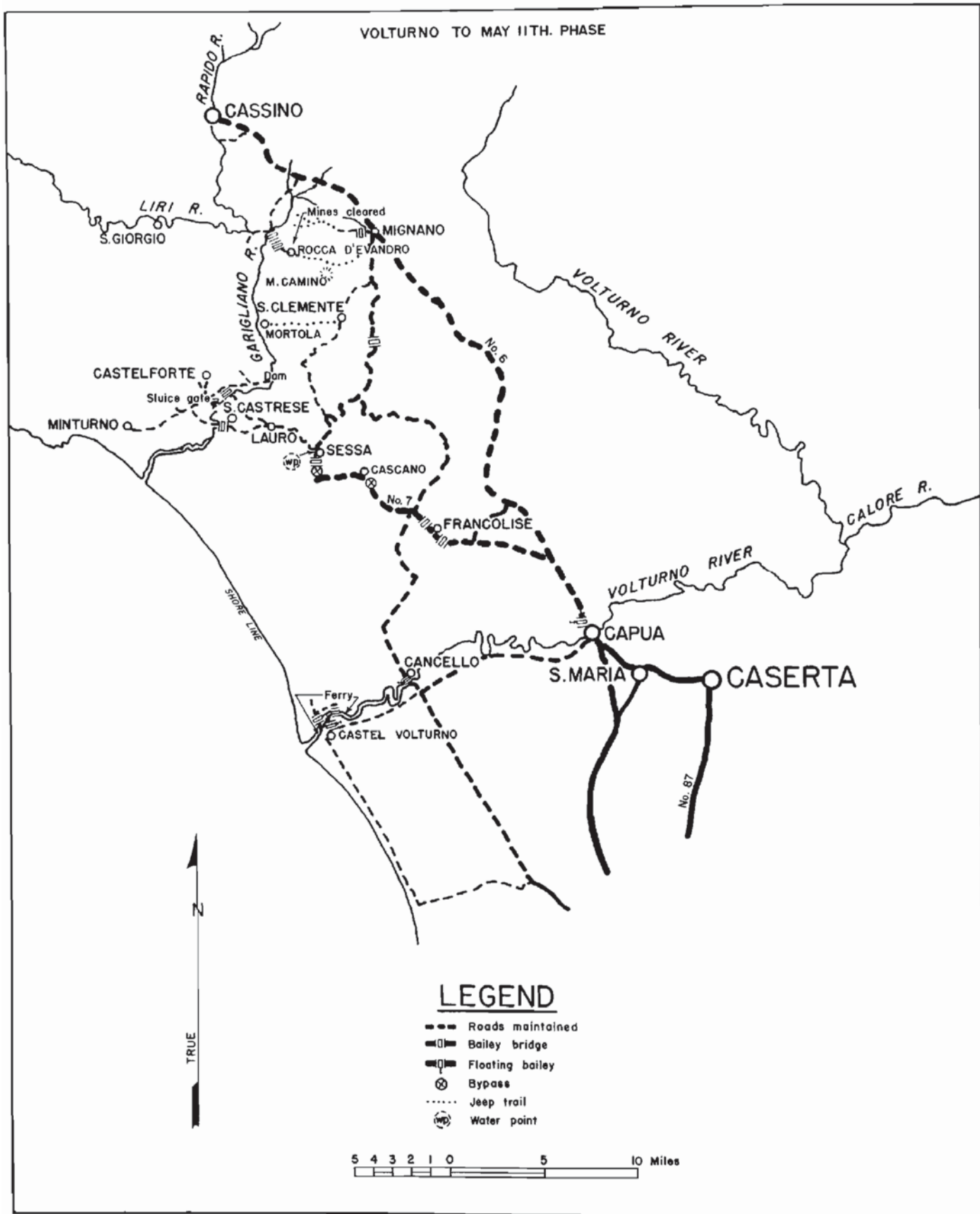
A brigade crossing site was to be at Castel Volturno, and to maintain this site it was necessary to open the coast road. This entailed the construction of three Bailey bridges of 70, 130 and 50-foot lengths, all completed by 11 October. The two shorter bridges constructed by the 272nd Field Company were finished without incident, but the 130-foot bridge built by the 171st Field Company was attacked by the enemy during erection. The attack was driven off, however, and casualties inflicted. Six of the engineers were wounded by hand grenades. Defense positions were reorganized and the bridging was resumed and finished without further casualties.

At noon on the 13th, a site was found for a ferry outside Castel Volturno, and by 1730 hours it was completed. During the night, seventeen jeeps, ten six-pounder anti-tank guns, and some quantities of supplies were crossed. This ferry continued to operate until 19 October, when it moved to the site in Castel Volturno, where the civilian ferry had operated. The rain had made the original approaches unusable. The morning of 13 October, another ferry site was found by the 272nd Engineers, a short way upstream from Castel Volturno. The far bank sloped at a forty-five degree angle to a height of twelve feet; the near bank was an easy gradient, and while the approaches were O. K. in fair weather, they were likely to break up after rain.

Work on the far bank was started immediately, and a Class 5 special tracked raft brought forward from a harbor area. Owing to the extensive work on the far bank, the raft was not in operation until 1915 hours. From that time, in spite of some shelling and mortaring, it worked smoothly. During the night of 13 October, twenty-two jeeps, sixteen six-pounder anti-tank guns, five carriers and several tons of supplies crossed over. Owing to the steepness of the far bank, the anti-tank guns had to be assisted up the slope by winching from a Scammell located on the near bank. On 14 October, the raft was sunk by a carrier and was out of action for six hours. It sank again on 15 October in similar circumstances, at which time it was replaced by a Class 9 shore loading raft.

That the main bridge across the Volturno was to be at Cancellio was decided after many reconnaissance attempts. The three companies of the division were ordered to build a 200-foot floating Bailey bridge at this site - the first floating Bailey to be built operationally. At 0530 hours, 15 October, work began. Mine clearance and bulldozing was done to enable supply vehicles to approach the site, and the approaches were carved down on the near shore with the bulldozer, and on the far shore by explosives and manual labor. Some of the bays were built and already floating when word came that the bridge would not be constructed there at all, but at Capua. The bridge rafts were broken up, reloaded and transported to Capua. There the 272nd finally constructed the first floating Bailey bridge. The 271st erected a 180-foot folding boat bridge on the prepared site at Cancellio shortly thereafter.

With the successful assault over the Volturno, the Field Park Company moved by stages to a site ten miles north of Capua. At this time the weather deteriorated rapidly, with a consequent slowing up of the general advance. The priority task was now the maintenance of the divisional routes and during November the company was employed to maximum capacity on the supply of road and trail materials. From mid-November until December, the 270th Field Company's main task was the maintenance of roads in the divisional area. The work on roads was, in the main, repair of hastily filled craters and blown culverts. Because of the heavy rain, several of these fills were washed away and culverts had to be inserted instead. A large by-pass at Sessa was worked upon, to take the traffic from a 350-foot, 3-span bridge, 60 feet high, which had been completely destroyed by demolitions. Included in the detour was a 130-foot double-double Bailey and 200-foot approaches.



46TH. DIVISION ROYAL ENGINEERS
OPERATIONS

SECTION III

46th British Infantry Division Royal Engineers (cont'd).

In December, the 270th made several small jeep trails to infantry positions overlooking the Garigliano. On 8 December, the company commenced work on a trail near S. Clemente. The trail was in very bad condition; in many places mud was 18 inches deep. Rock, Sommerfeld track, picket paling, and coir matting were all used to improve the bed. On one steep slope, concrete wheel tracks had to be made. The road was observed from an observation post about six miles away, so road screens were erected to hide the fact that it was in continuous use. After this, only normal harassing fire was experienced.

In early January, the 270th started moving divisional artillery into position in the Mignano valley. Roads were maintained, mines cleared and bridging done. The road from Route #6 to the Garigliano River by way of Rocca d' Evandro was opened up. Schumines, especially, were met in this area. Over the River Peccia, a crossing was put in which was very costly. There must have been a German listening post nearby, as each time work commenced the bridge site was heavily and accurately shelled. Consequently, five nights were necessary for the construction of this bridge (from 15 to 20 January), casualties amounting to forty-seven per cent of the entire working party, including the two officers and a large percentage of the non-commissioned officers.

There were two gaps to be spanned, which called for 110-foot and 30-foot Baileys. The job was called "Twin Bridges", and they were completed only a few hours before the initial assault on 19 January. The next task of the 270th was the construction of mule trails in the mountains north of the Garigliano. One engineer platoon was muleborne and lived up in the mountains, only carrying such tools as sledges, crow bars, explosives, etc., required for the job. After approximately sixteen days of this work, the company was recalled to Lauro prior to movement with the division.

The 271st Field Company built numerous small Bailey bridges in the advance from Capua to the Garigliano. The line of advance was along Route #6 and, apart from craters, no real road troubles were confronted until a large blow was found one mile from Sessa. A detour was constructed through Cascano, bypassing the obstacle. Difficulty was experienced with the detour, due to the unsuitability of the ground and the shortage of dump trucks for the hauling of stone. J Feder 504 time clocks were found in culverts under Route #6, fixed to 500 kilogram bombs. One of these mechanisms was missed, causing the road to be cratered behind the line of advance.

The 271st opened roads and trails between Sessa and the Rapido River. An exceptionally large number of craters were found, all of which were filled in by bulldozing, except one that had to be bridged with an 80-foot double-single Bailey bridge. When the Rapido River was reached, a road was built down to the river, and on the night of the attack an effort was made to construct a 40-foot single-single low-level Bailey just to the left of the Mignano railway track. This was not completed because of the heavy artillery and small arms fire brought to bear on the crossing. The 271st then moved to S. Castresse and constructed a 110-foot bridge (British folding type) over the Garigliano. From then until the unit was withdrawn from the line, the 271st Field Company was fully employed constructing mule trails.

After 26 October, when the division sector came to include Route #7, the 272nd Field Company worked in that area, constructing two Bailey bridges near Francolise and supporting a battalion crossing of a stream south of that village. November and December were spent opening roads forward to Sessa, where the company completed a mile detour to pass the main road bridge south of Sessa and put the town water supply into operation. During December, roads were opened and maintained from Clemente-Mortola west towards the Garigliano, and from Mignano a trail was made to gun positions in the area south of the Peccia stream. The foundation of this trail was a marsh of 300 yards. Even the best parts of it were only earth tracks, very soft after the heavy rains. Corduroy and Sommerfeld track were laid to help the situation.

In January 1944, the 272nd worked on the track forward to the ford over the Peccia near Mignano, preparing to support the operation of the 138th Brigade, which was to cross when the II Corps had cleared Monte Porcia. The attack took place during the night of 4 January and was accompanied by heavy rain, which made the approaches to the ford almost unusable even to jeeps. Work was started on the night of the attack to lay brushwood from the ford towards the lateral road on the enemy side, but intense direct fire from the enemy dispersed the working party of 19, after seven had been killed and four wounded.

On the 8th, a platoon moved with mules over Monte Camino to Rocca d' Evandro, and started night work on a narrow trail which led to the site where the enemy had erected a wooden trestle bridge. The work consisted of widening the road by hand to a minimum width of 7 feet, 6 inches and laying a stone surface.

46th British Infantry Division Royal Engineers (cont'd).

Until 19 January, the 272nd was occupied in preparing for the 128th Brigade's crossing of the Garigliano. The crossing was a failure, however, because of poor organization. The very swift current, due to opening by the enemy of sluice gates at S. Giorgio, plus the dense fog, created conditions difficult to overcome. The two main approach roads were the trail built by the 272nd, and the route over the "Twin Bridges" constructed by the 270th. These had been completed in time, but no complete reconnaissance had been made of the rafting and bridge sites.

The infantry of the 128th Brigade got their boats down to the river, but the water was running so fast that they could not launch them. One company managed to cross, but no cables had been fastened to the boats for return. The engineers gave assistance, but it was too late and the assault had to be called off before dawn on 20 January 1944, leaving one company of infantry on the enemy banks. The engineers stopped and the same day the 272nd was recalled to prepare to support the 56th Division engineers who had crossed the Garigliano opposite Castelforte.

On 23 January, the company moved to Lauro and began work on "Sun" trail out of Lauro. During February and the first half of March, the company worked on the "Sun" road. Also, during this time, it worked on the dam east of Castelforte. The sluice gates had been lowered and the machinery smashed and a breach blown in the river bank, so that the main stream was deflected against the road running along the north bank of the river. This caused deep erosion, and the road surface, normally 50 feet back, was falling away.

The gates were blown away, then the breach dammed by sinking a 40-foot double-single Bailey truss against a large block of masonry. Against this truss, rails were placed upright in the 12-foot water, and stone-filled 40-gallon barrels were dropped in behind. Eventually, the gap was filled, packed with concrete filled sandbags, and a 70-foot, single-double skeleton Bailey lined with Sommerfeld built on top. This was filled with rubble, and all the flow was again through the dam gates. The erosion of the road stopped. All other work in this operation was of minor importance.

In December, the problem of supplying the troops in the mountains south of the Rapido became a serious one, and the bulldozers of the 273rd Field Park Company worked almost unceasingly to keep routes open. Jeep tracks were built while the workshops produced sledges in quantity. Conditions remained unchanged in January. Some bridging equipment was lost in the abortive crossing of the Rapido.

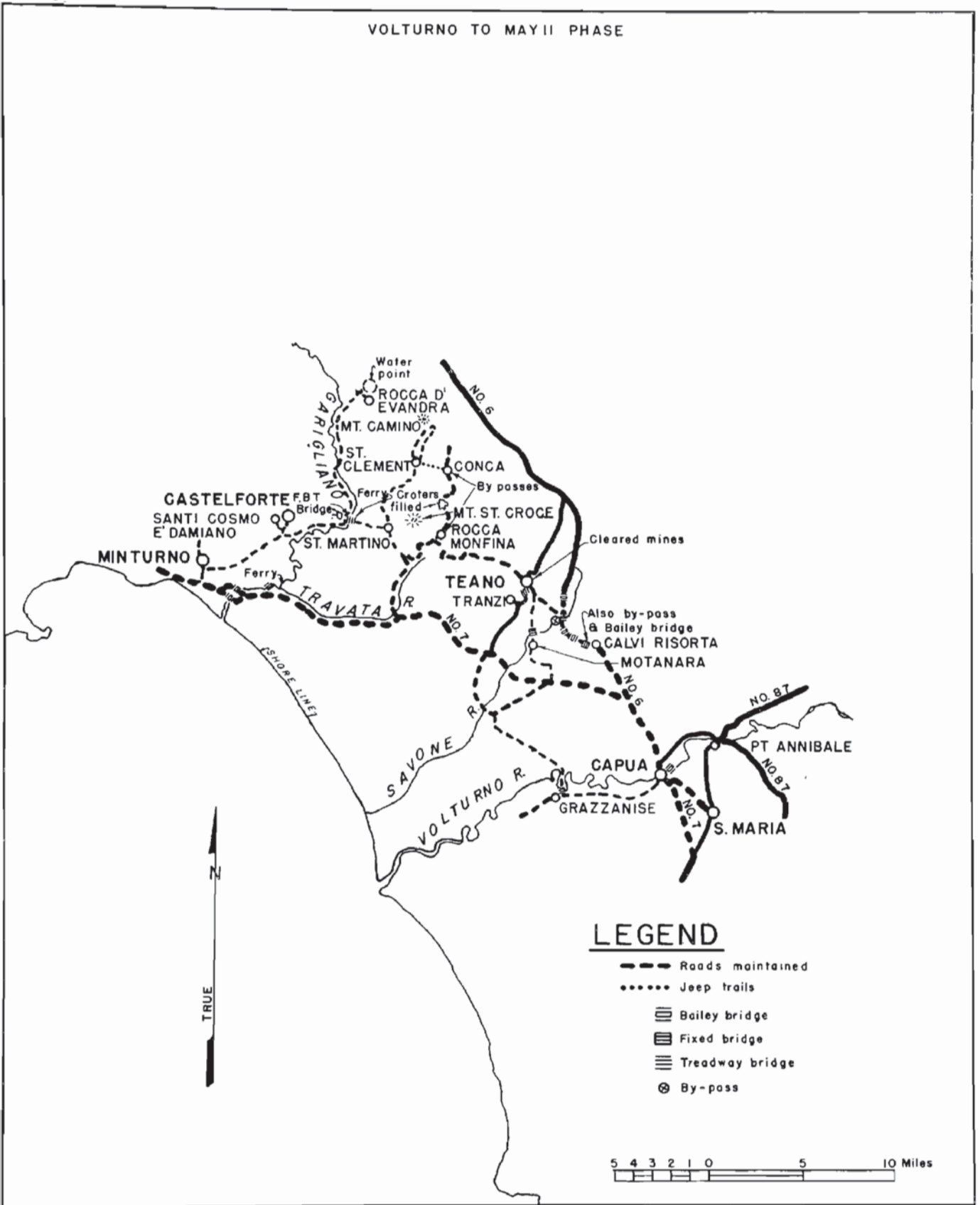
With the switch of the 46th and 56th Divisions in the latter part of July, the company arrived on the flat plain south of the Garigliano delta. From then until March, when the division was withdrawn, the Field Park Company assumed a routine existence punctuated by the construction of some minor bridges over canals barring the approach to the Garigliano. As usual, the chief task was the supply of road materials and the making of several hundred gabions for the repair of flood banks. On 15 March, the 46th Division with its engineer units, the 270th, 271st, 272nd Field Companies and the 273rd Field Park Company was withdrawn from X Corps and the Fifth Army and moved away to rest and re-equip. During the campaign, the Commander, Royal Engineers, of the 46th Division was Lieutenant Colonel J. C. Walkey.

56th British Infantry Division Royal Engineers

After the Volturno was reached, the 42nd, 220th, 221st and 501st Field Companies and the 563rd Field Park Company under the supervision of Lieutenant Colonel Blenkinsop, Commander, Royal Engineers, 56th Division, worked on river approach roads and the repair of ditch crossings. The main 56th Division attack was at Capua, where the 220th and 221st Companies were to assist the infantry in the crossing. The night of the attack, the infantry was prevented from crossing by heavy mortar fire with the result that after midnight the divisional part of the attack was called off. The following day, VI Corps' "Husky Bridge" at Ponte Annibale was constructed, and the 56th Division infantry crossed by this bridge. On account of the shortage of bridging equipment, the building of the main bridge at Capua had to be delayed several days.

The site chosen was several hundred yards east of the demolished bridge and was not suspected by the enemy, for while the town was shelled no shots fell near the bridge. Work began in the early hours of 17 October with the 220th working under the 270th Field Company. A 150-yard approach was made and metalled, and the slope at the abutments reduced. This bridge has already been mentioned in the 46th Division history as the first operational Bailey ponton bridge. "Oat" bridge opened 19 October 1943. The name "Oat" was derived from the divisional signs of the two companies that worked on it: "Oat" and "Cat".

VOLTURNO TO MAY II PHASE



56 TH DIVISION ROYAL ENGINEERS
OPERATIONS

56th British Infantry Division Royal Engineers (cont'd).

When the lateral road to Teano was reached, the 501st followed the 168th Brigade, while the 42nd continued up Route #6, building bypasses and two Bailey bridges. The 220th and 501st Companies built "S-- Creek Diversion" around the blown bridge over the Savoni River, consisting of 100 yards of Sommerfeld track and a small improvised bridge. The name was arrived at after an attack by enemy self-propelled guns had been followed with a raid by Allied fighter bombers. At Motanaro, the 221st built a track across the Savone valley and erected a scissors bridge over the Savone River on 29 October.

On the lateral road through Teano, the 221st built a Bailey bridge to supply the infantry on its assault on the Tranzi feature, which ended in the fall of Teano at the end of October. The enemy then withdrew rapidly into the hills. The 42nd Company opened the main road into and through Teano, removing many trees felled across the road. A number of anti-tank mines and improvised anti-personnel mines were found in this area.

On the road to Roccamonfina from Mount Santa Croce, the engineers repaired eight destroyed culverts and erected eight Bailey bridges. About 500 trees across the road were cleared with the help of local paisanos, who turned out in large numbers with their own tools. Other trees were found with box-mines attached ready for firing. A few scattered Tellermines were taken from the road.

At Roccamonfina, the division turned right towards Conca and Mount Camino in order to assist the Americans by clearing their left flank. The road from Roccamonfina through Conca to the foot of Mount Camino was opened up mainly by filling craters, clearing felled trees and building bypasses. The roads at the foot of Mount Camino were under direct observation from the enemy positions on the top of the mountain, so a jeep trail was constructed from Conca to S. Clemente to avoid using the other roads. The trail was about ten to fifteen feet below ground level, and had no drainage. Picket paling was fabricated at X Corps Engineer Supply by Italian civilian labor and was "floated" on top of two feet of mud for a distance of three miles.

Throughout the winter, the Royal Engineer Companies of the 56th Division continued to fill craters, build bypasses, erect Bailey bridges and try to keep the rain and water from undoing all their work. After the division had taken Mount Camino in December, the engineers began to remove the mines and booby traps they had laid themselves during the previous withdrawal. While sweeping for mines on a side road, one engineer surprised two Germans whom he found in a dazed condition sitting in a slit trench. He pointed his mine detector at them and they surrendered without a shot being fired.

When the top of Mount Camino was reached, two water points were opened, which supplied all the troops in that area. After the capture of Mount Camino, the 56th Division was replaced by the 46th, which took over the static front on the coastal sector along the Garigliano River. For the next few weeks, the division trained for river crossings, did odd jobs around bivouac sites and reconditioned its equipment.

In January, the engineer units began sending reconnaissance patrols along the Garigliano to locate the best crossing sites, approaches, etc. Plans were elaborated and on 17 January were put into effect as the attack on the river began. Crossing places had been selected away from obvious approach roads in order to avoid enemy fire and mined areas. The engineers were in charge of the infantry crossing, and all went well. The infantry ran into some anti-personnel, Teller, and Schumines on the enemy shore, but on the whole the resistance was slight.

Several folding bridge equipment trestle bridges were erected before H Hour over the canal running parallel with the river on the south side in order to give vehicles access to the river bank. The 221st Field Company started to build a Class 2 rubber raft, but was obliged to withdraw because of mortar fire. The next night, the site was moved half a mile downstream, and the raft erected.

The 220th Field Company had the task of constructing two Class 2 rubber rafts on the river. On the evening of the crossing, the company began the inflation of the rafts. The second raft was ready for operation at 0930 hours the next morning. On 21 January, this ferry was converted to Class 9 by the construction of a batwing raft. Two propulsion units were used for power.

The main responsibility of the 501st Field Company was the erection of a Class 30 Bailey ponton ferry across the river near the junction of the Travata River. Building began at 0200 hours 18 January and was completed by 1100 hours. Round trips took about 10 to 15 minutes. During the next twenty-four hours, 110 vehicles were taken over to the far bank, and casualties and maintenance vehicles brought back. After the first day, the operation of the ferry was turned over to the Italian Pioneers. The site was not shelled either during construction or for some time later, largely due to the use of an unexpected location and careful concealment of preparations. Traffic finally gave the location away, and on 27 January there was sporadic shelling, after which the majority of the Italian crew disappeared.

SECTION III

56th British Infantry Division Royal Engineers (cont'd).

The ferry was finally turned over to the X Corps Troops, Royal Engineers, to operate. The 213th Army Field Company, which for a time came under the command of the Commander, Royal Engineers, of the 56th Division, built a Class 9 folding boat type bridge at the bend of the river near Route #7 during the night of 18-19 January. The bridge was quite heavily shelled, but was kept repaired and in almost continuous operation. The 221st Company also built a Class 5 raft across the Garigliano between San Martino and Castelforte on 19 January, which was replaced two days later with a 160-foot, Class 9 folding boat bridge.

The 272nd Field Company, as well as the 213th Army Field Company, was attached to the 56th Division for several days to assist with the mine clearance and road maintenance work. The ground near the river on both sides was very flat and low in the division area. The roads in this area had little or no metalling, and the drainage was bad. Many roads were laid with picket paling throughout their entire length, and Sommerfeld track and flexible duckboards were used in the worst places. Afterwards, rubble was dumped on the road to form the hard wearing surface and adequate drains were dug. Italian military personnel was used on many of these roads and, in general, worked very well. Much of the work was done at night because of the accurate shelling.

As the Anzio landing failed to change the Garigliano front appreciably, the 56th Division engineers had to continue ferrying supplies to the mule trains on the north bank of the river. The 563rd Field Park Company was busy the latter part of January, collecting, checking and returning equipment used in the crossing. During the last of January and the first part of February, the 56th Division was moved to the Anzio beachhead to help repel the German counterattacks.

6th British Armored Division Royal Engineers

In February, the 625th and 8th Field Squadrons and the 144th Field Park Squadron were placed under command of X Corps for aid in the work on the Garigliano River. These companies, the engineers of the 6th British Armored Division, were supervised by Lieutenant Colonel Brinsmead, Commander, Royal Engineers, 10 Corps. Most of the work was the maintenance and construction of floating Bailey bridges and rafts, and road work. In March, they were joined by the 42nd Field Company. By the end of the month, the 6th British Armored Division had arrived in Italy and had been concentrated at Piedimonte D'Alife, south of Cassino. There the division engineers joined up with their parent unit after handing over their work to the 313th Engineer Combat Battalion.

7th British Armored Division Royal Engineers

At the Volturno, part of a German-built wooden bridge remained. On either end of this structure, short Baileys were erected to span the gaps to the remaining center portion by the engineers of the 7th British Armored Division. This Class 9 bridge obviated the necessity for constructing a treadway bridge upstream as planned. After the Volturno was crossed, the 7th Division switched sectors with the 46th Division and moved close to the sea. From there, the division moved forward to a sector between Piedimonte Rivoli - Carinola and the Gulf of Gaeta. Here, the division remained in place until winter, when it was withdrawn from the line for training and eventual movement to England in preparation for the Normandy invasion.

The 4th and 621st Field Squadrons cleared and prepared the roads to the Carinola location supported by the 143rd Field Park Squadron, and after getting into position on the mountains exerted all their energies in the construction and maintenance of supply and evacuation roads up to the front line positions. During this period, the engineer troops were under the command of Lieutenant Colonel Hunter, Commander, Royal Engineers, 7th Armored Division.

5th British Infantry Division Royal Engineers

At the change of the year 1943-1944, the 5th British Infantry Division joined X Corps and entered the line in the Piedimonte-Carinola-Mondragone area to relieve the 7th British Armored Division. The Commander, Royal Engineers, Lieutenant Colonel K. Osborne had command of the 38th, 245th, and 252nd Field Companies and the 254th Field Park Company. Immediately, preparations were made for the January attack on the Garigliano. When the attack came on the 17th, the 5th Division moved to the river on a narrow front extending from the railroad line just east of Highway #7 to the sea. The 5th Division crossed here despite extremely heavy casualties and advanced to take Minturno by the 19th. Casualties were especially high in the mined area north of the Garigliano between Route #7 and the sea. The bridgehead was strengthened in the mountains around Minturno, the engineers main job being to keep the supply roads in repair. On 5 March, the 5th Division was relieved by the American 88th Division, the 313th Engineer Battalion taking over the engineer responsibilities.

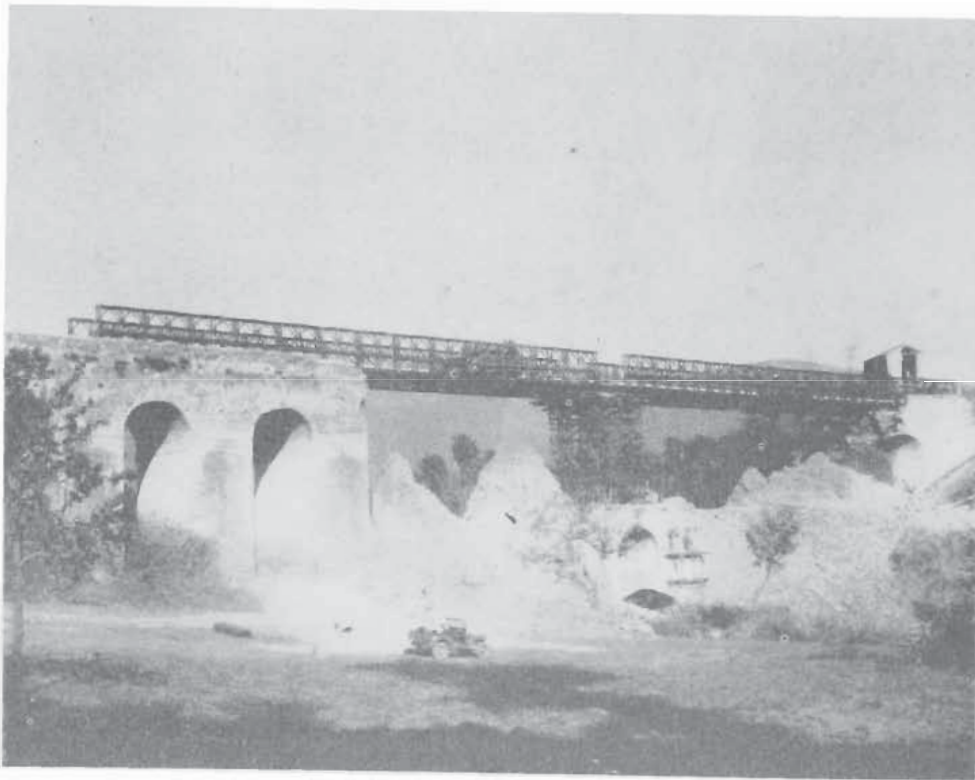
SECTION III

British X Corps Royal Engineers

571st Army Field Company

The 571st Army Field Company's participation in the assault crossing of the Garigliano was limited. One platoon was detached to the 4th Field Squadron of the 7th Armored Division for the crossing at Grazzanise and thus helped get the first bridge across the river on the X Corps front. Shortly after this, the company under the direction of the Commander, Royal Engineers, X Corps, Lieutenant Colonel K. Brinsmead, erected its first Bailey bridge near Capua, a job which went very slowly as the company's training in Tripoli had been rather limited.

Next, on Highway #6, the 571st built the first double-span Bailey bridge in the X Corps area at Calvi Riserta. The pier was unique in that it was constructed of tubular steel scaffolding, which proved rather unsafe when a height of thirty feet was reached. Construction was very slow and the 571st never resorted to this method again. Even with the immense amount of bracing used, there was still a lot of vibration of the structure. Accordingly, it was a relief when a timber trestle bridge was built to replace it.



BRITISH-BUILT BAILEY BRIDGE AT CALVI RISERTA

The company then moved to Teano as winter set in and a busy month was spent on the Teano-Roccamonfina road during the exceptionally heavy autumn rains. An average of ninety tons of stone was laid each day, in building up craters to road level and in widening the road surface. A large quarry was located right on the road, and by recruiting large gangs of civilian labor the road was kept in repair.

After the battle of Mount Camino, the company moved up to the Roccamonfina area and was again assigned road maintenance. Just before Christmas, one officer and one enlisted man were killed and two enlisted men wounded by "S" mines. The area contained a rock that produced a reaction on mine detectors, rendering them useless. Ever since, probing for mines was the only method deemed safe by the 571st. A detail was sent down to Capua to observe training in Bailey ponton bridging, and later the whole company went down for a week.

571st Army Field Company (cont'd).

Shortly after Christmas the unit moved to Sessa, and in conjunction with the 573rd carried out a dress rehearsal of a Bailey ponton crossing of the Garigliano River. This was performed at Cancellio on the Volturno, and included every detail that might possibly come up in the actual operation. The practice was a complete failure, with the result that much was learned--so much, in fact, that the real operation came off without a hitch. Preparations for the battle continued until the night of 19 January, when the first Bailey ponton bridge across the Garigliano was begun a short way downstream from the old bridge on Highway #7. The entire bridge and the approach roads were completed thirty-six hours after the enemy had left the site. The unit was unmolested during the construction period.

The atmosphere of calm was deceptive, however, as the next month's work proved. The Minturno bridge was overrun by gremlins. The river was not normally fast, but was subject to sudden rises during floods and great care had to be taken with anchorages. A few days later, the company was informed that it was going to build another one alongside it. The shelling had now started in earnest and continued until early March.

The company worked at night and built the second bridge. Much trouble was avoided by the permanent smoke screen maintained throughout the hours of daylight. This proved, however, very uncomfortable to work in for any length of time and caused much anxiety when smoke pots ran out one day. Another officer was hit at this time, making the officer battle casualties one hundred per cent in five months, and leaving only one officer in the company, who had landed at Salerno. Enlisted Men losses in wounded and killed amounted to slightly under fifteen per cent.

After a period of three weeks spent in trying to keep these two bridges afloat in floods and after damage by shellfire, the 571st was relieved by the 573rd. As a rest, the company was given the unshelled Damiane bridge to maintain. Two days later, the bridge was shelled heavily and many anxious day and nights were spent effecting repairs. The 50-ton jacks used by transportation units proved invaluable in keeping the superstructure above water; using the landing bays as lever arms provided a firm support over the half-span point. It was found that the design of "dodges" or baffles was very important, as the floods bring down quantities of debris, ranging from whole trees, to bulls, the horns of one having had a disastrous effect on the plywood sides of one ponton.

In early March, the 571st returned to Capua. There it received some instruction in building Bailey ponton bridges and rafting and enjoyed the first rest since the landing at Salerno.

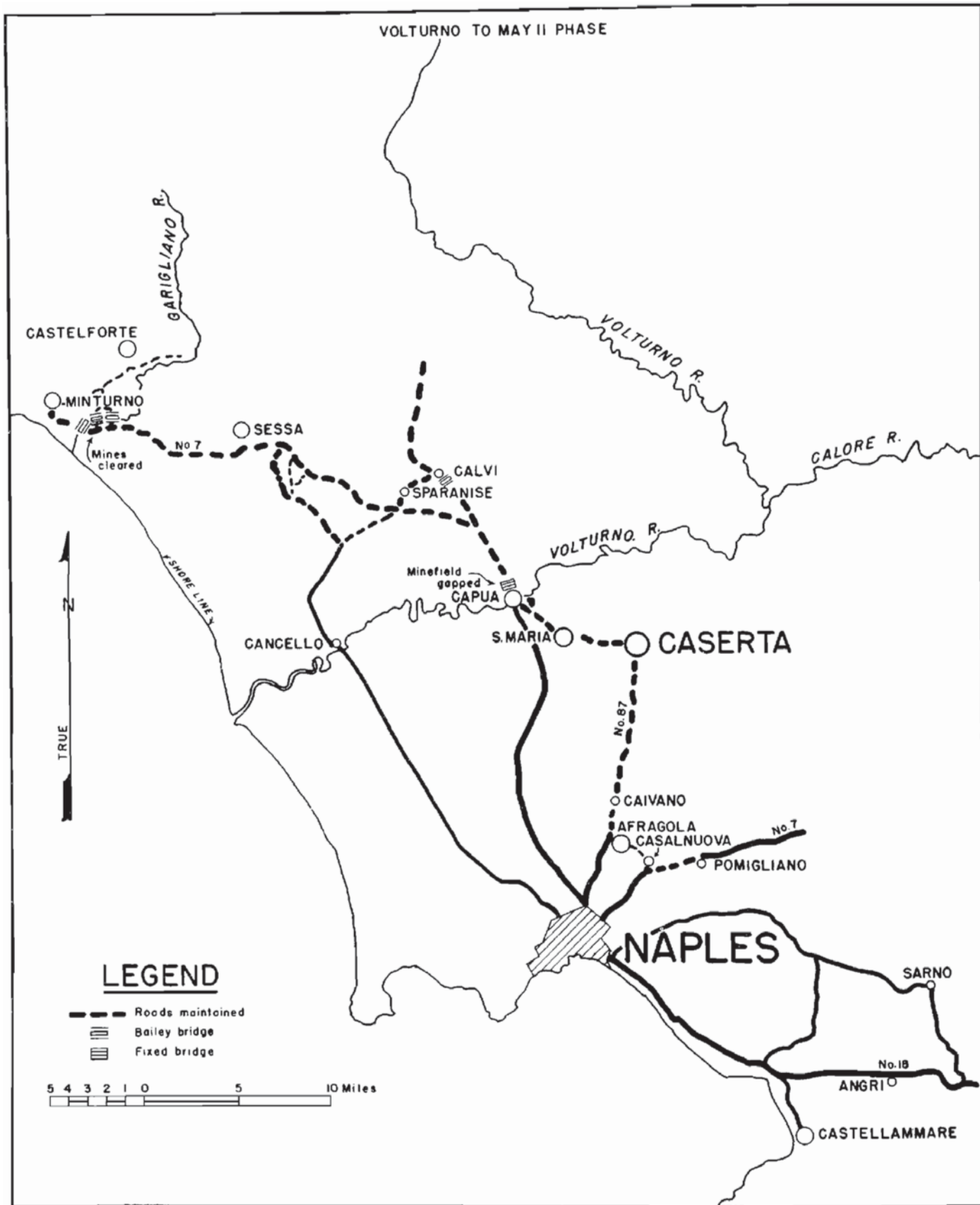
572nd Army Field Company

The 572nd Army Field Company moved to Pomigliano after the Volturno was reached. Under the supervision of the X Corps Commander, Royal Engineers, Lieutenant Colonel Brinsmead, the 572nd began work on 6 October on the 56th Division maintenance route running north from Pomigliano towards Caserta, through the villages Castel Nuovo, Afragola and Caivano. During the next two days, all four bridges north and south of Sarno were dismantled and returned to the dump at Castellamare, since the route was no longer of any importance.

Usual maintenance of road and water points was continued until 12 October, when two platoons were employed on the approach road to the Volturno River in the Capua area. Three hundred sixty yards of Sommerfeld track were laid over plowed land, and three hundred eighty yards of road prepared by laying rubble on the mud, blasting an entrance in the factory wall, and bridging a 12-foot ditch. Most of the work was done during the night hours. On 13 October at 0100 hours, the work came under heavy shell, mortar and small arms fire, wounding three men. Shelling caused damage to the road and in one place blew up a 20-foot stretch which was later replaced, but traffic was able to use the track from 2200 hours on 12 October.

Two platoons were withdrawn from their regular work on the 16th to stand by and prepare to work on approaches to both banks of a proposed ponton Bailey site. Work commenced on 17 October, and the next day one platoon worked on either side of the bridge location. On the 19th, every available man in the company was employed on the construction of the bridge, together with the men of the other construction units, and at 0100 hours in the morning, it was open to traffic.

On 23 October, the maintenance of the Bailey ponton bridge was handed over to the 213th Field Company. Plans were then made for the construction of piers on the site of the old Roman Bridge at Capua. On the following day, the design of the bridge was submitted and approved. Work began immediately on the clearing of what was left of the existing piers. On 26 October, three platoons of the 572nd and two sections of the 47th Pioneer Company were busy preparing the site of the proposed bridge and getting supplies.



**X CORPS ROYAL ENGINEERS
OPERATIONS**

572nd Army Field Company (cont'd).

The purpose for building the bridge was to insure that the Volturno was crossed by a high-level structure if the Class 70, timber trestle bridge which the Americans were building just downstream was not opened before the heavy rains, and further as a reserve in case the timber trestles were damaged by debris brought down by the flood waters. As the American bridge neared completion, work was slowed on the British bridge and many other jobs were undertaken, leaving only a small party behind to complete the piers.

By 9 November, all work on the approaches and the piers was completed and the maintenance party was withdrawn. The bridge was not built until a later date, when it was used solely as part of the one-way traffic system in Capua. Other work during November consisted chiefly of building small Bailey bridges (up to 90 feet), and maintaining the roads forward. Heavy traffic and rain caused much damage and on many occasions it was difficult to keep the roads open. Italian labor, mostly ex-soldiers from northern Italy, were hired and were found to be of great assistance.

On 20 November, a group going on leave was strafed by enemy fighters. Since that date, the 572nd did not see any German aircraft operating over its sectors. Throughout December, the corps engineer troops maintained roads, opened ditches and repaired bridges. Two quarries were worked chiefly under engineer supervision. In addition, several water points were maintained and road patrols were used on many of the minor roads for general repairs and bridge maintenance. The 572nd maintained the divisional supply routes into January.

During the operations beginning on 17 January, the company was responsible for clearing the approach route and making approach roads for the Class 30 Bailey ponton bridge constructed over the Garigliano south-east of Minturno. A demolished steel girder railroad bridge completely blocked the route. After searching the debris for mines, charges were placed and the obstruction blown away. Several large craters were filled after the roads had been swept and a one-way road was passable to the bridge site by 0100 hours on 19 January.

From the 19th to the 25th, the approach roads were widened and gravelled on both sides of the bridge. At that time, all work was handed over to the 571st Field Company. During February, the 572nd was chiefly engaged in maintaining the 46th Division supply route and operating water points. Later in the month, the unit assumed the responsibility for a Class 30 Bailey ponton bridge east of Castelforte, which the 572nd helped construct.

Early in March, the unit underwent its first period of training on the Bailey ponton bridge at the bridge training camp five miles east of Capua on the Volturno. Part of the month was spent on bridge training, part on the improvement of divisional supply route. At the end of the month, the 572nd Royal Engineers moved into the X Corps training area, at Angri, and from this time ceased to be a part of the Fifth Army.

573rd Army Field Company

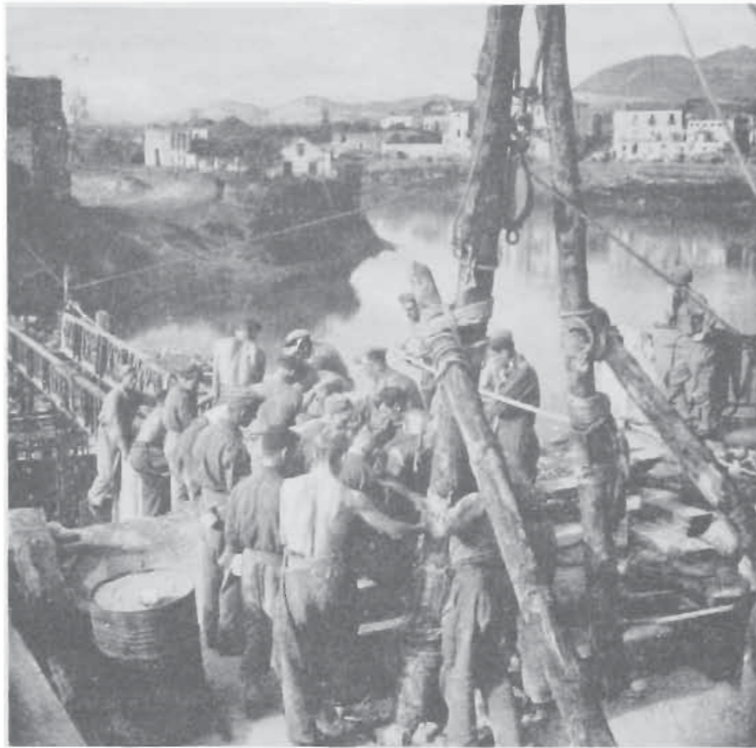
On the second day of the battle for the Volturno, the 573rd Army Field Company was attached to the 46th Division for the job of gapping a minefield to get tanks forward to the infantry on the far shore. This was accomplished during the night, and for the next week the company supported the division infantry. The division engineers were being held in reserve for building a ponton bridge. For the rest of the year, the company was employed in general road maintenance and improvement in the corps sector.

On 8 January 1944, the company was informed that in a short time it would help construct a ponton bridge over the Garigliano at Minturno on Route #7. A dry run was carried out near Cancellio, which gave the company a little extra training, but served chiefly to emphasize the poor cross-country performance of the bridge trucks.

The Garigliano attack started on 17 January. At noon the next day, the 573rd was informed that the bridge site was clear. This was not exactly true as the reconnaissance party was fired on by machine guns from the north bank. The next morning, however, the site was found clear by the reconnaissance party and the work was started. The bridge was opened the next day at 1530 hours. After a day's rest, the company was ordered to build another ponton bridge about three miles upstream. Work began on 22 January and traffic crossed over on the 24th. This bridge was about 400 feet long.

The next two months were employed in maintaining and improving one or the other of these two bridges, great difficulty being experienced during the times of flood. On one occasion, the level of the river rose thirteen feet six inches, washing away two ponton piers, damaging two others. At the end of March, the 573rd Field Company also moved to the bridge training camp at Capua for training and passed from under the command of the Fifth Army

SECTION III



BRIDGE CONSTRUCTION TRAINING



CAPUA SCHOOL OF MILITARY ENGINEERING

SECTION III

570th Corps Field Park Company

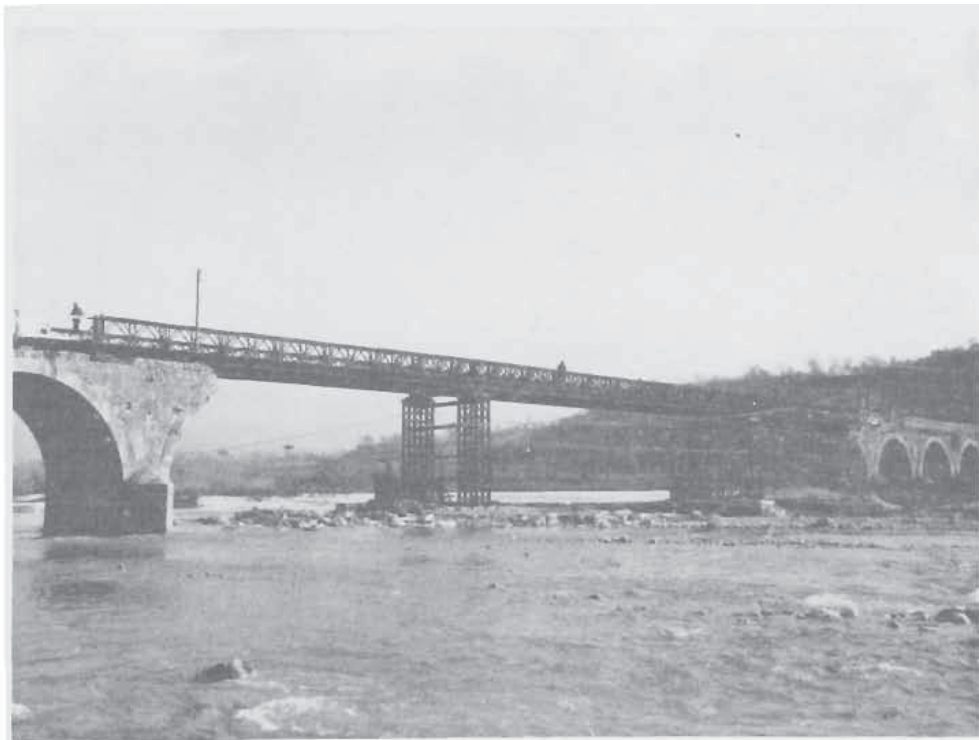
When planning for the crossing of the Volturno, the 570th Corps Field Park Company, Royal Engineers, faced the problem of getting small vehicles and guns across the Volturno River at high speed. Existing equipment for rafting was cumbersome and took too much time to erect, so the Chief Engineer of X Corps, Brigadier Godfrey Fawcett, gave the company a drawing of a Class 5 track raft which he had developed in England. One was put into production for a trial, and a system worked out whereby the raft could be put into high speed production.

After overcoming many snags, a successful raft was launched on a pond near Capua. Six of these rafts were manufactured and the field companies that used them reported that they were a great success in the crossing of the Volturno. At the same time, a small raft for carrying a Class 2 load was designed and a prototype made, which proved successful also (after many modifications had been made), but none was used for the Volturno crossing, as there was insufficient time to make any quantity.

The company's mechanical equipment did much work in constructing ramps and approaches to the bridges over the Volturno, the largest of these being the floating Bailey, the approaches of which involved a vast amount of bulldozer work. While working on these jobs, a call was received from an Engineer Field Squadron asking to use an auto patrol.

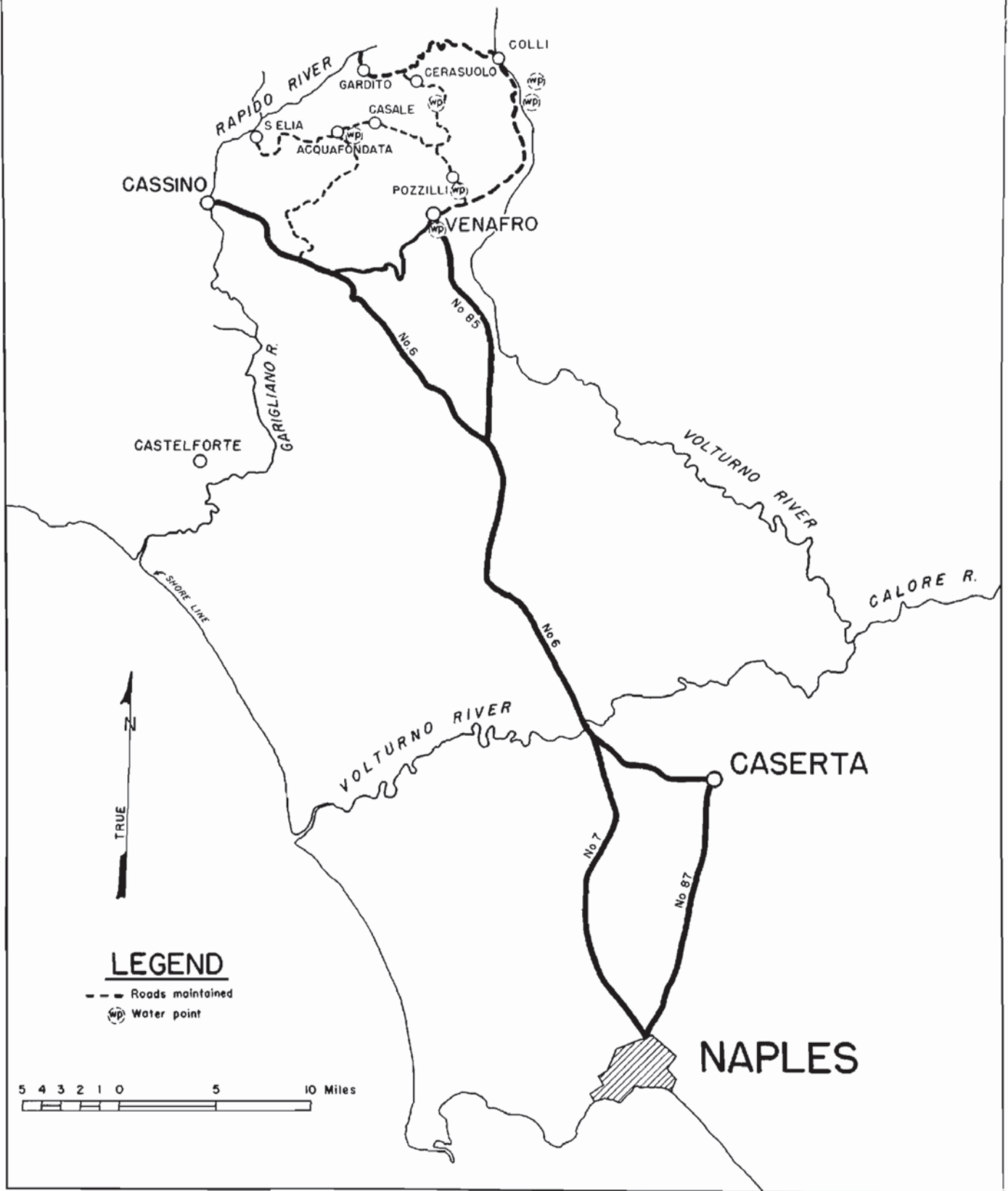
The Company did not know what the machine was, but had heard that it was the magic carpet of road construction. When it arrived (a Class 12 load), it crossed a Class 9 floating bridge on the way--much to the consternation of the Military Police. Although the squadron was being shelled very heavily, the operator insisted upon doing his job. He then retired as fast as the machine would go.

The Royal Engineer supply and bridge dumps for the Garigliano River area was at Sparanise. It was started in the railway station, but as has often happened the Railway Construction Engineers caught up and the dump had to be moved on to a muddy field where some 2,000 yards of road had to be built. Five more Class 5 track rafts were built by the Workshop Platoon, which was still in Capua, where it overhauled and started up a big civilian workshop in addition to running mobile workshops. Class 2 rafts were also put into production. One of these was the first Allied raft to carry a vehicle across the Garigliano River on the night of the assault. Shortly after the crossing of the Garigliano, the 570th Field Park Company was withdrawn for training at Capua and left the Fifth Army on 11 April 1944.



BAILEY BUILT BY FRENCH ENGINEERS NEAR VENAFRO

VOLTURNO TO MAY 11TH. PHASE



FRENCH EXPEDITIONARY CORPS ENGINEERS
OPERATIONS

SECTION III

French Expeditionary Corps Engineers

In January, the French Expeditionary Corps (CEF) joined the Fifth Army. There were two divisions in the Corps, the 2nd Moroccan Infantry Division and the 3rd Algerian Infantry Division, each of which were supposed to have one battalion of engineers. The African engineer battalions were composed of one headquarters company and two combat companies, together with one pioneer company which was added as a partial remedy for the shortage of qualified engineer personnel. Almost all of the technical personnel had been employers of the Mediterranean-Niger Railway Company, the officers having only temporary ranks.

At the beginning of the operational period, the 180th Engineer Battalion had a strength of 900 men and consisted of three combat companies, two works companies, one pioneer company and a service company. The Service Company included a workshop, a water supply service and a transportation section. This battalion constituted all the engineer troops under the Corps Engineer, General Dromard. To the 180th Battalion, Company "F" of the 175th Engineer General Service Regiment was attached in the capacity of a bridge train. Also the 1st Battalion of the 344th Engineer General Service Regiment was attached in place of the second service battalion which never arrived.

The CEF went into the line on 12 January in the sector west of the Volturno between Venafro and Colli. The mission was to advance to the Rapido River. This was accomplished by the end of the month. The main supply routes were from Venafro to Pozzilli, through Aquafondata to S. Elia on the Rapido, and from Colli to the river. Innumerable craters were filled along these roads (within a 2-mile stretch there were 10 blows), mines were cleared and road surfaces repaired to permit the passage of the CEF supplies.

During February and March, the engineer work was mainly maintenance of this road system and the training of new engineer troops, as the front remained static. On the 20 miles between Pozzilli and S. Elia eight pioneer and labor companies were required to maintain the road. For this work, Italian civilians were hired to form the above-mentioned labor companies. In addition to these roads, the engineers built a new road between Aquafondata and the Rapido for mules and light vehicles.

The restoration of bridges was the most spectacular work achieved by the engineers, for the French Africans had had practically no training for Army engineer work. In thirteen days, an 80-foot Bailey bridge, a 220-foot Bailey with two intermediate piers and a 1800-foot detour were constructed.

In mid-March, the French Corps was relieved and given a rest. A preliminary reconnaissance of the route to the rest area revealed 4 gaps on the road. In 10 days, 3 Baileys totalling 760 feet were built and a pile bridge carried away by flood waters restored.

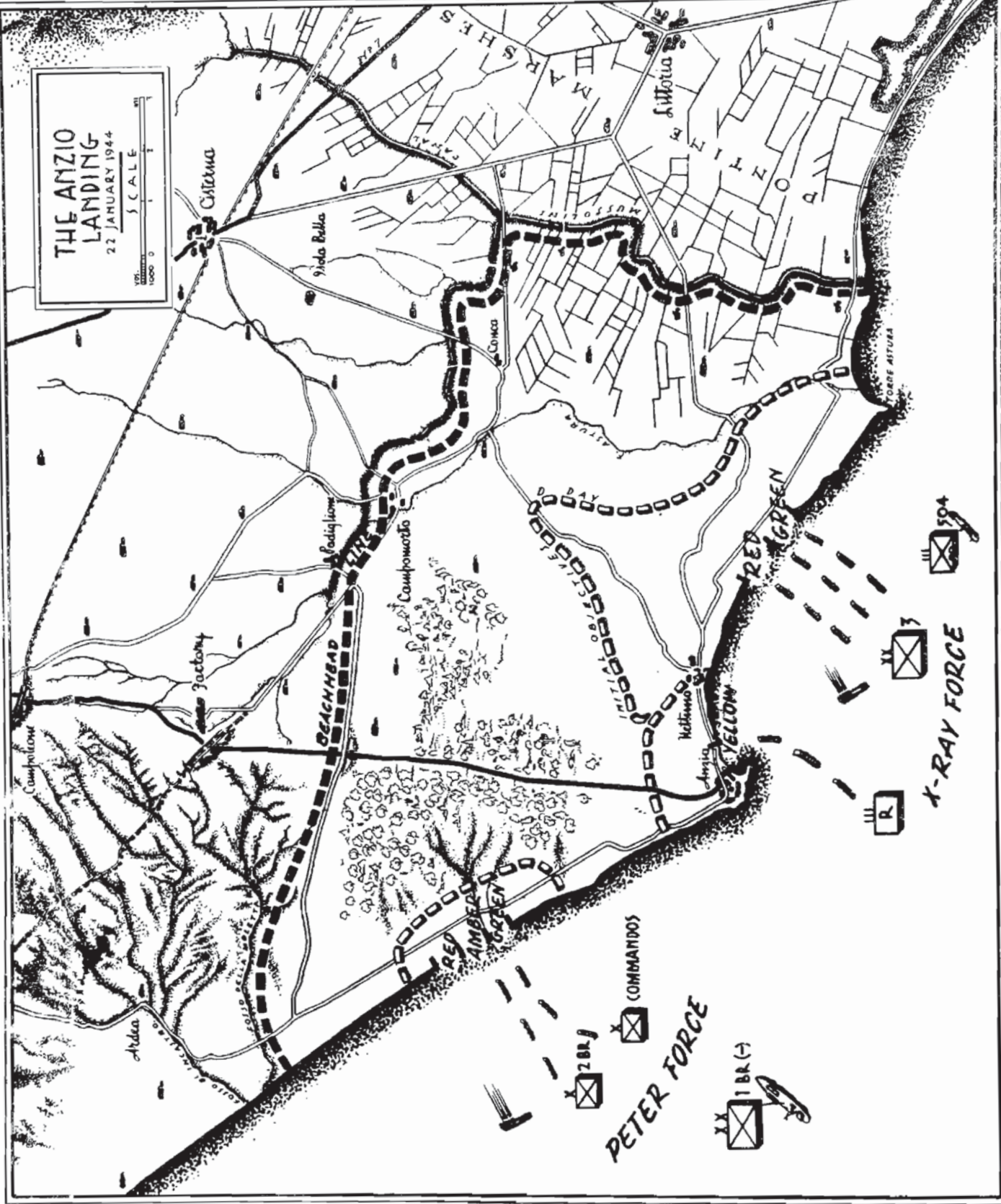
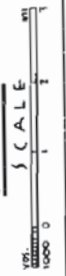
SECTION IV

THE ANZIO BEACHHEAD

	<u>Page</u>
A. The Tactical Situation	81
B. Work at Engineer Headquarters	82
C. Unit Operations	85

THE ANZIO LANDING

22 JANUARY 1944



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SECTION IV

THE ANZIO BEACHHEAD

A. The Tactical Situation

The Anzio Operation, known as "Shingle", was quite a shocker to the Germans. Quite a large area might have been taken after the landing on 22 January, if sufficient forces had been allocated. As it was, prudence dictated that the beachhead forces should not be overextended. The troops available were limited by shipping--the shortage of which was critical. The main purpose of the landing was to divide the German forces. The Eighth Army was to make an attack in the east; the landing was to divert enemy troops from the southern front; the big push was to be made by the main Fifth Army forces.

To insure the landing's surprise, an elaborate cover plan had been set up. A radio station was established on Corsica, which claimed to be the advance command post of VI Corps. All traffic was directed towards Leghorn, shipping was concentrated in Corsican harbors, and dummy dumps and landing craft were erected by camoufleurs.

After the landing, however, things began to go wrong. The Germans did not take as many units from the southern front as had been hoped. Instead, with astounding dispatch, a division was brought in from France, another from the Balkans, three from Northern Italy, two from the Eighth Army front, and only one and a half from the Fifth Army southern front. By D plus 11, the enemy actually outnumbered the Allied forces on the beachhead, with 98,000 troops to our 92,000. The Fifth Army now was facing a stone wall on two fronts.

Allied bombing had caused a great deal of damage to the harbor at Anzio. The mole was completely unworkable and the road at the back of Yellow Beach was completely blocked. The mole and harbor had been extensively mined with sufficient explosive to wreck the sea walls of the quays. These charges were of mixed German and Italian origin and had been laid some months. They were removed intact.

The bridges over the Incastro River and Mussolini Canal were blown by the landing troops according to plan. All these bridges had been mined by the enemy with Italian charges but it was necessary to renew all the fuzes, as the originals had deteriorated. The VI Corps defense line followed the natural anti-tank obstacles of the Moletta River and the Mussolini Canal. An urgent request for concertinas was made, 4,000 of which arrived pre-loaded on trucks on D plus 10, having been delayed by bad weather. Quantities of lumber also arrived on D plus 10, pre-loaded in trucks. The lumber had not been asked for, nor was it required.

As most roads were under shell fire, development of a road network became a matter of first importance. In depots, subsoil water was low enough to enable alluvial sand to be built up and packed by traffic. Anzio and Nettuno were honey-combed with tunnels cut in soft sandstone. These were normally used as wine cellars. One tunnel system was cleared, surveyed, and wired for VI Corps Headquarters all in 48 hours. Rumor had it that Nero built an underground tunnel from Rome to Anzio. The remains of an aqueduct were found which was several miles long, but which ran out by the Moletta River. No further trace of the Rome tunnel was found there.

The Anzio beachhead was forced to undergo a gruelling siege, especially for the first three weeks in February, when the Germans were trying to eradicate this constant threat to their right flank. Nearly all corps and division engineer units were employed as infantry troops, either to hold frontline positions or to act as reserves.

By 19 February, however, the beachhead was firmly established and the enemy accepted the fact and dug in. The stalemate continued until late in May. The initial force at Anzio consisted of Ranger Battalions, Commandoes, the 509th Parachute Infantry Regiment, 3rd Infantry Division and the British 1st Infantry Division. Later, the 45th Infantry Division, the 1st Armored Division, the First Special Service Force, the 34th Infantry Division, the 36th Infantry Division, and the 5th and 56th British Infantry Divisions arrived as reinforcements.

The Tactical Situation (cont'd).

Following the break-through of the Garigliano defenses on 11 May by the Fifth Army southern front forces, and their subsequent northward advance, the beachhead troops attacked with renewed vigor, and on 23 May broke through the German defenses on the beachhead perimeter. One of the Anzio engineers from the 36th Engineer Combat Regiment met with another engineer of the 48th Engineer Combat Battalion from the southern American force two days later, on 25 May 1945. The Fifth Army was reunited. The beachhead became history.



ANZIO HARBOR

B. Work at Engineer Headquarters

A planning board for operation "Shingle" had assembled in the Caserta palace in mid-November 1943. The representatives of the Army Engineer were Colonel Paxson, Captain Peterson, and Lieutenant Graham. The aerial photo interpreters, Captain Colvocoresses, and 1st Lieutenant Henry L. Clark, who joined the Engineer Section in November, worked at the Army Photo Center. After a thorough study of the beaches from Gaeta to Civitavecchia, the Engineer recommended the Anzio location because of the steep underwater gradient offshore, suitable beach exits and the availability of Anzio harbor.

Bids for tonnage were placed with G-4, and when the allotment for engineer supplies was made known, lists of priorities were drawn up, and plans made for the loading and unloading of engineer items.

In December, VI Corps sent a planning staff to the palace, which cooperated with the Army staff. The 540th Engineer Combat Regiment which was to be the shore engineer unit for the operations, also sent representatives. After the plans had been completed, they were turned over to the VI Corps Planning Group, because the landing was a Corps responsibility. It was this latter group that worked out the exact details and drew up the final terrain study.

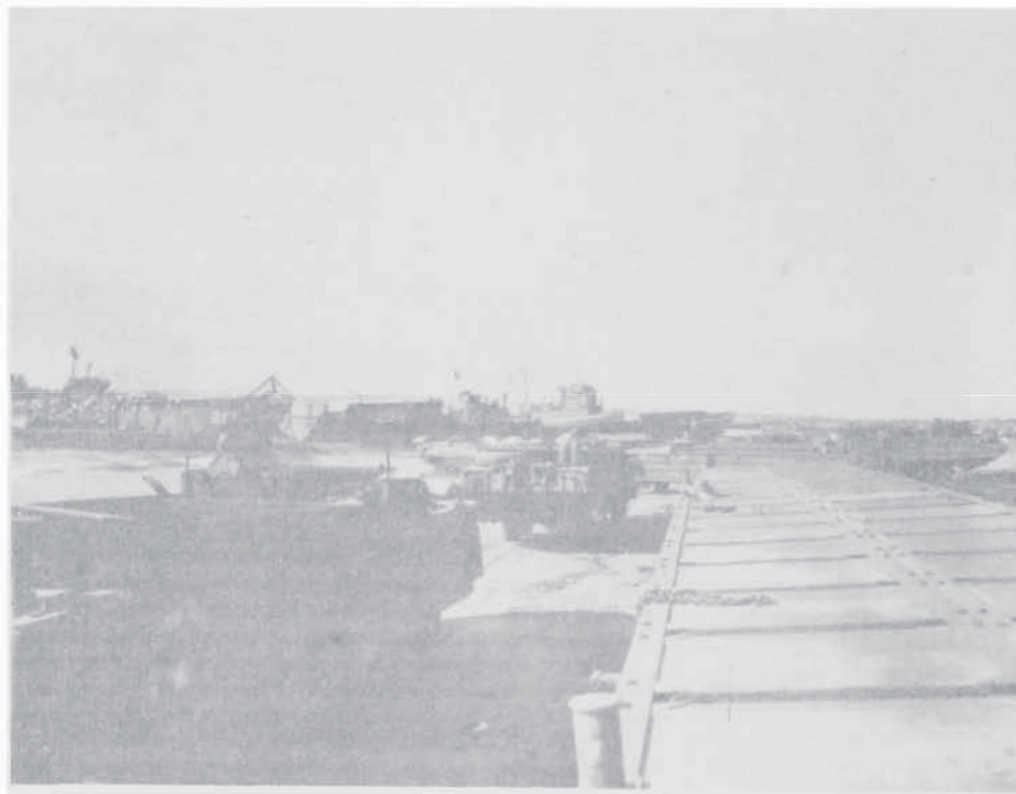
When the landing was made on 22 January, the 540th Regiment went ashore at H plus 15 minutes. The regiment's Commanding Officer, Colonel George W. Marvin, was designated by General Bowman to be the Deputy Army Engineer on the Anzio beachhead.

SECTION IV

Work at Engineer Headquarters (cont'd).

Captain Peterson went to the beachhead to supervise the engineer supply depot, and expedite the movement of supplies by helping to bridge the gap from the Corps Engineer to the Army Engineer. The engineer dump at the beachhead was run by the British 15th Stores Section and the 2nd Platoon, 462nd Engineer Depot Company, the latter loaned to Fifth Army for the operation by Peninsular Base Section.

The main work for the British increment of the Engineer Section was concerned with supplies. To avoid duplication of bulky items such as Bailey bridging, a "common user" policy was formulated on all engineer items from American or British sources. Items were issued from the joint dump on demands approved by the Corps Engineer. Difficulties in communication between Army Headquarters and the beachhead made it necessary to maintain personal liaison at least twice a week, usually by PT boat or Air-Sea Rescue Craft. Coordination of British Engineer work with that of the Americans at VI Corps Headquarters was effected by the appointment of an SORE II to act as advisor to the Corps Engineer on British requirements. This position was held successively by Major G. K. Benn, Major R. T. Brain, and Major S. B. Smith.



DUKW'S WAITING TO UNLOAD LVT'S AT ANZIO

Captain Peterson of the Engineer Section was replaced by Captain Bradley in March. Demand for defensive supplies, sandbags, wire, and mines became very heavy when it was apparent that the beachhead would have to resist a siege for a considerable length of time. The engineer dump averaged about 9,000 tons and had as much as 11,000 tons of supplies at one time. It was definitely proved that an engineer depot could be operated under shell fire, a previous subject of conjecture. On the beachhead, the first salvage operations on a large scale began. Treadway bridge equipment and hand tools, especially, were repaired and reclaimed. In May, quantities of river assault crossing equipment was sent to Anzio in preparation for the crossing of the Tiber, but the subsequent seizure of the Tiber bridges intact made the use of this tactical bridging unnecessary.

SECTION IV

Work at Engineer Headquarters (cont'd).

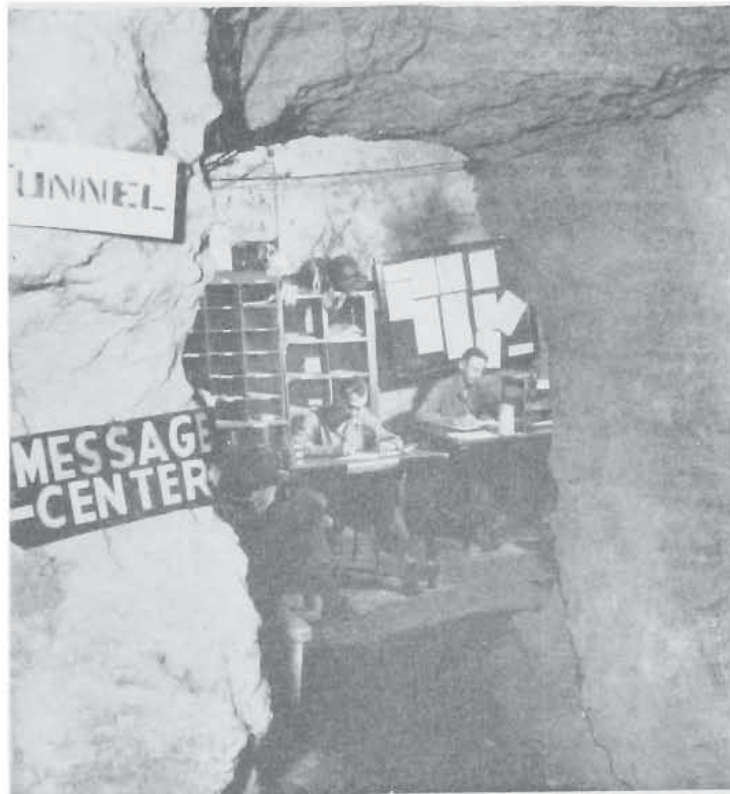
Only thirty-one miles of road were maintained at Anzio. The work consisted of taking care of the routes leading inland from the port and landing beaches. As the entire area was subjected to frequent bombing and shelling, continuous patrolling and surface repairs were necessary. Fourteen bridges, half Bailey and half steel treadway, were constructed. The area had been lightly mined before the initial assault, but gradually the perimeter of the beachhead became one of the most densely mined areas in the entire Italian peninsula. Mine laying and clearing was done almost entirely by Corps and division engineers, but Army units did check the harbor areas of Anzio and the landing beaches.

Anzio was a grave fire hazard. The great concentration of dumps and troop areas necessitated the closest of cooperation and liaison between the four Fifth Army Fire Stations, three British Stations, and the British Navy fire pumps at the ports.

From 22 January to 25 May, 45,756,000 gallons of water were produced on the beachhead. Camouflage was restricted to individual and small installation concealment on the front lines.

Thirty-nine officers and 763 enlisted men were sent to Anzio as replacements. It was a difficult period, since two combat regiments were employed extensively as infantry with a consequent high casualty rate. The enormous demand for replacements far outran the resources of the replacement system and had to be met by transferring trained personnel from other engineer units to those engaged in the critical operations.

In May, as the attack on the Southern Front began, a Fifth Army Advance Command Post was established at Anzio in a cave constructed by the Royal Canadian Tunneling Company, and one company of the 343rd Engineer General Service Regiment. General Bowman, Lieutenant Colonel Jones, and Major Steele went forward to this new Headquarters, where they conducted engineer operations until the two fronts joined on 25 May.



FIFTH ARMY ADVANCE COMMAND POST AT ANZIO

C. Unit Operations

540th Engineer Combat Regiment

The 540th Engineer Combat Regiment under Colonel George W. Marvin was selected to be the shore engineers of the 3rd Division for the Anzio landing. On 3 January 1944, the regiment moved to Cuma De Cuma, where the landing party was trained. With attached units, the strength of the 540th Engineer Beach Party totalled approximately 4,200. Practice landings were made; considerable time was spent in thorough re-equipping; and comprehensive study was given to maps and photo layouts of the Anzio beach area, in order that location of exit roads, traffic circulation and dump sites might be determined.

The regiment and attached units embarked 19 and 20 January from the ports of Naples and Pozzuoli. At 0200 hours, 22 January 1944, on X-Ray Beach, south of Nettuno, the assault forces landed with little opposition and were followed by initial elements of the Beach Party at H plus 15 minutes. Three beaches were established: Red #1, Red #2, and Green. The 1st Battalion operated Green Beach, and after the consolidation of Red #1 and Red #2 was replaced by the 2nd Battalion.

The beaches were found to be free of mines, with the exception of the extremities of Red Beach. The entire D Day convoy was unloaded by 0800 hours, 24 January. Yellow Beach was opened by Company "F", then subsequently turned over to the British for operation.

On 3 February, a new site was selected for regimental headquarters and Headquarters and Service Company in the town of Anzio. Three days later, the unit was relieved from attachment to VI Corps and reverted to Fifth Army control. Colonel Marvin was designated Port Commander of the Anzio port and the X-Ray Beach network. At this time, the 2nd Battalion moved into the town of Anzio and took over port operations from the 36th Engineer Regiment, and the 1st Battalion was given the task of operating the X-Ray Beach network.

By 6 February, the intensity of the enemy action had become so severe that VI Corps moved its headquarters underground. On that day, during one of the many air raids on Anzio, a bomb landed in the Company "E" officers' sleeping quarters and killed the commanding officer and two platoon leaders. Another direct shell hit, landing in the sleeping quarters of the 1st Battalion Medical Detachment, killed one officer and wounded two others.

The ill luck continued. During the evening of 1 March, a lone plane was heard overhead. Military personnel, including the AA gunners, believed it to be a British Lancaster, until it dropped two 1800-kilo bombs, one of which hit the sleeping quarters of Company "F". The toll was twenty-one enlisted men killed, nine wounded, and three completely buried in the ruins and reported "missing in action". The other bomb proved to be a dud, falling on the sleeping quarters of Lieutenant Colonel Kent and causing only minor injuries to personnel quartered there.

On 26 March, the 540th was assigned to Engineer Headquarters, Fifth Army, and worked directly under its supervision. At that time, Anzio was operating well above what had been thought possible and, in fact, was one of the world's largest ports in respect to net tonnage landed. The best original estimates of the Anzio port and beaches had rated a capacity of 600 tons per day. This was far lower than the average of 4,000 tons per day which developed as beach operations progressed.

Meanwhile, the regiment continued its beach security program, which included the operation of rescue and road patrols for the Anzio port and the X-Ray Beach network. Because of the health and sanitation problems at this time, it was necessary to appoint personnel from each company within the command to attend scheduled classes in sanitation for the prevention of malaria. During this period, the 540th was visited by Ernie Pyle, the war correspondent, Brigadier General Bowman, who awarded the regiment the Fifth Army Plaque for meritorious service, and Major General Truscott, VI Corps Commander and later commander of the Fifth Army.

On 16 May, the regiment moved to a new command post in Anzio, where it continued to operate the port and adjacent beaches. At the same time, a cold patch plant was put into operation, 3,000 yards of black top laid on roads and revetments dug for hospitals. The harbor of Anzio was augmented by the construction of LCT hards and debris and damaged ships further cleared from the entrance. Minefields at Littoria and La Ferria were cleared of 780 Italian boxmines.

540th Engineer Combat Regiment (cont'd).

On 31 May, Lieutenant General Mark W. Clark sent a letter to the 540th Engineers, saying in part: "5,695 tons of supplies were unloaded today. As of midnight, the port of Anzio is turned over to Peninsular Base Section. Fifth Army has operated the port of Anzio for four months and twenty-five days, and has averaged 4,000 tons per day. The day 7,828 tons of supplies were unloaded (28 March 1944), the port ranked fourth largest in the world."



540TH BEACH OPERATIONS AT ANZIO

36th Engineer Combat Regiment

On 5 January 1944, Company "H" of the 36th Engineer Combat Regiment joined the 1st Ranger Battalion at Naples and shortly thereafter the remainder of the regiment went to Afragola to prepare for the Anzio operation. On the afternoon of 19 January, most of the regiment, under the command of Colonel T. H. Stanley, embarked on LST's at Naples. D Day was 22 January. The mission of the regiment was to clear and put the port of Anzio into operation, support the advance of VI Corps assault elements, prepare an emergency landing field and clear corps dump areas.

The landing was practically unopposed, although there were many enemy air raids after dawn. Early in the afternoon, the port was clear and ready to take landing craft. This was the mission of Company "H", which landed with the Rangers before dawn. At about 1800 hours, D Day, regimental headquarters, 1st Battalion Headquarters, Companies "A", "B" and "G" landed in the port, rather than over the beaches as previously anticipated.

During the early part of the evening, Anzio was lightly shelled. Later, the shelling became more intense, with concentrations in the port area and in the vicinity of regimental headquarters on the north edge of town. The shelling was reported to come from a battery of 170 mm guns and continued until the morning of 23 January. There was practically no other enemy activity during the remainder of the day. Company "H" was released from the Rangers and returned to the regiment.

SECTION IV

36th Engineer Combat Regiment (cont'd).

The first task confronting the 36th Regiment was the cleaning up and setting into operation of the port. By evening of D Day, the task was sufficiently along to dock two LST's simultaneously. The docks and quays were thoroughly prepared for demolitions. The men worked through several air raids and removed the explosives. On D plus 2, LST's, LCT's and LCI's were discharging at the Anzio port. The regiment was performing a triple task--operating the port, fighting as infantry and doing engineer work on the beachhead. Roads were opened into dumps and into the forward combat areas, mines were removed and laid as required, bridges were repaired and constructed where needed, an airfield was prepared for the initial beachhead aircraft, and the port was opened and operated. After being organized, the port was turned over to the 540th Engineers, which had been operating the beaches.

On 30 January, the 2nd and 3rd Battalions were committed as infantry with the 45th Division. The mission was to establish a defensive line generally about eight miles north of Anzio, extending from the sea to a point five miles inland. On 31 January, one platoon of Company "F" went in front of the line to get German snipers, but were caught in a heavy concentration of mortar fire, which resulted in a total of twenty-five casualties, six men being killed. That night the 2nd and 3rd Battalions were relieved.

On 10 February, the entire regiment was committed as infantry on the left flank of the beachhead on the Moletta River sector. The regiment was attached to the 56th Division and was deployed from the sea to a point $4\frac{1}{2}$ miles inland. For forty-five days the 36th held this line against the 4th Paratroop Division, one of the crack German units, and in spite of its inexperience as infantry kept it firm against all attempts to break through (casualties during this period were the heaviest the regiment had ever incurred, 74 killed in action and 336 wounded).

On 26 March, the relief of the regiment by the British 5th Division was completed, and the regiment reverted to Corps control for engineer tasks. There followed a period of intensive training for over a month, developing scouting and patrolling technique and improving the operation of small unit raids. The 36th functioned as combat engineers, but the work assignments were not sufficient to keep all companies busy consistently. The work consisted of road maintenance, construction of revetments for hospital tents and airplanes, and miscellaneous jobs. The time not used on engineering tasks was spent on infantry training, which proved very helpful when the regiment again went into the line.



36TH BUILDS AIRPLANE REVETMENTS AT NETTUNO

SECTION IV

36th Engineer Combat Regiment (cont'd).

It was on 8 May that the unit was again committed as infantry, this time replacing the Special Service Force on the right flank of the Anzio Beachhead along the Mussolini Canal. The 805th Tank Destroyer Battalion and 156th Field Regiment, Royal Artillery, were attached as supporting artillery. Active patrols into enemy territory were maintained, roads were cleared of mines and artillery fire brought on suspected enemy observation posts and strong points. Elements of the regiment were attached to the 1st Reconnaissance Regiment (British), which was part of a task force was organized for the purpose of making a rapid thrust southeastward to effect a junction with the main Fifth Army troops moving up from the southern front.

The regiment had constructed four bridges across the canal in preparation for the offensive to break out of the beachhead. Early in the morning of 25 May 1944, at 0731 hours, Captain Ben H. Souza with elements of Company "B", 36th Engineer Combat Regiment, joined with elements of the 48th Engineer Combat Battalion from the southern front, in the vicinity of Borgo Grappa. Sometime later, the junction was remade, this time officially, with the arrival of the Army Commander at the scene. During the period on the Mussolini Canal, the 36th Regiment had seventy men wounded, one missing in action and fourteen killed in action.



3RD DIVISION BEACH EXIT AT ANZIO

10th Engineer Combat Battalion

On the morning of 22 January 1944, the 3rd Infantry Division landed at Anzio. Immediately, the 10th Engineer Combat Battalion started engineer work in anticipation of a German attack. Minefields were laid and bridges across the Mussolini Canal destroyed. A few days later, work was begun for offensive operations. After several weeks, it became apparent that the unit's work in opening roads for the advance was over, because the beachhead wasn't going any place. Instead, all effort was directed toward retaining what had previously been taken.

The obstacles placed by the 10th Engineers included 25,840 anti-tank mines, 274 anti-personnel mines, 19 road blocks, 30 blown bridges and culverts, 32 bridges prepared for demolition, 24,600 yards of double-apron barbed wire entanglements and 13,000 yards of concertina entanglements. For this work, 33,000 pounds of explosives were used. In addition, infantry positions were dug; 157 emplacements constructed with overhead cover, 3 underground division command posts built; and 30 hospital tents dug in.

SECTION IV

10th Engineer Combat Battalion (cont'd).

To enable the forces on the beachhead to be used most effectively, the interior transportation network had to be as good as possible, and along this line the 10th Engineers maintained and improved 26 miles of roadway, constructed 15 miles of new roads, installed 9 Armored Force treadway bridges, constructed 2 Bailey bridges and put 19 footbridges across the canal. Because of the excellent observation and the proximity of the enemy, most of the engineer work had to be done during the hours of darkness. For weeks, the work of constructing barbed wire entanglements and laying mines continued at night.

Since it was necessary to do much work in advance of the front lines, heavy casualties were sustained. Engineer replacements were not available, so it became necessary to transfer division artillery and anti-aircraft artillery men to the engineers to maintain working strength. On three occasions, when the danger of enemy penetration became imminent, the 10th Engineer Battalion was moved into division reserve positions as infantry.

During the last three weeks of confinement on the beachhead, all efforts were directed toward the preparation for the breakthrough. Road blocks were removed; craters bypassed or bridged; minefields and wire gapped; demolition snakes assembled for breaching enemy minefields; 300 brush fascines constructed to provide a speedy method of improving tank traction over soft ground. The demolition snakes were never employed, however, for as the attack progressed hand removal of anti-tank mines proved satisfactory. To facilitate the movement of tanks, 6 tank-crossings across two creeks were built during the period of preparation.

On the morning of 23 May, the beachhead forces started the attack which carried the Fifth Army into Rome. During the initial stages, the engineers cleared mines from roads, gapped enemy minefields and wire and maintained and constructed roads and bypasses to facilitate the movement of traffic and the employment of armor. After the breakthrough, the 10th Engineer Combat Battalion supported the 3rd Division by opening the roads along the route of advance.

307th Airborne Engineer Battalion

Company "C", 307th Airborne Engineers, landed east of Nettuno at 0900 hours on D Day, 22 January. The next day the unit moved to the Mussolini Canal. Most of the work was defensive—laying mines and blowing bridges. On 30 January, the Germans broke through the lines in a counterattack. Company "C", supported by three light tanks, retook this portion of the canal at 2300 hours and held it until relieved by the infantry the next afternoon.

In February, gun emplacements were constructed in houses in the area, other emplacements dug in the ground, minefields laid and more bridges prepared for demolition. In the middle of the month, two foot bridges were constructed across the Mussolini Canal from improvised materials, while two platoons constructed concertina wire. An anti-personnel minefield was put in no-man's land, using M2 mines. Two additional fields were laid the next two days.

Work began to slacken on 19 March. Two days later, the company left the beachhead. Five enlisted men and one officer stayed behind to show the engineer installations to the 109th Engineers, when the 34th Division took over the area. While on the beachhead, the company had laid in all, 11,000 yards of anti-personnel minefields and approximately 500 yards of anti-tank hasty minefields; had prepared thirty bridges for demolition; constructed twenty foot-bridges and two 20-ton bridges; prepared fifty machine-gun and mortar emplacements; strung thousands of yards of barbed wire; demolished one 40-ton bridge; cratered two roads and repaired several others. The greater part of the mine work was performed at night, in front of the infantry outpost line.

After a rest in Naples, Company "C" rejoined the 307th Airborne Engineer Battalion in Ullesthorpe, Leicestershire, England.

16th Armored Engineer Battalion

On 15 January, Company "A" of the 16th Armored Engineer Battalion reverted to Battalion control, and along with Company "B" and detachments of Headquarters and Company "E", was immediately attached to Combat Command "B". The Battalion was split at this time, with the remainder of the unit going to Anzio. On 25 March, Company "A" and detachments of Headquarters and "E" Company went directly to the staging area near Naples. While waiting for shipment, showers and water points were operated for Combat Command "B". A considerable amount of road maintenance was necessary and an extensive training program of mines and bridge training was stressed. Company "A" worked with the new M-2 treadway bridge and trained the 48th Engineers in its use. On 27 March, Company "B" embarked on an LST for Anzio, with the 34th Division. Company "A" plus the detachments of Headquarters and "E" Companies remained with Combat Command "B" and embarked on an LST for Anzio on 30 April.

16th Armored Engineer Battalion (cont'd).

16TH DIGGING TANK POSITION ON BEACHHEAD

Meanwhile, the part of the battalion on the beachhead was having many problems. The 1st Armored Division, less detachments with Combat Command "B" and bridge trains, had assembled in the vicinity of Qualiano about 20 January, to prepare for shipment to Anzio. The engineers were split into small detachments and placed on different ships in case engineer work should be needed as soon as the forces landed. Docking facilities, however, were available for landing on 27 January and the only difficulty encountered was the practically constant air raids provided by the Germans.

After a few days and nights of air raids and shelling, safety precautions were taken and vehicles and personnel went underground. Plans to move the division as a counterattack force to any part of the beachhead led to many days of road work. As no rapid advance appeared imminent, the 16th was called upon to prepare defenses in division areas. One anti-tank minefield and two anti-tank road blocks were installed. The minefield consisted of 5,887 mines. The road blocks were removed the day after they were established. Approximately 8,000 yards of double apron fence was erected by Companies "C" and "D", which were also alerted to go into the line as infantry.

When the German counterattack in February failed, everyone took a deep breath and renewed efforts to make the trails on the beachhead passable for armor. In the process of constructing one road, an old Roman highway was unearthed. It was called Nero's Pike, because it may well have been the road Nero travelled to Nettuno when Rome was burning.

From damaged houses on the beachhead and from a rock quarry, the 16th accumulated a stock pile of over 1,000 truckloads of rock, all of it crushed by hand. The engineer equipment was in great demand for construction of underground command posts. Over 500 vehicle pits were dug, and the wards of the division's Medical Battalion were dug in and revetted. As mentioned in the report of the 1206th Engineers, the tank dozers were stationed near the ammunition dumps and were used to extinguish ammunition fires by separating burning ammunition and covering it with earth without exposing personnel.

SECTION IV

16th Armored Engineer Battalion (cont'd).

On 1 May, all of the companies of the battalion were together again, with the arrival of Company "A" from the Cassino front. The entire battalion, commanded by Lieutenant Colonel John L. Inakeep, started intensive preparations and training for coming operations. The training was directed towards engineer work that would be needed for breaking out of the beachhead. There were three alternate plans to be used for the breakthrough. For the study of these, a large terrain plot made by the 16th was of great value. The terrain plot had been constructed for the division commander and his staff, at a scale of one to one thousand. From it, many of the engineering plans of the coming operations were worked out to the smallest detail. The information obtained from this comprehensive study determined the training policy for all troops of the division.

To overcome the possibility of numerous minefields and demolitions, training in the construction of snakes and the use of tank dozers was stressed. The 16th trained until, under ideal conditions, it could build 400 feet of snake in less than an hour. In the middle of the month, all training stopped and the construction of artillery positions, roads, command posts and bridges undertaken for the 36th Division, which had not yet arrived.



CRANE PLUS GMC EQUALS DUMP TRUCK FOR THE 16TH
ENGINEERS WORKING ON NERO'S PIKE NEAR ANZIO

SECTION IV

16th Armored Engineer Battalion (cont'd).

Preparation of positions for two different offensives was begun, using all available engineer equipment and personnel. Company "C" and "D" were moved to forward assembly areas on 21 May with Combat Commands "B" and "A", respectively. Twelve snakes were constructed by all four companies. Combat Command "A" used four of the snakes against a strong point in the initial assault with very good results. The minefields were successfully gapped and the enemy driven from its position, partly from the explosion and partly by the rapid advance of tanks passing through the gaps. After opening one gap, more were opened with mine detectors and prods in daylight, despite the presence of snipers, which caused some engineer casualties.

Two new routes known as "Red Road" and "Purple Road" were cleared and marked and maintained to Highway #7, during the first 48-hour period of combat. Water points were moved to forward positions, one getting so close that it drew sniper fire. Immediately after the fall of Cisterna, the tank dozers cleaned the rubble from Route #7 for two-way traffic through the town. There were also eight steel treadway bridges built, one with the aid of the T-2 tank retriever. One stretch of road was so deep in enemy territory that one platoon of engineers was required to act as infantry, so the construction could proceed.

Company "C" was attached to Task Force Howze, which in turn was attached to the 3rd Division, for the purpose of clearing mines, constructing roads, and operating a water point. "C" Company did about as much combat work as engineer work while with the Task Force. Company "A" was still attached to Combat Command "B" when the remainder of the battalion began clearing, marking and constructing the main supply road on the unprotected right flank in the vicinity of Campoleone.

39th Engineer Combat Regiment

After their training near Paestum, the two battalions of the 39th Engineer Combat Regiment rejoined regimental headquarters and prepared for the move to Anzio. On 21 January, the first priority vehicles were loaded and sent to the water-proofing area near Pozzuoli, whence Company "A" embarked two days later. On 25 January, the remainder of the regiment, commanded by Colonel Thomas Green, followed Company "A". The regiment disembarked at Anzio and moved directly to a bivouac area near Nettuno.



39TH ENGINEER SOLDIERS IN MACHINE-GUN
EMPLACEMENT NEAR ANZIO

SECTION IV

39th Engineer Combat Regiment (cont'd).

The regiment constructed a triple-single Bailey bridge at La Ferriere during its first day of work on the beachhead (29 January) and began the maintenance of roads, and the construction of mine and wire obstacles along the Canale di Mussolini. The 39th was relieved of this duty on the last day of January and attached to the 45th Infantry Division to take the place of the 179th Infantry Regiment in the right sector of the front line.

With about eight companies attached, the 39th Engineers occupied an 8-mile front, from the sea inland towards the left along the Canale di Mussolini. For the four days that the regiment was in the infantry positions, it engaged in patrol activities, capturing a few enemy prisoners. Protection for the sector was installed, consisting mostly of mines and barbed wire. When relieved by the First Special Service Force, it returned to Nettuno to continue engineering operations under VI Corps



39TH ENGINEERS LAYING MINEFIELD
NORTHEAST OF ANZIO

Company "F" operated a rock quarry during this period, off the airport road east of Nettuno. Roads were maintained; foot bridges built over the Mussolini Canal; and more wire and anti-personnel mines placed in the First Special Service Force sector. On 10 February, the 2nd Battalion was designated as corps reserve for the Special Service Force by night. By day, the battalion continued obstacle work for the 3rd Division in support of the 10th Engineer Battalion.

During March, the road work was continued, as well as the organization of the ground for primary defense. Pill boxes of reinforced concrete were built near the overpass on the Anzio-Rome road. All the houses in the area were turned into forts by reinforcing them with timbers, steel rails and sandbags. A few slits were cut through the walls and obstacles placed before the positions. For utmost efficiency, fields of fire were carefully cleared, while care was taken to prevent the work from becoming obvious to enemy observers.

SECTION IV

39th Engineer Combat Regiment (cont'd).

As April came and passed, this work went on and the hospitals on the beachhead were dug in. The hospitals were partly sunk in the ground and protected by sandbags above the earth line. The 39th worked to install the 52nd and 47th Medical Battalions, and the 15th, 38th, 56th, 93rd, 94th, and 11th Evacuation Hospitals. In addition, garbage, soakage and grease pits, latrines and roads were constructed for these units.

Meanwhile, the rock quarry operated to full capacity. The equipment in the quarry included five rock crushers, three shovels, two carryalls and four roadmix cement mixers. During all this time, the 39th was laying or removing friendly and enemy mines as the tactical requirements necessitated. Ranges were built for further troop training with rifles, sub-machine guns and machine guns, in addition to a sniper training range.

In the second week in April, the 39th built an aircraft beacon and prepared demolitions for the Special Service Force in the event of a withdrawal. Afterwards, training was begun on Bailey and treadway bridges, mine warfare, and scouting and patrolling. The training, which continued into the middle of May, was concurrent with an extensive anti-malaria program.

On 23 May, the offensive on the beachhead began. At this time, Company "D" was attached to the First Special Service Force to do engineer combat work. As the offensive broke out, new jobs had to be done, mainly in the Cisterna sector; bypasses, bridges, culverts, and an airstrip near La Ferriere, all had to be rapidly constructed. On 25 May, the final construction job for the joining of the northern and southern forces was done: a 45-foot treadway bridge. The bridge, which was located just northwest of Borgo Grappa, was built in thirty minutes.



FOOTBRIDGE ACROSS MUSSOLINI CANAL BEING
CONSTRUCTED BY 39TH ENGINEERS

SECTION IV

387th Engineer Battalion (Separate)

When the 387th Engineer Battalion (Separate) under the command of Major John T. Ortino was attached to VI Corps on 12 January 1944, Companies "B" and "C" with a small staff detachment were given to the 540th Engineer Combat Regiment to be part of the initial unloading detail for the landing at Anzio. They moved with the remainder of the battalion to Campi Flegrei and spent six days training and re-equipping. One platoon of each company was scheduled to accompany the first wave of the Shore Party, and these platoons practiced amphibious landings.

At 0400 hours, 22 January, the two platoons went ashore two miles south of Nettuno. They began work in the dark, building roads, laying sommerfeld matting and setting up dumps. The remainder of the two companies landed at 1530 hours, after sweating out two air attacks while waiting to unload. Upon disembarking, the men dug fox holes and erected their shelter halves in the flat open field about 300 yards from Red Beach. Then, they started unloading supplies.

Battalion Headquarters, Headquarters and Service Company, and Companies "A" and "C" also arrived on D Day, but as they were corps troops and not part of the Beach Party, their turn to land did not come until 0900 hours the next morning. During that time, their ship was attacked several times, but was not hit. The men carried picks and shovels ashore, and for three days, until the port of Anzio could accommodate bulk unloading, valuable road maintenance was done on the overburdened supply net by all three companies with these hand tools.

The bulk of the supplies landed for the beachhead in its early days was unloaded from LCT's into DUKW's by men of the 387th. As more and more troops poured ashore, more supplies were required. Port facilities were developed to their utmost by the 540th Engineer Combat Regiment and the 36th Combat Regiment, so the required supply could be maintained and a surplus built up for the final offensive.



ROAD IN BEACHHEAD ENGINEER DUMP BEING
BUILT BY 387TH BATTALION

SECTION IV

387th Engineer Battalion (Separate) (cont'd).

What amounted to time-and-motion studies were continually made by staff officers of the battalion to determine and enforce the most efficient unloading methods. Three companies, totalling about 500 men, averaged unloading 1940 tons per day for seven days, practically all of which was handled by hand. General Clark wired a commendation to the Port Commandant stating: "The discharge of over 5,000 tons daily for the past three days indicated a high degree of organization and willingness of your men to perform under most trying conditions." The commendation was endorsed to the 387th Engineer Battalion by the Port Commandant for the part it played in this achievement.

The improvements in the port and the addition of some Italian military personnel released first one, and later all companies from the work of unloading supplies, and freed them for engineering work and construction of roads. Company "A" took over road work and operation of the Engineer Depot on 7 February. Company "C" aided Company "C" of the 815th Engineer Aviation Battalion in laying a 100-foot wide pierced steel plank runway at the Nettuno airport.

As the small beachhead became congested with troops, especially around Anzio and Nettuno, sanitation and malaria control became serious problems. At least one company of the battalion was working on the clean-up of Anzio for seven weeks, beginning 1 April. From every unoccupied building in Anzio all unsanitary trash was removed and all roof tanks and flooded wine cellars were drained or sprayed with oil. Trash and garbage dumps were set up and operated. A sewer line pouring water and filth into the cellars of houses was traced three miles out of the city and diverted into the sea. Anzio, in spite of the bombing and shelling, was kept clean.



387TH OPERATING ROCK CRUSHER NEAR NETTUNO

The battalion took over the operation of the rock quarry and asphalt mix plants, located three miles south of Nettuno, from the 540th Engineers. The plants were operated sixteen hours a day for several weeks. Asphalt mix and crushed rock were supplied to the 540th and 39th Engineers, as well as to the 387th Battalion itself. In addition, crushed rock was supplied for the mix plant in Anzio operated by the 540th Regiment.

SECTION IV

387th Engineer Battalion (Separate) (cont'd).

Much road patching was done on the heavily travelled roads near Anzio and Nettuno by all companies of the battalion. A large 4-ton road roller was improvised by Headquarters and Service Company by welding together the four wheels of a large German gun carriage. While on the beachhead, Battalion Headquarters was in Nettuno in the lower floors of several small buildings; Company "D" was dug in to the side of a small bank on the south edge of Nettuno; Companies "B" and "C" had shallow tent dugouts in northeast Nettuno; and Company "A" was in the lower floors of a modern school building and two modern apartment buildings in the heart of Anzio.

Four officers and eleven enlisted men lost their lives and three officers and fifty-eight enlisted men were wounded during the campaign. On the night of 17 March, Lieutenant W. M. Condren and five platoons of Company "D" were unloading supplies during the blackout when the ship on which they were working was shelled during an air raid. When the ship began to list, working parties were organized to secure it to the dock. A temporary bridge was built to the sinking vessel, and the evacuation of men proceeded rapidly until the ship keeled over and trapped a number of men in the ship's stern. A crane was brought up and the side of the vessel ripped open, allowing the trapped men to escape through the gap. For this action, three men were awarded the Silver Star, and one officer and four enlisted men the Bronze Star Medal.

By May, supplies on the beachhead had been built up to a high level, and the beachhead forces were ready to join in the attack at the proper time. On 14 May, the battalion was assigned the maintenance of the Nettuno - La Ferriere road, in addition to operating two quarries and an asphalt mix-plant, salvaging steel, repairing submarine cable, operating trash and rubbish dumps, unloading Bailey bridge, and furnishing dozers, air compressors and the motorized grader to various and continuous small jobs.

The proper repair of primary black-top roads was a difficult problem because traffic during daylight hours was very heavy. Also, the traffic had to have two-way priority as these were the supply routes for the main attack. In spite of the fact that only ten dump trucks were available for this work, an average of 160 cubic yards of mix were applied daily.

120th Engineer Combat Battalion

On 30 January, the 45th Division landed at Anzio. The 120th Engineer Combat Battalion began the installation of defenses in its sector without delay. Mines were laid, artillery positions fortified, and houses strengthened for use as pillboxes. During the winter, the divisional sector was switched at various times, and similar work done in each instance. At the time of the May attack, the 120th was in the vicinity of Carroceto, from where it advanced to Rome.

109th Engineer Combat Battalion

On 19 March, Battalion Headquarters and Company "C" of the 109th Engineer Combat Battalion landed at Anzio. The remainder of the battalion, less service elements, arrived on 22 March. On the beachhead, the entire battalion, commanded by Lieutenant Colonel Robert Coffee, was located $1\frac{1}{2}$ miles northeast of Nettuno. Headquarters and Service Company, the battalion repair section and small detachments from each company formed a rear echelon which remained at Pianura near Naples.

In contrast to its previous combat experience in Italy, the mission of the 34th Infantry Division on the Anzio beachhead was a defensive one. As a result, the emphasis in engineer operations was on field fortifications, barbed wire entanglements, minefields and splinter-proof shelters. Because of the level terrain, practically all work was done at night.

As part of the beachhead's anti-malaria program, the 109th drained ditches and removed obstructions from water courses. As part of the defensive work, twenty bridges were made ready for demolition; fourteen road craters prepared; 625 rolls of wire made into concertinas; and 2,950 yards of barbed wire put into double apron fence in addition to the mine work.

At different times during the period spent on the beachhead, the 109th lifted forty-nine M1A1 anti-tank mines, forty-four Tellermines, and fourteen M2 anti-personnel mines. It laid 36 British Mark IV anti-tank mines, ten M2 personnel mines in concertinas, and sixty-six miscellaneous anti-personnel mines.

In working on the beachhead defense, positions were organized in depth with tactical and protective wire, and mines and demolitions. Each infantry battalion was provided with cellular defenses and canalized possible tank approaches. The work was coordinated with infantry and artillery commanders, and

109th Engineer Combat Battalion (cont'd).

with the Division Anti-Tank Officer. Some of the problems were the exact location of all minefields previously laid, preparation of all bridges for demolition and the dissemination of this information to all units concerned. The Commanding General prescribed an aggressive defense of the sector and the battalion furnished elements for the support of limited objective attacks and aggressive patrol action.

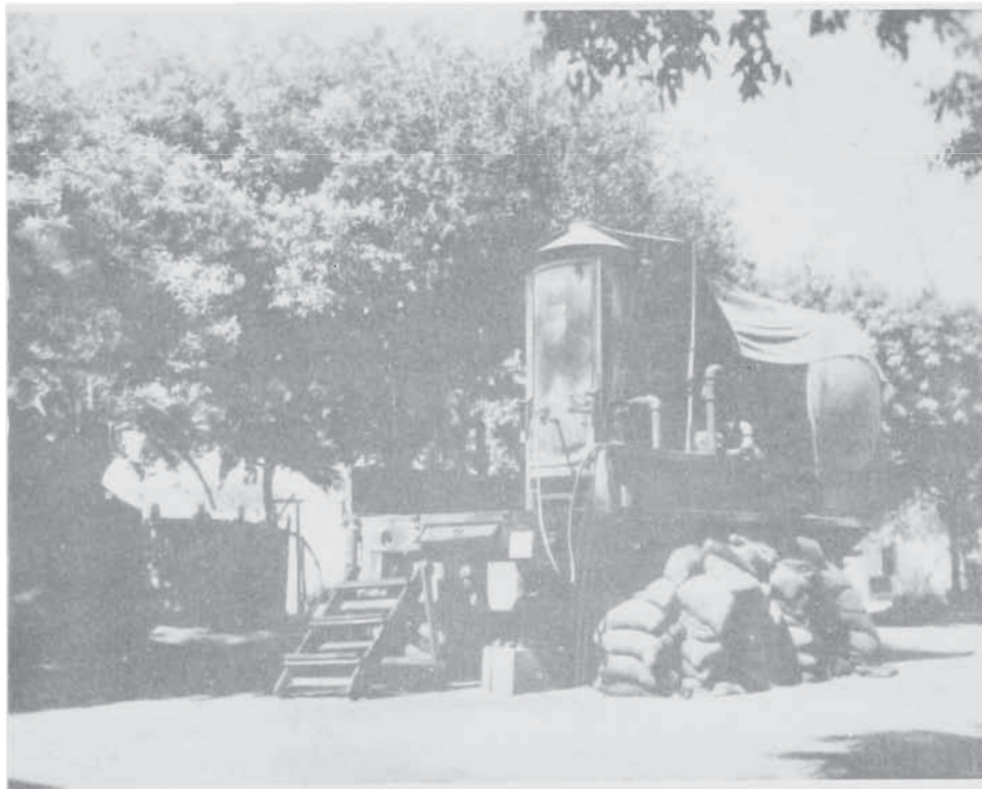
The second mission was to provide means of exit through the division sector for elements of the 1st Armored Division, the 3rd Infantry Division and the Special Service Force. This operation required: (1) training of the 34th Infantry Division in the basic principles of mine warfare, (2) clearing forward assembly areas of mines, (3) gapping of minefields for exit routes, (4) gapping of wire installations for exit routes, (5) bridging the canal in two places for tanks, (6) removing demolition charges from all bridges, (7) repairing and maintaining all roads in the division sector.

This operation was completed and the assault forces moved through the division area without too much trouble. The third mission of the 109th Battalion was to facilitate the movement of the division when it followed the assault divisions from the beachhead.

405th Engineer Water Supply Battalion

While the remainder of the 405th Engineer Water Supply Battalion south of the Garigliano was experiencing more or less routine operations, Company "B" was attached to VI Corps and moved to the Anzio beachhead, arriving there on 28 January and remaining until the breakthrough towards Rome. The bivouac, established at Nettuno, was mostly in renovated wine cellars, with only the kitchens and latrines above ground.

The initial operations included immediately taking over the 540th Engineer Regiment's water installations and increasing their output and capacity. In addition, extensive reconnaissance was made of all water sources and aqueducts; water points established on sources of unquestionable potability, and the camouflaging and improvement of these points undertaken.



VI CORPS SHOWER UNIT OPERATED BY
405TH ENGINEERS AT BEACHHEAD

405th Engineer Water Supply Battalion (cont'd).

As the beachhead became more firmly established, trestles, pipe lines, and showers were constructed for hospitals and other fixed installations, and large shower units were constructed and operated for corps and division troops. Existing water points were improved by the addition of turn-arounds and better traffic systems.

As spring came with its drier weather, the ground once again became dusty, so roads and airfields were sprayed to control the dust. During this period, Company "B" performed numerous tasks not usually connected with normal water supply operations, such as the operation of a distillation unit and the distribution of the distilled water to smoke generators located at the harbor and on the front lines. In addition, the company operated a fire fighting section that answered fire calls anywhere within the confines of the beachhead.

During the 114-day period from 1 February to 24 May, 23,834,300 gallons of water were produced, representing a daily average of 209,072 gallons. The company bivouac area and all water point installations were subject to frequent shelling, strafing and air raids, but Company "B" personnel suffered no casualties while at Anzio.

423rd Engineer Dump Truck Company

While the Headquarters and 2nd Platoon of the 423rd Engineer Dump Truck Company was attached to the 343rd Engineer Regiment on 20 March, the 1st Platoon was loaded on LST's with its equipment and shipped to Anzio for assignment to VI Corps. Upon arriving at Anzio, the task of the 423rd (now attached to the 39th Engineer Combat Regiment) was to augment the engineer trucking service for the Corps Engineer. The arrival of the trucks released the 39th Engineers' vehicles for work on the perimeter of the beachhead and furnished badly needed transportation to the British sector.

The platoon's prime mission was the repair and maintenance of roads. However, as rubble carted from the port was used as road material, the platoon also played an important role in the clearing of the port. As with other units, the first and main problem was mud. Each day, several trucks would be bogged down and have to be towed out. The second problem was one of repair. At first, parts were hard to get, but gradually the situation eased. The big supply difficulty was the replacement of axles and springs, which seemed to break as fast as they could be replaced. Another headache was finding enough drivers within the unit to keep the trucks rolling from sunup to sunset without stopping. The fourth problem was general supply, principally gasoline and rations.

To get a dry motorpool at Anzio, it was necessary to gamble on an area that had been shelled so much that the previous unit on the site had been forced to move. The platoon took the chance, and was lucky. During the entire time it was there, only two shells fell in the immediate area, and neither did any damage to the personnel or equipment. There was one slight casualty the day the planes came over during religious services; the chaplain got hurt in the rush to the fox holes.

The 423rd cleared several blocks in the port of Anzio, built a road through the swamp in the British sector, worked a large rock quarry, and hauled gravel and asphalt for patching roads. Later, at the time the forces joined, the 423rd Engineers were engaged mainly in hauling bridge materials. Throughout this period, Captain F. E. Seipel commanded the company.

469th Engineer Maintenance Company

The 469th Engineer Contact Platoon under the command of Captain Clayton H. Cooper was at Presenzano when the beachhead was established. In February, the unit received orders to move to the Naples staging area in preparation for work at Anzio. The platoon was held up a few days in the staging area, due to German counterattacks on the beachhead and the increased priority of ammunition and other essential supplies.

An air raid was experienced while coming into Anzio, but men and equipment were unloaded without damage or mishap. The engineer equipment in the beachhead was subjected to heavy usage as well as damage by blast and fragmentation. Two battle casualties were suffered due to shell fire, and one man was killed by concussion while repairing a generator.

At Anzio, the platoon was mostly on its own, and repairs were effected by ingenuity or by use of parts from completely demolished equipment. One tractor, considered a loss, kept as many as fourteen others operating in the field. Some success was gained with experimental work mounting a flame-thrower in the turret of a light tank. One of the Italian irrigation canal power houses was put in operation by the platoon after it had been sabotaged. When beachhead operations ended, the 469th Engineer Contact Platoon moved to Cisterna.

SECTION IV

473rd Engineer Maintenance Company

On 12 May, the 2nd Platoon of the 473rd Engineer Maintenance Company, which had just been attached to Fifth Army, departed from Naples with its equipment, consisting of eleven general and special purpose vehicles and five 1-ton cargo trailers. The platoon was commanded by 1st Lieutenant J. C. Plunkett. It arrived at Anzio on 13 May, and proceeded to its bivouac area about five miles north of the port.

Although the personnel (fifty-three enlisted men and one officer) had never experienced any enemy ground fire previously, the men continued to unload their vehicles and set up their bivouac without interruption, even when the "Anzio Express" greeted them. The bivouac area adjoined that of the Contact Platoon, 469th Engineer Maintenance Company.

The day following its arrival, the unit began to dig deep the foundations of their new homes. The following few weeks were uneventful. There were the usual air raids at night and the usual platoon duties of 2nd, 3rd and 4th echelon repairs by day on engineer equipment whenever and wherever it could be found and brought in. The chief purpose of the platoon at Anzio was to relieve the congestion of work placed upon the 469th Engineer Contact Platoon.

46th Survey Company

In April, the 46th Survey Company, South African Engineer Corps, received instructions to send an officer to the beachhead to report on the survey situation. Captain J. Hill undertook the mission. It was found that the whole framework in the area was based on one station taken from the Allied Force Headquarters Triangulation list of seaboard points, with a probable accuracy of \pm plus or minus six meters and North plus or minus 5 meters. The primary beacon had not been found, and no other identified and listed Italian triangulation station had been linked in as verification. The control framework was all transverse, and the bearings had been deduced from a set of azimuth observations on Polaris. It was recommended that a control be established over the Anzio area, based on the Italian primary network, before the beachhead expanded, when any errors in the existing local survey would be magnified.

When it was decided that a link-up was possible between the southern Fifth Army front and the beachhead, a detachment of two officers and eight enlisted men embarked on 18 April to carry out the survey. Parties were sent to two islands, where primary beacons had been provisionally verified. There, with the aid of helios, the observations, over distances up to forty miles, were carried out. The smoke screens on the beachhead were temporarily stopped to allow the observers to carry out their task. Many beacons on to which forward rays were observed were well behind enemy lines, and fully observed triangles could not be obtained. However, the "direction method" of computation overcame these difficulties. The balance of the stations in the beachhead area could then be calculated in a straightforward manner.

Coordinate lists were handed to all survey units on the beachhead on 27 April. It was found that one of the stations had been in error by over eight meters, and that a bearing error existed which would have been serious had the original beachhead survey been extended. It was also subsequently found, when an original untouched center mark was located two feet underground, that the link-up from the southern front to the beachhead was accurate to 0.7 meters.

After 28 April, a small party remained on the beachhead to carry out any further triangulation, which might be required by the artillery. This small party, reinforced in May, fixed further control for the artillery and verified additional stations in the Alban Hills which were to prove most useful in carrying the army triangulation forward and past Rome. The work on the beachhead had been performed under very trying conditions, but its usefulness justified the effort.

1710th Engineer Map Depot Detachment

In January, one officer, 1st Lieutenant Leroy L. Gamse, and six enlisted men were detached from the 1710th Engineer Map Depot Detachment and attached to Fifth Army, which in turn attached them to VI Corps. The initial duty of this group was to assist in the map distribution for the approaching landing at Anzio. The group landed at Anzio with VI Corps and remained on the beachhead to conduct the map depot, supplying maps to the troops in the area until the juncture with the main forces was effected.



MAP DEPOT AT NETTUNO

1206th Engineer Fire Fighting Platoon

The 1206th Engineer Fire Fighting Platoon was attached to Fifth Army from Peninsular Base Section and on 9 February 1944, under the command of 1st Lieutenant Charles M. King, was ordered by the Fifth Army Fire Marshal to proceed by water to the Anzio Beachhead. The unit left Naples the next day and arrived at Anzio on 12 February. The problems of firefighting on the beachhead were numerous, due to the blackout, smoke enemy artillery, bombing and strafing. The dominating problem, as usual, was the supply of water.

It was on the beachhead on 18 March, that the first tankdozer (tank with dozer blade) appeared for use against ammunition dump fires. The first machine was borrowed from the 16th Engineers and was an M-4 tank with a hydraulically operated blade. By the last of March, five tankdozers had been sent to ammunition dumps located on the beachhead - some of these tankdozers were cable operated.

Tests proved that the largest blades were best for ammunition fires. Also, it was found that rubber treads burned very easily, and that tankdozers used on ammunition fires needed all-steel tracks. They also needed curtains, because shell cases worked their way into the track between the bogies and invariably the machines threw a track when attempting to turn.

All types of fires were encountered on the beachhead by the 1206th, including civilian homes, ammunition dumps, gasoline dumps, ration dumps (everyone was anxiously awaiting a fire call from the PX warehouse, which fortunately never came), Allied Military Government medical dump, Chemical Warfare Service dump, Signal Corps dumps, the 45th Division Command Post, and once the Fifth Army Advance Command Post.

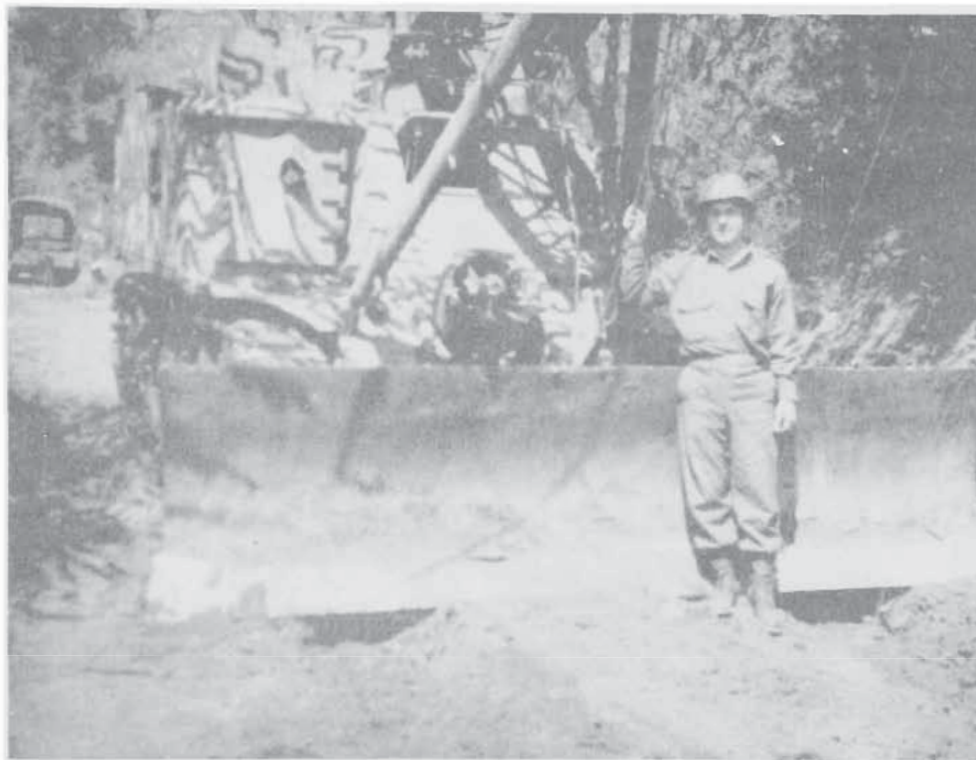
The unit combatted fires on ships in the harbor, filled and sunk barges, pumped out drydocks, cleaned sewer systems, filled water tanks. On several occasions, the assistance of the Navy was requested to supply an LCT for use as a trailer pump in order to combat a fire on the shore line which was inaccessible to vehicles. There were many motor pool blazes and a large number of DUKW fires. Minefields were always a hazard to the fire fighters, and on several occasions it was noted by men of the unit that civilians stepped on mines in areas the fire fighters have just left.

SECTION IV

1206th Engineer Fire Fighting Platoon (cont'a).

Aircraft fires were also handled by the 1206th. As artillery shells do not always respect the Red Cross symbol, hospitals were given particular attention. In one case, a trailer pump was installed between the 38th and 93rd Evacuation Hospitals, and a line stretched to both for immediate use by trained personnel before the arrival of the Fire Department apparatus.

During the beachhead operations, the platoon suffered 8 casualties, including the death of Lieutenant King, who was temporarily replaced by Lieutenant Small of the 1980th Engineers. After the breakthrough of the forces was effected, the 1206th Platoon remained in the Anzio area to protect the remaining dumps until relieved by a Peninsular Base Section unit.



TANK DOZER USED BY 1206TH FIRE FIGHTERS AT BEACHHEAD

1st British Infantry Division Royal Engineers

The 1st British Division had landed in Italy in December and been concentrated in the area around Cerignola. There, it prepared for the landing at Anzio. The engineer units for the division were the 23rd, 238th, and 248th Field Companies and the 6th Field Park Company. These troops, under Lieutenant Colonel Foster, Commander, Royal Engineers, led the assault landing of the division at Anzio.

The 1st Division was the only British unit to take part in the initial assault. It immediately moved into position on the left flank towards the sea. The 23rd Field Company was put into the line with the Guards Brigade on 10 February, and suffered 80 casualties while withstanding an enemy attack, including the Commanding Officer and two other officers. This left the company with 30 men.

As the latter part of May came, minefields, both friendly and enemy, were picked up and obstructions removed from all avenues of advance in preparation for the breakout from the beachhead. On 20 May, the division was moving north, pushing through densely mined areas, until it reached the Tiber.

SECTION IV

56th British Infantry Division Royal Engineers

The 167th Brigade Group of the British 56th Division arrived at Anzio on 13 February with the 220th Field Company. Three days later, the 220th and 501st Companies under the Commander, Royal Engineers, of the 56th Division, Lieutenant Colonel Blenkinsop, took up positions immediately behind the forward defense locations. These positions were astride the lateral road south of Moletta Creek with a forward platoon in a gully to prevent the infiltration of enemy patrols through the main line of resistance.

When the Germans brought up reinforcements to counterattack the beachhead, the rest of the British 56th Division moved to Anzio, one brigade at a time, in order to meet the threat. The 168th Brigade Group, with the 501st Field Company, sailed from Pozzuoli during the evening of 1 February 1944 in LCT's and disembarked at Anzio during the following afternoon. It moved up to a concentration area preparatory to taking over positions in the line with the VI Corps. The next day, the 501st Field Company came under the command of Lieutenant Colonel Foster, Commander, Royal Engineers, 1st Division, and commenced work on the maintenance of the many roads which were breaking up on account of the heavy rainfall. Mines were laid at night from 5 to 9 February, at which time the 501st took up positions in the line to stiffen up the left flank of the beachhead. During the two days on the line, there was torrential rain and the men had a rather damp time in their weapon slits where they had to stay to avoid observation.

The last British Engineer unit of the 56th Division to arrive at the beachhead was the 221st Field Company with the 169th Brigade Group. It arrived on 17 February and came under command of Lieutenant Colonel Foster, Commander, Royal Engineers, 1st Division, and commenced road construction and improvement. On 25 February, the 221st began to dig company positions. While the field companies were in the line, several of the biggest counterattacks on the beachhead were launched. The engineers soon learned to improve their fox holes by constructing cut and cover dugouts alongside, using local saplings and doors from shelled houses for the roof.

The main discomfort of the positions was due to the water which seeped into the trenches and eventually filled them. Telephonic communication between platoons was often broken by shellfire, and linesmen did a fine job of work keeping them open. Between certain positions crawl trenches were dug. Companies had a very full program of wiring and mine laying, which kept approximately half their strength employed each night.



BRITISH SOLDIER DRIVING LOADED DUKW ASHORE AT ANZIO

SECTION IV

56th British Infantry Division Royal Engineers (cont'd).

The 501st Company came out of the line and on 9 March left Anzio for Naples with the rest of the division. The 220th and 221st Field Companies remained behind for a few days, in order to maintain roads. The roads on the beachhead had little or no metalling and were often waterlogged due to the clay contained in the soil. Fascines or loose brushwood were placed in boggy patches, and over these Sommerfeld track and rubble were laid. In the worst places, short trestle bridges were erected. Ditching improved the trails greatly, but was very difficult on account of the large number of roots and tree stumps.

A stone quarry was operated by the 220th Field Company at Anzio, and turned out sufficient stone to fill all the needs of the 1st Division and 56th Division Royal Engineers. The quarry was shelled daily and one dozer operator was killed there. The American type of dump truck once again proved its worth, and did much to meet the unending demand for stone.

On 18 March, the remaining companies left Anzio and returned to Naples to rejoin the division. A few days were spent at Nocero, then they proceeded on to Egypt in April. After work and training in the Middle East, the division returned to Italy in July and was assigned to the Eighth Army for the attack on the Gothic Line.

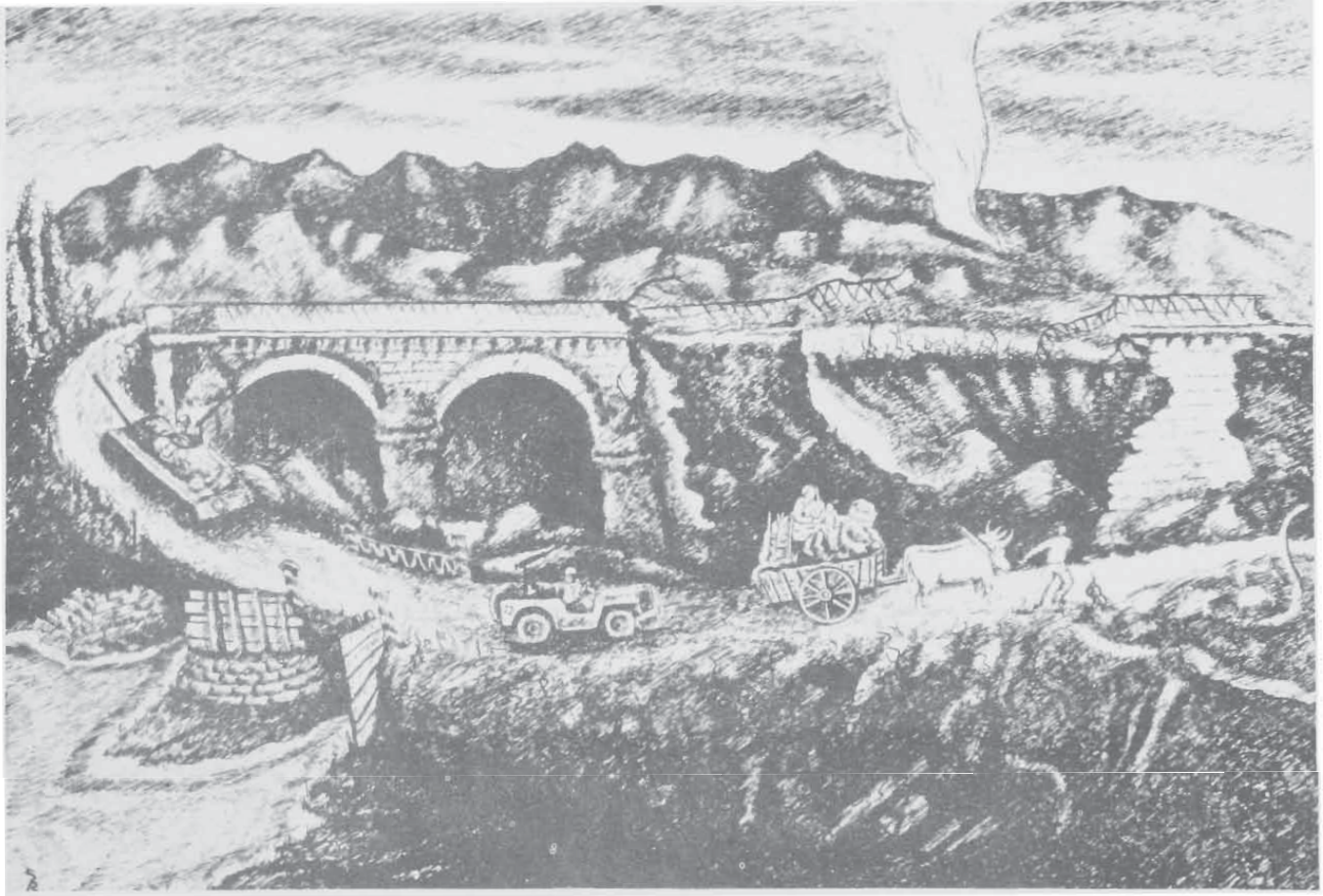
5th British Infantry Division Royal Engineers

On 7 - 8 March, the engineers of the 56th Division were relieved by the 38th, 245th, and 252nd Field Companies, and the 254th Field Park Company of the 5th British Infantry Division. The 5th Division replaced the 56th Division just two days after it left the Southern Front at Minturno. The principal work was the building of fortifications and the laying and removal of minefields. Lieutenant Colonel K. Osborne was Commander, Royal Engineers, 5th Division, throughout this period.

SECTION V

MAY 11TH TO THE ARNO

	<u>Page</u>
A. The Tactical Situation	105
B. Work at Engineer Headquarters	105
C. Unit Operations	109



109TH COMBAT ENGINEER BATTALION'S BYPASS AT CECINA

Original Pen and Ink Drawing by
T/Sgt Savo Radulovic

SECTION V

MAY 11TH TO THE ARNO

A. The Tactical Situation

On 15 April 1944, a cover plan was put into operation to insure surprise for the next offensive, which was scheduled for 11 May. The build-up of men and material was to be concealed from the enemy—a difficult task inasmuch as the Fifth Army sector had been cut to a fraction of its former size and troops and dumps were being moved into front-line positions. The Eighth Army had moved to the left (Cassino was now in its sector) and the Fifth Army was concentrated between the Liri River and the Tyrrhenian Sea. The camouflage work had to make it appear that all old positions were still occupied while all new installations had to be carefully hidden. Movement was under cover of darkness and radio activity was carefully restricted.

By the morning of 11 May, the Fifth Army was ready to strike. The day was a pleasant one, and the night that followed was very quiet—until 11 P.M. Then practically every gun in Fifth Army joined in a barrage that announced the beginning of the attack. The French Expeditionary Corps on the right flank went forward into the "Impassable" terrain, and continued right through it. The enemy's carefully prepared defense sectors were neutralized by 19 May. The Gustav Line was broken; the Hitler Line outflanked. Castelforte fell, then, in quick secession, Scauri, Formia, Itri, and Fondi. Gaeta was bypassed. The Allies pressed their enemy closely. At Terracina, the 310th Engineers with the 19th Engineers, assigned to II Corps, were so far forward that a sudden but short-lived reversal on 22 May forced crews of two D-7 bulldozers to abandon their machines.

Meanwhile, the Anzio troops had prepared a supplementary attack and opened it on 23 May. Two days later an engineer of the 48th Engineer Combat Battalion from the Garigliano front shook hands with a fellow engineer of the 36th Engineer Combat Regiment from the beachhead. Anzio was no longer isolated, but part of the main Fifth Army front again. The Allies continued up to Rome on 4 June and headed north. By the end of June, the Fifth Army had rolled on to Grosseto. Soon Piombino was taken. The advance continued northward, but at a slower pace. Cecina and Highway #68 were reached. Leghorn fell on 19 August, and now another port was in Allied hands.

At the end of August, the Fifth had cleared the remaining land south of the Arno. Here the Army stopped. Before it was a situation comparable to the one that existed before 11 May. The Allies were on an open, flat plain. In front of them, in place of the Garigliano, lay the Arno, and beyond lay the Pisano hills and the Appennines. Troops were given a chance to rest and relax. As preparations were made for a new attack.

B. Work at Engineer Headquarters

With the rapid advance after 11 May, work greatly increased for the Operations and Engineering Section. A very large road net was used during this phase, and 2,907 miles were maintained by Army units. Maintenance was dropped in the rear areas as the ports of Anzio, Piombino and Civitavecchia in turn were utilized. The most important supply routes were #1, #2, #68, and at the Arno #67.

Damage to the roads by demolition, shelling and bombing resulted in road blocks wherever the lines became static. The more serious bottlenecks were at Itri, Velletri, Cisterna, Genzano, Albano, Viterbo, Civitavecchia, Cecina, and Poggibonsi. In the course of the advance 322 bridges were constructed, a great percentage of them Baileys. Army mine teams were constantly in demand. Ninety-four mined areas were cleared and marked; thirty-eight areas checked and marked. These figures were in addition to the routine checking and marking of known or suspected friendly and enemy mined areas mentioned in the monthly overlay from Engineer Headquarters.

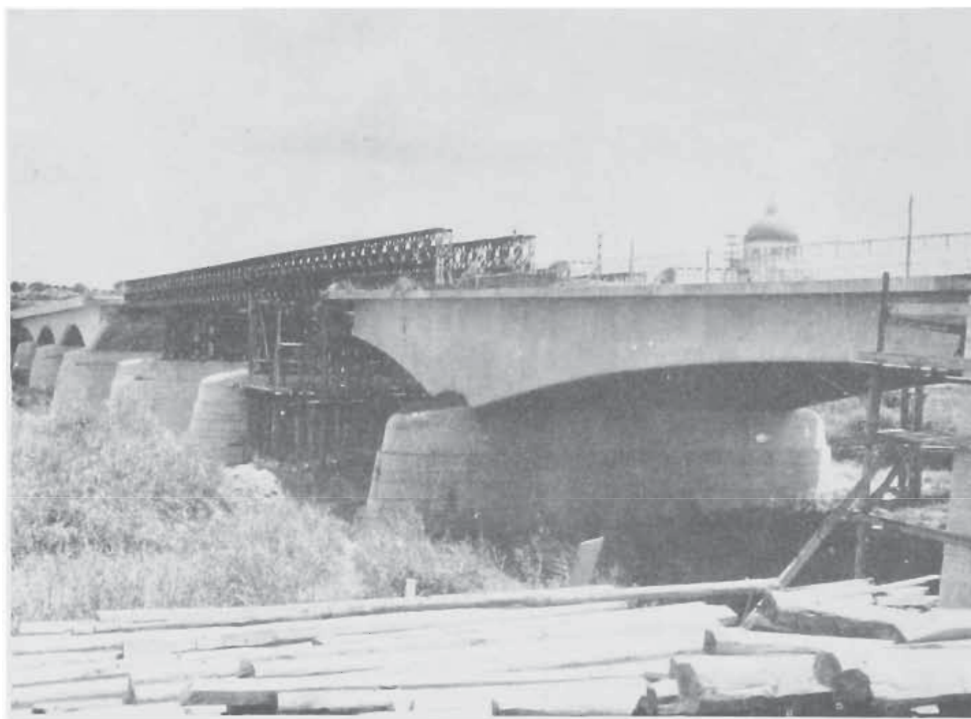
Fifth Army fire units were required to cover a greater area than in any other period of the Italian campaign. Constant check and the closest liaison was necessary with G-4 to keep up with the movement of depots. Because of overnight closing and opening of dumps, fire departments had to move frequently and rapidly. From May to September, twenty stations were operated. Close support was given by the British Army Fire Service, civilian fire departments, and Peninsular Base Section units. During this same period 88,540,000 gallons of water was processed for army use.

Work at Engineer Headquarters (cont'd).

In the rapid advance, the only camouflage work was concealment of individual positions by frontline units. After the Arno was reached, however, and preparations were being made to attack the Gothic Line, the most ambitious operational camouflage program of the Italian campaign was started. Every effort was made to conceal the Army build-up in the Empoli-Florence areas, and to simulate strength on the feeble left flank. The camouflage officer coordinated the entire program from Army Headquarters.

Second Lieutenant Kenneth H. Mayhew joined the S-3 Section on 18 May. In addition to supervising the operational maps in the section and making reconnaissance, he functioned as Engineer Equipment Officer. Two months later, Captain F. C. Meyer was attached to the section as Tactical Bridge Officer.

The Maps and Survey Section continued its work of the previous period. There were two personnel changes: Captain R. D. Hill, South African Engineer Corps, replaced Captain Adderly, who had gone to Allied Force Headquarters in March; Major J. R. Kirk was added to handle the distribution of maps.



BAILEY ACROSS TIBER RIVER BUILT BY 337TH ENGINEERS

In the Plans, Intelligence and Training Section, Captain Humphrey Ireland replaced Major DeNoya, who returned to the United States in July. Major Shirk joined the section from Operations and Engineering, bringing with him the responsibilities for Army camouflage and fire fighting.

The Supply Section made up monthly "Maintenance Requisitions" which listed probable demands of the Fifth Army for future periods of from 90 to 120 days. Normally only special or reasonable items were requested, as Class II and IV shipments into the theater are based on maintenance factors previously set up by Mediterranean Theater of Operations or Penbark. Class V requisitions were submitted monthly by the Engineer, but were stored by Ordnance. The requisitions were not cumulative; only one Class V requisition was in effect at one time. The explosives were set aside by Peninsular Base Section and were shipped to Fifth Army when called forward by the Army Ordnance Officer. In Peninsular Base Section, asphalt and road oil were a Quartermaster responsibility; in the Fifth Army it was Engineer. Requisitions, therefore, were placed on the Quartermaster, Peninsular Base Section, as required. Forecasts on these requirements were made from three to six months in advance.

Work at Engineer Headquarters (cont'd).

Requisitions for Class II items were made every ten days, based on back orders and on experience with fast moving items. The depot commander submitted requisitions for Class IV goods based on back orders and turnover. The requisitions were then screened by the Supply Section, and prepared and submitted. For the requisite transportation, the engineer depot requested trucks or rail cars for movement of supplies from Peninsular directly to Army. The engineer units requested transportation through the Supply Office which, after approving the applications, made all the necessary arrangements. When bulk orders for such items as Bailey bridge, lumber or field fortification materials were phoned in by front-line units, deliveries were made from the depots to the units whenever the transportation and supplies were available. This method saved the unit's trucks and decreased the time for shipment, a vital factor in a rapidly moving situation. 1st Lieutenant D. L. Brown was assigned to the section in May, followed by 1st Lieutenant B. K. Sollars in July, when Captain Moore left for the 1108th Engineer Group.



FLORENCE AND THE ARNO

With the entrance into Rome, Engineer Real Estate function became more important than ever. The Real Estate Officer aided G-4 in the selection of exact locations for dumps and troop locations and began issuing "Military Port Development Plans" based on maps and aerial photos. An overlay for the port of Piombino designated areas to be adhered to by all troops occupying the town. A map was distributed showing the port, the depot areas, the road system, road blocks, etc.

Depots were established quickly in the sites allotted. Piombino remained free of much unnecessary congestion; the various supply services were placed where they were most accessible to the combat organizations. During slack periods, forms, cards and processing procedures were improved. Leghorn was handled still more completely and efficiently. While there, Real Estate became a separate engineer section and 2nd Lieutenants Grant King and Richard F. Fitzgerald were assigned to help Captain Steckroth. On 20 August, the Real Estate Section went into Florence with G-4 to coordinate real estate matters between the Fifth and Eighth Armies.

SECTION V

Work at Engineer Headquarters (cont'd).

There were no British Divisions under the command of the Fifth Army for the breakthrough of the Gustav and Adolf Hitler Lines, I Corps having been relieved by II Corps and the French Expeditionary Corps. The 5th British Infantry Division had relieved the 56th British Infantry Division at Anzio and, together with the 1st British Infantry Division, advanced with the VI Corps to the south bank of the Tiber where they halted, and finally left the command of Fifth Army in early June. On 14 June, the British Increment was disbanded, but Lieutenant Colonel B. B. Smith remained with the Army Engineer as there were still numerous engineer problems requiring coordination of British and American policies (the work of 104 CRE (Works) in Rome, the rehabilitation of power installations, and the development of an Eighth Army Supply Route through the Fifth Army area from Piombino to Arezzo).

In addition to his engineering duties, Lieutenant Colonel Smith, being the only British Officer at Fifth Army Headquarters, had to deal with many minor administrative problems such as the evacuation of escaped British Prisoners of War, etc. Arrangements were made in the first week of August for Headquarters 73 CRE (Works) with supporting troops to assist in road maintenance in Rear Army Area, particularly round about the port of Piombino. In addition, British engineer troops (the 543rd Electrical and Mechanical Company and bomb disposal and mechanical equipment units) were allotted to Peninsular Base Section to assist in the opening of the port of Leghorn. Information was received on 10 August that XIII Corps would come under the command of Fifth Army in the area south of Florence, and planning was immediately begun to provide for the supply of engineer items and for road maintenance in the rear of the Corps.

In the middle of July, an Army policy of employing Italian military organizations was adopted. By the end of the month, Engineer Headquarters had 10 Italian units. Below is a status report of Italian units as of 29 July 1944:

Responsible Service	Italian Unit	Working Strength		Type Work	Location	Attachment
		Off	EM			
QM	67th Inf Regt	61	1297	Unloading Supplies	Piombino Port	175th Engr GS Regt
Engineer	103rd Minatori Bn	15	316	Unloading Supplies	Venturina	175th Engr GS Regt
Engineer	6th Artieri Co	4	140	Unloading Supplies	Piombino Port	175th Engr GS Regt
Engineer	910th Engr Bn Hq	4	12	General Labor	E165855	1st Pl 451st Engr Depot Co
Engineer	12th Engr Co	5	192	General Labor	E165855	1st Pl 451st Engr Depot Co
Engineer	21st Pontieri Co	7	251	General Labor	E165855	1st Pl 451st Engr Depot Co
Engineer	101st Pontieri Co	7	269	General Labor	E165855	1st Pl 451st Engr Depot Co
Engineer	909th Engr Co	5	109	General Labor	Q380240	Engr Depot E2-28
Engineer	210th Engr Co			General Labor	E740317	Engr Depot E2-23
Engineer	23rd Artieri Bn	32	622	Engr Road Work	Q315425	1108th Engr C. Gp.

The liaison and translation work of the French Increment at Engineer Headquarters continued as before until the departure of the French in July. Below is a list of American units which were attached to the French for operations:

- Company "F", 175th Engineer General Service Regiment
- 2nd Platoon, Company "D", 84th Engineer Camouflage Battalion
- Detachment, 85th Engineer Heavy Ponton Battalion
- Company "A", 405th Engineer Water Supply Battalion
- 344th Engineer General Service Regiment

SECTION V

C. Unit Operations

310th Engineer Combat Battalion

The 310th Engineer Combat Battalion, commanded by Lieutenant Colonel Cole, played an important part in the 11 May offensive. Company "A" operated a ferry across the Garigliano River under continuous shell fire. Company "C" sent several mine clearing parties into "no-man's land" to clear paths for the infantry. A member of one of these details was captured by the enemy, but escaped in the course of a fire-fight, slightly wounded by a hand grenade.

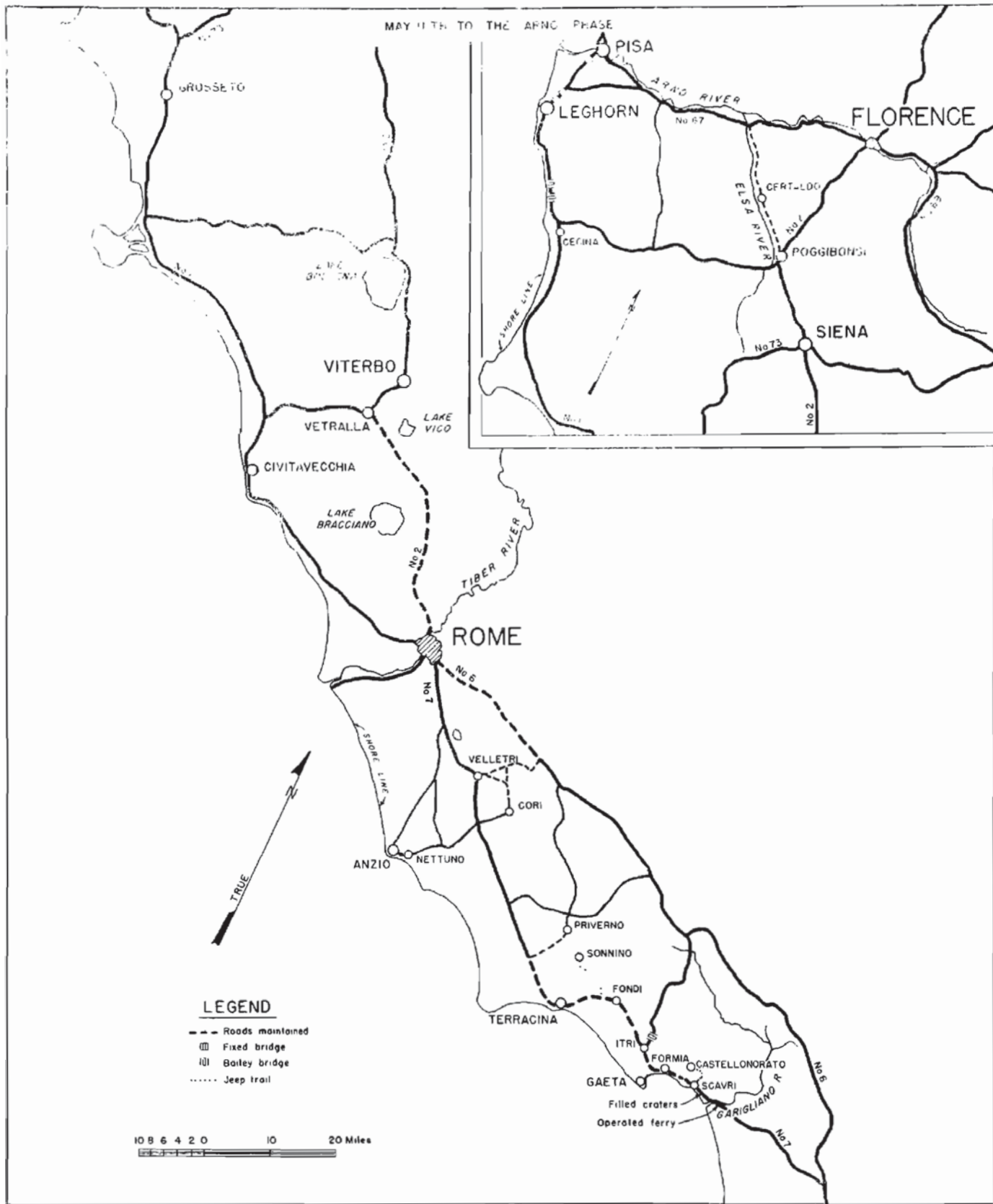
Men of "B" Company were attached to the infantry to act as second scouts, their job being to search the terrain for trip wires and mines, and to guide the infantry. This was a rather rough assignment, and of the twelve engineers assigned to the task two were wounded and three killed. Two nights later, Company "C" erected a prefabricated timber bridge while under mortar and artillery fire and an enemy air attack. Flares fell so close that one of the men was burned. But the bridge was successfully finished.

On the second day of the attack, the advance toward "S" Ridge and Solacciano was slowed down effectively, and tanks were badly needed to assist the infantry. Capo di Acqua River and a small tributary in the vicinity proved to be effective tank obstacles. A D-7 and an R-4 bulldozer succeeded in making crossings while under heavy shellfire. To allow infantry passage, a large "S" mine field had to be cleared. Men of Company "B" worked on the field, and there were three killed and two wounded before the job was finished.

After the last defenses of the Gustav Line were cracked, the battalion was engaged in constructing and maintaining minor roads and trails, often under artillery fire. A fierce struggle took place to get Highway #7. One of the jobs involved the construction of a jeep trail up steep Mount Castellonorato. Another difficult task was near Scauri, where the "C" Company operators lost two bulldozers on mines while filling craters.



GENERAL CLARK REVIEWS 310TH NEAR ROME



310 TH. ENGINEER COMBAT BATTALION
OPERATIONS

SECTION V

310th Engineer Combat Battalion (cont'd).

The advance continued through Formia and into Itri. Company "B", supported by the 235th Engineer Battalion, breached numerous road blocks and filled several extensive craters in the course of one morning. The 1st Platoon of Company "B" then led a reconnaissance troop into Gaeta and rounded up some thirty enemy prisoners. At Itri, one platoon of Company "A" constructed a 100-foot Bailey bridge.

Between Fondi and Terracina there were numerous bridges blown, necessitating the construction of many culverts and bypasses. At Terracina, the advance of tanks was held up by a road crater, which was found to be under small arms fire. A detail of the 310th started work on it and were fired upon by machine guns. The detail withdrew. Later, one of the two men wounded accompanied the 1st Sergeant back to the crater. They located the enemy strongpoint in a house nearby. The wounded man killed 8 machine-gunners and two riflemen in the house, and the sergeant accounted for two riflemen and wounded several others. The sergeant then organized a group of infantry and tank men and neutralized the position so the work could continue.

The rapid advance along Route #7 was temporarily held up east of Terracina, due to the heavily fortified, mountainous terrain. The defile through which the highway passes between the mountains and the sea was strewn with numerous road blocks and tank traps, all well covered by enemy fire. One blown bridge, in particular, prevented tanks from moving in to finish up the resistance. Bulldozers from the 310th and 235th Engineer Battalions worked under fire and completed an effective crossing.



310TH ENGINEERS CUTTING BRIDGE
TIMBERS IN LEGHORN AREA

Meanwhile, an amphibious task force, of which the 1st Platoon of "B" Company was the engineer component, had been started to Terracina by sea. En route, one of the DUKW'S carrying the engineers suddenly sank. Twenty-one men went into the water, most of them still laden with equipment. Although rescue was rapid, one man was lost. The landings were made short of Terracina, for the land forces had already arrived there.

310th Engineer Combat Battalion (cont'd).

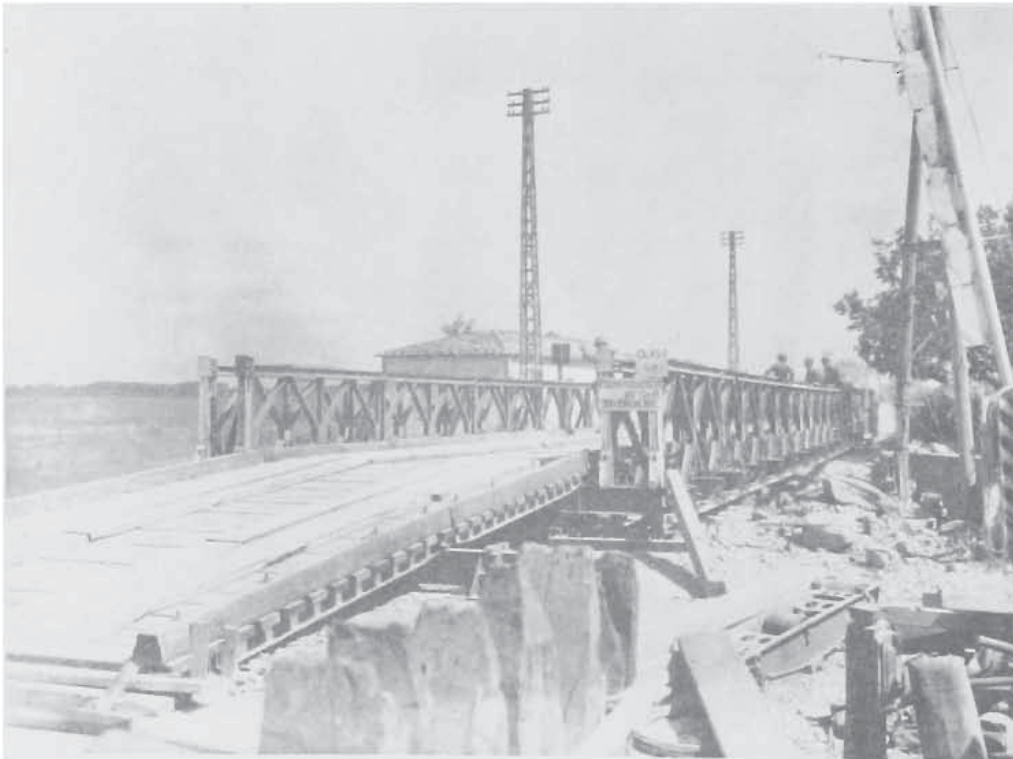
At Terracina, when the advance was temporarily held up, an alternate route through the mountains was needed to link Route #7 with Sonnino. Great effort was exerted to carve a road suitable for all divisional traffic out of the solid rock slopes of the mountains. Much hand work had to be done, and many demolitions placed, which required hand-carrying of the explosives up the rugged heights. After the breakthrough at Terracina made the road no longer necessary, construction was stopped with only one mile left to go. The six miles of finished road, however, greatly reduced the mule-carry, and enabled artillery to move several miles forward. Thus the work was not entirely in vain.

A rapid advance was made to Priverno and little engineer work was necessary. At this point, the 85th Division moved to the vicinity of Sabaudia for a short rest. The division reentered the offensive near Cori and the advance on Rome continued. During the advance, several roads were constructed through wooded terrain in order to bypass enemy resistance at Velletri and Loriano. A platoon from each company of the 310th accompanied the task forces on the final drive on Rome.

The most important of these was Task Force Cole. Its mission was to drive on Rome and secure three of the bridges across the Tiber River before they were destroyed by the enemy. The force was motorized and travelled to within five miles of Rome before it de-trucked and advanced by foot. The infantry marched forward on Highway #6 with the engineer platoon serving as the rear guard, its mission to clean out any snipers left behind by the infantry and secure the force's rear.

Since this was the first time this platoon had been committed as infantry, the engineers were armed to the teeth. As it entered the outskirts of Rome, the men were spread out to the right and left of Route #6 for several blocks. There were no Germans left, however, so the engineers were occupied solely with returning the hugs and kisses of civilians. This job continued into the early morning hours. The majority of the platoon finally bedded down in the lobby of the Plaza Roma Hotel, much to everyone's satisfaction.

Not forgetting their original mission, three men and the platoon leader went to the Tiber bridges to check them for mines and demolitions. These had already been secured by the infantry. One bridge was checked and nothing found. On stepping around the abutment of the near side of the Littoria Bridge, however, the group stumbled into nine frightened Germans. The prisoners were marched to the rear, greatly to the surprise of the infantrymen guarding the bridge. No charges were found on the other bridges after further search.



BAILEY CONSTRUCTED BY 310TH ENGINEERS
NEAR LEGHORN

SECTION V

310th Engineer Combat Battalion (cont'd).

Road clearance continued beyond Rome along Route #2 to Lago di Vico. Very little engineer work was necessary, most of the tasks consisting of removing vehicles from the road which had been knocked out by our air forces. The battalion with the other units of the division then went into a rest area south of Rome.

The middle of July found the 85th Division in IV Corps reserve as the advance on Pisa was in progress. During this period, two fixed timber bridges and three Bailey bridges were built on Highway #1. The timber bridges had spans of 70 and 50 feet, were Class 70 one-way, Class 40 two-way, and all work was done in four days. The Baileys were a 70-foot double-single, a 110-foot double-double, and a 130-foot double-double, all Class 40.

By 1 August, the division was in the area just south of the Arno River. Here the 310th, with the 1st Battalion of the 19th Engineer Regiment attached, conducted training in river crossing on the Elsa River near Certaldo, in preparation for a future crossing of the Arno. Reconnaissance patrols were sent to the river to study the proposed crossing sites. Plans then changed from a river crossing to a holding action. By the middle of August, the division was employed in defending the Arno front. The 310th Combat Battalion now had the dual missions of maintaining the road net and acting as infantry. This latter mission called for defending a 2,500-yard sector.



SWEEPING FOR MINES OUTSIDE A GERMAN
PILLBOX NEAR MARINA DI PISA

313th Engineer Combat Battalion

Before 11 May, the 313th Engineer Combat Battalion had established small engineer dumps in each regimental sector of the 88th Division. Plans were drawn up for removing existing barbed wire, minefields and trip flare belts. Flame-thrower fuel was prepared and refueling points established. The night before the attack, 1,782 M1A1 anti-tank mines and 140 trip flares, as well as large amounts of barbed wire obstacles were removed. On the night of the attack, the engineer companies were poised, waiting to open roads and trails. Although never used as such, Company "B" was alerted to fight as infantry.

On 14 May, the infantry broke through the German lines after being held at Santa Maria Infante. The 313th, commanded by Lieutenant Colonel Salvatore Armogida, followed immediately behind, repairing roads and demolitions as fast as the enemy was cleared away. The road south of the town was torn up by shellfire, and an enemy demolition in a hairpin curve north of the town needed primary attention. The hairpin curve was under direct enemy fire, and was in front of the infantry front line when the engineers brought out their angle-dozer to make the gap passable. Although subjected to heavy fire, they finished the job and made it possible for the tanks and other heavy weapons to follow quickly on the heels of the battle. The two operators later received Bronze Star Medals.

As the attack moved along Highway #7, it was stopped by enemy strong-points at Gaeta, Formia and Mount Petrella. The 313th opened the road to Spigno in one day, despite the fact that the Germans had spent two weeks preparing this mountain-side route for demolition. From Spigno, the battalion planned to make a road around Formia. The existing track, which was to have been the foundation, was unsuitable, so a trail was laid out roughly paralleling Highway #7 and intersecting the Maranola-Castellomorato road near the latter town. The trail, nearly two miles long, was finished in about nine hours, although the route was over virgin ground and steep hills, where vehicles had never been before.

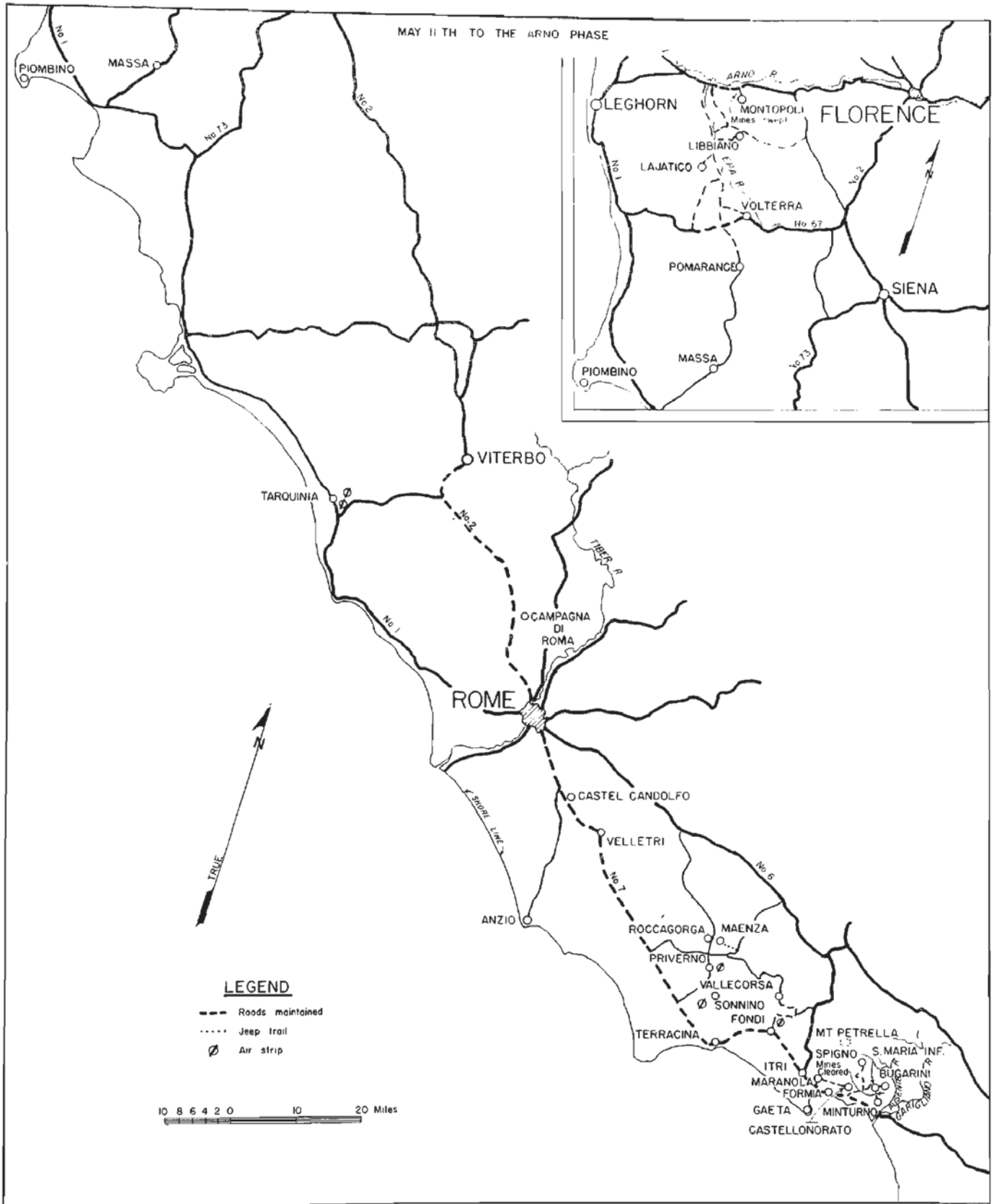
The Formia corridor was outflanked by this maneuver. German prisoners who were sent back over this road were amazed at the progress, and at the huge quantities of material which had been brought into hills they considered impassable. A similar route was begun around Gaeta, and much demolition work and hewing was done, but then rain made the completed section impassable on 19 May. The trail was never completed, however, for when Gaeta fell there was no need for the road.

Until 22 May, the battalion repaired roads in and around Fondi and worked on the main road to Vallecorsa, which was to be used as a main supply axis for troops in the hill mass to the northeast of Fondi. The enemy continued to hold the mountains, and again a supply trail was badly needed. On 23 May, work on this trail was begun. The first four miles was completely new road. When the terrain became too difficult even for jeeps, the trail was continued for mules, until it reached Sonnino.

By 26 May, the trail was complete. By that time, the beachhead troops had met the troops from the south, and the main roads were again open for traffic. The 313th Battalion moved to Sonnino at the edge of the Pontine marshes until the hills to the immediate north were cleared by the infantry. On 27 May, an airstrip was constructed near Sonnino for artillery liaison planes. The next day, the battalion moved to Priverno. Another air strip was built in this vicinity and about three-quarters of a mile of new road was cut south of Maenza, so that supplies could be brought up to the troops fighting for that town and for Roccaorga.

Meanwhile, the battalion was making preparations for the entry into Rome and the crossing of the Tiber. When it entered the city on 4 June, the prepared bridging equipment was unnecessary as the Rome bridges were all intact. On the morning of 5 June, two officers of the company were shot in a small street while making a reconnaissance. On the same day, the battalion moved into the city and received a warm greeting from more hospitable Romans.

On 7 June, Company "C" moved forward rapidly with the front line troops. A small party had gone ahead to inspect the roads. As it approached a bridge near Campagna di Roma, German engineers were spotted while finishing their demolition preparations. A nearby tank was pressed into service and its first shot hit the squad truck and killed the entire German party. The fuze beneath the bridge was then cut and the structure saved.



313 TH. ENGINEER COMBAT BATTALION
OPERATIONS

SECTION V

313th Engineer Combat Battalion (cont'd)

On 10 June, the company moved to Castel Gondolfo for a nine-day rest. The division then moved to Tarquinia, where it trained until entering the line again on 5 July. Two airfields, a Red Cross Snack Bar, a water point turn-around, and clearance on mines from beaches were accomplished as well as the usual road and bridge engineer work. From Pomerance, the battalion moved to Volterra and to Liatico. A ridge line road was swept for mines and the craters filled in between the towns of Libiano and Legoli, although all work had to be done in full view of the enemy and the shelling was consistent. When the job was completed, the bulldozer operators found that their bedrolls and barracks bags, which had been strapped to the dozer, were heavily slashed by shell fragments. All three operators were awarded Bronze Stars.

On 16 July, two log bridges were constructed, the first built by the 313th in Italy. These bridges were put in over nearly dry stream beds. As the 88th Division continued over the mountains toward the Arno, the engineers kept widening roads, constructing bypasses and culverts and sweeping for mines. The roads were so bad that wide loops had to be set up and controlled by the military police, so that the supplies could be brought up and empty vehicles returned to the rear.



ROAD BLOCK AT CASTELLONORATO

On 25 July, the division reached the Arno River near Montopoli. Two days later, the division was released and went to the vicinity of Volterra, where it stayed until the end of August, training and preparing for the river crossing operation. The battalion participated in infantry ground exercises and ran through a 24-hour problem as attack troops. In connection with the river crossing, 1st Lieutenant Daniel F. Johns crossed the Arno on 12 August, the first man to cross the river in that sector.

On 21 August, units of the 313th Battalion again began engineering operations, first near Leghorn, and then south of Florence. Five hundred forty-four miles of roads were maintained and repaired, and twenty-three miles were constructed. During the period that the river crossing was proposed, large quantities of bridging materials were on hand for the use of the division. Rope ladders were constructed for scaling the dyke walls on the north bank of the Arno. At this time, numerous plans were drawn up to cover any conceivable sort of operation which might be scheduled in the Arno River crossing. These plans were made in detail and any one of them could have been put into effect in a short time.

316th Engineer Combat Battalion

Company "A" of the 316th Engineer Combat Battalion arrived in Naples on 27 May, with the 361st Combat Team. After a brief staging period, the Combat Team moved by LST's to Anzio, going immediately into VI Corps reserve upon arrival on 1 June. On 3 June, Combat Team 361, now attached to the 36th Infantry Division, was committed just north of Velletri. There was little engineering work from Velletri to Rome, consequently Company "A" was able to adapt itself slowly and easily to the demands of combat.

In the push north from Rome to the Arno, the engineers were always kept busy. Company "A" was attached to the 109th Engineer Combat Battalion with the 34th Division, until 9 June. The company was then attached to the 111th Engineers with the 36th Division until 26 June, when it worked once again with the 109th Battalion.

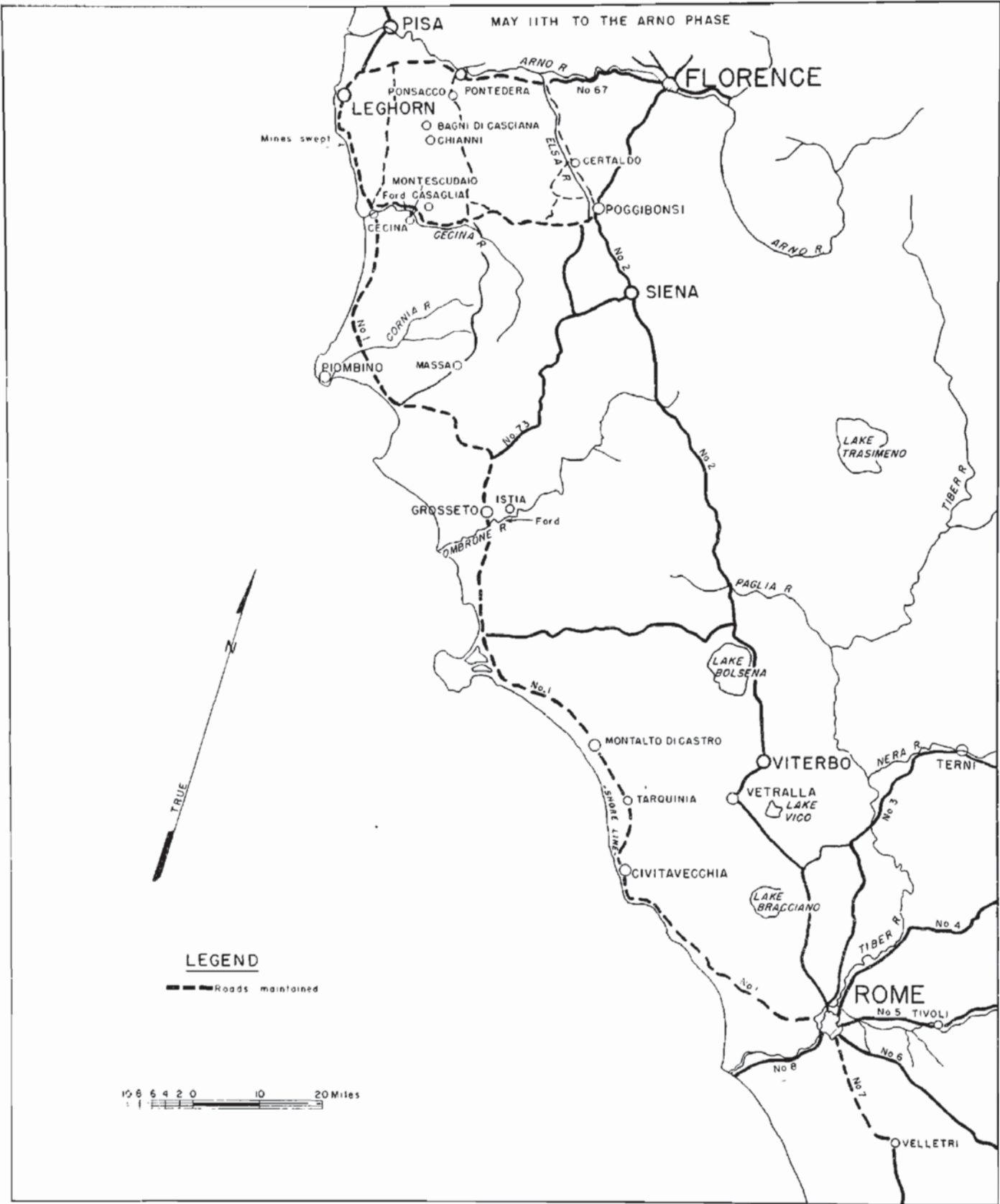
During the period of these attachments, the Company performed normal engineer road and bridge duties. Two fords, offering entirely different problems, were constructed. At the Ombrone River, the crossing site had a rock bottom, with steep banks on both sides retained by concrete walls. The river was 150 feet wide and from 2-2½ feet deep. After two hours of demolition and dozer work, the approaches were workable, and regimental jeeps were crossing the river.

In the afternoon, rain washed out a ford and prevented the completion of a treadway bridge upstream at Istia. Thus, all traffic had to use the Company "A" ford, which had been built for ¼-ton trucks only. The water became too deep for jeeps, but the heavier vehicles of two regimental combat teams and various artillery units were able to cross. To insure the crossing, a winch truck was stationed at the head of each approach to pull the loaded trucks up the muddy bank, and a bulldozer was kept in the stream to pull out any vehicles stalling there.

The second ford crossed the Cecina River, and was more of a tactical than a technical problem. The stream was shallow and narrow, and the banks were not hard to prepare. As the site was well covered by German fire, the work had to be done at night, and then only after the north bank of the stream had been cleared by the engineer security party. One hundred twenty Tellermines were picked up in the stream bed.



A 316TH D-7 DOZER IN ACTION



316 TH ENGINEER COMBAT BATTALION
 OPERATIONS

SECTION V

316th Engineer Combat Battalion (cont'd).

In the meantime, the remainder of the 316th Engineer Combat Battalion had left Africa. Commanded by Lieutenant Colonel William C. Holley, it arrived at Naples on 13 June. After a staging period at Bagnoli, the unit moved near Civitavecchia. On 3 July, Company "C" was attached to the 34th Division as part of Combat Team 363, and the next day entered action. As the infantry moved into the mountains between the Cecina and Arno River, Company "C" opened a regimental supply road across the mountains. New roads had to be cut from the precipitous hillsides, and down canyons and up the other side. What few routes and bridges had once been there had been thoroughly destroyed by the retreating enemy.

On 8 July, Company "A" rejoined the 316th Battalion. Three days later the 91st Division was committed in the vicinity of Casaglia. For the most part, the engineer work consisted of opening roads, clearing mines and repairing craters. The infantry advanced steadily, while the enemy put up a fight wherever possible. The closer the forces moved to the Arno, the heavier was the resistance; the more thorough and extensive were the enemy demolitions and mine laying.



316TH CLEARING UP DEMOLISHED OVERPASS
NEAR CAMPOMIGLIAIO

Task Force Williamson (Combat Team 363 reinforced) was attached to the 34th Division for an envelopment of Leghorn. On 18 July, the operation started. Company "C" advanced with the infantry, sweeping the roads and lifting large numbers of mines. For the first time, the Germans seemed to be running short of standard explosives. Eighty-eight mm shells and even small arms ammunition were found where charges had been placed for demolitions, but had not detonated. Lieutenant J. J. Motley of Company "C" and his driver were the first to enter Leghorn and met a German soldier and an officer, both of which were killed as they tried to escape. As the first of the American infantrymen entered the city, the engineers began to sweep the three main streets to the harbor, although sniper fire was constant.

The Task Force stayed in the coastal sector until the enemy had been pushed into that part of Pisa north of the Arno. The night Task Force Williamson moved to envelop Leghorn, the remainder of the division prepared a dawn attack to reach the Arno, about five miles to the north. The tanks moved first, followed by the infantry and engineers at 1,000 yards; the engineers to support the tanks on call.

SECTION V

316th Engineer Combat Battalion (cont'd).

In the 361st Infantry zone, the tanks broke through the initial German positions and advanced to within a few hundred yards of Pontedera, a sizeable town on the Arno. The infantry came up and fought with the tanks through the town. An engineer crew moved in with the leading platoon, searching for mines or booby traps. By the time the reserve company of the assault battalion entered the town, several blocks of booby-trapped buildings on the southern edge had been marked and taped.

Combat Team 361 was the first Fifth Army unit to reach the Arno. It had been decided not to force a crossing of the river at this time. All troops save one platoon, which remained in Pontedera to augment the town's guards, moved back to take up defensive positions before the low hills south of Ponsacco. Tactical and protective wire was placed, and many patrols sent to the Arno River, which was four miles beyond the Main Line of Resistance. The division boundaries were changed several times, each time further to the east.

On 13 August, the division withdrew from the line to an area by the Elsa River, near Certaldo. The following month became a period of training, rehabilitation and preparation for the next operation. An assault crossing of the Arno was to be made in the vicinity of Florence, and the 91st Division was to participate in the main effort. The Division G-3 called for river crossing training to be conducted by the engineers. Concurrently, the 316th had to prepare itself for its part in the crossing, as well as carry out preliminary reconnaissance to obtain information of the crossing sites.

All elements of the division had participated in a training program, designed to familiarize them with German mines and mine laying. The engineers now instructed the division again, teaching the infantry the way to use guide ropes and rubber reconnaissance boats, and how to tie basic knots and lashes. Emphasis was laid on individual practice in this initial phase. With the fundamentals mastered, the squads practiced crossing the Elsa with full equipment. The last phase of this training was a series of three regimental river crossings.

1108th Engineer Combat Group

48th Engineer Combat Battalion

On 13 May, the 48th Engineer Combat Battalion, commanded by Lieutenant Colonel Dean E. Swift since 11 March, began its participation in the smashing of the "Hitler Line". The battalion, a component of the 1108th Engineer Combat Group under Colonel Kingsley S. Anderson, bivouacked near Piedmont in the Garigliano River Valley and the line companies were assigned road maintenance and malaria control work. When the Fifth Army captured Spigno, the battalion was assigned the task of constructing a jeep trail over the high pass between Mount Petrella and Mount San Angelo to help supply the 88th Division troops that had broken through in that mountain sector. Because the Germans still held the western coastal strip in the vicinity of Formia and Gaeta, it was impossible to use Highway #7 as a main supply route.

Work started immediately. All available bulldozers were used and several dozer pack mules were borrowed from the infantry. Squads of men worked ahead of the dozers, blasting out of the rocks and woods a preliminary path for the dozers to follow and clear. The blasting was made both difficult and dangerous by American and French Army pack trains proceeding up the nearby mule trails, and by the stream of civilians coming down from their mountain refuges to homes in the valley below.

Supply convoys followed the dozers as they progressed. The jeep trail was beginning to approach the final stages when an order came from the 1108th Engineer Group Headquarters on 19 May, ordering the abandonment of the of the trail and instructing the 48th Battalion to move west of Scauri. Since the 85th Division had broken through in the coastal sector, Highway #7 could now be used as a main supply route and the jeep trail would be unnecessary.

The battalion was now assigned the maintenance of roads in the Formia-Itri area. Considerable work was necessary in both towns clearing the rubble from the streets. Work was then pushed on even beyond Itri, and by the afternoon of 20 May, Highway #7 was two-way to Fondi. On 22 May, battalion headquarters moved into the Fondi railroad station, and Company "B" was assigned to support the 91st Reconnaissance Squadron.

48th Engineer Combat Battalion (cont'd).

Strong resistance was put up in Terracina against the American troops. It was decided that the town would have to be outflanked, and that was possible in only one direction--through the mountains. Company "A" began building a tank road through the high ground around the town. It proved successful, for when the tanks went up the road into the high ground and fired on the town the Germans gave up.

The next morning, II Corps troops streamed through the town and into the Pontine Marshes. For the next few days, the battalion's activities were in that area, principally up Route #7 and in the section between the highway and the sea. The engineers assisted the reconnaissance troops as they attempted to maintain contact with the enemy, kept the supply routes open, and drained the marshes that the Germans had flooded in their attempt to impede the Allied advance.

On the morning of 25 May, the first contact with the Anzio beachhead was established. It was made by Lieutenant Francis Buckley and a patrol of the 48th Engineers at Borgo Grappa, at 0731 hours. The group met a patrol of the 36th Engineers from the beachhead. By the afternoon, more than ten patrols were attempting to prevent the German rear guard elements from blowing bridges as they retreated.

On 27 May, the battalion was relieved of support of the 91st Reconnaissance Squadron, and its area of activity shifted in the direction of Sezza. While working on the road approaching Sezza, enemy fire damaged a six-ton truck, a jeep and an R-4 angledozer, but no casualties resulted. Sixty-seven prisoners were captured by Company "B" in that area.

On 28 May, elements of Company "B" occupied the town of Norma. Roads were maintained in the area and one bridge was built. By nightfall of the 29th, all roads in the area were open to traffic. In some cases, bridges were discovered mined but not blown.

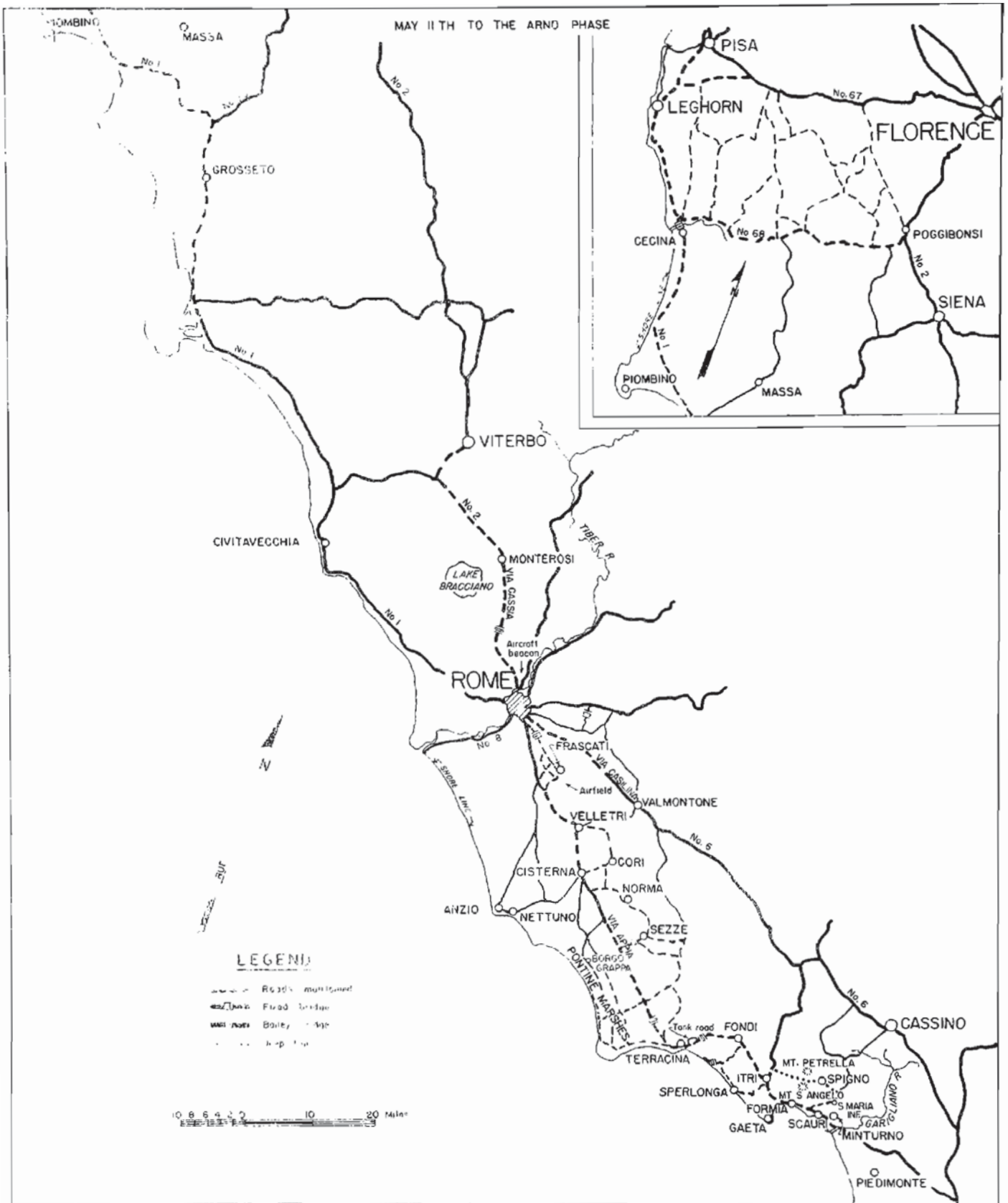
From the 29th to the 31st, the battalion was temporarily attached to IV Corps instead of II Corps. On the 31st, the 48th moved to the vicinity of Cori and commenced maintaining the road net leading toward Velletri. The battalion's mission was to follow the 310th Engineer Battalion of the 85th Division and support it in every way. This consisted principally in aiding in the construction and maintenance of the expedient dirt roads through the high ground between Loriani and Frascati. Because of the dry weather, it was necessary to sprinkle the roads frequently in order to keep the dust down. As water tankers were not available, they were improvised by placing 3,000-gallon canvas tanks on trucks and attaching these to a sprinkler bar.

As Rome was neared, the 48th worked further and further north, and on 5 June battalion headquarters moved into the Bank of Italy Athletic Club on the southern outskirts of Rome. Companies "A" and "C" moved to new bivouacs northwest of Rome and began the maintenance of roads in that area, particularly Highway #2. By 8 June, Company "A", maintaining the 85th Division supply route, was as far forward as Monterosi on Route #2.

Next day, the 1108th Engineer Group notified the battalion that it was relieved of all road assignments as of 1200 hours. The battalion then moved to Lake Bracciano to engage in additional training. On the 18th, an order was received alerting the battalion for a move, which was soon followed by another order directing the unit to cancel its training program and go to a location close to that of the 3rd Division, which was near Pozzuoli. So ended the 48th Engineer Combat Battalion's connection with the Fifth Army in the Italian campaign. Soon the battalion was engaged in amphibious training for the Allied landing on the Mediterranean coast of France.

235th Engineer Combat Battalion

The second battalion of the 1108th Engineer Combat Group, the 235th Engineer Combat Battalion, worked day and night to maintain the approaches to the Garigliano bridges and to hold these bridges intact under the tremendous traffic and the shelling incident to the Allied attack across the river. Then, as the II Corps forces swept into the hills beyond Santa Maria Infante and Castelforte, the demand for supply routes became acute. The battalion commanded by Lt. Col. Allen F. Clark, Jr., since 11 March, was called upon to provide jeep trails as a substitute for Highway #7, which the Germans were holding with fierce determination. Many trails were begun and then abandoned as new stretches of this artery were taken from the enemy.



1108 TH. ENGINEER COMBAT GROUP
 48 TH. ENGINEER COMBAT BATTALION
 235 TH. ENGINEER COMBAT BATTALION
 OPERATIONS

235th Engineer Combat Battalion (cont'd).

By the evening of 19 May, the battalion forward Command Post was in a shattered building in the main street of Formia. The momentum of the Fifth Army advance was now almost at peak, and the pressure on the engineers was constant. All bulldozers worked the clock around to open the road to Itri, for the capture of that town would greatly reduce the need for travelling over the slow tortuous mountain trails. Orders were given to open Highway #7 for two-way, high speed traffic. No forward boundaries were given, speed was the by-word.

On 20 May, Company "B" of the 235th was placed in support of part of the 91st Reconnaissance Squadron. The 235th helped open the twisting road from Itri to the sea at Sperlonga, then northward over the irrigation canals and around miniscule lakes to the flats before the cliff at Terracina. The movement was held there for forty-eight hours, while Anti-Tank guns were trained on the sharp bend in Highway #7, and mortar shells dropped from the heights above the water.



235TH BUILDING INFANTRY SUPPORT
BRIDGE NEAR LEGHORN

On the morning of 23 May, Lieutenant Colonel Clark, went on foot around this hot corner into the outskirts of Terracina. For two hours he directed clearance work by two of his bulldozers. The entire party was exposed to direct enemy observation from the town and hill, and was the target of much mortar and sniper fire. The job was completed and the machines returned around the bend without a casualty. The Via Appia was then open through Terracina and the Allied forces were poised for the last thrust to Rome, fifty miles away.

235th Engineer Combat Battalion (cont'd).

The engineer assignments had overlapped not infrequently, and the engineer picture since the advance from Minturno was a bit confusing. Generally, however, the 235th followed the division engineers who repaired roads just sufficiently to allow their divisions to pass. The 235th reconnoitered, probed the trails, seeking a quick one-way route for the armor. The 48th improved the routes for two-way traffic, laid culverts, hauled gravel. Both did mine work. This combination of the 1108th Group was found to work smoothly, and was continued whenever feasible.

At Terracina, the forward area was split, however, and as the 48th opened the beach route north, the 235th continued up Highway #7. At this time, the 48th Battalion's Company "B" sent a platoon to the 91st Reconnaissance Squadron, which relieved the elements of the 235th that had been with this organization since the breakthrough. At noon on 25 May, officers and men of the 235th working on Highway #7 met reconnaissance men of the 34th Division driving south from Cisterna.

The advance continued up the Via Casilina to Valmontone and then to Rome. During the month of June, the battalion worked for both II and IV Corps. The group and battalion commanders penetrated as far as the gates of Rome with the leading tanks on the afternoon of 3 June. Two days later, Company "A" of the 235th installed a 120-foot, triple-single Bailey bridge across a blow east and south of Rome. This was a difficult job, for the far bank of the crater had not been secured. Men of the company used rifles, machine guns and 60 mm mortars to knock out a German pocket and establish the bridgehead necessary before any work could be done.

On 6 June, the battalion moved into Rome and assumed responsibility for opening Highway #2, the Via Cassia. One company cleared mines and opened the road for one-way traffic while a second company dressed it up for two-way Corps traffic. The third company, in reserve, did the miscellaneous battalion tasks. When the 48th Battalion left on 17 June, the 23rd Artieri Battalion (Italian) was attached to the 1108th Group, but a full three months of training was necessary before it was able to function with reasonable efficiency.

From mid-June to mid-September, the 235th had to do all the engineer work for the corps. From Rome to Viterbo, the battalion opened 176 miles of road to two-way traffic, installed 38 culverts and three bridges totalling 208 feet, and built eleven bypasses. The dusty, sunbaked, dirt roads, with bypasses often through wheat fields, required oiling or constant watering. Miscellaneous engineer tasks done during this period included the moving and emplacing of eight artillery and anti-aircraft units, the construction of three cub landing strips, the preparation of two dump sites, the clearance of ten minefields, and the operation of sixteen water points, one aerial beacon and two quarries.

The battalion was then ordered to open Route #1 in close support of the 34th Division. Local material was plentiful and the work proceeded rapidly until a 290-foot bridge blow near the Piombino crossroads was reached. Three hexagonal culverts, four sections long, were placed to take care of the water. The dip was open to traffic after eighteen hours of work. From Piombino to Cecina, every culvert and every bridge over each canal was blown by the retreating Germans. At one point on Route #1, there were twelve demolitions within one mile. While on reconnaissance at Cecina, the battalion operations officer and two enlisted men were captured by the Germans.

At the site of the Cecina River, the 109th Engineers had constructed two fords across the stream, each with one-way approaches, developing a one-way traffic circuit. As soon as the bridgehead at Cecina was cleared of small arms fire, Company "C" of the 235th first built a two-way crossing by the old Cecina bridge site, then constructed a 15-foot, two-way wood stringer bridge. By using all the battalion's heavy equipment, plus two 8-yard scrapers borrowed from army engineers, the fills approaching the bridge, totalling 300 feet, were completed in thirty-six hours. Much of this work was done under harassing aerial fire.

On 4 July, Company "A" was placed in support of Task Force Ramey, whose mission was to advance along Route #6821. The other companies continued to work on Route #165 and the laterals to the east. Road maintenance and culvert and Bailey bridge construction continued for the rest of the summer, after the Arno River was reached in late July. The 235th was responsible for the engineer work along the entire IV Corps front of 55 miles. This front remained static until September.

16th Armored Engineer Battalion

As the Germans were driven back toward Rome in early June, the 16th Armored Engineer Battalion, commanded by Lieutenant Colonel Inskip, was occupied with road and mine work from the beachhead on north. More than once, the mine clearing detail was in front of both infantry and tanks. Detachments from Companies "C" and "D" entered Rome with some of the first elements, and examined the Tiber River bridges in their sector for demolitions.

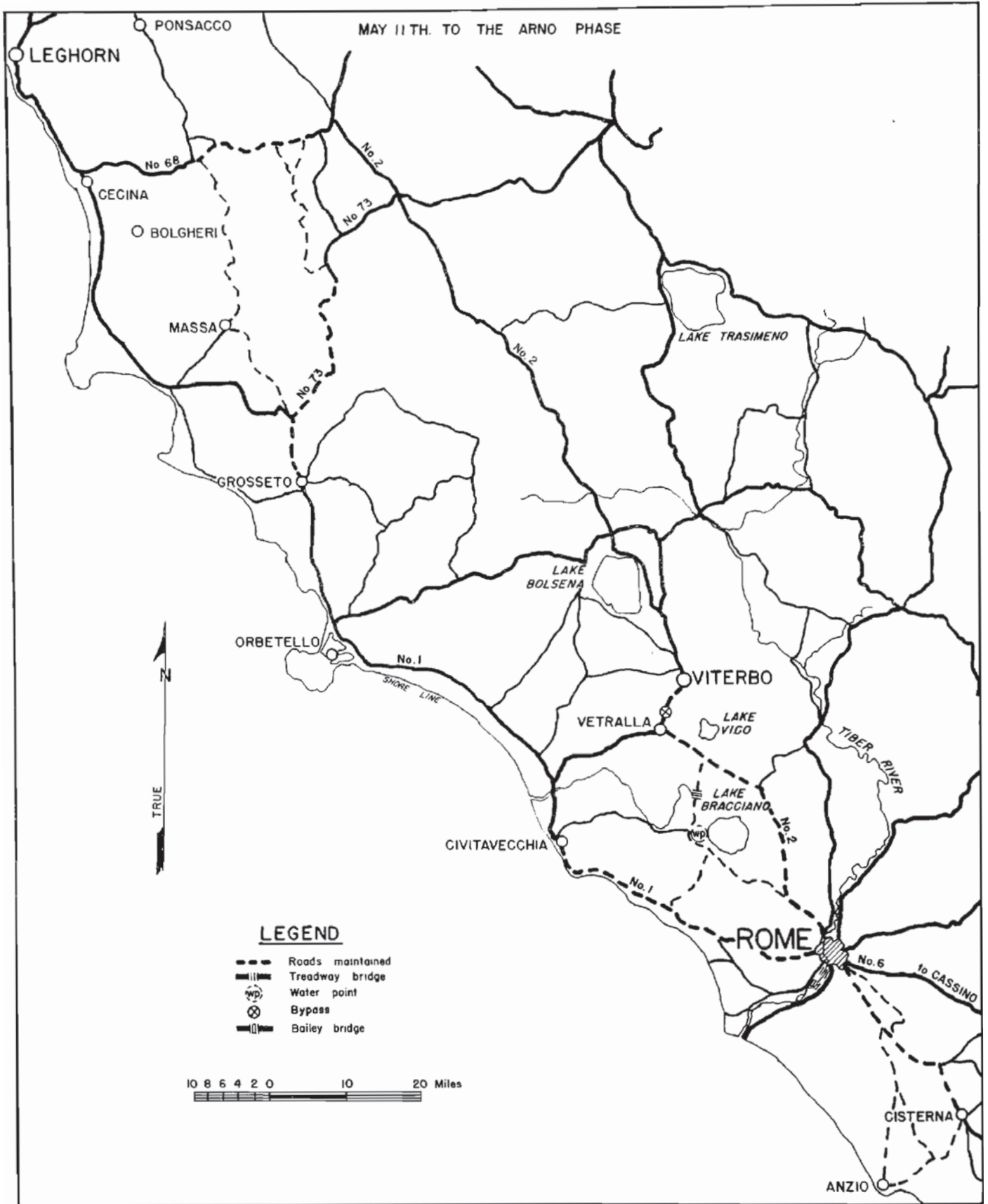
Company "E" supplied the equipment for, and supervised the construction of, two floating steel treadway bridges below the city for the 34th and 45th Divisions. The battalion continued north to Viterbo, where it was relieved. It assembled in the vicinity of Bracciano on 9 June. Here, for the first time in four months, the whole battalion was together. Maintenance of equipment and bridge training were given a high priority. Two showers and three water points were set up. A 60-foot Bailey bridge was built. a stockade constructed and division service roads were maintained.



BRIDGE AT PONTEDERA CONSTRUCTED
BY 16TH ENGINEERS

17 June, Company "B", with a detachment of heavy equipment from Headquarters Company, moved to the vicinity of Orbetello. Company "D" was attached to Combat Command "A" and moved into the same general area about the same time. The remainder of the battalion followed on 19 June. In the operations that followed, all companies were engaged in strenuous assignments. Company "C" joined Task Force Howze, and Company "A" was attached to Combat Command "B".

In the pursuit of the enemy through the mountainous country, the demolitions met with were extensive, and the need for bulldozer work was continuous. In some places, new roads had to be constructed because of the impossibility of repairing the demolished sections of roadway. Mines of every conceivable type were lifted from nearly 900 miles of road, including two with features never encountered before, a Teller 43 with no wells for anti-lift devices, and an Italian plastic igniter on anti-personnel mines.



16 TH. ARMORED ENGINEER BATTALION
OPERATIONS

SECTION V

16th Armored Engineer Battalion (cont'd).

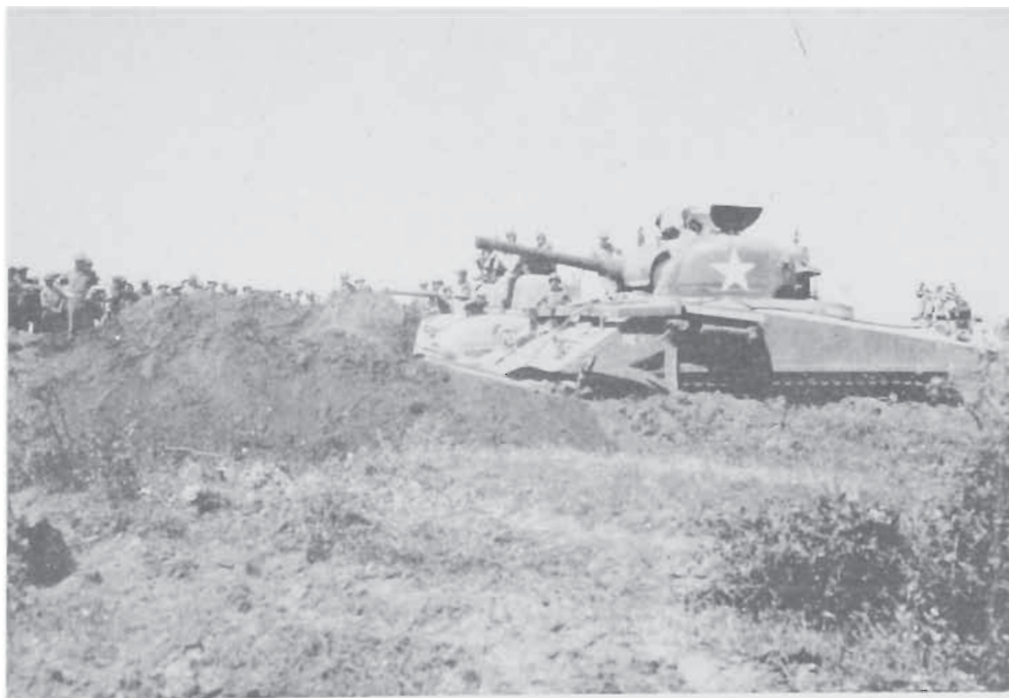
Thirty-seven steel treadway bridges were constructed, three under small arms and mortar fire. One of these was built with the aid of the T-2 bridge launcher. Twelve enemy bridges were repaired, eight fords improved, and one hundred culverts placed and filled. Over 500 craters were filled and nearly 200 bypasses around blown bridges were constructed. Clearing roads from the town streets so traffic could pass was found to be a major job.

On 10 July, the battalion, less Company "A", was attached to IV Corps for engineer support. Company "A" moved to a new assembly area to prepare it for the arrival of the division. There, it improved the road net, cleared two beaches of mines and set up two shower points. The rest of the battalion remained engaged in road repair for IV Corps in the forward areas. On 22 July, it was released from Corps and moved to an area south of Bolgheri to reorganize the battalion under a new table of Organization and Equipment. The unit was now under the command of Major Ralph N. Hale.

Much of the unit's equipment was changed, and the size of the battalion cut considerably. From the excess personnel, three new companies were cadred, the 2750th Engineer Light Equipment Company, the 1755th Engineer Treadway Bridge Company, and the Engineer Treadway Bridge Detachment, 345th Engineer General Service Regiment, later to become the 1029th Engineer Treadway Bridge Company

After the reorganization was completed and all the excess equipment turned in, the battalion began a training period. On 1 August, the unit was ready for the return to combat. On 7 August, the battalion, less Company "C", moved to an area near Ponsacco, some miles south of the Arno. Shortly after the 16th had arrived in the new area, it resumed training, emphasizing the construction of the steel treadway bridge and the Bailey bridge. Mine warfare was thoroughly covered for the new men in the unit, and each man practiced on ranges with his assigned weapon. Company "B", 317th Engineer Combat Battalion, was attached to the 16th for training and tactical use on 26 August. The unit was given training in mine warfare and other phases of combat engineer work.

During August, the 16th Engineers constructed two small arms ranges, one bypass, nine culverts, and marked and recorded six anti-personnel minefields. The division training area, nine and one-fourth square miles, was swept and cleared of mines. Four enemy anti-tank minefields were marked, and 207 Tellermines, 182 "S" mines, and 15 Holzmines were removed on this job. Approximately 3,000 men were instructed in mine warfare.



HYDRAULICALLY OPERATED TANKDOZER
BUILT BY 16TH ENGINEERS

SECTION V

16th Armored Engineer Battalion (cont'd).

As the plan for crossing the Arno River depended a great deal on engineering projects, the staff of the 16th Armored Engineer Battalion began an intensive study during August of the Arno River and its immediate vicinity in view of sites for a series of bridges for the crossing. Results of this study, as proved later, were very successful in regards to the complete operation.

109th Engineer Combat Battalion

As the beachhead forces attacked on 23 May, the 109th Engineer Combat Battalion, commanded by Lieutenant Colonel Robert S. Coffee, opened supply routes and attack routes for supporting armor. All elements of the division were committed in the vicinity of Lanuvio, and the 109th, less Company "B", was assembled as division reserve. This force conducted a successful coordinated attack on Crocetta.

After the division was successful in its assault on Lanuvio, the battalion opened routes for the rapid pursuit that followed the breakthrough. Company "B" supported by the corps engineers made a successful crossing of the Tiber River, using the M-2, Class 40, floating treadway bridge, the first time this type of floating bridge had been constructed in combat.

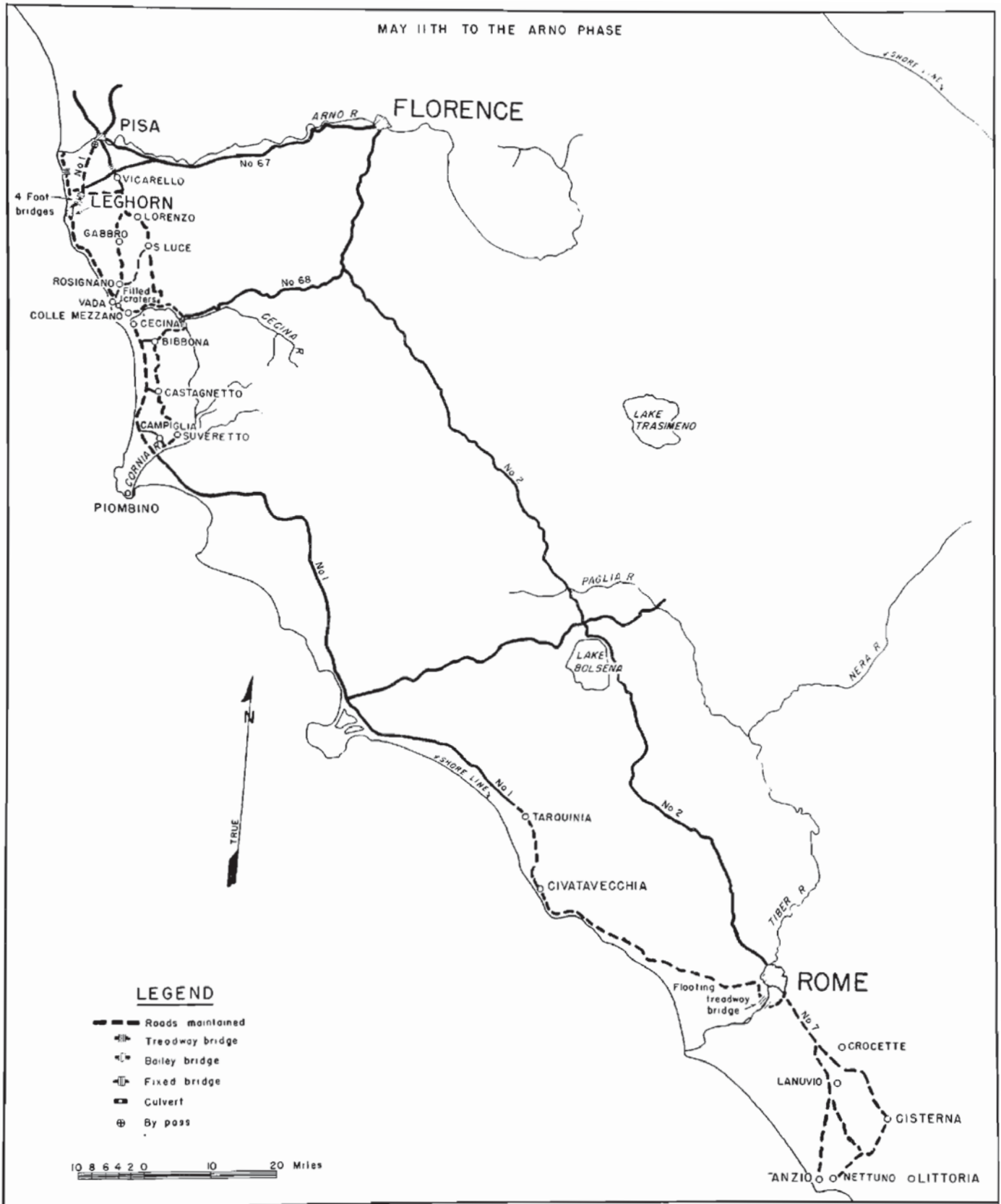


M-2 TREADWAY OVER TIBER

After the fall of Rome, the 34th Division drove northward along Highway #1, reaching Civitavecchia on 7 June and Tarquinia on 8 June. On the latter date, the division entered a rest period which was spent at Tarquinia. The 109th Engineers conducted schools for the infantry, and spent the rest of the time in renovating and repairing equipment.

On 26 June, the 34th Infantry Division re-entered the line along the River Cornia near Campiglia and attacked northwest along Route #1, through Cecina and north into the Arno River valley. During this period the 109th had attached to it the 232nd Engineer Company (Separate) of Japanese-Americans. Until 17 July, Company "C", 316th Engineer Combat Battalion, was also attached to the 109th, making a total at that time of six engineer companies for the support of six combat teams.

MAY 11TH TO THE ARNO PHASE



109TH ENGINEER COMBAT BATTALION OPERATIONS

SECTION V

109th Engineer Combat Battalion (cont'd).

From 25 June until they reached Cecina on 30 June, Companies "A" and "B" supported the advance up Route #1. The two companies constructed ten bypasses, made six fills, put in one culvert, and cleared three sections of minefields necessitating the removal of twenty five Tellermines and 400 wooden box mines. Company "B" improved the poorer, more inland roads leading through Suvereto, Castagneto and Bibbona, across the Cecina River to Highway #68.

This mine, road and bridge work and support of the infantry was continued up through the Port of Leghorn. Roads were opened in the Lorenzo - Rossignano - San Luce area. On them, fifty-five bypasses were constructed, four culverts installed, eleven craters filled, and 207 box mines and 121 Tellermines removed in addition to varied engineer jobs such as the construction of an 800-yard, one-way road, water point turn-arounds, and the removal of obstacles from the highways, such as demolished German equipment and trees. After 20 July, the road work continued northward from Leghorn.

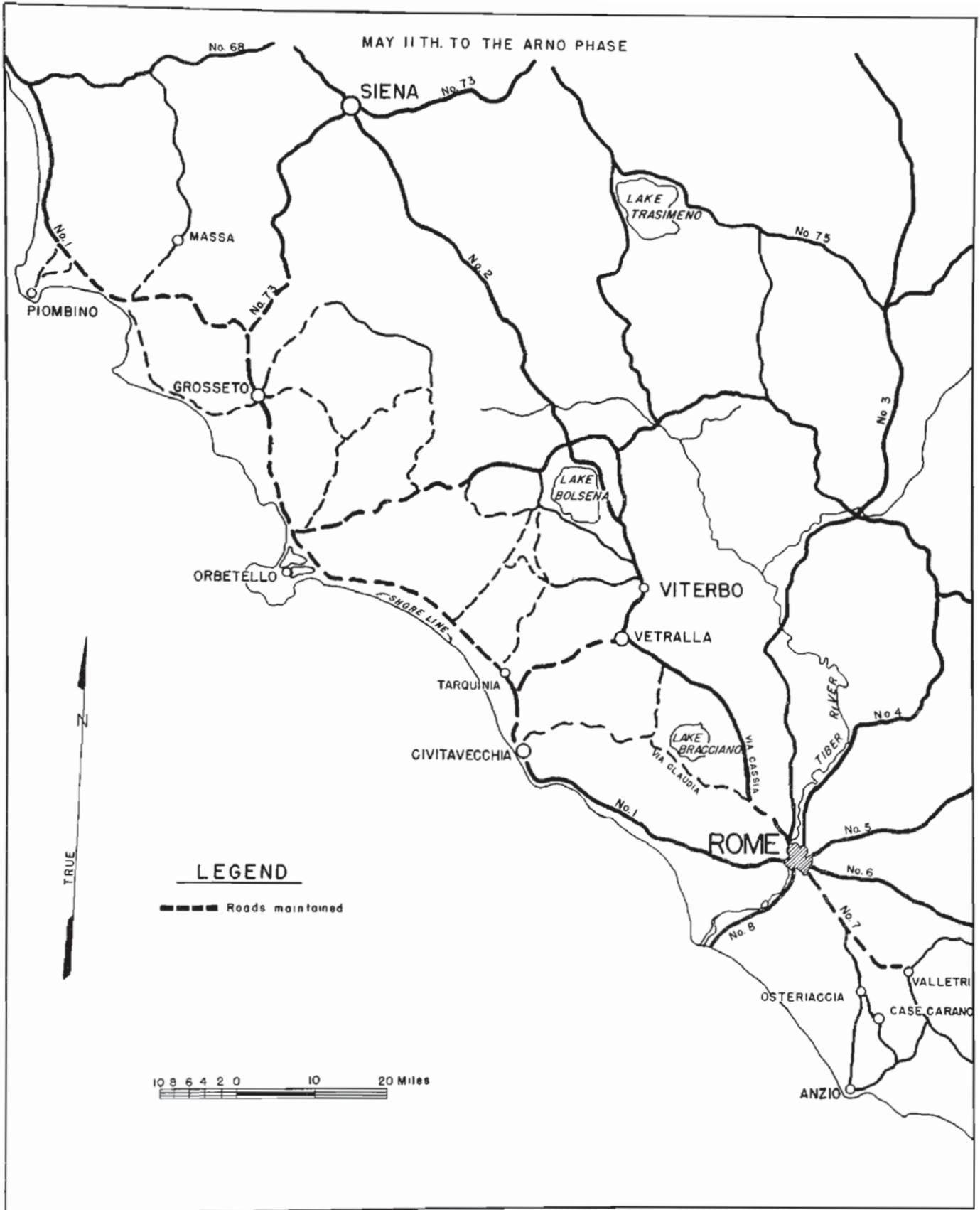
The terrain between Leghorn and Pisa, flat and highly cultivated, is criss-crossed by a complicated series of canals and drainage ditches, some large enough for navigation. The bridges over these waterways had been demolished by the retreating Germans, leaving a great bridge, culvert and bypass job for the engineers. Company "A" built two bypasses north of Vicarello, constructed a Class 40 floating tread-way bridge on a canal, bypassed nine blown bridges on the road from Cicaello to a point two miles south of Pisa, and picked up fifty "S" mines at the canal.

Northeast of Leghorn, Company "B" built four footbridges across a series of canals, constructed a Bailey bridge supported by a timber trestle across another canal, and a twenty-foot span trestle tread-way across the final canal. Company "C" checked secondary roads near Leghorn, built two bypasses, and constructed a 90-foot combination ponton and trestle bridge across a canal.

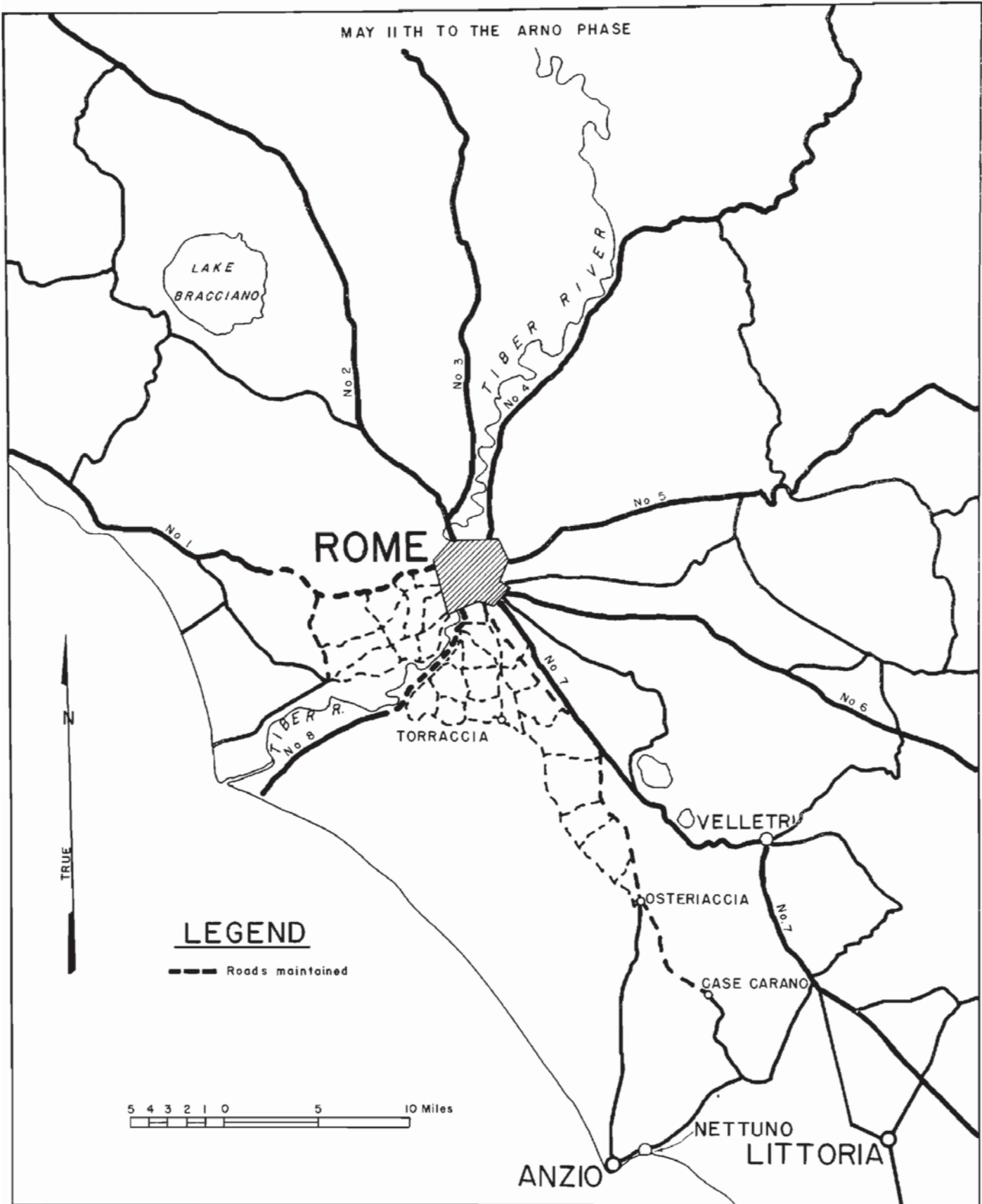
On 27 July, the 34th Division was relieved and the 109th Engineer Combat Battalion returned to Collemezzano for a rest period. The battalion conducted schools for the infantry and spent the balance of the time cleaning equipment and in rest and recreation. On 21 August, the battalion moved into the vicinity of Varra, and on 26 August went to Florence where it conducted reconnaissance in preparation for the coming drive through the Gothic Line.



PREPARING TO BLOW UP ENEMY PILLBOX IN CIVITAVECCHIA



111 TH ENGINEER COMBAT BATTALION OPERATIONS



120 TH ENGINEER COMBAT BATTALION
OPERATIONS

10th Engineer Combat Battalion

The 10th Engineer Combat Battalion helped with the breakthrough from the beachhead by clearing roads and minefields. After the breakthrough, the battalion supported the 3rd Division in its continued attack by opening the roads along the route of advance as the division went eastward and up through Velletri and Artena to Valmontone. Numerous craters were filled, twenty-three bypasses were built, ten miles of new road constructed and more than 150 destroyed vehicles and tanks obstructing the road removed. When the enemy resistance stiffened in the vicinity of Artena, the 10th Engineers moved into division reserve.

After the capture of Artena and Valmontone, the race to Rome ensued, and the 10th Engineers cleared Route #6 up to the city, arriving there from the southeast on 5 June, the day the city was captured. After garrisoning the City of Rome for eight days, the division moved to Pozzuoli in preparation for the invasion of France.

On 2 July, the battalion was given the mission of removing the mines and booby traps from the heavily mined area in the vicinity of Formia and Gaeta, so that the region might be available for training. Formia - Gaeta, was the west coast anchorage for the "Gustav Line", and an extensive mining program had been completed in this area by the Germans. In sixteen days, the 10th Engineer Battalion removed over 20,000 mines from this area, suffering fifty-seven casualties, including fifteen killed. The 10th Engineers left Fifth Army control soon afterwards, and was assigned to the Seventh Army.

111th Engineer Combat Battalion

On 27 May, the 111th Engineer Combat went into the line at Velletri. The 36th Division advanced up Route #7 to Rome, cut west of the city, and continued northward up Via Cassia (Highway #2) and Via Claudia (Highway #225) to Bracciano. The divisional sector was exceedingly narrow near Rome, but was tripled after the pinching out of the 45th Division. North of Civitavecchia the 36th Division had the entire sector from Lake Bracciano to the sea. The 111th opened up the roads in this sector as rapidly as the front line moved forward, and the front moved as fast as a motorized army could go. Tarquinia, Orbetello, Grosseto, and Piombino were taken one after the other.

The division was relieved on 26 June as it reached Mount Leoni. The hundreds of miles opened in the twenty days since Rome had necessitated continual mine clearance and construction of bypasses. As the dry weather caused low stream levels, many bridges blown did not need immediate replacement. When the 36th Division was relieved in June, the 111th Engineer Combat Battalion left Fifth Army permanently, soon going to Southern France.

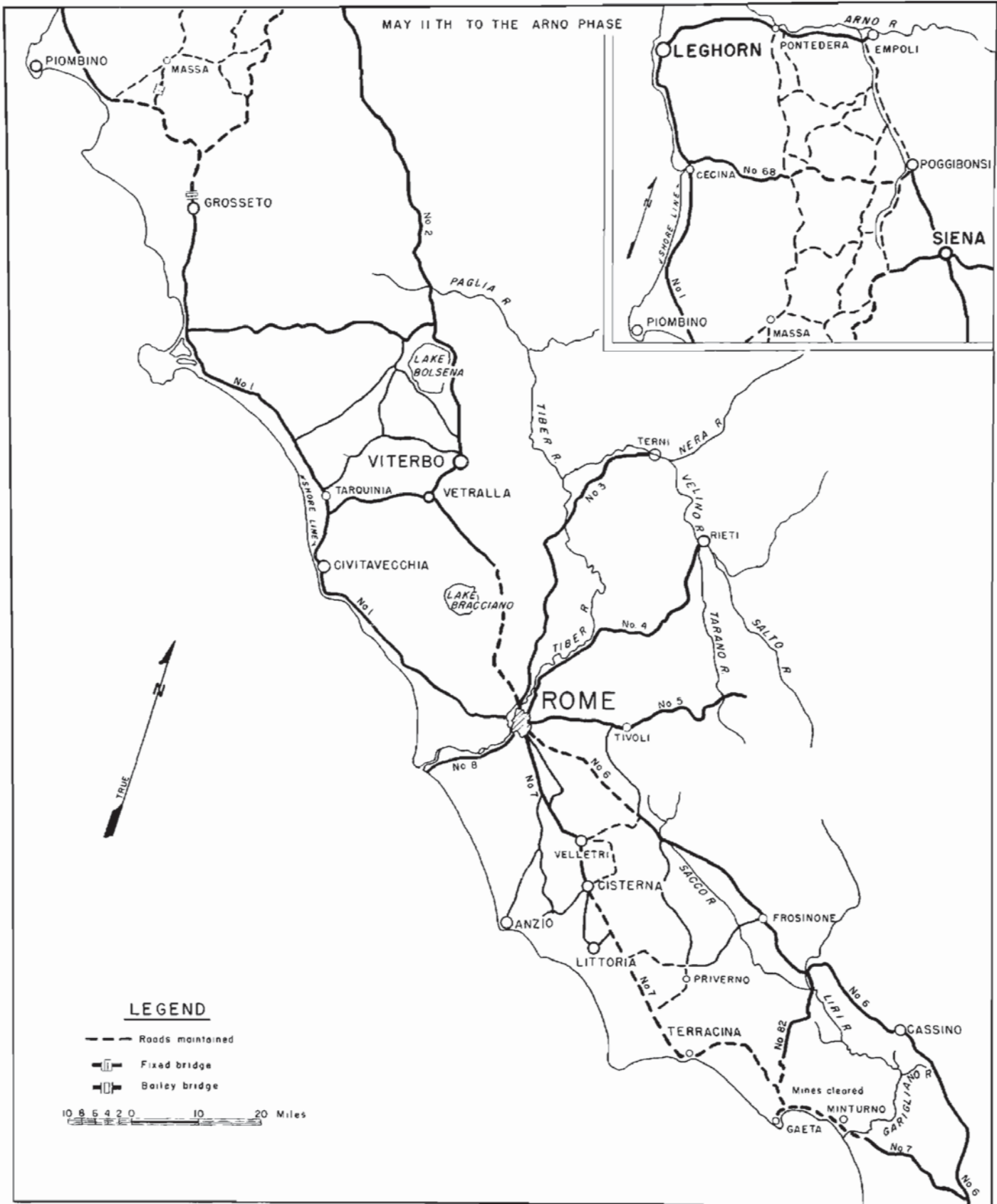
120th Engineer Combat Battalion

The 120th Engineer Combat Battalion advanced in a northerly direction as the beachhead forces attacked. It moved from Casi Carano through Osteriaccia and Torroccia to an area west of Rome. Although it was outside the 45th Division's sector, much of the division actually used Highway #7 into Rome and then went west, in order to make as much time as possible. The 120th Battalion cleared road blocks and demolitions along the route, and swept for mines. On 8 June, the battalion was spread from Castel Malnome to La Selce, preparing to move up Highway #1, when the division was relieved from the line. The 120th soon joined the Seventh Army and left for France.

19th Engineer Combat Regiment

When the attack from the Garigliano River line was made, the 19th Engineer Combat Regiment under Colonel Joseph O. Killian was assigned the job of maintaining and operating the existing bridges and ferries over the Garigliano. It also had to support the 85th and 88th Division Engineers and maintain the two divisional road nets.

By 20 May, the Gustav Line had been passed. The 1st Battalion remained in support of the two divisions, concentrating on road repair and maintenance. Most of the work consisted of installing culverts, constructing bypasses, filling craters and lifting minefields. The 2nd Battalion remained in support of the two tank battalions, clearing mines, installing culverts and opening the roads ahead of the tanks. Jeep trails were constructed, existing trails widened, and corduroy roads built to permit the passage of tanks.



19 TH ENGINEER COMBAT REGIMENT
OPERATIONS

19th Engineer Combat Regiment (cont'd).

On 14 May, one squad removed over 100 enemy mines, indicative of the widely scattered obstacles met with throughout the area. The engineers followed the retreating Germans so closely, that on 22 May, when a crater was being made passable near the blind corner at Terracina, enemy infantry action in a short-lived counterattack forced the 19th and 310th Engineers to leave behind their D-7's. The next day, however, both dozers were recovered. On the 24th, a mine detail cleared the way through Terracina to Route #7.

On 19 May, the regiment was alerted to move to Anzio by boat. The units were told to be ready on short notice to go to Naples for loading. Word was received the following day that the move had been postponed until 27 May. When the two Fifth Army fronts joined, however, the boat trip was no longer necessary.

On 26 May, Company "A" was given the mission of preparing a bivouac area for II Corps Headquarters. But before the work started, the mission was cancelled and the Company again started working on roads in the rear of division engineers.

On 27 May, all units of the regiment were relieved of their various missions and told to prepare to move to the vicinity of Cisterna. The work in their new area consisted of clearing the roads of destroyed enemy equipment, in addition to the routine mine clearing, repair and maintenance work. As a result of Allied air and artillery fire, the roads were obstructed continually with wrecked vehicles and guns.

On 30 May, the 19th was placed in support of the 3rd and 85th Divisions in their attack on Rome. With these divisions, the 19th arrived in the outskirts of Rome on 4 June and entered the main part of the city the next day.

The 19th Regiment had also prepared for an assault crossing of the Tiber. As this proved unnecessary, the unit continued right through the city and northward in support of the 88th Division engineers.

On 8 June, the regiment was relieved of all assignments and ordered to a rest and training area near Lake Bracciano. Training programs were written up and assigned to the companies, stressing the weak points that had been noticed in the past operations. The cooler morning hours were set aside for training, while the hot afternoons were left for recreation and resting. Swimming, boating, fishing and passes to Rome were opportunities offered to the men. All vehicles, equipment and clothing was checked, repaired and cleaned. Shortages in clothing and equipment were filled and units reorganized where necessary. In addition, several small jobs in road reconnaissance, mine clearing and replenishing the regimental dumps were assigned.

The 19th Regiment was attached to IV Corps on 19 June, and moved to Grosseto the next day to receive its initial assignment from that headquarters. The 1st Battalion was placed in support of the 36th Division from Grosseto north, in the drive up Highway #1. The 2nd Battalion was placed in support of Task Force Ramey, and worked mainly to improve the road net to the right of Highway #1. On 23 June the 1st Armored Division was committed to the right of the 36th Division and the 1st Battalion added to its support Combat Command "B" and Task Force Howze, while the 2nd Battalion continued to support Combat Command "A" and Task Force Ramey.

During the month of July, units of the 19th Engineer Regiment were continually shifted around to support various troops and to do a number of different jobs. The units' main job, however, was road work. Main axis routes were opened for two-way traffic, lateral roads were opened as required, and the surfaces improved, and caution and direction signs were posted.

At the end of the month both battalions were attached to infantry divisions, one to the 88th, and the other to the 85th. The two battalions, along with the infantry, started an extensive program in river crossing training. The main points covered: the use and purpose of assault boats; the use of ponton rafts for men and equipment; the construction of the infantry support bridge; the construction of footbridges; the use of demolitions for cutting away river banks to form approaches; underwater mine detection (using mine detectors water-proofed with a gas cap tied over it); gapping and marking minefields; experiments in winching vehicles across streams. Most of the training was conducted by practice accompanied by lectures and demonstrations. Along with the training, officers and men were sent out at night to make reconnaissance of roads and routes to the Arno River and to locate possible crossing points.

On 11 and 13 August, the 1st and 2nd Battalions were detached from the 85th and 88th Divisions, and returned to regimental control. By this time, plans had changed and neither of the two divisions was included in plans for the initial river crossing. On 16 August, orders were received directing units of the 19th Engineers to train in river crossing procedure with the 91st Division.

19th Engineer Combat Regiment (cont'd).

19TH ENGINEER BAILEY BRIDGE NEAR SIENA

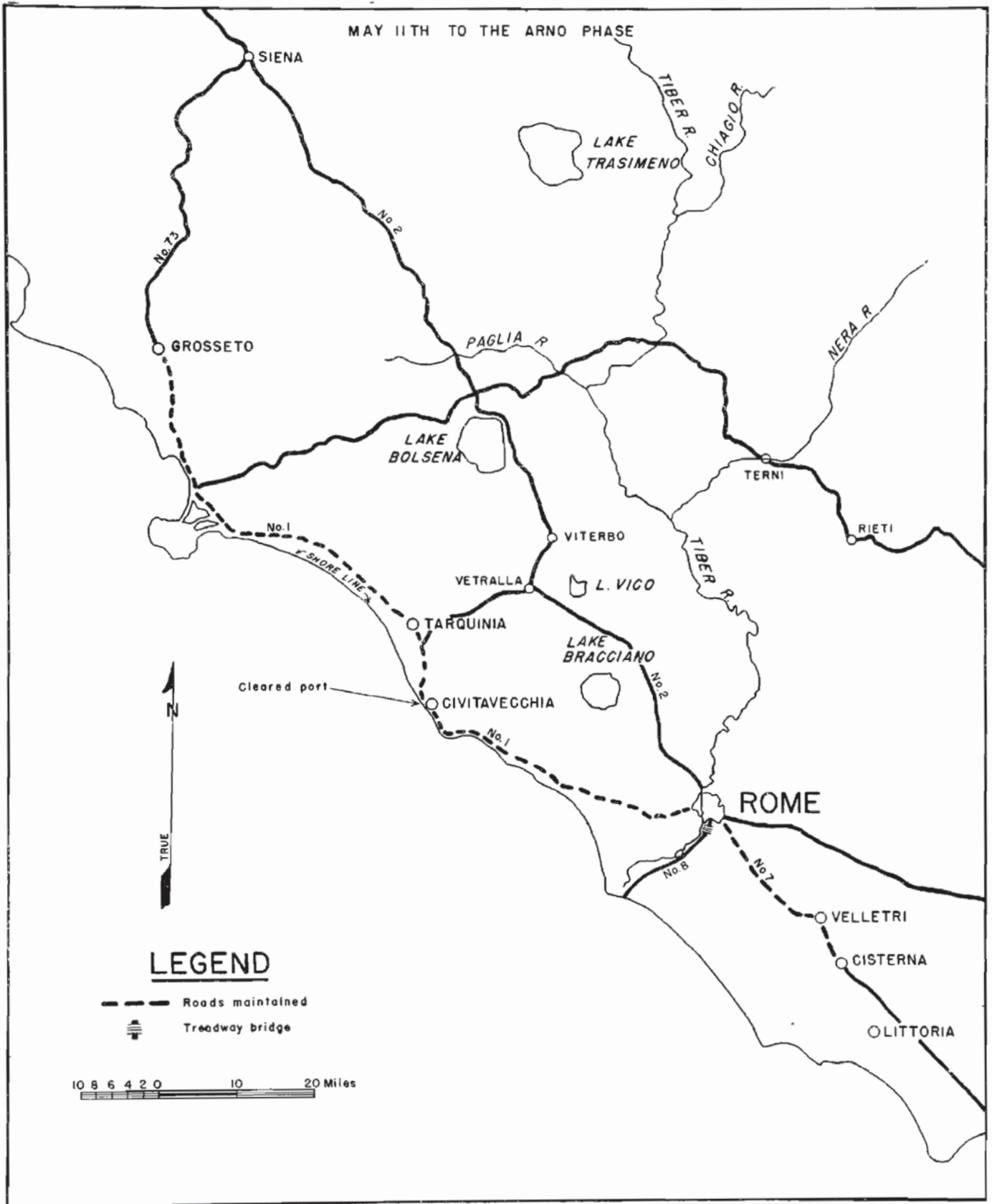
The training was similar to that conducted with the 85th and 88th Divisions. Since the Arno River was at a low stage and since the crossing was planned before high water came, shallow crossing expedients were stressed. Training with trestle treadway bridges was undertaken and the construction of fords and use of winches for pulling vehicles and equipment across streams was further experimented with, until units were thoroughly familiar with several methods of getting across shallow streams.

As the Germans had withdrawn from the Arno River by 26 August and it was evident that a forced crossing would not be necessary, the 19th was alerted to construct bridges across the river to replace the regular bridges, nearly all of which had been demolished by the enemy.

On 31 August, the 2nd Battalion was relieved of all assignments and attached to IV Corps. A new road net was assigned, and the work of clearing rubble from towns, constructing bypasses, making fills and clearing mines, was begun in the Empoli-Pontedera area south of the Arno. The battalion gave support to Task Force 45, 1st Armored Division and the 6th South African Armored Division, until it was detached from IV Corps on 5 September and returned to the 19th Engineer Regiment's control.

36th Engineer Combat Regiment

After the juncture of the two Fifth Army fronts, the 36th Engineers under Colonel T. H. Stanley joined in the forward push to the north, keeping Highway #7 open to traffic and clearing rubble from the streets in Cisterna. The regiment was once again committed as infantry on 31 May south of Velletri. The 1st and 2nd Battalions went into the line, relieving units of the 36th Division, and the 3rd Battalion was assigned as regimental reserve. Elements of the 36th Division bypassed Velletri on the east, then pushed down into the town from the north, while the 36th Engineers pushed up from the south and assisted in taking the town.



36 TH ENGINEER COMBAT REGIMENT
OPERATIONS

36th Engineer Combat Regiment (cont'd).

On 2 June, the regiment reverted to VI Corps reserve. The regimental Command Post moved forward to Velletri. The advance party took four German prisoners at the Command Post site as it arrived. The battalions followed infantry units and were engaged in mine clearance, scouring ravines and culverts for the disorganized enemy, and road reconnaissance. As a result of these operations, one man was killed and thirty-seven were wounded.

Shortly after Rome had been entered, the 3rd Battalion constructed a floating treadway bridge across the Tiber, five miles southwest of Rome. From this point, the regiment was engaged in construction of bypasses, bridges, culverts, and in road maintenance. On 10 June, the 3rd Battalion was relieved of attachment to VI Corps and attached to IV Corps.

On the following day, Colonel Stanley was killed while returning from a bridge site near Tarquinia. He was succeeded by Lieutenant Colonel J. B. Chubbuck. The regiment then moved north to Civitavecchia, and work was started in the town, clearing the streets of rubble and opening all port roads. Many areas to be occupied by evacuation hospitals were cleared of mines, as road maintenance and mine clearance along Highway #1 continued. On 19 June, the regiment was relieved of attachment to IV Corps and attached to the 3rd Division for movement to a training area at a later date.

The next day the unit moved to Grosseto, followed by a second move south to Pozzuoli three days later. Upon arrival, the regiment was assigned to Allied Force Headquarters, attached to North African Theater of Operations for supply and administration, and attached to the Seventh Army for planning and training. This ended the active participation of the 36th Engineer Combat Regiment in the Italian campaign. The unit next went to France with the Seventh Army.

39th Engineer Combat Regiment

The 39th Engineers, commanded by Colonel Thomas C. Green, linked up with the southern front in the sector just northwest of Borgo Grappa, on 25 May. The next day, Company "D" was relieved of its combat duties with the 1st Special Service Force, and was attached to the 133rd Infantry for engineer work. There it remained for three days. By this time, the offensive was moving so rapidly that all companies were taxed to the utmost in the opening of bypasses, bridges and culverts, and in the clearing of mines.

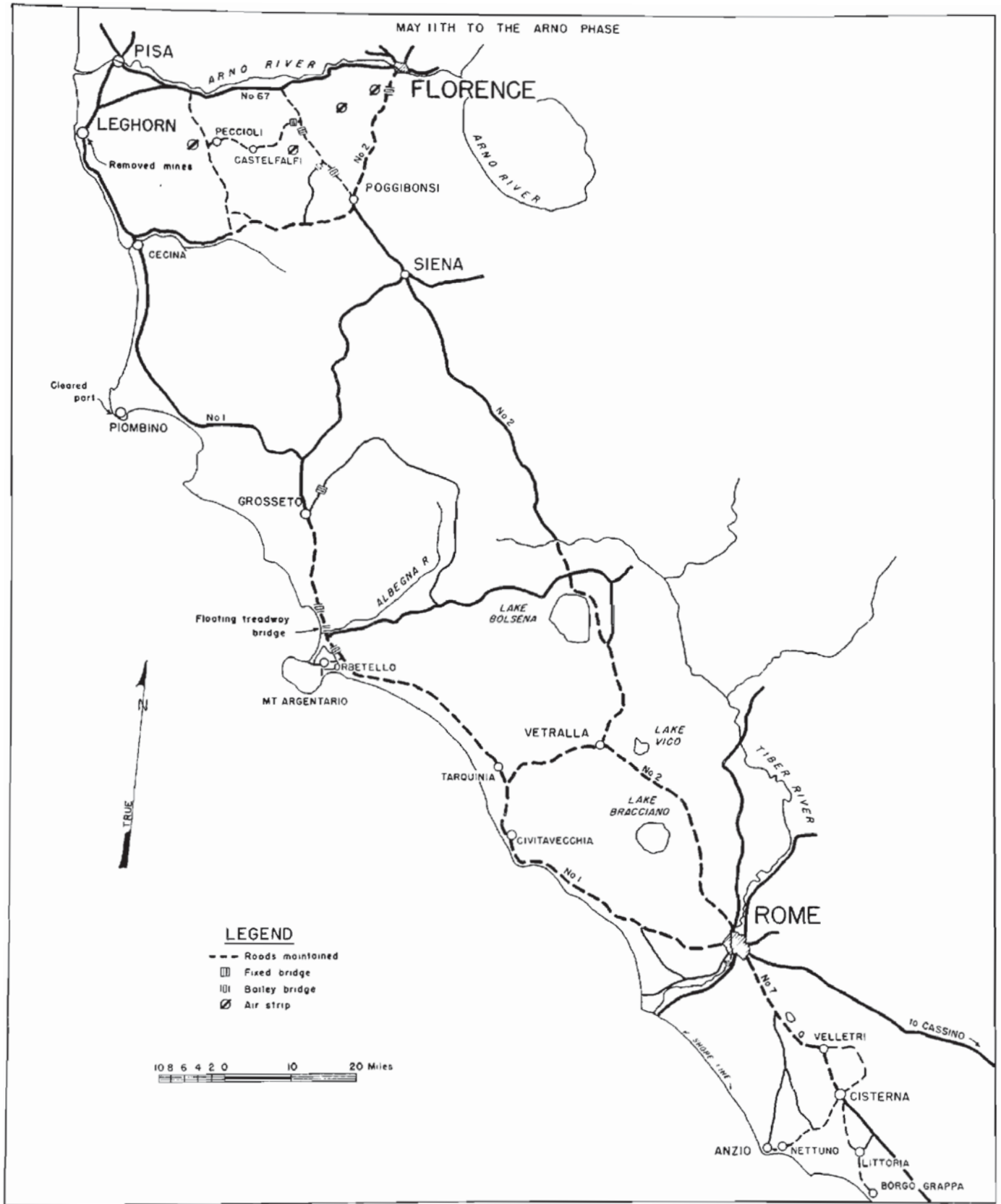
The 39th aided in the construction of the road through the mountains east of Velletri. Artillery, mortar fire and snipers, plus the solidly wooded mountains were all obstacles to the road's progress. Because of the nature of the terrain, it was impossible to bring air compressors into a position where they could be used, so all the trees too large to doze had to be cut with two-man saws. After Velletri was taken, the 39th constructed a 320-foot bridge over the Tiber River, on 2 June. Rome was entered three days later. Immediately afterwards, the maintenance of roads and bridges from Velletri to Rome was extended north to Routes #1 and #2.

Company "A" supported a stream crossing operation across the Albegno River, north of Orbetello. The operation was under way before friendly infantry troops had made a bridgehead. After twelve hours work, a 45-foot bridge was placed over the canal south of the river, a 315-foot floating bridge was built across the river, and a bypass was made which filled in a canal on the far side. As the infantry men arrived while the work was still in progress, Company "A" ferried them across the river. Company "B" opened the road through Orbetello to the island of Argentario, and was the first American unit to arrive there.

On 18 June, after the regiment had reached Grosseto, it was relieved of all work assignments. The next three days were spent resting at Rome; on 22 June it returned to Grosseto. The regiment's new mission was to clear the port of Piombino in conjunction with the 540th Engineer Regiment. On a reconnaissance of the port on 25 June, the engineers preceded the advance elements of the infantry and were subsequently fired upon by Partisans, who mistook them for the enemy.

In Piombino, the port and all berths were completely demolished. Company "A" removed 5,000 tons of scrap steel and pig iron from the major pier in two days. Hundreds of pounds of demolitions were used to remove three 70-ton gantry cranes, railroad tracks, flatcars and engines, as well as buildings, from the pier and the approaching roads. Three cutting sets were in operation continuously on these obstacles. Pier cribbing and flooring was done and much work accomplished under water, using diving masks and air-powered tools.

Three days after the work had started, on 25 June, ten LCT's could be loaded and unloaded head-on in the port, and one coaster accommodated alongside. By 2 July, this capacity had been increased by space for fifteen additional LCT's, three LST's and three DUKW's. 96,000 cubic yards of debris was moved in ten days. After the port was opened, the regiment continued working for the Port Operation unit for a month.



SECTION V

39th Engineer Combat Regiment (cont'd).

During the latter part of June, 400 blood plasma stands made out of 3/8-inch pipe were constructed for the 33rd Field Hospital. The motor pool constructed five water sprinkler systems and mounted them on 4-ton trucks for the spraying of the port roads, and three flag poles for military cemeteries, as well as various other items, such as a shift for a GMC water pump, a carburetor needle valve and float pins, sector arm bushings for jeeps, trailers, and a wire rolling rack. These latter articles either required special construction or were not available through normal methods of requisitioning. About the largest item built was a 1500-pound pile driver which was mounted on a Buckeye crane.



LCT HARDS BUILT BY 39TH AT PIOMBINO

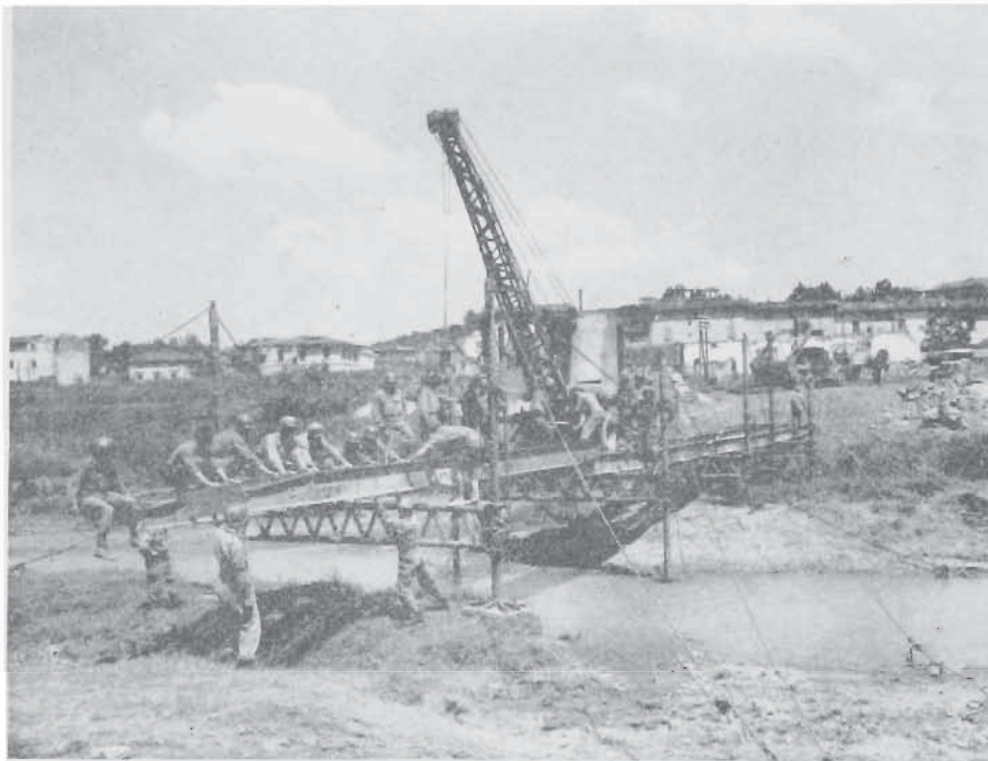
As additional work, the 39th aided in the construction of the Red Cross Club in Piombino, and with two D-7 bulldozers made a 4-mile fire-break trail in the mountains outside of the city, where a large uncontrolled brushfire had been threatening the town. One platoon moved to Leghorn on 20 July and began removing mines in the town. A pier was built over a sunken ship in the harbor, a railroad spur was reconditioned, and four steam cranes were refitted and put into operation. On 27 July, the 39th was relieved by the 175th Engineer Regiment and attached to II Corps. While working on the ports, one platoon cleared an area for Army Headquarters Command Post at Cecina, and other troops built firing ranges near Piombino.

When the regiment was attached to II Corps on 27 July, road work was again its assignment, mainly in the Peccioli, Montarno, and Castelfalfi sectors. This work continued through August, and September. From the time of the breakthrough from the beachhead, the 39th constructed twelve Class 40 Bailey bridge, totalling 1,230 lineal feet, fourteen Class 40 timber bridges totalling 632 feet, four treadway bridges totalling 675 feet, twenty-seven culverts, twenty-eight bypasses, two fords and five cub airstrips.

SECTION V

39th Engineer Combat Regiment (cont'd).

Company "B" spent the period from 17 August to 5 September in training. Bridges were stressed, and trestle treadway, floating treadway, infantry footbridges and Bailey bridges utilizing the Bailey pier were studied. As September arrived, Company "D" was occupied with the construction of a Class 40, 410-foot triple-double Bailey bridge across the Arno west of Florence, and Companies "D" and "F" were busy clearing the city of rubble and debris.



39TH BUILDING TRESTLE TREADWAY NEAR CASTELFIORENTINO

540th Engineer Combat Regiment

On 4 June, the 540th Engineer Regiment, commanded by Colonel George W. Marvin, was relieved from assignment to the Port of Anzio and its duties were assumed by a port group. Two days later the unit was released from all work in the Anzio-Nettuno area. Following the fall of Rome on 5 June, advance elements of the regiment (Company "A" and one platoon of Company "C") moved into the Rome area and engaged in disease prevention (dusting) and sanitation. The unit also had to check buildings chosen for Fifth Army Headquarters for mines and booby traps.

With the capitulation of the town and port of Civitavecchia, Colonel Marvin was designated Port Commander and the regiment moved in and began preliminary work in clearing the rubble and wreckage and in removing mines and demolitions. Landing craft hards were constructed and the harbor was cleared to receive Liberty ships.

Four days after work had begun on the port of Civitavecchia, the first cargo craft, an LCT, was unloaded. Five days later, the regiment was assigned the task of clearing the port of Piombino for Allied use. Before the town had fallen, the 1st and 2nd Battalions moved into the vicinity of Grosseto (less Headquarters and Service Company).

At noon on 25 June, shortly after the termination of organized resistance, both battalions moved into Piombino and began reconstruction of the port. When the regiment entered the town, there was still active rounding up of rear guard German defenders in progress. Work in Piombino was much like that accomplished in Civitavecchia, and after five days of repair the port was once again in use.

SECTION V

540th Engineer Combat Regiment (cont'd).

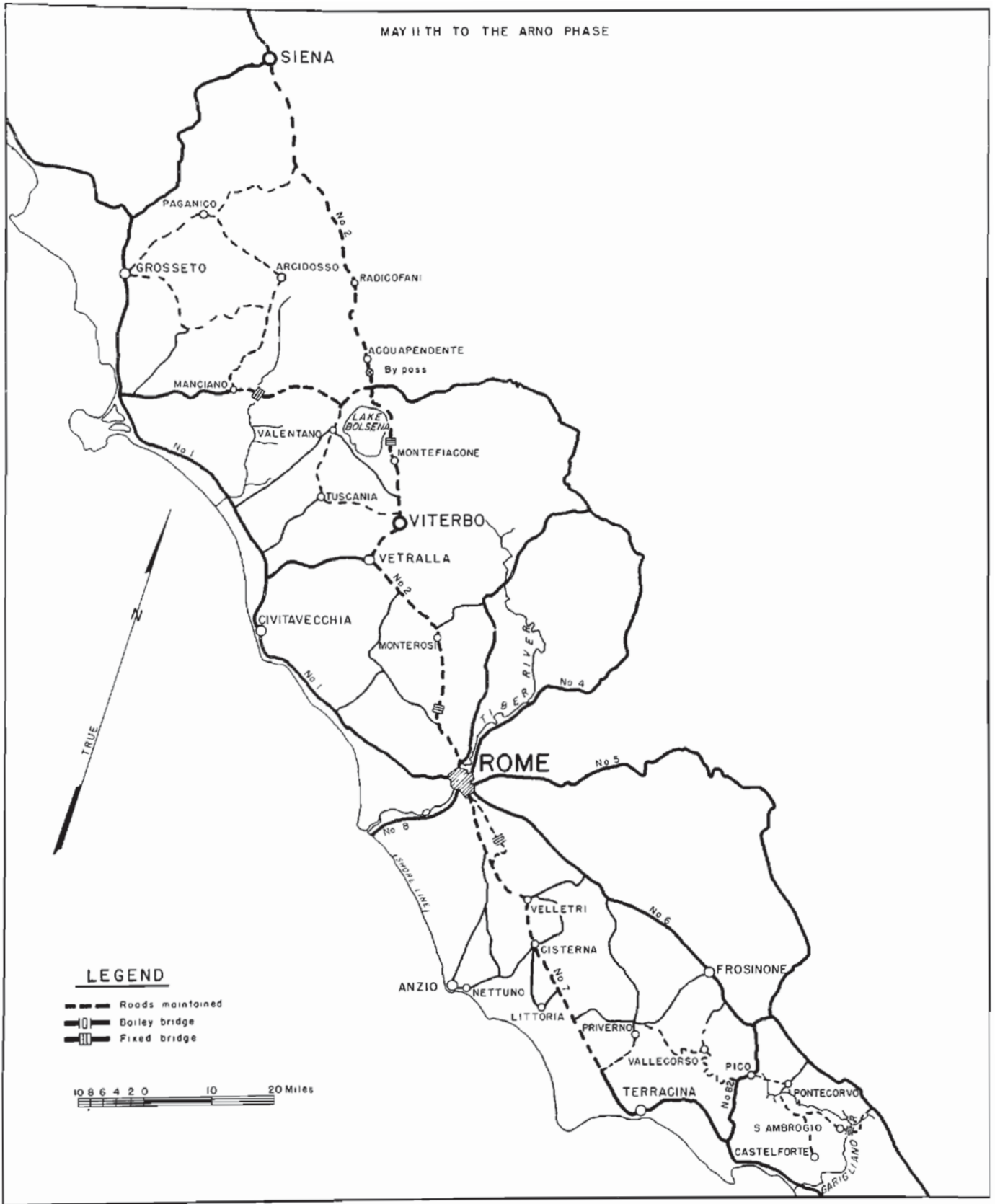
On 27 June, the 540th Engineer Combat Regiment was relieved from assignment to Fifth Army and assigned to Allied Force Headquarters. Having completed its work in Piombino, the regiment moved to a temporary bivouac located approximately five miles north of Rome. On 1 July, preparations were completed for movement to the Invasion Training Center area in the vicinity of Salerno.

With the culmination of the training program in Southern Italy, initial combat loading of organizational equipment of the 540th Engineer Beach Group was undertaken. Embarkation of personnel for the "Anvil" operation (assault landings in Southern France) was completed 10 August 1944.



540th CONSTRUCTING PIER AT CIVITAVECCHIA

MAY 11TH TO THE ARNO PHASE



334TH ENGINEER GENERAL SERVICE REGIMENT OPERATIONS

SECTION V

344th Engineer General Service Regiment

The morning of 11 May found the 344th Engineer General Service Regiment, commanded by Colonel R. H. Cameron, ready to support the French Expeditionary Corps' attack across the Garigliano River and the mountainous country beyond. Roads had been prepared for hospitals, ammunition dumps and ordnance maintenance units within the regimental section, and roads and bridges, including a number of new roads and trails to the Garigliano, had been completed. On 15 May, the regiment took over the maintenance of four main bridges across the Garigliano, and of the roads leading to the several crossings. Then followed in rapid succession, as the campaign advanced, the repair and maintenance of roads and stream crossings behind the advance of the French Expeditionary Corps. The general road net was between Highway #7 and Highway #6 then up #7 to Rome, #2 to Viterbo, and around Lake Bolsena towards Siena.

The work before Rome was, in general, along partially improved mountain roads and included preparation of bypasses, removal of minefields and restoration of mine-cratered roads. The work beyond Rome, usually on better roads, included in addition, the installation, as well as removal of Bailey bridges and the construction of heavy culvert, fills and fifteen semi-permanent bridges. On 30 June 1944, the 344th Regiment was withdrawn from its operations and moved to Civitavecchia, where it embarked and moved by sea 1 July to Pozzuoli. Arriving there on 2 July, it was relieved of assignment to the Fifth Army and assigned to the Seventh Army, for participation in the invasion of Southern France.

175th Engineer General Service Regiment

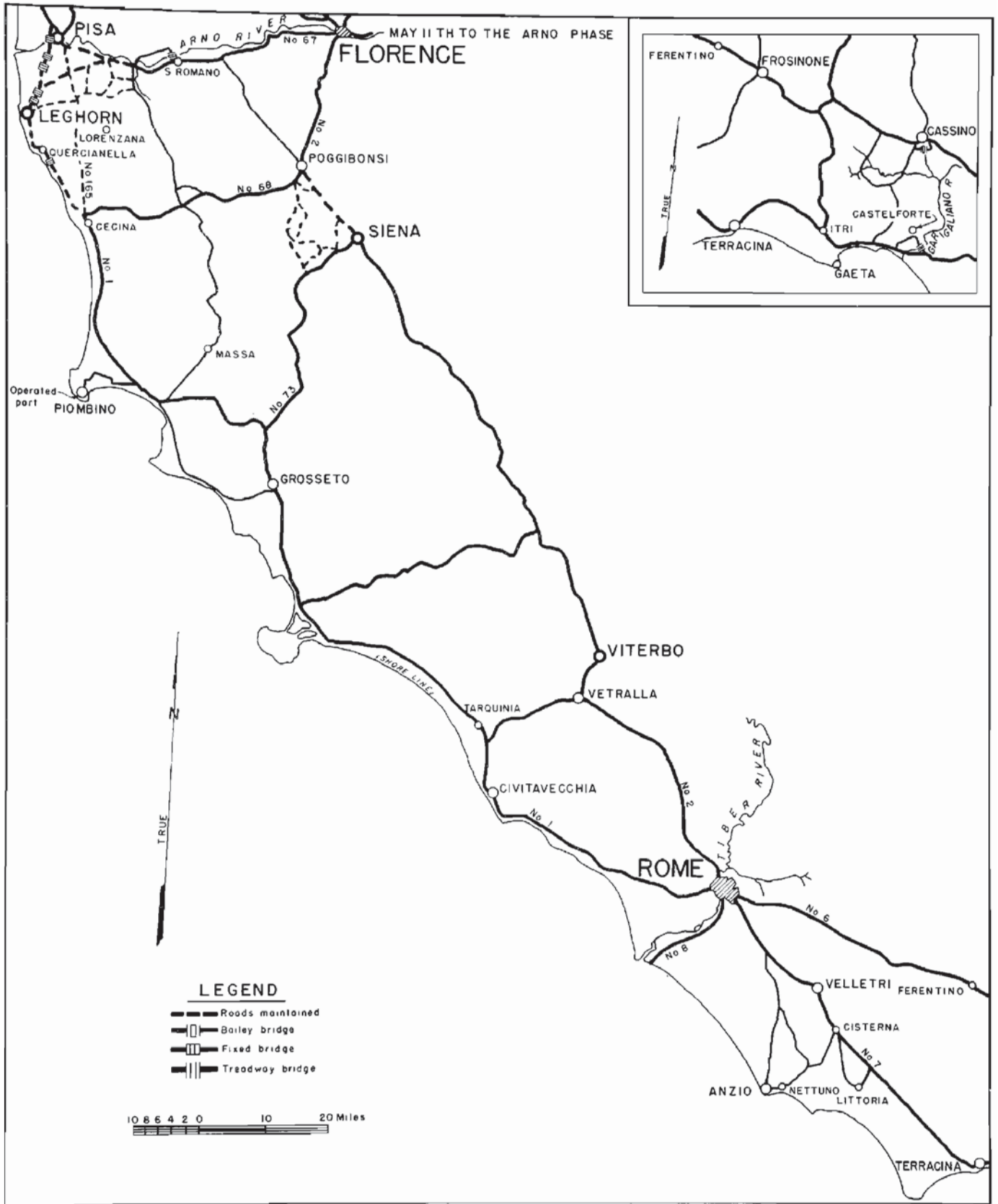
The 1st Battalion of the 175th (including Company "B", which arrived from Sicily on 15 May) did road maintenance work and assisted in the movement of the Army Command Post during the advance on Rome. On 11 May, Company "F" was called upon by the French Expeditionary Corps to span the Garigliano River below Castelforte, with a 165-foot M-1 treadway bridge. About 1500 hours, Brockway and 2½-ton trucks assembled in a small forest about two miles south of the river. At 2300 hours, the artillery barrage began, and it was hoped that the infantry would have the town of Castelforte by morning, so that the bridge could be built. But the enemy clung on, and only at 0330 hours on 13 May did the tactical situation permit the construction to begin.

In the erection of this bridge it was planned that the French engineers would have the abutments in, prior to the arrival of the bridge train. On arriving at the bridge site, however, it was discovered that the abutments were not ready. The platoon of Company "F" inflated all of the pontons, but could not proceed with the bridge any further. At 0600, the abutments not being ready, the platoon moved back to the woods with all its equipment. At 0700, the artillery was ordered to lay smoke in the town and the surrounding hills. The Chemical Warfare Service assisted with smoke pots and under this cover, the bridge was built in five hours. A total of 165 feet of treadway was laid. About twenty-five tanks immediately went over the bridge. The following two days and nights, the bridge was bombed and strafed, but never hit. The bridge was removed a week later.

Company "F" was also called upon to replace a 200-foot Bailey bridge across the Garigliano River below Cassino, which had failed during construction. The Bailey bridge was replaced with a 210-foot treadway bridge. Many Bailey and treadway bridges were delivered by the company for the French Expeditionary Corps during the advance on Rome. A few casualties were sustained during this period, both by personnel and equipment. The company was relieved of operation of the bridge train about 1 July 1944.

After the liberation of Rome, one company of the regiment was attached to the Rome Area Command to aid in the repair and construction of utilities and removal of a tunnel block. The tunnel was 900 feet long, with a 40-foot roadway and a height at center of thirty-five feet. At each end, a masonry wall with passageways had been built. These walls were thirty-five feet at the base, and tapered to about four feet at the arch ring. They were built of brick and stone. Inside the tunnel, at two places, double walls four feet thick had been built. All the walls were ruined, without, however, leaving a mark at any place on the arch ring.

During the first few weeks of the Rome advance, Companies "D", "E" and "F" continued the operations which they had been assigned to before the attack had started. Company "E", which had been employed as a II Corps Bridge Train, received orders from the Corps Engineer on 19 May to deliver 100 feet of Bailey bridging to the 310th Combat Engineers, near Itri. Upon arriving at the bridge site, about 200 yards from the town, it was noted that the infantry was still in the town's outskirts, thus placing the bridge site under continuous artillery and small arms fire, making it difficult as well as hazardous to erect the bridge. Work was initiated immediately, however, and the job was completed without any casualties, allowing the reconnaissance and Tank Destroyer detachments to enter the town to assist the infantry.



**175 TH ENGINEER GENERAL SERVICE REGIMENT
OPERATIONS**

175th Engineer General Service Regiment (cont'd).



175TH BUILDING BRIDGE UNDER BAILEY NEAR LEGHORN

As the Fifth Army advanced through the Pontine Marshes, Company "E" transported bridge after bridge to span the numerous canals on Highway #7 between Terracina and Cisterna. Company "E" continued operating as a bridge train during the drive on and beyond Rome, until it was relieved at Ravi on 1 July.

Headquarters and Service Company continued to operate the Engineer Equipment Pool until about 1 July. At that time, the equipment pool was dissolved and the equipment turned over to the newly formed 2750th Engineer Light Equipment Company. Company "D" of the 175th remained attached to the Engineer Supply Section until 5 July. On 29 May, the Bridge Depot Platoon had moved to a new site near Itri. By 27 June, Engineer Depot E2-11 and Bridge Depot E2-12 had been cleared of all materials, stores and equipment. Company "D" was then relieved of this assignment and returned to regimental control.

In early July, the regiment moved to the vicinity of Siena and Poggibonsi for road maintenance and bridge construction in close support of the French Expeditionary Corps. This assignment covered a three-week period, after which time regimental headquarters and the 1st Battalion moved to Piombino and relieved the 39th Engineer Regiment in the operation of the port. The port of Piombino was maintained for a week, during which time repair of the docks was continued, gang planks were constructed and berths, piers, and unloading platforms cleared. Also, water pumps were operated and the oil pipe line maintained.

The 2nd Battalion was assigned the mission of opening Route #1 from Cecina to Leghorn for traffic. The accomplishment of this latter mission involved the clearing of rubble and debris from the road, construction of bypasses, and erection of Bailey Bridges, and finally the construction of ten culverts with fills and eight fixed timber and steel bridges totalling 735 feet in length.

The most interesting of the fixed bridges built along this section of Highway #1 was a 145-foot, four-span trestle bridge a short distance south of the village of Quercianella. A survey of the site disclosed a total gap of 145 feet, with a very deep gorge in the center. By utilizing the remnants of the masonry abutments of the original arch bridge, a total clear center span of 71 feet was required. No girders of this length were available, so it was determined to use Bailey bridge trusses. A total of eight Bailey trusses spaced two and one-half feet apart, center to center, across the width of the bridge were used, each truss composed of seven, 10-foot panels. I-beams were welded to the top chord of the trusses to act as floor beams, and 29 of them were spaced evenly throughout the span.

SECTION V

175th Engineer General Service Regiment (cont'd).

The trusses were further tied together with angle iron sway bracing welded to the bottom chords of the trusses. Double bent timber piers were constructed on each abutment to support the Bailey trusses. Two additional spans of 25 feet and 15 feet were constructed on the north side, and supported on a single timber bent. I-beams were used as stringers in these spans. A span of 32 feet, using similar construction methods was built on the south side to complete the bridge. To facilitate the transportation of material and the placement of trusses during construction, a cableway with cable car had been erected across the gap.

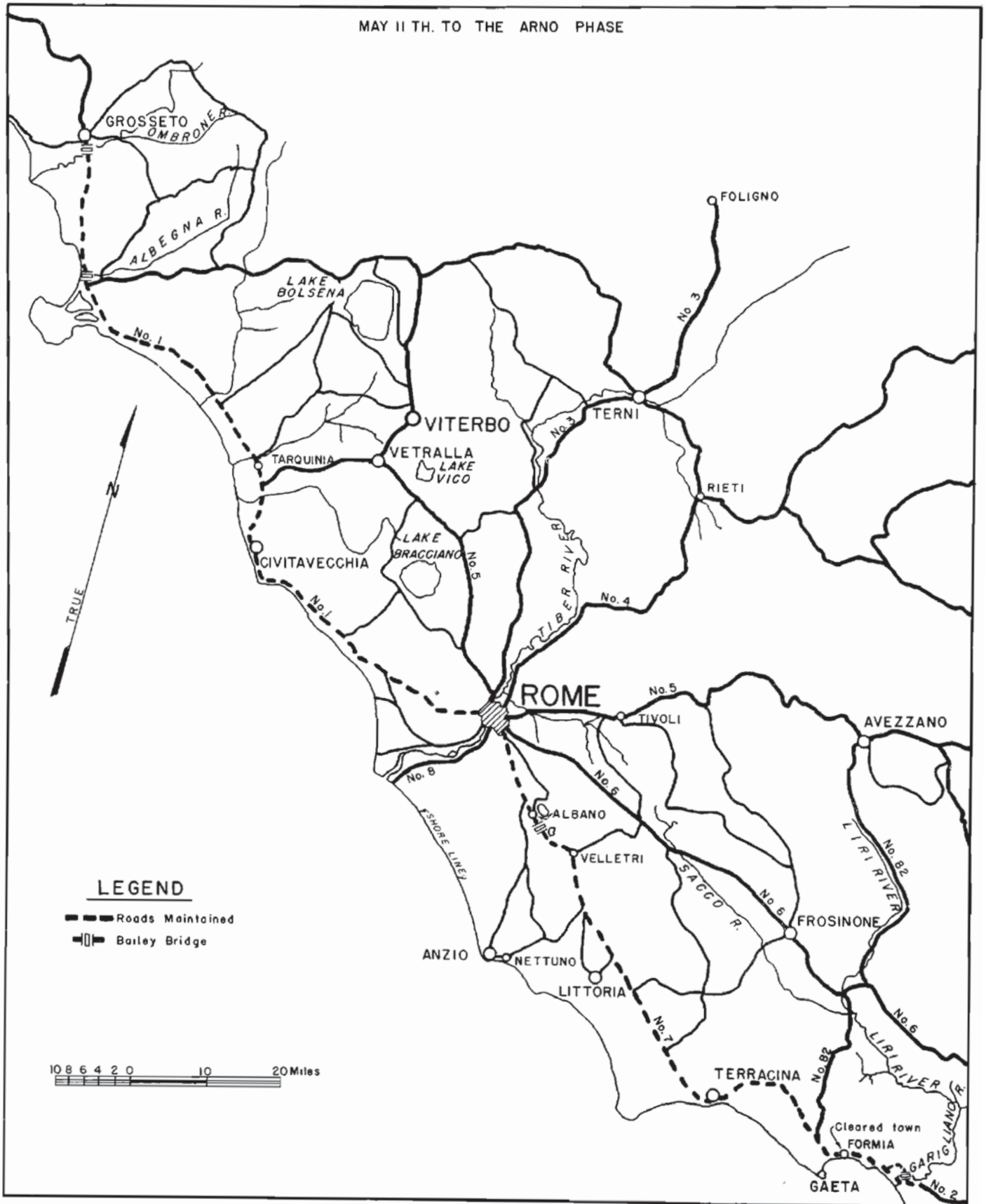


CABLE CAR USED BY 175TH IN CONSTRUCTION OF BRIDGE NEAR LEGHORN

After turning the operation of the port over to the base section, regimental headquarters moved to Lorenzana and the 1st Battalion took over the maintenance of Route #165, which included the construction of three large culverts. Other secondary roads in this area were also maintained. Upon completion of this work, the 1st Battalion moved to Route #1 and constructed five fixed bridges on that highway between Leghorn and Pisa.

The 2nd Battalion, after completion of its work on Route #1 south of Leghorn, took over maintenance of secondary roads east of Route #1 and south of the Arno River. In early September, a 530-foot Bailey bridge was constructed across the Arno River near San Romano. It was of triple-single construction, and

MAY 11 TH. TO THE ARNO PHASE



343 RD. ENGINEER GENERAL SERVICE REGIMENT OPERATIONS

SECTION V

175th Engineer General Service Regiment (cont'd).

supported by four stone masonry piers which had supported the original bridge. Plans were then made and materials assembled for a fixed timber bridge across the Arno River at Pisa, and work was begun on opening Route #67 as a main lateral supply route from Leghorn to Florence, in preparation for the opening of the Gothic Line offensive. The 175th was commanded throughout this period by Colonel J. H. Trescott.



TIMBER TRESTLE BRIDGE WITH BAILEY GIRDERS BUILT BY 175TH ON ROUTE #1

343rd Engineer General Service Regiment

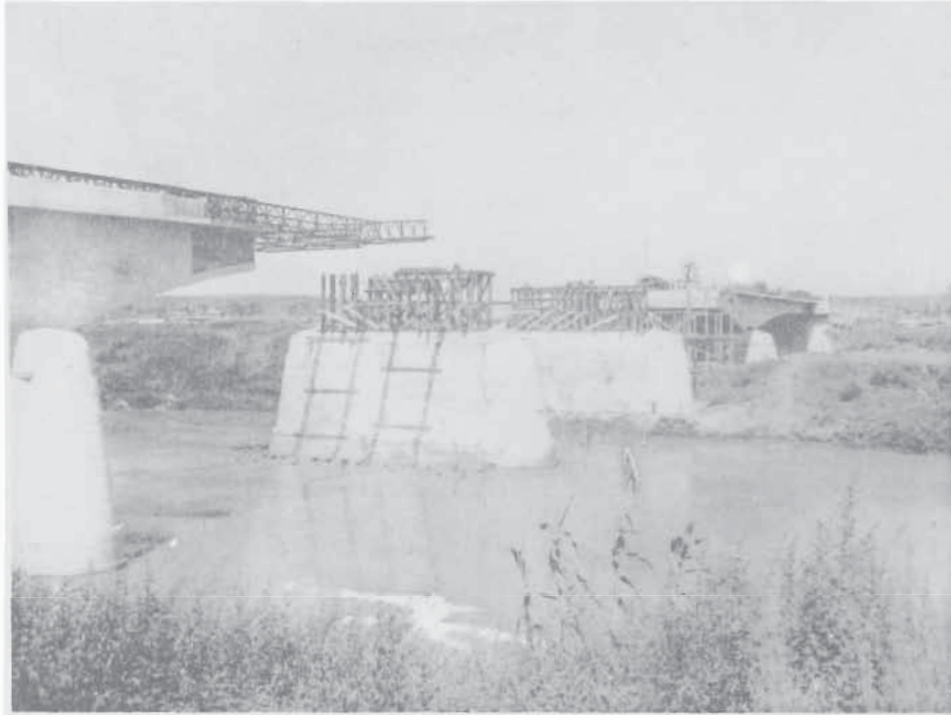
As the army drove northward to Rome and beyond, the 343rd Regiment under Colonel R. B. Dunbar supported II Corps, helping to keep the routes of communication open. This included clearing away debris at various locations and constructing a Bailey bridge overpass to alleviate traffic congestion on the Albano-Genzano bypass. The job of marking the extensively mined areas of the old Anzio beachhead area was undertaken by the 343rd. It was quite a problem, for besides the fields laid and relaid by the Germans, there were often-changed and sometimes partly-cleared friendly fields.

North of Rome, the regiment again was assigned road maintenance. The unit took over routes from VI Corps and constructed bridges across the Albegna and Ombrone Rivers south of Grosseto. Before this work was completed, the 343rd General Service Regiment was relieved of assignment to the Fifth Army, and left for the Naples area over the same roads on which it had worked for nine months. After further training and after being re-supplied and re-equipped, the regiment went on to the Southern France Campaign.

SECTION V

337th Engineer General Service Regiment

During the period from the attack on Rome until the Arno was crossed, the 337th Engineers under Colonel D. Lee Hooper maintained approximately 1,000 miles of primary and secondary roads. A large percentage of this mileage consisted of main communication routes, which required two-way Class 40 and one-way Class 70 traffic. The main communication routes included Route #7 from the Garigliano River to Velletri with lateral roads; Route #1 from Rome to junction of that highway with Route #68; Route #68 from Cecina to its junction with Route #2 near Poggibonsi; Route #2 to Florence.



337TH'S TIBER BRIDGE BEFORE LAUNCHING

Approximately 6,000 cubic yards of rock was produced to maintain these roads, most of which was used on bridge approaches and bypasses. Where dust was a hazard on main routes, the roads were watered and in some cases oiled. In order to eliminate left turns and traffic congestion at the intersection of Route #1 and Route #159 (near Piombino), a modified cloverleaf was constructed utilizing native roads wherever possible. Two overpasses were constructed, using log cribbing for abutments, dirt backfills, and 50-foot, double-single Bailey bridges to span Route #1. Eight thousand eight hundred man-hours were required to complete the assigned work. A single overpass was constructed at the intersection of Route #1 and Route #156 near Follonica to eliminate left turns for traffic coming from the north on Highway #1.

Thirty-five semi-permanent wood and steel stringer bridges with an aggregate length of 2,150 feet, and 23 Bailey bridges with an aggregate length of 2,760 feet, were constructed during the same phase. All bridges were of standard design and construction, utilizing native material whenever possible. Stringers consisted of I-beams, channel iron, special 32-foot built-up girders, and in one instance, 67-inch built-up girders taken from the Bagnoli Steel Mills near Naples. Pile bent and trestle bent span supports in general accordance with army bridge design were used.

SECTION V

337th Engineer General Service Regiment (cont'd).

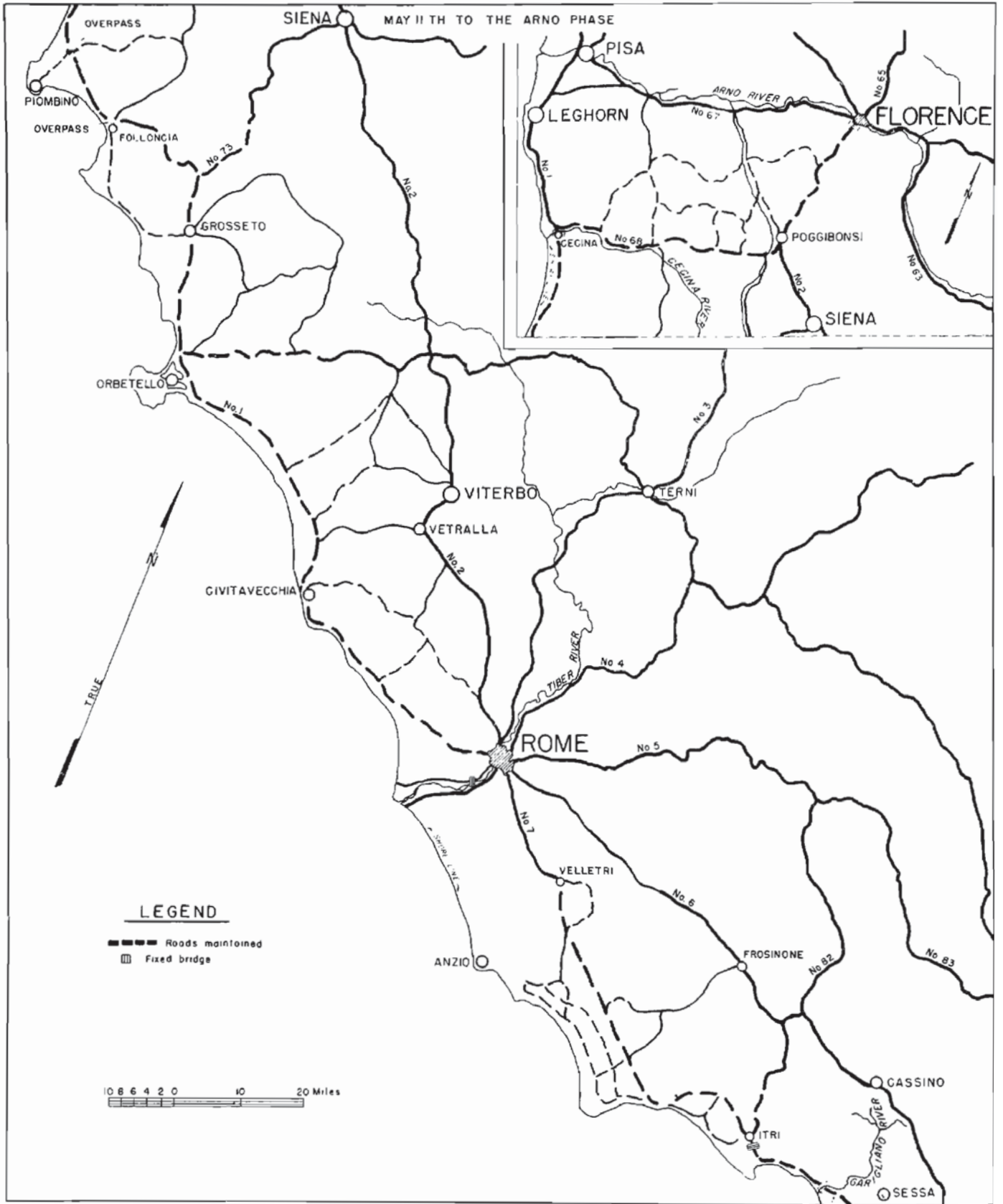


SMALL BRIDGE NEAR GROSSETTO CONSTRUCTED BY 337TH

The 337th had the mission of replacing the destroyed bridge on Highway #7 across the Garigliano River. Reconnaissances and plans for the bridge's erection had begun in January, and a dump for the materials had been established in the vicinity of Sessa. Assembly and pre-fabrication of the materials had been started long before work began in May. The bridge was a four-span, 228-foot, two-way, Class 40 type built at the original bridge site. Two pile piers were required with a third timber pier constructed on an existing pier base, to support the steel stringers. The work which began on 17 May was finished in 148 hours, on 23 May.

The bridge constructed on Route #7, from 29 May to 3 June, at Itri, was also a two-way Class 40 bridge. It was a three-span, 92-foot, trestle pier bridge, with built-up steel stringers, prefabricated at Bagnoli. The road level was sixty-two feet above the ground line, making it necessary to brace the pier into the abutments. To facilitate the movement of supplies west around Rome, the 337th Regiment also built a crossing on the Tiber, just a short way east of the Army ponton bridge. The crossing consisted of one, one-way, Class 70, triple-double, and one, one-way, Class 40, triple-single Bailey bridge, each 270 feet long. The site used was an unfinished concrete arch bridge, part of the road net for the Italian World's Fair.

Mine clearing and checking for minefields and booby traps were a major project throughout this advance. The trained mine crews were constantly in demand. Extreme care and discipline was required to keep accident and casualties down to a low percentage. D-7 tractors and power driven rollers were used to clear fields of wooden box mines--they simply rolled over the mines and set them off.



337 TH ENGINEER GENERAL SERVICE REGIMENT
OPERATIONS

SECTION V

337th Engineer General Service Regiment (cont'd).

The mine teams worked on sixty-four assignments in all. One of these jobs was to clear a right-of-way for the 785th Engineer Pipe Line Company (a Peninsular Base Section unit), from south of the Garigliano River to Terracina. The streets of Gaeta were cleared of debris, mines and booby traps. A type of enemy mine not found before by the 337th was the "R" mine. While transporting a load of these to the Engineer Dump, 30 of them exploded, killing the driver and assistant driver. The regiment's mine instruction team gave demonstrations, lectures and instruction in clearing and marking minefields to seven units during the summer months.

Twenty-three medical installations were worked upon and other assignments included the construction of entrance and access roads and bridges, mine clearance, road oiling, construction of tent frames, preparation of landing strips, blasting sump holes and construction of black-out frames. During this phase, the regiment performed eighty-six other projects for different units in the theater, which took approximately 52,500 man-hours.



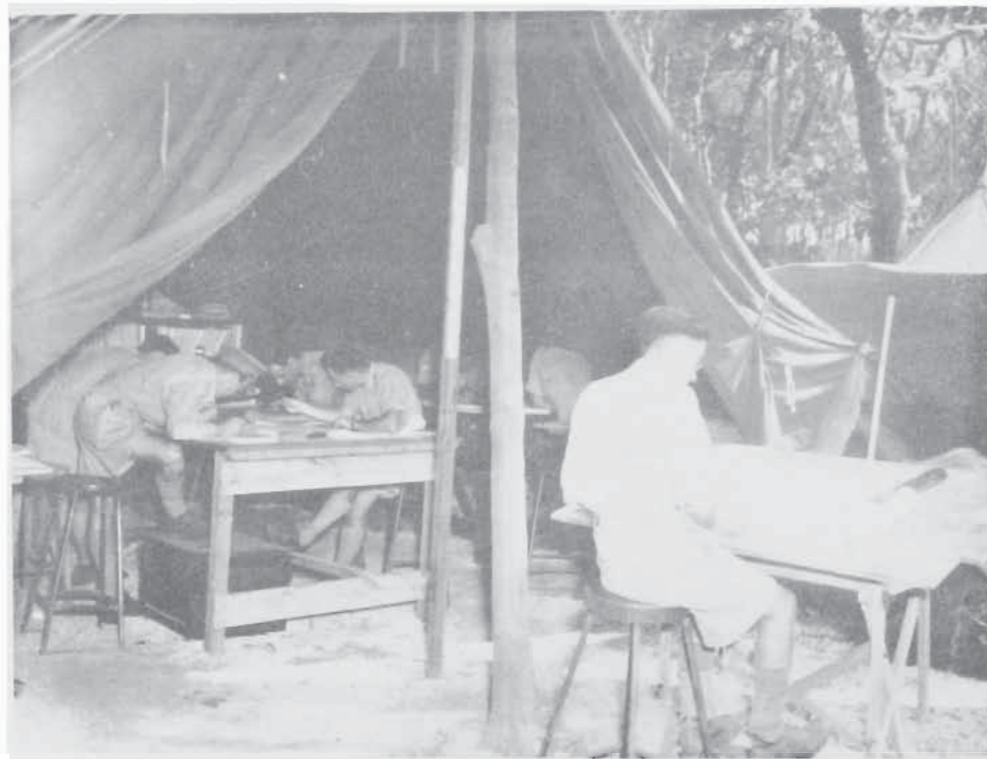
337TH'S BRIDGE AT CECINA

These assignments included dismantling "Damiano Bridge" across the Garigliano River, oiling roads, repairing levees, maintaining air beacons, removing treadway bridges, making traffic counts, setting up Fifth Army Command Posts, opening ditches and canals for malaria control, clearing sites and constructing roads for Quartermaster dumps and Ammunition Supply Points.

A Timber Bridging School for the British was conducted by the 337th. Two classes were held, one from 1 August to 16 August, the second from 28 August to 7 September, during which time, thirty officers and sergeants of the British Army were taught the American Army methods of fixed bridge construction. Each course was divided into four phases. The first phase was a field trip and inspection of bridges, paying close attention to the design and construction and condition of these bridges after they had been subjected to heavy traffic and high water. The second phase pertained to theory and design of the type of semi-permanent wood and steel bridges being built in the theater.

337th Engineer General Service Regiment (cont'd).

The third phase was devoted to the actual design of bridges that the 337th was to construct. The students were required to make their own design of these bridges, using American methods. The fourth phase was the study of construction methods in the field by observing bridges currently under construction by the regiment. One of these schools was in progress, and some of the other elements of the 337th Engineer General Service Regiment were occupied with the construction of the Florence bridge as the summer phase of the Italian campaign drew to a close.



337TH'S TIMBER BRIDGE SCHOOL FOR BRITISH

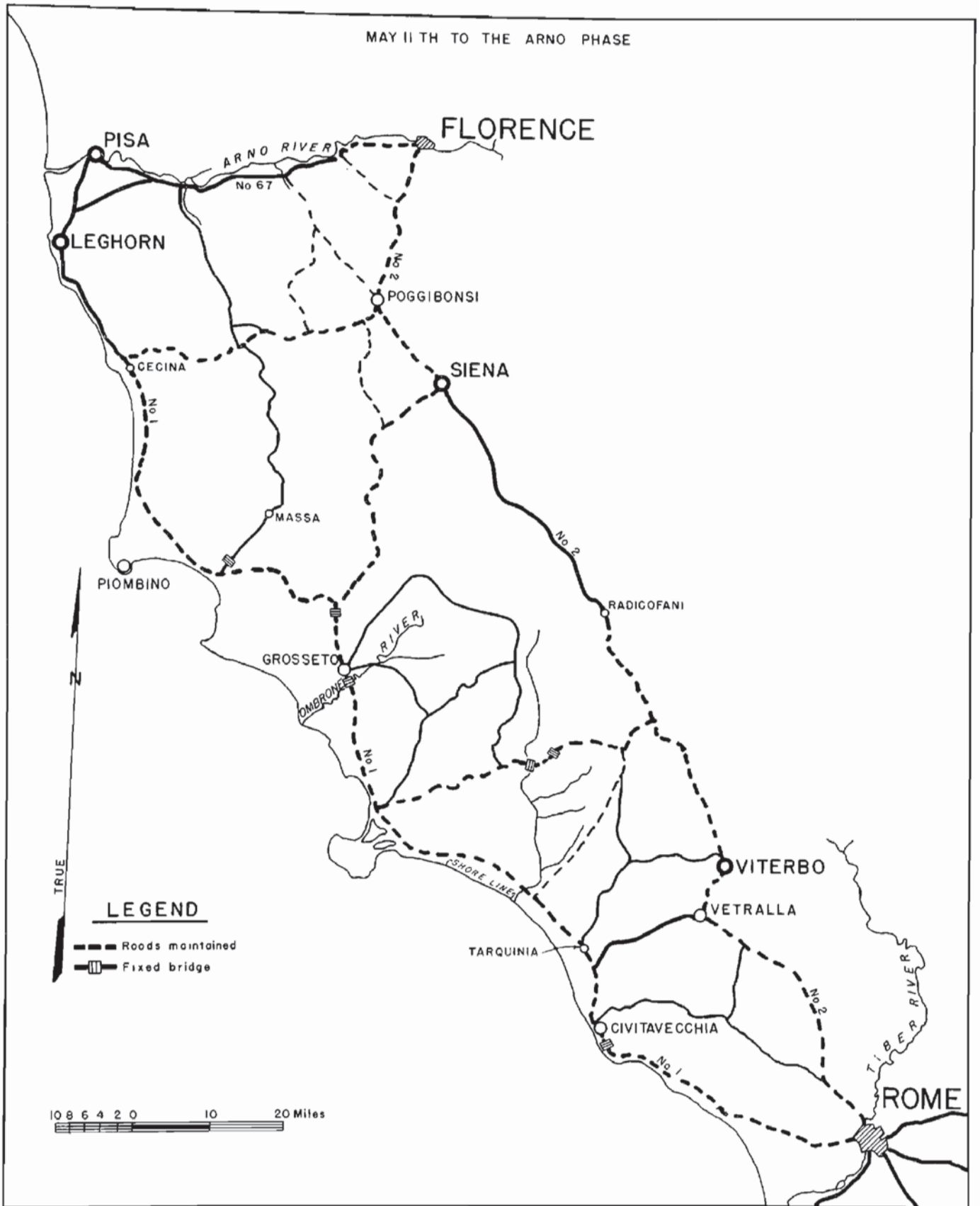
92nd Engineer General Service Regiment

In the rapid advance after the Hitler Line was broken, the 92nd Engineer General Service Regiment, commanded by Lieutenant Colonel George W. Bennett, operated in the rear in the Army area. In general, its duties were to keep the supply routes open for high speed traffic (the road net at one time embraced 180 miles of roadway) and to dismantle and return to the depots the tactical bridging left by the advance units. Thirty-nine Bailey bridges had been removed and returned to the depots by the regiment by the time the Arno was reached, the longest being a 350-foot, double-single floating Bailey (the longest fixed Bailey was a 310-foot, triple-single). The regiment itself, however, constructed only a few Bailey bridges, the largest a 130-foot, double-double, the shortest a 40-foot, single-single.

Highway #1 was maintained from Rome to Cecina, Most other assignments were further inland. Highway #2 was maintained from Rome to Radicofani and from Siena to Poggibonsi; Routes #68 and #73 from Highway #1 to #2; plus secondary roads to fill in the complete network. Eight fixed bridges were constructed, including one over the Ombrone River, which was the longest semi-permanent bridge erected by Fifth Army troops up to that time.

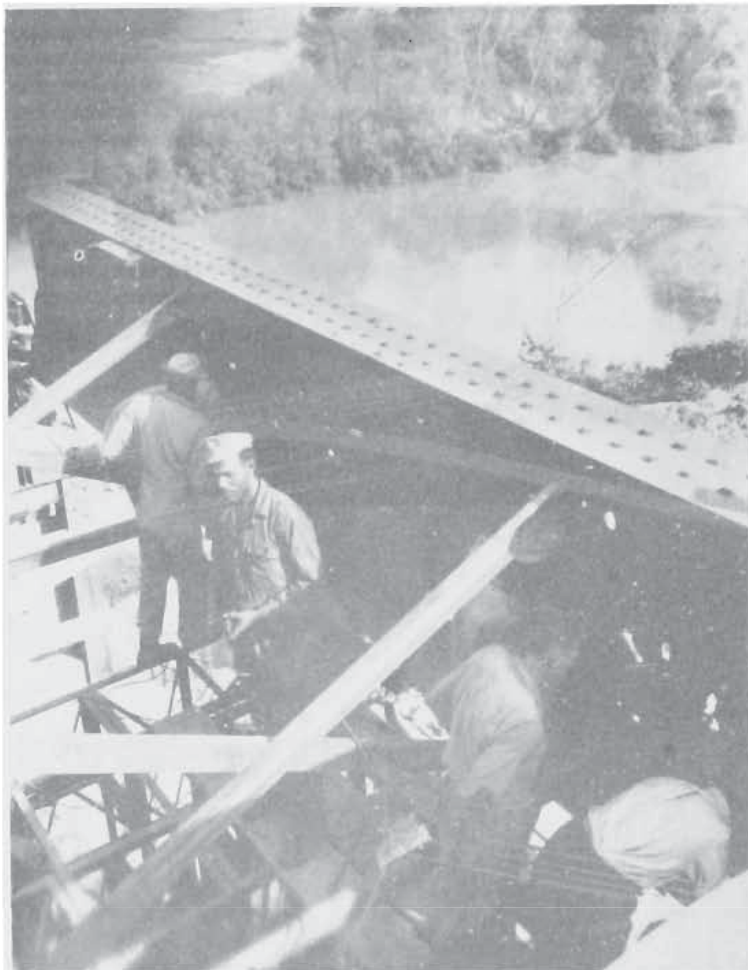
A six-hundred-thirty-foot gap, the result of air bombardment and enemy action, existed over the Ombrone River on Route #1 near Grosseto. A temporary bypass and a small low-level bridge had been constructed in the early stages of the advance, but autumn rains were expected and the bypass was not considered adequate. Three hundred feet of dirt fill was bulldozed up to the original bridge level and a 330-foot timber trestle, steel stringer bridge constructed. Three 270-foot steel girders, 62 inches high, were prefabricated and used for the three main spans.

MAY 11 TH TO THE ARNO PHASE



92 ND ENGINEER GENERAL SERVICE REGIMENT
OPERATIONS

92nd Engineer General Service Regiment (cont'd).



92ND ENGINEER BRIDGE ACROSS OMBRONE UNDER CONSTRUCTION

Racing against time and the elements, the bridge was opened to traffic just three days before torrential rains caused the river to flood and wash away the small bridge previously used. During the advance to the Arno River, the 92nd constructed 100 prefabricated steel and wooden hexagonal culverts for combat engineer units and also installed 12 of them itself.

Mined areas were checked for hospitals, ordnance and engineer dumps, and Fifth Army Headquarters. Paths to bodies were cleared through minefields for the Graves Registration Service, both along the Garigliano River and at Anzio. Two crews did practically all the mine clearance work done by the regiment. One crew consisted of an officer and five enlisted men, the other of one officer and seven enlisted men.

The first crew found about 4,000 anti-tank mines, including Tellermines, German box mines, as well as over 1,000 "S" mines and hundreds of Schumines. In one field, one mine in three was booby-trapped. The detail also checked houses before occupancy by military personnel. The other crew marked enemy minefields along Highway #6 south of Cassino, and worked with the Graves Registration Service for about two months at Anzio, and around Minturno after the breakthrough of the Hitler Line.

SECTION V

92nd Engineer General Service Regiment (cont'd).

Both mine details instructed the regimental combat team of the 92nd Division before it went into the line. About one hundred officers and non-commissioned officers of the division were taught mine and booby trap detection and clearing for a week prior to the assault on the Gothic Line. One officer was injured while instructing these classes, and another killed by a German hand grenade with an instantaneous fuze.

Meanwhile, the regiment operated the Army Bailey Bridge Depot on a 24-hour basis for one month and took over the Fifth Army sign shop. For its work during this phase of operations, the regiment was awarded the Fifth Army Plaque and Clasp for August 1944.



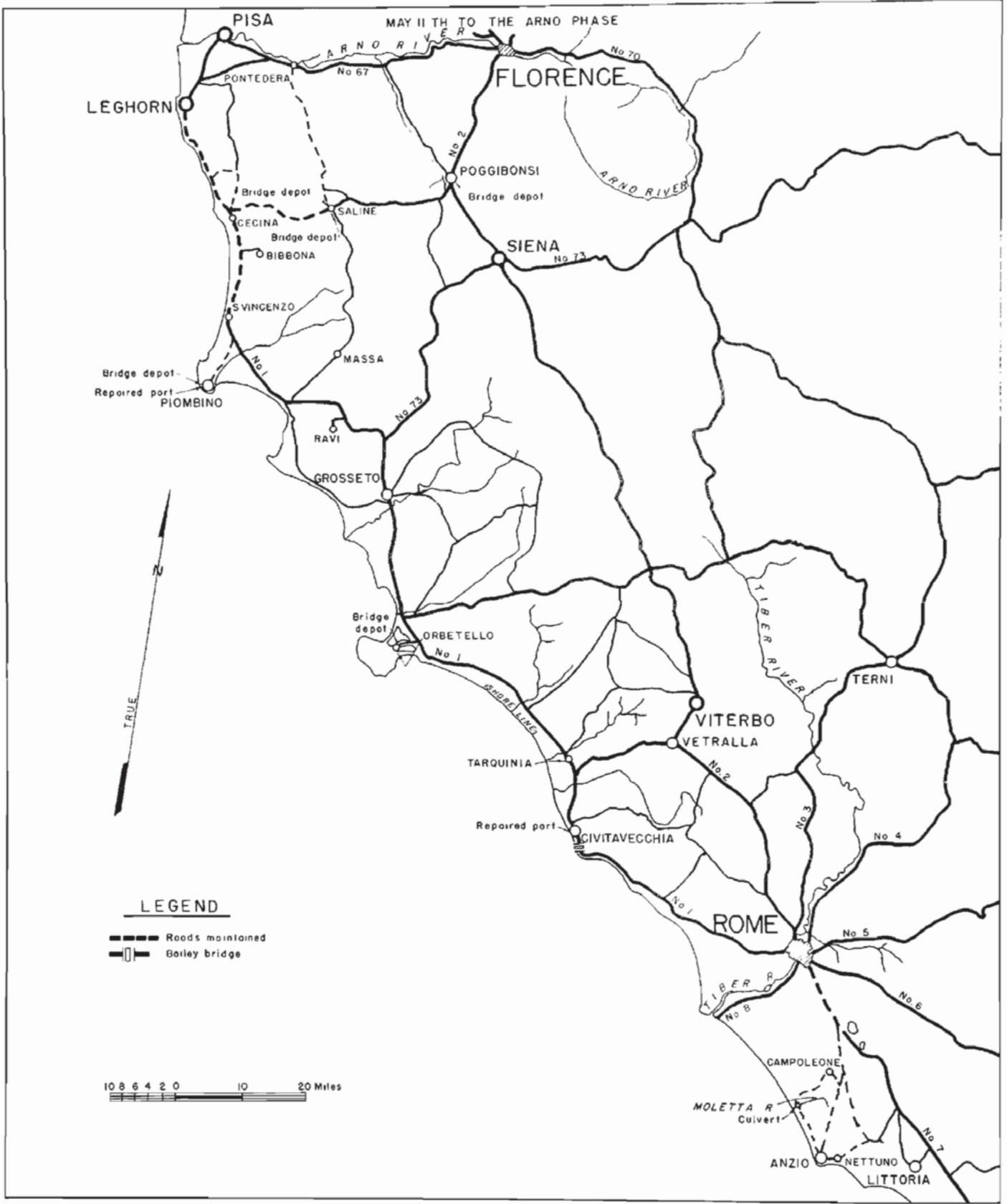
THE COMPLETED BRIDGE

387th Engineer Battalion (Separate)

After the attack by the southern troops on 11 May and the link-up with the beachhead on 25 May, the 387th Engineer Battalion (Separate) under Lieutenant Colonel William H. Bender was assigned both of the Anzio - Rome roads, one as far as Campoleone and the other to the Moletta River. For eighteen days, the battalion laid down over one hundred cubic yards of asphalt mix a day on these routes.

On 9 June, the 387th Battalion was relieved of its attachment to the 540th Engineers. Since it was the only engineer unit remaining in the Anzio area at the time, it consequently had to perform many varied tasks. A water point was set up and operated for the Fifth Army Rear Command Post, heavy trailers and prime movers were supplied to the port to move heavy cargo, new gun and radar positions were dug for new artillery units, and incidental help was given to hospitals.

On 8 June, one platoon of the 423rd Engineer Dump Truck Company was attached to the 387th, the additional trucks being a great help to the unit's operations. The following day, the battalion was attached to the 92nd Engineer General Service Regiment for operations. Company "D" built a two-way culvert bypass over the Moletta River, and removed its first Bailey bridge there, in an area heavily mined with both German and American anti-personnel and anti-tank mines. One of the latter was exploded by an R-4 dozer, but the operator was uninjured, despite being blown completely off his machine.



**387 TH ENGINEER BATTALION (SEPARATE)
OPERATIONS**

SECTION V

387th Engineer Battalion (Separate) (cont'd).

During the two weeks following the fall of Rome, the battalion's road maintenance assignment kept growing, until the two roads from Anzio to Rome were being cared for in their entirety by the 387th. On 18 June, the battalion was ordered to move at once to the port of Civitavecchia, and begin work there on the following day. At the same time, it was relieved of its attachment to the 92nd Engineers. Work was begun in Civitavecchia the next morning.

The 387th took over the engineering work of the port from the 540th Engineers, as at Anzio. The project here was to repair the heavily bombed and damaged water and sewage system, and to develop and execute a program of sanitation to make the town habitable for personnel required for port operations. Reconnaissance parties followed the plans of the water and sewage systems, parts of which were located in another town, and repair was begun. Civilian labor was transported to and from the city each day, to do the bulk of the masonry work.



387TH LAUNCHING BAILEY AT CIVITAVECCHIA

The required water pipes, reducers, and valves for repair were located in the city and in Rome. Rubble and trash were cleared from the sidewalks and streets of the main routes in the city. Garbage and trash dumps were established and operated; sanitary regulations for all occupying troops were drawn up. Lookout towers, truck-checkers' shacks and an unloading platform-bridge over a sunken ship were constructed.

In the town, Company "D" erected the battalion's first Bailey bridge, a 140-foot, triple-single, Class 24, at an angle over the railroad tracks, and with a confined launching space. Two 1-story buildings were blown down to open an approach to the bridge from the main highway. The stay in Civitavecchia was not long. Four days after its arrival, Company "D" moved out to unload Bailey bridging north of Grosseto. On 29 July, an advance detail for Company "D" moved to Orbetello to study the operation of an Army Bridge Depot. The next day, Company "A" was attached to IV Corps, Company "B" to Headquarters Commandant, Fifth Army Headquarters, and Company "C" to the French Expeditionary Corps. This left only Company "D" under battalion control.

387th Engineer Battalion (Separate) (cont'd).

Company "D" moved to Marina di Grosseto, and did the work necessary to convert a former resort into a rest camp. In four days, the Company joined the advance party at Orbetello, and took over operation of the Fifth Army Bridge Depots under the operational control of the Supply Officer, Engineer Headquarters, Fifth Army. Thus, battalion headquarters was minus its four line companies which were all under the control of a different headquarters.

The headquarters moved to Grosseto and then up the coast to Vada. Company "B" took over from the 175th Engineers the job of preparing new bivouac areas and maintaining the occupied areas of the Fifth Army Command-Posts, as well as the construction and maintenance of roads, air strips, and camp facilities. Road sprinklers were improvised from issued canvas tanks and from a civilian factory tank.

Companies "A" and "C" knew nothing about bridge trains until the day they were told "you are a bridge train". Additional drivers and mechanics were obtained; all men in the two companies trained in the correct nomenclature and loading practices for Bailey and treadway bridge parts; and work began. Company "A" worked with IV Corps near Cecina, then with II Corps near Castelfiorentino and finally with IV Corps again on 31 August near Pontedera.



BRIDGE DUMP OPERATED BY 387TH

Company "C" worked with the French in a mountainous sector with poor and very dusty roads, far from any American Ordnance aid. The main French axis was from Perrona to Potitine to Siena. Both companies were kept on the alert day and night for a call for bridging. One one occasion, Company "C" brought the bridging forward as called for, but could not deliver it to the appointed site as it was still in enemy hands.

SECTION V

387th Engineer Battalion (Separate) (cont'd).

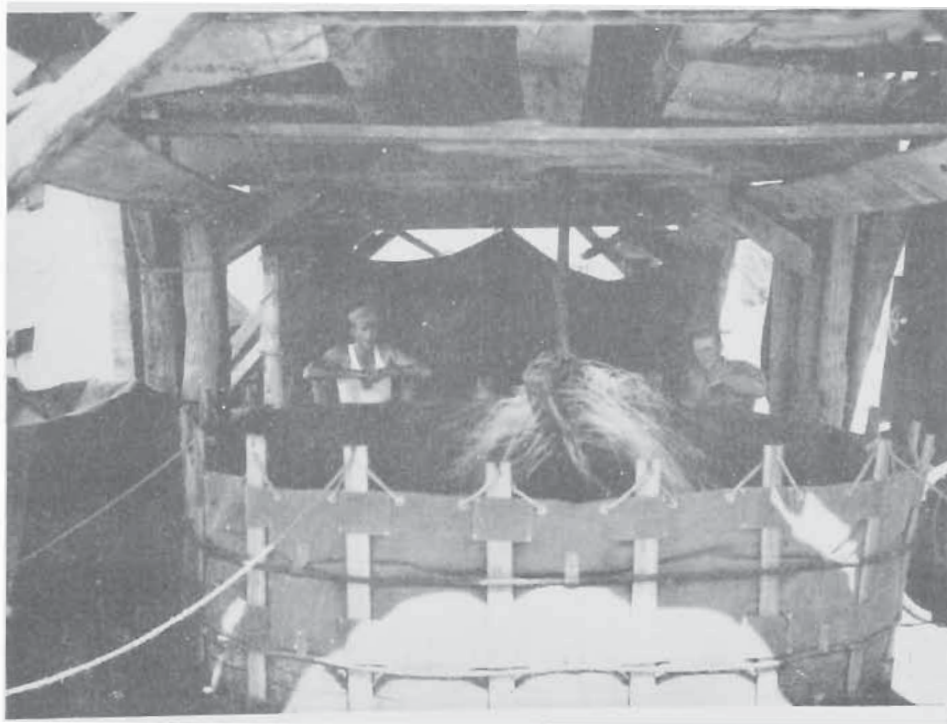
When Company "D" opened the Bridge Depot at Orbetello, the advance detail had completed its organization and the men had learned correct nomenclature, and what parts and how many of each constituted standard "loads" of Bailey, or complete "sets" of infantry support rafts. Also by this time, a repair section, especially necessary for the pneumatic pontoons, had been set up. An advance depot was next opened at Saline, and shortly thereafter, another one at Piombino to handle incoming bridging. Thus, three Army bridge depots were being operated at the same time, as the depots moved forward by leapfrogging. Poggibonsi was the final dump opened before the attack across the Arno. First one, and then two Italian Engineer Companies were attached to do the bulk of the hand loading and unloading.

On 26 July, the battalion, less Companies "A" and "D", was attached to the 175th Engineer Regiment for work in the port city of Piombino, replacing the 39th Engineer Regiment. The 387th graded, ditched and oiled the roads leading to Highway #1. Heavy port-unloading equipment was maintained, and other incidental engineering work accomplished. The 175th Engineers then moved out, and for the third time, the 387th was the only engineer unit remaining in the most northern port in operation for the Allies. On 15 August, Companies "B" and "C" went to Civitavecchia to unload the equipment of the Regimental Combat Team of the 92nd Division.

On 25 August, the battalion, still less the two companies, was assigned the maintenance of the Army supply roads behind the 175th Engineers. The first assignment was Route #1 from San Vincenzo to Cecina, and Route #68 from Cecina to Saline. Route #168, the main army supply route at the time, was a gravel road and very dusty. Dust was kept to a minimum by oil and by watering with two improvised sprinklers operating twenty-four hours a day. One platoon of the 423rd Engineer Dump Truck Company was attached to the battalion, and a quarry operated with a primary and secondary rock crusher attached from the 2750th Engineer Light Equipment Company.

405th Engineer Water Supply Battalion

Company "A" of the 405th Engineer Water Supply Battalion, commanded by Lieutenant Colonel M. P. Barschdorf, was placed in support of the French Expeditionary Corps, and in the initial phases of the breakthrough, operated dry distribution points up in the hills to service frontline troops and large numbers of pack mules. No sources were available and it was necessary to truck this water over mountain roads that were little more than trails. The points operating in the vicinity of Castelforte were within light artillery range of the enemy guns.



405TH AERATING WATER NEAR GROSSETO

405th Engineer Water Supply Battalion (cont'd).

The launching of the attack in May, with the subsequent rapid advance north provided a real test for the Water Supply Battalion. Company "A" continued in support of the French, Company "C" was in support of II Corps, Company "B" attached to VI Corps, and the Army area serviced jointly by Headquarters and Service Company, and "A" and "C" Companies.

Hospitals, bakeries, and other fixed installations moved rapidly, and upon short notice. Water points were set up, operated only a few days, dismantled and moved. Drilled wells were out of the question, and a constant reconnaissance for water sources was necessary. It was impossible to abandon water points in the Garigliano area so long as troops were in the vicinity, and as late as 7 June, when the battalion headquarters moved into Rome, a water point was still operating south of the Garigliano River. Contact was established with Company "E" on 27 May, at which time the company less a detachment, reverted to battalion control.

There was no civilian water supply problem in Rome, as there had been in Naples, so the battalion pushed on north, soon turning over all water points in the Rome area to the 518th Engineer Water Supply Company. During the brief stay in Rome, Company "C" was assigned the mission of filling the swimming pools at the "Foro Mussolini" (now the "Foro Italia"), which was to be used as an enlisted men's rest center. Within four days, 750,000 gallons of water were hauled by tank truck and emptied into the pools to accomplish this task.



405TH FILLS SWIMMING POOL IN ROME

Operations entered a more static phase during the latter part of July; hospitals and other fixed installations moved less frequently, and it was not necessary to move water points so often. During the week of 19-25 August, the battalion produced its record amount of water for one week--6,289,250 gallons. The Headquarters and Service Company point near Cecina alone produced and dispensed 202,850 gallons of water in one day.

As the Brazilian Expeditionary Force moved into the vicinity of Cecina, the 405th instructed the Brazilians in the principles of water supply, and in the maintenance of water supply equipment. The results were apparently satisfactory, for the Brazilians soon relied upon their own points for water supply.

SECTION V

405th Engineer Water Supply Battalion (cont'd).

As base section troops and installations moved into Leghorn, it was necessary for part of the city water system to be put into operation. Headquarters and Service Company personnel did considerable work on the filter beds at the city water plant, and later instructed base section personnel in the operation of this plant. The well drilling section, Headquarters and Service Company, drilled a 1100-foot hole at Leghorn, the deepest well drilled since the unit came overseas, and tapped a natural gas well. This well was cemented off and the hole plugged. Another well drilled three miles east of Leghorn along the aqueduct turned out to be a dry hole, and was abandoned.

Detachment, 85th Engineer Heavy Ponton Battalion

The ponton bridge which Company "A" of the 85th had been maintaining across the Garigliano was again shelled on 13 and 14 May. One man and eight pontoons were hit. On 16 May, the ponton trailers were unloaded and used to haul steel beams for a fixed bridge being constructed across the Garigliano River by the 344th Engineer General Service Regiment. The next day, a five-boat ponton raft was constructed to aid the 337th in this work.

On 22 May, the Class 28 heavy ponton bridge across the Garigliano was dismantled. The detachment closed the existing bridge depot and established a depot in the vicinity of Itri on 23 May. Five days later, the Itri depot was closed and the bridge depot moved forward to Nettuno.

On 28 May, the bridge company moved its equipment forward in the vicinity of Nettuno in anticipation of crossing the Tiber River. One unit of bridging was unloaded and the vehicles departed for Aversa to refill and return to Nettuno. From this time until the fall of Rome, Company "A" maintained the network of roads in the vicinity of Anzio.

On 6 June 1944, Company "A" constructed a Class 40 heavy ponton bridge across the Tiber River just southwest of Rome. The bridge was 305 feet long. Construction was delayed by several artillery barrages. The 85th Engineers were given the mission of maintaining this ponton bridge as well as two steel treadway bridges and a footbridge across the Tiber.

Another bridge depot was established in the vicinity of Civitavecchia on 12 June 1944. Eleven days later, this depot was closed and a new one opened near Grosseto. The two steel treadway bridges and the footbridge across the Tiber were dismantled on 13 June, and the ponton bridge dismantled three days later.



RAFT OF COMPANY "A", 85TH ENGINEERS, USED IN CONSTRUCTION OF
343RD ENGINEER BRIDGE NEAR ORBETELLO

Detachment, 85th Engineer Heavy Ponton Battalion (cont'd).

On 20 June, Company "A" constructed a five-boat raft to assist the 343rd Engineers in the construction of a fixed bridge across the Albegno River. During the next eight days, Company "A" transported 60-foot bridge piles for the 343rd. The round trip for hauling totalled about 700 miles.

On 28 June, one platoon dismantled a German Herbert bridge left intact by the enemy. A single span fixed bridge was constructed in one day on 1 July. The first half of July, Company "A" spent repairing British motor tugs for the bridge depot. Much assistance was given by Company "A" in the hauling of the bridging equipment between the bridge depots. In addition to these other duties, the detachment also operated a wrecker service.

On 25 July 1944, Company "A" and the Headquarters Detachment were relieved from assignment to Fifth Army. At the same time, Company "B" and Headquarters and Service Company, less the detachment, joined Company "A" and Headquarters Detachment to form the complete battalion once again. The 85th Engineer Heavy Ponton Battalion was then assigned to the Seventh Army for the French Campaign.

1554th Engineer Heavy Ponton Battalion

After the 1554th Engineer Heavy Ponton Battalion under the command of Lieutenant Colonel W. K. Benson, Jr., arrived at Naples, on 15 July, it spent two weeks unpacking and assembling equipment. A week was spent near the Volturno River, then additional training was accomplished on the Tiber west of Rome. From 8 - 25 August, the training included the construction of four bridges, two in the daylight hours and two at night. Experiments were conducted in the use of rafts and ferries, which gave the out-board operators the opportunity to develop better technique. Orders then came to move the battalion to Cecina. To preserve secrecy, the unit was moved into a bivouac area of natural concealment under cover of darkness. Shrimp nets were used to cover many of the tractors, trailers, and pontons when unloaded.

Up to this time, the Arno had not been crossed and the 1554th waited patiently to take part in its first combat operation.

1755th Engineer Treadway Bridge Company

The 1755th Engineer Treadway Bridge Company, activated on 7 August with Captain Wylie B. Mendel in command, had formerly been Company "E", the bridge company of the 16th Armored Engineers. One of the company's first jobs was to train the 39th and 19th Engineers in the construction of floating and trestle treadway bridges. The lessons learned as Company "E" of the 16th Engineers at Salerno, Cassino and Anzio, as well as in the initial phases of the Italian campaign, had fitted the unit well for this task, as well as for the imminent job of bridging the Arno.

423rd Engineer Dump Truck Company

After May, Headquarters and the 2nd Platoon of the 423rd continued in support of units on the Garigliano front, hauling gas line pipes, bridges and road materials for the 92nd Engineer Regiment and the 337th Engineer Regiment. The company headquarters was moved to a location in the old beachhead area, and later to Anzio proper, where it was attached to the 387th Engineer Battalion.

Meanwhile, the 1st Platoon still operated with the 39th Engineer Regiment in support of the continued push through and beyond Rome. The Army moved so swiftly that the greater part of the work of this platoon was shuttling bridges up for installation by the 39th Engineers.

Headquarters and the 2nd Platoon moved up all the Bailey bridges that the French had installed. The 423rd, commanded by Captain F. E. Seipel, was then attached to the 175th Engineer Regiment and later to the 92nd Engineer Regiment (this was the time road maintenance on Route #1 and the construction of the large bridge below Grosseto were of prime importance to the Army). At the end of August, Headquarters and the 2nd Platoon remained with the 92nd Regiment, an arrangement that continued into the next phase of the campaign.

CHECK YOUR MAP EDITION! HERE IS THE KEY!

1:25,000 SCALE MAPS

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1:50,000 SCALE MAPS

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104		105		106		107	
3	2	2	3	3	1	2	
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* NOT PUBLISHED - USE THE 1:25,000 MAPS.

RED FIGURES indicate the latest map editions.

CIRCLED FIGURES indicate maps of which NEW EDITIONS are in production.

Situation
as at
25 Aug. '44

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3	3	2	2
111	112	113	114

1:100,000
SCALE MAPS

□ 1:100,000 LAYERED MAPS AVAILABLE.

YOUR DIVISION ENGINEER can get a full issue of each of the above maps, in the EDITION SHOWN.

DO YOU HAVE THE LATEST EDITION?

Maps are constantly being revised and republished. Better check with your Engineer Officer next week. He might have a Later Edition that shows that jeep trail you can't find on your present map.

66th Engineer Topographic Company (cont'd).

Meanwhile, it was found that many units were using out-of-date maps, mainly because they were either too lazy or too busy to find out about new editions. Accordingly, the 66th designed a placard on one side of which was printed a pin-up girl and on the other side indices of new or revised maps. Surprisingly, units soon demanded and stocked all the latest map sheets. "Gloria", the first of a series of three of these information sheets, was published in August 1944.

661st Engineer Topographic Company

The 661st Engineer Topographic Company, commanded by Captain Lowell Newmeyer, made a series of northward moves as the Army went forward. At the same time, the company continued its work for Army Headquarters as well as VI Corps. For Fifth Army, maps were revised and printed and mosaics laid. For VI Corps, road network overlays were printed as well as such miscellaneous material as field orders, defense overprints, histories, special terrain studies, defense plans of Anzio, photomaps, posters, and Army booklets. This work continued until July when the 661st, still with the VI Corps, was assigned to the Seventh Army for the invasion of Southern France.

46th Survey Company, South African Engineer Corps

From mid-May onwards, during the rapid advance, the 46th Survey Company occupied a considerable number of stations, the majority of which were on mountain tops. The survey kept pace with the troops as the advance went through Cori and on to Valmontone. Both the enemy and the Allied troops destroyed many signals, thereby doubling the field work. Five-thousand-foot peaks were scaled day after day; mines and dead bodies were encountered on every hill; driving was done at all hours along jammed roads, and past heavy demolitions; but the pace was kept up, and the results were delivered on time.

During the rapid advance of the Army in the summer months, there was considerable interchange of artillery survey units with the switching of the corps boundaries. Consequently, sections of the 46th bivouacked with the Field Artillery Observation battalions in order to maintain liaison. It was found that one central computing section could not satisfactorily undertake all group computations owing to the distance separating sections and the congestion on the roads. Computing sections were, therefore, formed at each section headquarters, and the results were, in consequence, made available with minimum delay to artillery survey. Values were subsequently checked at Group Headquarters, and adjusted into a constant network over the whole Army front.

In August, while the front was more or less stabilized, a chain of large triangles was carried forward based on Italian primary beacons. Only one primary beacon was found to be in error--at Livorno. By the time that the attack was launched on the Gothic Line, the triangulation had been carried well beyond the enemy lines.

1710th Engineer Map Depot Detachment

After the beachhead had been consolidated with the southern front, the entire 2658th Engineer Map Depot Detachment (redesignated on 22 May the 1710th Engineer Map Depot Detachment) under command of 1st Lieutenant L. L. Gamse was assigned to Fifth Army. The unit continued its duties of supplying maps for all requirements. Planning maps were carried for staff use, and tactical maps for all units in accordance with their requirements. Air maps were issued for Air Force units operating with the Fifth Army, and orientation maps of all areas supplied to aid in the education of the Army personnel. On 23 June, the 1710th joined the 1712th at Grosseto, and continued to work with it at Cecina and later in Florence.

1712th Engineer Map Depot Detachment

On 22 May 1944, the original 2699th Engineer Map Depot Detachment (Provisional) was disbanded and the present 1712th Engineer Map Depot Detachment was activated with all personnel transferred in grade, including 1st Lieutenant E. D. Parks, the detachment commander.

Following the crossing of the Garigliano River, the depot was moved to Fondi on 26 May. After the fall of Rome, several of the trailers were moved forward in order to facilitate distribution of maps to the Corps. On 8 June, the entire depot moved to a radio factory on the outskirts of Rome, where new stocks were acquired, and stock no longer essential discarded. After this had been accomplished, the depot went to Santa Marinella on 16 June. On 21 June, the depot moved to an olive grove in the vicinity of Orbetello, and two days later to a school building in Grosseto.

1712th Engineer Map Depot Detachment (cont'd).

Because of the uncertainty of being able to replenish the supply of maps over the longer supply lines, it was decided to further build up the reserve supply during inactive periods, so as to be prepared for any emergency. This required increased personnel and transportation, so at Grosseto on 23 June, the 1710th Map Depot Detachment joined the 1712th, thus doubling the strength and transportation of the map depot.

The remainder of the time at Grosseto, and later at Cecina, where the depot moved on 14 July, was spent in gathering stock from base depots. Several new trailers were built, bringing the total number to nine. On 4 September, the depot moved to the outskirts of Florence, to be in a convenient location for the issuance of maps for the Gothic Line assault.

2750th Engineer Light Equipment Company

On 29 July, the 2750th Engineer Light Equipment Company, activated on 20 July 1944, received its first piece of engineer equipment from the depot. A policy was immediately set up whereby each piece of equipment was given a thorough inspection as to repair and shortages, upon its arrival. While difficult to get, tools were obtained in one manner or another. On 2 August, just 13 days after activation, the first piece of equipment was sent out on a work order to the 337th Engineer Regiment.

One month after activation, the company had 21 pieces of equipment in operation, with five on deadline because of unavailability of parts. On 8 August, the company was ordered to move north on Route #68 to the vicinity of the Engineer Depot. This move was accomplished in two days, with no delay in operation. While at this location, an engineer heavy shop truck was received which contributed greatly in reducing the number of deadlined pieces of equipment.

Rather than have idle operators around the company, all men whose equipment had not yet arrived, or who had no definite assignment, were sent out as students with the regular operators of other pieces of equipment. Students were given their choice as to what they wanted to learn, and if the opening existed they were allowed to follow this choice.

The 2750th's equipment aided greatly in the maintenance and construction of roads and bridges along Routes #1 and #68, both main Army supply routes. Three D-8 angledozers were furnished to the 338th Engineer General Service Regiment (a Peninsular Base Section unit), for the purpose of clearing the dock area of the port of Leghorn. With the aid of these dozers, and their experienced operators, the 338th was able to clear the dock area and prepare berths for the landing of much needed supplies in record time. The 2750th was commanded by 1st Lieutenant Joseph Wigodner.

450th Engineer Depot Company

Less two platoons, the 450th Engineer Depot Company under Captain William S. Steensma arrived at Naples on 11 June and reported to Fifth Army Headquarters. The unit's activities while with the Fifth Army were very limited. The 450th assisted in the operation of the Army Engineer Depots at Vairano, Civitavecchia and Grosseto in addition to the movement of various heavy equipment to forward depots at Piombino. This service terminated on 2 August 1944, at which time the unit was assigned to the Seventh Army for the French invasion.

451st Engineer Depot Company

As the May attack began, the 1st Platoon of the 451st Engineer Depot Company, commanded by 1st Lieutenant Donald L. Brown, opened a tactical engineer dump at Fondi, in addition to the main one at Sessa. At Fondi, a platoon of Italian soldiers was used, supervised by four Americans. The supplies were in the main, nails, lumber and sandbags, as well as hand tools. First Lieutenant Michael F. Coyle replaced Lieutenant Brown when the latter was transferred to Engineer Headquarters on 30 May.

On 10 June, a new depot was opened at Rome. For a time, three depots again were in operation simultaneously, then the two at Fondi and Sessa moved forward. As the supplies were being consolidated at Rome, the depot moved to Civitavecchia after a total stay in Rome of six days.

Supplies at Civitavecchia were obtained directly from the port, as well as from the depots further south. The platoon was finally consolidated at Civitavecchia, but moved northward shortly thereafter, turning the depot over to Peninsular Base Section. The depot required 500 trucks to move north to Piombino; it had so increased its volume that it needed the same number of vehicles required for seven full strength infantry regiments. The unit moved twice more (to Casaglia and Florence) before the beginning of the attack on the Gothic Line.

SECTION V

Companies "A" and "D", 84th Engineer Camouflage Battalion

On 11 May, Company "A" of the 84th Engineer Camouflage Battalion, commanded by Captain Carl M. Moseley, began a difficult screening job in conjunction with a company of the 19th Engineers and a company of the 53rd Signal Battalion. An 800-foot screen, 35 feet high, was erected across and parallel to the Garigliano River, serving as camouflage for a 300-foot Bailey bridge site. The bridge site was in the center of an open valley. The enemy controlled observation from three sides, at one point only two miles away.

All work was accomplished in four nights, and although the screen was shelled during the day, the lack of visible movement in the area so discouraged shelling that on the fifth day the bridge was erected with no enemy interference. On 13 and 14 May, a II Corps forward observation post with a hundred yards of road leading to it was camouflaged. The forward and rear echelon command posts of II Corps were constantly being concealed throughout the campaign.

Company "A" platoons were continuously away from company headquarters, moving constantly, and endeavoring to check the divisions, corps and Army units for camouflage discipline. Short classes were given in camouflaging observation posts, gun positions and flat tops. In July, the whole company was brought together, the first time since leaving Fort Dix, New Jersey, in April 1943.

Orders were received for the company to proceed on 11 July to Naples. When the company arrived, it was relieved from assignment to the Fifth Army and assigned to Allied Force Headquarters and attached to Seventh Army. It prepared to sail to France on D Day, to select the sites into which the attacking waves would disperse and to act as guides upon the beachhead.

The work of Company "D", 84th Engineer Camouflage Battalion, was similar to that of Company "A" as the Army went north. Three of the platoons were kept on the line, the fourth with Company Headquarters to act as reserve and to do the camouflaging of the Fifth Army Command Post. The line platoons camouflaged anti-aircraft positions, erected occasional road screens, and did instruction and inspection work.



COMPANY D'S DUMMY BAILEY NEAR PISA

SECTION V

Companies "A" and "D", 84th Engineer Camouflage Battalion (cont'd).

With the departure of Company "A" in July, Company "D" became the only camouflage unit with the Fifth Army. As the Arno River was approached in July, the most ambitious camouflage program attempted in Italy was begun. By this time, there had been two changes in the commanding officers: 1st Lieutenant Howard M. Castleman replaced 1st Lieutenant James A. Fagen in June, who, in turn, had replaced Captain Wayne D. Dunn in May.

The operational plans for Fifth Army called for a build-up of supplies in the II Corps area, south of the Arno, in the eastern part of the Fifth Army sector, in preparation for the attack on the northern Apennines and the Gothic Line. A concealment plan was begun which, in addition to attempting to hide all increase of activity in the II Corps area, was to simulate a build-up in the IV Corps sector in the west.

The work done in the II Corps area was of an unspectacular nature and of an accepted and proved type. In the Elsa Valley, near Certaldo and Castelfiorentino, dump areas were carefully selected with an eye to concealment. In rear areas, dummy assault boats were erected to cover the movement forward of the actual boats. Artillery sites were carefully covered with nets. Hospitals were not erected until just before the attack.

In the IV Corps sector, where a build-up was to be simulated, three main types of deception were used. Eleven batteries of 105 mm guns were simulated by the 4th Platoon of Company "D". This was accomplished by erecting dummy guns and poorly camouflaging them, and by using flash simulators at night. In this way, real batteries could be moved out of line, and with dummy emplacements in the same positions, the enemy was no wiser. All artillery units were notified that upon moving from old positions, camouflage nets were to be left up and dummy guns built in old pits.

The 2nd Platoon, commanded by 1st Lieutenant George A. Pommer, planned and erected two dummy ammunition dumps. Dump O-4-10 near Colle Salvetti was located so that enemy ground-based observation posts on Mount Pisano had direct observation. Dump O-4-14 was south of S. Miniato and was not under direct observation, but was within enemy artillery range. Empty ammunition crates, boxes and shell cases were hauled from real ammunition dumps and placed in decoys. Trucks circulated through the dumps to indicate activity.

At night, stacks and sometimes entire bays were changed, so that in the morning fresh tracks could be seen as well as a change in the amount of the dump's supplies. Both dumps had signs posted indicating ammunition supply point numbers, bay numbers, "No Smoking" etc. Salvage tentage drawn from the Quartermaster was set up in the immediate vicinity of each dump. Fifteen hundred tons of ammunition were simulated in Dump O-4-10 and 1800 tons in Dump O-4-14.

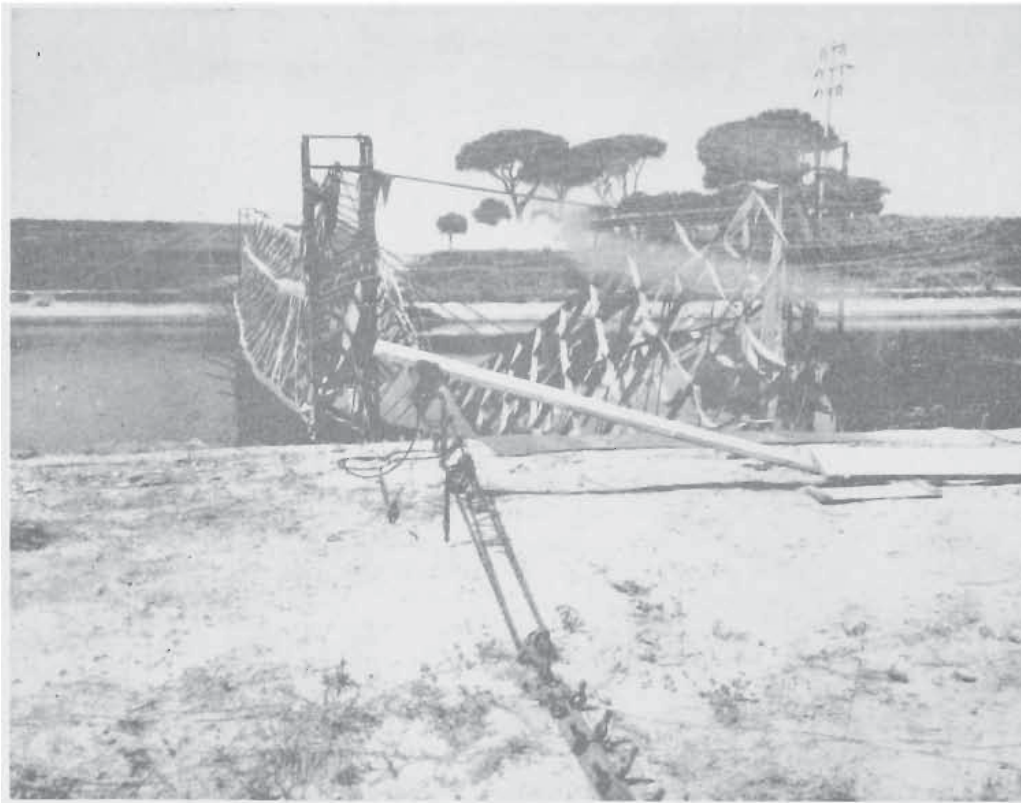
To indicate a more complete road net, and to simulate a great deal of work being done on the roads in the IV Corps area, the 2nd Platoon also erected dummy Bailey bridges. The bridges were prefabricated British camouflage devices constructed out of gas pipe, canvas strips and burlap. On 22 July, a 120-foot, double-double and 60-foot double-single dummy Bailey bridges were erected over two of the canals directly north of Leghorn on Highway #1, at the point where the junction is made with Route #67B.

Infantry patrols had passed this spot the previous day, and as the bridges were being built, infantry regiments were marching forward past the sites. Then the tactical plans were changed, and the bridges were removed the next day to permit the erection of real Bailey bridges. An additional dummy, a 40-foot, double-single, was then constructed a few hundred yards to the east.

On 26 July, a 120-foot, double-double, dummy was erected and remained for about two weeks, during which time enemy artillery landed in its vicinity about thirty times. This bridge was constructed and maintained during night without additional security, in an area frequently traversed by enemy patrols.

Another 120-foot, double-double dummy bridge was erected to the west of Highway #1 about two miles south of Pisa on 5 August. The famed tower, still in enemy hands, was easily within sight. Again, no security was available, except that which could be provided by the nine men and one officer working at the site. This bridge was repeatedly fired at by the enemy, necessitating return at night to make repairs. The bridge had to be completely rebuilt after being knocked down on the 7th, 10th, 13th and 17th of August. On the night of 29 - 30 August, thirty rounds of fire on the bridge was reported by British anti-aircraft units nearby.

It was estimated that this one bridge drew between 400 and 500 rounds of enemy artillery fire while in position. While the first two bridges built on Highway #1 did not receive any concentrated fire, neither did the two real Bailey bridges which replaced them. On 1 September, orders were given to remove the bridges.



- COMPANY D'S BRIDGE KNOCKED OUT BY ARTILLERY

469th Engineer Maintenance Company

During the rapid advance that followed the May attack, mines caused most of the damage to equipment repaired by the 469th Engineer Maintenance Company, commanded by Captain C. H. Cooper. Repairs not directly caused by enemy action could in general be broken down into four approximately equal groups. The first group resulted from inadequate or improper lubrication; the second could be attributed to improper operation or maintenance; the third was caused by the occasional necessity of doubtful repairs because of shortages of proper new parts; and the last, normal wear and tear.

The greatest difficulty of the 469th concerned the procurement of parts and maintenance materials. Seventy-five per cent of the parts needed for specific repairs were eventually obtained. Of the remaining twenty-five per cent, all but about two per cent of the requirements were supplied by rehabilitation of old parts, or outright manufacture by the company. The primary objections to such manufacturing were the time involved and the use of doubtful materials. The procurement of most parts, however, was via a daily parts courier to Peninsular Base Section, with "deadlined-requisitions".

Because of distance, a parts runner was only dispatched every three days after 6 June, which obviously delayed repairs somewhat. By 9 June, the company had moved to Rome, after setting up at Fondi, and then Genzano. The 2nd Maintenance Platoon went to Civitavecchia (the company's last operational location in Italy) on 14 June and was joined there by the other elements of the company (less the contact platoon) nine days later.

The 469th Contact Platoon moved and worked quite separately from the remainder of the company. When the beachhead broke out, the platoon moved to Cisterna and again repaired equipment from the main Army front. One of the jobs at this location was the replacement of rollers on a tractor of the 19th Engineers, which had walked 175 miles in front of tanks, clearing road blocks. After this, moves came in quick succession, the next move being to the southern outskirts of Rome, and finally to Civitavecchia. At this time, repair work was still being done in the three previous areas, because of the frequency of the moves.

French Expeditionary Corps Engineers (cont'd).



AMERICAN PROCESSED WATER BEING SUPPLIED TO FRENCH MULES
DURING THE ATTACK ON THE GUSTAV LINE

In a succession of quick advances, the French Expeditionary Corps, after taking Siena on 3 July at a very costly price, arrived on the southern banks of the Arno River on 22 July. During this push of 270 miles, the major work of the engineers was the maintenance of the communication network. All supplies for the French Expeditionary Corps had to come by road, as the local resources, usually heavily counted on by the French, were of no use whatsoever.

In the bridgehead, which the French had established across the Garigliano River in the Castelforte sector prior to 11 May, there were sixteen water points, six axial supply roads, three lateral roads, a network of mule paths, and four Class 30 bridges. The bridges were concealed by the use of both smoke and camouflage screens erected by Company "D" of the 84th Engineers. To hide the preparations for the attack, the dusty roads were sprayed with a mixture of oil and water, and a permanent smoke screen was used--according to German reports, the greatest ever encountered in Italy.

The French sector ran in a northwesterly direction with no attention seemingly paid to the matter of supply routes; the main axial routes were either in II Corps sector or the Eighth Army's. Consequently, third and fourth rate roads had to be utilized throughout the advance to Rome.

This campaign was the first in which the engineers of the French Expeditionary Corps had worked to maintain the movement of such a large number of motorized units. Before, they had worked for mountain troops which had only a small number of vehicles. In the present French Expeditionary Corps sector, however, there were at least 30,000 vehicles, most of them 2½-ton trucks or smaller, but some up to 9-tons. Daily traffic counts on some days registered over 3,000 vehicles on the main supply route: an average of over one vehicle per minute each way. Under such conditions, work was very difficult just when the maintenance problem was the most acute.



FRENCH EXPEDITIONARY CORPS ENGINEERS
OPERATIONS

SECTION V

French Expeditionary Corps Engineers (cont'd).

From Rome, Highway #2 was followed through Viterbo, Siena and Poggibonsi to Florence, a great relief after the difficult mountainous roads south of Rome. In two months, seventy-four bridges of all types totalling 6,000 feet were constructed, more than 650 craters filled, and approximately 1,800 miles of road opened and maintained. The last days of the advance, from 18 to 22 August, the French Expeditionary Corps was systematically relieved of its sector by the Eighth Army as it neared the Arno and Florence. At the same time, the Corps was released from its assignment to the Fifth Army.

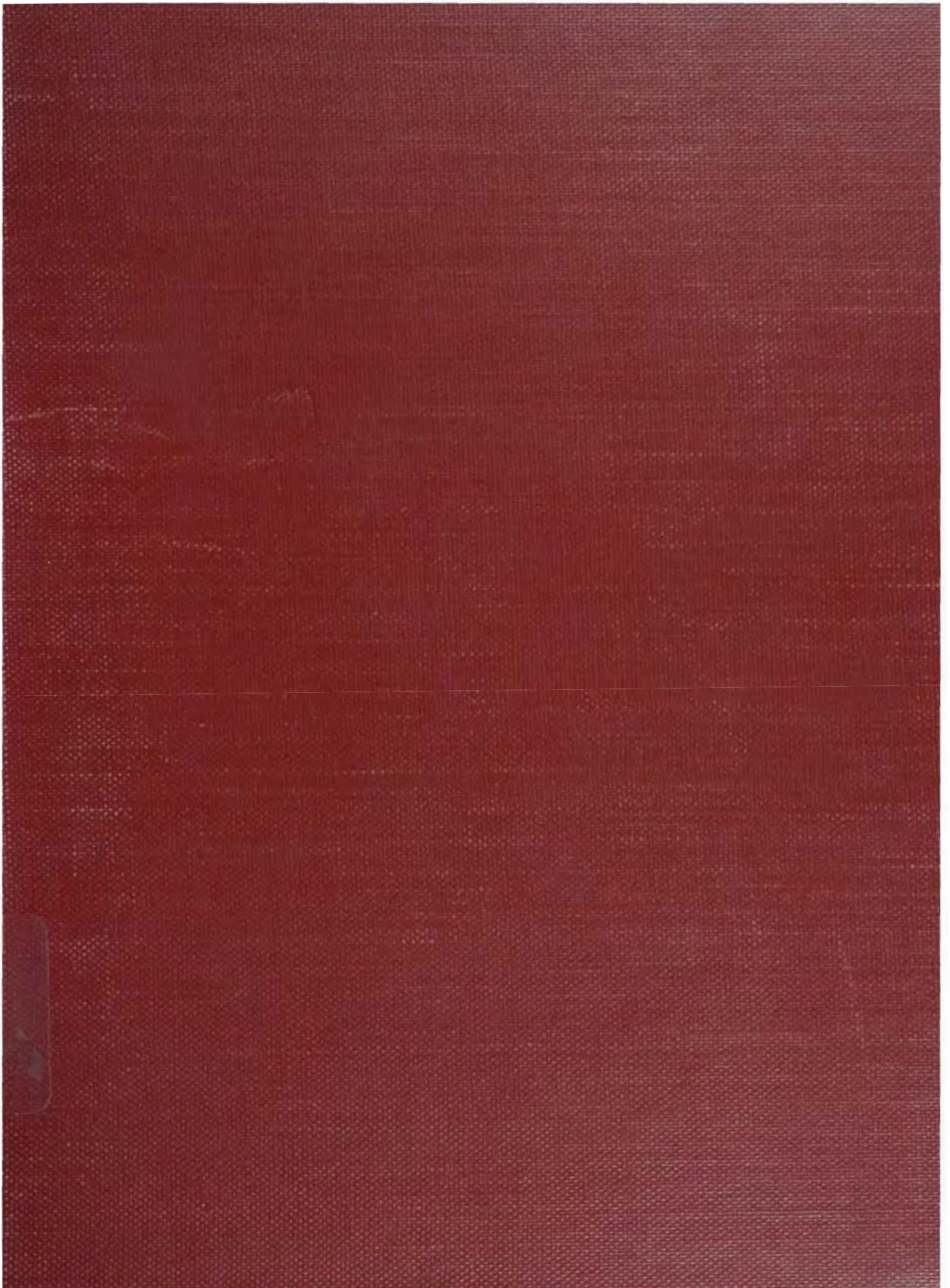
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Processed: Wed Sep 2, 2015 - 09:19 pm

Table of Contents

Section VI The Arno through the Winter static phase

A - The tactical situation

B - Work at Engineer Headquarters

C - Unit operations

16th Armored Engineer Battalion

109th Engineer Combat Battalion

310th Engineer Combat Battalion

313th Engineer Combat Battalion

316th Engineer Combat Battalion

317th Engineer Combat Battalion

126th Mountain Engineer Battalion

1108th Engineeri Combat Group

235th Engineer Combat Battalion

255th and 337th Engineer Combat Battalion

19th Engineer Combat Group

(19th Engineer Combat Regiment)

401st and 402nd Engineer Combat Battalion

39th Engineer Combat Group (39th Engineer Combat Regiment)

404th and 643rd Engineer Combat Battalion

175th Engineer General Service Regiment

1338th Engineer Combat Group (337th Engineer General Service Group)

169th Engineer Combat Battalion

182nd Engineer Combat Battalion

185th Engineer Combat Battalion

Air strip built by 185th near Futa Pass

92nd Engineer General Service Regiment

387th Engineer Battalion (Separate)

405th Engineer Water Supply Battalion

1554th Engineer Heavy Ponton Battalion

1029th Engineer Treadway Bridge Company

1755th Engineer Treadway Bridge Company

1168th Engineer Combat Group

423rd Engineer Dump Truck Company

425th Engineer Dump Truck Company

66th Engineer Topographic Company

46th Survey Company, South African Engineer Corps

1710th and 1712th Engineer Map Depot Detachments

597th Engineer Light Equipment Company

2750th Engineer Light Equipment Company

2916th Engineer Camouflage Company

1st Platoon, 451st Engineer Depot Company

383rd Engineer Depot Company

2769th Engineer Depot Company

400th Engineer Maintenance

Company

1206th Engineer Composite Section

1980th Engineer Composite Section (Scarperia 29th September 1944 H. Lofton)

1981st Engineer Aviation Fire Fighting Platoon

1628th Engineer Utilities Detachment

1621st Engineer Model Makers Detachment

6th South African Armored Division Engineers

1st British Infantry Division Royal Engineers

6th British Armored Division Royal Engineers
8th Indian Division Engineers
78th British Infantry Division Royal Engineers
XIII Corps Royal Engineers
British Naval Party "Jig"

"

British Army Fire Service
British 3rd Airfield Construction Group
9th Brazilian Engineer Battalion

Section VII The Po Campaign

A - The Tactical situation

B - Work at Engineer Headquarters

C - Unit Operations

317th Engineer Combat Battalion

16th Engineer Combat Battalion

126th Mountain Engineer Battalion

109th Engineer Combat Battalion

313th Engineer Combat Battalion

316th Engineer Combat Battalion

310th Engineer Combat Battalion

1108th Engineer Combat Group

19th Engineer Combat Group

401st Engineer Combat Battalion

402nd Engineer Combat Battalion

39th Engineer Combat Group

1338th Engineering Combat Group

169th Engineer Combat Battalion

182nd

Engineer Combat Battalion

185th Engineer Combat Battalion

175th Engineer General Service Regiment

92nd Engineer General Service Regiment

224th Engineer General Service Regiment

226th Engineer General Service Regiment

405th Engineer Water Supply Battalion

1554th Engineer Heavy Ponton Battalion

1029th Engineer Treadway Bridge Company

1755th Engineer Treadway Bridge Company

1168th Engineer Combat Group

217th Engineer Dump Truck Company

423rd Engineer Dump Truck Company

425th Engineer Dump Truck Company

597th Engineer Light Equipment Company

2750th Engineer Light Equipment Company

66th Engineer Topographic Company

1710th and 1712th Engineer Map Depot Detachment

383rd Engineer Depot Company

2769th Engineer Depot Company

400th Maintenance Company

1206th Engineer Fire Fighting Platoon

1980th Engineer Aviation Fire Fighting Platoon

1981st

Engineer Aviation Fire Fighting Platoon

1628th Engineer Service Detachment (Utilities)

6th South African Armored Division Engineers

British Army Fire Service

Miscellaneous British Units

9th Brazilian Engineer Battalion

Section VIII Lesson learned in the Italian Campaign

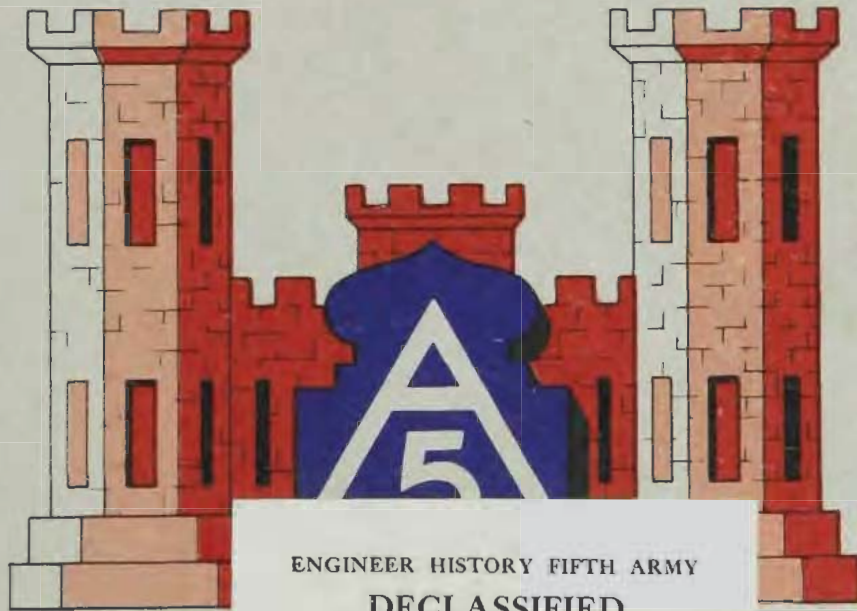
I - Introduction

II - Planning

III - Comments and Observation on Operations

ENGINEER HISTORY

MEDITERRANEAN THEATER



ENGINEER HISTORY FIFTH ARMY

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THE ENGINEER SCHOOL

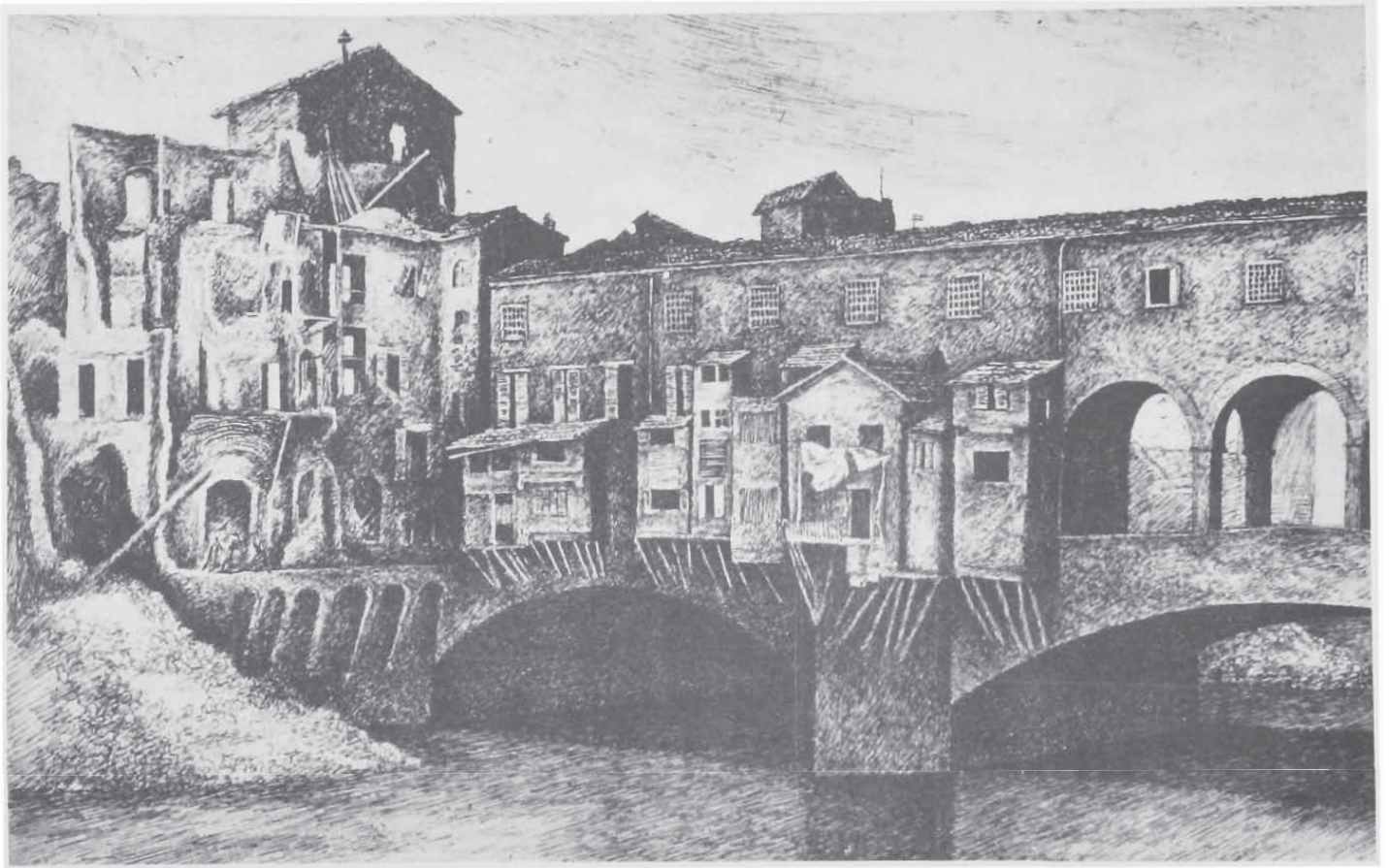
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FIFTH ARMY

VOL II

CONFIDENTIAL



PONTE VECCHIO - 1944

Original Pen and Ink Drawing by
M/Sgt Mitchell Siporin

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VOLUME TWO

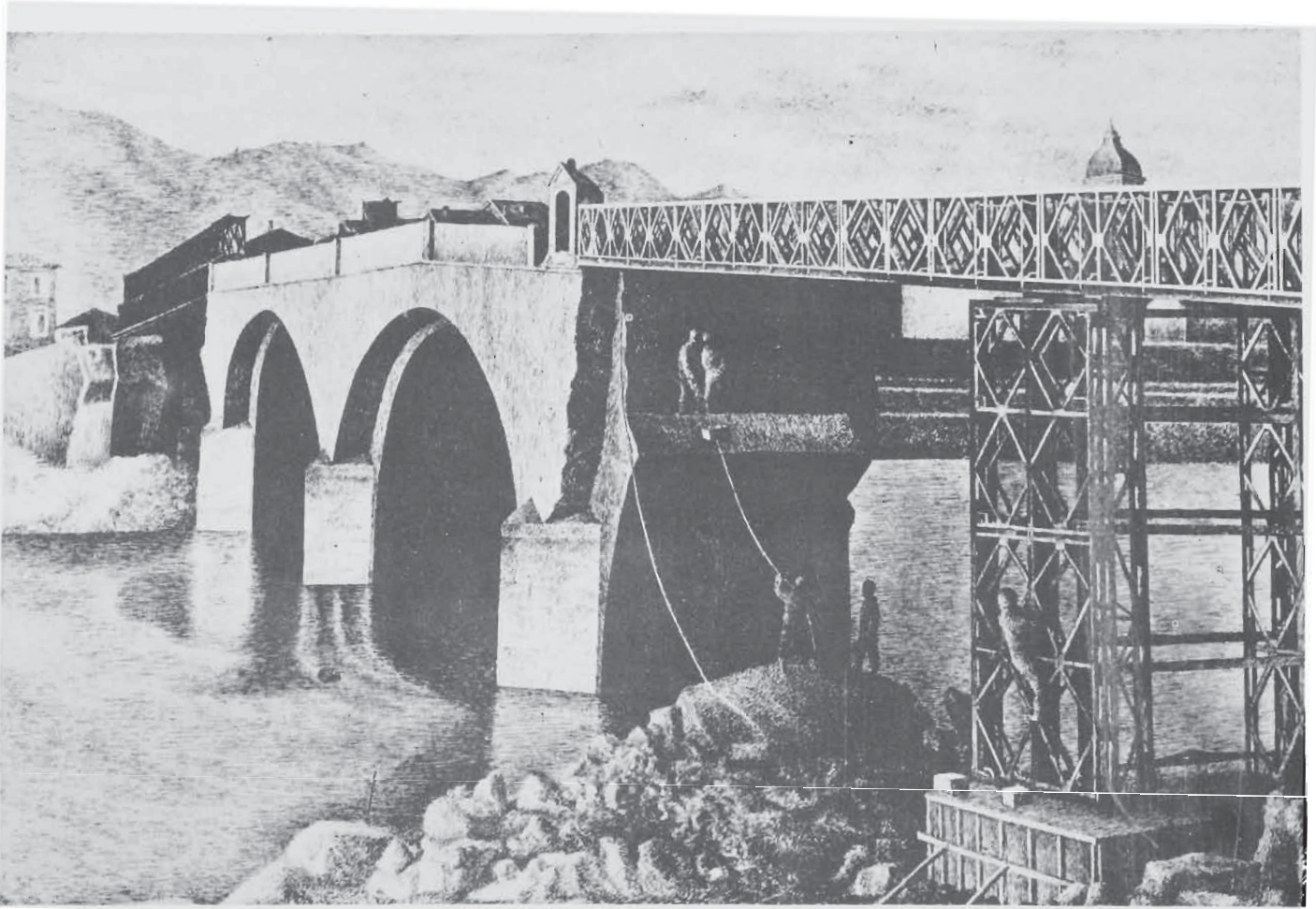
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ENGINEER HISTORY - FIFTH ARMY - MEDITERRANEAN THEATER

TABLE OF CONTENTS

VOLUME TWO

	<u>Pages</u>
VI. THE ARNO THROUGH THE WINTER STATIC PHASE	160 - 229
A. The Tactical Situation	160
B. Work at Engineer Headquarters	161
C. Unit Operations	166
VII. THE PO CAMPAIGN	230 - 264
A. The Tactical Situation	230
B. Work at Engineer Headquarters	232
C. Unit Operations	235
VIII. LESSONS LEARNED IN THE ITALIAN CAMPAIGN	265 - 268



BRIDGE CONSTRUCTED BY 235TH ENGINEER COMBAT BATTALION OVER SERCHIO RIVER

Original Pen and Ink Drawing by
M/Sgt Mitchell Siporin

SECTION VI

THE ARNO THROUGH THE WINTER STATIC PHASE

	<u>Page</u>
A. The Tactical Situation	160
B. Work at Engineer Headquarters	161
C. Unit Operations	166

SECTION VI

THE ARNO THROUGH THE WINTER STATIC PHASE

A. The Tactical Situation

Although the attack which was supposed to end the war in Italy came in September, the roots of it were based in the late summer months. It was at that time that the planning of the operation was begun and the participating units maneuvered into position. The 91st Division had reached the Arno River at Pontedera on 18 July; Leghorn had fallen the following day; the 34th Division had entered the southern half of Pisa on 23 July; the Eighth Army had occupied Florence on 22 August. The British XIII Corps, with the 8th Indian, 1st and 78th British Infantry Divisions, and 6th British Armored Division, was put under Fifth Army control.

The Arno was the barrier all along the Fifth Army front, an obstacle which had been crossed at only a few points, an obstacle which had to be overcome before the Army could strike at the Germans in their strongly fortified natural defenses of the Gothic Line. Experience at Salerno, the Volturno, the Garigliano and Anzio, had proved that any assault on carefully prepared German positions had to be well planned, and had to be executed with an overwhelming superiority of arms. To achieve surprise, a deception scheme, showing a build-up in the Pontedera area was inaugurated in August by the engineers. Actually, the strong Fifth Army forces were to attack from the Florence area, after a feint made by the Eighth Army along the Adriatic coast.

The attack began as planned (the official starting date of the Northern Appennine Campaign was 1 September). The Fifth Army engineers bridged the Arno at numerous spots, as the troops crossed the river the last days of August and the first part of September. Rapidly the drive went up Highway #65 until by 10 September the Gothic Line had been reached, high in the Northern Appennines. Here the 34th, 85th, 88th and 91st Divisions ran up against the strongest defenses yet encountered in Italy. Artillery and direct tank and tank destroyer fire did little damage to the deeply dug-in paratroopers and infantry. But the Gothic Line was broken and the troops were beyond Futa Pass by 17 September (about the time the fall rains began again).

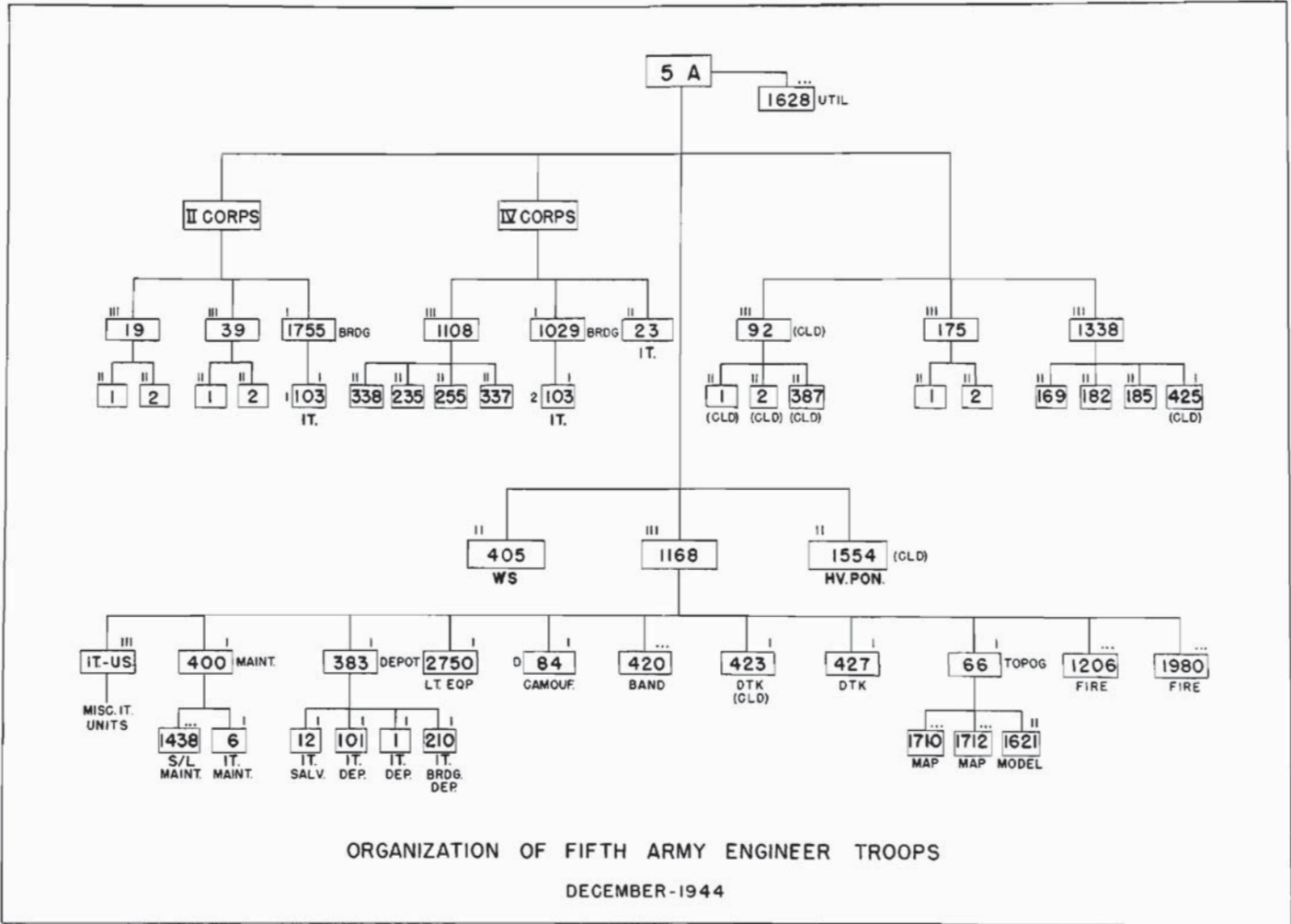
Yet the fighting was still hard. There were still twenty-eight German divisions in Italy, and they contested every hill, fighting stubbornly until II Corps was stopped within sight of Bologna, the immediate objective. The wind, snow, rain and mud of the Appennines helped, but it was the German soldier who stopped the attack.

Trails were pushed up the slippery slopes, the few highways in the sector were opened, demolished bridges gapped everywhere, and mud sloughs rocked until passable. The rains, which began in September, increased in October. By 3 November, all gullies were rushing rivers and the rivers virtual floods. Bridges were swept out throughout the Fifth Army sector, but enough remained to prevent the crippling of communications. Waters of the Arno lapped the lower sides of Bailey bridges, as the river rose to a height unequalled in ninety-nine years and fifty-one weeks.

The tactical situation became static, and combat was limited to artillery duels and patrol clashes. Preparations were made for an attack about the beginning of 1945, but this was prevented by a German attack in the Serchio River Valley in IV Corps sector at Christmas time. Troops were rapidly switched to meet the threat, and it was soon stopped.

In February, two limited objective attacks were made in the IV Corps area, one in the coastal sector north of Viareggio by the 92nd Division, and one by the 10th Mountain Division, in the Mount Belvedere - Mount Torraccio sector.

As spring approached, preparations were made once again for an attack. Supplies were built up, troops rested and re-equipped, units regrouped and artillery moved into position. As April came, the offensive was ready for the go ahead sign.



5 A

1628 UTIL

II CORPS

IV CORPS

III 19

III 39

I 1755 BRDG

III 1108

I 1029 BRDG

II 23 IT.

III 92 (CLD)

III 175

III 1338

II 1 2

II 1 2

I 103 IT.

II 338 235 255 337

2 103 IT.

II 1 2 387 (CLD) (CLD) (CLD)

II 1 2

II 169 182 185

I 425 (CLD)

II 405 WS

III 1168

II 1554 (CLD) HV.PON.

III IT-US

I 400 MAINT.

I 383 DEPOT

I 2750 LT. EQP

D 84 CAMOUF.

... 420 BAND

I 423 DTK (CLD)

I 427 DTK

I 66 TOPOG

... 1206 FIRE

... 1980 FIRE

MISC. IT. UNITS

... 1438 S/L MAINT.

I 6 IT. MAINT.

I 12 IT. SALV.

I 101 IT. DEP.

I 1 IT. DEP.

I 210 IT. BRDG DEP.

... 1710 MAP

... 1712 MAP

II 1621 MODEL

B. Work at Engineer Headquarters

On 16 December 1944, Colonel Paxson left Engineer Headquarters and went to 15th Army Group. Lieutenant Colonel Rowland became Deputy Engineer. Lieutenant Colonel Harrison D. Wilson was assigned as Executive Officer in March. In April, when Colonel Rowland was in charge of Engineer Training Center #2, Colonel George W. Marvin was assigned as Deputy Engineer.

As the front lines became static again, engineer activities were largely normal road maintenance and construction of permanent bridges. A total of 1,231 miles of roads were maintained by Army engineer units, many miles of which were dropped south of Route #67 when the Port of Leghorn was opened. Considerable damage by bombing, shelling and demolition occurred to the towns of Pisa, S. Casciano, Viareggio, Porretta, and Firenzuola, and to the main north-south routes. About forty miles were damaged appreciably. Seven hundred and thirteen bridges were built, of which 123 were of semi-permanent construction (see Section #1, Appendix J for a tabulation of the bridges built by Fifth Army Engineer units; Section #2 for a list of all the work orders issued by the Operations and Engineering Section).



MUD AND SNOW IN THE NORTHERN APENNINES

Practically all valleys and terrain in the Northern Appennines were checked for mines and marked to prevent troops from using them as bivouacs. A change of policy to cut down mine team casualties was inaugurated. Areas requested for bivouacs or dumps were checked and the results reported to the Operations and Engineering Section. If the area was found heavily mined, an alternate area was chosen. Often paths for gasoline pipelines and signal wires fell in this latter category.

There was a constant shifting of dump areas during the winter due to changes in the tactical plans, and this, coupled with the slippery condition of the mountain roads, necessitated the establishment of fourteen American fire stations. In addition, the British Army Fire Service operated five stations and Peninsular Base Section two stations in the Army area. More water was also produced in this period than in any previous one; 183,060,000 gallons were supplied to the Army.

SECTION VI

Work at Engineer Headquarters (cont'd).

During the campaign, camouflage activity was directed mainly toward the concealment of Command Posts, infantry positions and, especially, artillery sites. With the coming of spring, road screens were constructed, and every effort made to maintain a status quo appearance as the build-up was being made for the Po Valley attack.

In order to insure the minimum of delays to traffic on the mountain roads during the winter, and to establish facilities to handle emergencies caused by winter storms, a road post system was set up by the Engineers. Four main posts and twelve sub-posts were established on the main supply routes after a study of local weather and road conditions had been made. Areas above 500 meters had previously been subject to considerable snowfall, and sections of road above 800 meters had frequently been blocked, largely from drifts.

At the main posts, the engineer officer in command had a transportation officer or non-commissioned officer, snowplow operators, truck and wrecker drivers, radio operators, a mechanic, a cook and two first aid men to assist him. At the sub-stations, an engineer non-commission officer was in charge and the transportation representative was eliminated. These staffs were equipped to perform the missions assigned the posts. Snow plows, both motorized and V-type, graders, and bulldozers, as well as hand shovels were allocated.

Every effort was made to remove the snow before it became packed by traffic, and to prevent drifts from developing. Crushed stone was stock-piled along the routes to spread over the icy sections. Each post kept rations on hand for the use of snowbound military personnel, and the first aid men were kept in the event their services should be needed. Communication was maintained by telephone connections and radio. The network control station was at Engineer Headquarters.

A liaison officer from the Transportation Section was notified as to road conditions, and the need for chains. Wrecker service was provided to haul wrecked, stranded, or stalled vehicles off the road and generally aid the movement of traffic. A limited supply of petroleum, oil, and lubricants were stocked, but were for use in emergencies only. Daily, the main posts submitted situation reports by messenger to Engineer Headquarters giving the general condition of the road network, vehicle and medical casualties, and statistics on snow and periods of closed roads.

Throughout the Army area, eight-foot poles were erected at 200-foot intervals along the road edges to serve as snow guides. Scotch Lite tabs were tacked to each pole to aid night driving. The Operations and Engineering Section coordinated and directed this work, alerted the road posts of unusual vehicular movement, and made such inspections as necessary. There were only a few heavy snowfalls. These proved the success of the system, which would certainly have been capable of handling a much heavier winter.

During this phase, Major Kenyon revised his previous chart for the classification of steel bridges according to the British system (see Diagram #6, Appendix I), and made a chart to standardize the design of floor beams on timber stringer bridges (see Diagram #7, Appendix I). The Army road numbering system became continually more comprehensive as the campaign progressed, until it gave very complete coverage of the Northern Apennines, and Po River regions.

The Operations and Engineering Section was gradually increased during this period. Captain Frank E. Seipel became Equipment Officer, Captain Emanuel J. Cappello, Tactical Bridge Officer to replace Captain Meyer, and Captain Albert G. McKain, Roads Officer. After the death of Major Shirk near Viareggio in February, 1st Lieutenant George A. Pommer was assigned as Camouflage Officer. Lieutenant Mayhew assumed Major Shirk's duty of Fire Marshal.

In the fall, preparations were made to write the Engineer History of Fifth Army. The actual writing was started after Christmas. A questionnaire was sent to all engineer units that had ever worked under, or been assigned to, the Fifth Army. Thus the material for this volume came largely from the individual units themselves. In spite of the explicit directions on the information requests sent out, the unit histories varied greatly in content; some were very complete, others so brief or non-factual that it was impossible to present their exploits completely or to portray them in their full color.

On 5 September, Lieutenant Colonel Jones was assigned to the 235th Engineer Combat Battalion, and at that time the mapping and intelligence functions were again combined under one head in the Plans, Intelligence and Training Section. The camouflage and fire fighting duties returned to the Operations and Training Section. Work was continued on the study and interpretation of the terrain in the Po Valley. On 22 September a special engineer report on a portion of the Po River was printed (see Appendix M). This report is typical of dozens prepared by the section. In December, Major Kirk was replaced as head of map distribution by Captain Leo S. Straw.

SECTION VI

Work at Engineer Headquarters (cont'd).

The Supply Section continued its duties of the previous period. Major Ernest L. Clements and Captain Wylie B. Mendel were added to the section, and Major Peterson returned to the United States. First Lieutenant Warren E. Baldwin assumed command of the newly formed 383rd Engineer Depot Company, and Lieutenant Benjamin K. Sollars was assigned to the 400th Engineer Maintenance Company.

During the winter from October until January, the Real Estate Section was attached to City Command Section. In early November that group operated Montecatini as a rest camp for combat troops. Utilities were arranged for, the city divided into personnel and service accommodations, and assignments of property made. Planning work for Po Valley cities was done during the winter and turned over to the City Command Section. After being released from this job, the Real Estate Section resumed normal operations for the Army Engineer. First Lieutenant Richard V. Chase joined the section in February. Routine services were done for G-1, G-3, and G-4 until the April attack began.



THE WINTER FRONT

From September to April, numerous new units were formed: Three combat battalions, one light equipment company, one depot company, one maintenance company, two combat group headquarters, and two general service regiments were activated. At the same time two combat and one general service regiment were converted to combat groups, and two general service regiments were reorganized under new Tables of Organization and Equipment. These activations and reorganizations resulted in a further drain of both officer and enlisted personnel from depots, and in no case were the new units (except separate companies) ever able to come up to full strength.

The loss of personnel due to Temporary Duty in the United States and rotation reduced the strength of most units to about eighty-five per cent of Table of Organization. In connection with the foregoing, it can be added that the rotation system failed miserably since very few rotation replacements were ever furnished, and the ones that were rarely qualified for the vacancies they were to fill.

First Lieutenant Loring S. Miller was made Assistant Adjutant on 15 January 1945. On 17 March 1945, Engineer Headquarters was disbanded and the 2626th Engineer Group (Provisional) with the same personnel, Table of Organization, and functions was organized. The 1168th Engineer Combat Group was activated in December to simplify the administration of the numerous small units assigned to Engineer Headquarters.

SECTION VI

Work at Engineer Headquarters (cont'd).

Engineer Training Center Number 2 was organized in March 1945 for the purpose of training two of the newly organized general service regiments. The personnel for the 224th and 226th Engineer General Service Regiments came from the 92nd Infantry Division (Colored). Colonel Rowland was in charge of the Center, which was located south of the Arno River between Lastra a Signa and Montelupo. The first course of the school was scheduled for the period 2-28 April (see Appendix F).

Lieutenant Colonel B. B. Smith, RE, formed a new British Engineer Increment on 18 August 1944, which was composed of the following personnel:

- Lieutenant Colonel B. B. Smith, RE, (Assistant Director of Works)
- Major E. A. Hansen, MBE, RE, (SORE, Operations and Staff Duties)
- Captain J. D. Scarlett, RE, (SORE III Stores)
- 1 Corporal - Clerk
- 1 Lance Corporal - Clerk

In September two clerks were added, a sergeant and a lance corporal. In February 1945, Lieutenant M. A. S. Williams, RE, was attached to assist with supplies and equipment which had become a major problem for the section. He was relieved by Captain I. G. Storey who had similar duties from April to May.

16th Army Group, RE, with 466th Indian Corps Troops and two Army field companies and a road construction company attached were under the command of the Army Engineer for maintenance of roads to the rear of the XIII Corps sector. Also under the Engineer was Headquarters, 74rd CRE Works for rehabilitation work in Florence, a responsibility of the Army Engineer. The American engineer units with Fifth Army did many jobs around the city, but the main work of restoring public utilities, the electricity, the sewage systems and the maintenance of roads, was done by British troops given to the Engineer for this purpose.

The work of restoring the town's utilities was begun in August, and by the end of September, much of it was accomplished (see Appendix H for Rehabilitation of Florence, a report submitted by the 73rd CRE). The work continued, however, throughout the winter and spring, the utilities being constantly repaired to serve a greater and greater area. The work was first under the direct control of Lieutenant Colonel G. W. Harris, 73rd CRE, and after 12 January 1945, under 77th CRE, commanded by Lieutenant Colonel A. J. Kennedy.

A very satisfactory "common user" policy was worked out for the supply of engineer stores to the 6th South African Armored Division which was assigned to the Fifth Army. The Division was treated as an American division with access to American dumps for all tactical supplies common to both British and American armies. During the winter when the 1st and 78th British Infantry Divisions took over the 88th Division sector, it was found necessary for them to borrow twelve 6 x 6 dump trucks, as the British trucks were unable to navigate the muddy mountain trails.

The adaptability of the British "Senior Service" was again demonstrated when road work in the Pisa sector was done by Party "Jig" of the Royal Navy for approximately four months. The relinquishment of operational command of XIII Corps made virtually no difference to the work of the section other than to complicate administration. All responsibility for supply of the Corps was left with the British Increment, Fifth Army, but as operational command was now with the Eighth Army, it became impossible to exercise any control over demands made for supplies.

Throughout the winter, Italian military units were engaged and supervised by American engineer units. In the main they did manual labor. A status report of Italian units under Command Headquarters, Fifth Army Engineers, as of 5 April 1945, is printed below:

<u>Italian Unit</u>	<u>Working Strength</u>		<u>Type of Work</u>	<u>Location</u>	<u>Attachment</u>
	<u>Off</u>	<u>EM</u>			
103rd Italian Engr Combat Bn, Hq & Hq Service Co.	33	581	Administration	Q691739	175th Engr. G.S. Regt. (Opns. only)
1st Italian Engr. Combat Co.			Road Maint.	Q595767	"
2nd Italian Engr. Combat Co.			" "	Q686806	"
3rd Italian Engr. Combat Co.			" "	Q686711	"
210th Italian Engr. Combat Gp.	13	64	Administration	Q783695	1168th Engr. Combat Gp.
23rd Italian Engr. Combat Bn.	29	593	Engr. Road and Bridge work	L594089	1108th Engr. Combat Gp.
301st Italian Engr. Maint. Co.	5	163	General Labor	Q764746	400th Engr. Maint. Co.

SECTION VI

Work at Engineer Headquarters (cont'd).

<u>Italian Unit</u>	<u>Working Strength</u>		<u>Type of Work</u>	<u>Location</u>	<u>Attachment</u>
	<u>Off</u>	<u>EM</u>			
302nd Italian Engr. Maint. Co.	7	179	Salvage Work	Q743753	383rd Engr. Depot Co.
301st Italian Engr. Depot Co.	6	207	General Labor	Q814694	"
302nd Italian Engr. Depot Co.	8	246	" "	Q814694	"
303rd Italian Engr. Depot Co.	6	206	" "	Q743753	"
304th Italian Engr. Depot Co. (Prov)	1	189	" "	Q743753	"
305th Italian Engr. Depot Co. (Prov)			These two companies in process of organizing.		"
306th Italian Engr. Depot Co. (Prov)					
210th Italian Engr. Topo Plat.	1	53	Topo Work	Q786629	66th Engr. Topo Co.
92nd Italian Cam. (Masking) Plat.	1	30	Camouflage Work	Q768732	2916th Engr. Cam. Co.
302nd Italian QM Serv. Co.	4	212	General Labor	L859112	1755th Engr. Treadway Bridge Co. (Opns. only)
306th Italian QM Serv. Co.		180	" "	Q525879	1029th Engr. Treadway Bridge Co. (Opns. only)

SECTION VI

C. Unit Operations

16th Armored Engineer Battalion

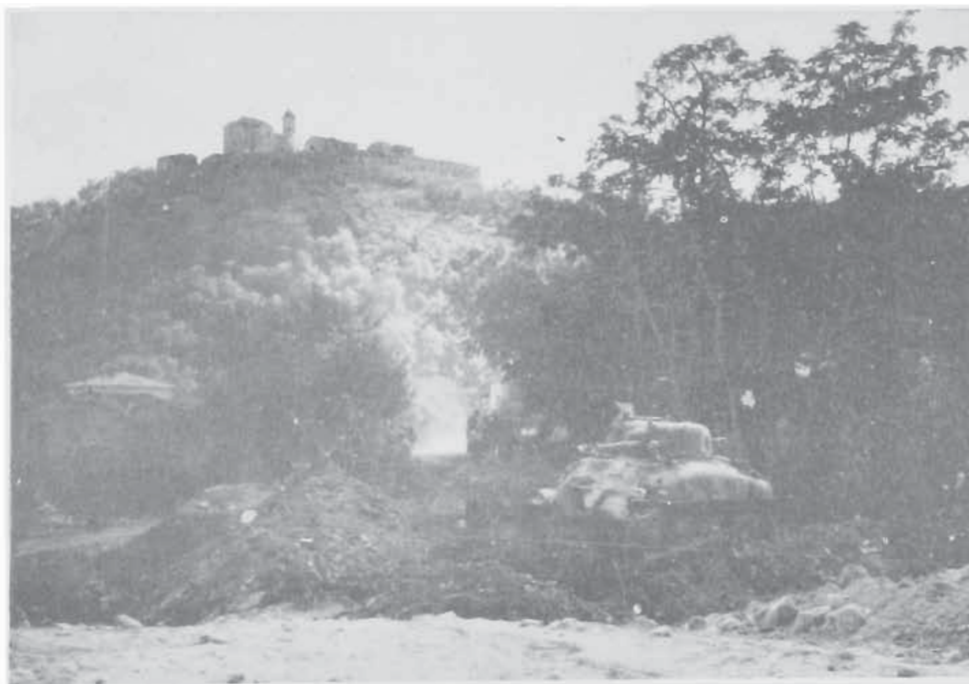
On the morning of 1 September, the assault crossing of the Arno River began. The 16th Armored Engineer Battalion was engaged in building bridges, constructing fords, lifting mines, and repairing roads. A 180-foot floating steel treadway bridge was built near Castelfranco, a ford for armored vehicles and a floating steel treadway bridge was built near Cascina, and two floating steel treadway bridges constructed at Pontedera. High water a few days later caused one of the Pontedera bridges to be abandoned, but on the whole, the initial operations of the 16th were very successful.

The battalion, less Companies "A" and "C", moved to the vicinity of Pontedera on 3 September, and shortly afterwards moved to Altopascia. Companies "A" and "C" remained attached to Combat Commands "B" and "A" respectively.

The entire operation of crossing the Arno River required a great deal of work by the personnel of the unit. During the early part of the month, the operations consisted of opening routes of advance along which many enemy demolitions and mines were found. Twenty steel treadway bridges and two Bailey bridges, and three timber bridges were constructed, twenty-two two-way bypasses were made, three underpasses were removed or cleared, one tunnel 800 feet long was cleared of rubble and craters and opened to two-way traffic, approximately 2,000 feet of new road was constructed, and innumerable road blocks, anti-tank mines, and anti-personnel mines removed.

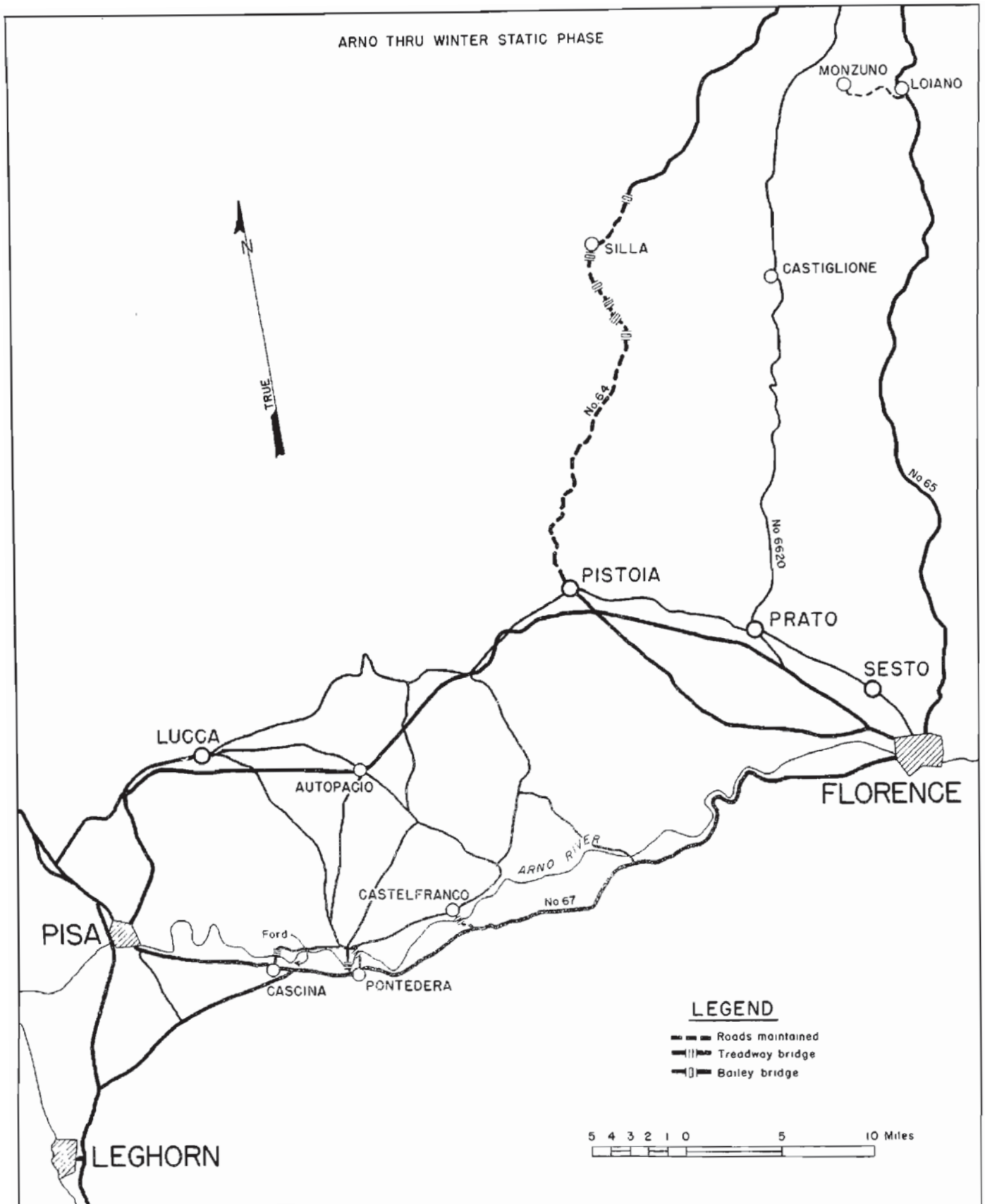
On 17 September, Company "B", 317th Engineer Combat Battalion, which had been working with the 16th, reverted to the control of the 92nd Infantry Division Regimental Combat Team. On 26 September, the 16th moved near Sesto. Company "A" remained in action with Combat Command "B". During the period 27 September - 7 October, the battalion trained in various engineer subjects.

On 8 October, the 16th was attached to II Corps as Corps Engineers and was assigned the mission of improving and maintaining the roads from Loiano to Monzuno. Two companies worked on the lateral road from Loiano to Monzuno for two days, when Company "C" was attached to Combat Command "A" and worked the road from Monzuno to Gabbiano.



16TH CLEARING THE WAY FOR ARMOR

ARNO THRU WINTER STATIC PHASE



16 TH. ARMORED ENGINEER BATTALION
OPERATIONS

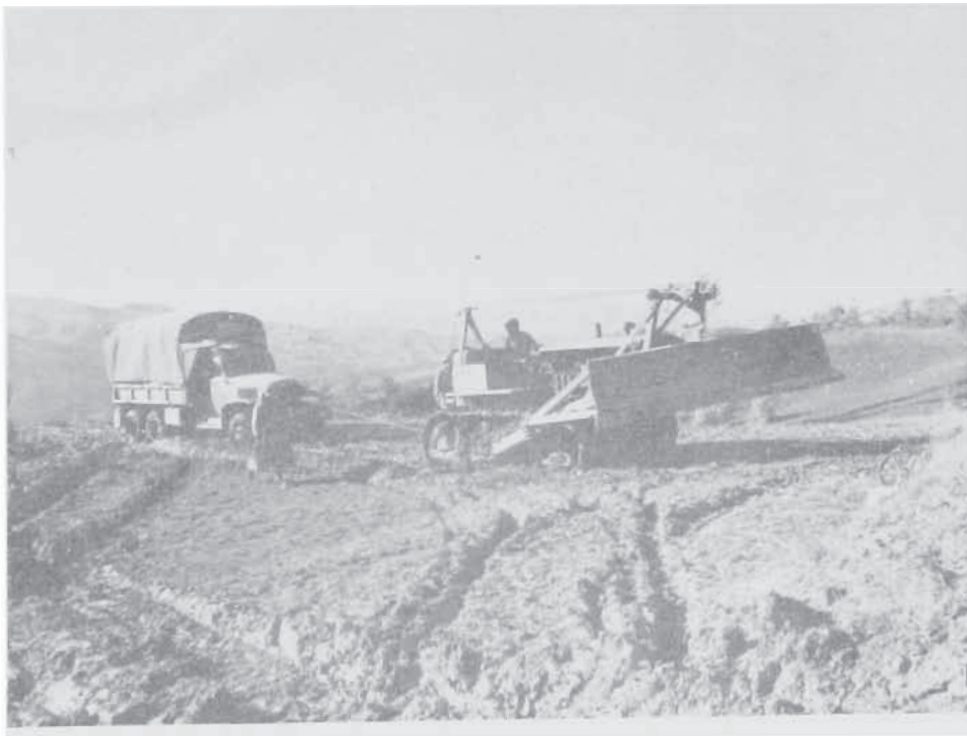
SECTION VI

16th Armored Engineer Battalion (cont'd).

In the meantime, Company "B" working on the lateral road, put in five box culverts, one 40-foot and one 50-foot revetment, two 15-foot treadway bridges, and two 30-foot treadway bridges. On 19 October, a culvert and a ford was built on the lateral road, and one hundred men from tank units and one hundred fifty men from a reconnaissance unit were attached to the 16th to help ditch and rock the road. A water point and one of the mobile shower units were set up along the route to supply units of the division.

Company "A", attached to Combat Command "B", had as its main axis of advance Highway #64. To aid in this advance, Company "A" made four $\frac{1}{4}$ -ton vehicle trails, filled in two craters, put in two box culverts, made one bypass, and cleared a landslide and a ford. It also built a number of bridges, including one foot bridge, one 30-foot treadway bridge, two 45-foot treadway bridges, and six Bailey bridges of various lengths including a 210-foot triple-single with one pier.

The 210-foot bridge was built at Silla at night behind the protection of buildings because of direct enemy fire. The entire bridge, including the launching nose, was built on the rollers and pushed across the gap. As it was close to dawn, there wasn't time to jack the bridge up to remove the rollers. A wrecker was brought up and used to raise the end of the bridge so the rollers could be removed. Because of lack of time, the rollers on the pier had to be taken out the next night but the bridge was open to Class 15 traffic throughout the day.



16TH HAULING TRUCK OUT OF MUD NEAR LOIANO

The remainder of October, the companies under battalion control were engaged in the maintenance of the divisional road net. Keeping the roads open became increasingly difficult with the coming of constant rains, and the flooding of local streams. Company "A" remained with Combat Command "B" on Route #64, and was committed as infantry intermittently during the remaining days of October. Their engineer activities were confined to road patrols and maintenance of bridges, fords and culverts. On 9 November, Company "A" returned to battalion control.

SECTION VI

16th Armored Engineer Battalion (cont'd).

During the month, all battalion personnel had a ten-day rest at Sesto. In December, the battalion established engineer dumps in forward areas to supply the division's proposed attack. This work was stopped and on 28 December the battalion moved near Lucca for possible use in the coastal area. Showers and water points were installed in the new area and a 223-mile road net assigned. In addition to the road and bridge work, each company received two and one-half weeks basic engineer training.

On 17 February, the battalion moved to Prato for a three-day temporary bivouac while the 1st Armored Division relieved the 6th South African Armored Division. From this area, the companies moved piecemeal to their areas of responsibility, gradually taking over all the operations previously done by the South African engineers.

Company "B", 109th Engineer Combat Battalion, and the 504th Italian Pioneer Company were attached to the battalion to aid in the engineer work required. Battalion headquarters was near Cadi Landio east of Castiglione. Over 1,000 Italian civilian laborers were hired to help with the engineer work which included about seventy miles of roadway. On 8 March, Company "B", 109th Engineer Battalion, was relieved and the company returned to its parent unit.

Since November, 100 culverts had been installed, 14,560 cubic yards of gravel used, four treadway bridges removed and three installed, one 60-foot Bailey installed and later removed, and a 50-foot fixed bridge built. Schools were given as often as practicable to keep the personnel of the battalion abreast of the latest engineering equipment and methods.

109th Engineer Combat Battalion

With the coming of September, the 109th Engineer Combat Battalion was in the Florence area. On 11 September, the unit was in the vicinity of Sesto. There, it was engaged in expediting the movement of the 34th Division in the drive through the Appennines towards Bologna.



109TH SUPPLY ROUTE

SECTION VI

109th Engineer Combat Battalion (cont'd).



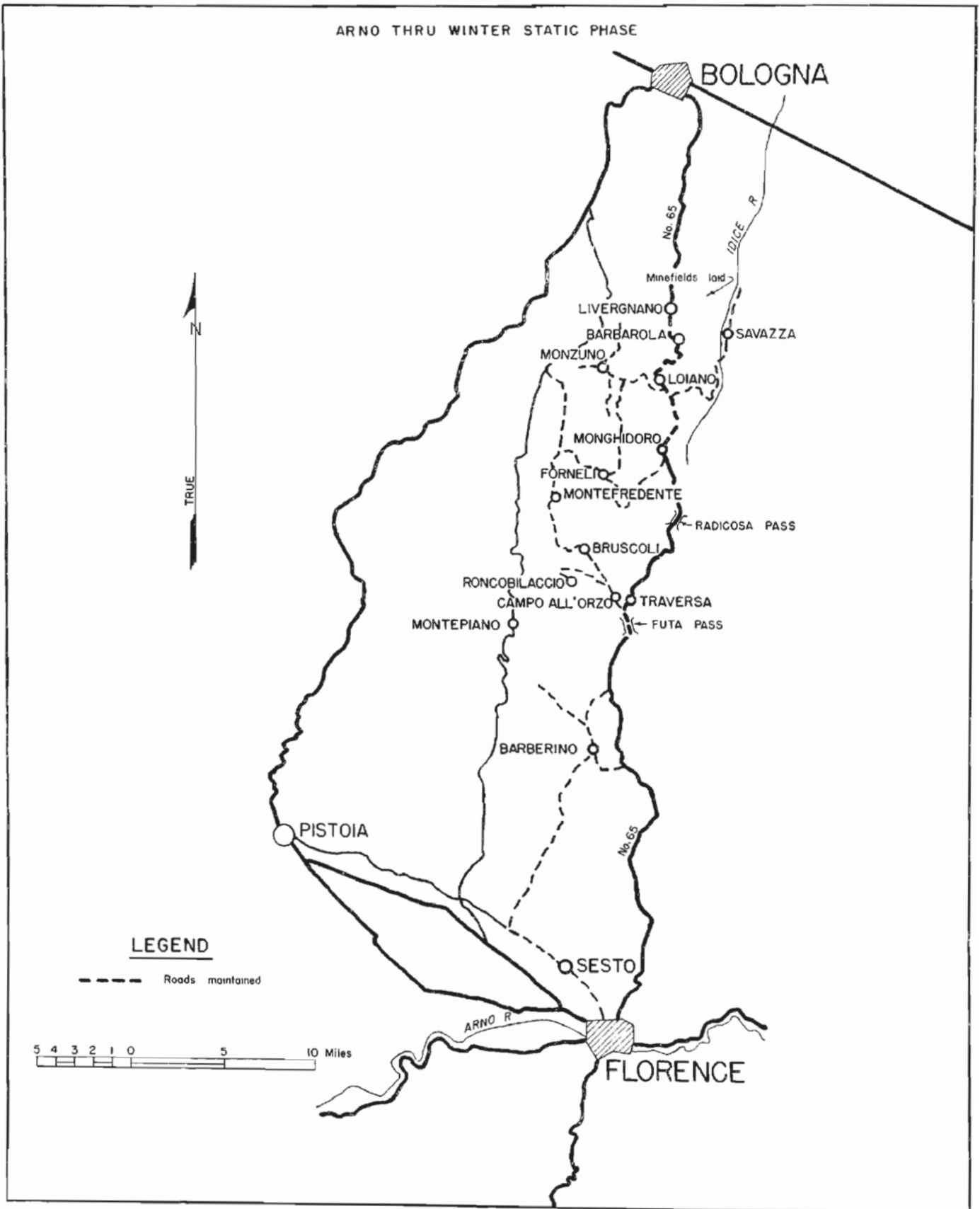
109TH MULE TRAIL

During the first month of this drive, the 34th Division moved along a route parallel to, but west of, Highway #65. Until 27 September, the main supply route ran north from Sesto to Barberino, and from that point branched to the north and west, one arm extending in the direction of Montepiano and the other through Migneto and northward into the mountains. From Sesto to Barberino, it was necessary to construct and maintain six bypasses and one fill. On the two branches north of Barberino, three fills were made and a great deal of maintenance work done, due to the bad roads and heavy rains.

On 26 September, all elements of the 109th moved over Futa Pass, and to the north and west. Battalion headquarters was established in the vicinity of Campo All' Arzo, one mile west of Traversa. At this time, the main supply route for the division was from Florence and Highway #65 to Campo All' Arzo, where it branched out to Roncobilaccio and to Bruscoli.

On 1 October, the battalion moved near La Calcinara, and maintained the roads from Futa Pass to Bruscoli and on to La Calcinara, as well as many laterals, the most important being those to Fornelli and to Montefredenta and Campiano. When the battalion moved to Fornelli on 6 October, two main routes were repaired and maintained, one from Fornelli to Monzuno, the other from Campiano via Gabbiano to Monzuno. The first mentioned road was originally an unimproved trail with no base, which became practically impassable during rainy weather. Its maintenance required the full time labors of two companies plus a provisional company of infantry replacements supervised by personnel from the battalion S-3. When the Gabbiano road was opened to Monzuno, it became no longer necessary to use this trail.

ARNO THRU WINTER STATIC PHASE



109 TH. ENGINEER COMBAT BATTALION
OPERATIONS

SECTION VI

109th Engineer Combat Battalion (cont'd).

On 14 October, all elements of the battalion moved to the east side of Highway #65, as the 34th Division changed sectors. The roads entering the division sector were unimproved and impassable in wet weather. From 15 to 21 October, the 109th maintained the road running from Barbarolo to Savazza, but it was then abandoned in favor of a road from Livergano to S. Ma Di Zenz with branches northward into the infantry positions. Along all these routes, mine clearance work had to be done, and sectors cleared throughout the division area. In addition, the division water points were operated, and camouflage work done and the entire division's camouflage discipline checked. The 109th was engaged in this work through the remainder of October and into November.

One part of the division main supply route was so steep that gravel would not remain on it. This was solved by sandbags filled with crushed sandstone for a road base. A total of 11,000 sandbags were used. To enable northbound trucks to enter this road from Highway #65 at Loiano, a cut-off route was constructed. When the reconnaissance for this project was made, it was found that to make such a road it was necessary to cross approximately 450 feet of soft, muddy ground.



PLANK ROAD BUILT BY 109TH NEAR LOIANO

As the quantity of rock necessary to construct a rock road was not available, a plank road was put in, using 3" x 12" planks. This road was found to be an excellent solution to the problem, and the maintenance on the road was negligible.

As the 34th Division prepared to make an attack, the last part of the year, engineer dumps were established in each regimental sector by the engineer companies supporting the regiments. In this way, the great length of time required to bring supplies to the forward areas was greatly reduced. To furnish an evacuation route, a corduroy road was constructed over soft ground for 1,000 yards. As the road was under the direct observation of the enemy, work had to be done at night. Ten-foot lengths of corduroy matting were constructed, using logs tied together with #9 wire. At the road site, these mats were unrolled over stringers, then fastened down with stakes.

SECTION VI

109th Engineer Combat Battalion (cont'd).

The last of December, the battalion moved to Ca Nove, one mile north of Radicosa Pass on Highway #65. The 109th, less Company "B", worked on the construction of a secondary defense line just north of Radicosa Pass, while Company "B" constructed a secondary line of defense on the west coast in the vicinity of Viareggio. On 12 January, the battalion returned to the front line, the command post moving east of Loiano, and was assigned the maintenance of the road net and the construction of new roads and trails and bridges in the Idice River sector of the line.

Anti-personnel, anti-tank and flare minefields were laid, and parts of enemy fields lifted. This work was continued until 13 February, at which time the battalion returned for rest and rehabilitation at Cavallina. Company "B", which had preceded the rest of the battalion by four days, returned to combat on the 17th with the 16th Armored Engineers in the area along Route #6620 from Lagaro to Murazzo and eastward.

The work on this road net consisted of general maintenance of existing roads, with 120 civilian laborers for help. Two hundred twenty-five yards of double and single concertina wire were laid in front of infantry positions in this sector. On 3 March, the 109th Battalion moved forward to Monghidoro. Company "A" bivouacked near Sabbioni and Company "C" near Canti, both on Route #65. Company "B" returned to the battalion on 10 March and moved into Company "A"'s position, that company moving in turn to Monzuno. In addition to the usual road, bridge, and mine work, the 109th conducted mine schools for the division personnel and a floating bridge school for the engineers.

310th Engineer Combat Battalion

On 12 September, the 310th Engineer Combat Battalion, supported by the 1st Battalion, 19th Engineer Regiment, took its place in line with the other units of the 85th Division in preparation for the breaching of the Gothic Line.



310TH ENGINEER WORKING ON JEEP TRAIL NEAR MOUNT GRANDE

SECTION VI

310th Engineer Combat Battalion (cont'd).

The road from San Piero to Firenzuola was to be the main supply route. The road was very winding for it ascended steep Mount Altuzzo, one of the key defenses of the Gothic fortifications. The enemy had made the most of the excellent demolition sites all along the route. The resultant craters demanded much hand labor and bulldozer work, often in zones of enemy observation.

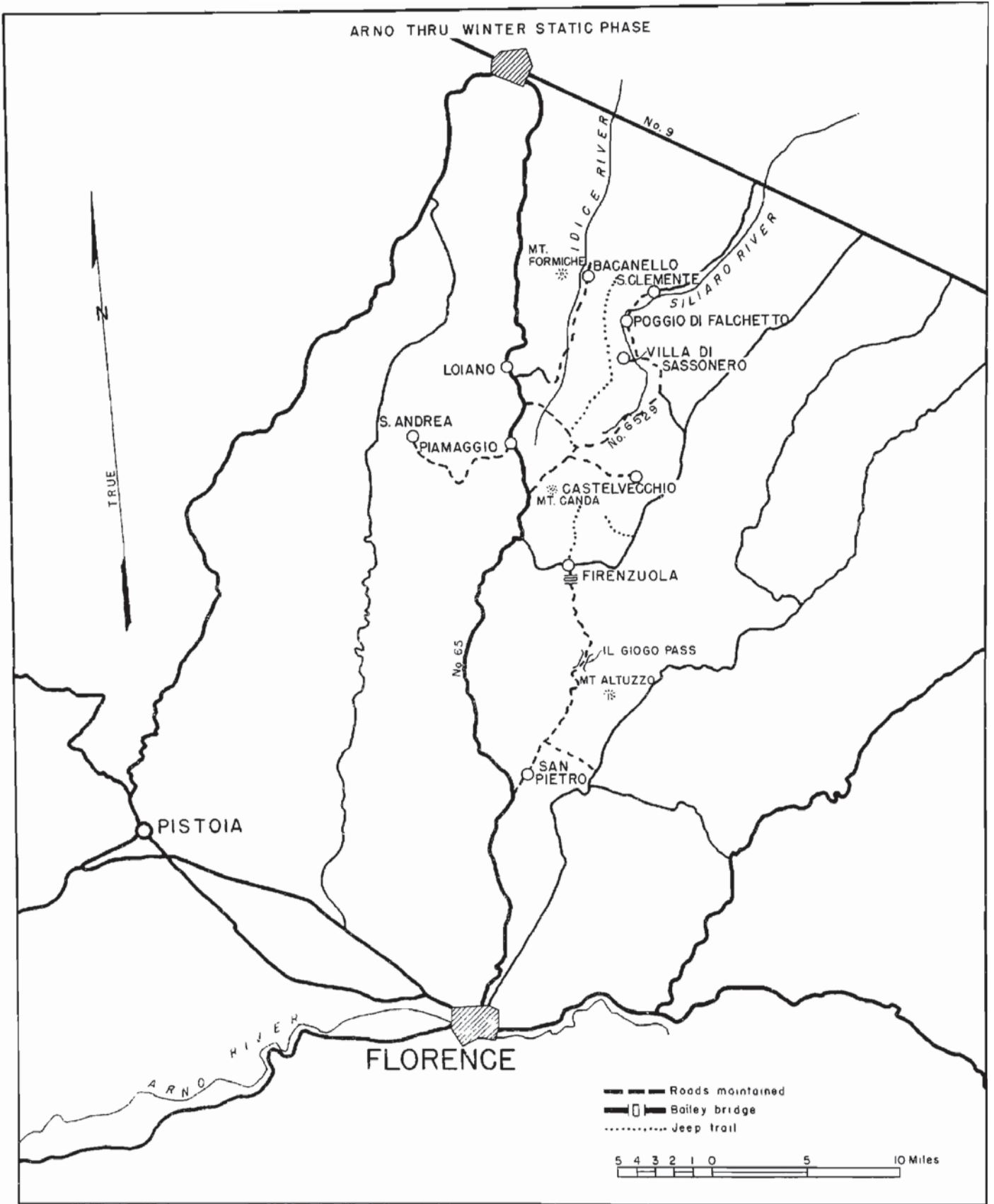
Several craters were located along sheer cliffs, and pick and shovel work was necessary to allow even the passage of mules. Extensive blasting was needed to fill the craters and permit vehicular traffic. Some of the craters were over 200 feet in length. A tank dozer of the 750th Tank Battalion was used for dozing under fire. On 17 September, the infantry reached the summit of the mountain. The following morning the road was open for all traffic. During this time, about six miles of jeep trails had been built.



310TH PREPARING BLAST HOLES IN QUARRY NEAR BACCANELLO

By 22 September, the key road junction town of Firenzuola had been reached. In this sector, again, road clearing had to be done; several craters filled, bypasses and culverts constructed. A 90-foot Bailey bridge was installed about a mile south of Firenzuola under intense enemy artillery fire. At Firenzuola, the division was without established roads, so the existing trail north was converted into a two-way road for a stretch of six miles in spite of the rain and mud. Further to the right, a three mile one-way road was constructed by extensive demolitions and dozing work along a creek bottom.

After a surprise attack on Mount Canda, the 310th had more road work. Route #6529 was opened to its junction with Highway #65, the Torrenti Idice Valley road was improved, and as the division slowly pushed through the Appennines, the 310th followed, improving and widening and repairing existing roads, as well as pushing through completely new routes. The demolitions throughout were extensive and difficult to repair, and mines were frequently run into, both anti-personnel and anti-tank.



310 TH ENGINEER COMBAT BATTALION OPERATIONS

SECTION VI

310th Engineer Combat Battalion (cont'd).

The mountain peaks ahead always provided the Germans with excellent observation posts. A road was needed from the valley road to the dominating Mount Formiche to allow tanks to fire directly on enemy positions, and lessen the chances of a counterattack. The stretch of three miles was opened; the tanks went through.

On 21 October, the 310th opened a supply and evacuation route to Castelvecchio, a distance of about three miles along the front lines. The job, which was completed in one day, led to a line of entrenched infantrymen. Meanwhile, the ten-mile ridge road along the division boundary had been extended three miles. During the first days of October, this road was continued another three miles for the use of the advancing tanks. Then the rains returned and the road was washed out beyond any hope of immediate repair.

The ridge road and its laterals to the valley road were by then deep in mud. In order to have at least one supply route, the entire battalion was put to work on the four-mile stretch of road from Baccanello, on the valley road, to Migliarino. In a downpour this road was gradually improved from a one-way dirt road to a $1\frac{1}{2}$ -way all weather road. Several thousand loads of rock were quarried and used for the making of the metalled surface.

On 21 November, the battalion moved to a site a few miles west of Piamaggio, and was transferred from divisional to II Corps control, to repair and maintain the lateral road from Piamaggio to San Andrea. The 310th worked on this road until after Christmas. Six rock quarries were operated by the battalion for the needed surfacing. Four Bailey bridges were erected, one a 250-foot triple-span bridge.

On 26 December, the 310th reverted to control of the 85th Division, and moved to the vicinity of Lucca. Defense plans against the threatened German attack down the Serchio Valley and the Ligurian coastal plain were put into effect as bridges and culverts were readied for demolition, and craters were prepared for all roads that might be used in the attack. The threat was short-lived, however, and the first week of 1945 was used by the battalion in training with the steel treadway bridge.

On 8 January, the battalion moved and spent the following week preparing to take over the work of the Royal Engineers of the 1st British Division, which was done on the 16th of January. Headquarters was established at Villa di Sassonero. During the period 16 January to 13 March, the 310th operated in support of the division in active defense. The engineer work during this time consisted of maintaining the division road net in the upper Sillaro River Valley in the vicinity of Poggio di Falchetto and S. Clemente.

This maintenance included the quarrying and spreading of well over 6,000 cubic yards of gravel, the construction of two Baileys and one fixed bridge, twenty culverts, the laying of 600 yards of somerfeld matting, and revetting 700 yards of roadway. Defensive positions, minefields and demolitions were prepared as part of the division's defense plan. Much of this work was done within 200 to 400 yards of enemy outposts.

On 14 March, the 310th Engineers were relieved by the Royal Engineers of the 10th Indian Division. From the headquarters at Gagliano, the companies were sent out to train for river crossings. On 1 April, the battalion moved secretly to Calci; all unit and divisional markings were removed from clothing and equipment.

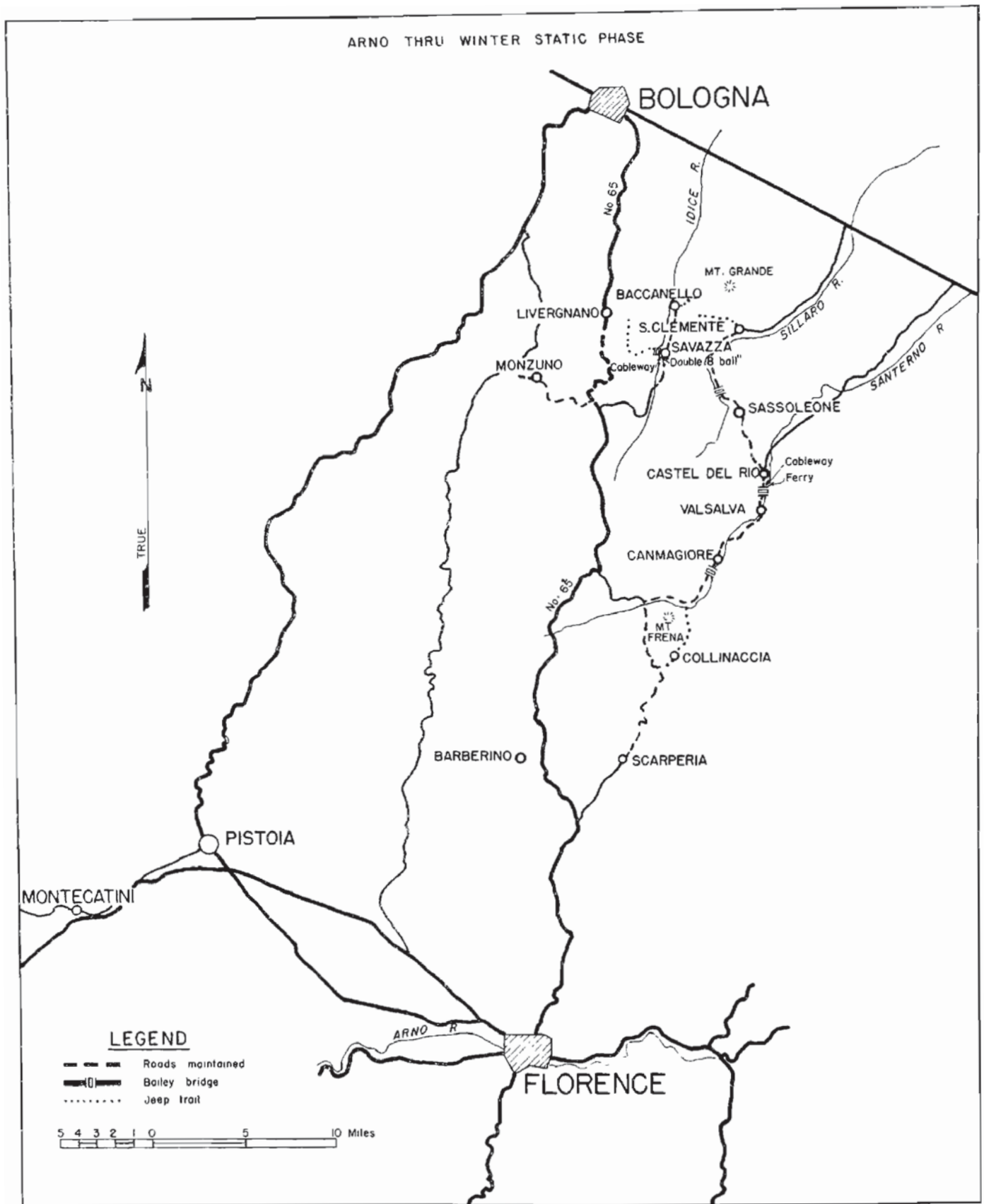
313th Engineer Combat Battalion

The 313th Engineer Combat Battalion was behind the lines during the first half of September. On the 19th of the month, the battalion moved north to Scarperia, checked its equipment and prepared to aid the attack towards Bologna. On 21 September, the 88th Division jumped off. Starting at Collinaccia, a trail was constructed down the mountainside, along Mount Frena to the Santerno River, across the stream, and on to the main road. This trail generally followed existing mule tracks, but a great deal of bulldozing and blasting was necessary.

While the trail was being built, the infantry crossed the Imola road. On 22 September, Company "A", with its equipment loaded on mules, pushed down the trail which was being constructed, and onto the main road, to sweep for mines and repair demolitions. While under heavy fire, a bypass was built around a blown bridge near Cammagiore.

On 24 September, another demolished bridge was spanned with a 120-foot triple-single Bailey bridge which was later lengthened to 150 feet; this addition was necessitated by the heavy rains which loosened the mud fill of the abutments and threatened to destroy the bridge. The 313th was kept busy during the last part of September maintaining and constructing Class 2 lateral roads to supply the foot troops.

ARNO THRU WINTER STATIC PHASE



313 TH. ENGINEER COMBAT BATTALION
OPERATIONS

SECTION VI

313th Engineer Combat Battalion (cont'd).

On 27 September, a culvert fill opened the main road into Valsalva. Just beyond the town a large bridge had been destroyed. The river ran through a gorge sixty feet below the roadway, and it was necessary to cut roads down the steep banks on each side, then to ford the stream. Tanks were put across that night, but with rain the next day, the river rose and became unfordable. A cableway was strung across the river for transporting essential medical supplies and rations, and soon an assault boat ferry was operating to move rations over and casualties back. By the following day, a Bailey bridge had been installed.

At this point, the 88th Division changed the direction of its advance and headed towards Sassoleone. Much work had to be done on this road also, because of its narrowness, the enemy demolitions and the weather. On 8 October, a quarry was opened and large quantities of rock were hauled to the fills and spread on the road.

By 11 October, the infantry was well ahead of Sassoleone. A bypass had been constructed over the first of a series of blown bridges. The first one had spanned a fairly large drainage line. A route was found which bypassed the second blown bridge. The third bridge was filled, and the fourth bypassed. An 80-foot, double-single Bailey bridge was constructed across the site of the fifth. On 17 October, supply trails were begun to Mount Grande. An airstrip was prepared and on 24 October 300 yards of double width sommerfeld track was laid on its surface.



BRIDGE NEAR FIRENZUOLA BYPASSED BY 313TH

On the night of 26 October, extremely heavy rains caused a flash flood in the Torrente Sillaro. Culverts, bridges and quantities of equipment, including trucks, jeeps, and trailers were damaged or washed away. The following day a breeches buoy and a footbridge were constructed to handle the essential traffic. The mountain trail became impassable for any but foottroops and mules, and even for them it was very difficult. For the remainder of October, the 313th Engineers worked on the main trail from San Clemente north towards Farneto, laying logs for corduroy (sommerfeld track was used as a base) and shoving in tremendous amounts of river bed rock in order to provide firm enough footing for the vehicles.

SECTION VI

313th Engineer Combat Battalion (cont'd).

In November, the same road maintenance work was done, and in addition quantities of barbed wire were laid, to aid the infantry in its mission of passive defense. During November, all units of the battalion spent from eight to twelve days at the Army Rest Area at Montecatini.

On the first of the month, Major James H. Green replaced Lieutenant Colonel Armogida as commanding officer of the 313th Engineer Battalion. Throughout December and until the middle of January, the 88th Reconnaissance Troop and Company "B", 317th Engineer Combat Battalion, aided the 313th in its mission of maintaining divisional routes of communication in the bad winter weather. The main roads were Route #6531 to Baccanello, a road from Baccanello to the east, and a road from Savazza to the west.

At Savazza, two 120-foot Bailey bridges were built across the Idice River (The "Double 8-Ball" Bridge), which later had to be withdrawn because of high water in the river which threatened to wash the bridge away. Four footbridges were then constructed at Savazza, and a cableway put in place (but not erected) to meet any emergency.

On 7 January, Major Green was promoted to Lieutenant Colonel. On 12 January 1945, the battalion was relieved and returned to the rest area at Montecatini, where, for ten days, the men and equipment were rehabilitated and some specialized training was carried on. Just previous to the move to Montecatini, one company of the 109th Engineer Combat Battalion was attached, relieving the 317th Engineers.

On 23 January, the 313th was back in the lines in the sector astride Highway #65. Defense works were installed in January and February in this new area to reinforce the defense situation. Mines were laid, wire placed and bridges prepared for demolition. As the weather became warm in the middle of February, work had to be redoubled to maintain the road surfaces. To help accomplish this, all three line companies operated rock quarries.

The battalion, minus Companies "A" and "C", moved on 3 March from its forward position in the vicinity of Livergnano to Barberino. Company "A" moved to Montecatini and was attached to the 349th Infantry Regiment, while Company "C" remained in position near Monzuno in support of the 351st Infantry Regiment. On 11 March Companies "A" and "C" joined the battalion, the first time the unit had been all together since the latter part of June 1944, when it was undergoing training at Tarquinia. The battalion's period of rest, rehabilitation and training came to its conclusion on 5 April, when it moved back into the line.

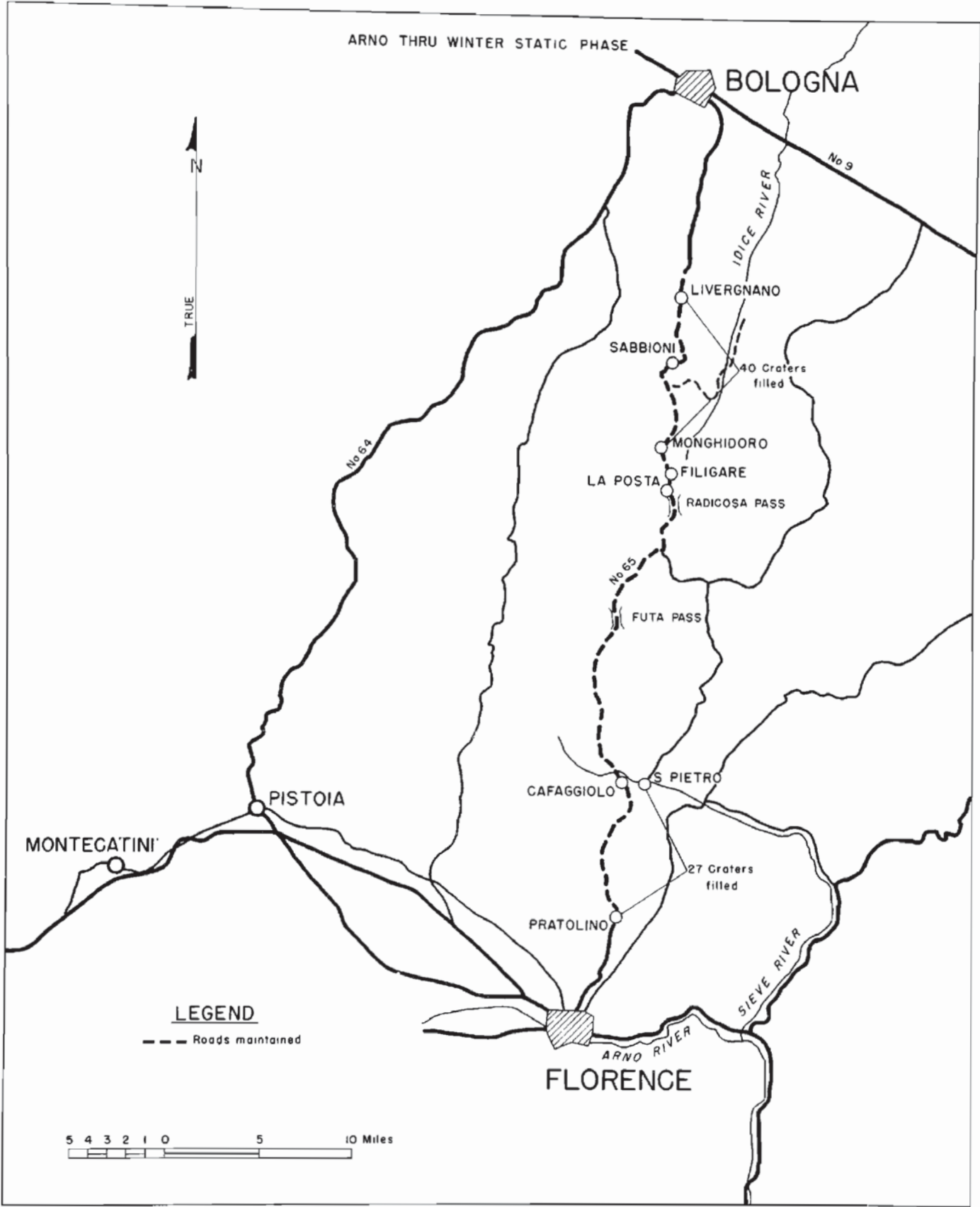
316th Engineer Combat Battalion

The 91st Division entered the line again on 10 September at Pratolino, a few miles above Florence on Highway #65. The 316th Engineer Combat Battalion supported the advance by work on Route #65. From Pratolino to S. Pietro, the engineers had to repair twenty-seven craters. There was no opportunity to learn how the infantry was advancing along the heights beside the road, so division reconnaissance units travelled the highway with the advance engineer vehicles, providing them with security. The leaders pushed aggressively, and the progress was rapid.

When the division broke into the Sieve Valley at S. Pietro and Caffagiolo, it confronted the Gothic Line. On 13 September, the division began the attack, and as it moved forward, the 316th built jeep and mule trails up the mountain sides. Each night work parties went forward to breach minefields and push the small roads further up the cliffs. As Futa Pass was approached, the engineer problems were mostly abatis and numerous craters.

Just before the pass was reached a tall bridge was blown and a Bailey bridge was installed. Next a crater was filled at the pass, and then the 316th was across the divide and past the main Gothic Line defenses.

Highway #65 remained the responsibility of the 316th Engineers. To supply the division troops, lateral roads were dozed from the highway and up into the hills. Then, as the rains came in September, mud entered the picture. Vehicles were road-bound; roads became impassable. Even the hard-surfaced Highway #65 became difficult to travel. A dry weather crater, requiring perhaps one platoon-hour to fill, became a monumental task to open and maintain during the wet weather. The dearth of gravel was heart-rending. Houses were continually pulled down for rock.



316 TH. ENGINEER COMBAT BATTALION
 OPERATIONS

316th Engineer Combat Battalion (cont'd).

So it went. Up over Radicosa Pass, past La Posta, and Filigare, to Monghidoro. At Monghidoro, the 316th changed the road policy from one of immediate one-way traffic at all costs, to one of permanence and minimum maintenance. The advance from Monghidoro through Livergnano during the first half of October presented many obstacles. Forty craters were filled, three road blocks removed, nine culverts installed and thirteen bypasses constructed.



316TH BRINGS PILES FOR BRIDGE NEAR GOTHIC LINE

In the days following the occupation of Livergnano, the new missions for the engineers decreased in ratio with the decrease in new ground taken. After the roads to the front were opened, and the lateral trails cleared and swept, more men and time became available for improving the routes which had already been hurriedly opened as the division had moved north. The engineers now returned to widen and improve these roads for two-way, heavier traffic.

On 22 October, the 316th began to aid in the erection of defense fortifications for the infantry. As a static phase was entered, barbed wire obstacles, mines, and cratering charges were used, so that only a minimum number of foot troops would be required to be on the line at one time. Anti-personnel mines were laid before the infantry positions, as well as concertinas.

On the highway north of Livergnano, the 316th Combat Battalion had filled a crater blown by the retreating Germans. Now, in defensive positions, the Americans returned and placed their own cratering charges in the same spot. This defensive mission of strengthening and improving the positions was not finished until November. In the latter part of that month, the battalion went back to Montecatini and Pistoia for its first complete rest since entering the lines in July.

The unit was back on the line in the Highway #65 sector the first week of December. Time was spent checking the cratering charges placed earlier, and maintaining the roads, as well as improving living conditions as much as possible. Three caves in a rock cliff in the Sabbioni area were turned into "barracks" complete with double bunks. Doors were made of scrap wood and materials salvaged from shelled buildings. Other men built "bungalows" from scrap wood, sand bags and shelter halves. But most outstanding was a 60-foot by 30-foot mess hall, which was made from several thousand sand-filled 105 mm howitzer shell cases. At night, the mess hall was used as a theater for the engineer troops.

SECTION VI

316th Engineer Combat Battalion (cont'd).

Extensive reconnaissance work was done in December for the planned offensive, and engineer plans were made. After an extra heavy shelling of the bivouac area on 16 December in which the mine and explosive dump was hit, the battalion evacuated the area and headquarters was reestablished in the town of Monghidoro. Defensive work was the main task in January.

The 91st moved east into the Idice sector, to replace the 34th Division in February, and once again road maintenance had to be stressed, especially as the warm weather brought back the problem of mud. The roads gradually became greatly improved--the warmer, drier weather of late February and March hastening the process.

In about mid-March, the 91st Division was relieved of the Idice sector by an Italian group, and the 316th Engineers set up bivouacs on the Sieve River a short distance off Highway #65 to take bridge training, instruct the infantry in mine warfare, and generally prepare for the spring offensive. After two weeks, the 91st Division began moving back into its positions in the sector straddling Highway #65.



A 316TH MOUNTAIN HOME

317th Engineer Combat Battalion

Company "B" of the 317th Engineer Combat Battalion had arrived in Italy the last of July and remained in a staging area until attached to the 16th Armored Engineers on 20 August. Three days later, the company helped the 370th Infantry Regiment cross the Arno River. Each of the three platoons constructed and operated a ford. After the crossing, the 370th Combat Team advanced from Cascina to Bagni di S. Giuliano with Company "B" working on Routes #1220, #1222 and #1223. Thirty-four bridges were maintained in this network, a ten-mile jeep trail built over the mountain, and a ford constructed across the Rigis Canal.

Roads were opened, fords constructed, craters filled and bridges repaired in the Lucca - Ponte Moriano - Pistoia sector until 1 October, when Company "B" was transferred with Combat Team 370 to the coastal sector near Viareggio. Work in that area included engineer reconnaissance, construction of by-passes, improvement of jeep trails, lifting of mines and construction of bridges.

SECTION VI

317th Engineer Combat Battalion (cont'd).



317TH SWEEPING BEACH AT VIAREGGIO

After October, Company "B" came under the command of the 317th Engineer Combat Battalion, which had now arrived in Italy. The battalion entered the line on 5 November, supporting the 92nd Infantry Division, which was operating directly under Fifth Army control in an area along the Ligurian coast.

The coast roads were maintained from Viareggio to Seravezza, north of Pietrasanta. Route #1226 also was maintained, and Route #1227 from Borgo a Mozzano to Galliciano. Strengthening bridges at night was common as the roads were under constant shell fire during the day by German 88's.

The month of December was a static one for the 92nd Division, except for a German attack in the Serchio Valley on 26 December. One platoon of the 317th, with one platoon of the 887th Engineers attached, put in a 100-foot, double-single Bailey bridge across the Lima River at Bagni di Lucca. The construction of this bridge was particularly difficult in that only sixty feet of launching space could be used. At daylight on 26 December, the enemy attacked the 92nd Division sector. By mid-morning, the attack developed on the right flank. The infantry commander in that sector ordered the blowing of all bridges previously prepared for demolition north of the line Trassilico - Calavorno - Caviglia.

During December, all the bridges north of Viareggio were prepared for demolition and guarded. After the attack of the Germans in the Serchio Valley was repulsed and the original ground retaken, the month of January was relatively static; bridge work was limited mostly to reinforcing and maintaining. Road maintenance work in the Serchio Valley was increased by the ice and snow. Two thousand and fifty-five mines were lifted. The main job during this period was the construction of 2,000 yards of cableway, which ran south of Galliciano from Fabbriche to Trassilico, was known as "Sherman's Skyway".

SECTION VI

317th Engineer Combat Battalion (cont'd).

The first part of February was spent in the continued reinforcement of bridges. On 8 February, Lieutenant Colonel Rowney was placed on temporary duty as commander of Task Force 1, and Major Alvin Wilder, Executive Officer, assumed command. During the next three days, the entire battalion supported the 92nd Division (-) in a limited attack in the coastal sector across the Cinquale Canal. The engineers' primary mission was to sweep the approaches to the canal and breach paths for the infantry - tank attack.

In the first part of March, a concentration area was laid out and constructed for the 92nd Division. The battalion organized the 92nd Division Mine School on 10 March. Every man, on completion of his course in mines, was required to go through a live minefield. In conjunction with this, a poster campaign on mines was undertaken.

For the road maintenance, three rock crushers were put into full time operation for gravelling purposes. Construction of bridges was at a minimum; 300 feet of fixed bridging was put in. The most important bridge was a Serchio River footbridge, 170 feet long. As March drew to a close, all supply dumps began to be filled and preparations for the final offensive were made.



317TH SETS OFF TELLERMINE NEAR VIAREGGIO

SECTION VI

126th Mountain Engineer Battalion

The 126th Mountain Engineer Battalion arrived in Italy on 18 January 1945 under the command of Lieutenant Colonel John R. Parker. On 2 February, the unit entered the line in the sector near Castelluccio east of Porretta on Highway #64. There, the unit was engaged in road repair work while preparing for an assault on Mount Belvedere.

The attack was made on 19 February. The mountain was intensively mined and the Germans were well dug into the rugged slopes. The 10th Mountain Division captured a ridge to the north the first day of the attack. On 20 February, Lieutenant Colonel Parker was wounded and evacuated to the hospital. Major Robert P. Boyd, Jr., Executive Officer, then assumed command of the battalion.

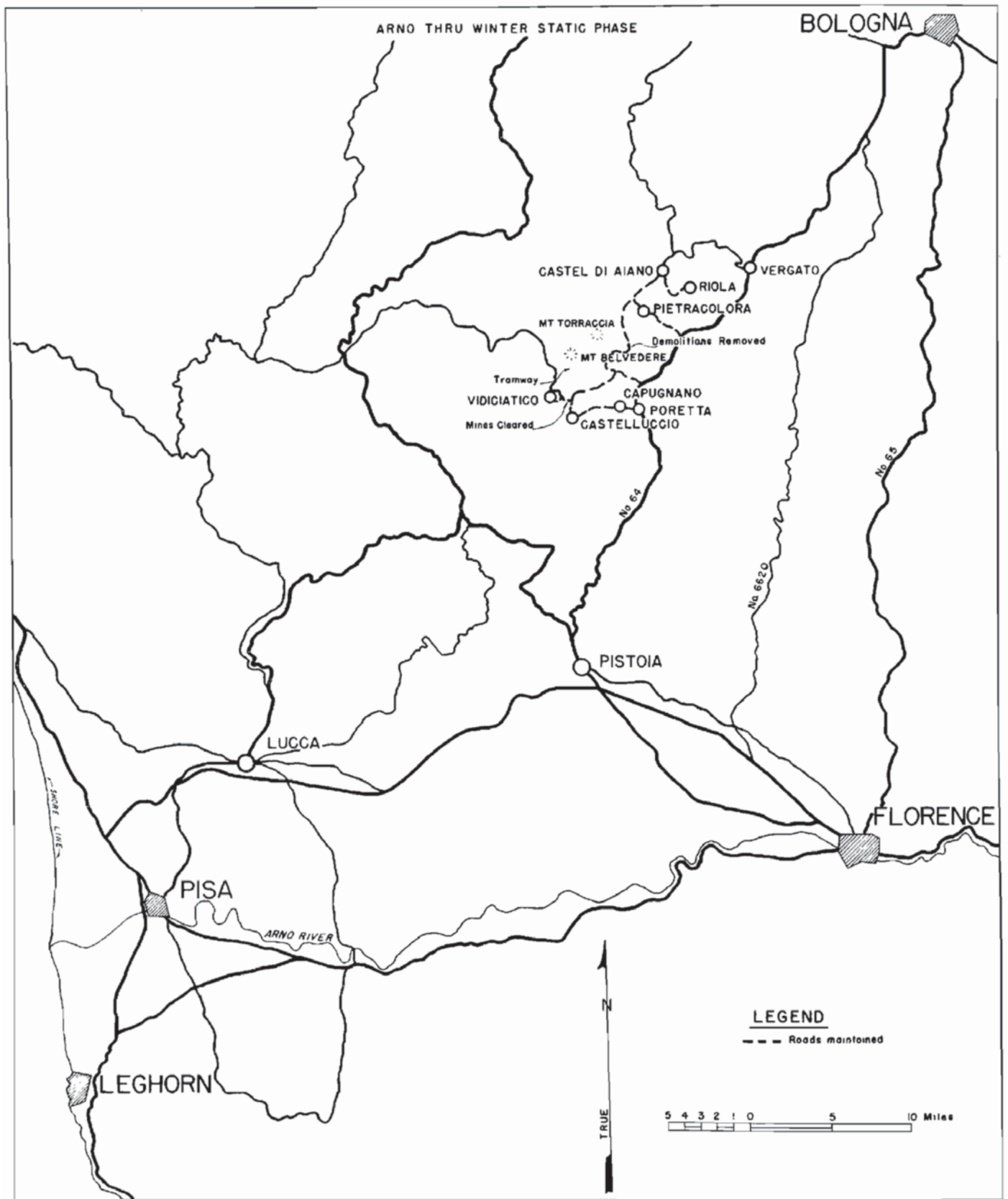


126TH ENGINEER TRAMWAY NEAR MOUNT SERRASICCIA

In order to evacuate casualties and to haul supplies to the infantry on the newly taken ground, a 1700-foot aerial tramway was constructed at an average slope of 18 to 20 degrees. The tramway was built while under fire in ten hours. At Capugnano a 20-foot culvert was installed, and secondary roads were swept to Vidiciatico. Mine removal was done on the net roads using bangalore torpedoes and one-half pound charges of TNT placed at one foot intervals and detonated with prima-cord, a string in each track. The results were satisfactory and the explosive did not damage the roads.

To remove mines intact was very difficult due to the frozen ground. The probes were of no value and the mine detectors were not able to detect mines which were three and four feet deep (Tellermines often on top of box mines). The road through Gaggio di Sotto was prepared for the movement of tanks. It was a wallow of mud. Drainage ditches and culverts were put in and holes were filled with rock.

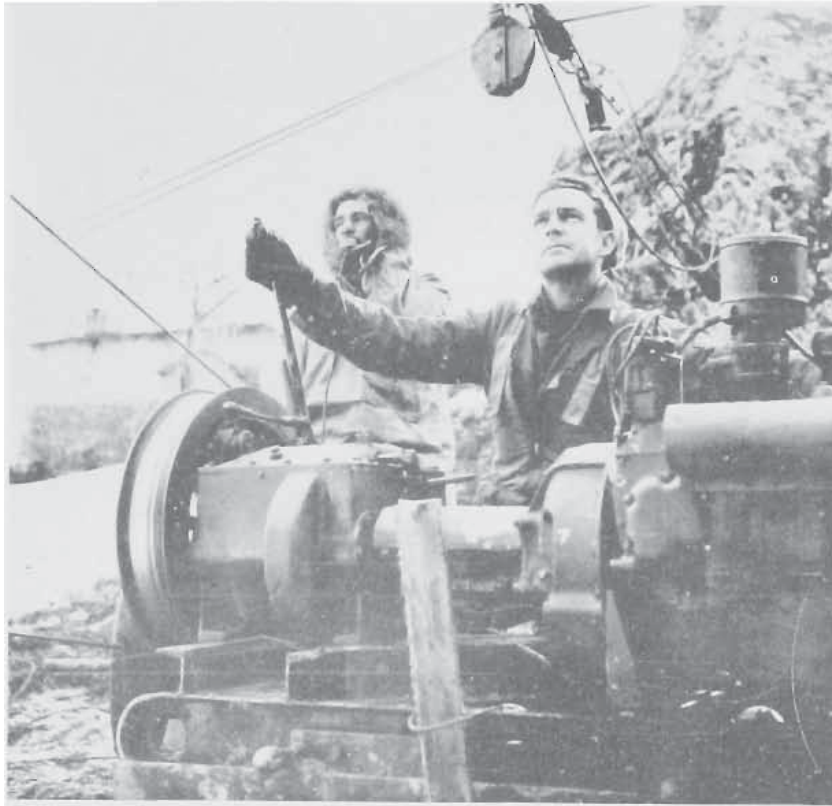
On 3 March, the division attacked again, beyond Mount Belvedere, up Route #1228. In all the movements in this area men of the 126th Battalion preceded the advancing tanks. Approximately a ton of German explosives were removed from two bridges on Route #1228 north of Mount Torraccia.



126 TH MOUNTAIN ENGINEER BATTALION
OPERATIONS

SECTION VI

126th Mountain Engineer Battalion (cont'd)



TRAMWAY POWER UNIT OPERATED BY 126TH ENGINEERS

On the night of 4 - 5 March, a bypass had to be built around a blown bridge near Pietra Colora so that tanks and tank destroyers could cross the gap and be in position to support the infantry when the attack on Castel d' Aiano was made in the morning. The blow was 400 yards from the frontline; mortar fire began to fall on the bridge site as soon as the engineers arrived. Work was done between barrages all night, and with the aid of two bulldozers the road was passable the next morning.

On 5 March, the advance stopped and the engineers' work became routine, mainly road improvement and culvert installation. A cableway was constructed near Riola, east of Castel d' Aiano, on 10 March and, supported by two "A" frames, was built in six hours.

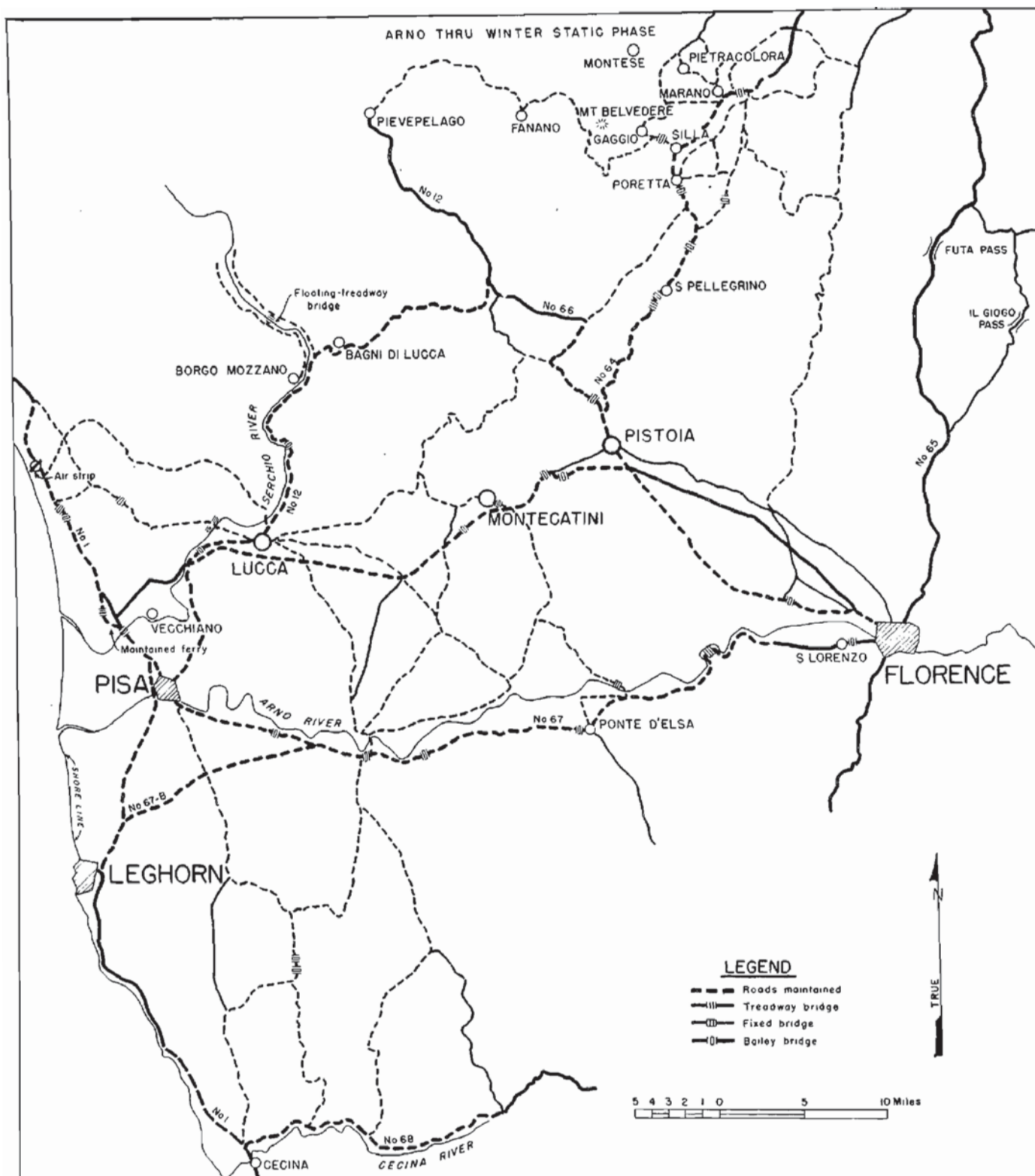
From the middle of March, and into the first days of April, the 126th Engineers began to prepare for the final attack. Communication routes were worked on, mines removed, and supply stocks built up.

1108th Engineer Combat Group

235th Engineer Combat Battalion

At the beginning of September, the 1108th Engineer Combat Group, commanded by Colonel A. F. Clark, Jr., was responsible for the engineer work along the entire IV Corps front of fifty-five miles, yet the only American unit with the group was the 235th Engineer Combat Battalion under the command of Lieutenant Colonel W. P. Jones. Task Force 45, whose mission it was to fight the Germans on the west coast, had no engineers whatever. As a further complication, the heavy equipment problem was severe at this time; there were few spare parts and fewer maintenance units. The shortage of prime movers was critical.

On 14 September, Company "C" of the 235th built a 230-foot, double-single Bailey bridge across the Serchio River, using as a base the pile bents of a destroyed German bridge. The bridge was dedicated to nine men of the company who had been killed while building a Bailey bridge at Cassino in March.



1108 TH. ENGINEER COMBAT GROUP
 48.TH. & 235TH. ENGINEER COMBAT BATTALIONS
 23RD. ARTIERI BATTALION (ITALIAN)
 OPERATIONS

SECTION VI

235th Engineer Combat Battalion (cont'd).

In the first days of October, the Serchio River rose to flood proportions and threatened to wash the bridge out. The low-level treadway bridges at Lucca and Vecchiano had already gone and another bridge near Lucca was in danger. In two days, Company "B" and one of the attached Italian engineer companies built two Bailey bridges at the same site. The American bridge was a 160-foot, double-double; the Italian a 130-foot, triple-single.



235TH BYPASS NEAR MOUNT TERMINALE

Thus, in September, the weeks of effort to train the 23rd Artieri Battalion began to bear results. The magnitude of the engineer tasks assigned to the 1108th required that jobs of the 235th be shared by the Italian unit. The 1108th had a 70-mile front, two task forces and two divisions to care for. The 23rd opened the Autostrada from Lucca to Pistoia, using 6,000 pounds of explosives to prepare bridge sites, construct bypasses and clear debris in towns. It built ten Bailey bridges totalling 800 feet and a 60-foot Class 40 timber trestle bridge.

During September, the 235th Battalion built thirty-three Bailey bridges totalling 2,160 lineal feet, and eight other bridges, timber and treadway, totalling 175 feet. It also constructed twenty-two bypasses, filled sixty craters, installed fifty culverts, dismantled four bridges totalling 410 feet, checked forty-two areas for mines, destroyed 762 enemy mines, cleared paths to remove bodies from minefields, operated twelve water points and one air beacon, prepared six cub strips and two Quartermaster dumps, dug in ten artillery units, built six fords and used 10,000 pounds of explosives in the work. October continued to be a month of work and sweat on roads and highways.

In November, the 235th Battalion Headquarters and the 1108th Group Headquarters were located near Porretta, high in the mountains above Pistoia. A lot of the work had to be done under cover of smoke or darkness because of the enemy's dominating positions overlooking the highways. It was the job of the Corps Engineers to keep the roads open between the two main elements of IV Corps, the Brazilian Expeditionary Force and the 6th South African Division.

235th Engineer Combat Battalion (cont'd).

The importance of secondary roads was increased because they offered more defiladed routes of approach to the front and provided alternate routes in the event of shelling on Highway #64. Drainage was the main problem on the tributary roads. Italian civilians were hired and used on the roads wherever possible. In November, the group maintained and worked 336 miles of roads, quarried 4,000 cubic yards of rock, constructed fifteen bridges and, in general, continued the same work done in September and October.

On 2 December, the 1108th Group Headquarters was attached to Fifth Army Headquarters and was ordered south of Florence to train two newly activated combat battalions. The 235th and 23rd remained on line to carry on the engineer tasks for IV Corps. A cadre was taken from the 235th Battalion and the four-week training program for the two battalions, formerly anti-aircraft searchlight battalions, began on 15 December. Evolved from 15 months of experience, the program was short and to the point, limited to the principles of combat engineering as adapted to the needs of the theater. Emphasis was laid on night work (see Appendix O).



235TH CORPORAL SUPERVISING WORK OF ITALIANS NEAR POPIGLIO

255th and 337th Engineer Combat Battalions

In mid-January, the 1108th Group moved to Lucca. The two newly trained battalions, known as the 255th Engineer Combat Battalion and the 337th Engineer Combat Battalion (as distinguished from the 337th Engineer General Service Regiment, later the 1338th Engineer Combat Group), were attached to the group and moved up to begin operations. The 255th went to work in the Porretta sector and the 337th in the Serchio Valley, as the 235th stepped back for a well-deserved rest. One of the difficult tasks done by the 235th in December was the construction of the "Christmas Bridge" near Borgo Mozzano, across the Serchio River. This 180-foot, triple-double Bailey bridge was constructed in twenty-seven hours by Company "B" plus one platoon of Company "A". It was an unsupported span with overhead transoms.

SECTION VI

255th and 337th Engineer Combat Battalions (cont'd).

The threat of the abortive German Christmas offensive down the Serchio Valley over, the 235th Battalion removed the remaining demolitions and spent the first half of January in routine bridge and road maintenance, dividing with the 23rd Battalion the entire IV Corps front, while the 255th and 337th Battalions did all manner of engineer tasks on roads in the rear, notably Highway #67. The latter half of the month, operations were complicated by the floods in the Serchio Valley which caused the 1108th Group's first bridge washout, and by landslides in the vicinity of Bagni di Lucca.

During the first week in February, the 337th Battalion followed the limited 92nd Division drive up the west coast and built a 50-foot Bailey bridge and three treadway bridges totalling 120 feet. The operation finished on 11 February, at which time the 92nd Division retired to its original positions. On the 19th, the 235th Battalion took over the roads leading to Mount Belvedere and the nearby heights to support the 10th Mountain Division and the Brazilian Expeditionary Force drive--the first successful attack since the stalemate before Bologna had begun.

As the Mountain Division outflanked Highway #64 to the west, the 235th's main work was trail development, the building of revetments and fords and the construction of culverts and bridges. During March, IV Corps prepared for the forthcoming operations against Bologna.

Meanwhile, the 1108th Group as Corps Engineers supported the limited attack of the 10th Mountain and 1st Brazilian Divisions from 3 to 9 March. In this mission, the 1108th Engineer Group constructed supply dumps, prepared hospital sites, helped the artillery into position, and executed general road construction during the balance of the month.



SNOW CLEARING BY 255TH NEAR MOUNT BELVEDERE

SECTION VI

19th Engineer Combat Group (19th Engineer Combat Regiment)

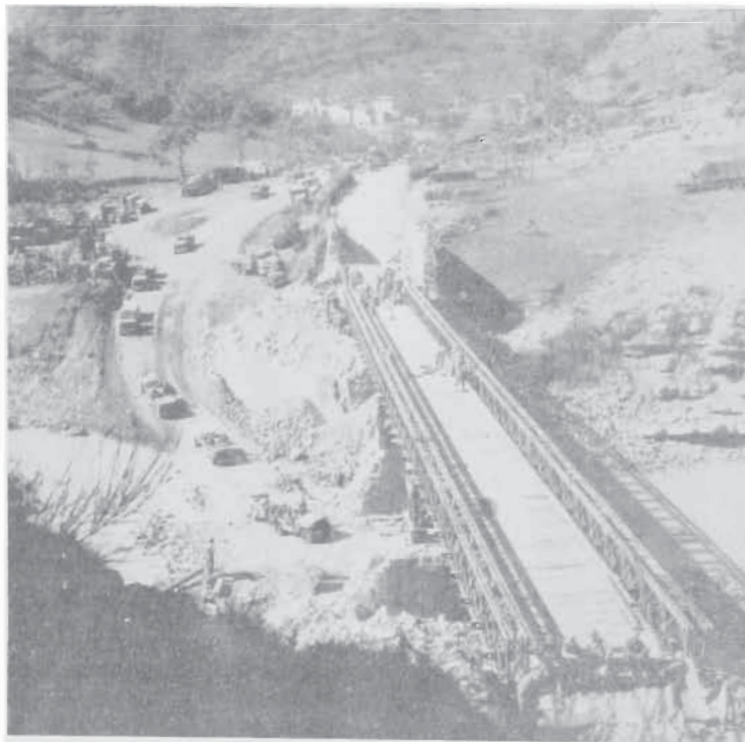
On 31 August, the 2nd Battalion, 19th Engineer Regiment, had been relieved of all assignments and attached to IV Corps. A road net was assigned on both sides of the Arno in the Pontedera-Empoli area. Rubble was cleared from these towns and neighboring villages, bypasses were constructed, fills made and mines cleared. The battalion gave support to Task Force 45, 1st Armored Division and the 6th South African Armored Division while attached to IV Corps, and was detached 5 September and returned to regimental control.

Heavy rains on the night of 7 - 8 September caused a trestle and a Bailey bridge over the Arno River just east of Florence to wash out. Both bridges had been constructed too low. Since the Bailey bridge was on a main supply route and the attack on the Gothic Line only a few days away, a 300-foot floating trestle bridge was constructed as soon as bridging could be hauled to the site. The Bailey bridge was salvaged by dragging it out with blocks and truck winches.

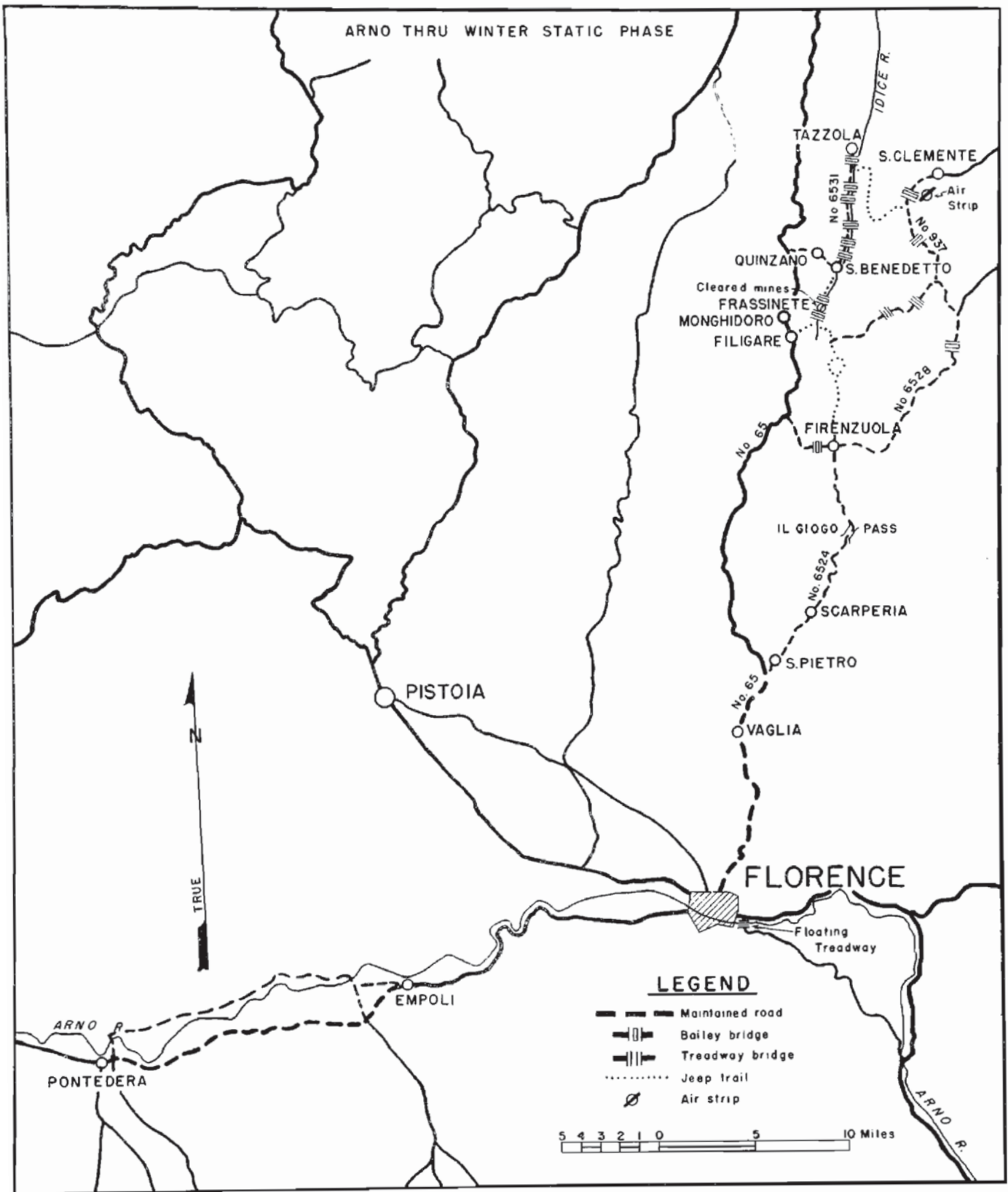
As the Gothic Line was attacked on 11 September, the 19th Engineers had their usual job of supporting the division engineers. The 1st Battalion started the attack in support of the 91st Division, but on 13 September changed to support the 85th Division. The 2nd Battalion remained in the rear, taking over the roads and supporting the 1st Battalion where it required help until 21 September when it began giving direct support to the 88th Division Engineers.

The 19th Regiment advanced up Highway #65, then continued on #6524. On 18 September, the main defenses of the Gothic Line were broken, and for some miles our forces moved forward rapidly. In a few places, the enemy had failed to demolish bridges or side-hill cuts and the engineers were able to keep the roads open with little difficulty.

Near the end of September the heavy rains started. They caused no end of trouble by washing out culverts and fills, making fords impassable and softening the roads until they could not stand up under the heavy traffic.



19TH ENGINEER BRIDGE NEAR FIRENZUOLA



19 TH ENGINEER COMBAT REGIMENT
OPERATIONS

SECTION VI

19th Engineer Combat Group (cont'd).

As the 19th advanced in September through Vaglia, San Piero, Scarperia, to Firenzuola and north, it operated three water points, constructed sixteen Bailey bridges, totalling 2,000 lineal feet, and one 90-foot trestle treadway bridge, in addition to filling craters, building revetments and constructing five cub strips. As the storms continued throughout October, the roads required more and more work to keep them open. Supply and evacuation became critical at times, and the move forward finally came to a standstill.

The 19th worked day and night to keep traffic moving. The deep mud and very rough roads soon began to show in the operation of the vehicles and equipment. There were many breakdowns and spare parts were hard to get, until frequently units of the regiment were almost without vehicles and equipment and the efficiency of their work dropped proportionately.



QUARRY WORK BY 19TH NEAR BISANO

During the latter part of October, the 19th received 2½-ton cargo trucks from the Corps Quartermaster, which helped materially in keeping the roads open. The work done in October was similar to that of the previous month. From Firenzuola the 19th Engineer Regiment moved north and east, up Route #6528, and across country to contact #6531 near S. Benedetto. The northern boundary on these two roads was near the towns of S. Clemente and Tazzola, respectively. Seventeen Bailey bridges totalling 1,600 feet were constructed, twelve culverts installed, five minefields cleared and craters, bypasses, fords, fills, and a cub strip worked upon.

On 8 November, the 2nd Battalion turned Route #937 over to the XIII Corps and moved to the regimental area near Frassineta, about two miles east of Monghidoro, and began construction of a road from that point at the southern end of Route #6531, which followed the Idice River south from S. Benedetto to Highway #65 at Filigare. "Easy Street" was finished on 29 November, a one-way, all-weather road. The 1st Battalion worked on the maintenance of roads in the interior area between Highway #65 and Route #937 in support of the 88th Division, which relieved the 85th on 18 November. The 34th Division in turn relieved the 88th on 13 January and the 91st followed on 11 February.

During the month, all men of the regiment had the opportunity to spend six days of rest in Montecatini, the first rest period for the organization since June. Three snow posts and one sub-station were opened in December. On 22 December, the ground froze hard, and a day later five inches of snow fall. Sand and gravel that had been stockpiled along the roads were spread on the snow and ice, and little difficulty was experienced in keeping the roads open. In January, the snow was sometimes as deep as twenty-two inches.

SECTION VI

19th Engineer Combat Group (cont'd).

The road maintenance work was easier from that time, as no new potholes developed. In January twenty-eight bridge sites were prepared for demolition and six minefields laid.

401st and 402nd Engineer Combat Battalions

The latter part of February was spent in planning for the reorganization of the regiment into a group. The new unit was called the 19th Engineer Combat Group, with the old 1st Battalion named the 401st Engineer Combat Battalion and the 2nd Battalion, the 402nd Engineer Combat Battalion. The change-over officially took place at midnight between 28 February and 1 March. The road assignments on Route #6531, the Quinzano road from Highway #6531 to Highway #65, and the tributary roads and trails remained the same. During March, there were rest periods again, and bridge training was done on the Arno with Baileys and M-2 treadways.

39th Engineer Combat Group (39th Engineer Combat Regiment)

After the Arno River had been crossed and the forces were moving northward, the 39th Engineer Combat Regiment, commanded by Colonel Thomas C. Green, began to construct the longest bridge the unit had ever built. It was across the Arno River at Florence and was a Class 40 Bailey of triple-double construction, 410 feet long. There were three spans, 140 feet, 130 feet and 140 feet in length. The original piers were sound, so they were merely levelled off and Bailey crib-type supports put on top and cemented in place.

A cableway was constructed to get the necessary material from the shore out to the piers. A truck winch cable was run out to a pole near the stone pier. On this was a snatch block and line. The materials were moved out to the pier on the cableway, and lowered down to the pier by slackening the winch cable. The block was returned to the shore by means of the attached line. The tops of the Bailey cribs were finished off with the standard crib-capsill, over which was placed a deck of 8 x 8 timbers. Base plates were secured to this deck.

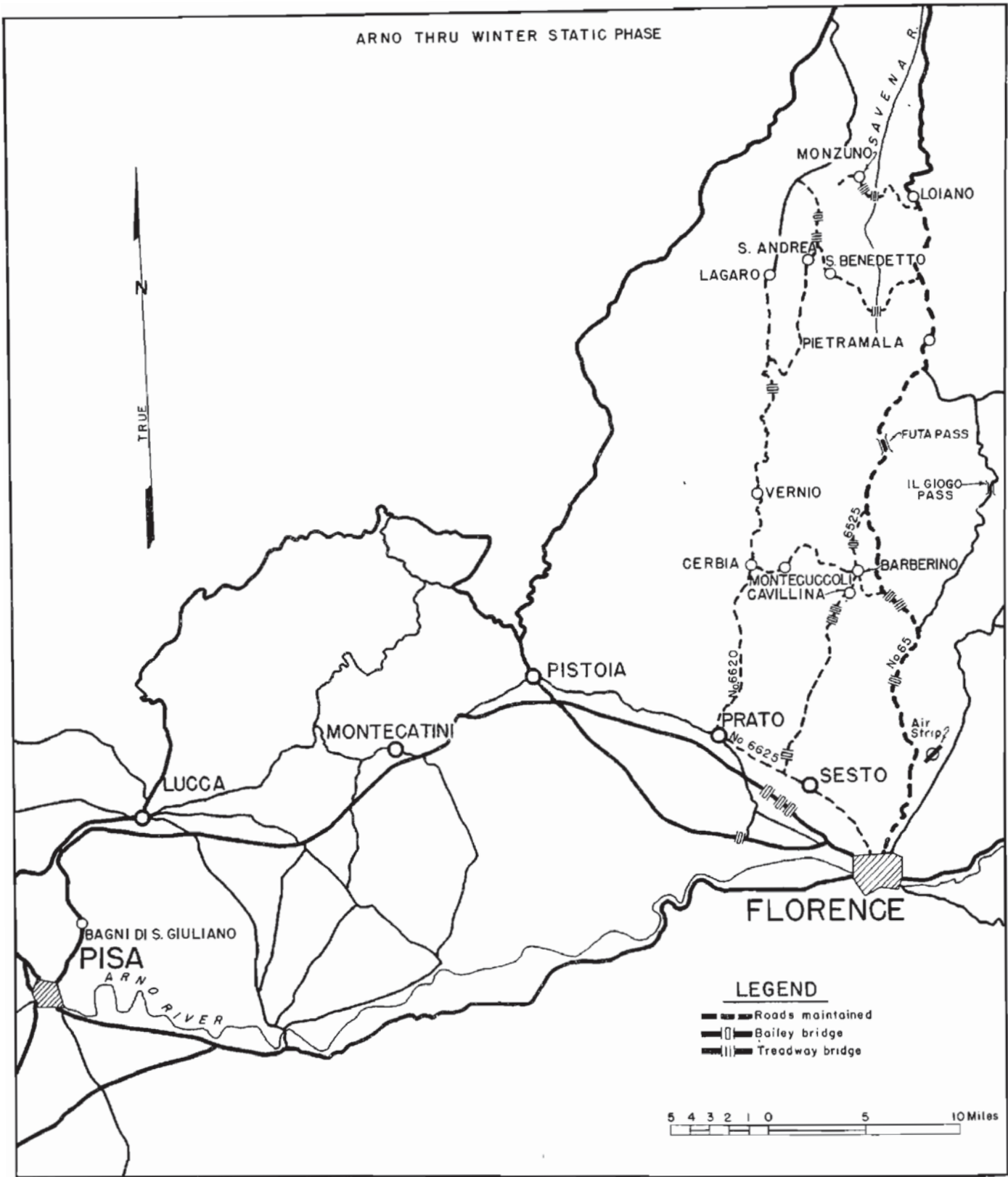
The approaches were cut into the banks, and the bridge launched at such a level that the ramp approaches were practically horizontal. The bridge was originally launched as a triple-single bridge and the second story added later by two working parties. The launching was accomplished by the winch of a 4-ton truck. After the second story was completed, the span was broken over the piers, thus reducing the danger of too great stress or strain.

As this bridge was being constructed, the 39th had other units following the advance. Along with the 19th Engineers, it supported the progress of the II Corps divisional units. The 39th was generally west of the 19th, and followed up the main supply route, Highway #6620. From Prato, the unit moved up the highway to Vernio.

On 17 September, the 39th began the construction of a road designed to connect the main supply routes, #6620 and #65, as well as the secondary supply road, Route #6525 from Sesto through Barberino. From the town of Cavallino on Route #6525 to the town of Montecuccoli, there was a poor one-way road. From Montecuccoli on west to the village of Cerbia on Highway #6620, there was only a mule pack trail. Work was started on both ends of this system, and in five days a two-way road for 2½-ton truck traffic was completed.

Throughout September and October, the work of supporting the forward troops continued. Thirteen Bailey bridges were built totalling 920 feet, all Class 40. Twelve trestle treadway bridges, also Class 40, were constructed. Twenty-five steel culverts were placed, as well as a dozen wooden box culverts. Twenty-four bypasses were built, and one cub airstrip, as the 39th Engineer Combat Regiment moved up to its northernmost positions for the winter of 1944-45.

Work was done on Highways #6620 and #65, as well as the important and difficult connecting roads through S. Benedetto and Monzuno. On the road to Monzuno from Loiano, a 180-foot triple-single Bailey bridge was built in mid-November at the site of a civilian bridge, thus eliminating the low crossing of the Savena River. At this same time, the regiment began to prepare for cold weather. The command post moved back to a location 1½ miles south of Loiano, and all the units began building semi-permanent quarters.



39 TH ENGINEER COMBAT GROUP
OPERATIONS

SECTION VI

39th Engineer Combat Group (cont'd).

To prepare the roads for snow, markers were erected, gravel stockpiled along the roads and two snowposts and one sub-snowpost set up and operated. Also in November, all personnel of the regiment were given nine days of rest at Montecatini. On 15 December, Company "A" began constructing buildings and repairing roads in the II Corps Command Post area near Pietramala.

On 27 December, Company "A" with the rest of the 1st Battalion, was moved to the IV Corps sector near San Giuliano and was attached to that headquarters for operations. The battalion was given the mission of securing and holding all dumps in the vicinity of Pisa in case of an enemy breakthrough. The 39th placed charges for demolitions on all bridges and culverts and began regular engineer road work. Company "B" constructed a 210-foot trestle treadway bridge across the Serchio River near Lucca, which required the building of a 350-foot dyke to divert the stream. It was necessary to build a road to the bridge and approximately 5,000 cubic yards of gravel was moved.



ARNO BRIDGE CONSTRUCTED BY 39TH

The 1st Battalion returned to the II Corps on 11 January and began transforming Route #6530 from S. Andrea to Highway #65 into a two-way road for future operations. The first two weeks of January had been cold, and about thirty inches of snow fell in the 39th Regiment's area, which put a big work burden on the snow stations. Many disabled vehicles were recovered, and the snow plows, dozers and graders were in use continually to keep the assigned roads open.

Meanwhile, the 1st Battalion spent part of its time preparing defensive positions and preparing bridges for demolition. The road work was made difficult the last part of January because of the thaw. The snow posts were now engaged in pulling vehicles out of the mud. On 22 February, the regiment (less the 2nd Battalion) moved three and one-half miles west of Pisa to the Peninsular Base Section Staging Area #3, to train in river operations. Company "A" of the 1554th Heavy Ponton Battalion and six Brockway trucks with equipment and crews from the 1029th Engineer Treadway Bridge Company were attached to the regiment for duty.

404th and 643rd Engineer Combat Battalion

On 1 March 1945, the 39th Engineer Combat Regiment was reorganized and redesignated the 39th Engineer Combat Group. The 1st Battalion of the regiment was named the 404th Engineer Combat Battalion and the 2nd Battalion the 643rd Engineer Combat Battalion. The 643rd remained in the II Corps area until 28 March, when the battalion moved down to join the rest of the 39th Group at the Arno River near Pisa for river crossing training.

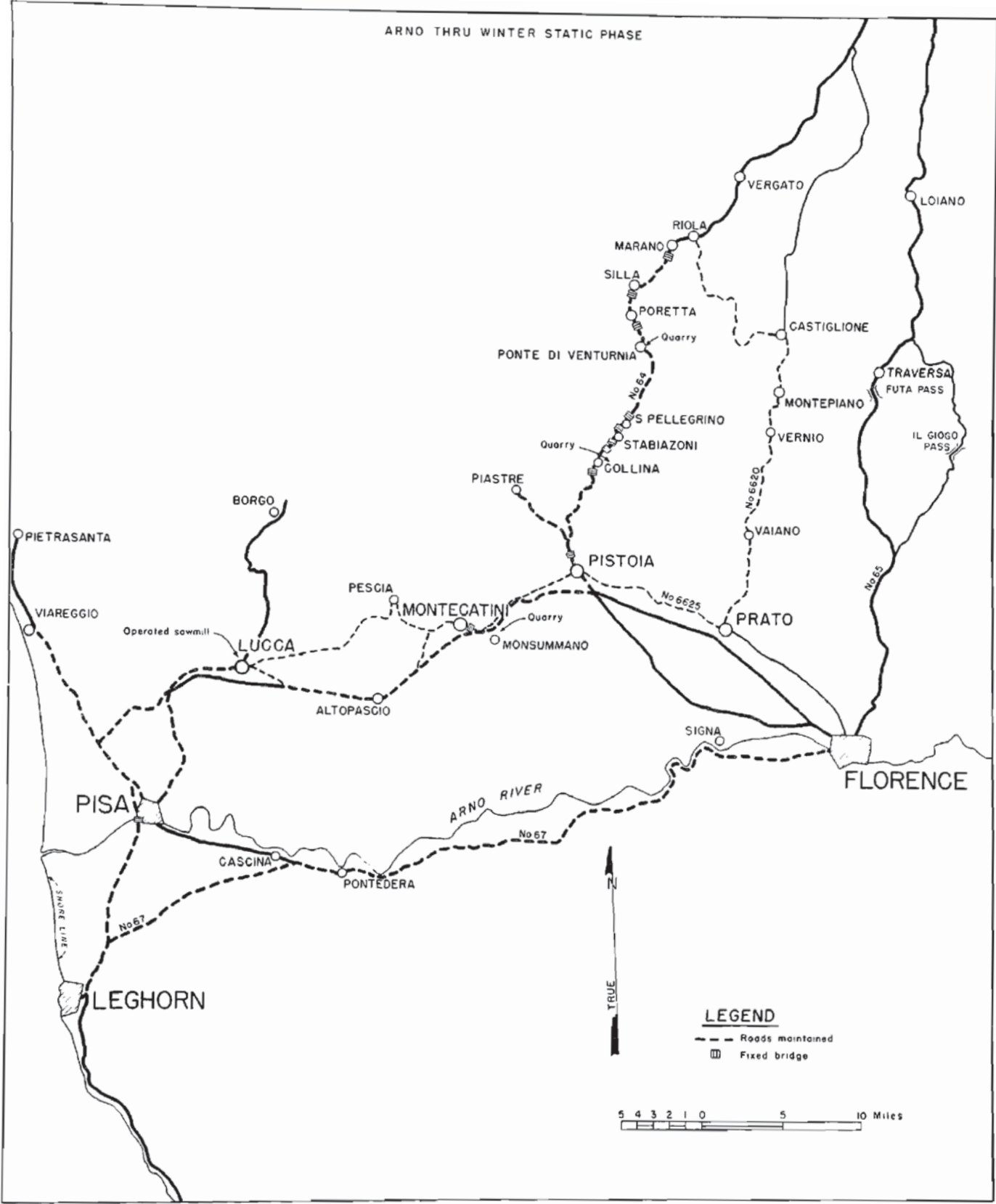


39TH PLACING CULVERT NEAR CAVALLINA

The 404th, at the training area west of Pisa, trained with the 25-ton ponton raft, the infantry support raft, the stormboat, the assault boat and the Quonset barge. When finished with training, a night problem was staged on 19 March. The three letter companies of the 404th transported a mock infantry assault task force, consisting of the remainder of the regiment across the Arno River. The training completed, the 39th Engineer Combat Group, with attached troops, was prepared to train the 337th and 338th Infantry Combat Teams.

175th Engineer General Service Regiment

Early in September, the 175th Engineer Regiment, under the command of Colonel John H. Trescot, was given the mission of opening Route #67 from Leghorn to Florence. This involved, first, the construction of Bailey bridges and clearing of debris and, finally, construction of six fixed bridges and culverts. Regimental headquarters moved to Cascina, and, about the first of October, on up to Viareggio. Construction of the Arno River bridge at Pisa was carried on and the work of the regiment gradually moved to the north side of the Arno.



SECTION VI

175th Engineer General Service Regiment (cont'd).

In late July, the 175th General Service Regiment had been informed by Engineer Headquarters, Fifth Army, that the regiment would be given the task of constructing a two-way highway bridge over the Arno on Route #1 at Pisa as soon as tactical conditions permitted. Information was obtained from ground and air photos and plans were made, but it was impossible to go to the actual site to make exact measurements and finish the final plans, until 1 September.

Work was begun at the site on 5 September with one company working at either end. The work was executed on a 24-hour basis throughout, floodlights being used from 15 September until completion on 2 October. The entire river bottom along the site was covered with debris from the original bridge, consisting of slabs of concrete ranging from six inches to two feet in thickness, with a thoroughly tangled mass of reinforcing steel. Trestle bent construction was used with steel stringers, Bailey panel trusses being used as stringers for the two center spans.

In October, Route #1 was maintained as far north as Viareggio. On this road, two permanent bridges were installed, and three culverts and fills. From Pisa to the northeast, Route #12 was assigned as far as Lucca. This route required only a 32-foot bridge, but a great deal of work had to be done on the surface, especially after the completion of the Pisa bridge on 2 October, and the resultant heavy traffic.

Other work included the maintenance of the Austostrada from Lucca to Pistoia. The Austostrada was an Italian pre-war superhighway. For the most part, it was level and straight, and without any grade crossings. Once opened, the highway itself required little maintenance, but its many overpasses were spanned by Bailey bridges which had to be replaced, and several wide gaps could not economically be bridged. Bypasses had to be built and these required heavy maintenance.

A 150-foot trestle bridge was constructed near Lucca, but otherwise the open end of the highway required only surface repairs to a point well east of Altopascio. From Altopascio to Montecatini, seven fixed bridges were installed, as well as an overpass, but from there to Pistoia, the road again was relatively clear. One obstacle all along the route was the removal of the debris from former overhead bridges which had been demolished and had fallen across the road.

On Highway #64 from Pistoia as far north as Ponte di Venturnina, eight fixed bridges were constructed, totalling 390 feet. Route #6620 was also assigned, as far north as Castiglione.

The road assignment for the 175th remained essentially unchanged until February. Most work had to be done on Highway #64, winding over the mountains toward Bologna, and a great deal also on Route #6620. These two roads, together with Highway #65, were the main army supply routes to the forward areas. During November, six snow stations were set up to insure these routes would remain open throughout the winter. These stations were maintained until March.

Also in November, a civilian sawmill was put into operation at Lucca, and reconstruction begun of a high tension power transmission line running through Pescia to Borgo. Other miscellaneous work included the clearing of mines for the Fifth Army wood supply, the winterization of hospitals, the opening and operation of a sawmill at Pietrasanta north of Viareggio in February, the clearing of mines along a gasoline pipeline route from Pontedera to Pistoia, and the construction of training aids for the Brazilian Replacement Depot.

On Christmas morning, the ration section of S-4 got an unusual holiday, as officers of the regimental staff, spearheaded by Colonel Trescot, undertook the procurement and breakdown of rations, dismissing the enlisted men for the day. The rations were all broken down by noon, as well as most of the officers. In January, the secondary road from Castiglione to Riola was taken over. This was a winding mountain trail, but was important because it was the first lateral road link between Routes #6620 and #64.

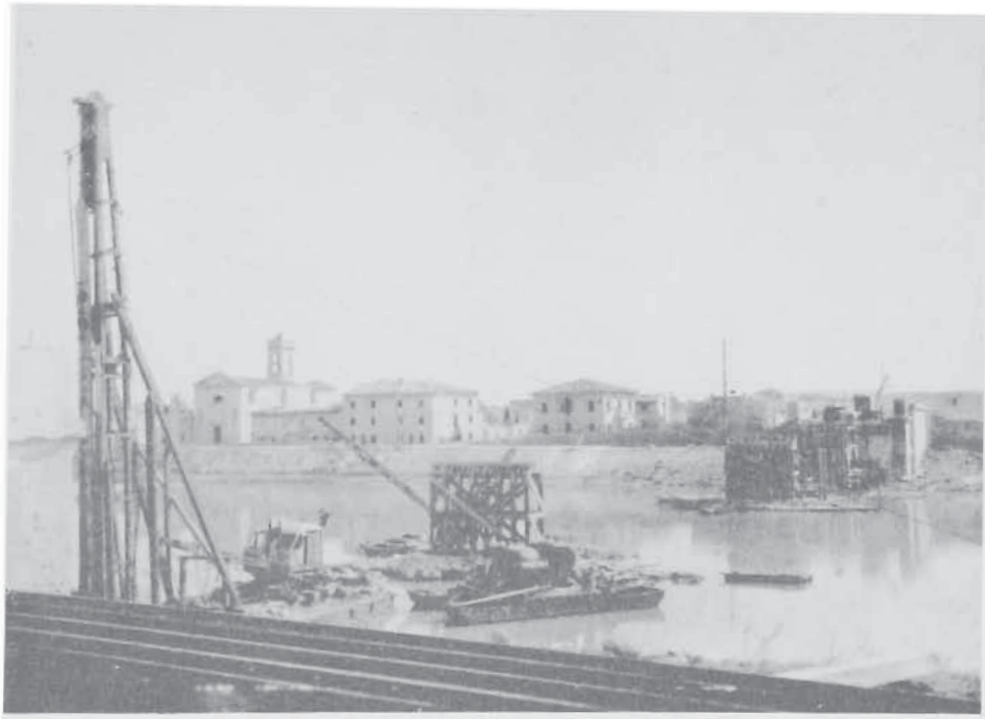
On 1 February, the 175th was relieved of all road responsibilities east of Pistoia by the 92nd Regiment. On 10 March, the regiment was reorganized under Table of Organization and Equipment 5-121, dated 27 September 1944, but never received the authorized third battalion. Preparation had been made in advance, so the reorganization was accomplished smoothly on the 10th.

About 15 March, Engineer Headquarters, Fifth Army gave the regiment advance notice that it would be called upon to construct a one-way Class 90, two-way Class 50, high-level, semi-permanent fixed bridge over the Po River at Ostiglia as soon as the site could be cleared of the enemy. This job was the largest single engineering task that the 175th had ever undertaken, and with the end of the war in Europe obviously drawing near, it might represent its last big job. With this thought in mind, all personnel of the operations section were thoroughly preoccupied with preparation of plans and designs for the bridge for the remainder of the month.

SECTION VI



DEMOLISHED BRIDGE AT PISA



175TH BRIDGE UNDER CONSTRUCTION

SECTION VI

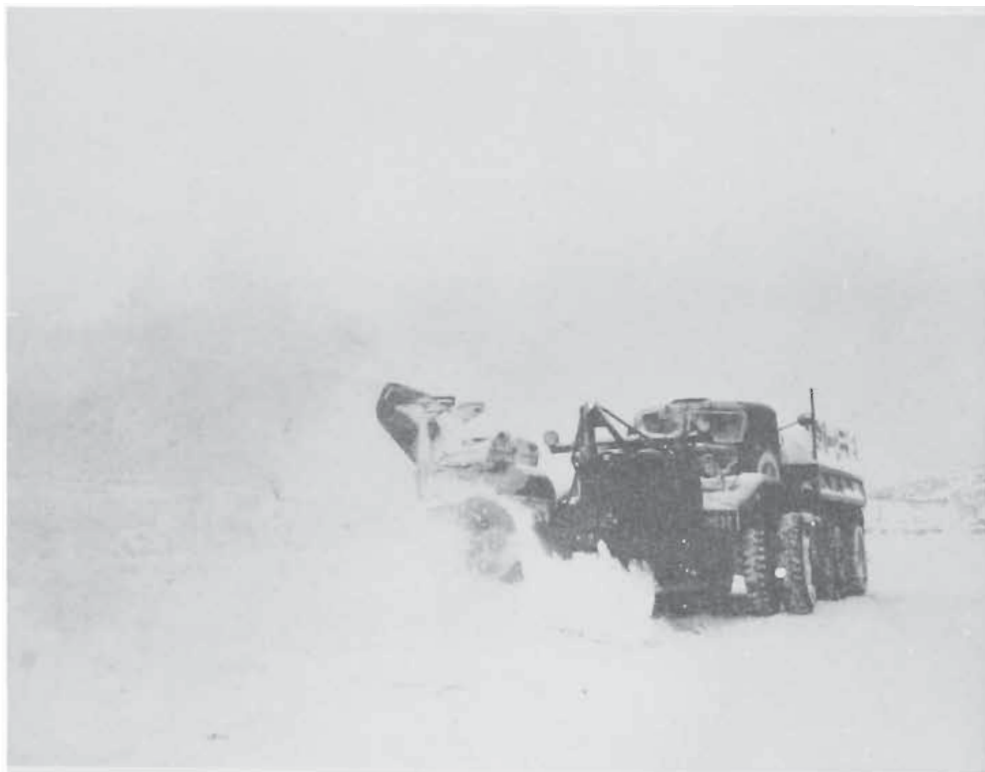


THE FINISHED BRIDGE



CLOSE UP VIEW

SECTION VI



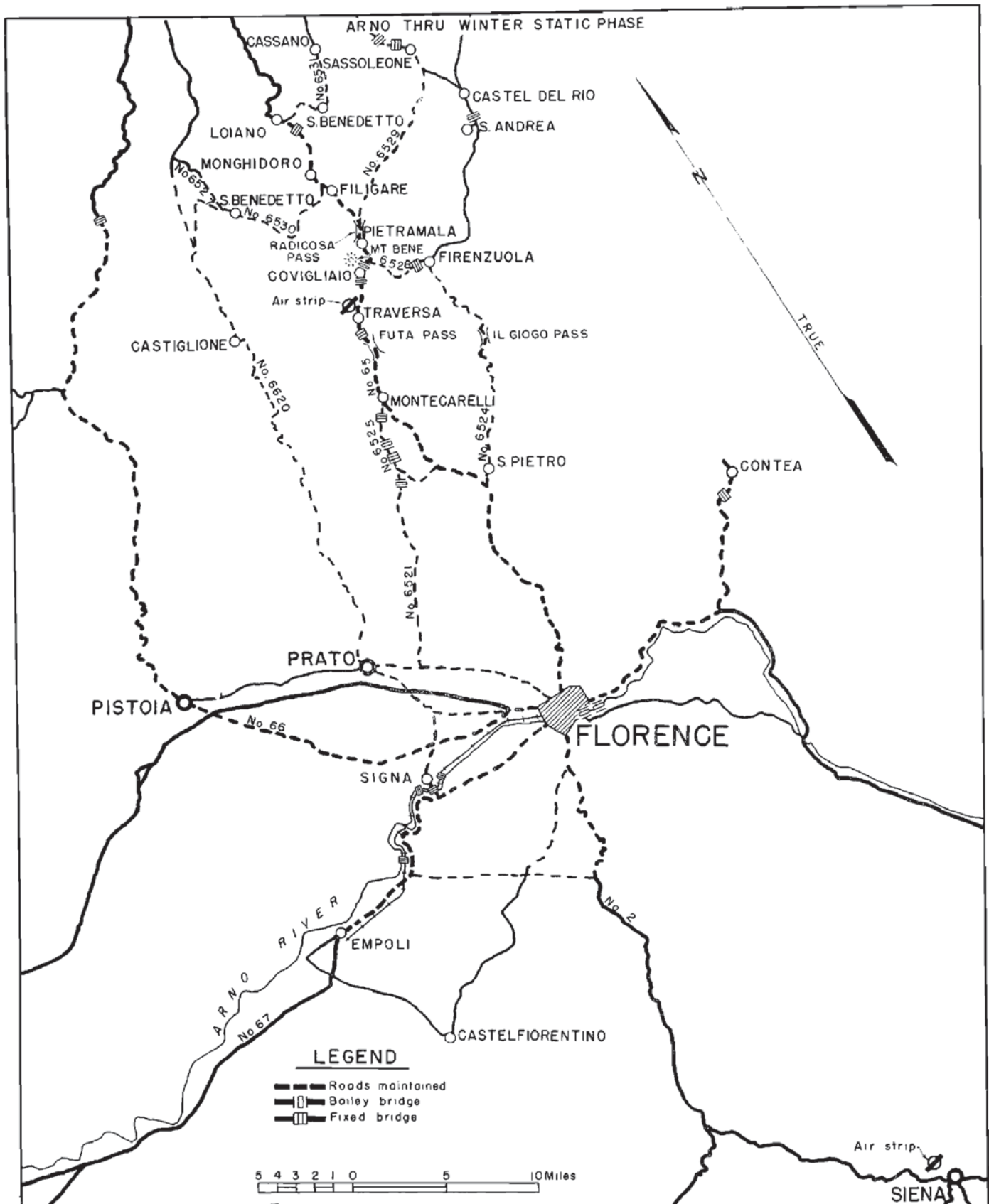
175TH FIGHTING SNOW NEAR COLLINA

1338th Engineer Combat Group
(337th Engineer General Service Regiment)

On 1 September, two one-way Class 40, 400-foot, triple-single Bailey bridges were begun across the Arno River at Florence by the 337th Engineer General Service Regiment, commanded by Colonel D. Lee Hooper. Three pile piers were driven simultaneously by using shovels on ponton rafts. Four days later the bridges were completed. Another bridge was built across the Arno at Signa. It was a 430-foot, triple-single Bailey, five spans, with four pile piers. In addition to these bridges and the ever-present smaller jobs, the 337th was working on an ever-increasing road net.

After 15 September, when the 337th Engineer General Service Regiment was disbanded, and 16 September, when the 1338th Engineer Combat Group was activated, the old 1st and 2nd Battalions became the 169th and 182nd Engineer Combat Battalions, respectively.

During the winter, the group headquarters organized and supervised the work of one main snow station and five sub-posts on Route #6529 and #65. It also organized a mine instruction team under the command of 1st Lieutenant John W. Schreiner, Jr, which marked and recorded seventy enemy and friendly mine fields, checked and cleared eleven areas and buildings for mines and booby traps, and conducted nine schools in mine warfare with a total attendance of 10,212 officers and enlisted men during the winter phase.



337 TH ENGINEER GENERAL SERVICE REGIMENT
 1338 TH. ENGINEER COMBAT GROUP
 169TH, 182ND & 185TH ENGINEER COMBAT BATTALIONS
 OPERATIONS

SECTION VI



337TH BRIDGE ACROSS ARNO AT FLORENCE

169th Engineer Combat Battalion

In the main, the 169th Engineer Combat Battalion under command of Lieutenant Colonel Roy A. Doman continued without a break the work it had been doing as the 1st Battalion of the 337th Engineers. From 16 September until the end of October, the unit expended 116,328 man hours of labor. It opened and maintained ninety-four miles of roads, fourteen of which were nothing but mud when taken over. Nine thousand and one hundred seventy-six cubic yards of crushed rock and gravel were used; ten rock quarries were established and maintained; six semi-permanent timber bridges with an aggregate length of 254 feet and three Bailey bridges totalling 560 feet were built.

A 24-hour-per-day traffic count was taken on Route #6529. At the end of a 10-day period, a total of 14,122 vehicles had passed the station. A temporary prisoner of war enclosure was constructed south of the Arno, which included the building of doors, windows, latrines and the laying of a concertina barbed wire fence. Four water points were established which produced about 55,000 gallons for many units beside the 169th during the months of September and October. The command post of the battalion made five moves, the fifth one on 22 October to a site on Route #6529, about three miles east of Highway #65.

By now, all units of the battalion were located on Route #6529. The road at first was nothing more than a crooked, muddy, rock-strewn mule trail that had been in existence for a great many years. The battalion widened the road, improved drainage and curves, did revetment work and used all its personnel on resurfacing. On 23 November, two snow removal stations were organized along the road. During December, the 169th also maintained Route #937 to Castel del Rio from the junction of Route #6529, for the 182nd which was at rest camp.

The companies of the 169th went one at a time for five-day rest periods at Montecatini during the period from 16 December to 30 December. During the month of January 1945, a training program was put into effect which reviewed bridge construction and taught new types of mines. Two culverts were constructed from 26 January to 15 February, to replace existing Bailey bridges.

SECTION VI

169th Engineer Combat Battalion (cont'd).

On 31 January, construction began on the semi-permanent "Charlie Bridge" on Route #937 north of Sassoleone. A triple decked Bailey bridge had been put in at this point, which required a great deal of jacking in order to keep in operational condition. An existing bypass was used during the construction period.

March was spent mostly in the maintenance of roads and the cleaning up of all assignments. A sprinkling system was used daily on the roads. Several men in the battalion attended the Floating Bailey Bridge School at Capua. On 3 April, the 169th Combat Battalion moved to Cascine Nuova and began training for the building of a floating Bailey bridge across the Po River.



169TH BRIDGE NEAR SASSOLEONE

182nd Engineer Combat Battalion

The 182nd Engineer Combat Battalion had been the 2nd Battalion of the 337th Regiment before reorganization. On 16 September, the unit merely continued its previous work. The battalion was under the command of Lieutenant Colonel Milton P. Barschdorf. The 182nd worked on the important supply routes from Florence north into the mountains. On Highway #65, asphalt patching was done, and improvement of bomb craters and demolition fills. From early September, progressive assignments kept the battalion occupied up to Radicosa Pass, where it was relieved on 22 October.

Route #6524 started with its junction with #65 near S. Pietro, and continued through Giogo Pass to Firenzuola. It was a one and one-half lane road with huge demolition craters, and the 182nd made it into a two-way road, after working from 1 October to 25 October. The circuit was completed as Route #6528 was taken over and made two-way from Firenzuola west to Highway #65. The work on these roads entailed the erection of seven bridges, four of them fixed bridges.

SECTION VI

182nd Engineer Combat Battalion (cont'd).

On Route #6528 near Castel del Rio, a 220-foot, triple-single Bailey bridge was washed out. The 182nd immediately drew up plans, and work was undertaken to replace the structure. In spite of the high water, a Bailey bridge of similar type was built, utilizing one center pier of trestle bent design embedded in a concrete foundation. The span was fifteen feet above the water level.

Work was done on the areas of seven medical units, the Fifth Army Command Post, two engineer dumps, and three ordnance and three quartermaster units. Also four water supply points were improved for the 405th Engineers, an air beacon maintained, and a prisoner of war cage constructed in Radicosa Pass.

On 27 October, work was begun on Route #937, a route north into the forward positions. When taken over, the road was mainly an impassable mud bog. The first job was getting water off the road, and the second task was adding rock. A platoon of the 425th Engineer Dump Truck Company was attached, to aid in the hauling of river gravel and stone. Entrances to unit bivouac areas along the road were a constant source of trouble, especially as vehicles drove off and onto the road regardless of culverts. Each time mud was carried onto the road, gutters caved in a bit more.

In November, a 220-foot Bailey bridge was built on Route #6528 at San Andrea, to replace a low level Bailey which had been washed out in the fall flood. Fourteen hundred foot approaches were constructed, and the bridge built with fifteen feet of clearance from the water level. When the job was completed, the 182nd removed the destroyed bridge from the turbulent waters.

Throughout December, the 182nd Battalion rested at Castelfiorentino, after turning its road work over to the 169th Battalion on 29 November. While at this site, minor jobs were done: an air strip at Siena, and prefabricated huts for 15th Army Group in Florence. Company "B" was placed on temporary duty with the 185th Engineers on 13 December to aid that unit in the maintenance of Highway #65.

From 10 January to 22 January, a 180-foot, triple-single Bailey bridge was replaced at Contea on Route #67, east of Florence, with a semi-permanent timber-steel structure. In January, five fixed bridges were constructed to replace Baileys in the vicinity of Barberino on Routes #6621 and #6625. Masonry work necessary was done by Italian civilians.



RAILROAD BRIDGE NEAR PISTOIA UNDER CONSTRUCTION BY 182ND ENGINEERS

SECTION VI

182nd Engineer Combat Battalion (cont'd).

Heating and repair work was done in January and February on the enlisted men's rest center in the central railway depot in Florence, and on the enlisted men's club in Montecatini.

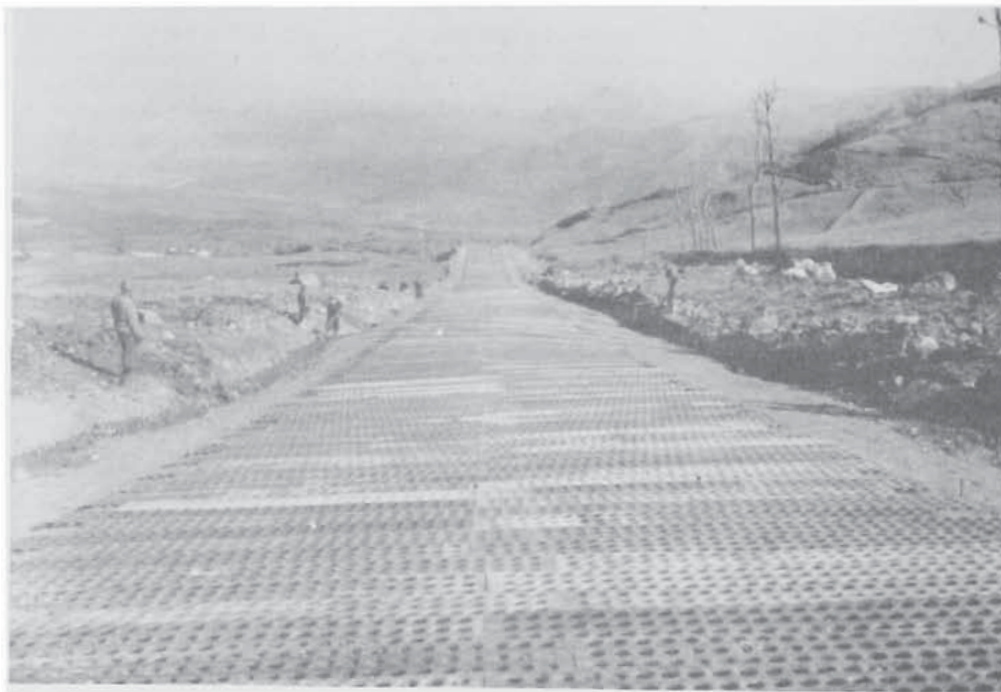
On 14 February, the battalion was placed on special duty with the Military Railway Service to help with the reconstruction of bridges and the railroad bed from Florence to Empoli. The tracks had to be patched all along the route, for every section had been destroyed. The largest jobs were the spanning of three breaks necessitating the erection of three 105-foot Unit Construction Railway Bridge spans. The spans were thrown across on 7, 9 and 13 March, respectively. While with Military Railway Service, the 182nd repaired twenty-seven kilometers of single line track, installed 18,300 lineal feet of sidings, and rebuilt or repaired sixty-three smaller breaks. The first train ran over the track on 20 March, approximately four weeks ahead of schedule. On 31 March, the battalion was relieved from duty with Military Railway Service and returned to full duty status with the 1338th Engineer Combat Group.

The next day, the battalion began to move north. Road work was taken over from the 169th Engineer Battalion on Routes #6531, #6529, and #6530 in addition to the smaller connecting trails. Battalion headquarters moved on 2 April to an area near San Benedetto on Route #6530.

185th Engineer Combat Battalion

The 185th Engineer Combat Battalion, commanded by Lieutenant Colonel Chester S. Wagner, became the third battalion of the 1338th Engineer Combat Group on 25 September. On 4 October, Lieutenant Colonel Wagner returned to the United States and was replaced by Lieutenant Colonel Maurice P. Shaver. The next day, the battalion began the maintenance of Highway #65 from Montecarelli to Monghidoro. The work was mostly maintenance, draining ditches, filling pot holes, removing mud and water from the road, repairing culverts, and cribbing and retvetting road shoulders, wherever necessary.

Maintenance of Route #6528 to Firenzuola was taken over from the 182nd Engineers at the same time, as well as the lateral from just south of Loiano, north and east to Cassano. Bridge repair work was done, three Bailey bridges were removed, one box culvert was constructed as was one Bailey bridge, a 270-foot double-single over the site of a damaged steel and timber bridge on Route #65 near Covigliaio. The 185th also did odd jobs on hospitals and dumps, as well as drainage work and mine clearance. From 18 October to 18 November, 8,500 cubic yards of shovel run, quarry rock, and crushed rock was produced from two quarries.



AIR STRIP BUILT BY 185TH NEAR FUTA PASS

SECTION VI

185th Engineer Combat Battalion (cont'd).

As November arrived, the 185th Command Post was at Pietramala, where it had moved on 25 October from Route #6525. The rock quarry set up at Mount Beni became the main quarry for the II Corps area throughout the winter season. In November, a Bailey bridge was constructed on Highway #65 at Covigliaio over an existing bridge, where the rains had caused the bridge's concrete to crumble. Civilian masons repaired the bridge while the Bailey carried the traffic.

Work was done for the 15th and 94th Evacuation Hospitals, but the biggest job was done for the 8th Evacuation Hospital at Pietramala, work which took from 15 December until 17 January. In December, snow-removal stations were set up along Highway #65 and personnel of the battalion were given six-day rests at the center at Montecatini.

In January, a semi-permanent bridge was built to replace a 90-foot Bailey bridge on Route #6528 near Firenzuola. The Bailey was first raised in place, then the fixed bridge constructed beneath the original. In January, snow removal was done on all the roads and the surfaces continually rocked. By the end of February, approximately 1,000 civilians were employed by the battalion. In March, these laborers assumed greater duties such as the building of a permanent bridge near Filigare, a 30-foot retaining wall at Monghidoro, and the operation of cut stone quarries at Monghidoro, Filigare and on Route #6530. Two hundred additional laborers were used during March.

The road work in March changed to resurfacing Route #65 with asphalt mix, rolling and grading the highway, rather than filling pot holes with gravel. One of the incidental jobs done by the 185th Engineer Combat Battalion at this time was the construction of a cub landing strip at Fifth Army Headquarters. The airfield was unusual because of its sloping runway. The only place possible to build the strip near the headquarters was on a hill where the runway sloped from 9 degrees at the lower end to 15 degrees at the upper end. Pierced steel planking was used in the construction. Although it proved very successful, pilots soon dubbed the strip, "The Ski Jump".

92nd Engineer General Service Regiment

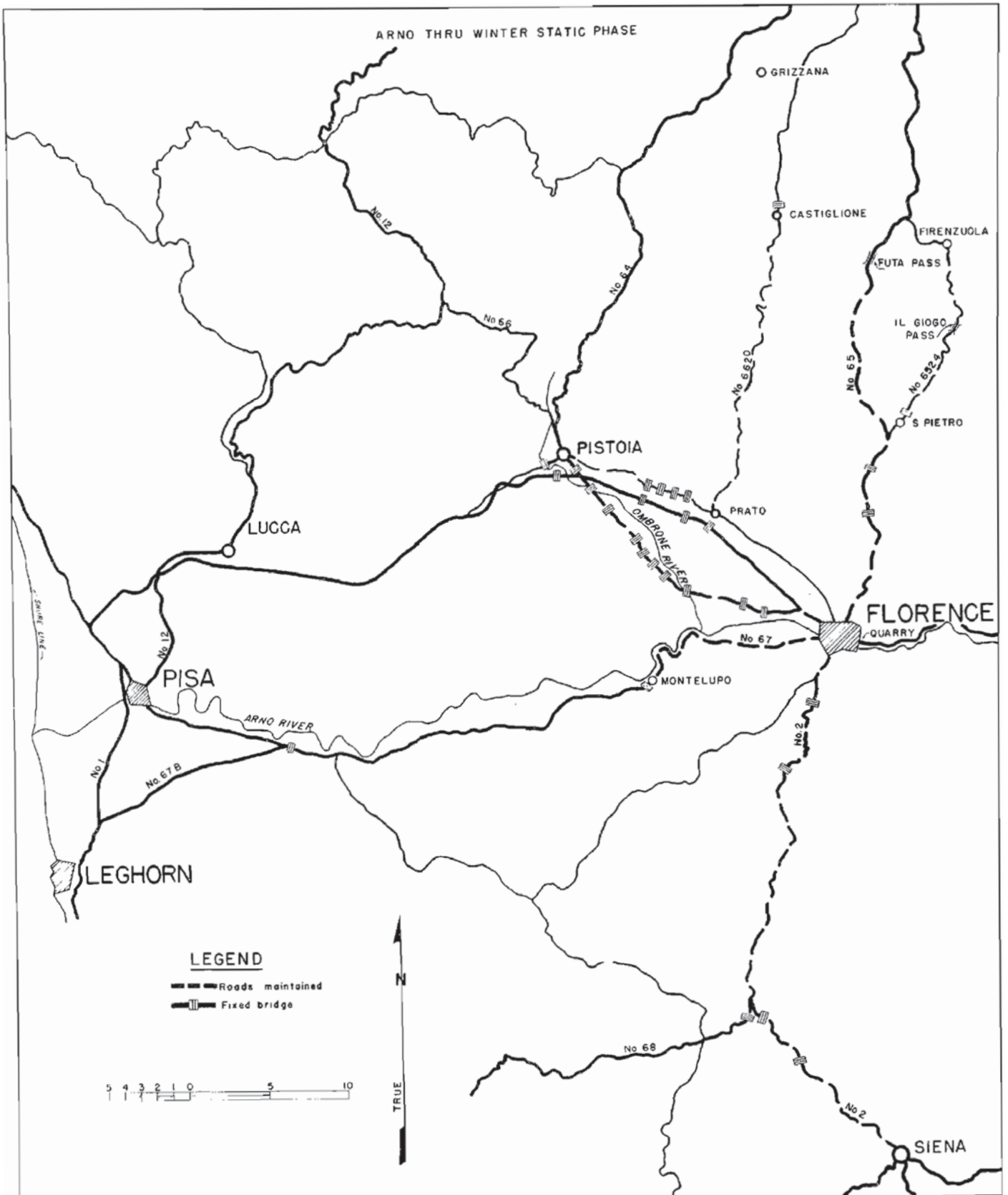
During the battle for the northern Apennines, the 92nd Engineer General Service Regiment under the command of Colonel George W. Bennett was engaged mainly in road maintenance and the replacement of Bailey bridges. At the beginning of the period, the unit maintained Highway #2 from Florence south to Siena. Later, Highway #65 was assigned as far as Futa Pass, as well as many of the adjacent secondary roads.

The east-west route from Montelupo to Florence was also in the 92nd work area but after the front lines reached the mountains in September, Highway #66 from Florence to Pistoia gradually became more and more important. Near Pistoia, a 215-foot steel and timber bridge was constructed, and on the same road, near Florence, a 100-foot bridge was built. These two were the 92nd Engineers' largest bridges in this part of the campaign. In addition, the regiment constructed twelve other fixed bridges and removed forty-two Bailey bridges constructed by advance units. Only one Bailey was put up by the 92nd.

The 92nd's roads required incessant patching, gravel, and ditching as the fall rains created washouts and turned all soft spots to mud holes. The regiment gravelled the engineer depot, Quartermaster Class II and III dumps, and improved hospital areas. A mine crew which had done much mine removal work, including the checking of dump areas and Fifth Army Headquarters, was detailed to train the 92nd Infantry Division on mine removal and the handling of booby traps. In the Gothic Line area, over 6,600 mines, including Tellermine, boxmines of both German and Italian manufacture, "S" and Schmines, were removed.

At the end of October, the 1st Battalion was maintaining Highway #66 from Pistoia to Florence, Highway #67 from Montelupo to Florence, the Signa, Ponte Vittoria and Ponte di Ferro bridges across the Arno at Florence, and Highway #65 north from Florence. The 2nd Battalion was working on Highway #65 in the Futa Pass area, and Highway #6524 through Giogo Pass to Firenzuola.

On 2 November, the Arno flooded over its banks and covered the highways on both sides of the river. The Italian flood control system was largely out of commission. For the next few days, the 92nd was busy working to fill dyke gaps, to replace culverts with bridges, and clearing away debris as the water rose to within a foot of the lower edge of the two Florence bridges. In November, a 215-foot bridge over the Ombrone River near Pistoia was completed, the second longest bridge built by the 92nd Regiment. Four steel stringer spans were used, utilizing the original abutments and three piers.



92 ND ENGINEER GENERAL SERVICE REGIMENT
OPERATIONS

SECTION VI

92nd Engineer General Service Regiment (cont'd).

About 200 civilians were hired by the regiment in November. Intensive work had to be done on Route #6524, a main supply route for the XIII Corps. Along Highway #65, the 92nd established three snow stations which were maintained until spring. The last part of November, the regiment was relieved of maintenance on Route #67. In December, sand and gravel was stockpiled along Route #65 for icy weather.



92ND ASPHALT MIX PLANT NEAR FUTA PASS

An unusual job was undertaken with the replacement of a trestle bent on a steel and timber bridge on Route #65 across the Sieve River. The trestle had been damaged by the swift current at the time of the floods. The bent was replaced with a 34-inch steel girder resting on pile piers constructed at each side, each consisting of four posts cemented into the rock stream bed. A well drill rig and crew from the 405th Engineer Water Supply Battalion drilled through the rock bed of the stream to allow the posts to be set.

In January, small asphalt hand mixing points for road patch material were established along the roads, and at one time there was about one mixing point per road mile. Snow, mud, and water were swept from potholes and replaced with asphalt mix.

On 1 February 1945, the 92nd Engineer General Service Regiment was reorganized. A third battalion was added, most of the personnel coming from the 387th Engineer Battalion which was inactivated on the same date. The new companies were Companies "G", "H", and "I". The new 3rd Battalion took over the maintenance of Route #6620 from Prato to Castiglione, the rest of the regiment keeping its previous assignments.

The opening of the Autostrada, Route #1-1, from Prato to Pistoia was begun, and this work included the construction of four 30-foot bridges and about 600 feet of culvert. Throughout February and March, road resurfacing was carried on, especially on Route #65. A 200-foot "A" frame bridge was built on Route #6620 across the Setta River at Lagaro as part of the plan to open that route to two-way traffic. A rail-head was built at Grizzano which was to be the northernmost terminal of the railroad, and to serve as a supply base for the spring offensive toward Bologna and the Po River.

SECTION VI

387th Engineer Battalion (Separate)

The 387th Engineers had done a great variety of work but had never built a bridge before 2 September, when a 30-foot steel stringer fixed bridge was built in six days on Route #68. Shortly thereafter, another bridge, a civilian one damaged by demolitions and by high water, was rebuilt. Company "A" was relieved as the IV Corps bridge train on 11 September, and together with the other companies, learned about the Bailey bridge while dismantling seven of them. The first sizeable bridge was a 93-foot steel stringer one north of Colle Salvetti on the road to Pisa. This job involved the construction of a ten-foot culvert for an adjoining canal, considerable fill for approaches and the removal of two Bailey bridges.

Late in September, the battalion moved up to the Arno River, taking over the maintenance of Route #67 from Leghorn to Montelupo. The road was patched, culverts replaced, bridge approaches paved and ditches opened. Italian "cantonieri" or road workers were hired to aid in this work. The civilians had done this work for years and needed only the minimum of supervision. Company "D" continued to operate bridge depots; the one at Poggibonsi was closed and one opened at Florence, later another at Firenzuola.

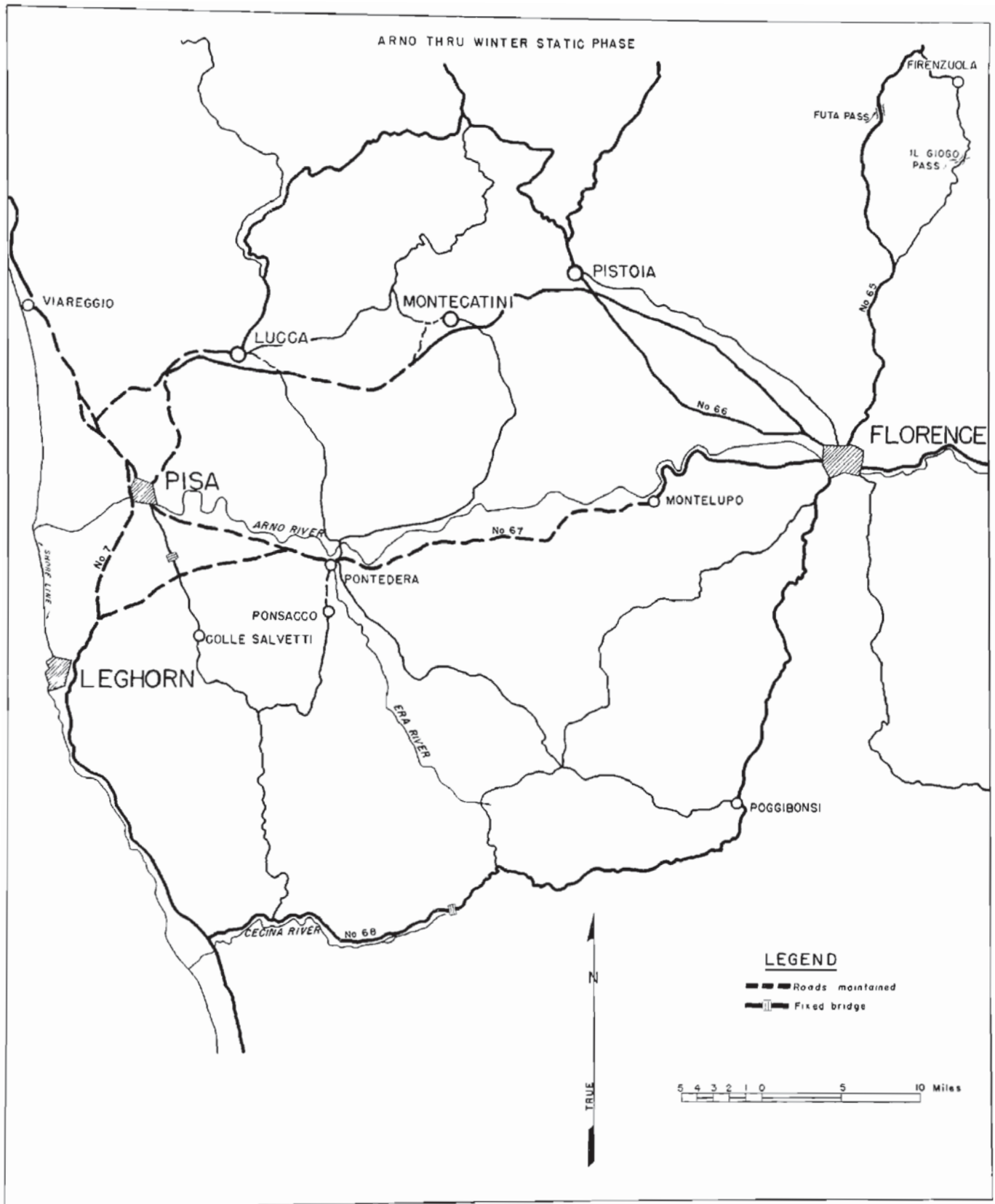
As the floods came at the beginning of November, patrols of the 387th were constantly inspecting the lines of communication in their areas. The bridge over the Arno River at Pisa was in danger of being washed out. The rushing water was two feet from the trusses of the bridge. Debris catching on the piers was kept cleared away to reduce the pressure against the piers.

The fixed bridge at Pontedera had water one foot above the bottom of the Bailey panel trusses, and the water was still rising. To save this bridge, a detail from the 387th demolished a dike on the Era River, releasing much of the flood water into nearby flatlands, and dropping the water level at once. Roads were under water in numerous places. A culvert under construction was flooded and the approaches washed out. An improvised bridge spanned the gap, however, and traffic was kept moving all night.

This road net was dropped in November and the road from Pisa to Lucca to Montecatini taken over. The 387th then remained the only Army engineer unit on the west coast. More bridges were built. A two-way 20-foot bridge with steel stringers was built to overpass a railroad, using 1,500 cubic yards of fill in the operation. Two more small bridges were built on the Autostrada. Sixty-two foot and 30-foot bridges were constructed over canals in the town of Viareggio.



387TH BRIDGE NEAR VIAREGGIO



387 TH ENGINEER BATTALION (SEPARATE)
OPERATIONS

387th Engineer Battalion (Separate) (cont'd).

At one time, five bridges were under construction at the same time by three companies. The work of roads and bridges continued throughout the autumn and winter, until 1 February 1945. On that date, the 387th Engineer Battalion was inactivated. Most of the battalion personnel was used to form the 3rd Battalion of the 92nd Engineer General Service Regiment; the companies being lettered "G", "H", and "I".

405th Engineer Water Supply Battalion

Upon the movement of the Fifth Army into the Florence area, the 405th Water Supply Battalion was assigned the task of installing the electrical as well as the water system in the Hotel Anglo-American, which was to be used as an American Officers' Rest Center. The same type of work was done for the Enlisted Men's Rest Center in the Florence Railroad Station.



WINTERIZED WATER TOWER BUILT BY 405TH

At the beginning of the drive on the northern Appennines, the battalion was split up in the same manner as it had been in the summer. Company "A" and Headquarters and Service Company were in charge of the Army area. Company "B", at Lucca, supported IV Corps; Company "C", in Covigliaio, was in support of II Corps. This disposition remained unchanged throughout the winter.

High in the Appennines, water was scarce; no running source of water could be found north of Loiano. It was necessary for Company "C" to set up dry points, utilizing twelve water tankers, and thus supply the forward areas. As the tankers were critical, well drilling was tried. At the beginning of November, north of Loiano, a well was sunk 310 feet, wearing out four bits, but the hole was dry. The same results were obtained at Barberino.

At the beginning of the wet season, with the accompanying turbid waters, sedimentation tanks were used. Mud, thicker and deeper than found on the Naples plain, was encountered, but the experience of the previous winter helped supply the answer to this particular problem. As the winds grew colder, hospitals became concerned over their water supply.

SECTION VI

405th Engineer Water Supply Battalion (cont'd).

A winterized water tower was constructed for the 8th Evacuation Hospital located high in the Appennines near Pietramala. A 3,000 gallon canvas water tank on a 10-foot tower was enclosed, two immersion water heaters were installed, and all water pipes were insulated, assuring the hospital a constant supply of water throughout the sub-freezing temperatures. Other hospital installations liked the idea, so it became Standard Operating Procedure to bury all water pipe.

In November, Fifth Army established a rest center in Montecatini, which was famous for its mineral baths. But the bath houses were closed--there was no longer any mineral water. The 405th installed the necessary piping, used high capacity pumps, and the baths were put into operation by the time the first troops arrived for a rest. To insure that soldiers did not drink impure water in the Montecatini system, the 405th chlorinated the entire city supply--between 7,000,000 and 8,000,000 gallons of water each week. However, many billets were unable to get sufficient water for washing and latrine use. A construction crew was sent out which found the trouble to be a constriction located in the pipelines between the city mains and the local reservoirs. Larger pipes were constructed at fourteen such points, thus allowing the billets to draw an ample supply of water from the city system.

During the winter, 15th Army Group Headquarters moved to Florence in a park along the north bank of the Arno. The 405th Battalion laid 2,781 feet of pipe from the Florence city mains to the ten kitchens, five ablution huts and one 32-man shower unit. Civilian labor was used for the shovel work and a crew of technicians from Company "A" for the plumbing.

With winter rains flooding the river beds and washing bridges out, the 405th aided the 92nd Engineers in the repair of the bridge over the Sieve River on Route #65. Working in two 8-hour shifts, a rotary and cable tool machine drilled eight holes into bed rock averaging eight feet in depth. In these, wood piles were set, forming two pile clusters, upon which the 92nd Regiment based its reinforcement of the bridge.

Acknowledging the success of the Sieve River, IV Corps called upon the 405th to do similar work at the site of the 180-foot bridge being constructed by the 1108th Group across the Serchio River about twenty miles north of Lucca. The river was so deep that the drilling had to be done from floating barges. The bridge was never finished, however, as a flash flood washed the barges downstream and destroyed one percussion rig. The Bailey bridge near the site was allowed to remain in place.

On 9 March, the well-drilling crew undertook another bridge job, again under the direction of 1st Lieutenant Wilho K. Kleemola. This job, on Highway #64 across the Silla River, proved successful; the rotary and cable tool machines drilled twenty holes and set piles for two double pile bents. The 175th Engineer Regiment built the bridge on these supports. Coincident with these special jobs, the steady, uneventful supplying of water from established water points was continued into the spring.

1554th Engineer Heavy Ponton Battalion

On 29 August, while the Eighth Army was still fighting in the northern outskirts of Florence, ponton equipment on wheels was delivered and parked on lateral roads on the north side of the Arno out of enemy observation by the 1554th Engineer Heavy Ponton Battalion, commanded by Lieutenant Colonel W. K. Benson, Jr. On the night of 1 September, a landing stage and a two boat raft with 25-ton pontoons was constructed. These were to aid the 337th Engineer General Service Regiment in construction of the 400-foot Bailey bridge at Florence. The rafts were used almost continuously performing several tasks: supporting the pile driver, moving supplies and equipment, and finally, delivering loaded dump trucks to dump rock ballast around the pile piers.

First orders for a preliminary reconnaissance for a ponton bridge site and a raft ferrying site across the Arno were given by the IV Corps Engineer to the commanding officer of the 1554th Engineer Heavy Ponton Battalion on 1 September. The most feasible sites were found about two miles west of Pisa.

On 3 September work was begun. Tanks were used for further reconnaissance because of the proximity of the enemy: mines were cleared by the 235th Engineers; and the equipment and materials unloaded at the various sites. The completed bridge was 540 feet long, the longest ponton bridge that had been built in Italy. An average of seventy-five men worked on the bridge for fourteen hours to complete it.

Because of the rain and consequent mud on the bridge, sommerfeld matting was nailed in place over the two-inch treadways originally nailed to the chess. This assisted materially in providing traction for the many vehicles crossing the bridge.

SECTION VI

1554th Engineer Heavy Ponton Battalion (cont'd).

In the vicinity of Empoli and Montelupo, two trestle bridges were constructed, the first sixty feet long, and the second 165 feet. During the floods a few weeks later, the longer of these bridges washed out and very little was salvaged. The other was removed in time to save it from the rising water. There was little effect on the ponton bridge except for the increase of river debris that was easily handled by the maintenance crew. The trestle bridges had performed their function and were not replaced.

After the crossing of the Arno had been accomplished, the 1554th assisted the 337th Regiment at Signa by furnishing and operating rafts for pile driving equipment for the Bailey bridge being constructed at that site. Other 1554th detachments maintained two floating treadway bridges across the Arno at Pontedera and Cascina.



1554TH PONTON RAFT BEING USED IN CONSTRUCTION OF
BRIDGE AT FLORENCE

The ponton bridge west of Pisa was maintained by the 1554th until it was dismantled 3 October, and at the same time, rafts were operated to assist the 175th General Service Regiment in the construction of the bridges on Route #1 at the crossings over the Arno and Serchio Rivers. When the ponton bridges had been dismantled and overhauled, the battalion moved toward Florence to keep up with the advance of the Army, and from that time until the end of 1944 was occupied with smaller jobs.

Each of the bridge companies dismantled their ponton equipment from the trailers and loaded a unit of Bailey bridge which was held on call for immediate movement. This bridge train was used on several occasions to carry various amounts of Bailey bridge to division and corps areas when the bridge material was not on hand in corps bridge trains.

At the same time, both bridge companies were using their otherwise unoccupied equipment and personnel for dismantling and hauling to the bridge depot Bailey bridges being replaced by other engineer units. Ponton trailers were also used on several occasions to haul piles and long steel beams to the army units replacing the temporary bridges.

SECTION VI

1554th Engineer Heavy Ponton Battalion (cont'd).

Toward the end of November, the 1554th was given the job of constructing roofs on two partly finished buildings which were to be occupied by the 400th Engineer Maintenance Company. This was the battalion's first construction job, and very few of the men had any training or skill as carpenters, and the supply of tools for the work was limited. The job was successfully completed in spite of two wind storms, which removed a part of the newly completed roof.

During the first months of 1945, the battalion continued routine jobs, principally using the ponton trailers for hauling logs, piles and other long loads for various Army engineer units. In addition, it began work in an entirely new field: the construction of fixed bridges.

The first fixed bridge was built on the Autostrada between Florence and Prato. Italian masons rebuilt the demolished abutments, and a 30-foot span was put in. Stringers were four 27-inch built-up I-beams salvaged from a bombed bridge at Signa, and railroad rails were welded at right angles to the I-beams for floor beams.

The second bridge, a two-span trestle bent, was also on the Autostrada. In preparing the west abutment of this bridge, it was found that the fill on which the road was built was a very spongy clay. In order to obtain effective bearing, five piles were driven as foundations for the abutment sill. These were the first piles driven by the battalion. During the early spring, four more bridges were constructed.

In the last week in January, a raft was made to support a well-drilling rig drilling pile holes for a bridge across the Serchio River north of Lucca. A flash flood capized the raft a short time later, destroying the drill rig. All precautions had been taken, the accident served only to prove that the 25-ton pontoons are not "seaworthy" in fast currents. The current in this instance was estimated at twelve miles per hour.

On 3 March, the battalion found another use for ponton equipment. A ponton was set right side up upon its trailer and carried Captain J. Shurley of Engineer Headquarters, Fifth Army, and his bride, the former Lieutenant M. Eckworth, A.N.C., from their wedding at the Protestant Church in Florence to the reception at the Engineer Mess. The city of the Medici was quite amazed at this spectacular old tradition of the United States Army Engineer Corps.

1029th Engineer Treadway Bridge Company

On 1 September, the Engineer Treadway Bridge Detachment, 345th Engineer General Service Regiment, moved north to Poggibonsi. Eight days later, it was attached to IV Corps for operations, and went north of the Arno River to Altopascio. During the fall months, the unit delivered tactical bridging to sites chosen by engineer combat units. In addition, all removed bridges were returned to engineer depots and spare parts were delivered when necessary.

On 2 November, a detail of men was sent to breach the dykes along the north bank of the Arno to prevent the river from overflowing and flooding areas to the south. At the same time, considerable work was devoted to retrieving stranded vehicles unable to return to the unit because of flooded roadways. In conjunction with the 1108th Group, a road patrol was kept on the Autostrada to report any irregularities caused by the flood to the highways, the bridges, etc.

On 6 November, the detachment moved from Lucca to Pistoia where it remained throughout the winter. The next day, a forward bridge dump near Porretta was established.

On 28 November, orders finally came from the War Department and the Treadway Bridge Detachment was activated as the 1029th Engineer Treadway Bridge Company. On the same day, it was assigned to Engineer Headquarters, Fifth Army. Since 1 September until its activation, the company had delivered 5,690 feet of Bailey bridging, 690 feet of treadway bridging and 560 feet of footbridge.

On 23 December, orders were received to move the forward echelon from Porretta to Suviana, and movement began the following day. The orders were subsequently rescinded, however, with the change in the tactical situation at Christmas time, and the bridging from both forward dumps was moved back to the company area in Pistoia. The 306th Quartermaster Company (Italian) was attached to the 1029th to provide additional transportation equipment and drivers on 15 February 1945.

SECTION VI

1029th Engineer Treadway Bridge Company (cont'd).

From the last part of November until the Po Valley offensive began in April, the company delivered 3,370 feet of Bailey, 900 feet of treadway, and 432 feet of infantry support bridge. During the static winter season, the replacement of tactical bridging by fixed bridges had continued, the 1029th returning from these sites 2,850 feet of Bailey, 575 feet of treadway and 312 feet of infantry support bridge to engineer depots.



BRIDGE COMPANY BROCKWAY TRUCK IN DIFFICULTY
NEAR S. BENEDETTO

1755th Engineer Treadway Bridge Company

After the successful bridging of the Arno River at Florence, the 1755th Treadway Bridge Company, commanded by Captain Wylie B. Mendel, attached operationally to II Corps, supplied the combat engineers with the Bailey and treadway bridging used in the drive beyond Florence into the Sieve Valley and through Futa Pass. During these operations, the company delivered 4,440 feet of Bailey and 2,750 feet of treadway bridge to the sites prepared by the combat engineer units.

The biggest assignment of the 1755th was the bridging of the Arno River after the first flood destroyed most of the bridges. A floating treadway bridge 330 feet long was erected in seven hours. The company also provided a bridge across the Sieve River for use of the assault forces. While being constructed, the bridge was under continuous enemy artillery fire.

Throughout the winter and spring there was little change in the operation of the unit. Men were sent to rest camps in Florence and Rome, a few sent to the United States on temporary duty. Bridges were delivered for erection or training purposes. Bridge parts scattered along roadsides were collected, and dismantled bridges hauled to depots.

From November until 5 April, 1580 feet of Bailey and 75 feet of treadway bridge were delivered to sites, and 1,000 feet of bridging salvaged. The average amount of bridging in the dump was about 700 feet of Bailey and 450 feet of treadway, these amounts being increased to 1,200 feet and 900 feet, respectively, by April.

SECTION VI

1168th Engineer Combat Group

Twenty days after the 1168th Engineer Combat Group under the command of Colonel Salvatore A. Armogida had been activated on 7 December 1944, the following units were attached for administration only:

Company "D", 84th Engineer Camouflage Battalion
66th Engineer Topographic Company
383rd Engineer Depot Company
400th Engineer Maintenance Company
423rd Engineer Dump Truck Company
427th Engineer Dump Truck Company
2750th Engineer Light Equipment Company
1206th Engineer Composite Section
1980th Engineer Composite Section
1710th Engineer Map Depot Detachment
1712th Engineer Map Depot Detachment
1621st Model Makers Detachment

The 1168th Group was organized in Barberino, but the headquarters moved south to Florence two days later, in which area it remained until spring. The personnel for Group Headquarters and Headquarters Company came from Headquarters Battery, 4th Anti-Aircraft Artillery Group, and from other engineer units of the Fifth Army. Units were attached to the group primarily for control and supervision of their administration. On 26 December, the group was made parent U.S. organization of the 210th Italian Engineer Combat Group and 123rd Italian Engineer Combat Battalion.

On 10 March, the newly activated 217th Engineer Dump Truck Company and the 597th Engineer Light Equipment Company (formerly the 427th Dump Truck Company) were also attached for administration, and when the 1981st Engineer Aviation Fire Fighting Platoon arrived on 16 March, it, too, was attached. Effective 20 March, the 1168th Group Headquarters was relieved from assignment to Engineer Headquarters, Fifth Army, and assigned to the 2626th Engineer Group (Provisional).

Meanwhile, the Group Special Service Officer secured a movie projector and nightly films were shown to the units attached. The movies were given at the different unit bivouac sites, all other units being notified and invited to attend. Medical inspections were made by the group medical officers, church services held regularly by the Chaplain, and plans made for an extensive Information and Education program to be inaugurated after the anticipated V-E Day.

Captain Harry T. Ennis, 175th Engineers, was placed on temporary duty with group headquarters for an indefinite period, his principal mission to be Engineer Mess Officer. In February, the Engineer Officers' Mess was opened in an estate on the northeast outskirts of Florence. The Engineer Mess was a club for all Engineer Officers in Fifth Army and their guests.

Past the teasy hat-check girl (whose good friend was Captain Wylie B. Mendel of Engineer Headquarters) was a beautiful ballroom, where an orchestra played each Wednesday and Saturday night. Other nights, music was furnished by a radio amplifier, and later by a genuine "juke box". In the adjoining bar room, beverages and sandwiches were served by Italian personnel under the supervision of American enlisted men. There was a pool room with a lounge and fireplace at one end and three other salons where the clatter of the battlefield was temporarily replaced by the chatter of eager signorine. On the second floor was a suite of rooms for General Bowman, a ladies' lounge, the Mess Office and quarters for Captain Ennis and the club personnel (see Appendix Q for a history of the Engineer Mess).

423rd Engineer Dump Truck Company

In the latter part of August, headquarters and the 2nd Platoon of the 423rd Engineer Dump Truck Company were attached to the 387th Engineer Battalion. The 1st Platoon remained with the 92nd Engineer Regiment. This same "split type" attachment remained in effect throughout November and December.

During this static phase of operations, all troops were in buildings for the first time in two years. On 28 December, the entire unit was attached to the 92nd Regiment for operations and moved to Vaglia, taking up an area in the local railroad station and yards. In January, the arrangement was again changed, the 423rd now being attached to the new 1168th Engineer Combat Group for administration.

SECTION VI

423rd Engineer Dump Truck Company (cont'd).

During this time, the 387th Engineer Battalion was de-activated, and an additional driving team of twenty-four men was assigned to the unit from the battalion's excess personnel. For the first time since activation, the unit was able to give twenty-four hour service with all trucks.

The months of January, February, and March continued in the same way; the 423rd Company employed its trucks on the main supply route, Highway #65, up to Futa Pass. Meanwhile, every effort was made to keep the equipment in readiness for the last shove into the Po Valley.

425th Engineer Dump Truck Company

Upon the completion of the advance through Florence, the 425th Engineer Dump Truck Company, commanded by Captain Marshall E. Pruett, was attached to the 1338th Engineer Combat Group. Under this attachment, the company helped to maintain Route #65, Route #66, and their tributaries, as well as working to supply hospitals, dumps and similar installations with needed materials.

During the fall months, the supply problem became critical. Automotive parts, tires and tubes were almost unavailable. To alleviate the situation, parts were interchanged from one vehicle to another to reduce the number of deadlined vehicles.

From 1 November to 16 November, headquarters and four trucks bivouacked at Barberino and worked with the 185th Engineer Battalion. The 1st Platoon worked with the 182nd Engineer Battalion at Castel del Rio and the 2nd Platoon with the 169th Engineers at Piancaldoli. Company Headquarters and the 2nd Platoon moved to Guignola on 7 December, where the 1st Platoon rejoined them on 28 January 1945. The entire company went to Pietramala on 20 March to aid the 1338th Group in road work.



425TH DUMP TRUCK CASES UP ON HIGHWAY #65

SECTION VI

427th Engineer Dump Truck Company

A great amount of shuttling for the 175th Engineers was done to and from engineer depots and to numerous bridge sites by the 427th Engineer Dump Truck Company under the command of Captain James M. Copeland. Bridge materials were obtained and Bailey equipment returned to depots. In its assignments with the 175th, the 427th helped with the replacement of six Baileys by fixed bridges on Highway #67, the replacement of three Baileys by fixed bridges on Highway #1 north of Livorno and the construction of the fixed bridge across the Arno at Pisa.

In October and into November, parts of the company were on work assignments throughout the Fifth Army sector. One squad worked on the repair and maintenance of Route #12 north of Lucca, one section on Route #64 from Pistoia to Corvella, one squad on Route #6625 from Pistoia to Prato, and one squad fifteen miles north of Prato on Route #6620. Another squad worked on miscellaneous jobs, such as hauling of lumber and crushed stone in preparation for a winter site for the 38th Evacuation Hospital at Montecatini.

The remaining platoon had a difficult assignment with the 1338th Combat Group on Route #65 south of Loiano. Load after load of rock was dumped twenty-four hours a day on the seemingly bottomless roads in that sector.

In mid-October, work had been done to prepare a bivouac site for Fifth Army Forward Headquarters at Traversa and a great deal of crushed rock was necessary. Meanwhile, company headquarters remained at Montecatini until 10 March, when the 427th was disbanded, and the personnel used for the formation of the new 597th Engineer Light Equipment Company.

217th Engineer Dump Truck Company

A period of one week's time was given to the 217th Engineer Dump Truck Company, commanded by Captain Andrew Harvin, for training after its activation on 10 March. Before the week was completed, the 2nd Platoon left the command post at Pistoia and began operating with the 2nd Battalion of the 175th Engineer Regiment at Pescia. The 217th was attached to the 1168th Engineer Group on 10 March. At the conclusion of the training period, the entire company began work hauling crushed rock and asphalt mix for the 175th on Route #64. On 1 April, the commanding officer left for the United States. On the same day, the 217th Engineer Dump Truck Company was attached to the 175th Engineers.

66th Engineer Topographic Company

The 66th Engineer Topographic Company under the command of Captain Vernon E. Woodard moved into buildings in the fall. It was immediately apparent that the move was a wise one, for more work and better work was done by the personnel. The company was authorized the 9-unit reproduction train of an Air Force Headquarters Company. The 66th kept this equipment in operation two shifts a day, seven days a week.

Meanwhile, replacements among technical personnel were almost impossible to obtain from the repple depoles. Since the time required to train a "topo man" properly was prohibitive, it was found that the best source for replacements was from other units in the army--soldiers who had had some topo training in civilian life. Some of the most skilled replacements were found driving trucks, painting signs, or fighting as infantrymen.

The 66th remained in the Florence area throughout the winter and continued the extensive map revision program covering the Fifth Army area of responsibility. Standard maps of all scales as well as layered maps were revised and reproduced during the winter period. Forty controlled photo-mosaic sheets were prepared at the scale of 1:12,500 covering the Reno Valley, including the areas along Highways #64 and #65 north from Ruta Pass to Bologna. In January and February, more 1:12,500 photo-mosaic sheets covering the Po River Valley area were also prepared.

In addition to the standard and layered maps and photo-mosaics, special blow-up mosaics were prepared at the scale of 1:10,000, covering the possible crossing points along the Po River. During the inactive period prior to the spring offensive, a number of special planning maps, charts, and diagrams were prepared for staff use. Much topographic work and reproduction material was prepared for II and IV Corps during these months. This work included defense overprints, unit histories, operational plans, and administrative orders (see Appendix R for Topographic Operation Summary).

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THELMA --- MORE 66TH TOPO MAP PROPAGANDA

66th Engineer Topographic Company (cont'd).

The survey platoon of the 66th was detached from the balance of the company for the entire winter-spring period. It was first engaged in establishing horizontal and vertical ground control along Routes #64 and #66 north of Pistoia. This operation was carried out in combination with the 46th South African Survey Company.

The latter part of November the survey section was assigned a new operational area. The new mission was to establish ground control in the area north of the Serchio River and west of Route #12 to the sea, and to furnish any and all survey information requested by the 92nd Infantry Division artillery. On 1 April, additional ground was added to the survey responsibility and the area now extended west to the road junction of Routes #12 and #66, roughly a forty-mile front. Just prior to the April offensive, the survey platoon was actively engaged in supplying fire control data to the artillery.

46th Survey Company, South African Engineer Corps

In August, while the front was more or less stabilized, the 46th Survey Company, South African Engineer Corps, had continued its survey work. A chain of large triangles had been carried forward, based on Italian primary beacons. By the time that the attack was launched in September on the Gothic Line, the triangulation had been carried well beyond the enemy lines, and requirements of artillery surveyors fully met. This dense network was worked on during the static winter campaign until by February it was carried well forward into the Po Valley.

1710th and 1712th Engineer Map Depot Detachments

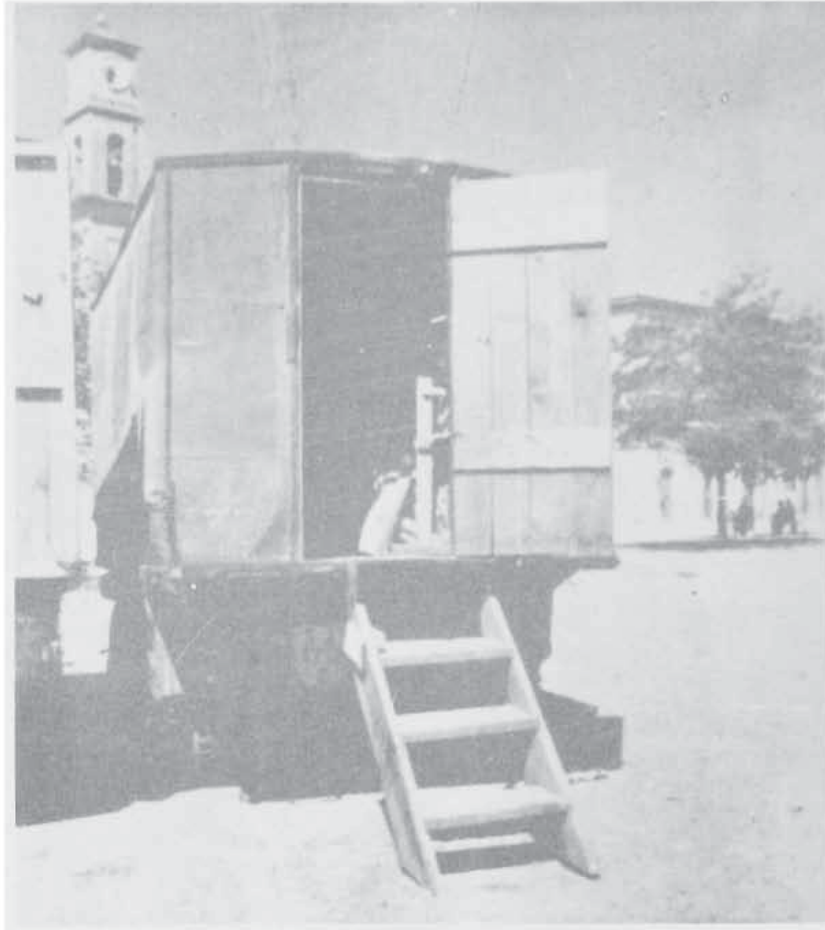
On 4 September, the 1710th and 1712th Engineer Map Depot Detachments moved near Florence, so as to be conveniently located for the Gothic Line attack. Both detachments continued to work together throughout the fall and winter. By this time, the map depot had become so large that it was impractical to move it completely without adequate warehouse facilities. On 17 October, all the trailers were moved forward to establish an advance depot at Traversa to handle only the maps necessary for the immediate campaign. A shuttle service was then maintained between the rear and forward depots, which kept the map stock up-to-date at the forward depot.

The main problem faced by the depot was the securing of sufficient floor space on which to store maps in a manner that would make it possible to issue them with maximum efficiency and in minimum time. Another problem was that of moving the entire depot, for the depot had to work with the Transportation Corps and abide by their schedules. This raised the problem of how to close one depot in the morning and reopen at the new area by noon of the same day.

Ever since the planning for Salerno (when the depot had 1,000,000 maps), the stocks in the map depot had increased until the October inventory of the 1712th and 1710th amounted to slightly over 6,000,000 copies. By 1 November, the forward depot consisting of the nine 2½-ton trailers was well established and in operation approximately forty miles north of Florence on Highway #65. This depot supplied maps to II and XIII Corps, while the base depot in Florence supplied operational maps to IV Corps and Army troops.

During the month of November, four more trailers were constructed and sent to the forward depot. The total stock held by the combined depots averaged 5,800,000 copies for the months November 1944 to March 1945 inclusive. In addition to this, all map paper used by the various topographic companies in the Fifth Army was stored and distributed. This stock of paper was built up so that by January, approximately sixty 2½-ton truck loads were stored in the warehouse.

The 1710th and 1712th detachments were attached on 27 December to the 1168th Engineer Group for administration. The highlight of the Christmas season was a party given by the depot in a small church in Florence for the children of the neighborhood. The 1712th Engineer Map Depot Detachment was redesignated the 1712th Engineer Service Detachment (Map Depot) on 20 January 1945. Then on 5 April, it was redesignated with its previous name.



1712TH MAP TRAILER NEAR FLORENCE

597th Engineer Light Equipment Company

When the 597th Engineer Light Equipment Company, commanded by Captain James M. Copeland, was activated on 10 March, the personnel of the old 427th Engineer Dump Truck Company made up all the unit's administrative, supply and mess personnel, three-fourths of its service platoon and all of its light and heavy truck drivers. Thirty men were on temporary duty with the 175th Regiment when the change was made.

On 20 March, the company was attached for administration to the 1168th Engineer Group. By 22 March, the equipment had arrived in such quantities that the company had to find an extra large bivouac area near the Pistoia airport.

On 27 March, the rock crushing and screening plant at the Porretta quarry was turned over to the 597th by the 2750th Engineer Light Equipment Company for both day and night operation.

SECTION VI

2750th Engineer Light Equipment Company

On 14 September, the 2750th Engineer Light Equipment Company under the command of Captain Joseph Wigodner moved northwest of Florence on the Autostrada so as to be centrally located between Routes #67 and #65. Though not primarily intended as a combat outfit, much aid was given to front line engineer units in their tremendous task of keeping roads and bridges open. Among these units were the 16th Armored Engineers, the 19th Combat Regiment, the 235th Combat Battalion, the 39th Combat Regiment and the 310th Combat Battalion.

The most equipment on one job up to that time was six pieces with the 17th Engineer General Service Regiment on its bridge across the Arno River near Pisa. During the month of October, many company machines were engaged in operations near the front lines in the mountains. At the same time, some of the remaining equipment was aiding the work being done on Routes #1 and #12 above Pisa, toward Viareggio.

At this time, thirty-two pieces of equipment out of a possible thirty-seven were in operation. Of the remaining five, only two were deadlined, the other three ready to go when called. In the last half of October, one general purpose shop truck and one third echelon emergency repair truck were received, both of which were immediately used extensively in the repair of equipment.

During November, the prime movers were especially busy, used not only by the company, but also by the engineer depot, the 92nd Engineers, and the 1338th Engineers. The crushing and screening plants were also in great demand throughout the fall, winter and spring, rendering invaluable assistance for road maintenance.

By the middle of November, the work of the 2750th was seriously impeded by lack of spare parts. All local resources had been exploited, yet eleven pieces were deadlined by the end of the month for lack of parts. Engineer Headquarters and Allied Force Headquarters worked on the problem which began to improve in December.



A 2750TH ANGLEDOZER WORKING NEAR VENTURINA

SECTION VI

2750th Engineer Light Equipment Company (cont'd).

By 18 December, the company set a new record, with thirty-three pieces of equipment in operation. Due to the constant rain, the 2750th's bivouac area became a veritable quagmire, so a move was made on 23 December to a new area on Route #66, west of Florence. The rains also caused the equipment to be in constant demand, and the muddy roads contributed to the company's difficulties, since the vehicles continually developed brake trouble. In January, the unit was attached to the 1168th Group for administration, operational control remaining with Engineer Headquarters.

In February, work began on a plan to train equipment operators for other Army engineer units. On 4 February, the first group arrived. These men were sent out with the 2750th's operators for a limited trial period, after which they were either returned to their units or retained for six weeks training, depending upon their aptitude.

Meanwhile, a new shovel was sent to work in the quarry at Porretta, and was promptly hit by a shell. Although the damage was quite extensive, the 2750th's maintenance section made the complete repairs necessary. On 14 February, a high priority work order was phoned in from Engineer Headquarters concerning work clearing the railroad yards in Florence. From that time until 15 March, two D-8 bulldozers, a power shovel, a Quickway crane and a concrete mixer from the equipment company were engaged in that work.

2916th Engineer Camouflage Company

During September, all the platoons of Company "D", 84th Engineer Camouflage Battalion, were given a week's rest at a rest center on the beaches at Cecina. On 3 October, the company was presented the Fifth Army Plaque and Clasp for the months of July and August by General Bowman. Later, it received the War Department Meritorious Service Unit Plaque. On 9 October, the 3rd Platoon was attached to the 71st Brigade of the 209th Anti-Aircraft Group to make inspections of anti-aircraft positions and correct camouflage errors. The 1st Platoon carried on with operational camouflage from II Corps Headquarters.



DUMMY 155 MM GUN BUILT BY 2916TH

SECTION VI

2916th Engineer Camouflage Company (cont'd).

In October, the Osteria ponton bridge was screened, in action which was necessitated by the enemy having direct observation on the bridge. It was desired to keep all movements across it concealed, and to protect men and vehicles. Two tripods approximately forty feet high were erected on either bank of the river. The cables were held by holdfasts, and the device raised by a 3/4-ton weapon carrier's winch, and block and tackle. The screen spanning the river was 300 feet long. Other nets were added on either side of the bank, running away from the river, until the road was no longer under observation.

In November, the Silla bridge, also under direct enemy observation, was screened. Two houses on either shore were used as holdfasts. A high tension tower which was located near the bank in line with the houses was used as a center support. The two halves of the screen were 156 feet and 256 feet in length.



SNOW CAMOUFLAGE FOR REAL 155 MM GUN

At the same time, dummy aircraft were constructed at the Porretta air strip. Enemy shelling had previously destroyed twelve planes and damaged two others. By replacing them with dummy planes, it enabled observers to locate and neutralize enemy batteries without further damage to real planes. In December and into January, the camouflage company supplied one officer and twenty-five painters and carpenters to the new headquarters area of the 15th Army Group. These men first assisted in the erection of prefabricated huts, and later painted huts, latrines and shelters. On 27 December 1944, the company was attached to the 1168th Engineer Group for administration.

In the early part of January, flash simulators were fired and decoys set up in former artillery positions. Several hundred rounds of enemy fire were received, one decoy receiving a direct hit. During the remainder of January, command posts and headquarters of the 10th Mountain Division were camouflaged, a tramway used for supplies and evacuation of wounded from a mountain top in the Mount Belvedere section was screened, and screens erected for roads in the same area. At Canneveccia, a road screen was erected under heavy mortar fire at an important road junction.

SECTION VI

2916th Engineer Camouflage Company (cont'd).

On 25 January, the 3rd Platoon was attached to VI Corps Artillery to assist corps and division artillery in the use of spun glass and other expedients for snow camouflage. Four American batteries and one British unit were among the organizations serviced by this platoon. Camouflage instruction was also given to officers and key personnel of the Brazilian Expeditionary Force Artillery.

In March, a road screen was erected above Loiano, so that vehicles could be brought up to supply the front line troops of the 158th Infantry of the 34th Division, without being hit by the enemy. The screen was approximately two miles long. Another screen almost as long, was constructed for the 34th Division near Monzuno. Both screens were entirely successful.

Throughout the fall, winter and spring, camouflage inspection was continuous, and instruction frequent. Camouflage classes were held for all newly arrived artillery units in Italy in preparation for the spring offensive--the first camouflage instruction many of these units had ever received. On 1 April 1945, Company "D", 84th Engineers, was redesignated the 2916th Engineer Camouflage Company.



WINTER TANK CAMOUFLAGE

1st Platoon, 451st Engineer Depot Company

The 451st Engineer Depot Company's 1st Platoon, under the command of Captain Donald L. Brown, in charge of the engineer supply depot, was located at Sesto, outside of Florence, during the Northern Appennines Campaign. An average of seventy-five requisitions were filled every twenty-four hours, for every type of engineer supplies. One requisition would be a rush order for a 20-ton bulldozer, the next for half a dozen bolts or 100,000 sandbags. Local supplies were often purchased and procured to supplement depleted stocks. An Italian salvage crew was usually attached, when civilians were not available.

The platoon repaired innumerable items such as tool handles, bridge treadways, flat bed trailers, water tanks, and rubber boats. On 3 December 1944, the 1st Platoon became the nucleus for a complete new depot company, the 383rd, and was absorbed intact. It thus quietly ended its existence, after working for fifteen months without a rest and after issuing 80,000 tons of supplies to various Fifth Army units.

SECTION VI

383rd Engineer Depot Company

The 383rd Engineer Depot Company was activated at Sesto on 3 December 1944, using as a cadre the personnel of the 1st Platoon, 451st Engineer Depot Company. The organization was attached to the 1168th Group, effective 4 December, for administration. At the beginning of 1945, the company took over the bridge depot near Florence after three weeks of intensive training, and continued its operation in support of the Fifth Army engineer units. At this time, Company "D", 387th Engineer Battalion was relieved of operation of the bridge depot.

During the period from January to April, the 383rd operated spare parts and Class II and IV Engineer Supply depots with the assistance of Italian army units.

2769th Engineer Depot Company

As soon as the 2769th Engineer Depot Company was activated on 1 February 1945 at Chiesa, it was attached to the 92nd Engineer Regiment. On 6 February, the company moved to Carlone. Three days later, it began operation of a rock quarry to supply crushed rock for the 92nd Engineers, who were maintaining Route #65 in the vicinity of Carlone. Heavy equipment was furnished by the 92nd, and the men of the 2769th kept a check on Italian labor in the quarry, furnished trucks, and supervised the quarry and crusher operation. The quarry was operated day and night, the output running up to 300 cubic yards of crushed stone per day.

On 10 March, the 217th Engineer Dump Truck Company was activated, utilizing four officers and ninety-nine enlisted men of the 2769th. Seventeen enlisted men from the 425th Engineer Dump Truck Company and eight enlisted men from the 92nd Engineer General Service Regiment were transferred to the 2769th to give it a total strength of forty-nine. Day and night operation of the quarry at Carlone was continued until 29 March, at which time the company moved to Traversa to set up and operate a quarry there.

400th Engineer Maintenance Company

From 18 August to 18 September, the 2nd Platoon, 473rd Engineer Maintenance Company, was bivouacked near Cecina, during which time eighty per cent of the 349 job orders accepted were completed. The balance of the work was evacuated when the unit moved to Sesto, just northwest of Florence, on 18 September.

Although the weather at the new area became more miserable each day, the unit continued to accomplish its maintenance work as before. For the six-week period from 19 September to 1 November, 454 job orders had been received, an average of over ten per day. This platoon was the only source for engineer maintenance for the whole Fifth Army.

In December, the 400th Engineer Maintenance Company was activated, commanded by Captain B. K. Sollars. The cadre of the new company came from the 2nd Platoon of the 473rd Engineer Maintenance Company. The remainder of the personnel came mainly from anti-aircraft units. The job of training then began. Most of the new men had been mechanics either in civilian life or in the army, but had never had anything to do with the repair of engineer construction equipment. The gradual decrease in the amount of engineer equipment deadlined, however, attested to the fact that the men were learning the work quickly.

During January 1945, the 400th Engineers began sending inspection teams to all hospitals and engineer units in Fifth Army. The generators of the hospitals were checked at least once each week. As a result, the generators were kept in excellent condition and emergency calls were reduced to almost zero. The inspection teams checking the engineer units advised on proper preventative maintenance.

The inspection teams also recommended to the units which machines should be sent to the maintenance company for correction of minor mechanical troubles. The results of these inspections were very satisfactory, and helped reduce the equipment deadlined in the Army.

On 14 March, the contact platoon was sent to Radicosa Pass to service all units in that area. The contact platoon repaired machines at the job sites, as well as those evacuated to the platoon area.

SECTION VI

1206th Engineer Composite Section

As September began, Section I of the 1206th Engineer Composite Platoon was at Cecina, Section II at Panzane, and Section III at Peccioli. The sections remained at these locations most of the month. Section III was the first to move. On 16 September, it went to Staffoli, north of Pontechra. On 28 September, both Section I and Section II moved to Lucca. Section I was sent to Lido di Camaiore on 14 October, then after three days moved again, this time to Lucca to join the rest of the platoon.

Most of the fires during this time were quickly extinguished, only one ammunition dump fire causing any particular trouble. The station remained in Lucca until 19 November, when it was moved east to Pistoia. On the 28th of November the 1206th Engineer Composite Platoon was redesignated the 1206th Engineer Composite Section.

The unit was attached to the 1168th Engineer Group on 29 December 1944. It moved to Montecatini on 15 March. Four days later, the unit was again redesignated, this time as the 1206th Engineer Service Detachment, a designation that was to last only a few weeks, until the first day of the new attachment on 5 April.



1206TH FIGHTS FIRE NEAR SILLA

SECTION VI

1980th Engineer Composite Section

After the fall of Florence, Section I of the 1980th Engineer Composite Platoon under the command of 1st Lieutenant Melvyn E. Small moved to Campi on 12 September. Italian houses and wheat shocks were the only fires the section was called to in this sector. On 14 September, Headquarters Section moved to Sesto to protect the Army installations in the Florence area. Most fires here were at the airport or at civilian homes. Daily preventative inspections were made at all the nearby installations.

One unusual fire occurred at the Quartermaster Gasoline Dump. Eighty octane gasoline leaked from the pipe line into a creek. Civilians proceeded to salvage this gas by scooping it up. When 300 gallons had leaked out, fire broke out so rapidly that there were twenty casualties, eleven of which had to be hospitalized, and one died on the scene.



1980TH TESTS "WATER FOG SPRAYER" NEAR SESTO

Section I moved from Campi to Scarperia on 29 September. Four days after the station was opened, the area was subject to a heavy bombing and strafing attack by the enemy. As a result, a fire started in an ammunition dump nearby. The firemen were strafed enroute to the fire, but escaped uninjured.

Vehicles blocked the road because of the strafing, greatly hampering the fire apparatus movement. A call was sent to Sesto for help, but that section was combatting a fire at the 82nd Ordnance Command Post. The Scarperia section extinguished the ammunition fire alone, as the Sesto equipment arrived late. The loss was held to thirty tons of black powder and one ton of TNT. This was considered quite minor as there was several thousand tons of ammunition in this dump.

On 12 October, a fire station was opened at Pietramala on Highway #65. This station, the most advanced operated by the 1980th Platoon, had several minor fires caused by enemy shell fire and strafing—all of which were quickly extinguished, losses being held to a minimum. On 10 November, in order to cover more completely the extended forward area, another station was opened at Villanova on Highway #65.

SECTION VI

1980th Engineer Composite Section (cont'd).

The unit was redesignated on 28 November from the 1980th Engineer Composite Platoon to the 1980th Engineer Composite Section. The Fifth Army front had advanced to the point where another station was needed. On 9 December, the station at Scarperia closed and a new station was established at Monghidoro at Ammunition Supply Point O-4-27. The section was attached to the 1168th Engineer Combat Group for administration only on 27 December 1944.

The Villanova station was closed on 10 June and reopened at Venturina three days later. This latter move proved to be only a temporary one and the station was closed on 21 January. The 1980th Engineer Composite Section was again reorganized and redesignated the 1980th Engineer Aviation Fire Fighting Platoon, a change which necessitated the loss of ten enlisted men who were transferred to a replacement depot. No new moves were made until after the Po Valley campaign had begun.

1981st Engineer Aviation Fire Fighting Platoon

On 14 March 1945, the 1981st Engineer Aviation Fire Fighting Platoon, commanded by 1st Lieutenant Lawrence H. Dykers, arrived at Leghorn from Corsica. The following day, the platoon went into service at Pistoia, relieving the 1206th Engineers. During March, the organization had fourteen fire calls. On 20 March, two fire trucks from the 1981st were sent to the 703rd Engineer Petroleum Distributing Company in answer to a call to extinguish a large fire which resulted from a break in the Pontedera - Pistoia pipe line. Burning gasoline flooded a ditch along the railroad tracks for one hundred yards. Fire had broken out while crews were repairing the pipe line. Three sections fought this fire for one and a half hours.

1628th Engineer Utilities Detachment

In September, the 1628th Engineer Utilities Detachment under the command of Captain Charles R. McCracken helped move the Army Forward Command Post to Florence. The command post was set up in a park along the north bank of the Arno River in the western part of town. The detachment provided the usual utilities and erected prefabricated and Nissen huts. In mid-October, the command post again moved, this time to Traversa on Route #65 just north of Futa Pass. Just before this move was made, the Army Rear Echelon moved into a tobacco factory in Florence.

These two sites required an immense amount of work. They were entirely different in character. Work was done at the rear echelon to put back into operation the permanent utilities system in the factory's many buildings.

The forward area was just a muddy hillside, bogged down in the fall rains. This was the command post throughout the winter, and work was continually being done to improve the site and make it more habitable. The utilities detachment set up and maintained the lights, signs, water and bathing facilities. Over 300 loads of rock were hauled for the roads in the area. Tents were winterized and prefabricated huts and a new type steel field barracks for the different sections in the headquarters were erected. The floors, sides, and doors for the winterization of the tents were constructed in the carpenter shop of the detachment and stoves with oil burners installed throughout the command post.

On 10 February 1945, the 1628th Detachment was relieved from assignment to the Engineer Headquarters and was assigned to Fifth Army Special Troops. On 1 March, the detachment was reorganized under Column EE of Table of Organization and Equipment 5-500, dated 26 July 1944, which provided an additional officer for the detachment.

1621st Engineer Model Makers Detachment

The 1621st Engineer Model Makers Detachment had completed terrain models for the Northern Apennines campaign well before the attack started, and army staffs had studied the models while making the attack plan. While the campaign was actually in progress, however, the Model Makers Detachment was occupied with detailed studies of the Po Valley (the smaller scale models having been finished even before the Apennine attack) and with models of the Alps from France through Switzerland, into Austria and into Jugoslavia.

SECTION VI

6th South African Armored Division Engineers

On 22 August 1944, the 6th South African Armored Division moved from Siena into the line along the Arno River in the Empoli area west of Florence and came under control of Fifth Army and IV Corps. The engineer units of the division were the 5th, 8th and 12th Field Squadrons, and the 17th Field Park Squadron. In addition, the 42nd Field Company was attached to the division during the entire period of its attachment to Fifth Army.

The sites selected for the Arno crossings were near Empoli and about half way between Montelupo and Signa. The crossing operation began on 1900 hours, 1 September, the 12th Squadron on the right, the 42nd Field Company at Empoli. The shores of the river were thoroughly mined, and two hours after the operation commenced, three bulldozers had been blown up by non-detectable mines in the gravel bed of the river.

By early the next morning, the 42nd had a ford and a bridge over the river, and the 12th Squadron had a ford completed and had started work on a bridge. The bridge train at this site had been shelled while approaching, and had been forced to return and take a more devious route. Altogether, four bulldozers were blown up in this operation, half the number the division had for the crossing and actually one more than the Table of Equipment strength.

From the Arno River to the Gothic Line, the engineers of the 6th Division encountered the heaviest mining and demolitions in their experience in Italy. All roads and trails were mined along their entire length, and nearly all bridges and culverts were blown. Two more bulldozers were damaged on the approaches to the Gothic Line. The repair of demolitions in this phase became more difficult as the rains set in and it became necessary to fill demolitions with rock, as earth fills by bulldozers became soggy morasses, impassable to traffic.



RIO VEGGIO BRIDGE BUILT BY 6TH SOUTH AFRICAN ENGINEERS

SECTION VI

6th South African Armored Division Engineers (cont'd).

On the third day after the division had crossed the Arno, when its leading elements were approaching the foothills of the Appennines, a flood on the Arno carried away both low level bridges built in the assault, and also a third low-level Bailey bridge built subsequently to the attack to ease the supply problem in the eastern sector. One troop from each Field Squadron and one platoon from the 42nd Field Company were pulled in to build a high level 310-foot triple-single Bailey bridge at Empoli.

The advance continued through the Gothic Line in rain and cold weather. The problems of repairing demolitions became more acute as it became necessary to do much heavy revetment work on the steep mountain sides. The operations involved more and more infantry tasks, and mine clearance detachments were constantly supplied for clearance of roads and paths for the dogfaces.

In the later phases of the Appennines campaign, up to and including the static winter phase, the development of supply roads assumed ever increasing proportions. During this period from the attack on the Arno until spring, the division engineer units constructed forty-seven Bailey bridges totalling 4,980 feet, built approximately forty miles of jeep trails and maintained fifty-five miles of roads and trails during the static period. For one four-week period, an average of 500 tons of gravel was used for the roads per day. In addition, 230 demolitions were repaired. The last week in March the division with its engineer units went to Lucca to have a rest.

1st British Infantry Division Royal Engineers

The 23rd, 238th and 248th Field Companies of the 1st British Infantry Division, supported by the 6th Field Park Company, had been working on Arno River crossings and approach roads to the river throughout August. The first half of the month had been spent working south of Florence, then the division was shifted to the sector just to the west.

On 1 September, while the enemy was still in possession of parts of Florence, the 23rd Field Company crossed the Arno and began clearance of Route #65. By 9 September, the road was open for 2-way traffic to a point beyond Pratolino. Throughout, the route was barred by obstacles. Heaps of mined rubble lay on the road, booby trapped abatis had to be cleared, and craters filled.

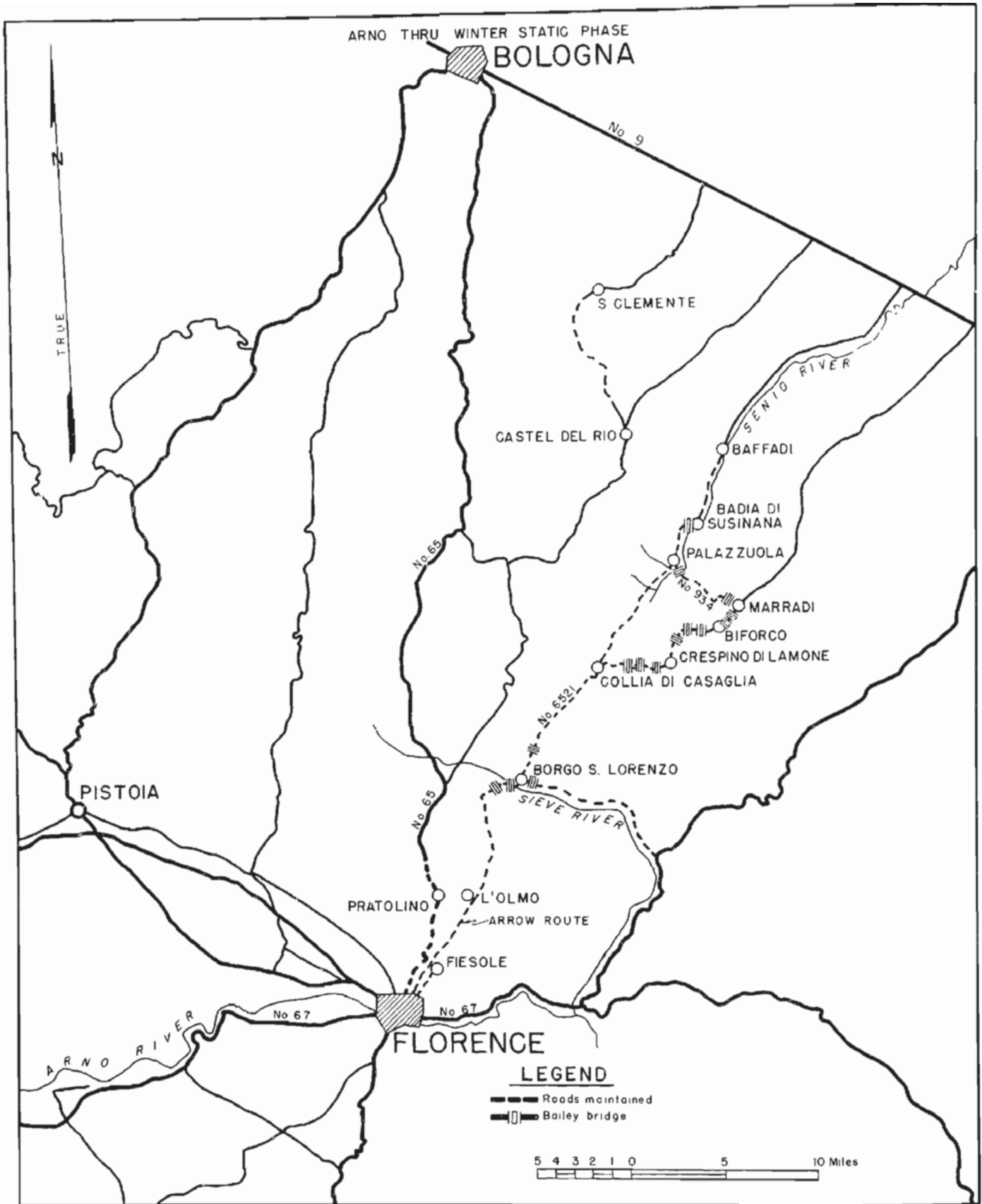
The 238th Field Company worked up Route #6521 (called "Arrow Route" by the British). Many mines were cleared and numerous craters were made passable in the Badia area near Fiesole. The 238th continued up Arrow Route to L'Olmo, where the route was handed to the 248th Field Company on 10 September. In the meantime, the 248th had been employed in opening up routes between Route #67 and #6521, all of which had been heavily cratered.

The 248th swung north up the Arrow Route, and the next day reached the Sieve River. A 120-foot folding boat bridge was put across and opened to traffic at 2100 hours. There was no enemy interference during the bridging, the nearest shelling being about 300 yards to the north. The same day, the 238th began the construction of an 80-foot double-single Bailey across the Sieve River in Borgo San Lorenzo, which was completed at 0630 hours on 12 September.

The night of 11-12 September, the engineers of the 1st British Division erected three bridges. The third was an 80-foot double-single Bailey bridge built by the 23rd Field Company on Route #6521, a few miles southwest of Borgo San Lorenzo. The work was similar through the whole Gothic Line: fills, bridges, roads, shellings, as the division progressed up Arrow Route. On 11 September, the enemy was found to have disappeared and a headlong dash that night ended at Crespino.

The 6th Field Park Company which had moved to L'Olmo and on to Borgo San Lorenzo, quickly moved on again to Crespino Railway Station. The 23rd Field Company began work on the Bullock Route on 20 September. This route began as a mule trail at Collia di Casaglia on Route #6521 and became better as it went north until it was a two-way road at Palazzuola, on Route #934. Bulldozer, blasting, and revetment parties went to work and four days later the difficult mountainous road was open for jeeps.

At Palazzuolo, a ford crossed the Senio River which the heavy rains soon made impassable, so the 70-foot "Undertakers Bridge" was built, so named because the decking was made from lids of coffins found in the local undertakers shop. At Biforco, a huge fill was put in where a bridge had been destroyed over the junction of two streams. After culverts had been laid, all the houses for 100 feet from the edge of the gap were demolished (greatly to the indignation of an artillery unit who had established a Command Post in one of them) and the rubble moved into the gap with four bulldozers.



I ST BRITISH INFANTRY DIVISION - ROYAL ENGINEERS OPERATIONS

SECTION VI

1st British Infantry Royal Engineers (cont'd).

The 238th Company then moved over to Marradi, which was completely unoccupied at that time. A bridge was blown in Marradi, but until the end of September this gap could not be repaired because of intense enemy shelling of the town. Thus, the Bullock Route became extremely important. Work was done northwest of Marradi on Route #934, using two D-4's and such small items as could be ferried by jeep or mule over the Bullock Route.

On 29 September, a 120-foot, triple-single Bailey was completed at Marradi. Fifteen minutes later, the D-7 bulldozer crossed over and began work on the approaches to another bridge site one mile to the west. When that bridge was finished, materials were moved forward on Route #934 to a demolished bridge one mile east of Falozzuolo. The bridge, put across a 200-foot gap, was open at 0430 hours on 2 October.

By 2 October, the 248th Field Company had repaired the next side cut demolition sufficiently to allow bridging equipment to pass. By evening, the clearing of the launching site for the next bridge, near Badia di Susinana, was completed and the unloading of equipment had begun. As soon as this bridging equipment had passed the side cut demolition, a section from a Canadian Drilling Company, R.E., attached to the 248th Company, began work to widen and improve the side cut. Working throughout the night, over one hundred bore holes were drilled and charged. At 0430 hours, the charges were blown, and by 0630 hours, by bulldozer work and hand labor, the bridge was opened to Class 9 traffic.

Five Bailey bridges totalling 630 feet were constructed by the 1st Division engineers in four days. Since the attack across the Arno, and all through the Gothic Line, the 23rd, 238th and 248th Field Companies had concentrated their attention on the Arrow Route and the connecting lateral roads. By 5 November, the Arrow Route, which consisted of Route #6511, as far as Marradi, and Route #934 from that point north, had been completed to Baffadi.

Roads and trails into the hills to supply forward infantry companies were extremely difficult to maintain throughout the winter. Stone for metalling the roads was obtained from houses as well as rock quarries. Fifty miles of roadway were opened from Florence to Baffadi, necessitating the construction of twenty bridges and the repair of fifty-seven craters.



BYPASS BUILT BY THE 1ST BRITISH DIVISION ENGINEERS

1st British Infantry Royal Engineers (cont'd).



1ST BRITISH DIVISION SAPPERS REPAIRING ROAD NEAR GOTHIC LINE

On 5 November, the 1st British Infantry Division moved westward to replace, with the 78th British Division, the American 88th Division. The 1st Division's new sector was along Route #937. The engineers took over the maintenance of this road from San Clemente back to the junction of Route #937 with Route #6529.

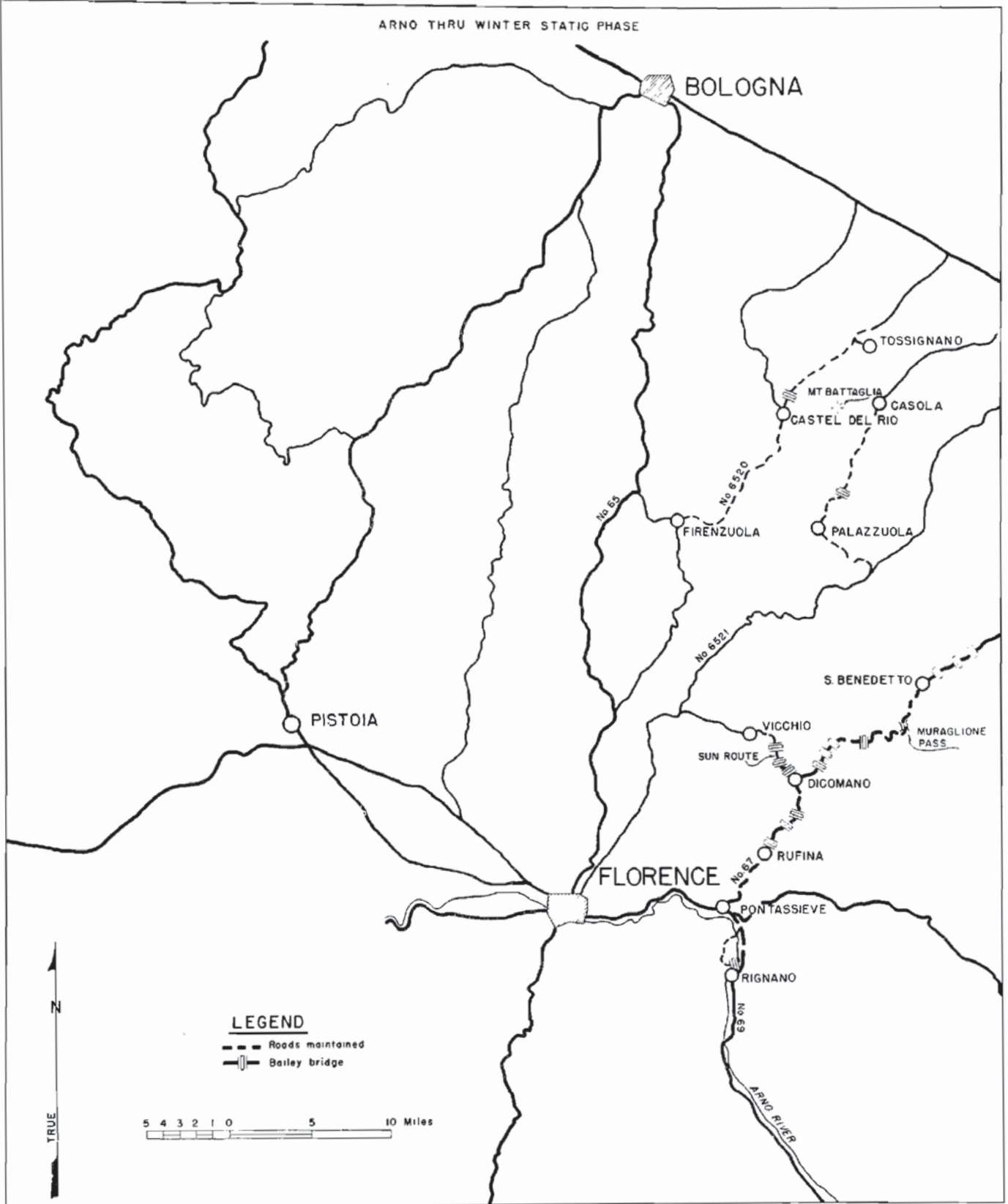
Bulldozers had frequently led the advance of the division during the fall. One dozer operator said of his work, "Ho, the officer in charge of the job told me we had a few miles to go. I said 'Where's the infantry?' and he said, 'Oh, they are miles ahead.' - Well, we went on and we didn't see anybody all day." In this particular instance, it was just as well because the only infantry in that direction was German and not reckoned to be friendly.

6th British Armored Division Royal Engineers

When the XIII Corps went under Fifth Army control on 18 August, the engineers of the 6th British Armored Division were working slowly up Route #69 in the area of Rignano. A 110-foot, triple-single Bailey bridge was built across the Arno River designed to be proof against the heavy floods which were apt to descend from the mountains without warning. The bridge was on steel cribs, the abutments embedded in concrete rafts.

The last days of August, the engineers went across the river near Pontassieve with the division and advanced up Route #67 to Rufina. The division was at this point on 1 September when the Fifth Army drive began.

ARNO THRU WINTER STATIC PHASE



6 TH BRITISH ARMORED DIVISION
ROYAL ENGINEERS
OPERATIONS

SECTION VI

6th British Armored Division Royal Engineers (cont'd).

The 625th and 626th Field Squadrons were engaged the first weeks in September in opening up roads and trails to either flank in support of the infantry brigades while the 8th Field Squadron erected an 80-foot bridge to replace a 40-foot one which had been washed out. In all its work, the 114th Field Park Squadron supported the other divisional engineer units.

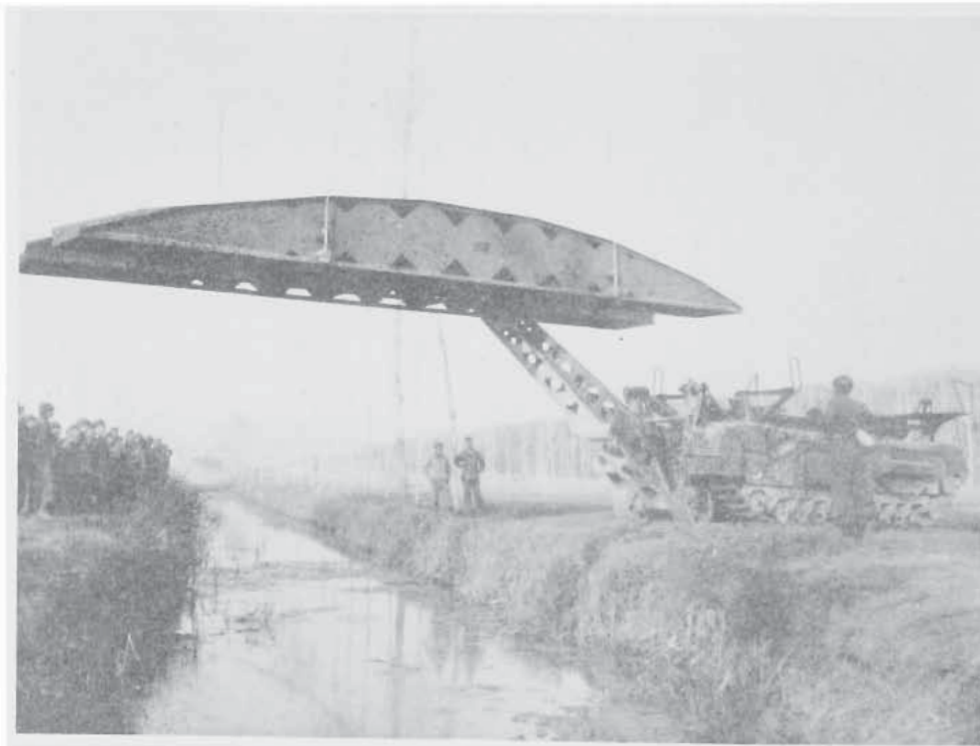
On 9 September, the enemy withdrew without warning to Dicomano and there was a scramble to open up the road. From Dicomano, Route #67 wound for six miles into the Gothic Line through a narrow cleft in the mountains, rising gently to San Godingo, whence it climbed 3,000 feet in five miles to the summit of the Benedito Alps. An estimate of one month was given as the length of time needed to open Route #67 from San Godingo to Muraglione Pass, but the job was done in thirteen days.

The 8th Squadron opened trails into the hills and for the first few days the 626th Squadron opened Route #6737 to Vicchio (Sun Route), but when this was finished the 626th joined the 625th on Route #67. Fifteen bridges were constructed, thirty-nine craters filled in and nine bypasses built, and the road was opened as far as San Benedetto on 25 September.

Owing to the difficulties of communications, the advance now had to pause to enable the guns and tanks to come over the mountains, and the chance of a rapid thrust to Forli was lost. The enemy had time to demolish more of the road, and the fall rains started in the last week of September. The squadrons were kept occupied with the construction of jeep trails into the hills and the maintenance of the bypasses and bridges to the rear.

Another advance was planned, but the weather and poor roads caused its abandonment by the middle of October. On 15 October, the 625th and 626th Field Companies moved across to Route #6528 (Ace Route). The 625th took the section from Firenzuola to Castel del Rio, relieving the American 88th Division on Mount Battaglia.

Jeep trails became the order of the day. A number of booby traps consisting of beehives attached to trip wires were laid and found very satisfactory, one small field accounting for five enemy dead and several wounded. The 626th had the sector north of Castel del Rio in addition to work on the right of Ace Route, thus taking over the commitments of the 78th Division which moved further to the left to relieve pressure on the American divisions advancing on Bologna.



DEMONSTRATION OF BRITISH EXPERIMENTAL TANK BRIDGE NEAR PRATO

SECTION VI

6th British Armored Division Royal Engineers (cont'd).

During the advance in the last week of October, the 625th and 626th Squadrons opened Route #6528 to a point short of Tossignano. The 6th British Armored Division there linked up with the Polish Corps. At this time, the 626th Squadron left the line and went to Florence for a rest. The 625th Field Squadron was later withdrawn and moved east to Palozzuolo on Route #934, where it took over the sector between that road and Route #6521. The work here was the same: jeep trail and main supply route maintenance and mine laying.

In November, the 526th Field Squadron returned to the sector south of Tossignano. The assignments remained the same until after XIII Corps left Fifth Army operational control on 18 January 1945.

8th Indian Division Engineers

At the time XIII Corps came under Fifth Army control, the 8th Indian Division was in the area of Florence where the division engineers had constructed a ford and had cleared the Ponte Vecchio to enable supplies to reach the city. The engineer units of the division are the 6th, 66th, and 69th Field Companies and the 47th Field Park Company.

On 25 August, the enemy had vacated Florence and a folding boat trestle bridge and a 120-foot improvised bridge were erected across the river upstream from Florence that night. On 28 August, a low level Bailey bridge was constructed at Rosano, near Pontassieve. As 1 September arrived, these crossing sites were ready for use as the 8th Indian Division began to attack.

Following the initial crossing west of Pontassieve, two field companies were employed on the development of trails for the forward brigades, while the remaining field company, with the pioneer company, maintained the Arno bridges and their approaches. As the troops went further into the hills north of the Arno, more and more time was spent on road work. The rains on 6 and 7 September caused many washouts and from that time on less "drum culverts" were used and more Bailey equipment.

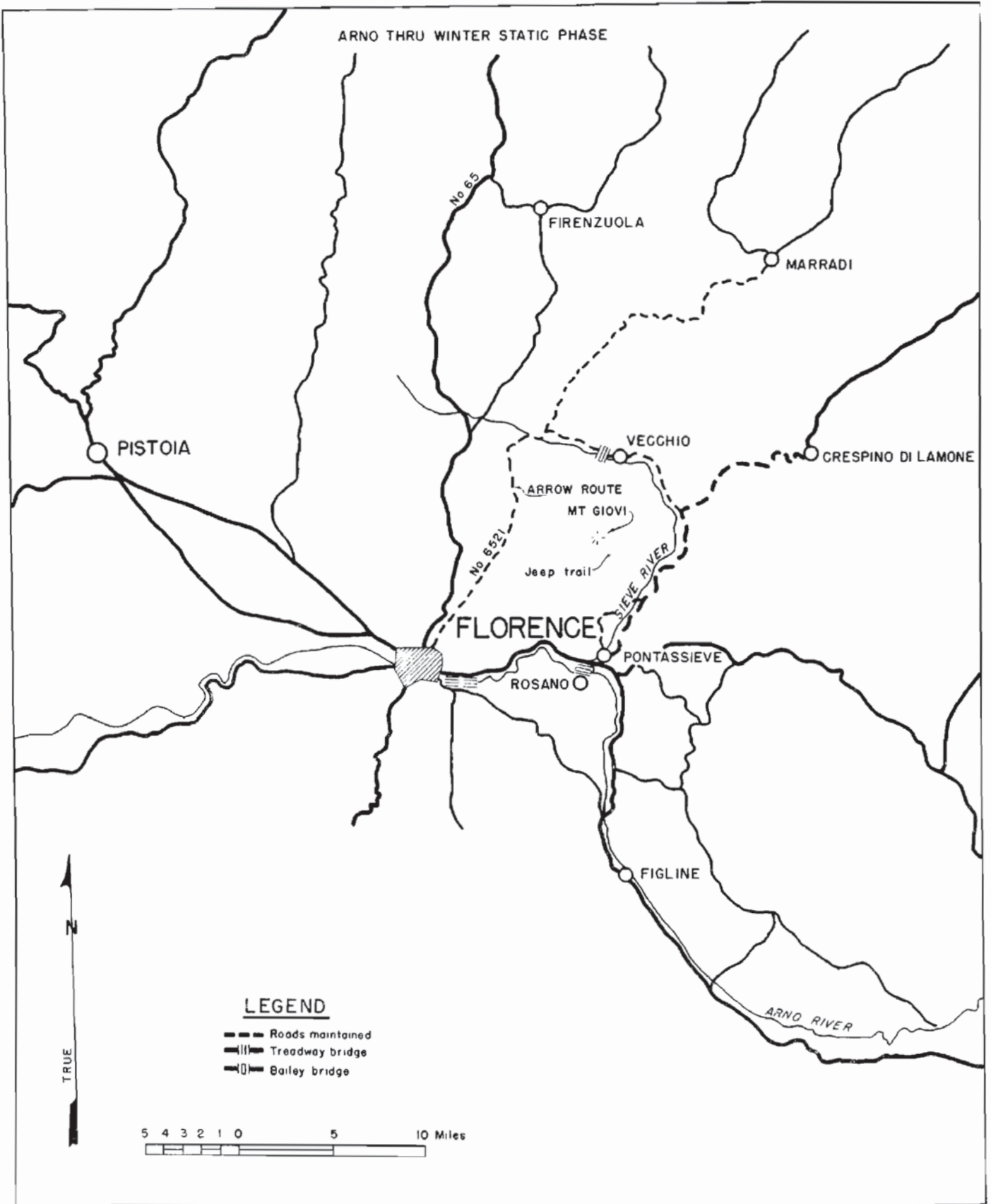
On the right flank, the 66th Field Company opened a trail forward to link up with the Eighth Army left flank, constructing several improvised bridges and lifting more than 400 Tellermines. A jeep trail was thrust forward to the summit of Mount Giovi for a 25-pounder gun.

On 10 September, the division lost contact with the enemy, and abandoned the trails in the central sector. All work was concentrated on one route to link up with the 1st British Division's main supply route. For several days, both the 7th and 69th Companies worked in front of the forward infantry positions building trails and bridges.

Work on the crossings of the Sieve River was not opposed, although it was under direct observation from the Gothic Line. The 66th Company improved a ford at Vicchio and pushed on to build several Baileys on the main road and on the roads north from the town. To the east, the 7th Company improved a ford at Sagginale, then constructed a low level Bailey nearby as a flood precaution. The 69th Company followed the 66th and constructed a high level Bailey bridge at Vicchio.

Once the river crossings had been made, all companies were engaged in opening up trails running north and northeast from Vicchio to support the infantry. Water points were established high in the mountains to keep the mule lines as short as possible, and jeep trails were built to these points through "impassable" terrain. When the infantry had broken through the Gothic Line, the engineers were withdrawn and sent to reinforce the engineers of both flank divisions in opening Routes #6521 and #67. The latter route had to be followed by the 8th Indian Division since it had no axis of its own.

In the beginning of October, operations tended to become more static, the chief engineer task being to keep in good repair the roads in the Marradi area. The railroad station and part of the marshalling yards at Marradi were used as an engineer and Bailey bridge depot from October on. Throughout the winter, the problems remained the same. Roads had to be opened and maintained to dumps and hospitals. Bailey bridges had to be replaced. Mines were continually removed from enemy fields, and small fields of friendly minefields were laid. This work continued until after XIII Corps left the operational control of Fifth Army on 18 January 1945.



8 TH INDIAN DIVISION ROYAL ENGINEERS
OPERATIONS



INDIAN ENGINEERS PREPARING BRIDGE
SITE NEAR BORGIO SAN LORENZO

78th British Infantry Division Royal Engineers

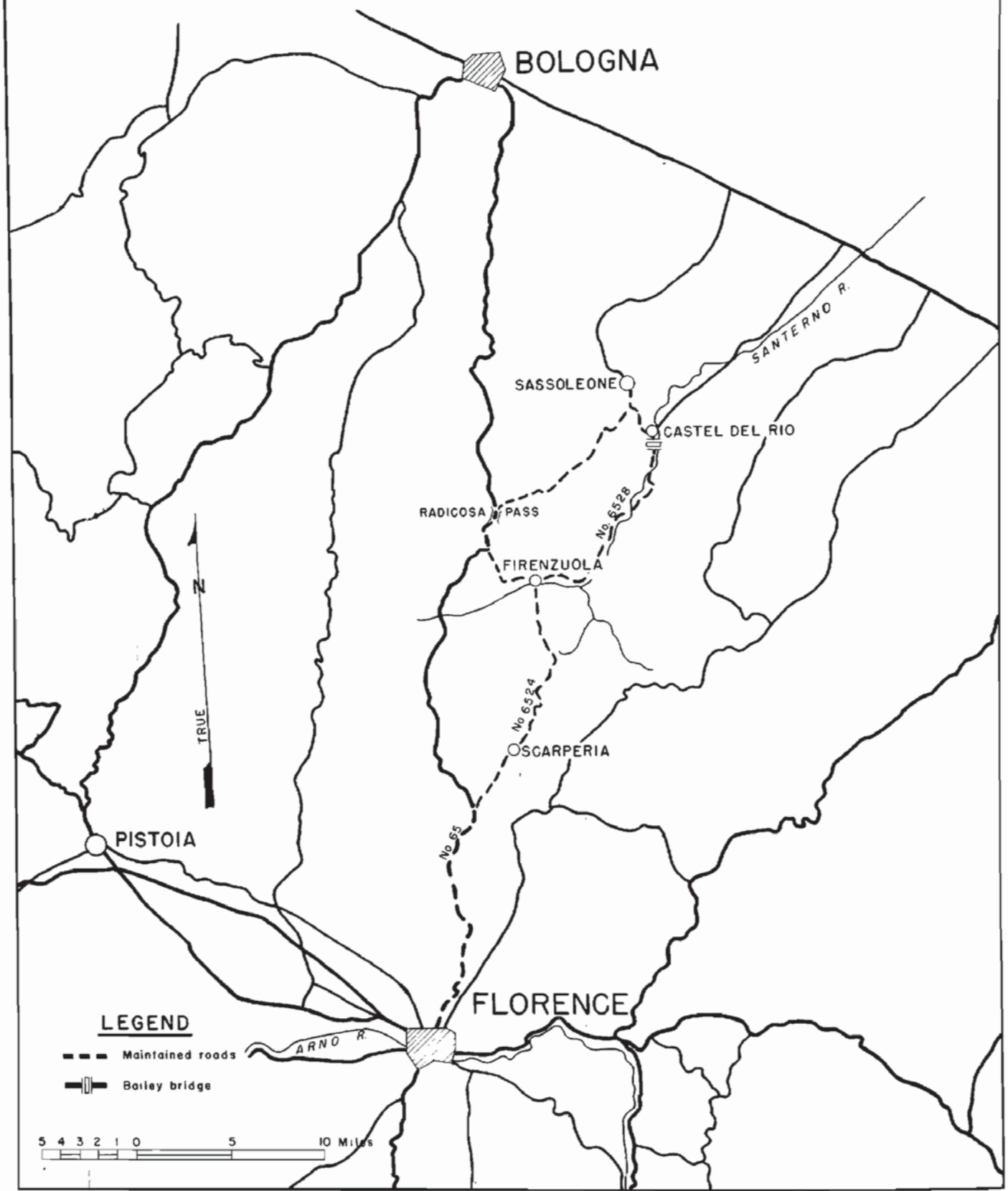
The 78th British Infantry Division did not join the XIII Corps and the Fifth Army until mid-October, when it returned to Italy from Egypt. The infantry took up positions in the heights forward of Castel del Rio. The engineers of the division, the 214th, 237th, and 256th Field Companies and the 281st Field Park Company took over the road net in this sector, the main supply routes being Routes #65, #6524 to Firenzuola, and #6528 to Castel del Rio..

Forward of the latter town, one company began the construction of a long bypass and a low level bridge across the Santerno Creek. Another company began work on a jeep trail that crossed the stream by a steel hump-backed bridge that had been built in the 15th Century and had not been demolished by the retreating Germans. On 18 October, the 6th British Armored Division took over on the right flank and the important Route #6528 was made exclusively for them.

The 78th Division's main axis then became Routes #6529 and #937 from Radicosa Pass to Sassaleone. Because of the amount of work involved, Route #6529 was made the responsibility of Fifth Army Engineers, so the British Sappers could concentrate on #937. Route #937 had to be drained and surfaced along its entire length. Mechanical equipment was requested, but not received. Where the ground permitted, bypasses were built to keep traffic off the rapidly deteriorating road.

Every unit bivouacked along the route was ordered to place culverts at exit and entrances, and large numbers of men of all branches began drainage work. Division maintenance traffic was drastically reduced to a maximum of eighty vehicles a day, and nothing besides this and engineer traffic was allowed. Even so, the road's condition grew worse; what little foundation there was soon collapsed. Vehicles floundered in the mud, stuck in ruts, bellied, slipped sideways over the bank, sprawled across ditches.

ARNO THRU WINTER STATIC PHASE



78 TH BRITISH INFANTRY DIVISION ROYAL ENGINEERS OPERATIONS

SECTION VI

78th British Infantry Division Royal Engineers (cont'd).

On 28 October, the Commander, Royal Engineers, stated that unless a considerable amount of mechanical equipment was immediately forthcoming, it would become impossible to maintain the forward troops. A rock crusher and dump trucks arrived and were put into use. XIII Corps Troops, R.E. had arrived the week before, and now the 182nd Battalion of the 1338th Group came to add its support to the 214th, 237th, 256th Field Companies and the 281st Field Park Company.

With this wealth of men and material, success came slowly, painfully, but inevitably, and the road became traffic-worthy. By the time the division left the operational control of the Fifth Army in January 1945, the road was sustaining a great volume of heavy traffic without difficulty.



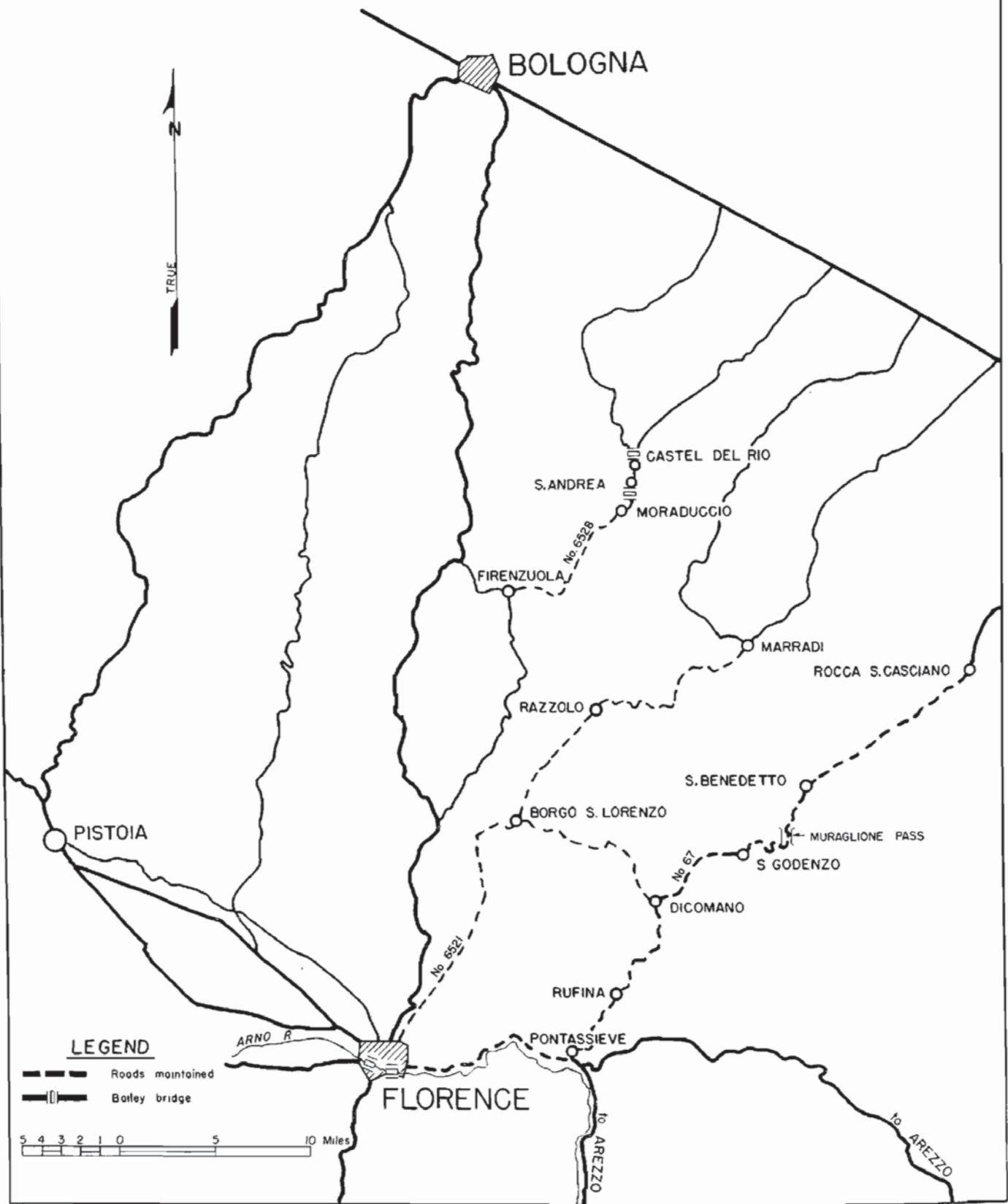
ROUTE #937 - THE BRITISH SUPPLY ROUTE

XIII Corps Royal Engineers

The XIII Corps troops had moved north from Arezzo and Tavernelle to Florence, and had completed the Ponte Trinita, a 360-foot, triple-single Bailey bridge over the Arno, and were working on the Victory Bridge, a 410-foot, triple-triple Bailey, when assigned to Fifth Army on 18 August.

In September, the 577th Field Company supported the 6th British Armored Division up Route #67. On 4 September, the 56th Field Company joined with the 577th and shared the tasks along Highway #67 from Pontassieve to Rufina, and from Rufina to Dicomano. On 9 September, the 578th Field Company started up Route #6521 toward Borgo San Lorenzo in support of the 1st Division, taking over fill work and widening the road to two-way wherever possible. At Borgo San Lorenzo, the company turned right and worked down the road to Dicomano on Route #6737. Thereafter, the three companies together maintained this route until 23 September.

ARNO THRU WINTER STATIC PHASE



XIII CORPS TROOPS ROYAL ENGINEERS
OPERATIONS

SECTION VI

XIII Corps Royal Engineers (cont'd).

Air reconnaissance had shown that Route #67 north of Dicomano was heavily damaged, and that a great amount of cribbing would have to be done. In preparation for this, logs were ferried down to Dicomano from the State Forest at Vallombrosa, where 30,000 pine trees were ready cut and stacked and thousands more uncut. The 577th Field Company began working up Route #67 on 16 September to make the road two-way and Class 40.

During the first week, seven side cuts were worked on, the gaps varying from 60 to 300 feet. The 56th Company passed through on 20 September and continued this work, one side cut being 600 feet in length. One job of special interest was encountered at a spot near the top of the hill, north of S. Godenza, where the whole of the road had been blown away on a convex bend, leaving only a sheer cliff. By careful blasting, a one-way route was established in thirty-six hours. Later, the road was made two-way by timber cribbing.

Farther up, two hairpin bends had been blown away, both of which were made passable by the use of cribbing. The last major task on this stretch of road was at Muraglione Pass. From there onward, there was no obstacle before a 560-foot blow beyond S. Benedetto in Alpi, which was repaired by the 6th British Division Engineers.

On 22 September, the 578th Company moved north behind the 1st Division up Route #6521 as far as Pazzola, strengthening Bailey bridges and widening the road to two-way where possible. Four days later, the assignment extended north to Marradi. The 578th worked on this stretch of roadway until 22 October, when the company moved over to Route #67 and took over the maintenance of that road from S. Benedetto to Rocca S. Casoiano.

In the meantime, the 56th Field Company received orders to move to an area near San Andrea. There was a low level Bailey bridge over the river at this spot, but it was feared that the great variation of the river level during the rainy season might result in its washing out. It was decided to build a Bailey on the existing road site. This necessitated the construction of a 510-foot, double-single bridge supported by four piers.



BAILEY BUILT BY 56TH FIELD COMPANY NEAR SAN ANDREA

XIII Corps Royal Engineers (cont'd).

Work commenced on 6 October and the bridge was open to traffic on 15 October. Labor was continued on the bridge after this date: concrete work on the piers, welding of distribution beams to chords, and general maintenance. Eleven days after the bridge was opened to traffic, the low level bridge was washed away during a heavy rain storm.

On 9 October, the 577th Company, which had been maintaining Route #67, moved over to an area around Moradaccio south of San Andrea on Route #6529. Two days later, construction was begun on a 310-foot, double-single Bailey bridge north of Castel del Rio, and on the 12th the unit took over the maintenance of Route #6529 from the site of the 310-foot bridge south to Firenzuola.

The bridge was begun on 11 October, but owing to the difficulty in getting supplies to the site, and the tactical situation, it was not open until 24 October. The bridge was built on three piers constructed of double-double Bailey panels rising off the existing pier bases. This road work--revetting, draining and surfacing--continued into January.

Throughout the whole of this period, the main tasks of the Field Park Companies had been to keep the field companies supplied with engineer materials, to provide cutting and welding facilities and personnel, to execute blacksmith jobs and repairs, and to repair, whenever possible, the companies' vehicles.

British Naval Party "J"

In November, a unique unit took charge of a road sector near the Tyrrhenian coast. The unit was known as Naval Party "J" and belonged to British Royal Navy. The British naval liaison officer at Fifth Army Headquarters, Captain A. N. Grey, Royal Navy, learned of the difficulty with which the army engineers were maintaining their vast road net, and offered the use of Naval Party Jig.

The officer in charge was Lieutenant Commander Young, R.N.R. To assist him were about thirty subordinate officers. Party Jig was located in Leghorn, where it was awaiting the opening of the port of Genoa. Seamen, mechanics, artisans and Royal Marines made up the bulk of the party. These men were used mainly in a supervisory capacity over a group of Italian laborers.

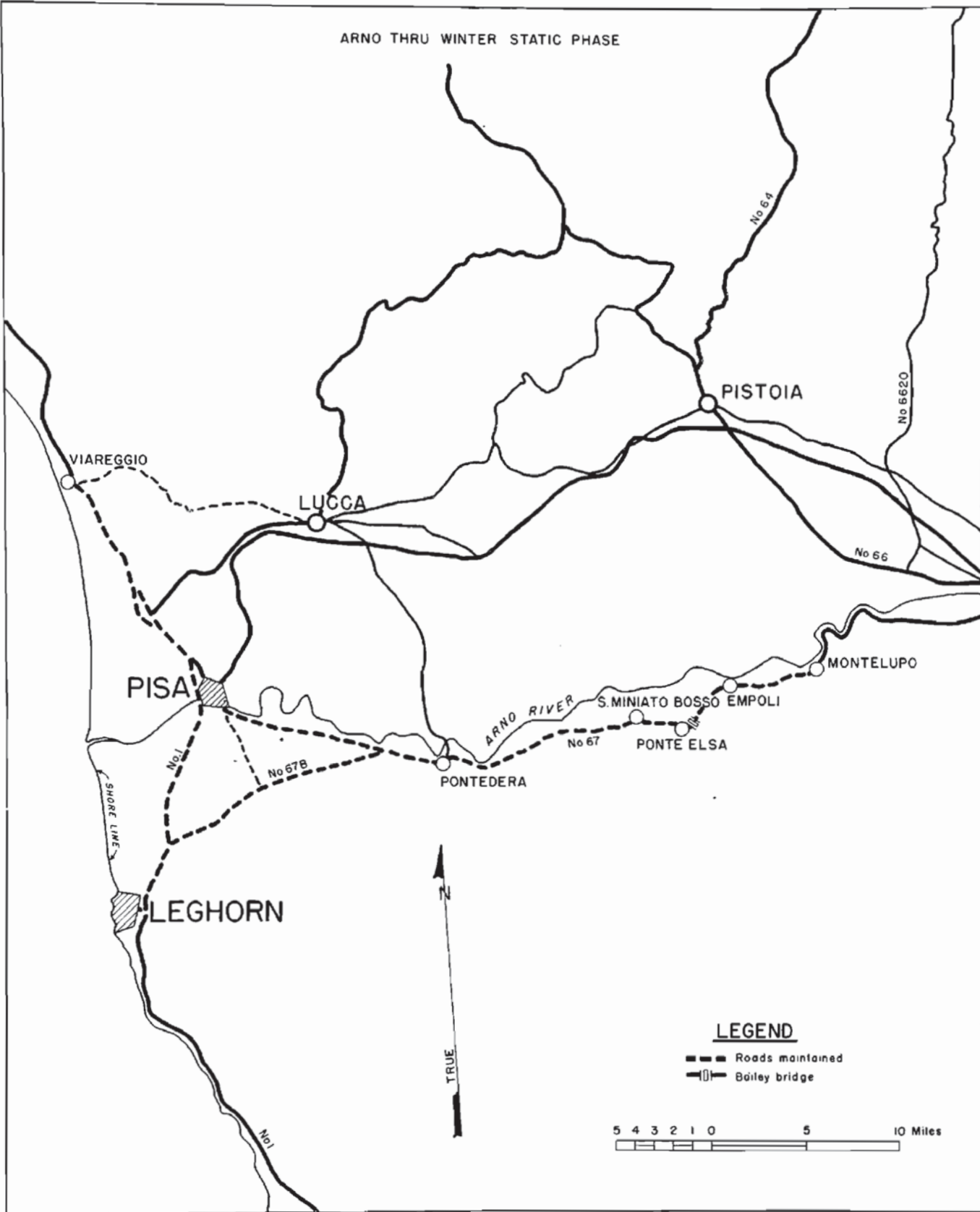
The maintenance of Route #67B and Route #67 from its junction with #67B to Montelupo was taken over by the Royal Navy on 17 November, 1944. The first work after reconnaissance had been made was the construction of culverts at Catena and at San Miniato Basso, and the patching of pot holes along the entire road. Rubble and asphalt were used until crushed rock was obtainable. A constant checking of bridges along the route was undertaken and repairs made when necessary.

During the last week of November, the Naval Party was also assigned the maintenance of Highway #1 from Leghorn to Viareggio. The first Bailey bridge repaired was at Ponte Elsa on 28 November. The bridge needed the replacement of several panels. Repair was completed between midnight and 0300 hours.

The roads through both Pontedera and Empoli were in very poor condition, so Party Jig helped the civil authorities by making detours through both towns. Drainage ditches and culverts were cleared in areas all along the route. Major L. R. Woolner, Royal Marines took over command of the unit from Lieutenant Commander Young, on 30 December, the latter being required for naval duties. By the end of December, about 200 Italians were being employed.

During the winter, tarring and filling continued, but great difficulty was experienced in obtaining sufficient quantities of crushed rock. During the night of 21 February, a damaged section at the west end of the Bailey bridge at Ponte d' Elsa was replaced. At this time, Major Woolner was also recalled from the unit; Lieutenant J. G. Maccoy, R.N.V.R., then assumed command.

On 26 February, Party Jig dropped the maintenance of Route #67, and took over the maintenance of an additional stretch of Route #1, from Viareggio to Lucca. Again the main work to be done was road surfacing, which was continued until the unit was relieved in the latter part of March 1945.



BRITISH NAVAL PARTY "JIG"
OPERATIONS

SECTION VI

British Army Fire Service

Included with British troops taken over by the Fifth Army when it assumed command of the Florence area was the 17th First Class Fire Brigade of 101st Fire Fighting Company. At the beginning of 1945, however, when the Eighth Army commitments grew, this brigade was relieved by the 606th First Class Fire Brigade of 152nd Fire Fighting Company. About this time, it was decided by Allied Force Headquarters that the fire risks of Fifth Army were greater than could be covered by the United States Fire Department, and on 20 February a Staff Officer, Army Fire Service, was appointed to the British Increment of Fifth Army to inspect and report. Liaison was effected with the Fifth Army Fire Marshal, and very soon the four brigades of the 152nd Fire Fighting Company together with Company Headquarters were operating in the Fifth Army Area.



BRITISH FIRE FIGHTERS IN FLORENCE

British 3rd Airfield Construction Group

On 16 February 1945, the 3rd Airfield Construction Group (less two detachments) took over the responsibility of road maintenance on Highway #1 north of Pisa. This unit, under the command of Lieutenant Colonel H.W.G. Tingley, did road surfacing and checked bridges in the area, and made all minor bridge repairs.

9th Brazilian Engineer Battalion

The first expeditionary echelon of the Brazilian Army landed in Naples on 17 July 1944. Included were the 1st Engineer Company and elements of Headquarters and Service Company. After a period of instruction during which the men had to adapt themselves to the new environment and to American equipment, the 1st Engineer Company was assigned to IV Corps to assist the corps engineer units. The detachment of Headquarters and Service Company remained with the combat team to maintain engineer vehicles.

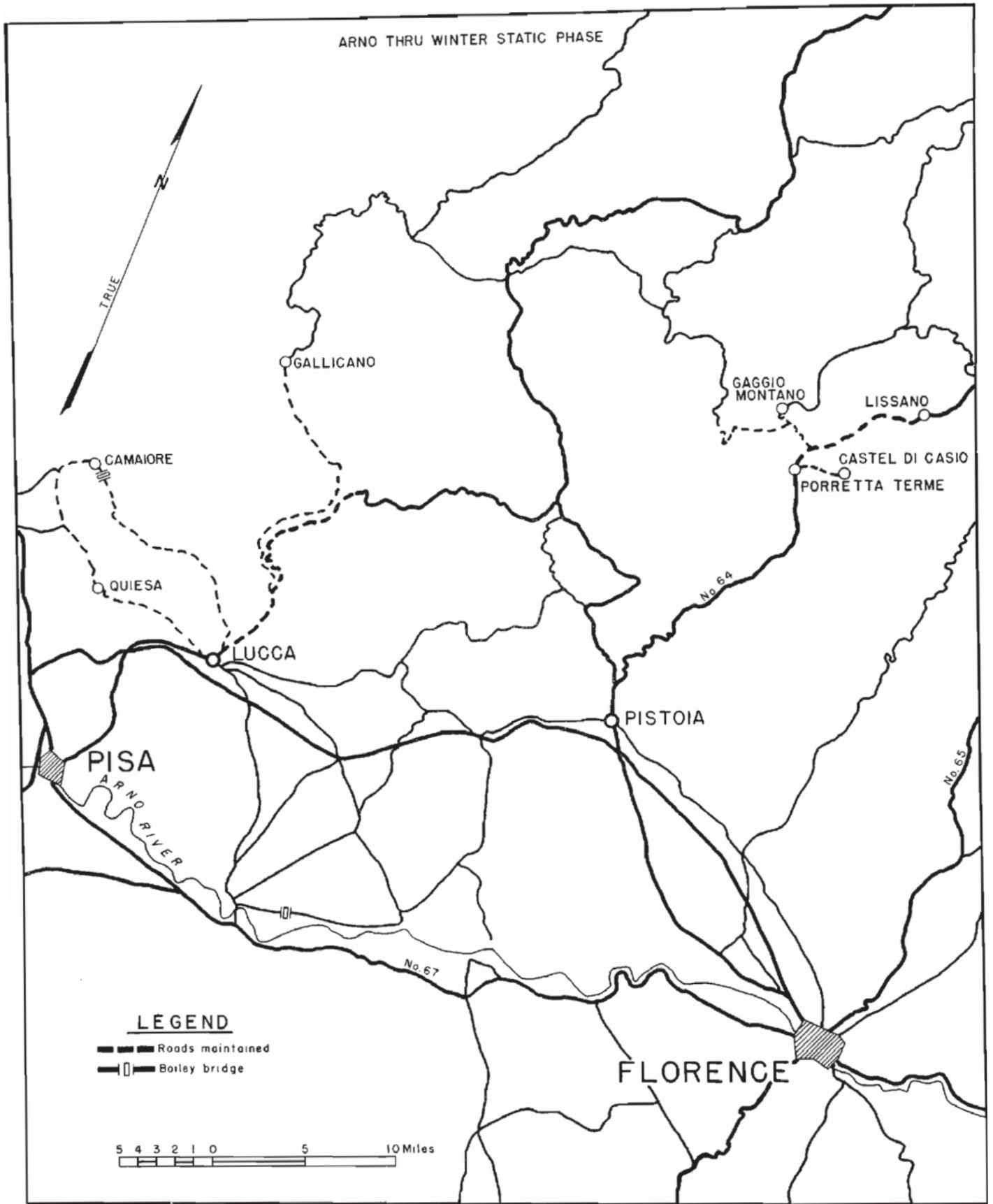
For a 6-week period until 1 November, the 1st Company repaired, widened, and maintained roads in a net north of the Arno River and generally west of Lucca. Nine Bailey bridges totalling 930 feet were erected, one temporary bridge of wood and steel pipes forty-five feet long was constructed, eighty-seven gaps were repaired, and 1,067 mines of various types were removed. The road was opened into Camaiore, a town occupied for an hour by the engineers before the infantry arrived.

The remainder of the 9th Engineer Battalion arrived at Leghorn on 11 October. A period of training started on Bailey bridges and mines. On 1 November, the first echelon joined the rest of the battalion. Between 7 and 13 November, the entire battalion moved to the front line in a sector astride Highway #64. For the first few weeks, the Brazilian Expeditionary Force merely engaged in holding the established defensive positions. The engineers did road maintenance work on Highway #64 as far north as Lissano and on the roads to Suviana and Goggio Montano.

For an attack against Mount Castello, the engineers gapped friendly minefields, then cleared enemy mines from routes of advance, filled craters and made the routes passable. The attack failed, however, and at the conclusion of the action the 9th Engineers relaid mines as a defensive measure. A great number of mines and booby traps were removed from houses at this time.



BRAZILIAN ENGINEERS MARKING A GERMAN MINEFIELD
NEAR MOUNT CASTELLO



9 TH ENGINEER BATTALION (BRAZILIAN)
OPERATIONS

SECTION VI

9th Brazilian Engineer Battalion (cont'd).

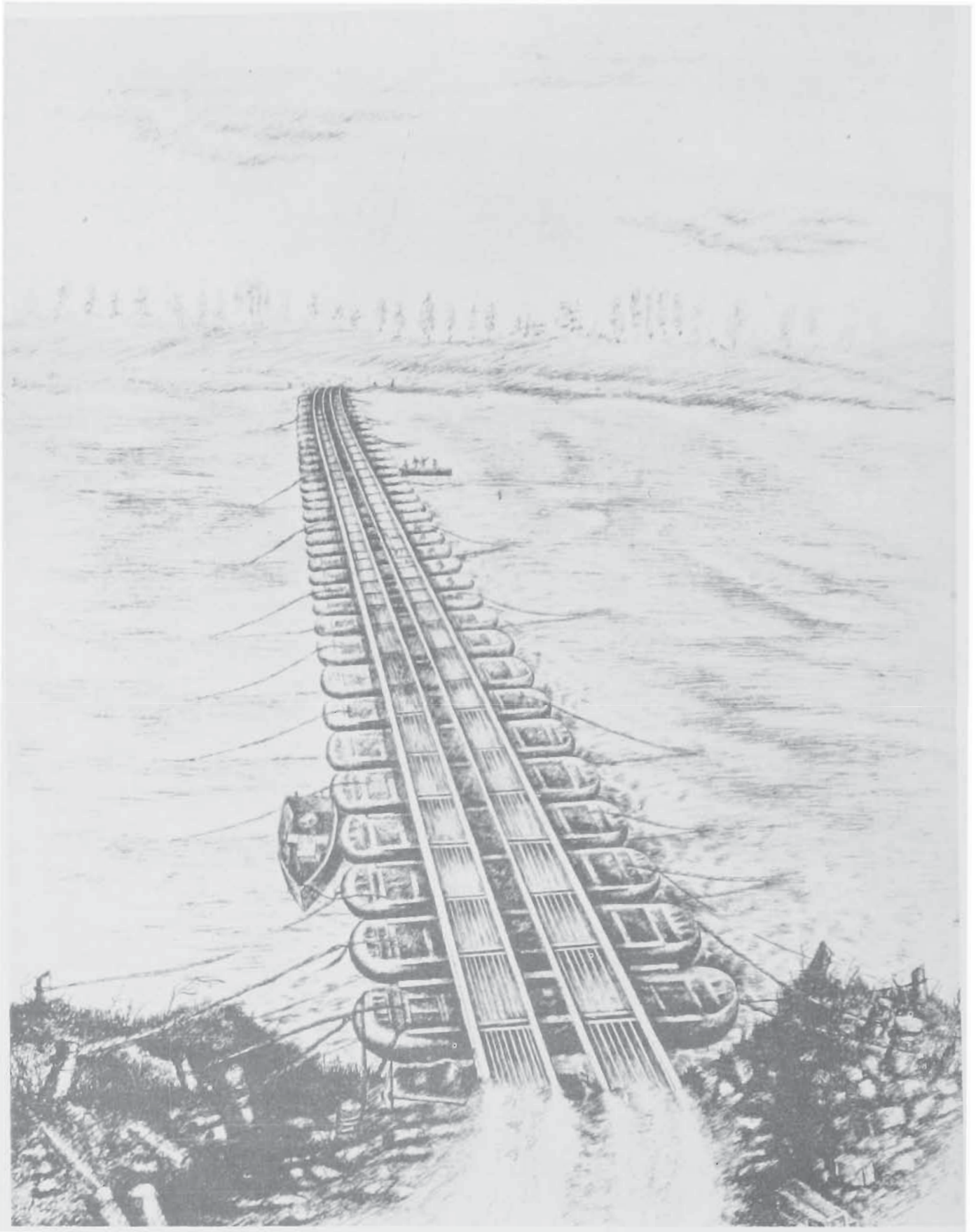
From 1 until 12 December, the 9th Battalion participated in a second attack on Mount Castello. Work on roads was done under observation and continuous fire of the enemy. This attack was also unsuccessful. From mid-December, after the division had taken up defensive positions again, a static period was entered into that lasted until mid-February 1945. Minefields were laid and plans made for demolishing roads and bridges in event of an enemy attack.

On 18 February, a third attack was launched to capture Mount Castello, this time in conjunction with the 10th Mountain Division, a drive which proved successful. The 9th Engineers again cleared the way for the advance by lifting 300 mines, neutralizing enemy charges, and opening the supply routes. Two Bailey bridges, one 120 feet and the other 110 feet in length were constructed near La Grilla, all work being done under enemy mortar and artillery fire, and usually under small arms fire as well.



BRAZILIAN ENGINEERS BUILDING ROAD NEAR SILLA

Similar work was done after 1 March when the Brazilian Expeditionary Force attacked Rocca Pitigliano, and then Soprassasso and Castelnuova, the final phases of the Mount Castello advance. After these objectives had been gained, the 9th Brazilian Engineer Battalion laid anti-personnel and anti-tank mines, and continued to maintain the roads in its sector until April.



PO PONTON BRIDGE CONSTRUCTED BY 402ND ENGINEER COMBAT BATTALION

Original Pen and Ink Drawing by
T/Sgt Savo Radulovic

SECTION VII

THE PO CAMPAIGN

	<u>Page</u>
A. The Tactical Situation	230
B. Work at Engineer Headquarters	232
C. Unit Operations	235

SECTION VII

THE PO CAMPAIGN

A. The Tactical Situation

April brought the attack that ended the war in Italy. An engagement on the Comacchio split on 2 April raised the curtain. Three days later, the 92nd Division drove into German positions in the coastal area. Massa was taken, then Carrara, the marble town. On 9 April, the Eighth Army, which had been slowly advancing for some time, intensified its attack. On 14 April, IV Corps launched the beginning of the main Fifth Army assault towards Vergato. II Corps jumped off forty-eight hours later. The line-up for the attack was as follows:

- IV Corps - 1st Armored Division
10th Mountain Division
Brazilian Expeditionary Force
- II Corps - 6th South African Armored Division
88th Infantry Division
34th Infantry Division
91st Infantry Division
- Fifth Army - 92nd Infantry Division
442nd Regimental Combat Team



BOLOGNA

SECTION VII

The Tactical Situation (cont'd).

As the attack progressed, the 85th Division was committed in the center of the line in the IV Corps sector. The Germans retreated, fighting every inch. Beyond Vergato, the Fifth Army made better progress as it reached the downward slopes of the Appennines. On 20 April, Bologna fell.



THE PO

Bologna had been the goal of the September attack. It had remained within sight of the Americans all winter. Its capture opened up a new and entirely different phase of the Italian campaign. Deprived of their mountain defenses, the Germans were forced to shift their retreat into high gear. The Po Valley road net was so large it was impossible to do much effective cratering or bridge demolition. Finally, the withdrawal became a rout. All of the bridges over the Po had been destroyed by the Allied Air Force and many Germans and vast amounts of German equipment were stranded on the river's south bank.

The first crossing of the Po by the Fifth Army took place on 24 April at San Benedetto against only minor resistance. In the western Appennines, the Germans pulled out to avoid being trapped and La Spezia was occupied without opposition. Following the crippling losses sustained by the enemy before and during the river crossing, swift Allied thrusts were made to Verona, Brescia and Bergamo. The enemy forces were decisively split. The Germans were unable to muster enough force to try even a temporary stand in their well prepared positions along the Adige River.

There was nothing for the enemy to do now but surrender: full, final unconditional surrender of all German and Italian armies in Italy and the Austrian Tyrol. The possibility of a last-ditch stand in the Alps had been eliminated.

The surrender in Italy came on 2 May 1945. To the dirty, unshaven, dog-tired veterans of the Italian Campaign, Victory Day for all Europe (8 May) was only an anti-climax.

B. Work at Engineer Headquarters

No administrative changes in Engineer Headquarters took place during the brief Po Valley Campaign. Road maintenance was confined to primary routes, and because of the extensive network in the valley, little work was required during the advance. The damage from shelling and explosives was confined largely to the roads south of Route #9. About fifty miles were effectively damaged. Along Routes #64 and #65 side hill blows and debris in the villages resulted in effective road blocks. A total of 1,006 miles of roads were maintained by Army units during this phase. One hundred and twenty-two bridges were built, including eighty-five Baileys and eleven steel treadways.

The chief engineering feat in the valley was the rapid crossing of the Po River. Minefields were numerous during the first part of the campaign, as anticipated, but after the main breakthrough the enemy had little time to use his skillful delaying tactics. Twelve areas were cleared of mines for military installations, and only one additional area had to be checked. The long supply lines and temporary dump areas had fire coverage from seven American and two British fire stations. Civilian fire departments in the Po Valley were found to be in good condition enthusiastic and cooperative. Water production was 38,270,000 gallons.

As the enemy retreat broke into a rout, all pretense of camouflage was forgotten except when soldiers actually came in contact with the enemy. In such cases, infantrymen and engineers took only the logical personal concealment measures that by now were second nature.

The S-2 Section mainly coasted along on the work it had done in the previous campaign; there were no more anticipated operations to plan for (in the European Theater, at least). Every effort was made to secure information on enemy minefields, and to disseminate overlays of friendly minefields to units in the Appennines. In regard to mapping, there was practically no further printing of new sheets, the only work being map distribution.



GERMAN PRISONERS AT BRESCIA

SECTION VII

Work at Engineer Headquarters (cont'd).

At the termination of hostilities, the Supply Section released the following summary of its work during the Italian Campaign:

1. Finance:

a. Funds obligated from 9 September 1943 through June 1944.

(1) Labor	\$ 7,692.26
(2) Materials	<u>2,333.66</u>
(3) Total	\$ 10,025.92

b. Funds obligated from July 1944 through May 1945.

(1) Labor	\$ 1,008,538.68
(2) Materials	<u>70,618.69</u>
(3) Total	\$ 1,079,157.37

2. Stocks and Consumed Tonnage:

a. A total of 101,239 tons of engineer Class II and IV materials was consumed during the Italian Campaign. Principle items were as follows: (this does not include crossing equipment, Bailey bridging, stone, gravel or locally procured supplies)

(1) Lumber	tons	37,500
(2) Bitumen	tons	10,000
(3) Road oil	tons	2,500
(4) Mechanical Equipment	tons	8,000

b. Largest amount of bridging in the Army at one time (on 12 March 1945) consisted of 226 complete sets (130 feet double-double) of Bailey bridge (150 in use, 76 in stock), 10 sets of floating Bailey, and 2,000 feet of treadway. At the beginning of the last offensive, the Fifth Army had 65 complete sets of Bailey bridge in depots, with 25 marked for recovery if required.

c. A total of 46 map, bridge, and Class II and IV depots was established during the campaign. The shortest period of operation: Bridge Depot, Bologna, E2-40, opened 23 April 1945, closed 25 April 1945. Longest period of operation: Bridge Depot, Florence, E2-36, opened 9 November 1944, closed 11 May 1945.

d. An estimated 1,200,000 tons of rock and gravel were taken from local quarries.

3. From 9 September 1943 to 11 May 1945, Fifth Army made 727 requisitions on Peninsular Base Section for engineer materials.

4. From August 1944 to 11 May 1945, 1,039 various requests for movements by transportation were made.

During the final campaign, the Real Estate Section aided the orderly occupation of Bologna, Modena and Verona. After the conquest of Northern Italy, zones were established north and south of the Po River for the administration of the territory in the Army area. Each of these areas had one real estate representative.

Meanwhile, the principle tasks of the British increment were the reserving of assault equipment for the 6th South African Armored Division and the organization of engineer troops for opening the British roadhead in Bologna. Although it was not anticipated that the South African Division would be called upon to cross the Po in the early stages of the attack, provision was made to have British river crossing equipment ready in Army dumps should the need arise. The provision was most fortunate in the turn of events, as the whole of the 12th Motorized Brigade was ferried over the Po on rafts near Felonica.

Work at Engineer Headquarters (cont'd).

On the termination of the British Increment's attachment to Engineer Headquarters, Lieutenant Colonel B. B. Smith wrote: "The closing days of the section were chiefly occupied in preparing histories and reports for various headquarters, and in destroying evidence of many crimes committed in the name of operational necessity. The outstanding lesson learned from the operation of the British Increment was the absolute necessity of maintaining the closest possible liaison with the American staff. It would have been impossible to secure any degree of coordinated effort between British and American engineer troops had the staff not worked as an integral part of the Engineer Headquarters."

After the end of the war, the Adjutant General of Fifth Army released figures of Engineer casualties incurred since the landing at Salerno. The following figures include both officers and enlisted men:

Killed in action	597
Died from injuries received in action	140
Non-battle deaths	94
Total killed	831
Seriously wounded in action	786
Lightly wounded in action	1,860
Total wounded	2,646
Taken Prisoner of War	36
Missing in action	30
Total casualties	3,540

As the campaign ended, the organization of Engineer Headquarters was the same as during the previous period. Below is a roster of officers and enlisted men as of 2 May 1945:

Brigadier General	Frank O. Bowman	0-12090	Army Engineer
Colonel	George W. Marvin	0-14887	Deputy Engineer
Colonel	John G. Ladd	0-255580	S-2
Colonel	William F. Poe	0-920610	S-3
Colonel	Henry C. Rowland, Jr	0-20940	ETC-2
Lieutenant Colonel	Irving W. Finberg	0-290892	S-4
Lieutenant Colonel	John E. Kenyon	0-272818	S-3
Lieutenant Colonel	Charles R. Rosenbaum	0-303326	S-1
Lieutenant Colonel	Harrison D. Wilson	0-243249	Executive
Major	David M. Bradley	0-456332	S-4
Major	Ernest L. Clements	0-526298	S-4
Major	Wylie B. Mendel	0-364962	S-4
Major	Gustave R. Peterson	0-244307	S-4
Major	Frank E. Seipel	0-904976	S-3
Major	Joseph R. Steele	0-268938	S-3
Captain	Donald L. Brown	0-1100029	S-4
Captain	Emanuel J. Cappello	0-453329	S-3
Captain	Henry L. Clark	0-366481	S-2 (attached)
Captain	John W. Graham, Jr	0-383329	S-2
Captain	Humphrey Ireland	0-451809	S-2
Captain	Albert G. McKain	0-903918	S-3
Captain	Jack K. Shurley	0-465893	S-2
Captain	Robert H. Steckroth	0-1102066	Real Estate
Captain	Leo S. Straw	0-321591	S-2
1st Lieutenant	Richard V. Chase	0-485044	Real Estate
1st Lieutenant	Richard F. Fitzgerald	0-1112692	Real Estate
1st Lieutenant	Grant King	0-1288070	Real Estate
1st Lieutenant	Kenneth H. Mayhew	0-436433	S-3
1st Lieutenant	Loring S. Miller	0-1112326	S-1
1st Lieutenant	George A. Pommer	0-1113396	S-3
Chief Warrant Officer	Raymond F. Jewett	W-2109280	S-4
Master Sergeant	James G. Duffy	36025815	S-1
Master Sergeant	George A. Fournier	32060570	S-1
Master Sergeant	Allen Sakowitz	32118436	S-3
Master Sergeant	Edwin H. Weber	32062569	S-2
Technical Sergeant	Jesse A. Abshire	33046644	S-3
Technical Sergeant	George J. Boykoff	32171924	S-2
Technical Sergeant	George P. Gregoire	34076385	S-2
Technical Sergeant	Don N. Hansen	39682356	S-2

SECTION VII

Work at Engineer Headquarters (cont'd).

Staff Sergeant	Andrew L. Burnham	37273703	S-1
Staff Sergeant	Arnold Goshin	32326840	S-4
Staff Sergeant	James P. Morris	35104761	S-2
Technician 3rd Grade	Martin D. Broadland	31240636	S-1
Technician 3rd Grade	Gilbert W. Meyer	37604728	S-4
Technician 3rd Grade	Charles F. Murphy	31202054	Real Estate
Technician 3rd Grade	Vincent N. Nilsson	35335269	S-3
Technician 3rd Grade	Frederick T. Sanders	38133433	S-2
Technician 4th Grade	Lawrence J. Bartosch	36294818	Real Estate (TD)
Technician 4th Grade	Rubin S. Boles	38318507	S-2 (TD)
Technician 4th Grade	Lawrence C. Dugan	33797252	S-2
Technician 4th Grade	Baer M. Frimer	32610641	S-4
Technician 4th Grade	James D. Holston	33263538	S-1
Technician 4th Grade	Miles J. Kendziorski	36108515	S-1
Technician 4th Grade	Charles J. Knabb	33677020	S-1
Technician 4th Grade	Paul H. LaPenna, Jr	12012966	S-2
Technician 4th Grade	George E. Mooney	35760712	S-1
Technician 4th Grade	Graham O. Preston	19004162	S-3
Technician 4th Grade	Charles G. Reading Jr	32367242	Real Estate (TD)
Technician 4th Grade	Abner Rothstein	32694343	S-4
Technician 5th Grade	William H. Gallogly	33740163	Real Estate
Technician 5th Grade	Andrew J. Catanzaro	32599644	S-1
Technician 5th Grade	Fred E. Gehm	16172047	S-1
Technician 5th Grade	Thomas E. Grace	34883734	Real Estate
Technician 5th Grade	Edward C. Hoffman	35742442	S-1
Technician 5th Grade	George F. Jefferson	19119664	S-4
Technician 5th Grade	Samuel Karnofsky	32325584	S-1
Technician 5th Grade	Robert H. Lewis	34544218	S-2
Technician 5th Grade	Leon Lipner	32695746	S-4
Technician 5th Grade	Charles J. McAroy	20258048	S-4 (TD)
Technician 5th Grade	William R. Mertens	32750915	S-4
Technician 5th Grade	James M. Stark	38166602	S-3
Technician 5th Grade	Roy R. Stoermer	39123201	S-2
Private First Class	Erasmus D'Agostino	20258010	S-4 (TD)
Private First Class	Perlie R. Durgin	31351777	S-2

SECTION VII

C. Unit Operations

317th Engineer Combat Battalion

During the early part of April, supplies had been built up in engineer dumps in strategic points on the line to be in close support of the 92nd Division Infantry. At 0500 hours on 5 April, the attack jumped off in the coastal sector and the 317th Engineer Combat Battalion, under the command of Lieutenant Colonel Rowney, proceeded to clear minefields, construct bypasses and infantry support bridges, and clear road blocks. Initially, the enemy was very thorough in his work in demolitions and blew almost every bridge on the route of his retreat. Tunnels were found blown, tank traps were numerous and road blocks had been constructed at every important road crossing.

The engineers were to support the advance by opening Highway #1 as the main divisional supply route. One of the most important jobs was the removal of charges which the enemy had not been able to set off because of the rapid advance. At all times during the attack, lateral routes were kept open in the divisional sector and this involved more Bailey bridges, bypasses, fixed bridges, fills and mine removal.

By 24 April, the Magra River had been reached. The bridge over the Magra on Highway #1 between Sarzana and La Spezia had three blown arches, but the piers were not damaged. A 310-foot Bailey bridge was launched over this gap and the road to La Spezia was open.

In the vicinity of Rapallo, a section of Highway #1 built on a rock shelf was blown by the enemy. To repair this blow, the 317th went below the crater and cut a new shelf. A retaining wall was then constructed and the cut filled until the road was restored to its original level.

Many other spots had been prepared for demolition by the Germans, always where it was practically impossible to construct a bypass. In one instance where a charge had actually been detonated near Celle Ligure, it was necessary to construct a fourteen-mile detour.

During the period immediately following the surrender of the enemy forces in Italy, the 317th Combat Battalion worked to open Highway #1 from Genoa to the French border, cleared part of the Genoa harbor of mines, and repaired the Genoa and Novi airports for light and medium aircraft.

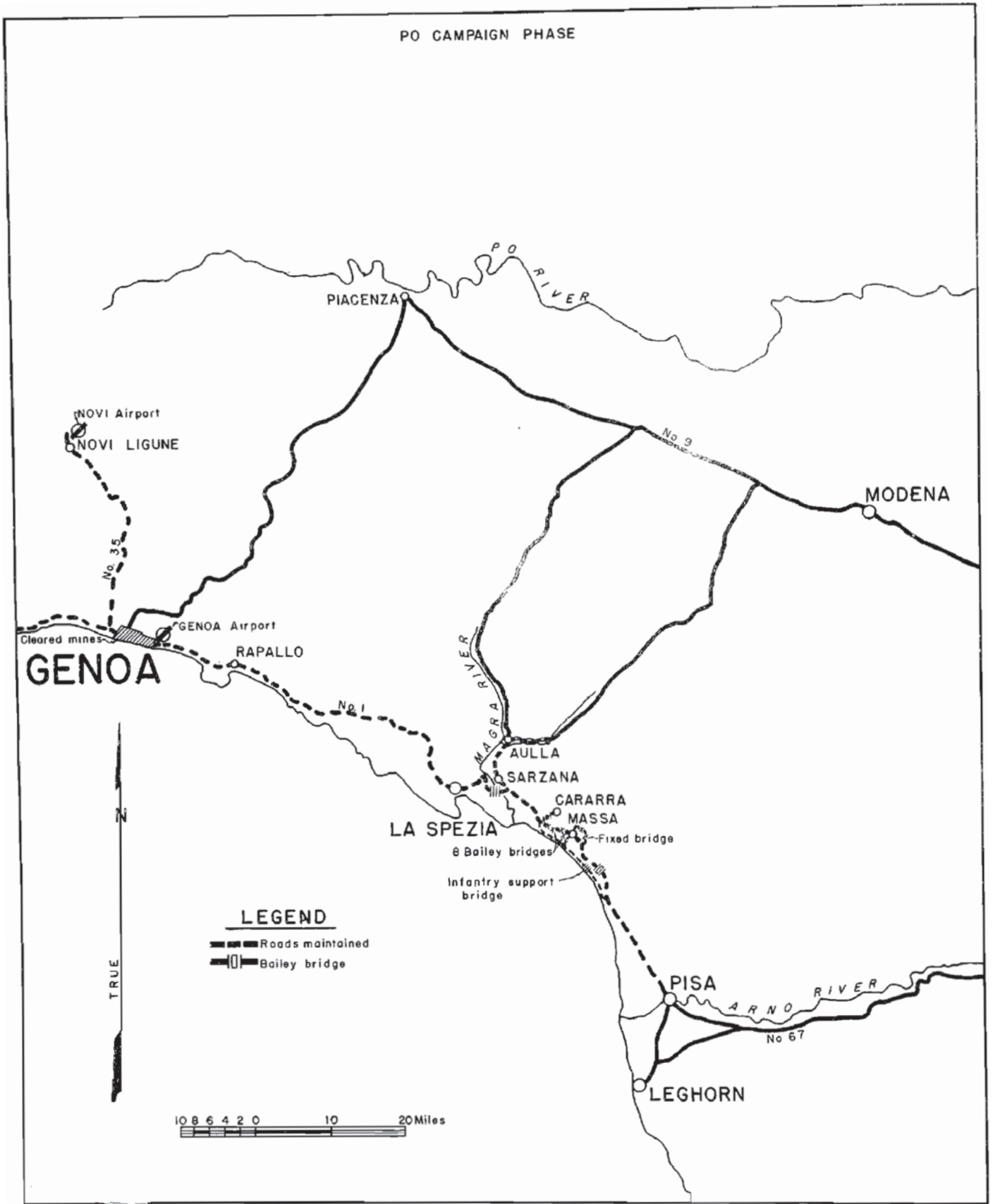
16th Armored Engineer Battalion

On 5 April, the entire 16th Armored Engineer Battalion, commanded by Lieutenant Colonel Ralph Hale, moved to the vicinity of Lucca, having been replaced in the Vergato - Mount Termine sector by the 6th South African Division. Immediately upon arrival in the new area, plans were made for the pending operation in the IV Corps sector. Extensive studies of the sector north of Vergato and west of Highway #64 had been undertaken by the battalion intelligence section.

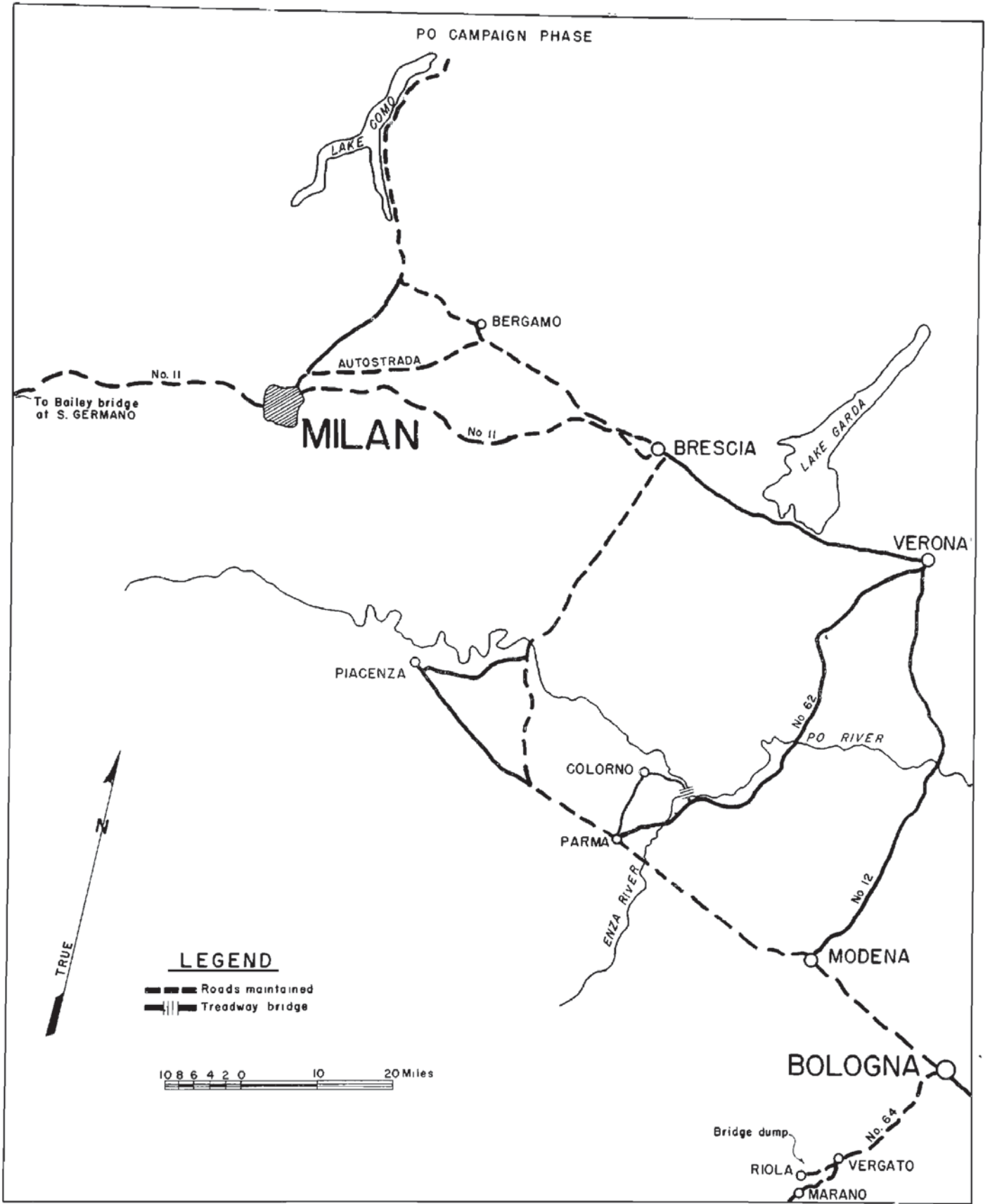
A bridge and engineer supply dump for the division was established northeast of Riola. On 10 April, the battalion moved to the Marano - Riola area. Initial operations of mine sweeping and road clearance preceded the attack of 14 April, then moved forward with the advance. All heavy equipment had to be walked at first because of the difficult terrain.

The problem of mines, although serious at first, gradually diminished as the attack progressed, until by the time the Po River was reached it ceased altogether. The last mines were found at the northern entrance to the Appennines, and in almost all cases these were harmless box mine cases filled with gravel. Several bridges were built (the largest a 96-foot M-2 trestle trestleway), three cub strips made for the division artillery, and, until 18 April, five water points and six showers were operated.

PO CAMPAIGN PHASE



317TH ENGINEER COMBAT BATTALION
OPERATIONS



16 TH. ARMORED ENGINEER BATTALION
OPERATIONS

16th Armored Engineer Battalion (cont'd).

In the operation from the Po River to Lake Como, little engineer work was done, other than the removal of road blocks and the construction of a few small bypasses. When large-scale surrenders began, each lettered company handled collecting and clearing points for the combat commands and the division.

The battalion and company maintenance sections repaired many enemy vehicles, which were briefly used for honky-tonking before they were turned in to Ordnance. Approximately 660 prisoners were captured by the 16th Armored Engineer Battalion in addition to the thousands handled and evacuated through the engineer-operated stockades.

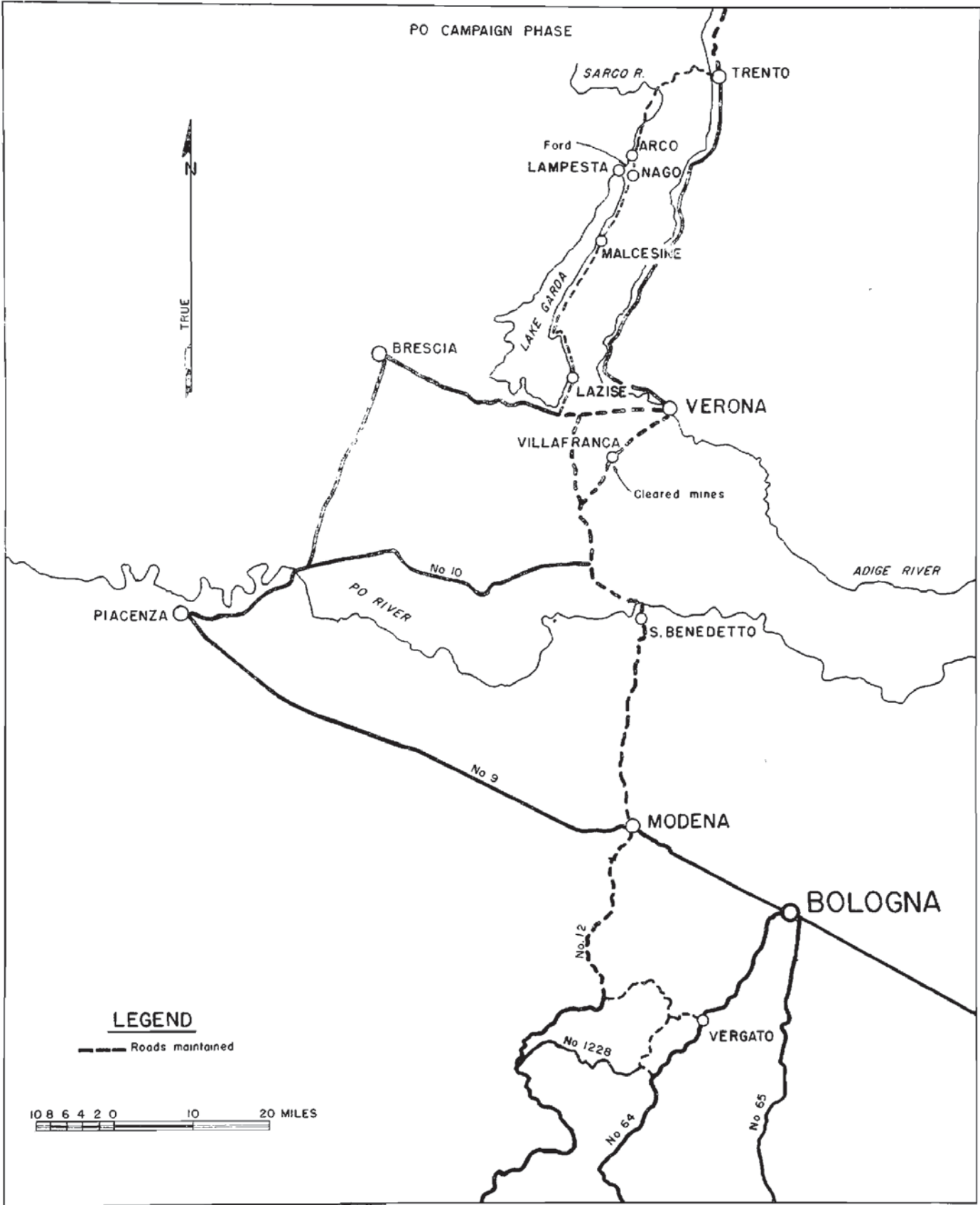


16TH CHECKING FOR MINES IN VERGATO

126th Mountain Engineer Battalion

The 126th Mountain Engineer Battalion, commanded at this time by Major Robert P. Boyd, Jr., started forward with the 10th Mountain Division on 14 April. The advance was made generally along Route #1228. Engineer mine clearance details went ahead of all units while the division was still in the Appennines. Besides filling craters by bulldozing, gravel was used to stabilize trail surfaces, and in one place steel matting was used.

The 126th then broke out of the mountains and rapidly moved to San Benedetto on the Po. The river crossing by the 10th Division was started at 1200 hours on 23 April. The entire engineer battalion participated in ferrying the infantry across the river in assault boats. Through the heavy enemy artillery fire some of the engineers made as many as twenty-three trips across the river in twenty-four hours. In all, the 126th Battalion had twenty-four casualties, two men being killed.



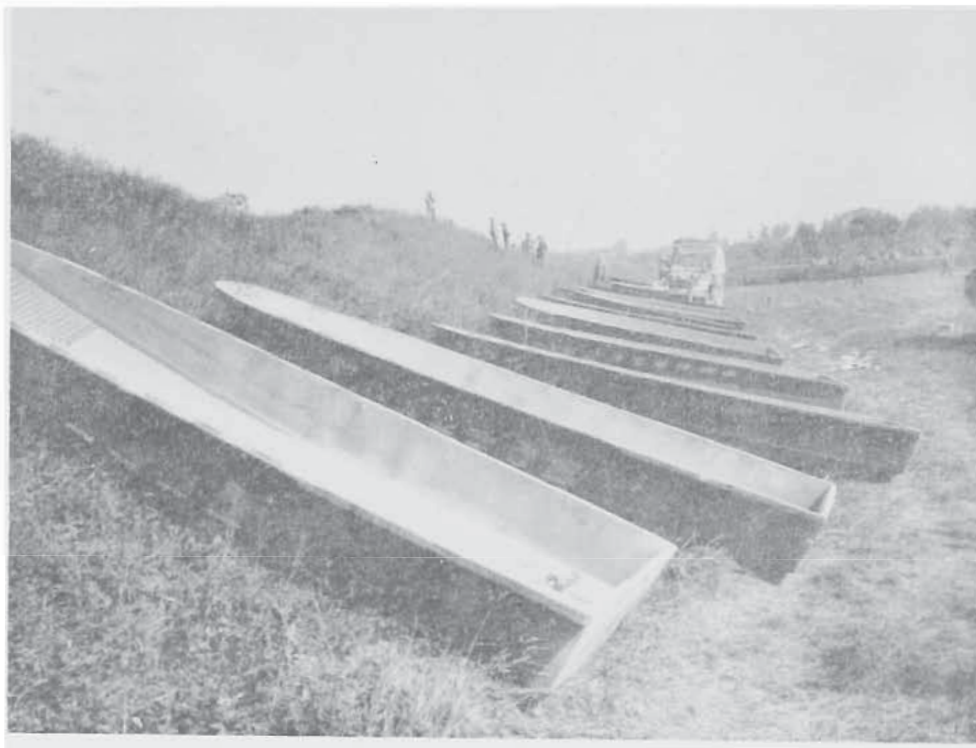
126 TH. MOUNTAIN ENGINEER BATTALION
OPERATIONS

SECTION VII

126th Mountain Engineer Battalion (cont'd).

After the river crossing, one platoon of Company "A" went forward in support of the 85th Division and cleared mines from the airfield near Villafranca. On 27 April, the remainder of the company joined the 85th Division on Highway #11 to support the assault on Lake Garda from Lazise. The advance was held up due to the excellent demolition work of the Germans in their destruction of key points in the road and the blocking of the tunnels above Malcesine. The clearing of the tunnels and installation of necessary Bailey bridges was the most important work for many days.

In the meantime, the infantry was being ferried around the blows in Lake Garda roads in eight DUKW's. Had the Germans been given a chance to man their extensive fortifications, the engineers might have suffered heavy casualties. On 29 April demolition charges were removed from the road beyond Lempesta under enemy artillery fire, and a ford at the mouth of the Sarco River was improved.



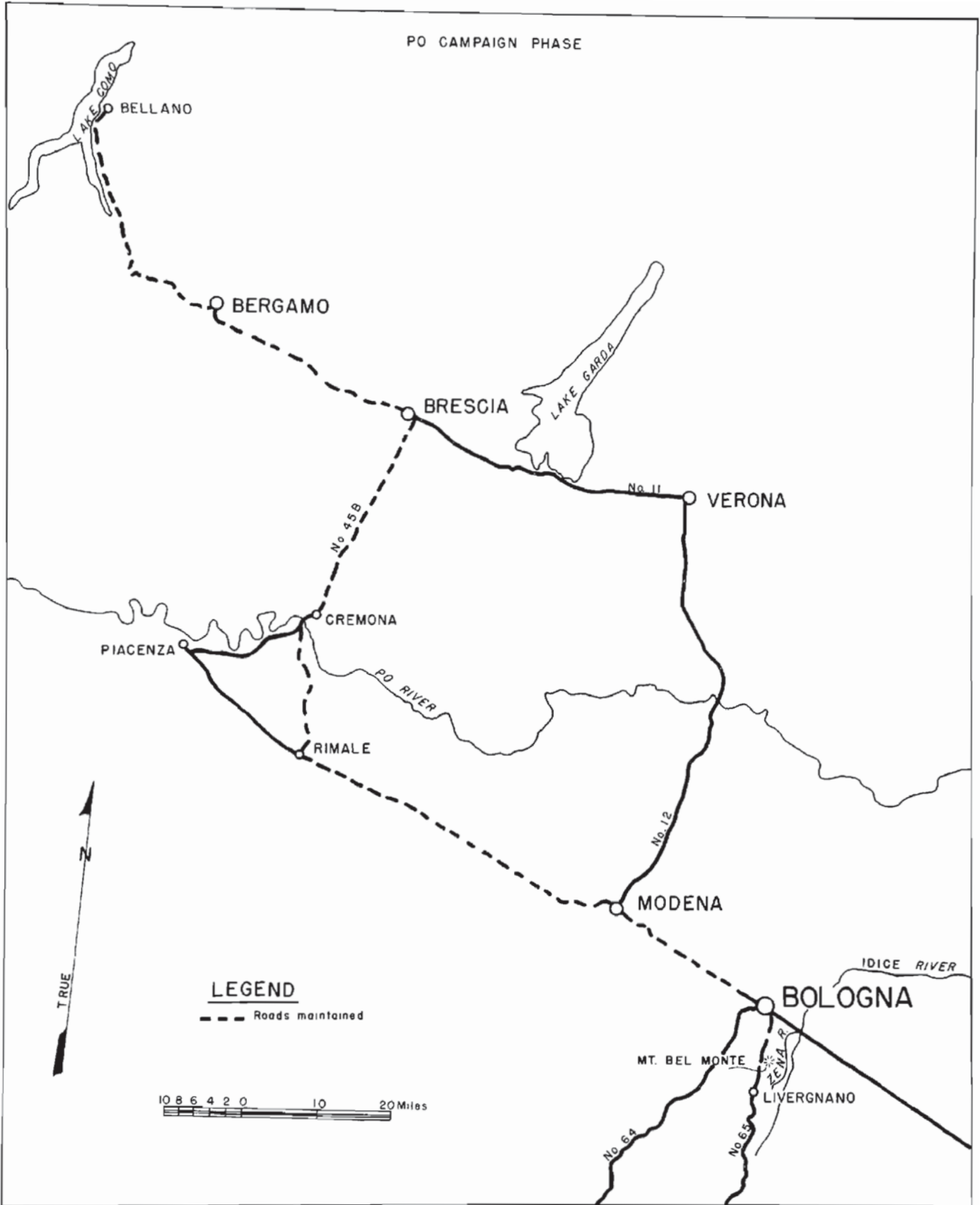
BOATS WAITING TO CARRY 10TH MOUNTAIN
INFANTRYMEN ACROSS PO

On 4 May, after several craters had been repaired, the road from Nago to Arco was open for 2½-ton traffic. The next day, the 126th Mountain Engineer Battalion reached Austria and opened up roads beyond the Italian border.

109th Engineer Combat Battalion

The first week in April, the 34th Infantry Division shifted its sector to the east and assumed defense of the area around Mount Belmonte. Battalion Headquarters and Headquarters and Service Company of the 109th moved into the Zena River Valley east of Livergnano, and in this position made plans for the attack on Bologna which began on the morning of 16 April. On 20 April, a forward command post was established near Livergnano and moved into Bologna the next day. The remainder of the battalion command post moved into Bologna on 22 April.

PO CAMPAIGN PHASE



109 TH. ENGINEER COMBAT BATTALION
OPERATIONS

SECTION VII

109th Engineer Combat Battalion (cont'd)

From Route #65, the 34th Division swung left onto Highway #9. The engineer companies remained with the most forward elements as the dash northwestward continued. The battalion command post moved daily. After the Po crossing, the battalion went to Brescia and to Bergamo. On 1 May, the unit was in Legnago, the next day near Bellano.



109TH PUSHES THROUGH DEMOLISHED TOWN
ON WAY TO BOLOGNA

When the enemy surrendered, the 34th Division began collecting and evacuating the personnel of the 75th German Corps. During the latter part of the advance, the battalion had many less craters to fill and bypasses to make, and although much mine clearing was done, that, too became a minor job as the plain was crossed.

One major task was reconnaissance. Very often the forward columns stopped behind obstacles when a little more investigation would have shown a bypass, a ford, or another usable route. The engineers were kept busy trying to follow the speed of the advance and probe around obstacles in the route of march.

Another major problem was that of supplying the division with maps during the advance. This was accomplished by continuous liaison with Corps Headquarters by a special map officer from the battalion. After the hostilities had terminated, the 109th Engineer Combat Battalion was occupied with the operation of three prisoner of war stockades for Italian, German and Russian prisoners.

313th Engineer Combat Battalion

The 313th Engineer Combat Battalion, under the command of Lieutenant Colonel James H. Green, concluded its training period and returned to the Italian front on 5 April in the sector around Monzuno west of Highway #65. On 15 April, the battalion began to push forward, and from the time the offensive began rolling the next day until the end of April, all four companies and the command post travelled separately, moving as the situation warranted. The companies were generally attached to their regimental combat teams and their efforts were devoted to constant maintenance of the lines of communication throughout the division's zone of advance.

The first job was the removal of mines; the next the repair of roads. In three days, however, the infantry reached the flats of the Po Valley, where both of these tasks became negligible. It was not until the Po River was reached that a major engineering obstacle was encountered.

The 643rd Engineer Combat Battalion of the 39th Engineer Group was attached to the 313th Battalion from 25 April until 28 April to aid in the movement of the division across the river. The Po River was crossed at Ostiglia by Quonset barges and infantry support rafts. In addition to the ferries, the 313th constructed a footwalk across the demolished railroad bridge.

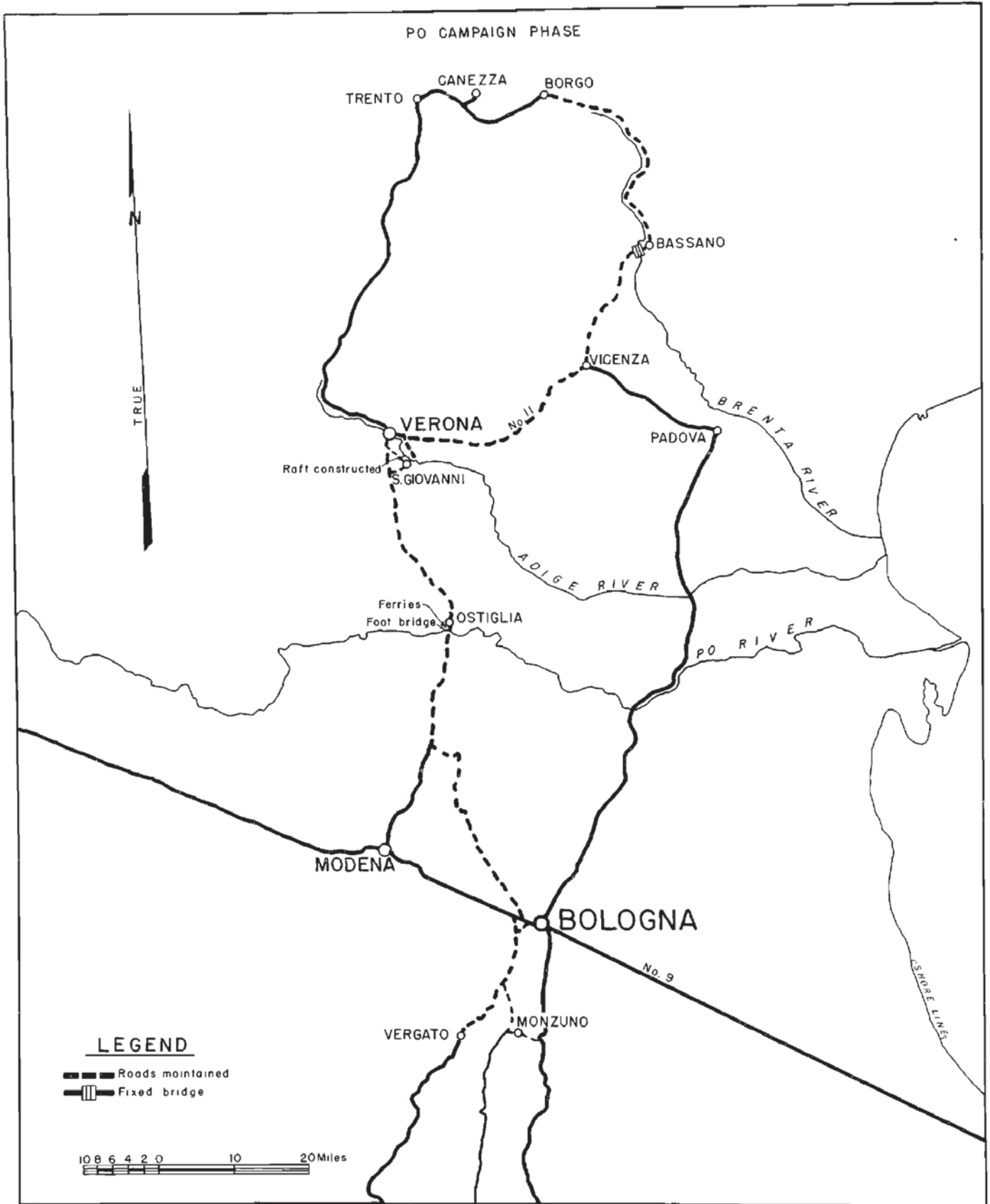
Some time was lost in getting the infantry across the river. Bridging and ferrying equipment which should have been immediately behind the advancing elements was not brought to the river until a day had passed. Even then it was found that the equipment was not complete and much time was lost in constructing field expedients which, although operable, were certainly not as satisfactory as standard equipment. The same fault held true for the crossing of the Adige and Brenta Rivers.

In the latter case, had it not been for a partially completed enemy bridge, one or more days might have elapsed before the river could have been spanned. At San Giovanni on the Adige, enemy materials were used to construct a Class 30 raft.

On 30 April, the 313th Engineer Combat Battalion was bivouacked in the general vicinity of Bassano, having made an advance across the Po Valley to the foothills of the Alps. Moves of from twenty to forty miles made each day. The surrender of the enemy found the 313th continuing its job of road maintenance work and repair.



CROSSING THE PO NEAR OSTIGLIA



313 TH ENGINEER COMBAT BATTALION
OPERATIONS

SECTION VII

316th Engineer Combat Battalion

In preparation for the passage of tanks on the eve of the attack, a difficult culvert and fill was installed by the 316th at the four-house settlement of Barchetta in the vicinity of Pianoro, within a few hundred yards of the enemy. Fords were prepared and mines cleared for the attack on Mount Adone. With the taking of Mount Adone and Pianoro, the main German barriers before Bologna fell.

As the advance moved forward, the engineers swept roads and improved trails and roads. After the 91st Division went to Bologna, it crossed the Panaro River by the bridge that the 88th Division had captured and proceeded to the Po. The engineer mission was concerned mainly with clearing the roads of dead horses and burned German vehicles.

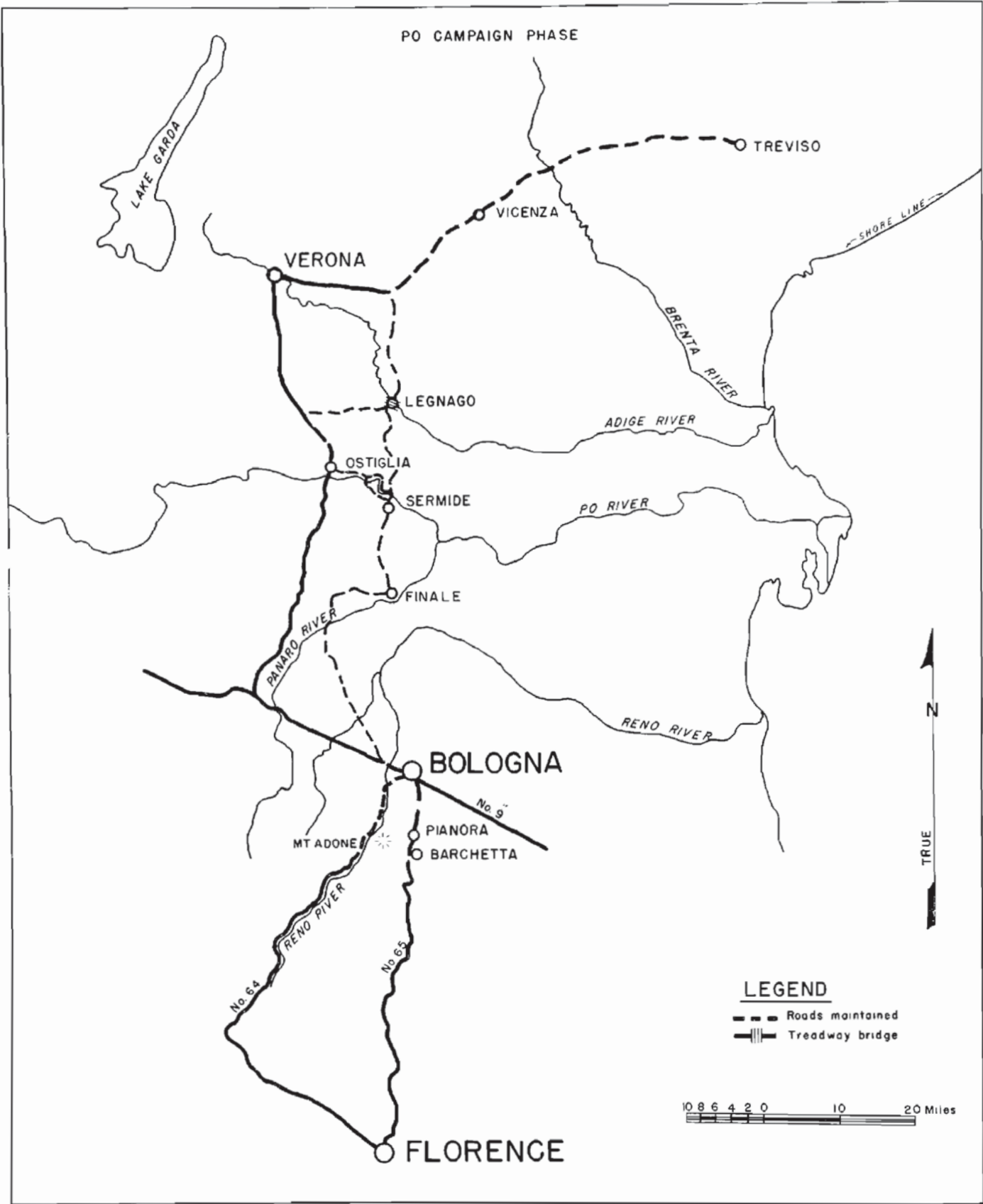


316TH ENGINEER DELOUSING ROAD NEAR BOLOGNA

On 24 and 25 April, the 316th Battalion crossed the 91st Division over the Po at Sermide, about seven miles east of Ostiglia. Ferries and rafts were used until the corps floating bridge was completed for the larger vehicles. The assault boats and DUKW's employed on the Po were kept well forward and were ready for use as soon as the bank of the Adige was cleared near Legnago on 26 April.

Assault troops crossed on a partially repaired railroad bridge nearby. Company "A" crossed one regiment several miles upstream by an infantry support raft. The 402nd Combat Battalion constructed an M-1 treadway bridge at Legnago on 27 April. By that date, the entire division was across the Adige River and continuing the pursuit of the Germans toward the northeast.

Vincenza was captured and the division went due eastward. The Brenta River was crossed first by "snaking" vehicles across the shallow stream with bulldozers, and then by a trestle treadway bridge constructed by corps engineers. During the crossing, members of the 316th Engineer Combat Battalion were engaged in several fire skirmishes with the enemy in which several men were killed or wounded.



316 TH. ENGINEER COMBAT BATTALION
OPERATIONS

SECTION VII

316th Engineer Combat Battalion (cont'd).

The advance was so rapid that there was little or no road repair work necessary and no mines to delay the attack. Battalion Headquarters moved into Treviso on the afternoon of 30 April, with Companies "A" and "B". Company "C" joined the remainder of the battalion there the following day. The 316th under the command of Lieutenant Colonel William C. Holley was mainly engaged in the roundup of prisoners after the surrender of the Germans on 2 May.

310th Engineer Combat Battalion

From 1 to 16 April, the 310th Engineer Combat Battalion, commanded by Major Hugh K. Burch, trained in river crossing operations, firing of all weapons, road and bridge maintenance, and physical hardening in the area near Calci. On 17 April, the battalion moved to Riola and began the advance to the Po. Thirty miles of roads were swept and cleared. The permanent bridge across the Panaro at Camposanto was saved by Corporal A. J. Augustino, who swam across the river under heavy small arms fire, and neutralized seven enemy demolition charges before they were detonated.

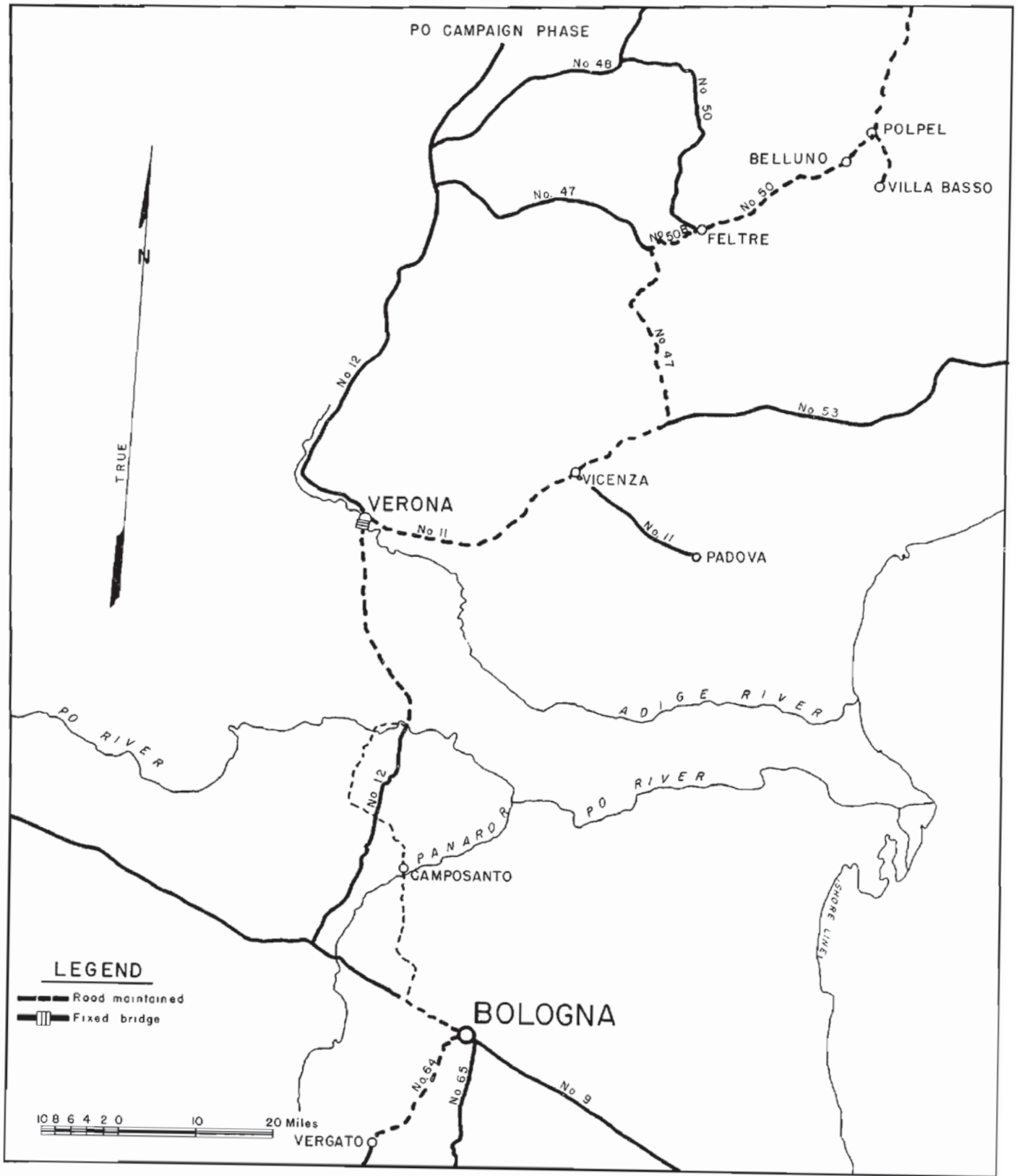
On 23 April, the 310th began crossing the Po River, using expedients made out of local materials. Four infantry support and three improvised rafts were made and all reconnaissance and combat units of the division were crossed with the exception of the medium artillery.

On 26 - 27 April, the engineers of the 85th Division spanned the Adige River at Verona with two ferries and a permanent bridge built by constructing earth ramps at a partially destroyed railroad bridge, after clearing away derailed cars, rails and ties. From this time to 2 May, the battalion continued normal engineering work along Highway #50 through Feltre and Belluno.

The next six days were spent at Villa Basso, making reconnaissances of captured enemy equipment. Sixty-four installations were discovered and reported. Over three million board feet of lumber, sawmills, power plants, machine tools, air compressors and printing presses were among the equipment taken.



85TH DIVISION VEHICLES WAITING TO BE FERRIED
ACROSS PO BY 310TH ENGINEERS



310TH. ENGINEER COMBAT BATTALION
OPERATIONS

SECTION VII

1108th Engineer Combat Group

On 14 April when IV Corps began its attack, the 337th Battalion was in support of the 10th Mountain Division west of Highway #64, the 255th Battalion was behind the 1st Armored Division, and the 23rd (Italian) and the 235th Battalions were in general support of the corps.

More mines were encountered than the 1108th had seen since before Rome. The repair of craters and demolitions had to be deferred until every foot of debris was carefully prodded, as the non-metallic mines were undetectable in the shrapnel covered area. In a distance of about one and one-half miles, 570 mines were lifted from the roadway.

A great deal of work was required to make trails to outflank Monte Pero to Vergato, and the engineers were under fire most of the time. IV Corps lost the use of Highway #64 north of Piano di Venola to II Corps in a boundary change which left only Route #6423A for corps traffic. The road was easily observed by the enemy.

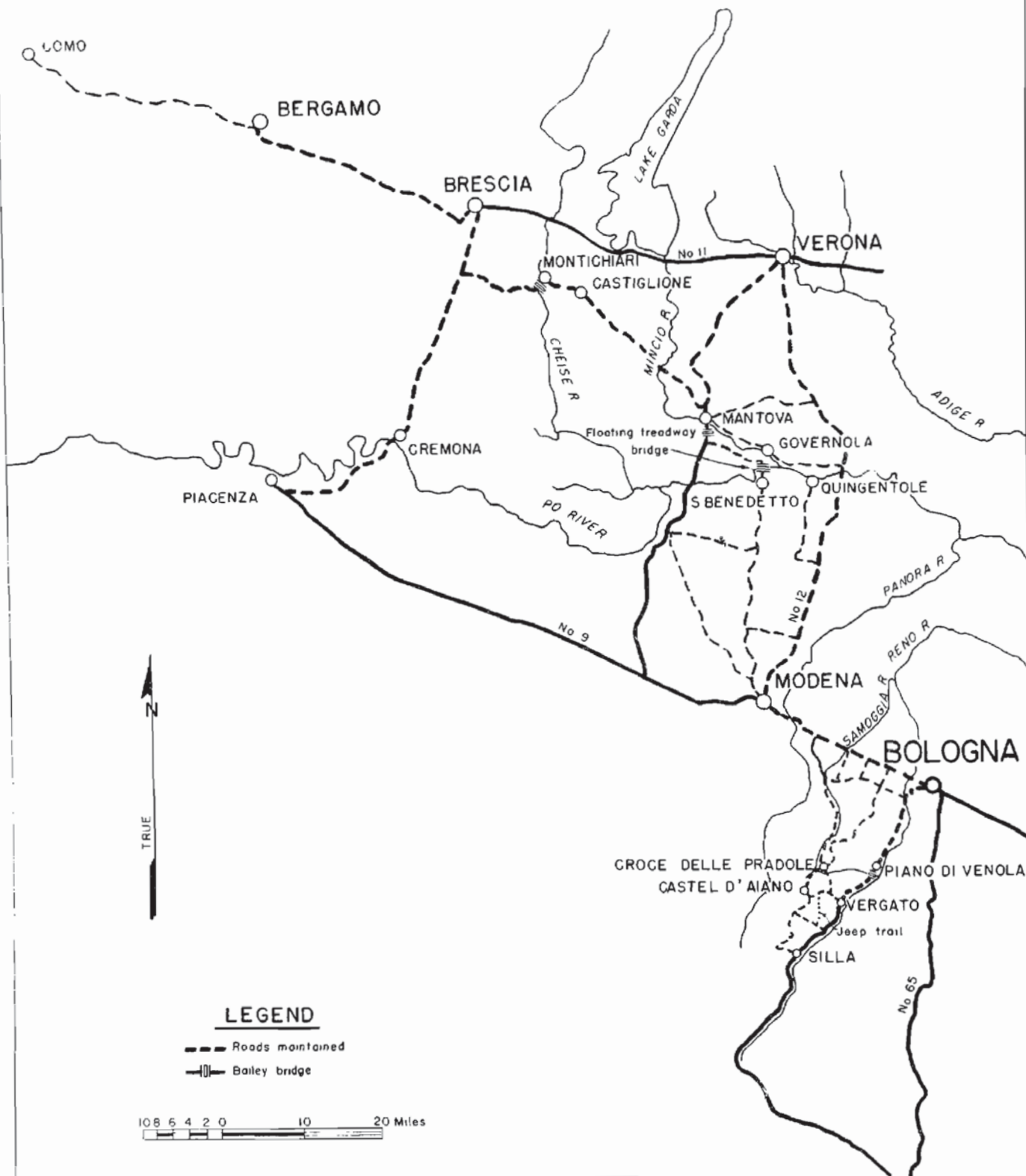
In the town of Tole, the road was only one-way, and since it was the main supply route for two divisions the traffic bottleneck made Tole a favorite target. A paralleling road from Sussano to Croce della Pradole was opened on 18 April, and by 21 April the road through Tole was made two-way by the construction of a four-mile bypass. While equipment was working on the north end of the road from Croce della Pradole, heavy artillery barrages were unleashed to drown out the noise of the bulldozers.



BRIDGE OVER ADIGE BUILT BY 235TH ENGINEERS OF THE 1108TH GROUP

With the completion of the mountainous phase of the campaign, the units on the corps front were re-shuffled to exploit the breakthrough. The 255th Engineers were assigned to support the 85th Division on Highway #64 and the 10th Division to the east. Further east, the 337th Battalion assisted the 1st Armored Division in the Somoggia Valley until 21 April, when it was replaced by the 401st Battalion of the 19th Engineer Group, at which time the 337th went into the Po Valley to support the 10th Division. The 23rd Italian Engineers were in general support of the Brazilian Expeditionary Force which came up behind the 10th Division east of Highway #64.

PO CAMPAIGN PHASE



1108 TH. ENGINEER COMBAT GROUP
235 TH., 255 TH., & 337 TH. ENGINEER COMBAT BATTALIONS
23 RD. ARTIERI BATTALION (ITALIAN)
OPERATIONS

1108th Engineer Combat Group (cont'd).

The Po Valley was reached on 21 April by the 85th, 10th, and 1st Armored Divisions. Here and there, a crater was blown and a bridge partially destroyed but there was not the thorough and systematic use of demolitions and mines that had become synonymous with a German retreat. With the extensive road net in the valley, the 1108th also found little work except for river crossings. Work before the Po River was reached, mainly consisted of shortening supply routes by bridges and fills on the main highways.

For the crossing of the Po River, the 1108th Group had, in addition to the four battalions of the group, the 401st Combat Battalion, the 1554th Ponton Battalion, with Company "A", 92nd Engineer Regiment, attached, and Company "A" of the 404th Combat Battalion. Until the construction of bridges, the 337th and 255th helped the 10th Mountain and 85th Divisions cross the Po River in assault boats, the 10th Division crossing first at S. Benedetto on 23 April, the 85th at Quingentole, a short time later.

The first bridge across the Po was a Class 18, 915-foot M-2 floating treadway near S. Benedetto, completed at 1030 hours on 25 April by the 235th and 401st Engineer Battalions. The tanks, except for those that crossed on barges and ferries, had to wait until 1600 hours the same day, when the Class 40, 856-foot neavy ponton bridge was finished by the 1554th Ponton and the 337th Combat Battalions. Company "A" of the 404th Combat Battalion assembled and operated three Quonsett barges.

The Mincio River at Governolo was crossed by a quick repair of a damaged bridge by men of the 337th Battalion, who had been without sleep for three nights and two days. The 255th Engineers went with the 85th Division to Verona, the 337th and 235th Engineers alternately went with the 10th Mountain Division to Verona by way of Governolo and Mantova; and the 401st Engineers followed the 1st Armored Division to Brescia, Bergamo, and Lake Como.

The last significant engineer projects in this drive were the construction of two 240-foot Bailey bridges across the Adige River, one by the 235th, the other by the 255th Battalion. The fast movement obviated the need for much engineer work, so engineers of the group protected main supply routes from isolated pockets of Germans, cleared out these pockets, and assembled and evacuated prisoners of war. The armed patrols were maintained on the main supply routes until 6 May, when they were withdrawn. Approximately 14,500 prisoners were processed by the 1108th Engineer Combat Group under the command of Lieutenant Colonel William P. Jones, Jr.

19th Engineer Combat Group

For the first half of April, the 401st and 402nd Engineer Combat Battalions of the 19th Engineer Group, commanded by Colonel John D. Cole, Jr., were mainly occupied with road maintenance on Route #6531 and the route between Loiano and Quinzano. Culverts were widened, narrow places were dozed and blasted to allow two-way traffic, ditches were cleaned out and Bailey bridges were removed. The roads became very dusty in April due to the very dry spring. Water tankers, some from the 405th Engineers and some "homemade" ones, were used to combat this difficulty.

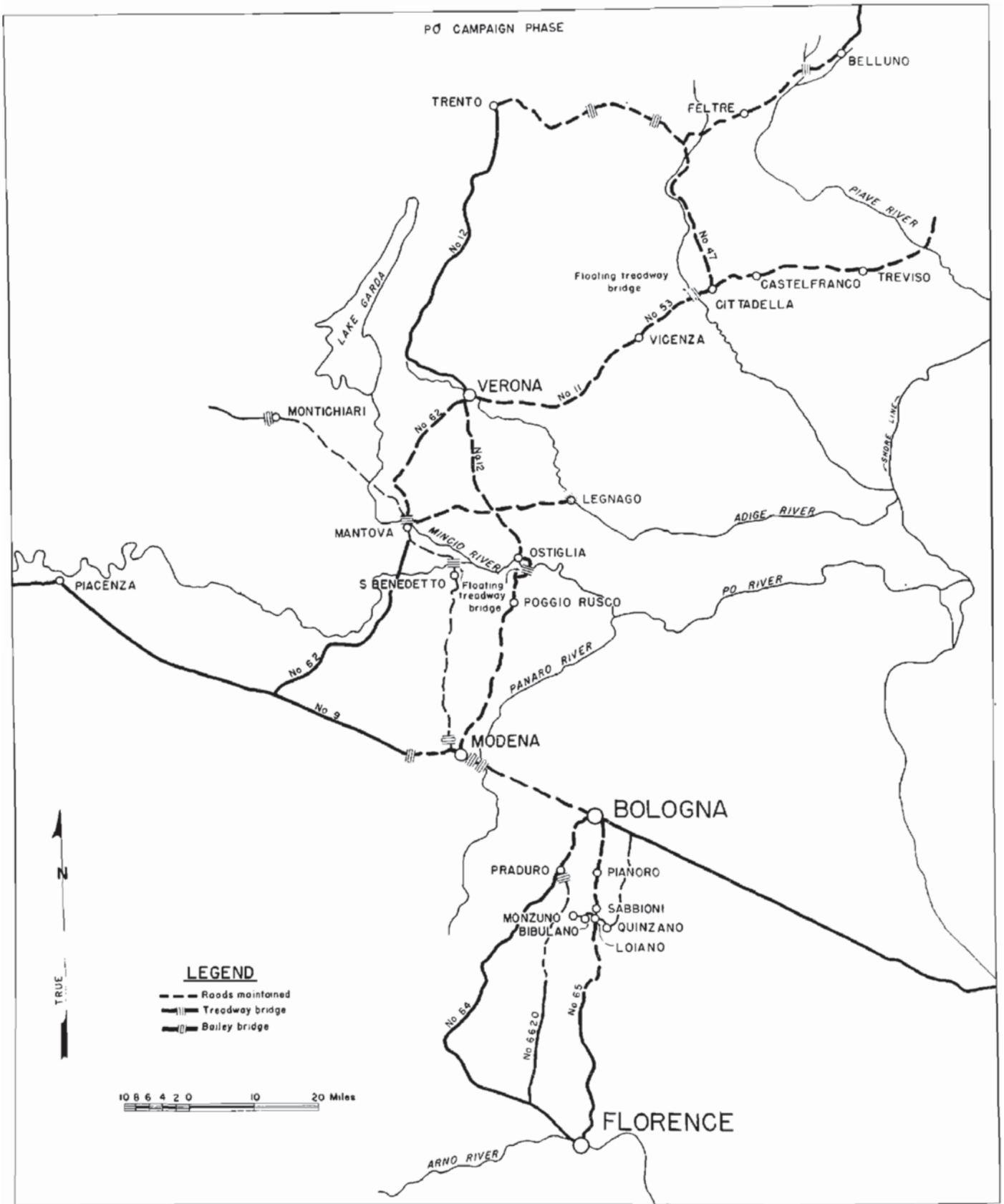
401st Engineer Combat Battalion

As II Corps jumped off on 16 April, the 401st Battalion under the command of Lieutenant Colonel Jack S. Berry had Company "A" working with the 109th Battalion, and Companies "B" and "C" with the 316th Battalion in support of the 34th and 91st Divisions, respectively. Company "B" worked up Highway #65, and shortly thereafter the battalion command post went up the same road to a bivouac near Sabbione.

The work of the 401st on Route #65 was mostly the construction of bypasses and clearing of minefields. At Pianoro, a bypass had to be constructed through a minefield. A lane was cleared using both mine detectors and prodding; nevertheless, a D-7 bulldozer was blown up.

It appeared that the 401st might be one of the first units to enter Bologna, but on 20 April the battalion was transferred to IV Corps sector to work with the 1108th Group, in support of the 1st Armored Division. The following day, the battalion moved to Mount Moscoso on Highway #64. The day after the move, a Class 40, 60-foot, double-single Bailey bridge was built over a damaged bridge at Modena.

The companies were leap-frogging each other to keep up with the 1st Armored Division. On 23 April, the next day, a 180-foot, triple-single Bailey was built across the Panaro River near Modena. Two other Bailey bridges were installed the same day.



19 TH. ENGINEER COMBAT GROUP
 401 ST. & 402 ND. ENGINEER COMBAT BATTALIONS
 OPERATIONS

401st Engineer Combat Battalion (cont'd).

PO RIVER BRIDGE NEAR BREDE BUILT BY 401ST ENGINEERS

On 24 April, work began to "bulldoze down" the banks of the Po River at S. Benedetto. Float construction began at 1600 hours. All night long the work progressed, and at 1045 hours, 25 April, the first bridge across the Po River (the longest bridge ever built by the battalion) was officially opened. The next day, a 75-foot M-1 treadway bridge was constructed across the Mincio River. On 28 April, a 110-foot, triple-single Bailey bridge was built at Montichiari.

Later, rain caused such a rise in the river that the original stone support upon which the bridge rested gave way, and the bridge collapsed into the river bed. The fallen bridge was recovered with difficulty, then replaced with a 60-foot addition to insure its resting upon a solid base.

In the fast moving situation in the last half of April, there were several times when the battalion had groups of men very close to the front. Often, it seemed that they would be surrounded and cut off from aid. The last two days of April found the 401st Combat Battalion maintaining the main supply routes in IV Corps sector.

On 30 April, the 401st got word that it would return to the 19th Engineer Group Headquarters. The battalion crossed over to the II Corps sector by way of Verona, Padova, and Vicenza and bivouacked at Castelfranco. On the day of the surrender of the German forces, the battalion built a 100-foot trestle treadway bridge across the swift-flowing Piave River, about midway between Feltre and Belluno.

SECTION VII

402nd Engineer Combat Battalion

When the advance began on 16 April, the headquarters of the 402nd Battalion split into two sections, and the forward command post moved to Bibulomo. Also on 16 April, Companies "B" and "C" were assigned to support the 313th Engineer Battalion of the 88th Division. Company "A" worked on the net of roads between Highway #65 and #6620, and on 24 April was at Poggio Rusco.

On 21 April, Company "B" began construction of two 110-foot spans of triple-single Bailey bridge across the Reno River near Praduro, which was completed two days later. On 22 April, the 402nd's support of the 34th Division was terminated, and Company "C" was switched to the 91st Division.



THE 402ND BRIDGE ACROSS THE PO NEAR OSTIGLIA

Company "A", assisted by units of Companies "B" and "C", constructed an M-2 treadway bridge across the Po River about two miles east of Ostiglia on 25 April. Company "B" maintained the bridge the next two days, then went to support the 88th Division in its crossing of the Brenta River on the 28th. An M-1 trestle treadway bridge was built, which was damaged by a tank on 30 April, but was promptly repaired. The bridge was on Highway #53 between Vicenza and Cittadella.

In the meantime, Company "A" had moved north to construct an M-1 treadway bridge across the Adige River at Legnago. When the construction was completed, the unit began to rock the approaches. This work continued until the next day, when Company "A" was relieved by Company "C". On the last day of the month, both Company "C" and Company "A" moved to the town of Treviso.

In May, the 402nd Engineer Combat Battalion under the command of Lieutenant Colonel Donald S. Nero supported the 85th and 88th Divisions by making minor road repairs and maintaining the Brenta River bridge.

SECTION VII

39th Engineer Combat Group

The entire 39th Engineer Combat Group, commanded by Colonel Thomas C. Green, spent the first days of April at the Peninsular Base Section Staging Area #3 near Pisa, training for river crossing. On 7 April, the 404th Combat Battalion returned to Castiglione in the II Corps sector, to be followed by the 643rd Combat Battalion and 39th Engineer Group Headquarters on 13 April. The remainder of the month was a series of long moves.

At the Po, the 643rd Battalion crossed the 88th Division and 757th Tank Battalion at Ostiglia by Quonset barges, and infantry support rafts, until the bridge by the 169th Battalion was constructed. An infantry support raft was built without clamps or side rails using rope and twenty-penny nails. This raft held up for six days and carried jeeps and 1½-ton trucks.

The 6th South African Division was crossed at Sermide, aided by Company "A" of the 643rd Battalion. The 404th Battalion crossed the 362nd Regiment, 91st Division, using single and double assault boats. Troops crossed were supported by DUKW's, LVT's and infantry support rafts. Company "A" of the 404th was attached to the 1108th Group for barge operation at S. Benedetto.

On the Adige River, the 643rd Battalion helped cross the 88th Division near S. Giovanni south of Verona. One Class 30 raft was made out of captured enemy material with prisoner of war labor. Vehicles were carried on Italian ferries and German barges powered by DUKW's. The 404th Battalion supported the 316th Engineers again and operated rafts for the 91st Division's crossing of the Adige.

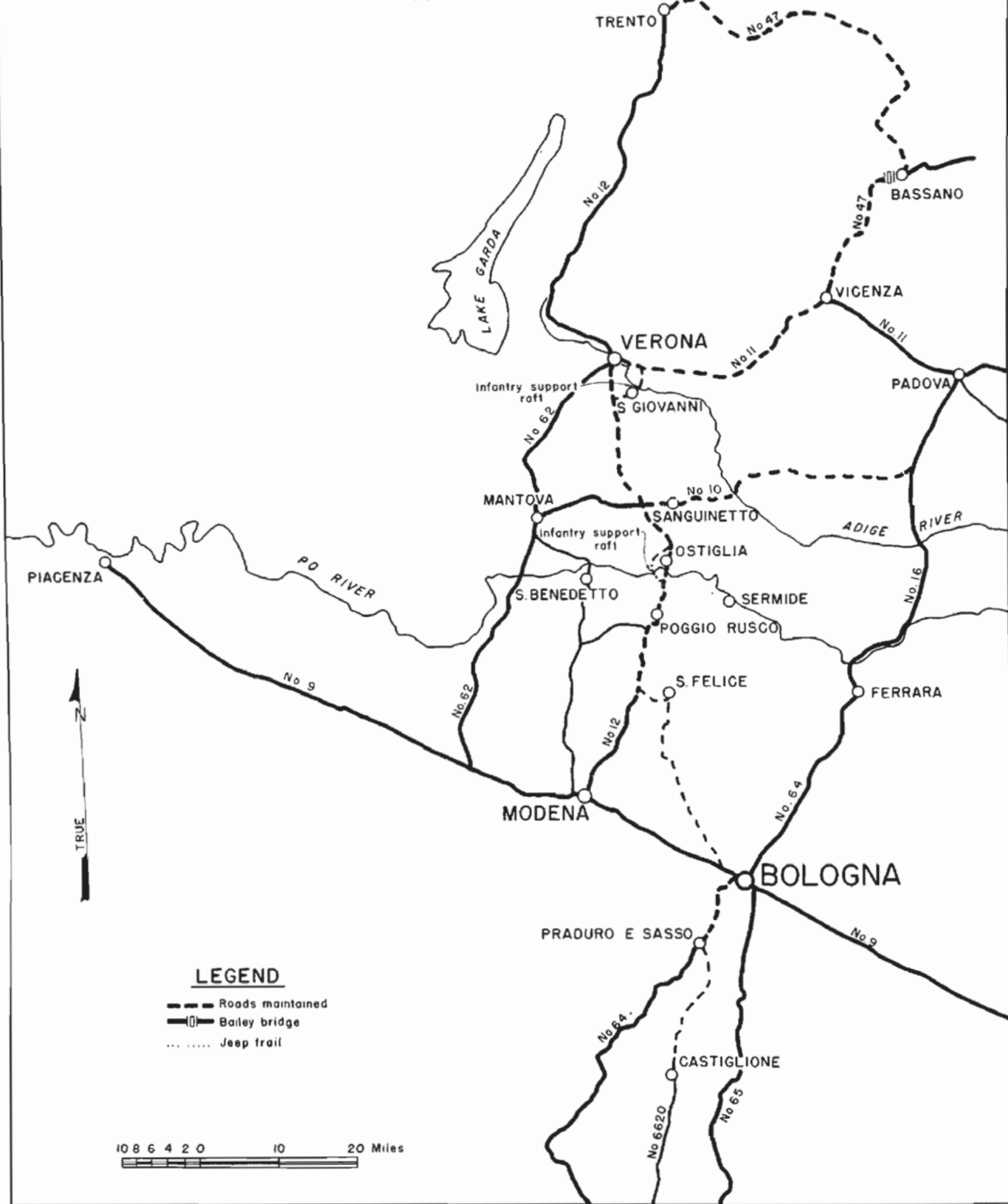
On 2 May, the 39th Group moved from Vicenza to Bassano, and after one day there, went on to Fossano. By 6 May, it was at Trento.

After the Adige River was passed, the main work was opening up the routes of supply in northern Italy. One Bailey bridge was built near Bassano, 150 yards from the river, and rolled down a narrow road with only one-inch clearance to the launching site. The other half of the same bridge was built in place and not launched at all.



IMPROVISED CLASS 30 RAFT BUILT BY 39TH ON THE ADIGE RIVER

PO CAMPAIGN PHASE



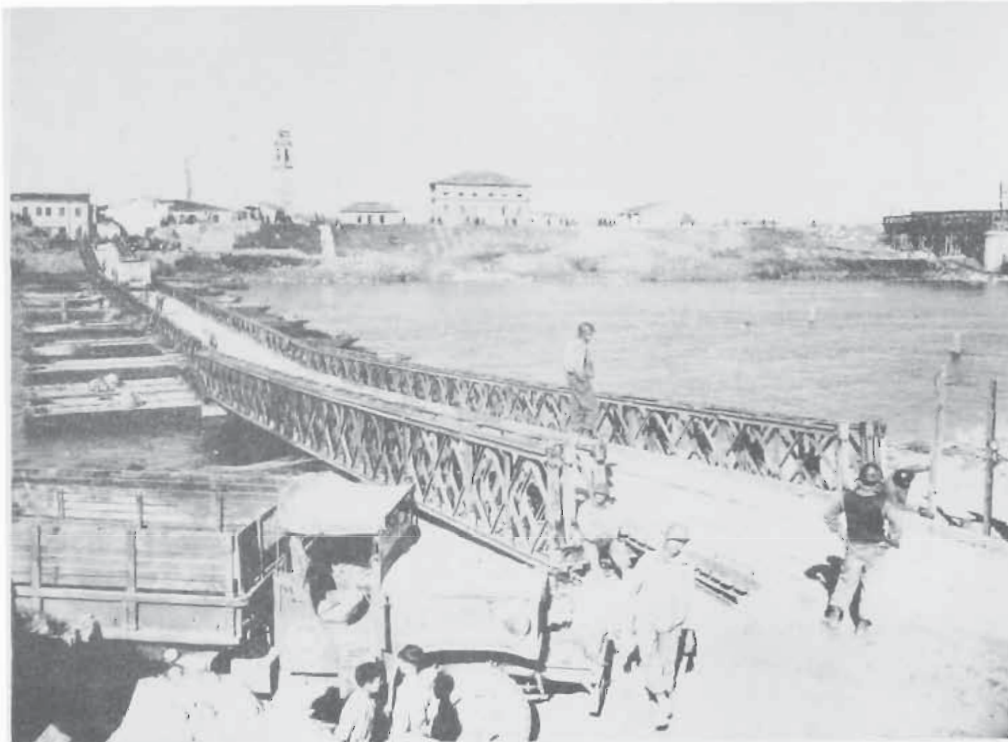
39TH. ENGINEER COMBAT GROUP
OPERATIONS

1338th Engineer Combat Group

169th Engineer Combat Battalion

On 3 April, the 169th Engineer Combat Battalion of the 1338th Engineer Combat Group moved to Cascine Nuove, and began to train on the Arno for the construction of a floating Bailey bridge across the Po. The training lasted for two weeks. On 20 April, the entire battalion moved to Route #6531 and began patrolling the road. Four days later the battalion moved again, this time only a short distance out of Bologna.

Company "B" erected a Bailey bridge on Highway #64 across the Reno River just southwest of Bologna, and Company "A" began another one across the Reno on Route #6620 just east of Praduro. But before the work could get any further than the clearing of piers and abutments, the battalion again moved.

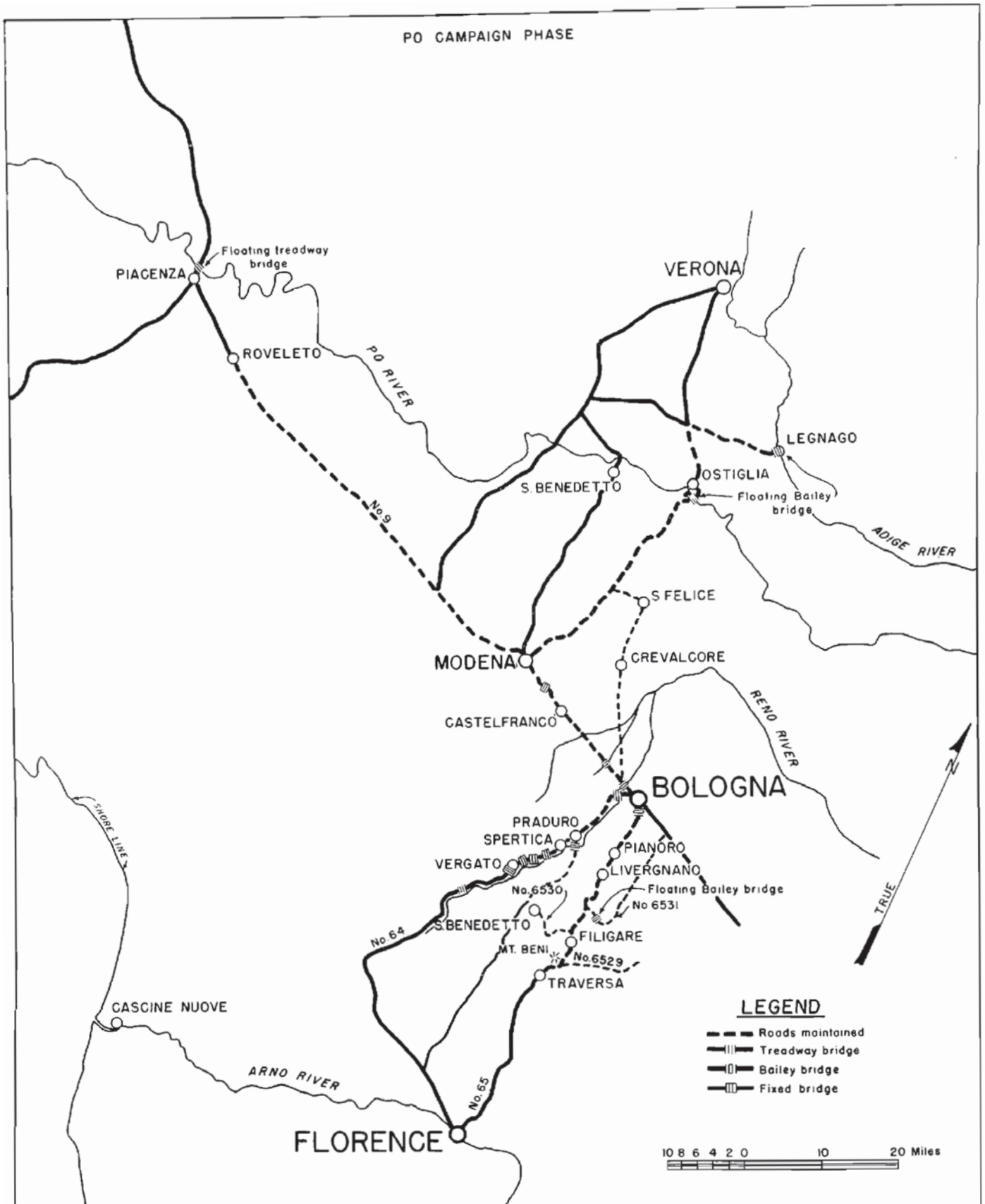


169TH'S FLOATING BAILEY AT OSTIGLIA

At 0630 hours on 25 April, the advance party reached the Po at Ostiglia. The infantry was still clearing German soldiers from ruined buildings across the river. The surveyors set up the center line of the bridge and the dozer operators began work at once, one of the dozers being ferried across to the far shore. The dozer operators worked until noon of the following day.

At this time, materials had arrived in such quantities that actual construction of the bridge could get under way. From the time that actual construction started on the Class 40, 1,000-foot floating Bailey until the bridge was finished, thirty-four hours elapsed.

Before the bridge had been completed, the dozer operators were again at work in clearing another site at the Adige River near Legnago. The bridge, a 474-foot floating Bailey, was constructed in a period of ten hours. As the war came to an end, the 169th Engineer Combat Battalion, commanded by Lieutenant Colonel Roy A. Doman, began the construction of permanent bridges to replace the tactical bridging, and worked on road and floating bridge maintenance.



1338 TH. ENGINEER COMBAT GROUP
 169 TH., 182 ND. & 185 TH. ENGINEER COMBAT BATTALIONS
 OPERATIONS

SECTION VII

182nd Engineer Combat Battalion

The 182nd Engineer Combat Battalion, under the command of Lieutenant Colonel M. P. Barschdorf, moved to San Benedetto on 2 April, and the companies assumed road duties on Routes #6529, #6530 and #6531. Approximately one thousand Italian civilians were hired to work on these routes.

On 18 April, work was begun on a two-way Class 40 semi-permanent bridge at Vergato on Route #64. Timber trestle bents were built on four existing piers, and five pile bents were erected, one in the middle of each span. This ten span steel stringer bridge was completed in nine days and opened to traffic on 27 April. The Bailey bridge on the nearby by-pass was dismantled and hauled to the bridge dump.

On 21 April, work was begun to replace a 110-foot Bailey bridge on Route #64, three miles north of Vergato. The bridge was completed on 30 April. The battalion had five bridges under construction and approximately twenty-four miles of road to repair and maintain during this period, in addition to several minor jobs. Besides the two bridges mentioned above, the unit built an 83-foot timber trestle bridge forty feet high, four miles north of Vergato, a 165-foot timber trestle, steel stringer bridge at Spertica, seven miles north of Vergato, both on Highway #64, and a 540-foot double-single continuous Bailey bridge on Route #6620 at Praduro.

The 169th had cleared the rubble from the six masonry piers of this latter bridge and had begun the erection of the Bailey panel piers on top of them when relieved by the 182nd on 25 April. The bridge was open for traffic the first part of May.

On 1 May, a 600-foot treadway bridge was built across the Po River at Piacenza. The same day, work began to replace a 180-foot Bailey bridge on Route #9 between Castelfranco and Modena. The site was prepared, and then the 182nd was relieved of the job by the 185th Engineers.

In addition to the bridge work, there was, of course, road maintenance. On 19 April, the battalion had been assigned Route #64 from Vergato to Calvanzano. On 22 April, the assignment was extended to include Route #64 from Calvanzano to its junction with Route #6620. By 24 April, the battalion had Route #64 from Vergato to Route #9 and a portion of Route #9 from its junction with #64 to the Reno River.



LAUNCHING 182ND BAILEY NEAR PRADURO

SECTION VII

182nd Engineer Combat Battalion (cont'd).

Several days of wet weather caused traffic to pile up in muddy bypasses and fills which had carried the heavy traffic adequately when dry. By the end of the month, however, these weak spots were repaired; all fills had been brought up to grade and rock-surfaced, and the bypasses were rocked and drained. On 28 April, the battalion was assigned the maintenance of Route #9 from Castelfranco to Modena.

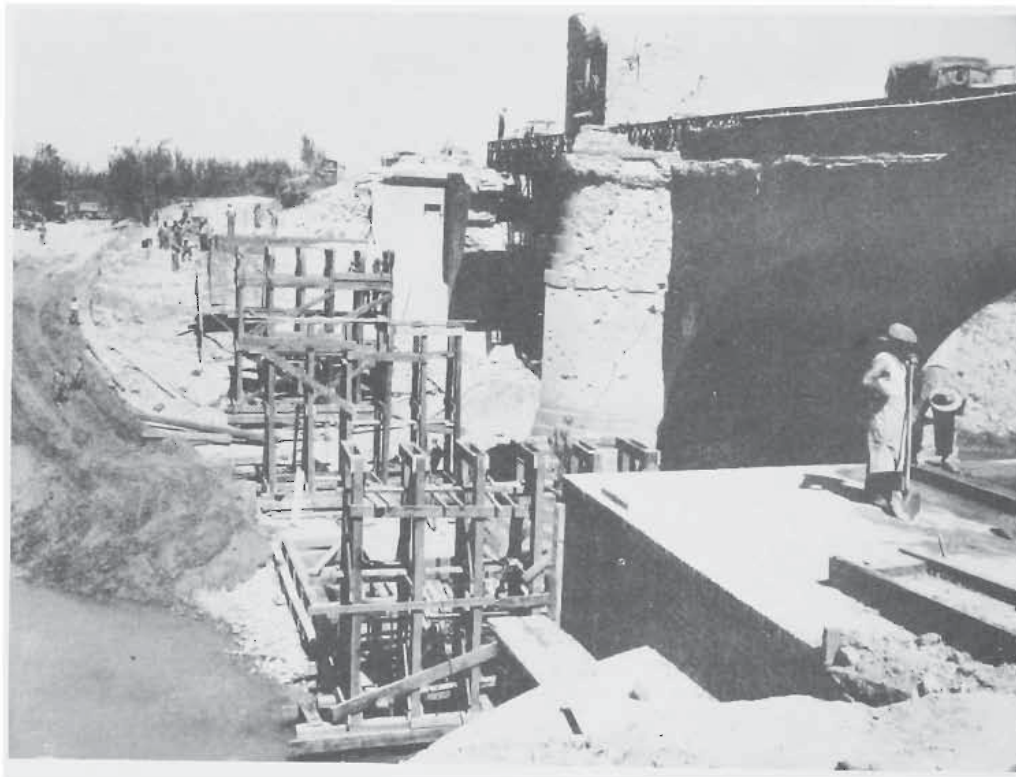
The push into northern Italy and the large number of prisoners taken made it necessary to enlarge and build several prisoner of war enclosures. The 182nd cleared an area and buildings in Modena for the Fifth Army Rear Command Post, and laid matting for an air strip. On 5 May, the battalion was assigned the job of opening Route #12 from Modena to Rovereto. As the European War ended, the 182nd Engineer Combat Battalion was working on roads, on a prisoner of war enclosure at Modena, and on three semi-permanent bridges.

185th Engineer Combat Battalion

In the first part of April, the 185th Engineer Combat Battalion, under the command of Lieutenant Colonel M. P. Shaver, was resurfacing Highway #65 with asphalt and stone for a stretch of eleven miles. Never had traffic been so heavy on the road; the average rate was one military vehicle every twelve seconds.

Teams from the 185th worked in forward areas near Livergnano, locating and marking off minefields. On the day of Bologna's capture, a 90-foot Bailey bridge was constructed on Route #65 on the city's outskirts. Immediately, a semi-permanent bridge was started underneath the Bailey. Another urgent work order was building a bypass and clearing debris from Route #65 through the ruined and much booby-trapped town of Pianoro.

At the end of April, all work on Route #65, including quarry and asphalt plant operations, was turned over to the 226th Engineer General Service Regiment. From 1 November 1944 to 1 May 1945, the 185th had employed 2,500 civilian workers, the highest daily attendance being 1,555. Many of these were skilled artisans, masons, stone cutters, blacksmiths and mechanics.



185TH BUILDING BRIDGE ON HIGHWAY #9

SECTION VII

185th Engineer Combat Battalion (cont'd).

The quarry at Mount Beni had produced a total of 105,252 cubic yards of rock during the winter. This quantity was broken down into 40,000 cubic yards of quarry run rock, 50,100 yards of primary crushed rock and 15,150 cubic yards of secondary crushed rock. Other quarries were located at Filigare, at Traversa and in the river bed on Route #6530. The total production of these latter quarries was 7,000 cubic yards.

In May, the battalion moved up on Route #9, the companies being strung out between Bologna and Modena. A second Bailey bridge was built beside the one-way bridge across the Reno River just northwest of Bologna. It was built on the partially blown masonry bridge. Special base plates were welded onto long triple steel girders to take care of the overhang. The bridge was completed on 6 May. At the same time, a Class 40, two-way fixed bridge was built on Highway #9. Between Castelfranco and Modena, a 176-foot, four-span fixed bridge was constructed and was fifty per cent completed on 8 May.

175th Engineer General Service Regiment

The 2nd Battalion of the 175th Engineer General Service Regiment was designated to support the 92nd Division in its attack up the coast. By 12 April, the division was moving rapidly, and Company "F" moved to Querceta to construct a Bailey bridge across a canal. Though the area was under fire, the bridge was completed rapidly, but not without casualties. A double box mine detonated, killing two men and injuring nine.

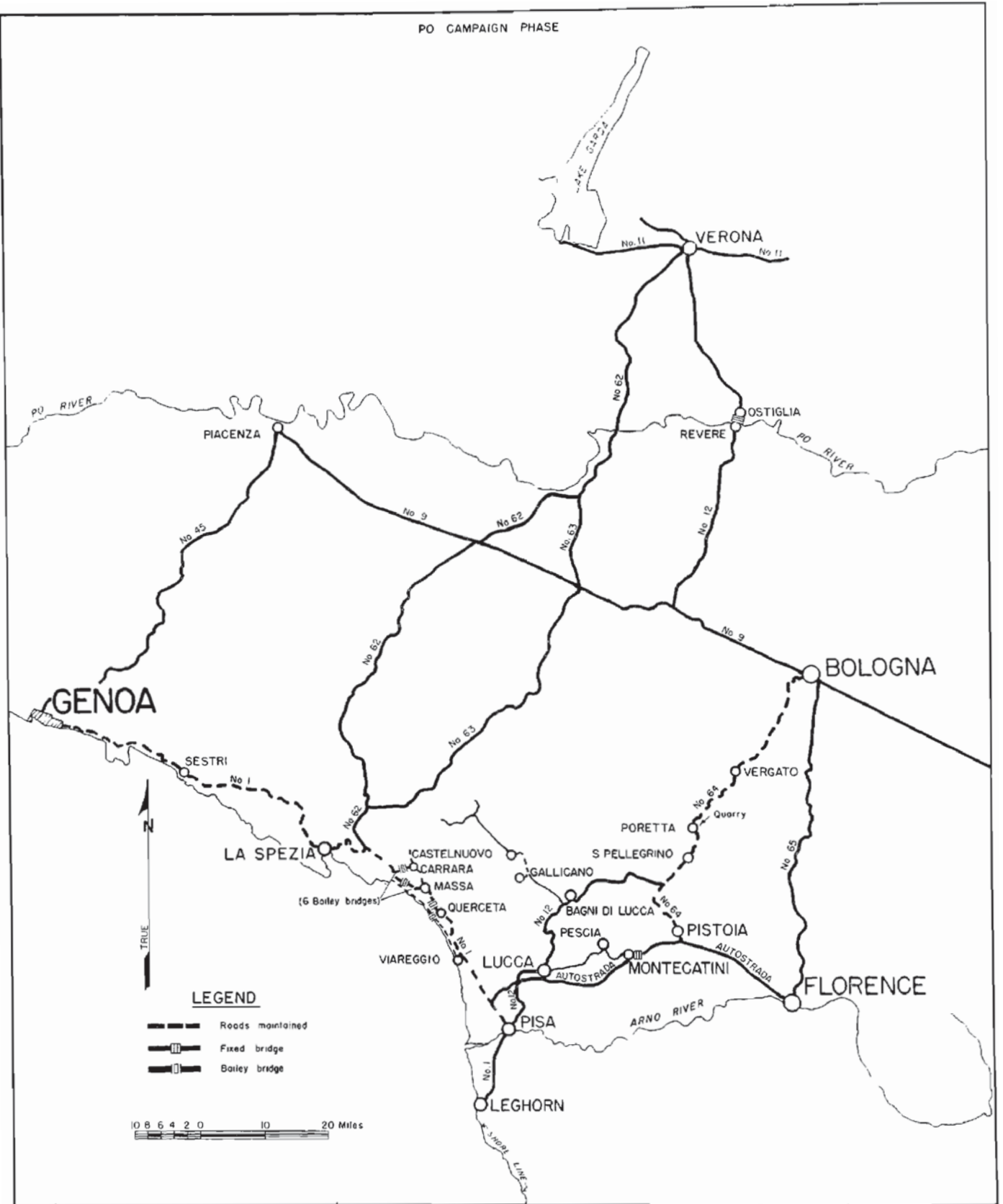
After completion of this bridge, the 175th continued filling craters and lifting mines on the roads immediately in the rear of the 92nd Division. Companies "D" and "E" remained at their previous assignments until the latter part of the month. Company "E" worked continuously through 21 - 22 April at the port of Leghorn, loading heavy river crossing equipment on transportation to be taken to the front for the Po crossing.

The company moved to La Spezia on 25 April, where Company "D" joined it the following day. Both companies took over the clearing and maintenance of Highway #1. By 2 May, the engineers had moved into Genoa shortly after the first infantrymen had entered the city and began work on the coastal highway.



175TH BRIDGE ACROSS PO UNDER CONSTRUCTION

PO CAMPAIGN PHASE



175 TH. ENGINEER GENERAL SERVICE REGIMENT
OPERATIONS

SECTION VII

175th Engineer General Service Regiment (cont'd).

The companies of the 1st Battalion designated to construct the Po River fixed bridge lost their identities, as officers and men were assigned for the job in accordance with their capabilities and experience. Concurrent with work to make Highway #64 able to carry the heaviest conceivable volume of traffic before the end of the month, each company sent a representative to a pile driving school on the Arno River near Pisa, and a school for erection of trusses near San Pellegrino.

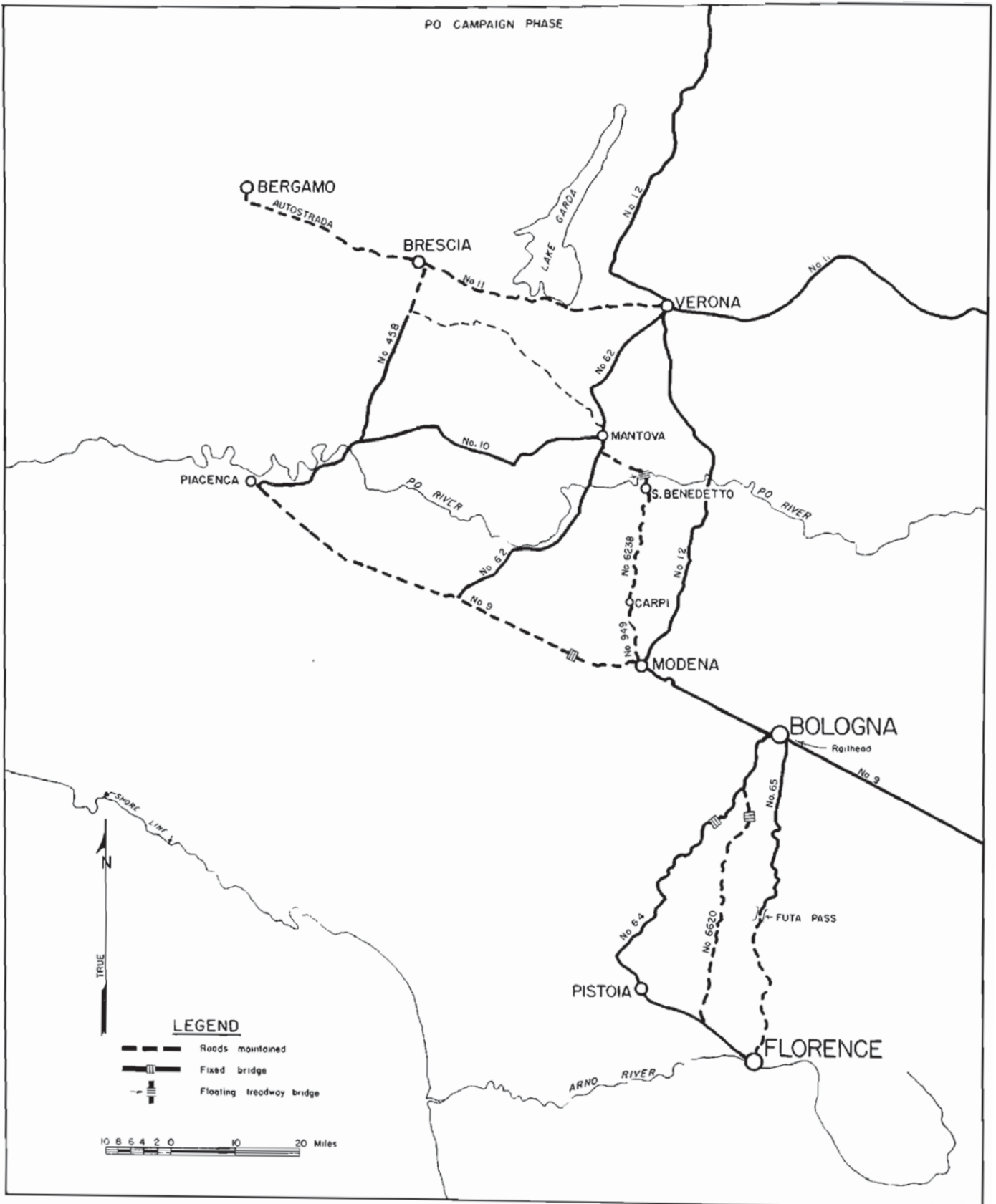


THE COMPLETED BRIDGE

By rotating these groups, every man had a chance to practice his job before actual construction of the Po River bridge began. At the same time, the supply section started stockpiling the trusses, wooden piles, timber and other components of the bridge, and carpenters began prefabrication of wooden components.

By 28 April, the bridge site had been captured, and Regimental Headquarters and Headquarters and Service Company and all of the 1st Battalion moved to Revere across the river from Ostiglia. When the regiment arrived at Revere, the men found the shore and countryside littered with abandoned German equipment. In a few hours, every soldier was equipped, according to his taste, with a horse, a motorcycle or a car. It ended, as all nice things in the Army do, with a regimental order to turn in every last item.

Survey of the site was immediately started when the organization arrived, and 60-foot piles, steel I-beams, and Bailey trusses were brought in. Actual construction began on 1 May and the bridge, 1,370 feet long, was finished eighteen days later. The morning of 19 May, the bridge was officially opened by Lieutenant General Truscott and Brigadier General Bowman. Throughout the campaign, the regiment was commanded by Lieutenant Colonel Alexander H. Miller.



SECTION-VII

92nd Engineer General Service Regiment

The 92nd Engineer General Service Regiment, commanded by Colonel George W. Bennett, maintained its road net in the mountains until 26 April. The main work was the resurfacing of Highway #65. The asphalt mix used during the winter months had been too rich in many places and when traffic increased in March and April these sections softened and rolled.

To cope with this condition, two methods were used. One consisted of crushed stone thrown on the soft sections which the constant traffic beat into the soft spots until the surface was stabilized. Where the section rolled badly, the only treatment found to be feasible was to dig out the over-rich mix and replace it with a more stable one. The material removed was stockpiled and salvaged by heating and mixing with more rock so that very little asphalt was actually wasted.

One company and a detail from Headquarters and Service Company spent April at the Engineer Training Center #2, helping to train the new 224th and 226th Engineer General Service Regiments. On the 26th, regimental headquarters moved forward in support of IV Corps and established its command post in the Po plain. The maintenance of Route #9 northwest of Modena was undertaken, six damaged bridges repaired.

One company was detailed to help the 1554th Engineer Heavy Ponton Battalion construct the floating bridge across the Po River at San Benedetto, and to maintain the approaches to the bridge after it was completed. Several prisoner of war stockades were hurriedly constructed by the regiment when prisoners came in in droves at the close of April. In most cases, these were simple pens of concertina barbed wire. After the surrender of the enemy, the regiment continued its same assignments. The remaining work on Route #6620 and the Grizzano railhead south of Bologna was finished. The bulk of the troops concentrated on opening Highway #9 for two-way traffic from Modena to Piacenza. Route #949 north from Modena to the Po River was taken over, as was Highway #11 to Brescia, and the Autostrada from Brescia to Bergamo.

224th Engineer General Service Regiment

Four days after its activation on 28 March, the 224th Engineer General Service Regiment, under the command of Lieutenant Colonel Otto J. Rohde, began training near Bottinuccio. The period of training was scheduled for six weeks, but after four weeks the unit was assigned to perform engineer work on Highway #64 from Pistoia to Vergato, thus relieving the 175th Engineers for work in the Po Valley. This was the main task until cessation of hostilities a few days later, but other work was assigned, including the maintenance of Routes #6620, #6424 and #6629. In addition, much time was spent removing over three dozen Bailey bridges and disassembling and crating prefabricated huts left behind in the northern Appennines by the army.

226th Engineer General Service Regiment

The 226th Engineer General Service Regiment, activated on 28 March with the 224th Regiment, spent the period from 2 April to 27 April in training. The 226th then left its bivouac area east of Bottinuccio and southeast of Montelupo and moved north. Road assignments included Highway #65 from Florence to Bologna and the minor Routes #6623, #6620 and #6530.

Highway #65 had to be maintained for extremely dense traffic, as it was the main route from the Arno to the Po Valley. Many miscellaneous jobs were also performed by the 226th in the few days before the hostilities ended. Over 2500 route signs were painted, prefabricated huts were dismantled and crated, Bailey bridges removed, and rock quarries, asphalt mixing plants and a salvage lumber dump operated. Throughout the campaign the 226th Regiment was commanded by Lieutenant Colonel Alonzo G. Ferguson.

405th Engineer Water Supply Battalion

On 21 April at 0900 hours, Company "C" of the 405th Engineer Water Supply Battalion, under the command of Lieutenant Colonel Beverly B. Biggin, arrived in Bologna with five water tankers. A dry point was set up on Highway #9 just east of the city. Battalion Headquarters, Company "A" and Company "C" moved into the city's outskirts. Company "B" moved up Highway #9 west of Bologna.

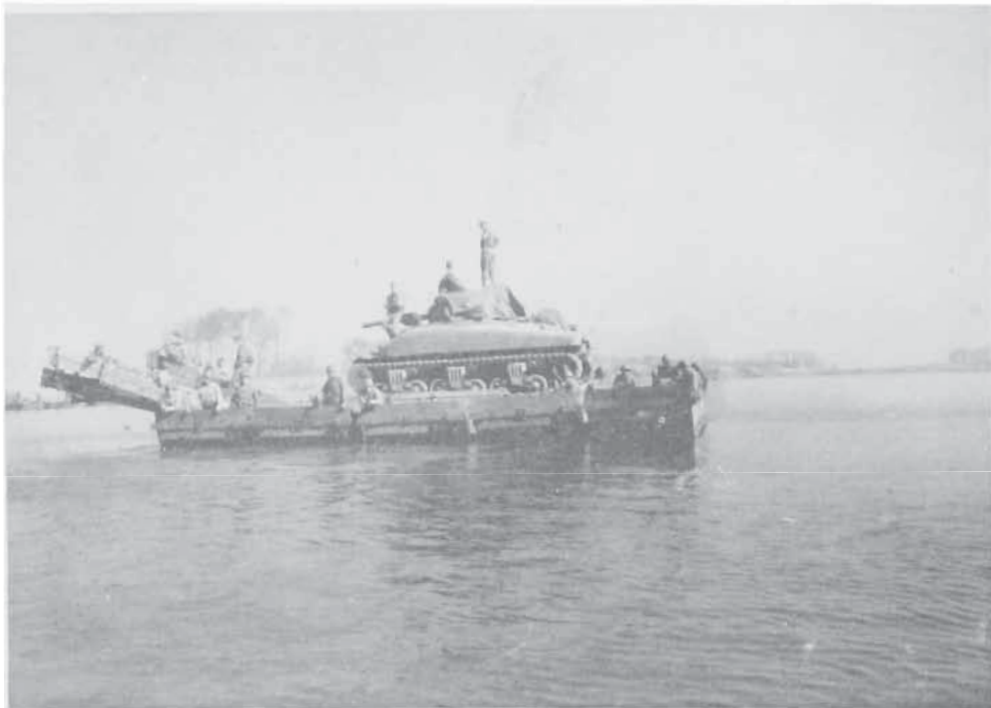
Water points were established and moved the same day in an effort to keep up with the fast-moving infantry units. Companies "B" and "C" crossed the Po River in close support of IV and II Corps respectively. By 1 May, waterpoints had been established from Milan east to Vicenza. After the war's finish, the battalion worked harder than ever to furnish water to units scattered all over Northern Italy.

SECTION VII

1554th Engineer Heavy Ponton Battalion

In April, Battalion Headquarters, Headquarters and Service Company, and Company "B" of the 1554th Engineer Heavy Ponton Battalion, under the command of Lieutenant Colonel W. K. Benson, Jr., were located at Sesto, while Company "A" was in Peninsular Base Section staging Area #3, about five miles west of Pisa. From 1 April to 18 April, Company "A" conducted training for the 643rd Engineer Combat Battalion in 25-ton ponton rafting, maintenance and operation of twenty-two and fifty-five horse power outboard motors, and maneuver line erection. The company also maintained a Class 40 bridge across the Arno River near San Piero at Grado.

The study of the twenty-two horse power motors was conducted by marine mechanics and operators from Company "A", while the training on fifty-five horse power motors was conducted by personnel of attached Headquarters and Service Company men. After 18 April, Company "A" hauled piling and logs for the 175th Engineers.

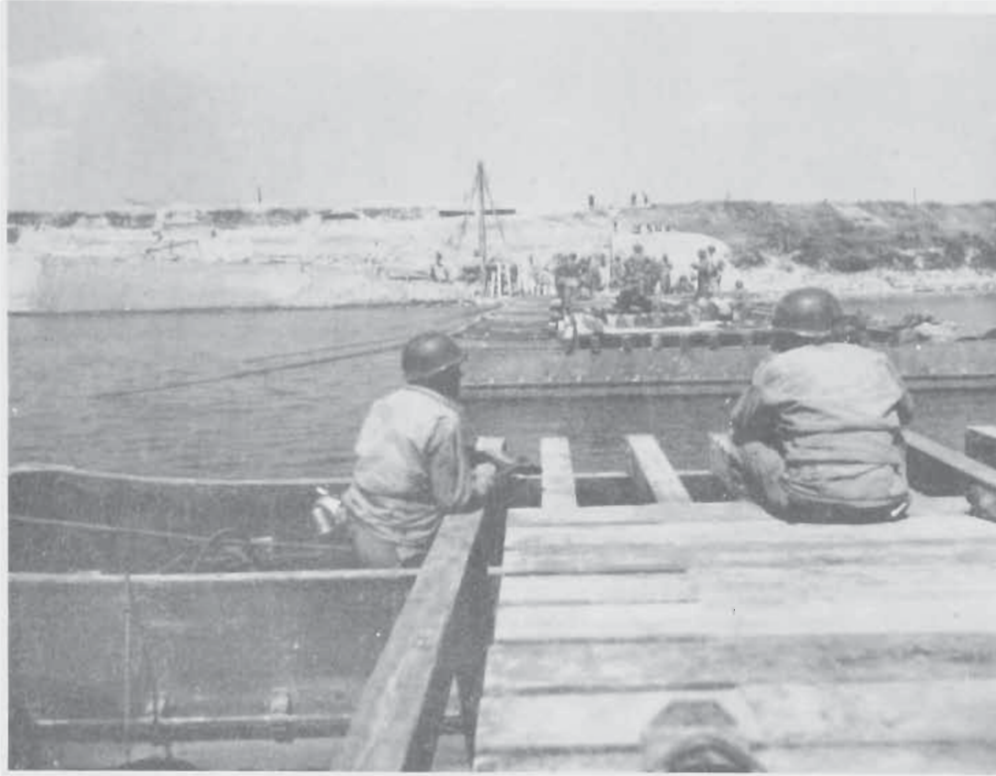


RIVER CROSSING TRAINING ON ARNO CONDUCTED BY 1554TH

Company "B" began operating an Army Bailey Bridge Train on 4 April, keeping two complete Bailey bridges on wheels at all times. Through 20 April, the company delivered eleven bridges totalling 1,200 feet. On 7 April, the unit completed construction of a 66-foot steel and timber fixed bridge outside Florence, and throughout the month the company maintained Route #6625 from the city limits of Florence to the west edge of Sesto. The last few days before the company left for the Po River, were spent in constructing mine barriers of empty 5-gallon oil cans. Two thousand feet of mine barriers were built and rigged to block floating mines for the Po operation.

On 23 April, the entire battalion moved to a bivouac area about three miles south of San Benedetto on the Po River. The next two days were spent building a heavy ponton bridge. The companies continued putting the finishing touches on the bridge until 6 May, while Company "A" maintained an M-2 treadway bridge one mile downstream. All of Company "A"'s semi-trailers were used to haul piles for the 175th Engineer General Service Regiment from Pistoia to Ostiglia for that unit's fixed bridge across the Po, and Company "B" hauled Bailey bridging from Bridge Dump E2-36 in Florence up Highway #65 to E2-42 at Modena.

SECTION VII



HEAVY PONTON BRIDGE UNDER CONSTRUCTION BY 1554TH ENGINEERS



THE SAN BENEDETTO BRIDGE IN OPERATION

SECTION VII

1029th Engineer Treadway Bridge Company

On 10 April, a detachment of the 1029th Engineer Treadway Bridge Company was moved to Riola in preparation for the 16 April offensive. Two days later, a detail which had been attached to the 39th Engineer Assault School on the Arno River near Pisa in February returned to the company.

On 16 April, three Bailey bridges totalling 470 feet were delivered to the Vergato area. Two additional bridges were delivered the next day. On 18 April, the company moved from Pistoia to Riola to join the advance detachment. The dump at Riola was increased by ten 130-foot, double-double Bailey bridges.

On 22 April, the 1029th moved to Anzola dell' Emilia, northwest of Bologna on Route #9, about forty miles from Riola. Bridging was scattered in three sites, and the company tried to assemble it at the forward location while delivering bridges to the Po River and bringing bridges north from Florence.

With the crossing of the Po, it was necessary to abandon the Riola dump in preparation for the next move forward. Moglia was the site chosen, and at 0230 hours on 25 April, the first convoy arrived at the site. The second convoy arrived about four hours later. Cranes were lent to units, trucks used by other organizations, and bridges of many types were called for up to and after 2 May, when the German forces in Italy surrendered.

On 27 April, the company moved to Verona and three days later to Milan. From 25 April until 8 May, the company supplied units with treadway bridge, ponton boats and almost 2,000 feet of Bailey bridging.

1755th Engineer Treadway Bridge Company

By April, the amount of Bailey and treadway bridge in the 1755th Engineer Treadway Bridge Company's dump was 1,200 and 900 feet, respectively. The delivery of bridging after the April attack started began on the 18th of the month. The same day, a 330-foot, triple-single Bailey and a 100-foot, triple-single Bailey bridge were delivered to the 402nd Engineers of the 19th Engineer Group.

On 22 April, the company bridge dump was moved forward to a new location just southwest of Bologna, a distance of about thirty-five miles. Two days later, the company command post went to Poggio Rusco, followed the next day by the company dump. On 29 April, the company and dump moved again, this time to the vicinity of San Bonifacio, where the unit remained one day. On 30 April, a move was made northeast to Vicenza.

During April and the first eight days of May, the 1755th delivered 1,880 feet of Bailey and 2,995 feet of treadway bridging.

1168th Engineer Combat Group

The 1168th Engineer Combat Group, commanded by Colonel Salvatore A. Armogida, and the 420th Army Service Forces Band moved by motor convoy on 28 April from Florence to Modena. The Group and the band moved again on 3 May, this time from Modena to Grazie. A group inspection team was formed from the personnel of the headquarters and attached units and an examination of all personnel records of units within the organization was begun. The 420th Army Service Forces Band was relieved from attachment to the Group on 5 May, and was assigned to Special Troops, Fifth Army.

217th Engineer Dump Truck Company

During and after the April offensive, the 217th Engineer Dump Truck Company under the command of Captain Andrew Harvin continued to work with the 175th Engineers. On 24 April, the company moved to Ponte Della Venturina on Route #64, and on 28 April to the Po River near Revere to help in the construction of the Ostiglia bridge.

The 2nd Platoon was still working away from the company, with the 175th Regiment's 2nd Battalion, and on 30 April moved to Chiavari in the vicinity of Genoa. The 2nd Battalion of the 175th had been working with the 317th Engineer Battalion of the 92nd Division during the push up the west coast, and as a result, the 2nd Platoon worked continuously in combat engineer zones until the end of the war.

SECTION VII

423rd Engineer Dump Truck Company

As the April attack was launched, the 423rd Engineer Dump Truck Company, commanded by Captain B. L. Sherrill, was still engaged in the resurfacing of Route #65. When the Army gained momentum and the Po was crossed, one platoon was attached to the 175th Engineer Regiment for hauling Bailey bridge for the Po River bridge at Ostiglia. This platoon immediately went on a twenty-four hour work basis. Each driver made the round trip from the river back to Pistoia and return in about sixteen to eighteen hours.

The 1st Platoon in the meantime had been split into three groups. One went with each battalion of the 92nd Engineer Regiment. The platoon worked on the Vergato railhead, Route #6620, and hauled supplies of the engineer dumps from Sesto, near Florence, to Modena. The cessation of hostilities in Italy found the 423rd Engineer Dump Truck Company near Modena and work continued more furiously than ever.



LOADING UP DUMP TRUCK SOUTH OF BOLOGNA

425th Engineer Dump Truck Company

On 24 April, the 425th Engineer Dump Truck Company, which was attached to the 1338th Engineer Combat Group, moved to Bologna, leaving one officer and seventeen enlisted men on detached service with the 185th Engineer Combat Battalion on Highway #65. This detachment rejoined the company on 1 May. On 6 May, the company moved to Verona, the 2nd Platoon remaining on special duty with the 185th Battalion after the completion of hostilities. The 425th was commanded by Captain Marshall E. Pruett.

SECTION VII

597th Engineer Light Equipment Company

By the end of April, the 597th Engineer Light Equipment Company had received twenty-nine pieces of organizational equipment. The bituminous distributor was used continually, first with the 1108th Group and then with the 175th Regiment on Route #64. When the air compressor arrived on 8 April, it immediately went out to the 758th Pipeline Company (a Peninsular Base Section unit), which was laying a gasoline pipeline up Route #64.

On 20 April, the unit moved forward, and when the 169th Battalion constructed a ponton bridge across the Po at Piacenza, the 597th inflated the pontoons and remained to maintain the correct pressure throughout the bridge until well into May. Shovels were used to help fill craters on Route #66 and to drive piles for a 175th Engineer bridge on Route #1. The two graders were constantly used to smooth recent fills on forward roads.

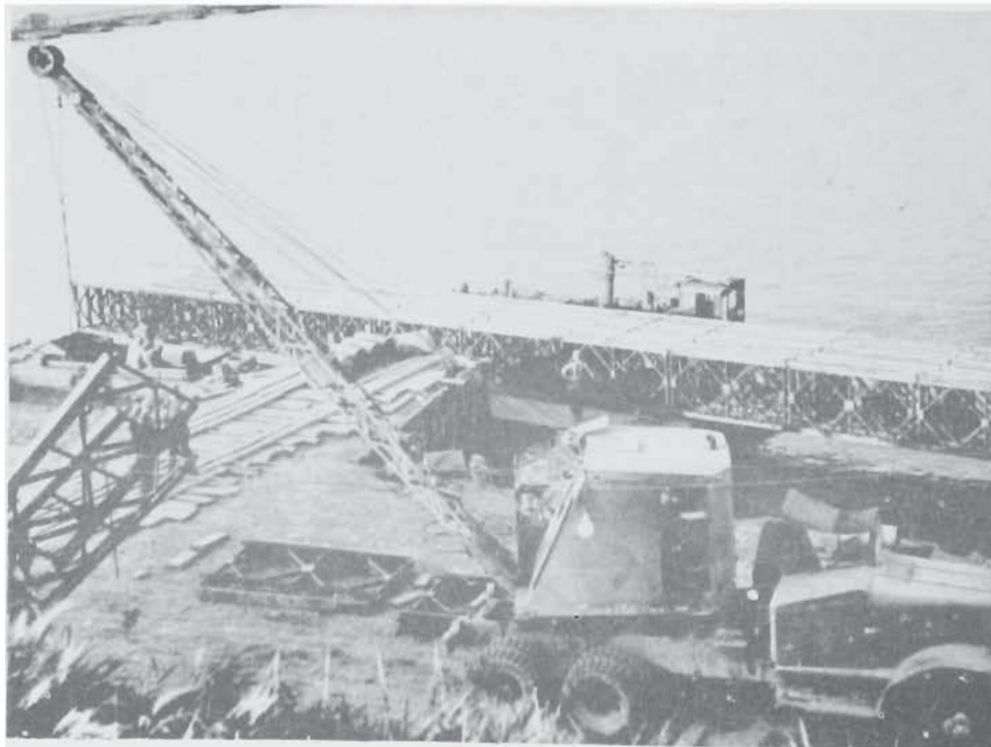
On 28 April, the company and its equipment pool moved 114 miles over the mountains into the Po Valley to the town of San Benedetto. While some of the equipment had stayed behind for the necessary road and bridge improvement after the breakthrough of the enemy defenses, other pieces had joined the chase across the Po Valley.

597th equipment worked with almost every combat engineer unit in II Corps, as well as many in IV Corps. The company was commanded by Captain James M. Copeland.

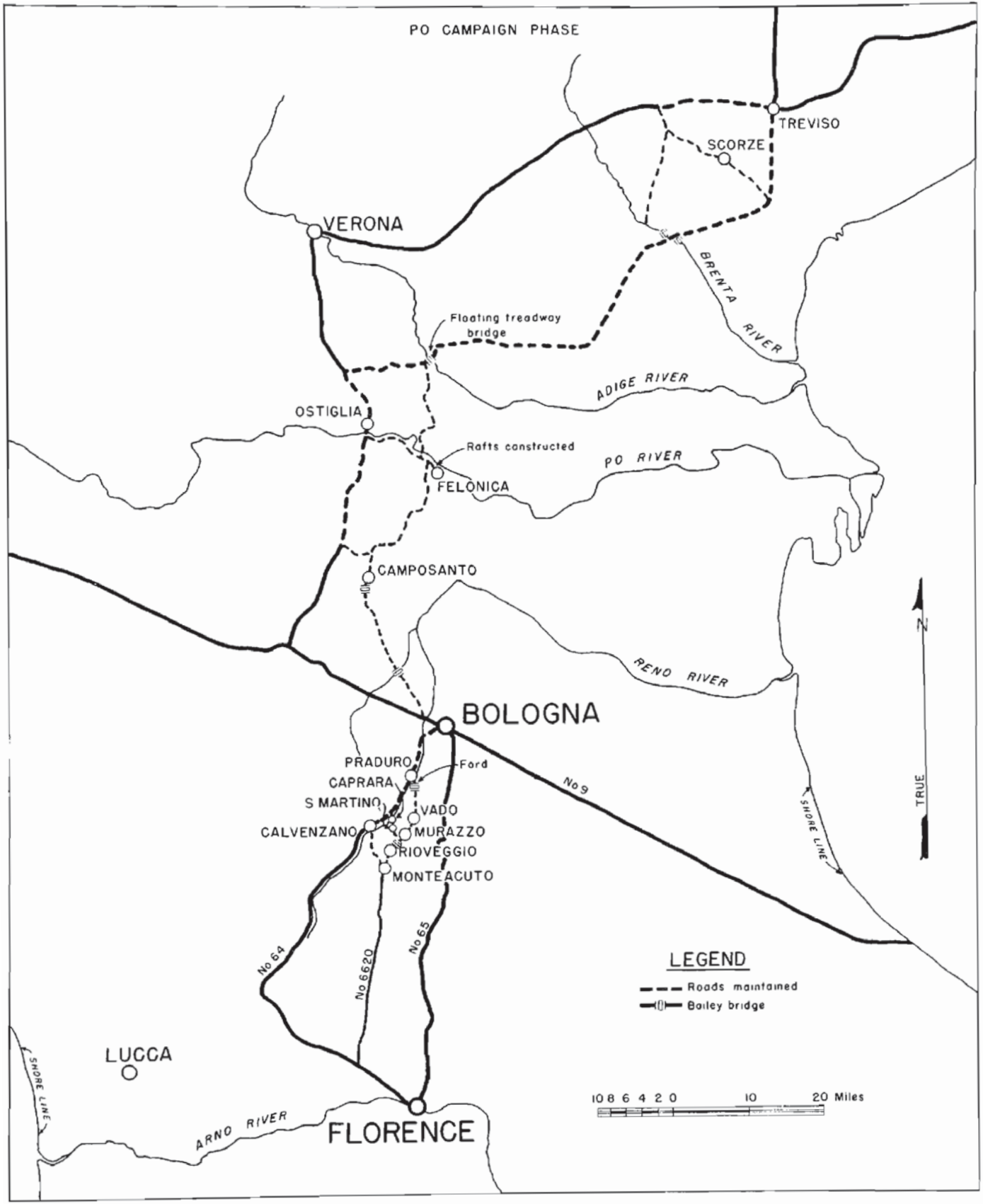
2750th Engineer Light Equipment Company

With the arrival of warm weather, the 2750th Engineer Light Equipment Company began malaria control work. Craters were filled and standing water sprayed. On 23 April, orders were received to move, and the following day the company went to a market place on the north outskirts of Bologna. On 28 April, the company moved to Ostiglia and the next day to Verona.

During all this movement, the unit's operation continued as usual. The company remained at the same location in Verona until the end of the campaign. The schooling of operators begun in February was brought to a close, the 2750th Engineer Light Equipment Company having trained thirty-five operators for the various other engineer units within the Army. With the campaign over, the company started to regroup its personnel and collect its scattered equipment. The unit was commanded by Captain Joseph Wigodner.



2750TH CRANE WORKING ON THE PO

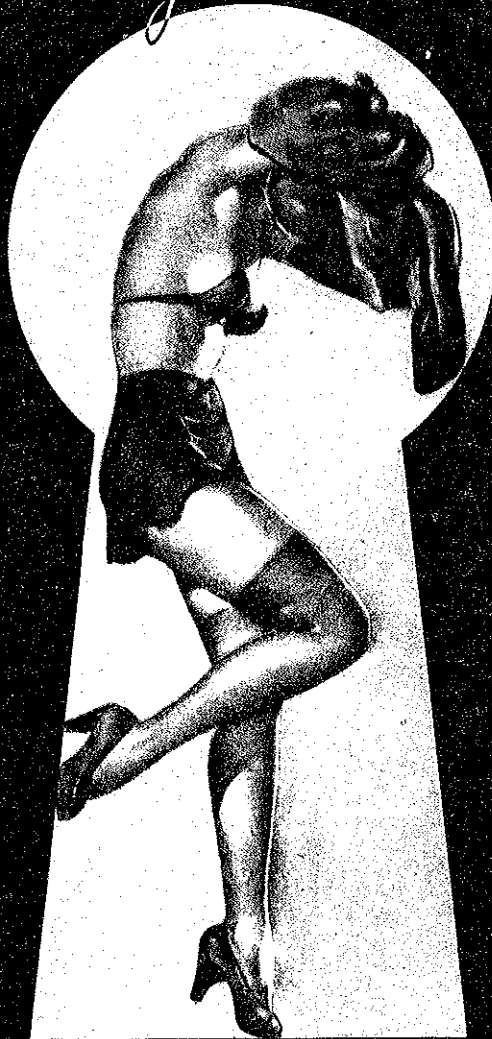


6TH. SOUTH AFRICAN ARMORED DIVISION
 ROYAL ENGINEERS
 OPERATIONS



"Yvonne"

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WITH CONTOURS

• DEMAND THE LATEST EDITION •
YOU OWE IT TO YOUR TROOPS
SEE YOUR DIVISION OR CORPS ENGINEER

TURN 'ER OVER

DEC. 1944

PREPARED & PHOTOLITHOGRAPHED BY 56TH ENGR TOP. CO., U.S. ARMY.

SECTION VII

66th Engineer Topographic Company

The Survey Platoon of the 66th Engineer Topographic Company, under the command of Captain Vernon E. Woodard, was occupied supplying fire control data to the artillery until 27 April, when it joined the balance of the company in the Florence area. Prior to the crossing of the Po River, when our troops were pushing northward rapidly, it was necessary for the Reproduction Section to work on a 24-hour basis to keep everyone furnished with maps and photo mosaics. In several instances, maps were delivered to the advancing troops by cub plane.

The Italian personnel of the company continued to work well in the photo-mapping and reproduction platoons, and because of this additional manpower it was possible for the Reproduction Section to work on a two-shift arrangement. From 1 November 1944 to 8 May 1945, a total of 4,369,078 impressions was made, forty photo mosaics were prepared, and 118 standard maps of various scales revised, using recent air photos. There were twenty-eight layered maps prepared in this same period.

Innumerable miscellaneous jobs had been done by the company, including the preparation and printing of the bi-monthly "Book of Facts" which was distributed by the Commanding General, Fifth Army.

1710th and 1712th Engineer Map Depot Detachments

On 17 April, the forward depot of the 1710th and 1712th Engineer Map Depot Detachments was moved to the vicinity of Vergato on Highway #64. This change in position from Highway #65 to the west was necessary in order that the combat troops would have better access to the much needed maps. On 27 April, the forward and rear depots were consolidated in a large garage in Modena. At this time, approximately 1,000,000 maps were released to the 15th Army Group and were left in the warehouse at Florence.

Because of the amount of labor involved in such moves, and the increased rate of map distribution, a platoon of Italians was attached to the depot. During the month of April, 4,900,000 operational maps were issued to the divisions and service troops of the Fifth Army. This made a total of about 23,500,000 maps issued since August 1943. On 3 May, the depot moved to Verona, and set up operation in a large building, which had previously been a German rest camp.

383rd Engineer Depot Company

The 383rd Engineer Depot Company, under the command of Captain Warren L. Baldwin, was operating the Class II and Class IV Engineer Depots and the Engineer Bridge Depot near Florence in early April. With the attack in the middle of the month, the bridge work trebled in volume. On 23 April, the bridge depot was moved to Bologna, and two days later to Modena, being followed by the Class II and IV supply depots on 27 April. The move to Modena was accomplished without any interruption of service, although the normal operation of the organization was on a twenty-four hour basis.

The company obtained 428 German prisoners of war to perform labor in the depot at Modena, and a compound was established for their quarters. The prisoners of war were needed to supplement the Italian labor, as large quantities of all types of supplies handled by the 383rd Engineer Depot Company were being issued, and also much work was being done on the classification of many items of captured enemy engineer property.

2769th Engineer Depot Company

The 2769th Engineer Depot Company, commanded by Captain A. R. Hooks, Jr., had set up and begun to operate a rock quarry near Traversa in the first days of April. Day and night operation of this quarry was continued until the first week of May. The record output of crushed rock for this company was 426 cubic yards during an 18-hour period of operation.

400th Maintenance Company

During the Po Valley offensive, the 400th Maintenance Company, under the command of Captain B. K. Sollars, moved from Florence to Bologna, Poggio Rusco, and Verona. All this in just a few days. From December 1944 to May 1945, the 400th Engineers completed 1900 repair jobs.

SECTION VII

1206th Engineer Fire Fighting Platoon

The 1206th Engineer Service Detachment, Fire Fighting, was at Montecatini on 5 April, when the unit was redesignated the 1206th Engineer Fire Fighting Platoon, commanded by 1st Lieutenant Joseph F. Buff. Headquarters moved to Modena on 29 April, one section remaining in Montecatini. From November to the end of the war, the unit was called to forty-four fires.



FIGHTING GASOLINE TRUCK FIRE IN VERONA

1980th Engineer Aviation Fire Fighting Platoon

On 9 April, Headquarters and two sections of the 1980th Engineer Aviation Fire Fighting Platoon, under the command of 1st Lieutenant Melvyn E. Small, closed the fire station at Sesto and joined the 3rd section up at Pietramala. This move was a preparatory one, pending the final Fifth Army offensive on 16 April. On 25 April, Headquarters and three sections moved down into the valley to Modena. At the same time the final section at Monghidoro was relieved, and dropped back to Pietramala, thus giving better coverage to Route #65. On 4 May, the Pietramala station was closed, and joined the balance of the organization at Modena, where it was located at the war's end.

1981st Engineer Fire Fighting Platoon

Throughout April, the 1981st Engineer Fire Fighting Platoon, commanded by 1st Lieutenant Lawrence H. Dykers, had only minor fires to combat. At the beginning of the month, Headquarters and Sections #1 and #2 were at Sesto, and Sections #3 and #4 moved to Vergato. Shortly after Bologna fell, the Sesto station was closed and a station opened at the outskirts of Bologna. Next, the Vergato station was closed and the equipment moved to Ostiglia. In a few days, Section #4 moved to Verona, and Section #3 to Mantova.

SECTION VII

1628th Engineer Service Detachment (Utilities)

On 5 April, the 1628th Engineer Service Detachment (Utilities), under the command of Captain Oliver H. Smith, Jr., was redesignated to the 1628th Engineer Utilities Detachment. In April and May, the detachment was kept continually busy, as an advance command post was formed, giving the detachment three command posts to provide for. The advance command post made four moves, the last one to Gardone Riviera on 17 May; the forward command post made three moves, as did the rear command post.

For each of these new sites the personnel of the utilities detachment furnished signs, lights, water, bathing facilities, air strips, fire protection and general utility service. At the final site, (where the whole Army Headquarters was assembled in buildings along a four-mile stretch on the shore of Lake Garda) rafts were built and swimming facilities added.

6th South African Armored Division Engineers

After a short rest in the Lucca area, the 6th South African Armored Division returned to the line on 4 April, in a sector along Route #6620 in the Rivoeggio area. Preparations were immediately begun for the attack in this sector. Night reconnaissances of roads and demolitions beyond the infantry positions were undertaken. The engineers, under the supervision of Commander, Royal Engineers, Lieutenant Colonel R. M. M. Cormack, lifted their own minefields and built up forward supply dumps. Many trails and roads were built in the triangle Calvenzano - Vado - Montecatino, the purpose of the roads being supply and evacuation during the attack. A one-way circuit resulted ultimately.

As the attack began, a non-commissioned officer and six mine sweepers from the 12th Engineer Field Squadron went forward to tape safe lanes and lift mines, etc., with each attacking infantry company in the 12th Motorized Brigade. Tank support was required from the engineers on the eve of the attack. The trail from S. Martino to Caprara was under constant machine-gun and mortar fire and the mine clearance party was so heavily attacked that the task became impossible. The road was in full view and ran along a watershed skyline. An alternative route was then reconnoitered and cleared in a valley.

The 5th Field Squadron moved up Route #6620 and cleared the way for the 24th Brigade. Near Mirazzo was a large demolition around which a long bypass with culvert was built. As soon as the dominating ridge in enemy territory was cleared on D Day, a 240-foot Bailey bridge was constructed on Route #6620, the bypass continuing to be used to provide two-way traffic. A series of very heavy blows were encountered from Vado to the Reno River near Praduro. All these were repaired by bulldozing. On the Reno River, a tank ford was constructed and a low level 80-foot double-single Bailey bridge built.

From the Reno River onwards, no mines were encountered and many bridges were taken intact. The enemy, in full retreat, presumably did not have either the time or materials to do mine laying and demolitions on the normal scale. Even where demolitions were made, they were not mined. The division was ordered to continue its advance north to the Po River, maintaining contact with the enemy. At Camposanto, a bridge was captured over the Panaro River. Two 80-foot and two 110-foot Bailey bridges were built at this stage.

On reaching the Po River on 25 April, the division was told it would not be given a bridge on the division front. The 12th Motorized Brigade was to be rafted across at Felonica, and the remainder of the division was to cross over the floating trestle at Ostiglia. To cross the former unit, one Class 5 Folding Boat raft, one Class 9 close support raft, and one Class 40 Bailey raft were constructed and operated. The wet gap was about 1,000 feet at this point; the German landing stages were modified and used.

The infantry was taken across in storm boats. A Class 40 Quonset Barge was built, but its capacity was only one trip in forty-five minutes, against the Bailey Class 40 raft's one trip per twenty minutes. Altogether, the engineers would much have preferred a floating bridge to the rafts, feeling that the delay imposed by getting the material forward would be more than offset by the speed at which the crossing would be effected, and exploitation would be much more rapid beyond the river. DUKW's were also used, but were found to have so much difficulty in negotiating the muddy banks that their use was not warranted.

SECTION VII

6th South African Armored Division (cont'd).

The division continued the pursuit northeast to Scorze near Treviso, the only engineer task being the construction of a few Bailey bridges and the clearing of knocked-out enemy vehicles and guns from the roads. The Brenta River was crossed by two Bailey bridges. The Adige was crossed by means of a Class 40 floating treadway on 27 April. During this phase, eight Bailey bridges were built totalling 690 feet, and fifteen demolitions were repaired. After the division reached Scorze, it was turned around and sent to Monza, near Milan, a distance of approximately 200 miles. No engineer work was done by the 5th, 8th and 12th Field Squadrons, the 42nd Field Company or the 17th Field Park Squadron on this move, except a small amount of road and bridge maintenance.



RENO RIVER FORD BUILT BY SOUTH AFRICAN ENGINEERS

British Army Fire Service

During the final phase of the Italian Campaign, the four brigades of the 152nd Fire Fighting Company continued to operate in the Fifth Army Area. During the planning for the Po Valley, a fire prohibition scheme was drawn up but never used owing to the rapid collapse of German resistance.

From 20 February 1945, when the 152nd Company went under Fifth Army control, until the end of the campaign, the Company units attended sixty-nine fires in the Army area, involving a loss of approximately \$1,852,000. In conjunction with the fire prevention program, 112 fire inspections of units were made.

Miscellaneous British Units

In April, the Fifth Army Engineer had a number of small British units under his command, in addition to the engineer companies of the 6th South African Armored Division. These units included the following:

I. Non-divisional units:

Headquarters, 77 CRE Works
588 Army Troops Company, RE
664 Artisan Works Company, RE
697 Artisan Works Company, RE
287 Works Section, RE
278 Works Section, RE
15 Stores Platoon, RE
1 Boring Platoon, RE
4 Bomb Disposal Platoon, RE
877 Italian Artisan Works Company

Headquarters, 3 Airfield Construction Group
(less 2 detachments)
709 Artisan Works Company, RE,
(less 2 platoons and 1 detachment)

Headquarters, 135 Mechanical Equipment Company, RE
Mobile Detachment, 7 Mechanical Spare Parts Base Section, RE
88 Mechanical Equipment Platoon, RE
(less detachment with 6 South African Armored Division)
15 Mechanical Equipment Platoon, RE
32 Mechanical Equipment Platoon, RE
17 Mechanical Equipment Platoon, RE (less 2 detachments)

310 Works Section, RE
5 Bomb Disposal Platoon, RE
Headquarters, 543 Electrical and Mechanical Company
12 Stores Platoon
"B" Detachment, 8 Engineer Bridge Supply Depot

II. Royal Navy Service Corps units in support:

"D" Platoon, 650 General Transportation Company
(dump trucks)
"C" Platoon, 214 Company, RASC (dump trucks)
Section 248 Tipper Company (dump trucks)

III. The following units were earmarked for Bologna:

687 Works Section, RE
4 Bomb Disposal Platoon, RE
15 Mechanical Equipment Platoon, RE
"D" Platoon, 650 Company (less 2 sections)
12 Stores Platoon, RE

In addition, the 159 Bomb Disposal Platoon, RE, from 2 District was earmarked for Bologna.

Preliminary planning for the opening of a British roadhead at Bologna had been done jointly by Engineer Headquarters, Fifth Army (British Increment), and Headquarters, 215 Sub Area. In accordance with the plans, Deputy Commander, Royal Engineers 287 Works Section was placed in command of British Engineer troops in Bologna, and accompanied the commander of 215 Sub Area in the initial reconnaissance on 22 April. A detachment from 4 Bomb Disposal Platoon, RE also accompanied this initial reconnaissance party.

The damage in the area chosen for the roadhead was not found to be very extensive, and only a small amount of debris had to be cleared. This was undertaken by an advanced detachment of 15 Mechanical Equipment Platoon, RE, which arrived in Bologna on 24 April. Mine laying had not been as extensive as anticipated and the principle task of the Bomb Disposal Platoon, which arrived in Bologna on the evening of 22 April, was the checking of areas to be occupied by British Installations and the reconnaissance of unexploded bombs. A very considerable number of the latter were found.

SECTION VII

Miscellaneous British Units (cont'd).

For the rehabilitation of Bologna, the British engineers main work was bomb disposal. The Works Section and the Artisan Works Company were employed entirely on domestic engineer service for miscellaneous British units in Bologna. 12 Stores Platoon opened and operated an engineer supply depot at 53 Roadhead for the supply of division and Army troops (the platoon was badly stretched during the first ten days as the 12 Stores Platoon was not relieved at Colle Solvetti until that time). This involved the splitting of 12 Platoon between two major engineer depots, 110 miles of road apart.

Prior to the start of the advance, the Army Engineer through the British Increment organized two three-day courses in elementary mine and booby trap detection. The courses were conducted by 4 Bomb Disposal Platoon, which was equipped with a mine museum for the purpose.

Administration of all Mechanical Equipment Platoons was carried out by Headquarters, 135 Mechanical Equipment Company which, with Mobile Detachment 7 Mechanical Spare Parts Section, was located in Florence. In addition to the four platoons shown in the troop list above, the company was responsible for maintenance and administration of 60 Mechanical Equipment Platoon work on the Appennine Rail Project.



TRUCK OF BRITISH 3RD AIRFIELD CONSTRUCTION WAITING FOR A
LOAD OF GRAVEL NEAR PIETRASANTA

Headquarters, 135 Mechanical Equipment Company, therefore, had a very heavy responsibility, spread over a wide area, principally south of the Appennines. In view of this, it was decided that the unit should remain in Florence until work south of the Appennines could be dropped. At this time, it would move north to Bologna, and subsequently pass under the control of 2 District for Northwest Italy. The move to Bologna was commenced on 3 May and took nearly three weeks to complete owing to the large amount of tools and equipment to be transported.

88 Mechanical Equipment Platoon, which already had a detachment with the 6th South African Armored Division, was intended primarily to support that division. The 88 Platoon was therefore placed under operational control of II Corps on 22 April and ordered to move forward from Florence to join 17 Field Park Squadron on 25 April. By this time, however, the advance was proceeding at considerable speed, and consequently the unit never caught up with the field park squadron before the termination of hostilities. As bulldozer casualties were very light, however, this did not effect the efficiency of the division's mechanical equipment.

SECTION VII

Miscellaneous British Units (cont'd).

132 Mechanical Equipment Platoon, under the operational control of Fifth Army, was in support of 210 Works Section maintaining a road network in the X Corps Sector at the beginning of the period. On 26 April, a detachment of one officer and ten operators, with administration personnel, necessary transportation, and four dozers was attached to the American 92nd Division and moved to North of Pisa to assist in opening up Route #1 to Genoa.

The balance of the platoon then concentrated at Florence where it remained until going to 2 District on 4 May. 17 Mechanical Equipment Platoon with 3 Airfield Construction Group were partially committed on a road maintenance assignment in the Pisa-Lucca area, the balance of the platoon being split among various airfield commitments not under Fifth Army control.

The work of the 77 CRE Works in Florence was continued. The removal of units from that organization for the work in Bologna did not unduly interfere with the work, which by that time had been considerably reduced in quantity and importance.

Headquarters, 3 Airfield Construction Group with the 709th Artisan Works Company under command continued to maintain a portion of the Army road net from Leghorn to Pisa and Lucca, doing mainly surface repairing, but also keeping a constant check on the bridges in the area and occasionally doing minor repair work.

310 Works Section with 5 Bomb Disposal Platoon were placed under command of Fifth Army in order to continue maintenance of certain roads in the former XIII Corps (later X Corps) sector of Eighth Army. It was necessary for these roads to be kept open for a period of 10 to 14 days after the fall of Bologna in order to clear supply and ammunition depots which had been left in the area.

543 Electrical and Mechanical Company, less "G" Platoon, was engaged in the rehabilitation of power lines and stations under Peninsular Base Section control in the general area north of Leghorn. "G" Platoon under direct control of the Fifth Army Engineer carried out a similar task on the 120 KV line from Rifredi (Florence) to Bologna. Up to the week ending on 5 May, thirty-six pylons had been reconstructed and thirty-five miles of cable erected. Reconnaissance through the "Winter Line II" area showed very heavy damage to pylons in that area, at least fifty having been destroyed in the remaining twenty miles of line toward Bologna. Mines proved a formidable hazard and it became necessary to furnish a bomb disposal detachment for permanent attachment to the Electrical and Mechanical Platoon to clear the cable route and pylons.

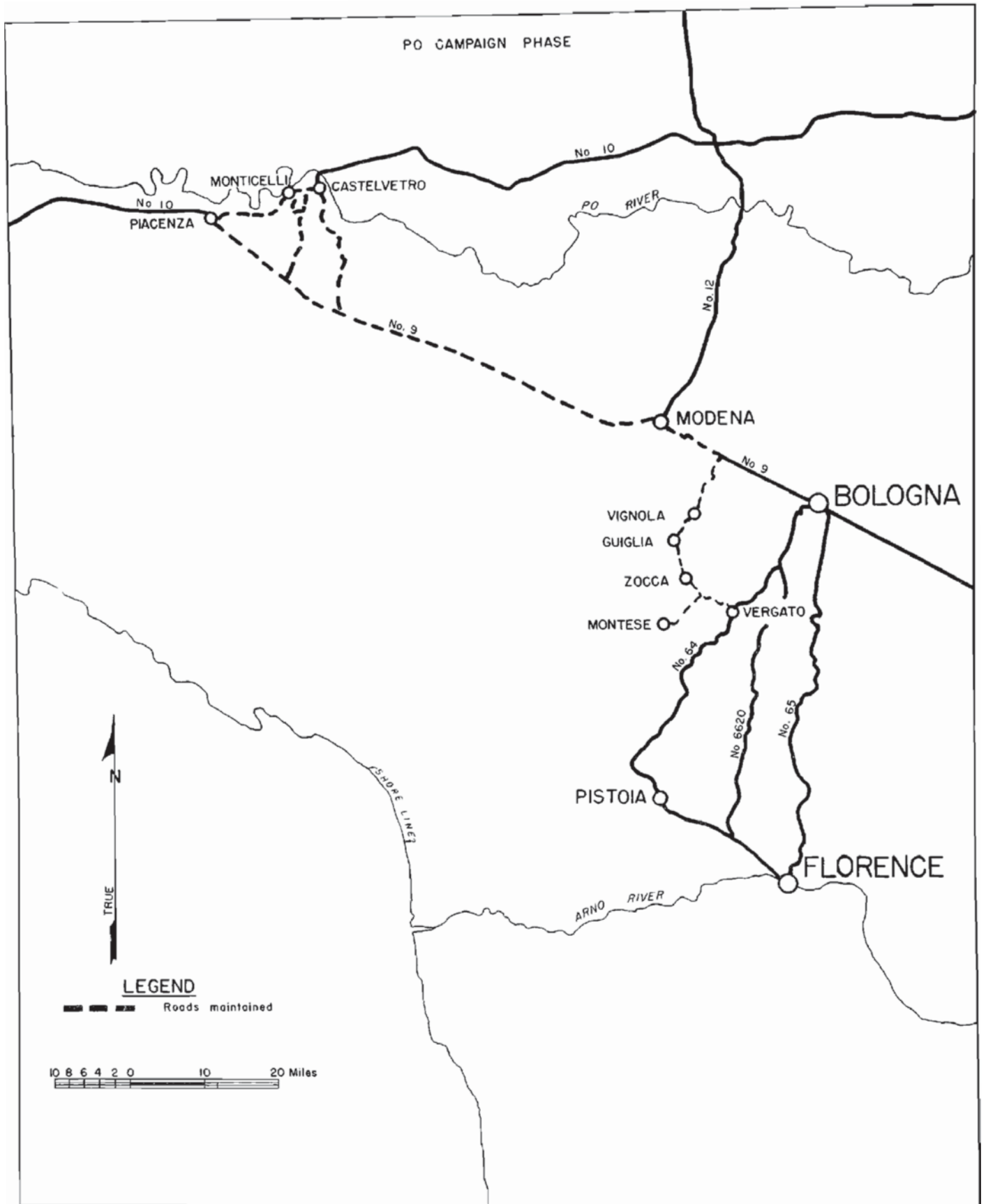
A detachment of one officer and twenty enlisted men from 8 Engineer Supply Bridge Depot were attached to the American Engineer Bridge Depot for the purpose of repairing all Bailey ponton and other British floating bridging and assault equipment, and also to supervise the loading of these items. When the Bailey ponton bridges over the Po at Ostiglia and the Adige at Legnago had been erected, maintenance detachments were furnished to carry out repairs to pontoons on the site.

9th Brazilian Engineer Battalion

In April, the 9th Brazilian Engineer Battalion maintained its road net while preparing for an attack on Montese. The attack came on the night of 14-15 April. For an hour and a half, a bulldozer was operated under small arms fire to repair a demolished portion of the road to Montese. After opening the road and clearing mines, the engineers entered the town with the first infantry troops.

After Montese was taken, the battalion rapidly opened paths for the division, concentrating on the road Zocca-Guiglia-Vignola. One engineer platoon was always kept with the divisional reconnaissance platoon. From 22 April on, the operations increased in tempo as the Po Valley was reached.

By 27 April, the Battalion command post was at Monticelli. The next day, two infantry companies were crossed over the Po in assault boats near Castelvetro. The 9th Engineer Battalion was relieved of its organic transportation in order to speed up the movement of the infantry. The battalion took over the guarding of prisoner of wars in an area near Valenza, a task that continued until after the armistice.



9 TH ENGINEER BATTALION (BRAZILIAN)
OPERATIONS

SECTION VIII

LESSONS LEARNED IN THE ITALIAN CAMPAIGN

SECTION VIII

LESSONS LEARNED IN THE ITALIAN CAMPAIGN

I. Introduction

The Engineer Section, Fifth Army, operating as an Engineer Headquarters and later as a Group Headquarters (Provisional), commanded the engineer troops of the Army in addition to regular staff duties.

There was a shortage of engineer troops and heavy equipment throughout the Italian Campaign.

II. Planning

As to the lessons learned in the battle planning, the following points are pertinent:

1. Since Terrain Appreciations are an essential feature of modern military planning, it is imperative that the unit engineer be "let into the picture" at the earliest possible date. In the planning for "AVALANCHE" this was done, and resulted in an early narrowing down of the possible landing sites.

2. A small, compact engineer planning staff, composed of officers and enlisted men of wide experience and versatility, including members with prior troop and staff experience or training, is preferable to a staff of technical specialists.

3. The senior engineer planner need not be the unit engineer, providing the planner has the unit engineer's complete confidence. The senior engineer planner must be thoroughly familiar with engineer logistics, engineer intelligence, and engineer troop unit dispositions, availabilities, and capabilities. He should have on his planning staff an officer familiar with mapping, surveys, and photo intelligence procurement and distribution. He must have an engineer photo interpreter with prior engineer combat or troop experience. He must also have an officer thoroughly familiar with engineer procurement, fiscal matters, billeting procedure, and engineer repair parts. If the operation involves an amphibious landing, the senior planner should have on his staff a senior combat engineer officer with amphibious experience.

4. The planning staff must have a minimum accommodation of three separate rooms or tents: one for the engineer logistical planning, one for photo interpretation, intelligence files, troop lists and maps and charts, and one for conferences and discussions. A lesser number of spaces results in tremendous confusion and loss of efficiency, as well as a possible jeopardization of security.

5. The planning staff must be prepared to work steadily for long hours. Conferences may be called by the G-3 or G-4 at odd hours, and it is imperative that a qualified engineer representative attend. When troop nomination lists, or supply tonnage bids are called for, this information must be submitted complete, and on time. It can be stated categorically that in all future plans there will be numerous changes before final decisions are announced.

6. It is most important that engineer intelligence information be accurate and simply presented--preferably in map, chart, or tabular form. Overlays are difficult to read and are generally not liked by senior commanders. At least one office copy should be prepared of any maps or documents turned in, otherwise the Commanding General might pick up the only copy and neglect to return it. In the early stages of planning, neatness of presentation must be subordinated to speed and completeness. A neat, well-turned-out document submitted two hours late is often valueless, as the decision will normally have been made by that time.

II. Planning (cont'd).

7. Oral presentation of engineer data must be done forcefully, firmly, and authoritatively. A hesitant, undecided, or wavering presentation will cast doubt in the minds of the conferees as to the accuracy and validity of the facts. A strong-willed CG, C/S, G-3, G-4, or G-2, should not be permitted to talk the engineer down on facts which he positively knows to be true (as a corollary--the facts must be correct). When questions are raised on points on which no data has been collected, the only course is to acknowledge the fact, then go find out the answer, and quickly.

8. The work must be closely coordinated with engineer and intelligence sources of our own navy and air services and of allied forces.

9. The planners must not become too embroiled in the minute details of the job. The major problems should be settled and as much factual data accumulated as possible. It must be remembered that other planning staffs down the ladder will have a "say-so" on the details.

III. Comments and Observations on OperationsA. Engineer Section

1. The primary administrative lesson learned during the Italian Campaign is that of the very considerable advantage gained by having all engineer troops in the Army other than division units under the direct command of the Army Engineer. Whether this is accomplished by means of a separate headquarters as was authorized under Table of Organization 5-200-1 dated 15 July 1942 or by means of a provisional Command Group as presently organized, the final result is the same. It is felt, however, that the Engineer Headquarters (T/O 5-200-1 dated 15 July 1942) possessed distinct advantages in that it was a much more closely coordinated unit with assigned personnel whose internal administration was controlled directly by the Army Engineer. Everyone knew exactly where he stood; which materially assisted morale, especially that of enlisted personnel.

2. Operational and administrative control of troops directly under command is much simpler and a great deal faster than any other means. Reports passing through the Engineer's office in a direct chain of command can be scrutinized and evaluated and in most cases corrective action can be taken or assistance rendered without further reference to Army. In the redeployment of engineer troops, a large percentage of the readjustment was worked out within the Engineer Command and in several instances units were sent to the Redeployment Areas completely readjusted.

3. There is a definite need for an Engineer Intelligence Team, consisting of one officer and three enlisted men, with quarter-ton truck and trailer. This team should spend all its time forward with the division and lower headquarters, examining and searching for enemy equipment and methods. It should be attached to the Engineer S-2 Office.

4. An Engineer Photo Interpretation unit should be authorized and be a part of the Engineer S-2 Office. It should consist of at least two officers and four enlisted men, with pertinent equipment and transportation.

5. The Supply Sub-section must have sufficient personnel to handle the normal supply operations, planning requirements, transportation, and local resources.

B. Engineer Troops and Operations

1. The assignment and attachment of separate companies to a Group or Service Battalion Headquarters for administrative control has been found highly beneficial since more rigid control can be exercised over the administrative procedures of these small units. In general, these units are much poorer in administrative procedure than a regiment or battalion, due to the fact that the variety of paper work does not diminish with the size of the unit, while the personnel to handle it does.

2. Topographic companies (Corps) should be equipped with a "Saltzman projector" or its equivalent for the mechanical rectification of aerial photographs.

3. A topographic company (Corps) is entirely too large a unit for the needs of a Corps unless the Corps is operating independently. However, some reproduction facilities are essential. A platoon to operate one press section, provide a pool of draftsmen and a few men for map distribution (approximately six enlisted men) would be sufficient. A map depot detachment of one officer and eleven enlisted men is much too large for this purpose.

SECTION VIII

III. Comments and Observations on Operations (cont'd).

4. All engineer survey work (trig) should be done on an Army level only. Corps boundaries are too changeable and artillery locations are often situated without regard to corps sectors. Consequently, survey work by Corps Engineers is wasteful and difficult. The problem of adjustments of trig across Corps boundaries is eliminated by doing the surveying under Army control.
5. The shortage of engineer troops was handled by employing civilians and utilizing existing agencies and contractors in Army and Corps areas. The employment of a large number of civilians on road maintenance, bridge construction, skilled labor on hospital and depot installations definitely indicates the need for an engineer supervisory unit similar but larger and more complete than the British Works Section. This unit should contain construction supervisors, equipment, operators, timekeepers, contract personnel and engineer specialists in sanitary, electrical, mechanical, highway and architectural engineering and in bridge construction. A unit of this type, employed in conjunction with dump truck companies and a pool of proper equipment (perhaps in equipment companies) could supervise up to 4,000 civilians and replace from two to three General Service Regiments in the Army area, and to a lesser extent, units in the Corps areas.
6. The lack of equipment was partially relieved by the formation of light equipment companies and the special authorization issue of excess T/E equipment to units. However, construction was delayed materially due to lack of adequate equipment throughout the campaign. Additional equipment companies would have solved the problem, provided the T/E of an equipment company were modified to meet the special requirements of this theater. A limited number of equipment companies and a pool of specially selected equipment would have expedited all construction work.
7. One equipment company should be attached to each Corps.
8. Adequate maintenance companies must be assigned to Army and at least one platoon to each Corps.
9. Colored engineer units with superior white officers are able to successfully supervise civilian labor and to operate and maintain heavy equipment. Unless so officered, they should be used on work where a large amount of labor and the minimum of machinery is required.
10. The U.S. Army was far behind the British Army in the development of local resources and the procurement of local materials. This resulted in a delay of construction and necessitated shipping more materials from the States. Based upon the experience gained in this campaign, it is recommended that an engineer unit be formed to develop local resources and procure local materials. This unit should consist of a group of specialists with a very few enlisted men, equipped with adequate transportation.
11. Engineer units must have more trained equipment operators and mechanics. In most cases, operators were not sufficiently trained in the operation and maintenance of heavy equipment. It is recommended that more emphasis be placed on this phase of training, as a good operator will do three to five times the work of a poor one.
12. Officers and non-commissioned officers must have more training in job planning. Very few officers in engineer units are able to size up a job and place the proper amount of equipment or personnel on the job to complete it in the required time. On large jobs, the planning and organization of the work was rarely accomplished until the job was seventy-five per cent complete. This resulted in failure to complete the work on time and a waste of manpower and equipment. It is recommended that all officers be given more training on job estimating and planning.
13. There must be very close liaison between operations and supply. Operations have been held up on numerous occasions for Class IV supplies. The unit S-4 must follow up on all requisitions closely and the Army Engineer Supply Officer must have accurate records of materials available and must follow up through Base to see that requisitions are promptly filled.
14. A spare parts platoon must be attached to Army if the supply of spare parts is to keep up with the need.
15. Tankdozers or armored dozers should be provided for all combat engineer units. This equipment would save the lives of specially trained personnel. Such equipment is a very effective weapon for fighting ammunition fires.

SECTION VIII

III. Comments and Observations on Operations (cont'd).

16. Too much emphasis in manuals and in training has been placed on a trestle bent set on mud shoes or rock filled cribs for semi-permanent bridges. Unless there is a rock foundation, piles should be used, driven to refusal, or a minimum of twenty-five feet penetration.

17. Where heavy steel girders are not available, 100-foot stringers built of Bailey bridge panels have been successfully used on two-way Class 50, one-way Class 90 bridges.

18. The Corps Engineer should be in the supply picture and for that purpose needs a supply section. Particularly Class IV items which are in short supply must be apportioned to divisions and corps troops as needed for the operation.

19. In addition to depot companies, there is a need for small detachments similar to British Stores Sections consisting of one officer and approximately fifteen men with messing facilities and transportation to be used for small tactical depots, controlling and operating local establishments, exploiting local resources, etc.

20. Base sections cannot expand to give good support to a rapidly moving army without the addition of extra troops to close out rear installations and leap-frog forward as the area grows larger.

21. A standard system for Military Real Estate operations within an Army is a necessity. This can be accomplished by including a Real Estate Sub-section in the engineer section of Army, Corps and Divisions. These Sub-sections must use the same type of records and forms and must be given special training in the subject before attempting to operate. A definite split in responsibility must be made between the general staff sections and the real estate officer, such as:

G-1 Billeting and Recreational Facilities

G-2 Intelligence Installations

G-3 Bivouac, Training and Operational Installations

G-4 Service Installations

Army Engineer
Real Estate Officer

Allocation of facilities under general directives and decisions from the above.

Bookmark Summary for: Engineer history - Fifth Army - Med Theater_Vol-3-Appendix.pdf

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List of Appendices

Appendix A - Brief resume of the career of Brig. Gen. Frank Otto Bowman

Appendix B - Original Personnel of the Fifth Army Engineer Section

Appendix C - Organizational Charts

Appendix D - Engineer Section Duty List

Appendix E - Engineer Training Center Attendance

Appendix F - Roster of Engineer Training Center Officer

Personnel

Appendix G - Terrain Study "Avalanche"

Appendix H - Unit Histories

- 10th Engineer Combat Battalion

- 16th Armored Engineer Battalion

- 109th Armored Engineer

- Battalion

- 126th Mountain

- Engineer

- Battalion

- 307th Ariborne

- Engineer

- Battalion

- 310th Engineer Combat

- Battalion

- 331th Engineer Combat

- Battalion

- 316th Engineer Combat

- Battalion

- 317th Engineer Combat

- Battalion

- 19th Engineer Combat

- Group

 - 401st Engineer Combat

 - Battalion

 - 402nd Engineer C

 - ombat Battalion

- 39th Engineer Combat

- Group

 - 404th Engineer Combat

 - Battalion

 - 643th Engineer Combat

 - Battalion

- 1108th Engineer Combat

- Group

 - 48th Engineer Combat

 - Battalion

 - 235th Engineer Combat

 - Battalion

 - 337th Engineer Combat

 - Battalion

 - 255th Engineer Combat

Battalion
1168th Engineer Combat
Group
1338th Engineer Combat
Group (337th Engineer General Service Regiment)
169th Engineer Combat
Battalion
182nd Engineer Combat
Battalion
185th Engineer Combat
Battalion
36th Engineer Combat
Regiment
92nd Engineer General Service Regiment
175th Engineer General Service Regiment
224th and 226th Engineer General Service Regiment
343rd Engineer General Service Regiment
344th Engineer General Service Regiment
531st Engineer Shore Regiment
540th Engineer Combat
Regiment
387th Engineer Battalion (Separate)
405th Engineer Water Supply Battalion
Detachment, 85th Engineer Heavy Ponton Battalion
1554th Engineer Heavy Ponton Battalion
1029th Engineer Treadway Bridge Company
1755th Engineer Treadway Bridge Company
217th Engineer Dump Truck Company
423rd Engineer Dump Truck Company
425th Engineer Dump Truck Company
427th Engineer Dump Truck Company
400th Engineer Maintenance Company
469th Engineer Maintenance Company
473rd Engineer Maintenance Company
66th Engineer Topographic Company
1710th Engineer Map Depot Detachment
1712th Engineer Map Depot Detachment
597th Engineer Light Equipment Company
2750th Engineer Light Equipment Company
383rd Engineer Depot Company
450th Engineer Depot Company
1st Platoon, 451st Engineer Depot Company
2769th Engineer Depot Company
Companies "A" and "D", 84th Engineer Camouflage Battalion 2916th Engineer Camouflage Company
1202nd and 1204th Engineer Composite Platoons
1206
th Engineer Composite Platoon
1980th and 1981st Engineer Fire Fighting Platoons (Aviation)
1621st Engineer Model Making Detachment
1628th Engineer Utilities Detachment
1st British Infantry Division Royal Engineers
6th British Armored Division Royal Engineers
8th Indian Division Engineers
46th British Infantry Division Royal Engineers
56th British Infantry Division Royal Engineers
78th British Infantry Division Royal Engineers
X British Corps
Royal Engineers
XIII British Corps
Royal Engineers
46th Survey Company, South African Engineer Corps
9th Engineer Battalion (Brazilian)

Appendix I - Charts, Forms and Route Numbering

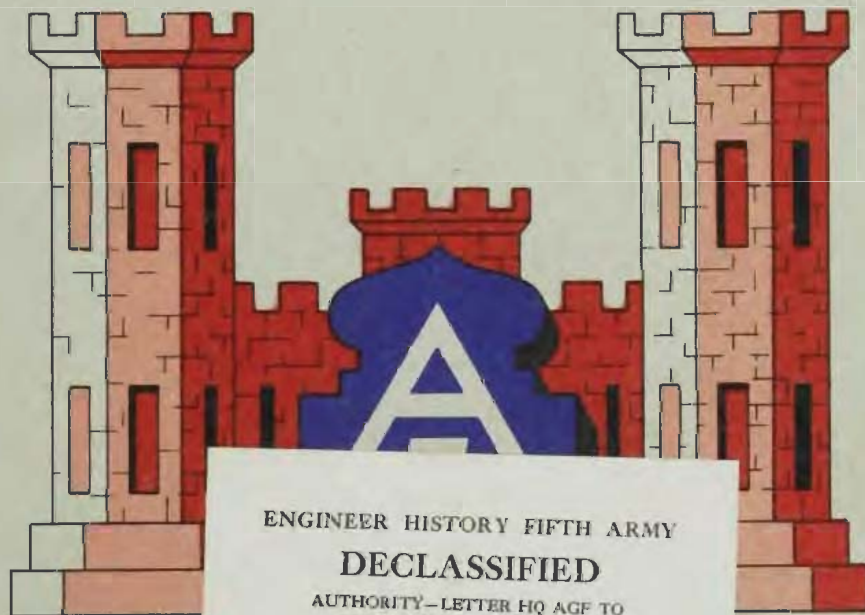
Diagram #1 - Bridge Alignment Chart
Diagram #2 - Sample work order form
Diagram #3 - Unit progress Report
Diagram #4 - Route numbering
Diagram #5 - Alignment Chart Steel Stringer Bridges
Diagram #6 - Design of simple-Stringer Bridges - Steel Stringer
Diagram #7 - Design of simple-Stringer Bridges

-Floor Beams

Appendix J - Bridge List and Work orders
Appendix K - Water supply operations
Appendix L - Engineer route report no. 3
Appendix M - Special Engineer Report
Appendix N - Rehabilitation of Florence
Appendix O - Training Program for Engineer Combat Battalion
Appendix P - Conversion and training of the 224th and 226th Engineer
Appendix Q - History of the Engineer Mess
Appendix R - Topographic Operations

ENGINEER HISTORY

MEDITERRANEAN THEATER



ENGINEER HISTORY FIFTH ARMY
DECLASSIFIED
AUTHORITY—LETTER HQ AGF TO
CG FOURTH ARMY, 5 MAR 46
THE ENGINEER SCHOOL
18 APR 46
Rgg

FIFTH ARMY

APPENDICIES
CONFIDENTIAL

APPENDICES

LIST OF APPENDICES

- A. BRIEF RESUME OF THE CAREER OF BRIGADIER GENERAL FRANK OTTO BOWMAN
- B. ORIGINAL PERSONNEL OF THE FIFTH ARMY ENGINEER SECTION
- C. ORGANIZATIONAL CHARTS
- D. ENGINEER SECTION DUTY LIST
- E. ENGINEER TRAINING CENTER ATTENDANCE
- F. ROSTER OF ENGINEER TRAINING CENTER OFFICER PERSONNEL
- G. TERRAIN STUDY "AVALANCHE"
- H. UNIT HISTORIES
- I. CHARTS, FORMS AND ROUTE NUMBERING
- J. BRIDGE LIST AND WORK ORDERS
- K. WATER SUPPLY OPERATIONS
- L. ENGINEER ROUTE REPORT
- M. SPECIAL ENGINEER REPORT
- N. REHABILITATION OF FLORENCE
- O. TRAINING PROGRAM FOR ENGINEER COMBAT BATTALION
- P. CONVERSION AND TRAINING OF 224TH AND 226TH ENGR. G. S. REGIMENTS
- Q. HISTORY OF THE ENGINEER MESS
- R. TOPOGRAPHIC OPERATIONS

APPENDIX A

BRIEF RESUME OF THE CAREER OF BRIGADIER GENERAL FRANK OTTO BOWMAN

APPENDIX A

Brief Resume of the Career of Brigadier General Frank Otto Bowman

The Bowmans and the Ottos, paternal and maternal ancestors of Brigadier General Frank Otto Bowman, have been Americans for two centuries. Most of that time, most of them have lived in Pennsylvania. Quite a few military men have been members of the two families. Seven Bowmans fought at Concord, and Colonel Bodo Otto was George Washington's Chief Surgeon at Valley Forge. Colonel Alexander Hamilton Bowman was appointed superintendent of the Military Academy in 1864.

Henry D. and Carrie Otto Bowman were living at Mesilla Park, New Mexico, on 27 July 1896, when their son, Frank, was born. He attended the local schools until 1912, when he went to Pottstown, Pennsylvania, to the Hill School. After graduation, he returned to Mesilla Park and took a civil engineering course at the State College.

At Christmas time during his second year at New Mexico State College, he went to Washington, D.C., to prepare for an examination to enter the United States Military Academy. He took the examination in March 1916 and went to West Point three months later. His appointment was from Senator Albert Fall.

Lieutenant Bowman graduated from the Academy on 1 November 1918. Ordered to Camp A. A. Humphreys (now Fort Belvoir), he attended the Engineer School from December 1918 to September 1919, when he was made a First Lieutenant. Until November 1919, he accompanied a group of engineer officers on a tour of inspection of European battlefields of World War I, after which he returned to Camp Humphreys, graduating from the Basic Course there in June 1920.

June is not only the month for graduation but also the approved time for a young man's fancy. . . On 17 June 1920, Lieutenant Bowman was married to Lucy Reed Curtis in New York City. The Bowmans have two sons. The eldest, born in January 1922, is Frank Jr., who participated in the Italian Campaign with the 16th Armored Engineer Battalion. He is a graduate of Williams College and did post-graduate work in geology at the University of North Carolina. He enlisted in the Army in September 1942 and got his commission at the Engineer Officer Candidate School at Fort Belvoir. The second son is Henry, born in November 1923, also a lieutenant in the Corps of Engineers. After a year at Cornell, he enlisted in December 1942. Henry graduated from Officer Candidate School at Fort Belvoir in June 1943. He participated in the French and German campaigns with The Advance Section, Communications Zone. Mrs. Bowman remained in Charlottesville, Va., patiently awaiting the family's return.

Soon after Lieutenant Bowman, Sr., was married, he was ordered to Camp Travis (now Fort Sam Houston) with Company "A" of the 2nd Engineers. He remained there until February 1921, when he was sent back to Camp Humphreys for the Advance Course, graduating in June 1921. Lieutenant Bowman was then ordered to Hawaii and put in command of Company "A", 3rd Engineers, at Schofield Barracks, until June 1924. He was then sent to Fort Du Pont, Delaware, as a member of the Engineer Rifle Team and participated in the tryouts. He went with the team to Camp Perry, Ohio, where it won the 1924 national matches.

Lieutenant Bowman returned to Camp Humphreys again and was put in command of his third Company "A", this time with the 29th Topographic Battalion, until September 1929. While at Humphreys, Lieutenant Bowman played polo on the Engineers' first team.

The next five years he spent as commandant of the Reserve Officers Training Corps at Alabama Polytechnic Institute at Auburn, Alabama. There he became a member of Tau Beta Pi, honorary engineering fraternity, and was also initiated into Lambda Chi Alpha, academic fraternity. Next, he went to the Office of the Chief of Engineers in Washington, D. C., becoming the resident member of the Beach Erosion Board. He got his captaincy in September 1935. In August 1938, he went to Fort Benning, Georgia, to command Company "A" of the 4th Engineers (the demonstration company for the Infantry School) until June 1940, when the unit was expanded to a battalion with Captain Bowman still commanding. He was made a major on 1 July 1940. The battalion, a crack outfit, comprised the combat engineers of the 4th Division. Major Bowman commanded it at Camp Gordon, North Carolina, until December 1941, during which time he got another promotion, his lieutenant colonelcy, in September 1941.

He went to Washington in January 1942 as a member of the special planning group of II Corps (then under Major General Lloyd Friedendahl). The corps headquarters group soon went to Jacksonville, Florida, with Colonel Bowman as Engineer. The II Corps then came under the command of General Mark W. Clark. The Engineer was promoted to Colonel in February 1942. Colonel Bowman landed in Scotland on 12 July 1942 and entrained for Southern England, where he was stationed at Tidworth Barracks, Hampshire, for a few weeks, after which he set up headquarters at Cowesfield, near Lord Radnar's castle in Wiltshire. On 28 August, Colonel Bowman went to London with the Norfolk House Group and helped plan operation Torch, the attack on North Africa. He arrived in Algiers on 20 November 1942 as Engineer of Allied Force Headquarters.

APPENDIX A

Brief Resume of the Career of Brigadier General Frank Otto Bowman (cont'd).

Colonel Bowman became Fifth Army Engineer on 5 January 1943 and served at Fifth Army Headquarters at Oujda, Morocco, until 8 April, when he was ordered to Oran to be Engineer of the Service of Supply under General Thomas Larkin. Colonel Bowman returned to Fifth Army on 12 August 1943. His subsequent history is one of the most important chapters of the story of the Fifth Army Engineers.

APPENDIX B

ORIGINAL PERSONNEL OF THE FIFTH ARMY ENGINEER SECTION

APPENDIX B

Original Personnel of the Fifth Army Engineer Section

Colonel Frank O. Bowman
Lieutenant Colonel Harry O. Paxson
Lieutenant Colonel John G. Ladd
Major Irving W. Finberg
Major H. E. Wetzel
Captain Otto Dreydoppel
Captain H. H. Vanderveer
Captain J. R. Steele
Captain B. F. Wombaker
Second Lieutenant J. W. Graham, Jr.
Warrant Officer S. D. Jones
Technical Sergeant Frederick J. Kerner
Technical Sergeant Edwin H. Weber
Staff Sergeant Don N. Hansen
Technician Third Grade George A. Fournier
Sergeant Joseph W. Weigman
Technician Fourth Grade Jesse A. Abshire
Technician Fourth Grade Graham O. Preston
Private First Class George P. Gregoire
Private William Bissell

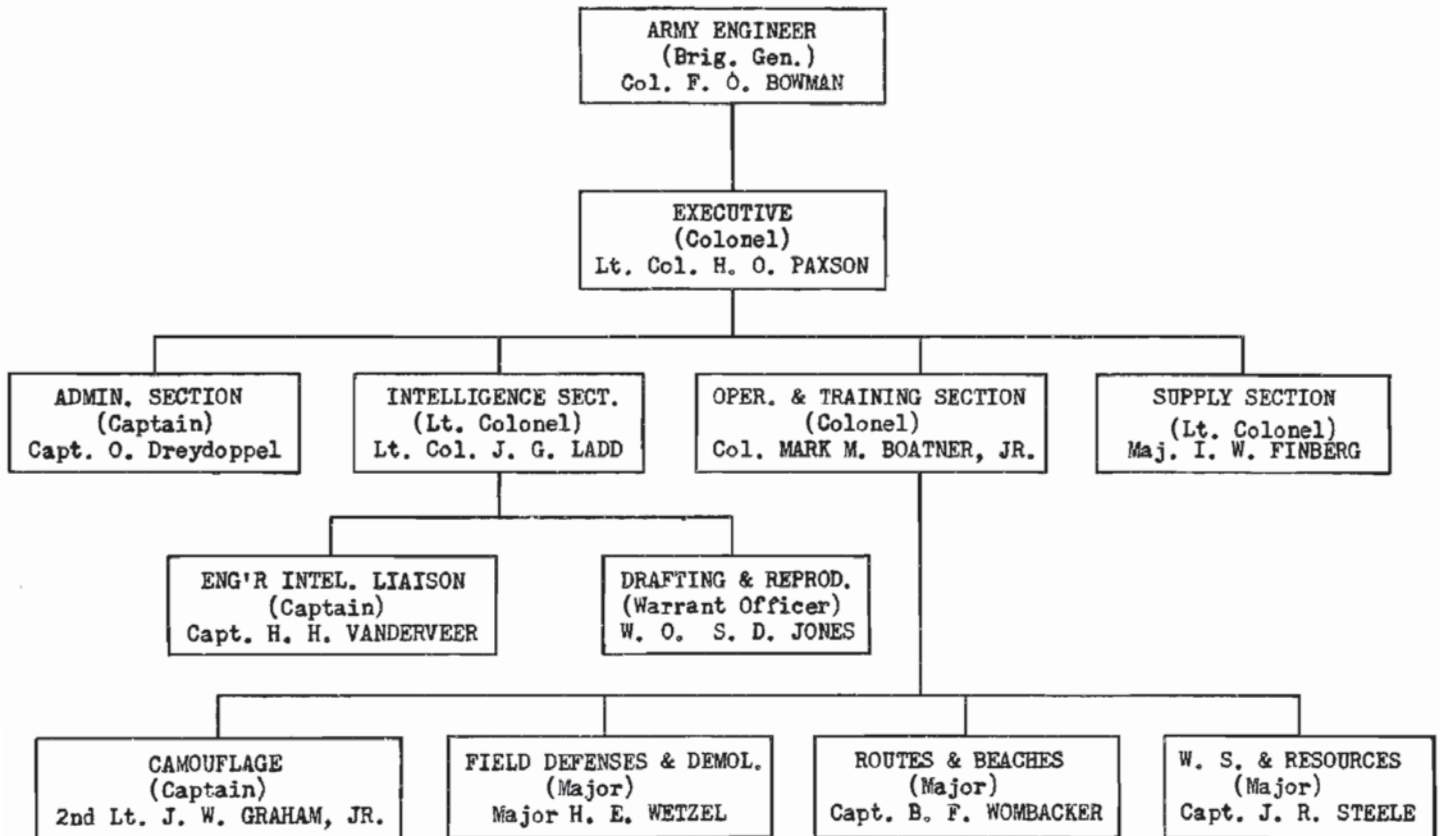
APPENDIX C

ORGANIZATIONAL CHARTS

APPENDIX C

Original Organization of Fifth Army Engineer Headquarters

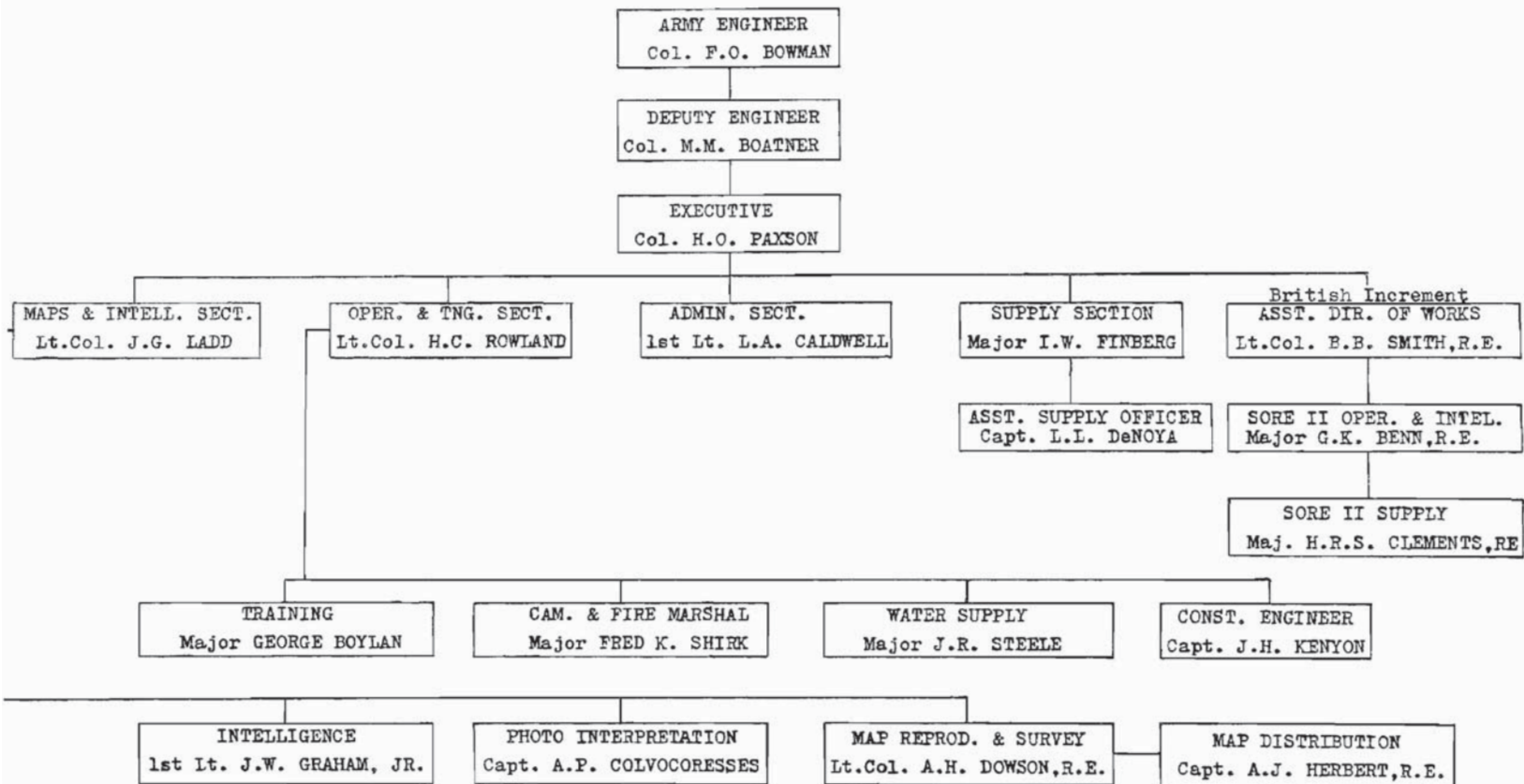
20 January 1943



APPENDIX C

Organization of Fifth Army Engineer Headquarters

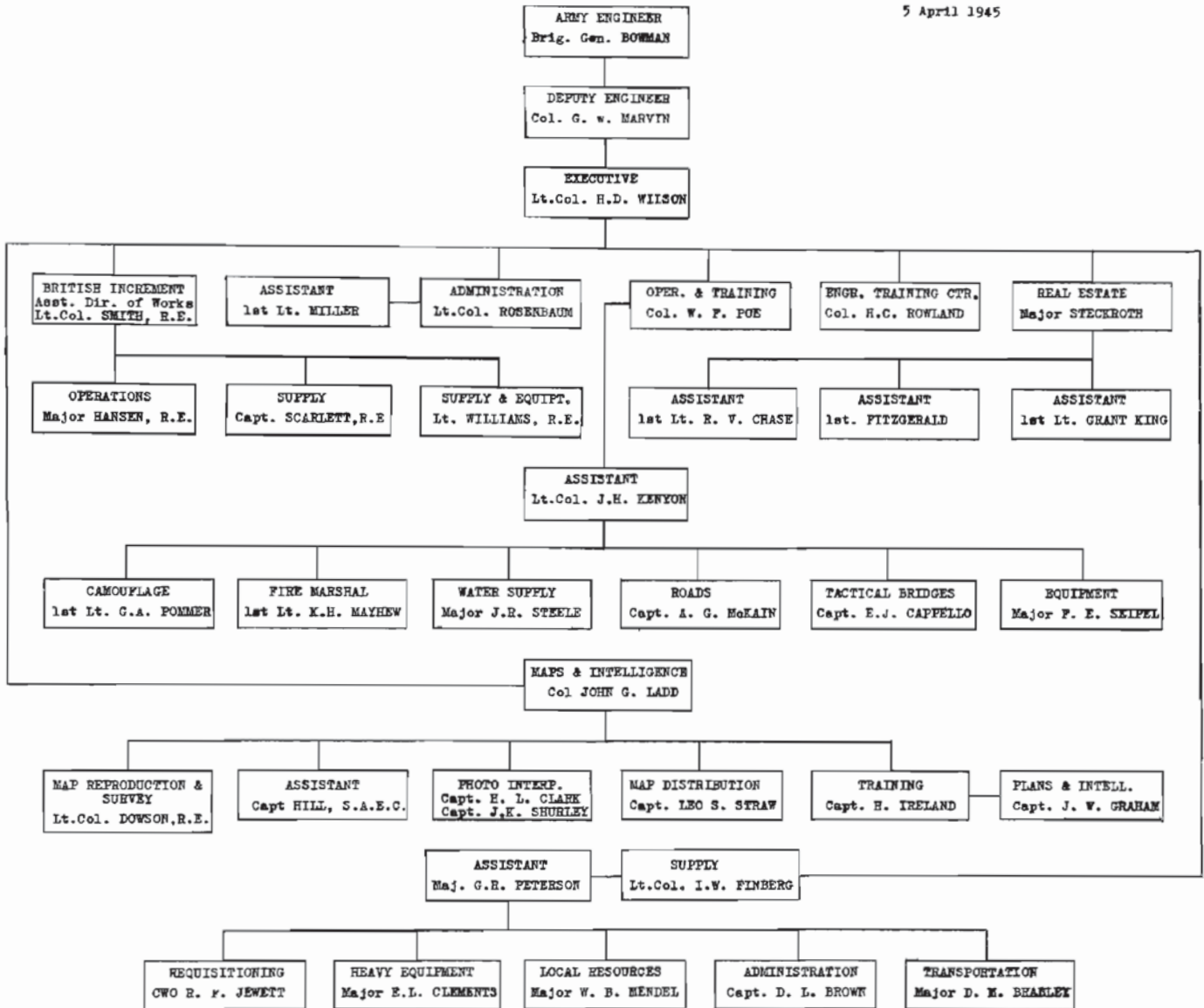
9 September 1943



APPENDIX C

Organisation of Fifth Army Engineer Headquarters

5 April 1945



APPENDIX D

Engineer Section Duty List

The following shows in detail the duties of the Sub-sections of the Engineer Section, Fifth Army:

I. Headquarters Section:

A. Brigadier General - Army Engineer:

Duties: To keep the Army Commander and Staff informed on all matters pertaining to the Engineers. To take such action as is necessary to accomplish missions assigned to the Engineers. To supervise the work of all Sub-sections in the Engineer Section, issue general instructions, pass on all matters of policy within the Section and recommend engineer policy for the Army. To check on all important papers going out of the office. To secure necessary decisions from the Commanding General or Chief of Staff. To keep abreast of the tactical situation and of all matters of interest to the Engineer Section and to keep the Sub-sections informed.

B. Colonel - Executive Officer:

Duties: To be thoroughly familiar with the duties of all Sub-sections and with all general policies of the Army Engineer. Direct and coordinate the work of the Sub-sections. Keep the Engineer informed on all matters pertaining to the Sub-sections. Receive decisions from the Engineer and give necessary instructions to Sub-sections in furtherance of these decisions. To be prepared to take over the duties of the Army Engineer during his absence. To take necessary action on routine matters in the name of the Army Engineer.

II. Administration Sub-section:

Captain - Chief of Section:

Duties: To handle all administrative matters under the general policies established by the Army Engineer or as directed in special cases. To manage the office. To supervise the keeping of all duty rosters of the section. To receive and route all incoming mail and to handle and register all secret files. To coordinate the exchange of information between Sub-sections. To keep a record of all Engineer Troops assigned to the Army with names of the unit commanders and other officers. To take necessary action regarding classification, rosters, etc., on all personnel assigned to the Engineer Section.

III. Intelligence and Map Sub-section:

A. Lieutenant Colonel - Chief of Section:

Intelligence Duties: Supervise the collection, evaluation and dissemination of engineer intelligence and engineer technical information, using such sources as the Army G-2 Report, Engineer Intelligence Reports from higher and lower units, and local engineer personnel and libraries. Keep informed on the enemy situation and plans--with particular emphasis on the strength, technique, state of training and combat efficiency of enemy Engineer troops. Prepare the following Engineer Intelligence Bulletins:

(1) Engineer annex to Fifth Army G-2 Intelligence Bulletins; these to cover information to be distributed to all branches (for example, information on new types of booby traps employed by the enemy).

(2) Engineer Technical Bulletins; these to be distributed directly to Engineers of lower echelons and to include engineer intelligence information of interest solely to Engineer troops.

Map Duties: Assist the Operations Sub-section in maintaining the situation map. Prepare map lists for training and for operations. Acting under policy directives, as issued by G-2, control map supply for the Fifth Army, including preparation of requisitions on Allied Force Headquarters. Supervise the reproduction of simple charts, sketches and map substitutes for sections of the Fifth Army Headquarters. Keep informed on the organization, equipment, methods of operation, location and capabilities of all topographic units in the Fifth Army. Check all requisitions for supplies for topographic units and recommend any revisions necessary. Keep informed on the tactical situation

Engineer Section Duty List (cont'd).

and advise the Army Engineer as to any additional coverage or stockage of maps required. Keep the Engineer, the G-2 and the G-3 "War Room" maps topographically up-to-date and advise the Army Engineer when these corrections are sufficiently important to warrant transmittal of the data to the Engineer, Allied Force Headquarters. Secure all readily available data as to survey monuments and datum points in present and proposed Fifth Army Theaters of Operations. By liaison with the Air Officer, Fifth Army Headquarters, be familiar with the location and operational condition of major landing fields.

B. Captain - G-2 Engineer Liaison:

Duties: Assist the Chief of Section in all his intelligence duties. Act as liaison with Army G-2, working half the time with the G-2 collecting information of value to the Engineer Section, and half the time in Engineer Section collecting information of value to the G-2 Section.

C. Warrant Officer - Drafting and Reproduction Sub-section:

Duties: To supervise a joint drafting and reproduction section and allot priorities to the work of sub-sections (in case of doubt as to priority, decision will be made by Engineer or Executive).

IV. Operations and Training Section:

A. Colonel - Chief of Section:

Duties: Keep informed on the organization, equipment, methods of operation and capabilities of all Engineer troops assigned or attached to the Fifth Army. Keep fully informed on all tactical operations and recommend necessary changes in operational procedure and use of Engineer troops. Keep fully informed on the tactical and technical training of all Engineer troops in the Army and recommend any necessary changes in training methods. Be conversant with projected plans for future operations and assist in such planning. Supervise the preparation of broad directives for training of Engineer and other units on engineer subjects. To keep informed as to the construction programs in each Base Section so far as they apply to the Army and to determine whether they conform to the desires of the Army Commander. Study engineer intelligence reports for sources of building materials, either available or able to be developed in the area, and to prepare data sheets on each class of material. Study design and construction methods in each area with a view to passing on to lower Engineer units the information as to the best methods of design. Study future operation plans with a view to being prepared to recommend, on short notice, types and amounts of engineer construction required. Maintain information on size, capacity, construction time, availability of materials and suitable locations for various types of buildings and other engineer construction. Be prepared to recommend the allocation of Engineer units assigned or attached to the Fifth Army for various construction jobs. Coordinate with the Supply Officer, Engineer Section, the availability of prefabricated buildings, lumber, steel, cement, and other imported engineer construction materials to insure a maximum economy in their use. Maintain simple construction schedules and progress charts so that the Engineer may keep the Commanding General and the General Staff currently and accurately informed of all current construction being undertaken under Fifth Army supervision. Examine, as exhaustively as practicable, the possibilities of utilizing available buildings and other facilities in lieu of undertaking unnecessary new construction.

B. Lieutenant Colonel - Operations and Training Sub-section:

Duties: Prepare general training programs covering training of Engineer units and also training in engineer subjects to be taught other arms and branches. Coordinate with other officers of the Operations and Training Section and the Intelligence Section the instruction to be given troops in latest combat and engineering methods. Check detailed training programs and schedules prepared and submitted by Engineer troops of the Fifth Army. Prepare Engineer Training Circulars covering purely military engineering subjects. These circulars will be for issue to subordinate Engineer units for the purpose of acquainting them with the latest thoughts on and development of engineer technique. Make informal inspections of the training of all Engineer units assigned or attached to the Fifth Army. Maintain an up-to-date troop list of all Engineer troops assigned or attached to the Fifth Army and all Engineer troops assigned or attached to subordinate tactical components of the Fifth Army with detailed data as to strength, capabilities, state of training and combat effectiveness. Study all probable theaters of operations within which the Fifth Army might operate and be prepared to assist or advise on the engineer phases of such operations. Prepare Operations Memoranda on engineer subjects as required and produce revisions of existing memoranda as necessary. Maintain close and constant cooperation with the Intelligence Sub-section so that engineer intelligence may be rapidly and effectively applied to engineer technique and training through the medium of Operation Memos and Engineer Technical Circulars. Keep the Engineer situation map posted.

Engineer Section Duty List (cont'd).

C. Major - Field Defenses and Demolition Sub-section:

Duties: Keep informed on the organization, equipment, methods of operation and capabilities of all types of enemy troops with a view to devising methods for delaying their advance. Study all information available on the use of mine-fields and other obstacles both by our own troops and by the enemy. Prepare for the Operations and Training Officer drafts of such of this information as should be disseminated to all troops. Assist the Operations and Training Officer in the preparation of Memos on methods to be used in passage of obstacles of all types: minefields, barbed wire, ditches, etc. Be prepared to recommend a layout of defensive positions, including anti-tank defenses, in case of large scale Army operations. Make studies looking forward to recommending a plan for strategic demolitions in probable theaters of operations. In coordination with the Operations and Training Sub-section Officer and the Intelligence Officer, establish policies and technique in training units in demolitions.

D. Captain - Camouflage Sub-section:

Duties: Prepare a recommendation on camouflage policy within the theater to cover the methods to be used in combat for forward installations and for large rear-area installations. Develop methods using deception, dummies, and other variations of offensive camouflage. Advise the Army Commander, through the Army Engineer, on the use of offensive camouflage and deception in connection with tactical and strategic operations. Inspect camouflage practice and training throughout all units in the Army. Be responsible for the camouflage of the Army Headquarters. Recommend the use of camouflage troops assigned to the Fifth Army. Supervise camouflage training and schools for Fifth Army troops.

E. Major - Routes and Beaches Sub-section:

Duties: In conjunction with the Engineer Intelligence Section, study all intelligence reports for conditions of all roads, railroads and bridges in the Fifth Army area. Be prepared to recommend types of road and bridge repairs required and troops best able to accomplish the repairs. Study all major bridges in the area and recommend priorities for guards. Keep posted in the Army Engineer office an accurate road and bridge "condition-and-capacity" map. Sources of such information are: (1) G-2 Section, Fifth Army (via Engineer Intelligence Liaison Officer); (2) Study of current air photos; (3) Verbal or written reports by visitors to the Section; (4) Personal reconnaissance by members of the Section; (5) Prisoner interrogation reports; (6) Local official publications, documents and reports; (7) Interrogation of messengers and truck drivers working out of the Fifth Army pools. (Most of this information should be properly secured through the Intelligence Section.) Study road nets, railroad lines and all bridges in probable areas of future operations and be prepared to give their probable capacities and effect on the tactical situation. Be prepared to recommend routing of convoys in the Fifth Army area. Maintain technical contact with local railroad officials. Obtain from Engineer Intelligence Officer and keep available the following information concerning the Fifth Army area: (1) condition of rights-of-way; (2) numbers, availability, capacities and condition of rolling stock; (3) capacities of routes (in tons per day); (4) personnel and material limitations on expansion of present facilities to meet increased requirements. Be prepared to recommend use of engineer railroad construction units that may be assigned or attached to the Fifth Army. Obtain and keep readily available information on extent, slope, nature and capacity of beaches in probable operational areas (special attention should be paid to exit routes from the beaches to inland routes, towns and military objectives). Obtain and keep readily available general information on locations, capacities (in tons per day), unloading and storage facilities available, exit routes and additional constructional requirements for ports in the Fifth Army area and also in probable future operational areas.

F. Major - Water Supply and Resources Sub-section:

Duties: Keep posted a water "availability-quantity-and suitability" map, together with maintaining the information in such form that it may be readily included in estimates or reports or may be quickly disseminated to Army troops. Be prepared to recommend the use of Water Supply units that may be assigned or attached to the Fifth Army. Coordinate with the Supply Officer, Engineer Section, the checking of water supply requisitions and the prompt delivery of the items requested. Be prepared to give to the Utilities Officer, Fifth Army Headquarters, technical advice on the local water supply. Make inspections of field water points, Fifth Army (assigned or attached) water supply units, and of future sources of water. In cooperation with the Intelligence Officer, Engineer Section, make water supply studies for possible future operations zones. Maintain liaison with the Medical Officer, Fifth Army, in regard to suitability of water sources in the Army area. Maintain a map and descriptive tabulation (indicating locations, quantities, suitability and availability) of stone quarries, rock crushers, gravel pits, sand pits, backyards, timber stands, saw mills, lumber yards, cement plants, tile or concrete pipe plants and machine shops in the Fifth Army area. Be prepared to furnish this information to the Operations and Training Sub-section for planning purposes or to Army or lower Engineer units for their use.

Engineer Section Duty List (cont'd).

V. Supply and Transportation Sub-section:

Lieutenant Colonel - Supply Officer

Duties: Study supply plans and depot stockage reports of Base Sections in order to give information on quantities and locations of various engineer supplies and equipment. Study engineer intelligence information for location of engineer supplies and equipment which may be secured in probable theaters of operations. Be prepared to recommend locations, in the field, of Army engineer dumps during active operations. Maintain an accurate, up-to-date list of engineer supplies available--showing specifically unit weights, unit bulk, packaging, methods of shipment, and current locations. Be prepared to recommend priorities for supply of engineer equipment to units. Keep informed as to any studies being made for operations and be prepared to assist in formulating plans for engineer supplies for the operation. Study British and French supply methods and nomenclature with a view to possible use of such facilities in an emergency. Handle all matters within the Fifth Army pertaining to the rental of buildings and land, and all emergency purchases. Maintain liaison with the Transportation Branch with reference to all movements of Engineer troops under Fifth Army control.

APPENDIX E

ENGINEER TRAINING CENTER ATTENDANCE

APPENDIX E

Engineer Training Center Attendance

During the period between 12 March 1943 and 21 August 1943, nineteen complete courses were conducted at the Engineer Training Center. The original length of the course was seven days; the period was increased to nine days beginning with the seventh course. Attendance figures for the period 12 March - 21 August are as follows:

	<u>British</u>	<u>American</u>	<u>French</u>
Enrolled	2	1302	234
Completed Training	2	1186	222
Received Certificates	2	1037	181

Total Attendance: 1538

APPENDIX F

ROSTER OF ENGINEER TRAINING CENTER OFFICER PERSONNEL

APPENDIX F

Roster of Engineer Training Center Officer Personnel

Staff

Lieutenant Colonel	Aaron W. Wyatt, Jr., C.E.	Commanding Officer
Major	Harold E. Wetzel, C.E.	Executive Officer
Captain	Eric J. Schellenberger, C.E.	Camp Executive
Captain	Herman H. Vanderveer, C.E.	Secretary
Captain	Robert J. Hall, C.E.	Instructor
First Lieutenant	Paul B. Stratte, M.C.	Camp Surgeon
Second Lieutenant	Roland L. Seitz, C.E.	Supply Officer
Second Lieutenant	Martin M. Bell, C.E.	Adjutant

Initial Instructors British Increment

Major	Cecil L. Stephenson, R.E. (Br)	
Major	Stanbury J. Hawkins, R.E. (Br)	Left 10 April
Captain	Eric H. Yeo, R.E. (Br)	Left 10 April
Captain	Robin R. Hoskyn, R.E. (Br)	Left 10 April

Turnover Instructors

First Lieutenant	Allen G. Brierley	
First Lieutenant	John R. Courte	
First Lieutenant	Richard E. Rogers	
Second Lieutenant	Benjamin R. Ertell (Development)	
Second Lieutenant	Maurice E. Mercer	
Second Lieutenant	Henri Servagean (French)	
First Lieutenant	Robert D. Stephens	
First Lieutenant	Ward R. Henden	
Second Lieutenant	Jack Wible	
Captain	Hubert G. Reuther (Development)	
First Lieutenant	Ambrose D. Howell, Jr.	
Second Lieutenant	Vincent J. Baccari	
First Lieutenant	Marc Chaudet (French)	
Second Lieutenant	Emory G. Smith (Administration)	
Second Lieutenant	Herbert M. Liebert	
First Lieutenant	Charles H. Kessey	
First Lieutenant	Charles O. McCormick, Jr., M.C. (Surgeon)	
First Lieutenant	James J. Merle	
Second Lieutenant	Rodgers L. Gregory	
Second Lieutenant	James J. McCann	
Second Lieutenant	Edward F. Girtman	
Second Lieutenant	Edward R. Murphy	
First Lieutenant	Lawrence A. Caldwell	
Second Lieutenant	Charles L. Hirsch	
Warrant Officer (jg)	Samuel D. Jones (Administration)	
Second Lieutenant	Reid T. Moser (Administration)	

APPENDIX G

TERRAIN STUDY "AVALANCHE"

The following is a true copy of the original terrain study, except for the removal of Exhibits A, B, C and G--Road, Bridge and Water maps. The original classification "SECRET" has been reduced to "CONFIDENTIAL".

HEADQUARTERS FIFTH ARMY FORTUNE
Office of the Engineer
A. P. O. #512, U. S. Army

SECRET
BIGOT

7 August 1943

TACTICAL STUDY OF THE TERRAIN

NAPLES AND VICINITY

Map Reference: (GSGS 3982, 1:250,000; GSGS 4164, 1:100,000)

1. Purpose: This study is published for the purpose of presenting planning data for military operation "AVALANCHE", should such operation be ordered.

2. General Nature of the Area:

a. General Nature of the Terrain: The area lies between Latitude 40°15' and 41°10', and Longitude 15°30' westward to the sea. Except for the coastal area just south of SALERNO and the CAMPAGNA Plain north of NAPLES, the area is mountainous with narrow valleys and not especially suited for military operations of combined armies.

b. Ridge System: The principle ridge system runs in an east-west direction, 5 to 8 miles north of SALERNO. A secondary ridge system branches off in a northwest direction from a point about 10 miles northeast from SALERNO. This secondary ridge forms the northeastern edge of the CAMPAGNA Plain which surrounds NAPLES.

c. Drainage System: The principle rivers consist of the SELE and its tributary the CALORE which empty into the Gulf of SALERNO about 17 miles south of the town of SALERNO. The larger stream only is perennial. Numerous small mountain streams flow seaward from the ridge lines. Steep vertical banks are the rule in these smaller streams; these banks are a serious obstacle to tanks and wheeled vehicles.

d. Communications:

(1) Railroads: There is a double track, electrified, standard gauge railroad from ROME to NAPLES to BATTIPAGLIA (via SALERNO); at BATTIPAGLIA it divides into two single track routes, one following the coast to the toe of ITALY and the other following the valley of the SELE River to the heel of ITALY. The NAPLES portion is one of the most vital of the ITALIAN railway system, for over it moves much of the traffic for southern and eastern ITALY. A single-track, steam line runs north from SALERNO to BENEVENTO and east along the OFANTO River. A narrow gauge, 95 cm., electric line operates in the NAPLES area and around Mt. VESUVIUS. Tunnels are numerous on all railroads within the area.

(2) Roads: An excellent arterial highway runs northward from vicinity of AGROPOLI (southern end of Gulf of SALERNO) to ROME via SALERNO and NAPLES. A good road also runs north from SALERNO to AVELLINO, thence west to NAPLES. There are numerous secondary roads throughout the area. In general the main roads are black-topped and well maintained. Secondary roads are graveled or rocked, but become rough after either prolonged wet or dry spells. Other roads and trails are seldom maintained and become impassable in extreme dry or wet weather. The bridges and coast grades on the arterial highway are satisfactory for all military loads. On other roads occasional weak bridges, steep grades or sharp curves will slow down traffic. For road classification and bridge data, see "Road Overprint, July 1943" (3 sheets) and bridge table, attached as Exhibits A, B, C, and D.

e. Beaches: The best beach, tactical or otherwise, exists in the Gulf of SALERNO. It is a 20-mile stretch, south from SALERNO, naturally divided into two sections by the SELE River. Sea approaches are excellent and there are numerous exits into the interior to the main north-south highway. There are other smaller beaches, suitable only for landing of company or platoon groups. For tabulation of beach characteristics and outline map showing beach locations see Exhibits E and F. More detailed information on beaches is being prepared by the AFHQ Joint Beach Committee; this report will be issued as a separate document at a later date.

f. Water Supply: Springs and wells, both of which are numerous, are the important, readily-available, sources of water within this area. Springs predominate in the hilly and mountainous parts, whereas wells are common in the valleys and coastal plains. There are numerous streams which have large flows during the winter rainy season. In the summer, the dry season, only the larger streams will con-

Appendix G

tinue to give ample supplies. Most streams are used for irrigation, which generally absorbs the dry season flow. The city of NAPLES receives the greater part of its water via underground aqueducts from springs in the hills. The aqueducts vary in length from 8 to 12 miles. Drinking water is supplied in separate aqueducts from industrial water. For all general purposes the water problem should not be serious; possible enemy destruction of aqueducts, and "Bone-oiling" of wells could create a critical water problem. Water discipline among troops must be developed and maintained. Plans should contemplate bringing in initially one gallon per man per day in 5-gallon cans for 6 to 7 days. Plans must be made for repairing damaged municipal sources. All drinking water must be chlorinated. Poisoning of water in wells is possible. Likewise, the defenders may place the highly disagreeable Bone Oil in wells and tanks. It is virtually impossible to neutralize this oil within a reasonable time. Water supply units must be trained in combating these menaces. Water sources should be marked, as rapidly as possible, with a sign which definitely specifies for what it may be used, i.e., "For Washing Purposes Only", "Safe for Drinking and Cooking Purposes", "Unsafe for Any Use", etc. For additional details, see Exhibits G and H.

g. Areas suitable for Mechanized Force operations: The SELE Plain (south and southeast of SALERNO) and the CAMPAGNA Plain (surrounding NAPLES) are most suited for cross-country movement. The area connecting these two plains is hilly and mountainous, with narrow corridors. It is not suitable for mechanized force operations, but must be crossed to move from the SELE Plain to the CAMPAGNA Plain and NAPLES. The most suitable crossing is the one mile wide corridor following the main highway northwest from SALERNO.

h. Ports:*

(1) PORT OF NAPLES (see sketch of port in Exhibit I):

(a.) Location: NAPLES (40°50'N, 14°16'E), the second largest city in ITALY, is located on the west coast of ITALY, about 350 miles northeast of BIZERTE. This excellent port is located at the north head of a deep bay in the Gulf of NAPLES.

(b.) Communications: NAPLES is a railroad center, and has good railway communications with other points in ITALY. The main highway along the west coast passes through NAPLES. Two transpeninsular highways connect NAPLES with the main ITALIAN east coast road.

(c.) General Description of Port: The inner harbor is completely protected by a mole and a breakwater, except for the two narrow entrances. One of the entrances is further protected by a short breakwater. It contains approximately 650 acres of water surface. There are a total of 8 large and one small pier, and 9 bulkheaded wharves, with a combined berthing capacity of approximately 30,000 feet.

(d.) Entrances: There are two entrances from the Gulf of NAPLES into the port proper. One, in the center, is 800 feet wide; the other, at the east side of the port, is 750 feet wide. Both entrances are protected by submarine nets.

(e.) Capacity: Because of clearance difficulties inland, it is unlikely that the port could handle more than 16,000 tons of military cargo per day.

(f.) Storage Facilities: There is ample warehouse space. Most of the piers and wharves have from one to several buildings on them, thought to serve the dual purpose of transit sheds and warehouses. Twelve of the largest warehouses have a total floor space of 1,354,300 sq. ft.

(g.) Cargo Handling Equipment: The piers and wharves are equipped with 65 fixed or travelling cranes with capacities mainly of from 1½ to 4 tons. Power in most cases is electric.

(h.) Railroads: Tracks are on most of the main piers and wharves, and have direct connections with the main line railroads. A bad bottleneck exists behind Pier No. 17.

(i.) Dry Docks and Repair Facilities: The port has three graving docks, one floating dock, and has extensive repair yards and shops.

(j.) Floating Equipment: Due to traffic congestion, a considerable portion of the cargo of the port is handled by lighters and ships' tackle. There are approximately 300 lighters at the port with an aggregate total capacity of approximately 20,000 tons. 15 tugs are registered at NAPLES.

*Data given here does not take bomb damage into consideration.

Appendix G

(k.) References: For further details of this port see the following references available at the office of the A. C. of S., G-2, Fifth Army.

(1.) Strategic Engineering Study (US) - ONI 104-10 March 1943.

(2.) The Port and Town of NAPLES - ISTD/C/200-17 July 1943.

(2) PORT OF SALERNO (See sketch of port in Exhibit J):

(a.) Location: SALERNO (40°40'N, 14°45'E), is a small, purely commercial port, approximately 50 miles south of NAPLES. It is an artificial harbor, consisting of 35 acres of water surface and a long jetty, quayed on the seaward side.

(b.) Entrance: Its entrance is narrow - 125 yards, and the harbor could easily be blocked by the sinking of a ship or two across it.

(c.) Capacity: The harbor will accommodate up to four vessels at one time. Average depth is 29 feet.

(d.) Storage Facilities: There is no storage available on the quays. There is practically none in the harbor area. The town proper does not appear to have any large warehouses but undoubtedly has numerous small storage places.

(e.) Railroad: The harbor is served by a railroad spur which comes off the railroad running south from NAPLES.

(f.) Cargo Handling Equipment: With the exception of a small, hand, 2-ton crane on MANFREDI Wharf, there is no cargo handling equipment. Direct unloading from ship to railroad is possible only on the MANFREDI Wharf.

(g.) Port Proper:

(1.) The eastern side (mainland) is the best of the quays. It is rail served and has the only crane in the harbor. Large ships must be unloaded by lighters but medium ships can tie alongside. Its berthing capacity is one 450-foot slip on the east side and one 180-foot on the south side. Its daily capacity (short tons) would be:

450' slip (by lighterage)	700 tons
180' slip (by direct unloading)	200 tons
TOTAL	900 tons

(2.) The northern side is unquayed and has a shipyard on it. It cannot handle any cargo.

(3.) The western quay is composed of three parts. The first section, called MOLO DI PONENTE, is composed of two parts: BANCHINA 3 GENNAIO, and the remainder. BANCHINA 3 GENNAIO has berthing length, on the east side, of 770 feet, and can accommodate only 3 small ships at a time, or 2 medium and 1 small ship. Its capacity with most favorable combination would be only 2 @ 300 tons and 1 @ 200 tons or 800 tons per day in all. The remainder of the MOLO DI PONENTE would accommodate 1 - 450 foot ship at a time. Its capacity would be 700 tons per day.

(4.) VECCHIO ANTEMURALE and MOLO FORANEO, extensions to MOLO DI PONENTE, could both accommodate several big ships at a time. However, due to the only 10 foot width of the mole, clearance by truck could be accomplished from only one ship at a time regardless of whether located on MOLO DI PONENTE, VECCHIO ANTEMURALE or MOLO FORANEO. Its capacity is still the same - 700 tons per day figured from MOLO DI PONENTE.

(5.) Recapitulation of capacity (short tons per day):

BANCHINA MANFREDI	-	900 tons
BANCHINA 3 GENNAIO	-	800 tons
MOLO DI PONENTE	-	700 tons
VECCHIO ANTEMURALE	-	none
MOLO FORANEO	-	none
TOTAL		2400 tons

(3) PORT OF AMALFI (See sketch of port in Exhibit J):

(a.) Location: AMALFI (40°38'N, 14°36'E), a town of about 5000 population, is situated on the northwest side of the Gulf of SALERNO, about 23 miles southeast of NAPLES.

(b.) Communications: The town has no railroad service. It is on a highway extending eastward along the coast to SALERNO. The town has telephonic and telegraphic service.

(c.) General Description of Port: PORTO DI AMALFI is an artificial harbor, the coast of which trends northeastward and then eastward. It is protected from the southwest by a mole extending 750 feet in an easterly direction. At the northeast end of the harbor, about 1300 feet from the root of the mole, is a jetty extending southward 175 feet from the coast. The southern part of the harbor has depths of 26 feet and the depths decrease gradually toward the northern side. The harbor side of the mole and the jetty are quayed with depths alongside of 13 feet.

(d.) Entrances: The entrance to the harbor is about 800 feet wide.

(e.) Capacity: About 200 tons of military cargo could be handled per day.

(f.) Storage Facilities: There is only limited open storage space, and it is doubtful if any storage warehouses exist.

(g.) Cargo Handling Equipment: It is believed that there is none.

(h.) Repair Facilities: It is believed that there are no dry docks. Minor repairs can be executed.

3. Military Aspects of the Terrain:

a. The Mountains: The ruggedness of the mountains and the lack of routes therein permitting deployment off the roads, restrict maneuver to the SELE and CAMPAGNA Plains. To reach the latter from the south, early control of the mountain corridors connecting them must be obtained. The enemy, if initially driven out of the plains, could retire into the mountains and wage harassing guerrilla warfare against our bridgehead and consolidations in the lowlands. This is not considered probable.

b. The Rivers: Except for the SELE River, they are not serious obstacles in the summer and early fall. Flash floods during late fall and winter would make obstacles of the smaller rivers for short periods. Although dry in the summer season, many of the streams have steep and high banks, sufficient to make them definite obstacles. Bridges could easily be demolished to retard our movement.

c. Beaches: Good off-shore slopes of 1:40 to 1:80 in the Bay of SALERNO permit landing ships to come close to shore. Absence of extreme tide, heavy swell and dangerous breakers during September permit longer and less hazardous operations over the beaches. The most favorable beach exists at the northern end of the 20-mile stretch south from SALERNO. The southern 1/3 of this 20-mile beach strip is backed by numerous drainage ditches. These constitute minor obstacles.

4. Critical Terrain Features: The mountain passes connecting the SELE and CAMPAGNA Plains, the SELE River, and the general lack of off-the-road maneuver areas in the mountains.

5. Tactical effects of the Terrain:

a. The mountainous terrain completely surrounding the SELE Plain limits the depth of the initial bridgehead and exposes this bridgehead to observation, fire and attack from higher ground.

b. The high ridge between SALERNO and NAPLES bottlenecks an advance northward, from the SALERNO bridgehead, through two very narrow corridors. Early control of the northern exits of these corridors is vital.

c. The SELE River, entering the Gulf of SALERNO, at the south central section of the SELE Plain, dictates a natural division of the landing into two sub-task force sectors. Bridging, to span 300 ft. of river width, must be carried in early to provide additional north-south communication between the two beach sectors.

For the Engineer:

10 Exhibits:

- Exhibit A - Road and Bridge Map 1
- B - Road and Bridge Map 2
- C - Road and Bridge Map 3
- D - Bridge Table
- E - Beach Table
- F - Beach Location Sketch
- G - Water Map
- H - Water Supply Discussion
- I - Sketch of Port of NAPLES
- J - Sketch of Port of SALERNO; Sketch of Port of AMALFI

/s/ H. O. Paxson
H. O. PAXSON,
Colonel, C.E.,
Executive

BRIDGE INTELLIGENCE
(To accompany "Road Overprint July 1943", Maps)

BIGOT
SECRET

Route Number	Bridge Number	Map Reference (OSGS 4230)	Description	Span (in feet)	Distance Between Banks (in feet)	Total Length (in feet)	Approach Road Width (in feet)	Road Bridge Width (in feet)	Bypass	Fords	Remarks
7	7/1	N195698	3 spans, reinforced concrete or masonry	20	---	80(?)	---	16	---	-----	Bridge over 3 separate dykes
7	7/2	N598748	Reinforced concrete or masonry	33	104	120(?)	30	15	---	-----	2 or 3 separate span arches
-	0/1	M944703	Unknown	--	290	---	12	--	---	Yes	Construction started, completion unknown
-	0/2	N021741	Lattice Girder	30102	238	306	--	--	---	Ford at M949703	3 span railway bridge; possible use as road bridge
-	0/3	N025747	Reinforced concrete or masonry	30130	373	400	30	20	---	-----	3 spans; water gap 240 feet
-	0/4	N071777	Ford only	--	300	---	7	--	---	Ford only	Wet gap, 293 feet
-	0/5	N086770	Ford only	--	260	---	10	--	---	Ford only	Wet gap, 250 feet
-	0/6	N023573	Reinforced concrete or masonry	65	---	---	15	12	---	-----	Single span
-	0/7	M982653	Reinforced concrete or masonry	80	135	---	20	16	---	-----	Single span
-	0/8	N754208	Culvert	22	---	280	16	20	---	Fordable	Culvert over flat wadi
-	0/9	S920757	Reinforced concrete or masonry	--	---	302	12	15	---	-----	Bridge over steep valley
-	0/10	S846948	Reinforced concrete or masonry	--	---	115	20	10	---	-----	Number of spans unknown
-	18/1	N860110	Reinforced concrete or M.	--	---	170	20	25	---	-----	Possibly 3 spans
18	18/2	S873988	Arch, 1 span	50	---	---	30	--	---	-----	Single span

EXHIBIT "D"

HEADQUARTERS FIFTH ARMY FORTUNE
Office of the Engineer
A. P. O. 512, U. S. Army

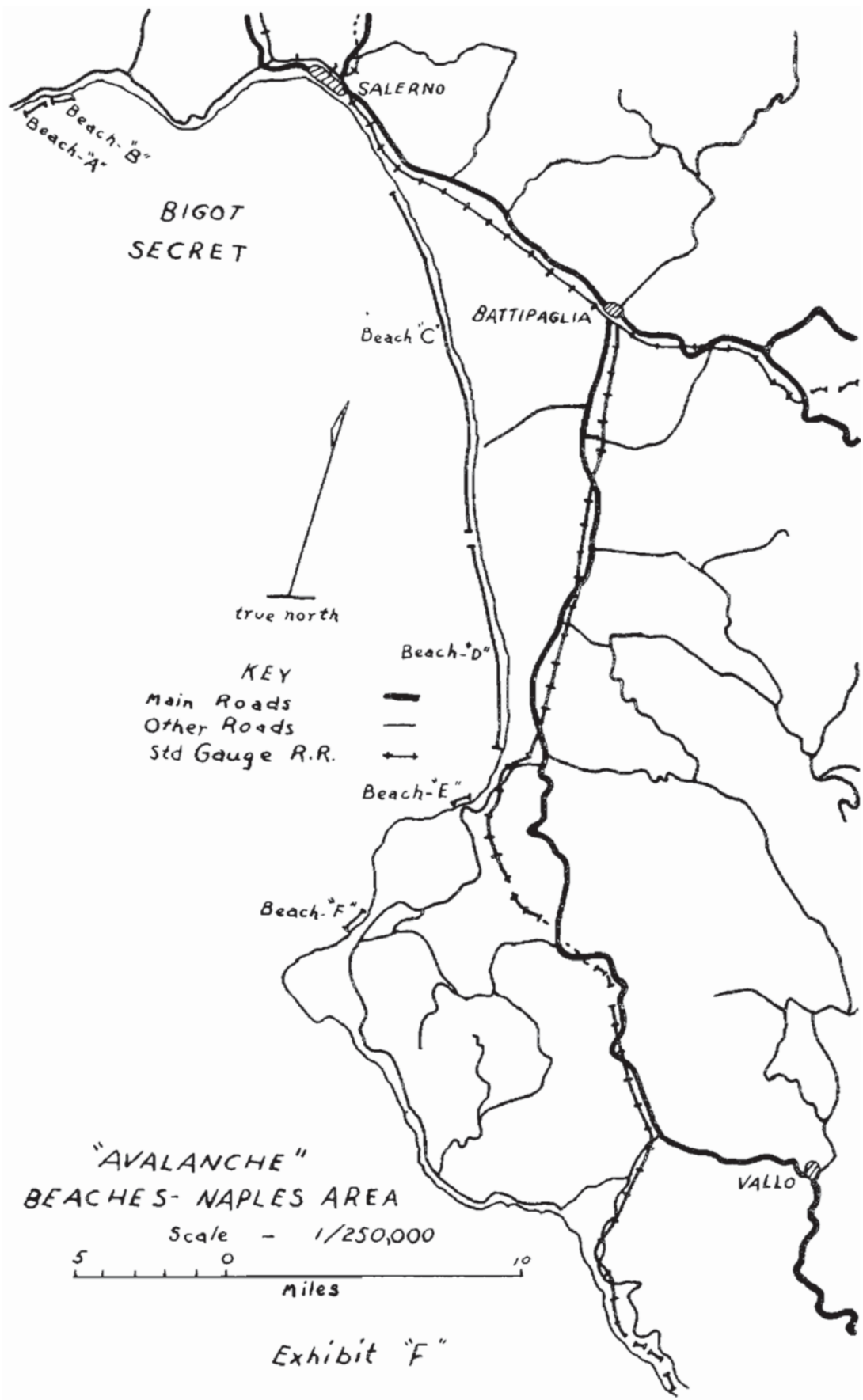
(Plan: AVALANCHE
(Date: 7 August 1943
(Source Material: I. S. T. D./c/209 29 June 1943

BIGOT
SECRET

B E A C H E S

1 Beach Name, Coordinates, & Ref. Letter	2 Map Sheets	3 Marine Approach Characteristics						4 Beach Characteristics					14 Remarks	
		5 Suitable Anchorage		6 Approach	7 Underwater Gradients	8 Length	9 Width	10 Slope Above Water- line	11 Obstacles on Beach	12 Exits				
		13 Depth	14 Distance Out							15 Men	16 Tracked Vehicles	17 APV's		
ft.	yds.			yds.	ft.	at	at	at						
A PORTO DI ANALFI 505257 to 507257	4229 197 IV	49X	350	Clear from South. Easily identified	1:18	125	60	Good	Backed by wall & wood (50 ft. wide)	Yes	Yes	Yes	Small harbor; 760 ft. mole; quay on inner side 10 ft. wide; 13 ft. water along- side; further east is stone jetty 160 ft. long with 13 ft. water at head. Roads inland very poor; coastal road hilly & winding; de- ployment difficult. Cover in village only. See port report.	
B PORTO DI ANALFI 510258 to 511258	4229 197 IV	49X	350	Clear from South. Easily identified	1:15	185	60	Good	Backed by high Vertical Wall.	Yes	Yes	Yes	Roads inland very poor; coastal road hilly & wind- ing; deployment difficult; cover in village only.	
For SILERNO see report on Forts														
C FIUME FORNO to FIUME SELE - 702260 to 800093	4229 197 I	33X	1000	Clear from West to Southwest. Fairly easy to identify	1:18 to 1:60	17,600	150	Good	709252 River 725233 River 737203 Diked River 767163 to 768164 has a stream be- hind shore.	Yes	Difficult due to soft sand. tracks to- ward beach at: 706253 711250 718243 721239 727233 733223 743207 753195 780140	Yes	Yes	Main coastal road runs 1 1/2 miles(N) to 4 1/2 miles(S) in- land from beach. River Tus- ciano obstacle to vehicles; bridge at 752208 & 799223. At north end country built up; vineyard at south; more open & sandy. River Sele an obstacle. 2 drainage ditches (obstacle) south- east of 770170 for 2 miles. Little cover behind beach.
D FIUME SELE to FIUME SOLOPRONE 797093 to 849984	4229 198 II	33X	1000	Clear from West to Southwest. Easy to identify. Greek temples at FIESTUN.	1:40 to 1:80	11,440	150	Good	Heights inland 300 yds from 4 to 24 ft.	Yes	Best exits opposite an- cient town of PASTUN & just south of River SELE.	Yes	Yes	Coastal road from 4 1/2 miles (N) to 1 1/2 miles (S) inland from beach. Rivers SELE & SOLOPRONE definite obstac- les. Many drainage canals in area near beach; 840030 these are obstacles to M/2 movement. Poor cover.
E AGROPOLI - 837948	4229 198 III	30X	600	Clear from North- west. Easily identified.	1:60	180	150	Good	Rocky ledges at north; jetty at south side	Yes	Yes	Yes	Hole on southeast side of cove; mole is 300 feet long with 5 feet water at head. Beach of coarse sand and shingle. Exit eastward into new part of town; road net inland only fair; movement off road difficult due to steep slopes, stone hedges & cult. Weak iron bridge at (845949). Fair cover especially to South.	
F CASTELLABATE 804876 to 800863	4229 209 IV	33	550	Clear from West. Castle identifies beach	1:40 at north end; 1:190	1300	150	Good	804876 to 804873 Village with wall along beach. 804873 to 803868 low water; 803864 rocky spur	Yes	yes between 804876 and 804873	Yes	Road to northeast very narrow; road to south better; 16-19 feet wide. Numerous small ravines cause local obstacles. Movement off road diffi- cult. Good cover to south- east of village; fair cover elsewhere.	

EXHIBIT E



WATER SUPPLY

GENERAL

1. Rivers. In most parts of Italy supplying water to occupying troops should not be a difficult problem. Streams are numerous and have large flows during the winter, the rainy season. In the summer, the dry season, the larger streams will continue to give ample supplies but the flow of the smaller streams may be seriously reduced. Most streams are used for irrigation which in some cases absorbs the full dry season flow.

2. Springs. In the hilly and mountainous parts, springs are numerous. These are generally fresh water springs and would provide adequate supplies for large units.

3. Wells. In the valleys and coastal plains, wells of moderate to large yield are common. Additional water supplies could be obtained by drilling new wells (20 to 50 ft. deep in many places such as in Calabria, Lucania and Campania; 100 to 500 ft. deep in others as in Apulia and also Campania) or by installing efficient pumps in existing wells. (Strategical Engineering Study, Feb. 43.)

SOUTHERN ITALY

4. Calabria and Lucania, and Campania are mountainous with lowlands usually near the coast. The rocks which constitute the highgrounds of Calabria, however, are in large measure impermeable; run-off is rapid, draught in summer is severe, and underground supplies are limited. The rocks of the mountains and uplands of Lucania are varied and folded, many of the river valleys are long and alluvial deposits are widespread. On the whole, the water problem of Lucania may be described as falling between those of Campania and Calabria, presenting difficulties in summer but with considerable resources of water nevertheless readily available.

5. Campania is fairly described as well-watered, both in mountains and lowlands. Although it has been necessary to bring water a long distance by aqueduct to augment the supply of a densely populated area like Naples, for all general purposes water is not a serious problem.

APULIA

6. Apulia stands by itself. The rocks excepting the eastern flanks of the Apennines are little folded, but they allow surface water to pass readily to great depths and from the east coast sea water penetrates inland through the rocks for considerable distances. Rainfall is very irregular and the ample quantities which fall from time to time are carried off the slope of the Apennines only to sink deeply underground; usually comparatively small amounts of the run-off reach the sea by the river valley and stream courses. Coastal marshes, as elsewhere in Southern Italy, are malarial and brackish.

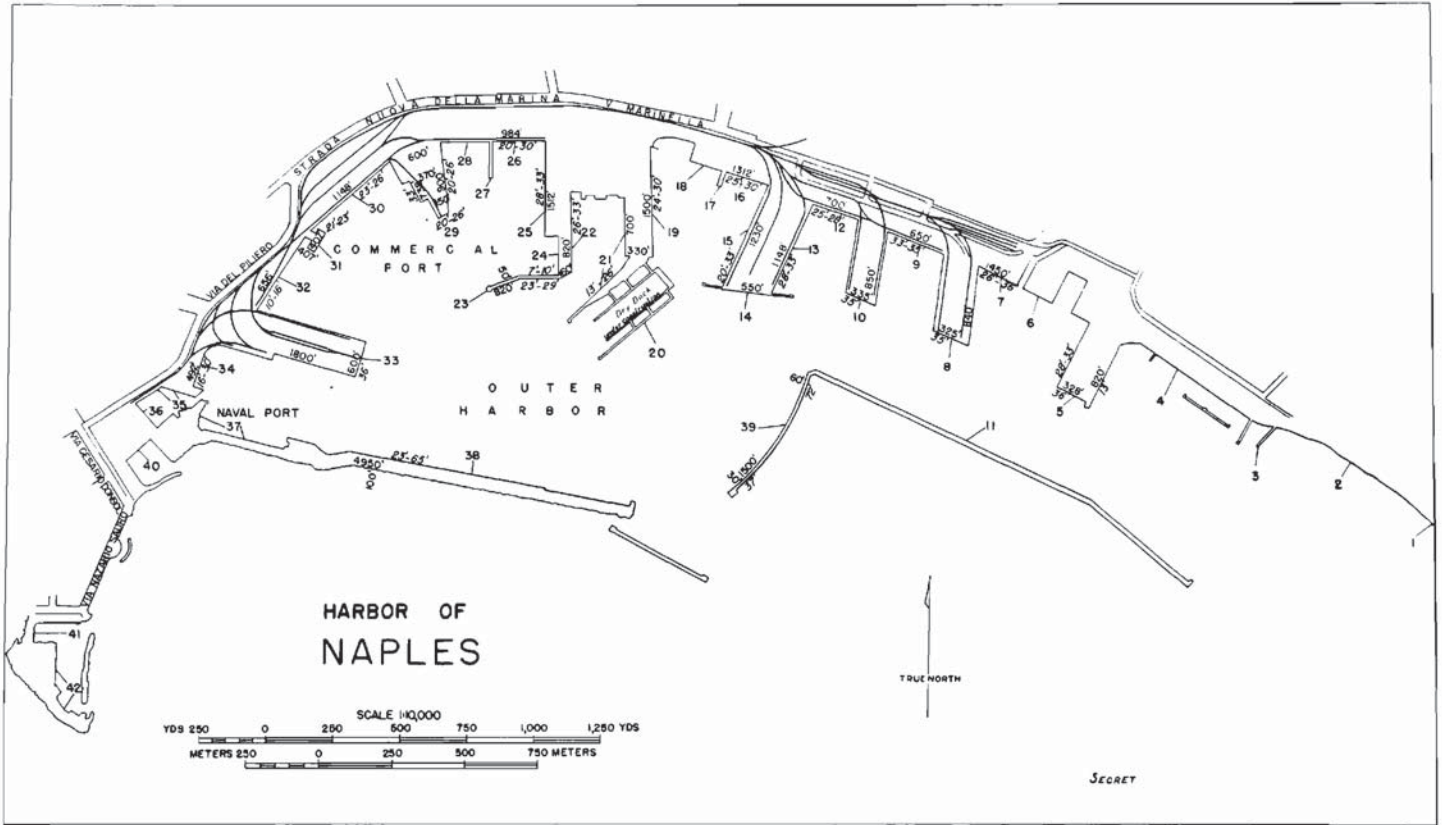
7. To overcome the pressing problem of water supply the great Apulian aqueduct has been built. Excluding the aqueduct, Apulia has a reasonable supply of water in and around the main centers of population, although on the whole supplies are limited in country districts. Much of the limestone plateaus of the "heel" of Italy is almost waterless. The water supply of the province is now dominated by the Apulian aqueduct. It is likely under war conditions that the natural and local supplies will also be available for immediate use. Difficulty may be experienced because the population of some 2,000,000 has come to rely on the great aqueduct and the life and industry of the people has become adjusted to the supplies that it provides throughout the year. Before the construction of the aqueduct the amount of water available, especially in summer, was gravely limited. Cisterns, water collected from roofs, shallow wells, and scattered springs were used. (ISTD/C/210 The Resources of Southern Italy)

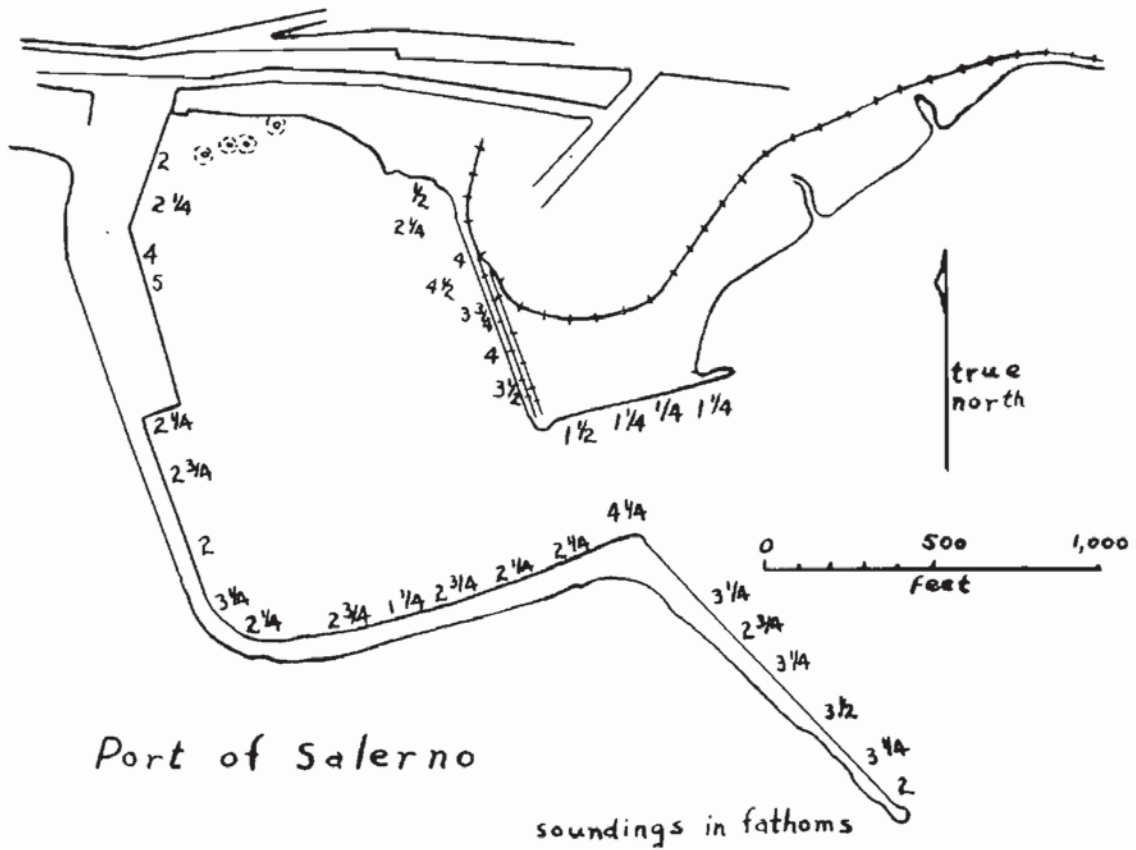
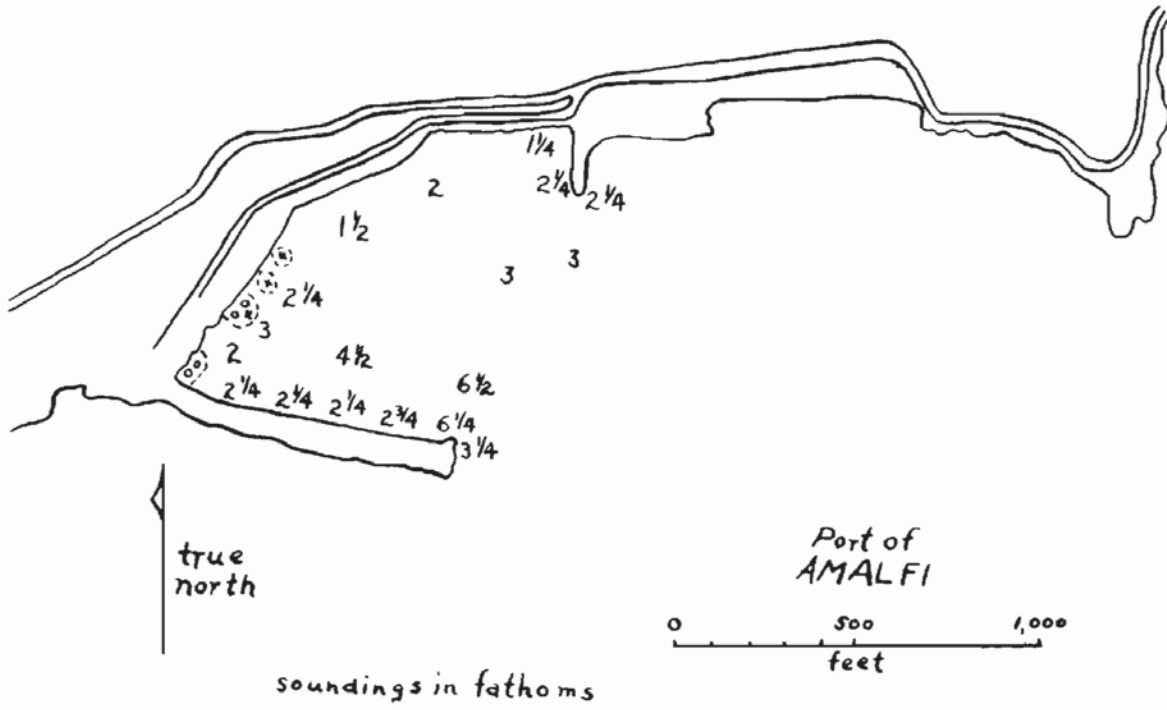
8. In winter surface water is relatively abundant in most parts of Puglia (Apulia) and will afford satisfactory water supplies.

9. Wells. Water table wells, mostly dug, are numerous in the area southeast of Taranto. In general the water is of good quality and abundant. In most parts of this area new wells will obtain moderate amounts of water. Water table wells are also numerous in the lowland area north of the Ofanto River between the Gargano peninsula and the Apennines. In many parts of this area the wells yield considerable amounts of fairly good water. However, in the area east of Foggia, the first water that is encountered is generally salty or otherwise mineralized. No wells are reported in the limestone plateaus of the Gargano peninsula and south of the Ofanto River, between Barletta and Brindisi. Both of these areas are underlain by fissured or cavernous limestone. Large quantities of water are probably obtainable by drilling wells 300 to 400 feet deep.

10. Artesian Wells. Artesian wells are numerous in the area north of the Ofanto River and in the area southeast of Taranto, north of the Ofanto River water can be obtained by driving well points but in most places drilled with rotary rigs will provide larger yields and will be more satisfactory. In the area southeast of Taranto good artesian water is found in fractured and cavernous limestone and individually yields are large. Additional water is obtainable at most sites by drilling new wells. The pumping lift may be as much as 200 to 300 feet.

(SES 73 Pt. 2 Page 41)





SECRET

Exhibit J.

APPENDIX H

UNIT HISTORIES

The following pages contain a few brief facts on the organization and history of engineer units which have served under the Fifth Army. Lack of information has necessitated the omission of any reference to the following units: 111th Engineer Combat Battalion, 120th Engineer Combat Battalion, 661st Engineer Topographic Company, 5th British Infantry Division, 7th British Armored Division, 6th South African Armored Division and French Expeditionary Corps.

APPENDIX H

HISTORY OF FIFTH ARMY ENGINEER UNITS

10th Engineer Combat Battalion

On 13 October 1939, the 2nd Battalion, 6th Engineer Regiment, was redesignated the 10th Engineer Combat Battalion. The 10th; therefore, shares the seventeen battle honors and French Croix de Guerre. of the present 6th Engineer Battalion. These awards were earned during the War of the Rebellion, the Spanish-American War and the First World War. The 10th became the Division Engineers of the 3rd Infantry Division. From the staging area at Camp Pickett, Virginia, the unit embarked for Africa on 23 October 1942. Landing on 8 November and taking part in the brief French Moroccan Campaign, the battalion later trained near Port Lyautey, French Morocco, and Arzew, Algeria, for the Sicilian Invasion. Landing at Licata, Sicily, on 10 July 1943, it joined in the whirlwind, 39-day campaign which ended in the fall of Messina. The unit then went to Trapani for more training in preparation for the move to Italy.

16th Armored Engineer Battalion

The 16th Armored Engineer Battalion was activated with the 1st Armored Division at Fort Knox, Kentucky, utilizing property and personnel of the 47th Engineer Troop, on 16 July 1940. During its participation in the Tennessee maneuvers in the fall of 1941, it did a great deal of work similar to that later encountered in combat, but had one criticism in particular to make: the lack of mine warfare training. The comment was: "Nearly everything was considered except the all-important enemy mining, which was overlooked completely."

The battalion left Fort Knox on Easter morning 1942. It is amusing to anyone who has ever gone overseas with troops to read the unit's comment on the movement: "The battalion left Fort Knox, and arrived at Fort Dix four days later amidst the greatest secrecy--the move being unknown to anyone except 94 per cent of the population of the Middle Atlantic States. The muddle and confusion surrounding the preparation for shipment was terrifying to behold, but this was understandable since nothing quite comparable to an Armored Division had ever hit the New York Port of Embarkation. Considering one false start to the port, tearing down and rebuilding kitchen trucks twice, taking the tracks off and putting them back on the half-tracks four times, making seven tally copies for every item to be shipped, including the one-quarter pound blocks of TNT, and laboring under the fear of possibly failing to salute while moving at the double and executing an about face, all ranks remained unperturbed and ready to sail."

The battalion sailed during April and May, most of the troops going on the "Queen Mary". The 16th was in Ireland from June of 1942 until the fall, during which period it operated an elaborate security system. A local comment passed about was to the effect that Ireland had never been safer--except for the girls. Company "B" and attached equipment and personnel landed on the African beaches on 8 November with Combat Command "B". Company "B" was joined in Africa by the rest of the battalion on 21 December.

After the African campaign was completed, the 16th held a training school near Rabat, French Morocco, which was limited to deliberate minefields, bridging, and field fortifications--all training being seriously handicapped by work projects. On 30 July 1943, the battalion was assigned to Fifth Army, and Company "A" was attached to the Fifth Army Engineer Training Center as a demonstration unit. The rest of the battalion was occupied in amphibious and bridge training.

109th Engineer Combat Battalion

The 109th was a combat regiment, part of the South Dakota National Guard, when ordered into Federal Service on 10 February 1941. It took part in the Louisiana maneuvers and, when on 1 February 1942 the 34th Infantry Division was converted into a triangular division, the regiment became the 109th Engineer Combat Battalion. The battalion sailed for Ireland on 18 February 1942, but the ship was forced to return, arriving at Boston on 3 March. The unit remained at Camp Edwards until 30 April 1942, when it again set sail from the States. This time the trip was successful and the battalion rejoined the division in Ireland on 12 May.

109th Engineer Combat Battalion (cont'd).

Leaving Ireland in the fall, the 109th landed at Algiers on 8 November and took part in several major campaigns in Tunisia. Following the fall of Tunis, the division remained in Tunisia until the middle of July, during which time the battalion undertook training and rest programs, operated engineering installations at staging areas used by troops invading Sicily, and performed other engineering tasks. During the latter part of July, the 109th moved with the 34th Division to the Oran area to attend the Fifth Army Battle and Invasion Training Schools, at the same time preparing for the move to Italy.

126th Mountain Engineer Battalion

The 126th Mountain Engineer Battalion was activated 14 September 1942 at Camp Carson, Colorado, as the 126th Engineer Battalion. The next summer, on 15 July, the unit was reorganized and redesignated the 126th Engineer Light Combat Battalion. On 25 October 1944, the unit was again redesignated, this time as the 126th Mountain Engineer Battalion. In the United States, the battalion trained at Camp Carson, Colorado, Camp Hale, Colorado, and Camp Swift, Texas. On 28 December 1944, the unit moved to Camp Patrick Henry, Virginia, in preparation for its first overseas service. The battalion left Hampton Roads on 6 January 1945 and disembarked on the 18th in Italy, entraining in ancient "40 & 8" boxcars for the Peninsular Base Section Staging Area #3 at Pisa. The 126th Mountain Engineer Battalion remained there until 2 February, when it moved into frontline positions with its parent unit, the 10th Mountain Division.

307th Airborne Engineer Battalion

On 15 March 1942, the 307th Engineer Combat Battalion (82nd Infantry Division) was activated at Camp Claiborne, Louisiana. Four months later, on 15 July 1942, the unit was reorganized as the 307th Airborne Engineer Battalion (82nd Airborne Division) and moved to Fort Bragg, North Carolina, in September 1942. Early in April 1943, the battalion left Fort Bragg for Fort Hamilton, New York. After a trip to Camp Edwards, Massachusetts, and back, the unit left New York on the U. S. Army Transport "George Washington" on 29 April. On 10 May, the 307th landed at Casablanca, French Morocco, then moved to Oujda. By 30 June, the unit had moved to the vicinity of Kairouan, Algeria. During the period 1 - 17 June, Company "D", 84th Engineer Camouflage Battalion, later the 2916th Engineer Camouflage Company, was attached to the 307th to assist the 82nd Airborne Division in its camouflage problems.

After participating in the Sicilian Campaign, the 307th returned to North Africa. There, the engineers were split up among combat teams and assault units. After training a short time, the components of the 307th went to Italy; the first group, the 2nd Platoon of Company "A", landing with the Rangers on 10 September. Company "C" took part in the parachute attack by the 509th Infantry Battalion (Parachute) in the vicinity of Avellino and as part of the 504th Regimental Combat Team served in the Southern Appennines and at Anzio.

310th Engineer Combat Battalion

The 310th Engineer Battalion was activated as a part of the 85th Infantry Division on 15 May 1942, at Camp Shelby, Mississippi. In 1943, unit training was undertaken in winter maneuvers in the cold swamps of Mississippi, spring maneuvers in rainy Louisiana, and summer maneuvers in the scorching desert of California. In the fall, the battalion was at Fort Dix, preparing for overseas movement.

Elements of the battalion left for overseas on 16 December 1943, and the remainder arrived in North Africa in early January 1944. At Saint Denis du Sig, Algeria, the battalion rebuilt a prisoner of war camp, and performed many utility tasks such as water supply, sewage disposal, wiring and surveying. At the the Engineer Training Center, the unit received a thorough training in mine warfare methods and Bailey bridge construction. At the Invasion Training Center near Arzew, extensive training was undertaken in amphibious operations. Later, the battalion constructed elaborate reinforced concrete beach obstacles and steel tetrahedrons. This was followed by training in the breaching of these obstacles and the establishment of a school on this type of operation for the infantry regiments of the division. In March, the 310th Engineer Battalion went to Italy.

313th Engineer Combat Battalion

On 15 July 1942, the 313th Engineer Combat Battalion was formed at Camp Gruber, Oklahoma, by order of Headquarters, 88th Infantry Division. It took the number, history and colors of the 313th Engineer Regiment which had supported the 88th Division in Alsace in 1917. Until 13 June, the following year, the battalion trained in the wild country of the Cookson Hills near Muskogee, Oklahoma. The men, some fresh from basic training and some from induction centers, learned the fundamentals of combat engineering and infantry tactics. For 5 days in May 1943, when the Arkansas River overflowed its banks endangering the lives of thousands of inhabitants of surrounding towns, the battalion interrupted its training and with all available resources and equipment the officers and men endangered their lives in the raging waters to rescue civilians and livestock stranded in the flooded lowlands.

313th Engineer Combat Battalion (cont'd).

On 13 June, the battalion moved to the Texas-Louisiana maneuver area by motor convoy. Under unpleasant conditions of rain and intense heat, the battalion learned how to act as a coordinated unit and how to support the division. While on maneuvers, the battalion constructed trestle bridges, repaired roads and spanned rivers.

On 25 October 1943, the overseas move began. The battalion went to North Africa by increments, the greater part going to Casablanca. There, it boarded a train, and for 3 days enjoyed the luxuries of a journey by "40 and 8's" to Magenta, Algeria. On 26 December, the battalion was again a complete unit and turned to training programs, including Bailey bridge, mine warfare and infantry work, until the next month, when the 88th Division moved to Italy.

316th Engineer Combat Battalion

The 316th Engineer Combat Battalion was activated on 15 August 1942 at Camp White, Oregon, as part of the 91st Infantry Division. Its officer cadre had come from the Engineer School, Fort Belvoir, Virginia, where it had been assembled from various units. The enlisted cadre came from the 8th Engineer Squadron, 1st Cavalry Division, at Fort Bliss, Texas. The battalion trained at Camp White until it departed on 1 September 1943 to participate in the IV Corps maneuvers in eastern Oregon. Following the maneuvers, the organization returned to garrison at Camp Adair, Oregon, refitting and training until alerted on 20 January 1944 for overseas movement.

The battalion departed from Camp Adair on 19 March, completed its staging period at Camp Patrick Henry, Virginia, and sailed from the Hampton Roads Port of Embarkation on 1 April. Most of the battalion, together with other units of the 91st Division, landed in Oran, Algeria, on 20 April, while the remainder arrived on 1 May. In Algeria, the engineers went into a period of intensive amphibious training along the Mediterranean coast east of Oran and each company participated in realistic landing exercises in the vicinity of Arzew. Company "A" left the battalion and went to Italy with the 361st Combat Team on 22 May 1944.

317th Engineer Combat Battalion

The 317th Engineer Combat Battalion was activated at Fort McClellan, Alabama, on 15 October 1942, as the engineer unit of the 92nd Infantry Division. Like the rest of the division, the 317th was a colored unit, with both colored and white officers. Training was immediately initiated and conducted at three camps in the United States. Besides the period at Fort McClellan, from 15 October 1942 to 5 May 1943, the unit was at Fort Huachuca, Arizona, from 8 May to 23 January 1944, in the Louisiana maneuver area from 26 January 1944 to 13 April 1944, and at Fort Huachuca again from 17 April to 4 September 1944.

Company "B" of the 317th left Fort Huachuca as part of the 370th Combat Team and embarked from Hampton Roads 15 July 1944, arriving at Naples 31 July. The company then moved with the Combat Team to Civitavecchia, where it was staged for its entry into combat.

On 26 August, a detachment of four engineer officers and six enlisted men left Fort Huachuca with the division advance detachment and went to Bari, Italy, arriving 27 September. Proceeding to Leghorn, it planned and laid out a staging area and began to receive equipment for the battalion. The remainder of the 317th left Fort Huachuca 4 September and arrived at Leghorn on 4 October. The battalion remained in the staging area until it was committed to action 5 November 1944. Before entering combat, the battalion worked on railroads, swept minefields and did minor road repair work.

19th Engineer Combat Group401st Engineer Combat Battalion402nd Engineer Combat Battalion

In the first days of its activation at Fort Ord, California (25 June to 1 July 1940), the 19th Engineer Combat Regiment was known as the 19th Engineer Regiment (General Service). From 1 July on, it was designated as the 19th Engineer Regiment, Combat. The unit remained on the west coast for two years, occupied with training and maneuvers. In January and February, the 19th made a general survey for destruction and blocking communications in and around the city of Los Angeles in the event of an invasion. One battalion moved to Santa Barbara on a forced motor march to repel a threatened landing when a Jap submarine shelled oil tanks there.

APPENDIX H

19th Engineer Combat Group (cont'd).

The regiment sailed for Scotland aboard the "Queen Elizabeth", 31 August 1942, and stayed in the British Isles until 26 October 1943. It landed at Arzew on D Day, 8 November, and did engineer and infantry work throughout the African campaign. The 1st Battalion was attached to the 45th Division arriving in Sicily on 10 July 1943 (D Day). The first mission was to make the Comiso Airport operational by D plus 2. This was accomplished by 0600 hours on the scheduled day, even though work could not be started until the evening of D plus 1. The remainder of the regiment arrived in Sicily on 29 July and performed normal engineer duties until alerted for movement to Italy.

The 19th Engineer Combat Regiment was reorganized on 1 March 1945 and redesignated the 19th Engineer Combat Group, while regimental headquarters was at Frassineta, east of Monghidoro, Italy. The 1st and 2nd Battalions were reorganized at the same time, and redesignated the 401st Engineer Combat Battalion and 402nd Engineer Combat Battalion, respectively.

39th Engineer Combat Group

404th Engineer Combat Battalion
643rd Engineer Combat Battalion

A cadre from the 19th Engineers formed the nucleus of the 39th Engineer Combat Regiment which was organized at Camp Bowie, Texas, 25 April 1942. Throughout the summer and fall, it trained and took part in two Louisiana maneuvers. After refresher training, the regiment left from New York City on 13 January 1943, arrived at Mers-el-Kebir on 26 January and was assigned to the Fifth Army to build the Engineer Training Center in Morocco. In July, it sailed from Algiers to Gela, Sicily, as part of the Seventh Army. For three days, the 1st Battalion served with the Ranger Force, making the initial landing on 10 July 1943. Later, the rest of the regiment arrived and continued in the campaign until 25 August. On 11 September, the 39th Regiment was relieved from its assignment to Seventh Army and reassigned to Fifth Army.

On 1 March 1945, when the unit was near Pisa, the 39th Engineer Combat Regiment was reorganized and redesignated the 39th Engineer Combat Group. At the same time, the 1st and 2nd Battalions of the regiment were reorganized and redesignated the 404th and 643rd Engineer Combat Battalions, respectively.

1108th Engineer Combat Group

48th Engineer Combat Battalion
235th Engineer Combat Battalion
337th Engineer Combat Battalion
255th Engineer Combat Battalion

The 48th Engineer Regiment was activated on 25 July 1942 at Camp Gruber, Oklahoma. In April 1942, it left for Louisiana to participate in the Third Army maneuvers, and by redesignation on 7 April became the 1108th Engineer Combat Group, the battalions becoming the 48th and 235th Engineer Combat Battalions, respectively. The entire organization returned to its home station in June to prepare for overseas movement. Processed at Camp Miles Standish, Massachusetts, it sailed from Staten Island on 21 August 1943, and arrived at the port of Oran on 3 September.

After a one-month training period at Saint Denis du Sig, Africa, where emphasis was placed on Bailey bridges and enemy mine warfare, Group Headquarters and the 48th Engineer Battalion sailed for Italy, disembarking at Bagnoli on 10 October. Equipment was assembled and transported first to Avellino, then to Caserta, and it was in the latter city that the two battalions were once again united under group command, the 235th Engineer Combat Battalion having arrived in Italy on 28 October.

On 7 December 1944, the 337th and 409th Engineer Combat Battalions were activated near Malpensa, Italy. The personnel for these two units was obtained from the 335th and 354th Anti-Aircraft Artillery Battalions of the 4th Anti-Aircraft Artillery Group, when those units were de-activated. The 409th Battalion was redesignated the 255th Engineer Combat Battalion on 8 January 1945, while the unit was still near Malpensa. These two battalions were then attached to the 1108th Engineer Combat Group for training in engineer work, and later for operations with IV Corps. The conversion of Anti-Aircraft Artillery units to Engineers was accomplished smoothly (for details of the method of conversion and training see Appendix "O").

1168th Engineer Combat Group

On 7 December 1944, Headquarters and Headquarters Company, 1168th Engineer Combat Group was activated in the vicinity of Barberino, Italy. Personnel from the 4th Anti-Aircraft Artillery Group (disbanded) was utilized to the greatest extent, and additional personnel transferred from other engineer units of Fifth Army.

1338th Engineer Combat Group
(337th Engineer General Service Regiment)

169th Engineer Combat Battalion
182nd Engineer Combat Battalion
185th Engineer Combat Battalion

The 337th Engineer General Service Regiment was activated at Camp Swift, Texas, on 20 July 1942. The regiment was moved during the latter part of January 1943 to the Louisiana maneuver area near Camp Polk, and participated in Third Army maneuvers during February, March and the early part of April 1943. Upon being relieved of duties in the maneuver area, the regiment was alerted for overseas movement, staged at Camp Miles Standish, Massachusetts, and embarked from New York Port of Embarkation on 29 April, landing at Oran, Algeria, twelve days later.

The regiment was assigned to Fifth Army in June 1943, and operated in the vicinity of Oran and Algiers, with Company "F" attached to Fifth Army Headquarters at Oujda, Morocco, and later at Mostaganem, Algeria. Company "B" was attached to the 344th Engineer General Service Regiment for invasion training from 20 July to 29 August 1943. On 13 August, the 2nd Battalion was attached to VI Corps and began invasion training near Valmy, Algeria.

On 16 September 1944, the 337th Regiment was disbanded, and the personnel of the regiment transferred to the 1338th Engineer Combat Group, which was activated the same day. The personnel of the 1st and 2nd Battalions made up the newly activated 169th and 182nd Engineer Combat Battalions.

The 185th Engineer Combat Battalion was originally Battery "A", 213th Coast Artillery Regiment Anti-Aircraft, upon induction into Federal service on 16 September 1940. The next months were spent in training until the U.S. entered the war in December 1941. At that time, the unit departed from Fort Eustis in two hours and rushed north to protect New York harbor. The battery was expanded into the 3rd Battalion, 213th Regiment, on 13 June 1942, after additional cadres were added.

On 1 November 1942, the unit left New York harbor aboard the U.S. Army transport "John Ericson" for Casablanca. The regiment operated in North Africa until 13 October 1943 when it departed for Naples. The battalion maintained Naples defense positions until 1 April 1944, when the unit was reorganized into a separate battalion, the 337th Anti-Aircraft Artillery Searchlight Battalion, which continued the air defense of Naples until after the fall of Rome.

The unit moved to Civitavecchia on 26 June 1944 and maintained anti-aircraft positions around that port until inactivation on 24 September 1944. The entire personnel was transferred to the 185th Engineer Combat Battalion, which was activated on 25 September. Four days later, the battalion moved near Sernallino, was attached to the 1338th Group and began a six weeks' course in engineering training.

36th Engineer Combat Regiment

The 36th Engineer Combat Regiment was activated on 1 June 1942 at Plattsburg Barracks, New York. After more than a year of training and maneuvers with VI Corps, First Army, 1st Infantry Division, and 9th Infantry Division, the 2nd Battalion left for overseas with the 39th Infantry Regiment of the 9th Infantry Division in September 1942. The regiment, less the 2nd Battalion, was attached to the 3rd Infantry Division and became part of the Western Task Force. It left Norfolk, Virginia, on 24 October 1942 and landed at Fedala, French Morocco. Shortly afterward, the regiment, less the 2nd Battalion, was assigned to I Armored Corps.

The 2nd Battalion left England as part of the Eastern Task Force and landed in Algiers. The regiment itself operated the Port of Fedala until February 1943, at which time it moved to Rabat for training. In April 1943, it was attached to the Fifth Army Invasion Training Center for training and moved to Arzew, where the 2nd Battalion rejoined it. The 36th was again attached to the 3rd Infantry Division, and landed in Sicily on 10 July 1943, remaining there to operate the Port of Licata until 19 August 1943. The unit then returned to Bizerte, Tunisia, where it was assigned to Fifth Army and attached to VI Corps.

92nd Engineer General Service Regiment

The 92nd Engineer General Service Regiment was originally constituted on 1 October 1933 as the 51st Engineer Battalion (Separate), an inactive unit of the Regular Army. The unit was redesignated the 92nd Engineer Battalion on 1 January 1938 and activated at Fort Leonard Wood, Missouri, on 1 May 1941. For one year, the battalion, a colored unit with white officers, trained, participated in the Louisiana-Arkansas maneuvers with the Second Army in the fall of 1941, and engaged in camp construction work.

On 1 May 1942, the organization was redesignated the 92nd Engineer Regiment (General Service). The following month, the unit moved to Fort Dix, New Jersey, and on 1 July 1942 sailed for Scotland. The regiment was assigned to Southern Base Section of Service of Supply, European Theater of Operations, and was stationed near Taunton, Somerset, in Southwest England. On 1 August, the unit was redesignated the 92nd Engineer General Service Regiment.

On 6 February 1943, the regiment sailed for Oran, arriving ten days later. There, the unit was assigned to the Mediterranean Base Section. In April, the regiment was attached to the Fifth Army Invasion Training Center in preparation for the Sicily and Salerno operations. On 14 November 1943, the unit sailed from North Africa and landed at Naples three days later. Although assigned to the Fifth Army at that time, the regiment was attached to Peninsular Base Section and worked for the 1051st Engineer Port Construction and Repair Group on the port facilities in Naples harbor. On 20 December 1943, the 2nd Battalion was released from attachment to Peninsular Base Section. On 5 January 1944, the rest of the organization was also released and the entire regiment entered the Fifth Army area north of the Volturno River.

On 1 February 1945 near Sesto, Italy, the regiment was reorganized and increased from two to three battalions. The additional personnel was drawn from the 387th Engineer Battalion (Separate), which was de-activated the same day.

175th Engineer General Service Regiment

The 175th Engineer Regiment was organized on 16 February 1942 at Fort Jackson, South Carolina. The regiment left the New York Port of Embarkation on 2 November 1942. Prior to this date, it had served in the United States on combat teams of the Eastern Defense Command. The 175th arrived in Casablanca, French Morocco, 18 November 1942, in the D plus 5 convoy of the Western Task Force. While there, cantonments were constructed, an engineer dump operated, roads and railways constructed, nine miles of taxiways and fifty hardstandings at Gazes Airport near Casablanca built, and the French Morocco Power system reconnoitered.

On 25 February 1943, the regiment proceeded to La Meskiana, Algeria, and was attached to the British First Army, to maintain and repair roads in that area. In Tunisia in March, the regiment was attached to the American II Corps and continued road and bridge maintenance and repair in the Tebessa-Haidra-Thala-Feriana region of Tunisia. In April, the regiment again was attached to the British, this time to the Eighth Army. Road and bridge work was done in the Sbeitla-El Djem-Enfidaville-Maktar area of Tunisia, and also harbor work at Sousse. On 21 May 1943, the regiment was attached to Eastern Base Section for road work and the clearing and repair of Karouba Base, Bizerte.

On 1 August 1943, the 175th went to Sicily with the Seventh Army. It was charged with the operation of supply installations, guarding railroads and public utilities, road and bridge repair, salvage work, and the operation of a petroleum distribution system in the area. Near Trapani and Palermo, airport runways and taxiways were constructed. The regiment was released from assignment to the Seventh Army and assigned to Island Base Section on 17 September. On 4 November 1943, the regiment was assigned to Fifth Army and a month later began moving to Italy.

224th Engineer General Service Regiment
226th Engineer General Service Regiment

The 224th and 226th Engineer General Service Regiments were organized on 28 March 1945 near Bottinuccio, Italy. The personnel was obtained by disbanding the 366th Infantry Regiment, previously a colored regiment of the 92nd Division. The officers of the 224th were white officers transferred from other engineer units in Fifth Army. From the time of activation until 27 April, the units were mainly engaged in training (for methods used in reorganization and training see Appendix "P").

343rd Engineer General Service Regiment

The 343rd Engineer General Service Regiment was activated at Camp Claiborne, Louisiana, on 22 April 1942. After two months' basic training at Camp Claiborne and Fort Dix, New Jersey, the regiment embarked for foreign service from New York on 1 July 1942, landing at Glasgow, Scotland, thirteen days later. The 343rd did construction work on hospitals, barracks and depots in an area from Henley-On-Thames to Reading, and west to Taunton. The 1st Battalion embarked for North Africa from Glasgow, arrived at Mers-El-Kebir on 11 November 1942, and immediately started to work clearing the port's harbor and highways of debris, mines, and booby trap installations. The same work was done in Oran. The remainder of the regiment landed in North Africa on 6 December, joined the 1st Battalion and went into bivouac at Canastel, east of Oran. There, it was assigned to the Fifth Army early in January 1943. The 2nd Battalion landed with the first water convoy entering the harbor of Palermo during the Sicilian Campaign. The enormous job of harbor clearance where was begun immediately. All military highways through and out of the city had to be cleared and repaired, and the city's utilities systems rehabilitated. At the close of the Sicilian Campaign, the 343rd was given the assignment of all the bridge design and construction from Bandazzo and Capo d'Orlando to Messina. When the work was completed, the entire regiment embarked from Termini Imerese for Italy on 26 September 1943.

344th Engineer General Service Regiment

The 344th Engineer General Service Regiment was constituted within the IV Corps area in 1921 as an organized Reserve unit. It was activated into Federal service at Camp Claiborne, Louisiana, on 29 April 1942. Its initial training in the United States was basic and very limited. The regiment moved overseas 1 July 1942, arriving at Gourock, Scotland, on 12 July. The unit was immediately assigned to Southern Base Section, European Theater of Operations, and undertook construction projects in South England. Before going to Oran in January 1943, three months' combat training was completed.

In Africa, the 344th was assigned to Mediterranean Base Section, to do general construction work. From 18 July to 1 September 1943, the regiment was assigned to Fifth Army and attached to the Fifth Army Invasion Training Center at Port-aux-Poules, Algeria, where it trained as an engineer shore regiment. It later trained the 36th Infantry Division and one combat team of the 34th Infantry Division in amphibious operations, including the clearing of beach and underwater obstacles.

As the invasion of Italy approached, it became apparent that the 344th would have to be used as a shore regiment for the landing, so it was completely equipped, loaded and rehearsed, only to have the 531st Engineer Shore Regiment arrive to take its place about a week before D Day. As a result, the 344th was returned to Mediterranean Base Section for construction work. On 12 November 1943, it was again assigned to Fifth Army and arrived in Naples on 17 November, moving the same day to Bagnoli.

531st Engineer Shore Regiment

The 531st Engineer Shore Regiment was activated at Camp Edwards, Massachusetts, 15 June 1942. The regiment included three Far Shore Companies in each battalion instead of the usual two Far Shore and one Near Shore Company. The personnel embarked from New York on 6 August 1942 and landed at Belfast, Ireland, on 17 August. After a brief training period in Great Britain, the battalions embarked for Algeria with three combat teams. The 531st landed on 8 November 1942 (D Day in North Africa) in support of the 1st Infantry Division. Following the close of the African campaign, the regiment performed numerous assignments, including the operation of the port of Arzew, construction of an air strip at Belizane, and aided in the construction and operation of the Fifth Army Invasion Training Center at Port-aux-Poules, Algeria.

The 531st landed in Sicily on 10 July 1943 and participated in the campaign until 15 August. The regiment then returned to Africa and was assigned to the Fifth Army, which attached it to VI Corps.

On 5 September 1943, the regiment, with attached units and less rear echelon personnel and equipment, boarded transports and landing craft in the harbor of Oran, preparatory to participating in the assault on Salerno on D Day. The 531st was assigned the mission of supporting the 36th Infantry Division.

540th Engineer Combat Regiment

The 540th Engineer Shore Regiment was activated at Camp Edwards, Massachusetts, on 11 September 1942. During training, the 540th worked with the 36th Combat Regiment in amphibious exercises at Fort Bragg, North Carolina, at Camp Bradford, Virginia, and on the Chesapeake Bay. The 1st and 2nd Battalions were attached to the 60th and 47th Infantry Regiments of the 9th Division. This attachment was made for the purpose of coordinating infantry missions with those of shore engineers, and to create regimental combat teams capable of forcing a landing and maintaining a beachhead on hostile shores.

540th Engineer Combat Regiment (cont'd).

On 19 October, the 2nd Battalion left the continental limits of the United States followed by the 1st Battalion on 23 October. The regiment was changed from a Shore Regiment to a Combat Regiment on 25 October. The convoy zig-zagged its way across the Atlantic, first toward England, then Bermuda, Dakar, the Canary Islands, and finally French North Africa. Both battalions landed 8 November--D Day. They did various jobs including beach, port, and depot work, until assigned to Fifth Army on 15 March 1943. Thereafter they trained with the I Armored Corps at Rabat and under the First Engineer Amphibian Brigade at Port-aux-Poules. Modern equipment was issued to the regiment, and the men given the opportunity to familiarize themselves with the new amphibious truck called the "DUKW".

The regiment landed in Sicily on D Day, 10 July, the 2nd Battalion acting as shore engineers for the 3rd Infantry Division, the remainder of the regiment as shore engineers for the 2nd Armored Division. After operating the landing beaches of Gela and Licata, the regiment opened and operated the Port of Palermo on 25 July and Termini Imerese on 5 August. Two landings made by men of the 2nd Battalion on the north shore of Sicily towards Messina helped bring the campaign to a speedy conclusion. After the fall of Sicily on 17 August 1943, the regiment was relieved from assignment to the Seventh Army, assigned to the Fifth Army and attached to the 45th Division.

387th Engineer Battalion (Separate)

The 387th Engineer Battalion (Separate), a colored unit with white officers, was activated at Fort Meade, Maryland, on 1 May 1942. The battalion trained and did construction work in the United States until it left New York for Oran on 1 April 1943. In Africa, the battalion was assigned to I Armored Corps and later to the Seventh Army. It was attached to Mediterranean Base Section for four months, during which time it performed varied engineer activities--repairing, construction, painting, garnishing camouflage nets, etc. On 20 August 1943, the battalion was assigned to Fifth Army, but remained attached to Mediterranean Base Section.

The summer was hot but morale remained high, as varied recreational facilities were made available to the men. In Oran, there was a formal guard mount, a battalion parade once a week, and all companies marched through the streets during retreat ceremonies. On 22 September, the battalion was released from attachment to Mediterranean Base Section and alerted for overseas movement. Up the gang plank went the officers and men on 1 October 1943, and the next day they sailed from the harbor of Mers-El-Kebir.

On 1 February 1945, the 387th was disbanded and the personnel used for the 3rd Battalion of the reorganized 92nd Engineer General Service Regiment and also for the newly activated 2769th Engineer Depot Company.

405th Engineer Water Supply Battalion

The 405th Engineer Water Supply Battalion was activated at Camp Breckinridge, Kentucky, on 20 November 1942 from a cadre supplied by the 85th Engineer Heavy Ponton Battalion. From the time of activation until 1 May 1943, when it moved to the staging area at Camp Patrick Henry, Virginia, the battalion was busy organizing and training. On 10 May, the battalion departed from Hampton Roads, Virginia, for overseas. It arrived at Oran on 23 May, and was assigned to the Fifth Army six days later. Headquarters, Headquarters and Service Company and Company "B" were attached to the Atlantic Base Section at Casablanca, French Morocco; Company "C" was attached to the Eastern Base Section at Bizerte, Tunisia; and Company "A" went to Oujda, French Morocco. The period from the time of arrival overseas until the initial landings by the Fifth Army at Salerno was spent in securing equipment, further training and normal water supply operations.

Detachment, 85th Engineer Heavy Ponton Battalion

Activated on 4 June 1941 at Fort Belvoir, Virginia, the battalion participated in the 1941 Second Army maneuvers in Louisiana, the 1941 First Army maneuvers in North Carolina, and in the 1942 VI Corps maneuvers, also in North Carolina. Company "A" left the New York Port of Embarkation and arrived in Oran, Algeria, on 11 May 1943, followed by a portion of the battalion headquarters and part of the Headquarters and Service Company.

While in North Africa, the detachment's training consisted of constructing heavy ponton bridges across the Cheliff River and erecting Bailey bridges across selected dry gaps. A school in mines and demolitions was held for all personnel. On 21 August 1943, the entire detachment was assigned to Fifth Army. After staging and completing the necessary details, it sailed from Bizerte, landing at Bagnoli, Italy, on 16 October 1943.

1554th Engineer Heavy Ponton Battalion

The 6496th Engineer Heavy Ponton Battalion (Provisional), a colored unit, was activated 29 March 1944 on the Cheliff River, 10 miles east of Mostaganem, Algeria. On 5 June 1944, the unit was designated the 1554th Engineer Heavy Ponton Battalion. The officers and enlisted men of the battalion were for the most part drawn from the 2nd Cavalry Division, also a colored unit with white officers. Thirteen weeks were spent in training in basic engineering subjects, and specialized bridge construction. Assignment to the Fifth Army came on 12 June 1944 and the battalion wound up its training and began to prepare for the trip to Italy.

1029th Engineer Treadway Bridge Company

The Engineer Treadway Bridge Detachment, 345th Engineer General Service Regiment, which later became the 1029th Engineer Treadway Bridge Company, was organized from excess personnel of the 16th Armored Engineer Battalion, when the 1st Armored Division was reorganized late in July 1944. A Treadway Bridge Company is normally organized as a separate company, but since no activation orders were received from the War Department, it was set up as a detachment of the Headquarters and Service Company of the 345th Engineer General Service Regiment, a Peninsular Base Section unit. The detachment was attached to Fifth Army for operations.

The period from 26 July to 2 September 1944 was spent in organizing the company, training the men in the handling of treadway and Bailey bridging, driving and operating Brockway bridge trucks, and in general combat engineering. On 2 September, the company moved from Castagneto to Poggibonsi, where it began operation as a unit. The detachment became the 1029th Engineer Treadway Bridge Company, upon activation on 28 November 1944, at Pistoia.

1755th Engineer Treadway Bridge Company

The 1755th Engineer Treadway Bridge Detachment, formerly the bridge company of the 16th Armored Engineer Battalion of the 1st Armored Division, was activated under its new name on 7 August 1944 near Castelfiorentino, Italy, shortly after the parent unit's reorganization.

217th Engineer Dump Truck Company

On 10 March 1945, the 217th Engineer Dump Truck Company was activated at Pistoia, Italy, obtaining personnel from the 2769th Depot Company and equipment from the disbanded 427th Engineer Dump Truck Company.

423rd Engineer Dump Truck Company

The 423rd Engineer Dump Truck Company, a colored unit, was activated 15 April 1942 in Camp Claiborne, Louisiana. Thirteen weeks' basic training, plus work on the "Worst Railroad in the World" between Camp Claiborne and Camp Polk, followed. On 10 August 1942, the unit entrained for Fort Dix, New Jersey, for overseas shipment. There was a slight change in plans, however, and while enroute the unit moved instead to Camp Pickett, Virginia. There, it spent six more months training.

The 423rd embarked from New York on 1 April 1943 and sailed the next day for Oran. In North Africa, the unit was assigned to Headquarters, Mediterranean Base Section, during which time it won the Mediterranean Base Section "E" for all-around excellence. The company was assigned to Fifth Army on 8 January 1944, but did not sail for Italy until 10 March. The unit shipped out of Mers-El-Kebir harbor in two detachments: one aboard a passenger liner; the other went with the equipment on a freighter.

425th Engineer Dump Truck Company

The 425th Engineer Dump Truck Company, a colored unit, was activated 27 March 1942, and after a year of training and some work with the 423rd on the ill-fated "worst railroad" at Camp Claiborne, Louisiana, left the States for Africa on 2 April 1943. After a six months' assignment with the Atlantic Base Section at Casablanca, French Morocco, the company sailed from Bizerte on 9 October and landed at Salerno two days later. Prior to embarkation, the company had been assigned to Fifth Army.

APPENDIX H

427th Engineer Dump Truck Company

On 31 December 1941, at Camp Claiborne, Louisiana, an order was received from Washington to organize the first white Engineer Dump Truck Company. This was the beginning of the 427th Engineer Dump Truck Company. The unit hardly had been formed when orders for movement overseas were received. The 427th left the United States on 15 January 1942 and after eleven days at sea landed in Ireland. In the Old Country, along with numerous movement and construction duties, the 427th went through a tough training program. The unit then moved to England, spent two months there, and went to Africa, arriving on 17 January 1943. There, the company did road construction work, first under Mediterranean Base Section, then under II Corps, until the Sicilian Campaign. A week after landing in Sicily as a part of the Seventh Army, the 427th was assigned to the Fifth Army.

400th Engineer Maintenance Company

On 3 December 1944, the 2nd Platoon of the 473rd Engineer Maintenance Company supplied a cadre for the activation of the 400th Engineer Maintenance Company at Sesto, Italy. Additional personnel was obtained from the 354th Anti-Aircraft Artillery Searchlight Battalion to bring the company up to strength.

469th Engineer Maintenance Company

On 1 December 1941, the 392nd Engineer Depot Company was redesignated the 469th Engineer Shop Company at Camp Shelby, Mississippi. The name was later changed to the 469th Engineer Maintenance Company. It had spent a month at Camp Claiborne, Louisiana, and almost a year at the Desert Training Center in California, when it moved overseas. As this was one of the first maintenance companies, equipment was difficult to obtain and very little actual maintenance operations experience was possible in the States.

The company arrived at Oran on 14 April 1943, where it was assigned to the Mediterranean Base Section. In July, it was assigned to the Seventh Army and went to Sicily to take part in that campaign. After a short assignment to Island Base Section following the cessation of the Sicilian Campaign, the company, less the Contact Platoon, was assigned to the Fifth Army and arrived at Paestum on 6 October 1943.

473rd Engineer Maintenance Company

The 473rd Engineer Maintenance Company was activated at Camp Gordon, Georgia, 15 May 1942. The company departed from the United States on 21 August 1943, enroute to North Africa, and arrived in Oran on 2 September 1943. After one month in North Africa, the unit embarked for Italy and arrived at Naples on 10 October 1943. The 473rd was attached to Fifth Army upon arrival at Naples, but on 1 November, it was relieved of this attachment and assigned to Peninsular Base Section. During this assignment, the company performed its duties of 2nd, 3rd and 4th echelon repairs on engineer equipment, and also operated the engineer equipment depot E2-54. On 10 May 1944, orders were received attaching the 2nd Platoon to Fifth Army, and ordering it to report immediately to the Anzio beachhead. This platoon was later augmented by the attachment of two officers and twenty enlisted men from various units.

66th Engineer Topographic Company

The 66th Engineer Topographic Company started intensive training immediately after it was activated at Fort Jackson, South Carolina, on 8 July 1941. It participated in the 1941 Carolina maneuvers, and also furnished all map issues for the 1942 Tennessee maneuvers. On 15 September 1942, the 66th boarded a train bound for Camp A. P. Hill, Virginia. Here, it was learned that the 66th was to be a unit of Task Force "A", and the time at Camp Hill was spent in equipping and re-equipping the company. The equipment requirements changed almost daily, and everyone was completely in the dark as to where the company was to be sent, as both arctic and tropical items were issued to it.

A Map Distribution Detachment of fifteen men was furnished after being thoroughly scrutinized by the Federal Bureau of Investigation, and this detachment handled all maps and charts to be used in the invasion of French Morocco. It received the bulk stock of maps in Washington and accompanied them in specially guarded express cars to Hampton Roads Port of Embarkation. In a well guarded warehouse, the maps were sorted and a detailed breakdown was made for all the units which were to participate in the invasion of North Africa. After the maps had been duly and ceremoniously turned over to the captains of the various invasion ships, the group was divided into three parts, each being placed on a separate ship.

66th Engineer Topographic Company (cont'd).

At Camp Kilmer, New Jersey, the rest of the company had its last big fling in New York City, and learned the novel army game of "Take it out of your A Bag and put it into your B." It sailed from New York on 1 November 1942 on the U. S. Army Transport "Ericsson", formerly the Swedish luxury liner "Kungsholm". The maps were distributed and the secrecy lifted after seven days at sea--it then being too far away to swim back home. In Africa, the company was attached to the Western Task Force, I Armored Corps and Allied Force Headquarters. The Survey Platoon was attached to the 3rd Infantry Division, with which it made the landing in Sicily. The platoon was assigned to Fifth Army and left Termini Imerese to land in Italy on 20 September 1943. The balance of the company arrived at Salerno on 5 October 1943.

1710th Engineer Map Depot Detachment

The 2658th Engineer Map Depot Detachment was formed on 24 May 1943, in North Africa. It was later redesignated the 1710th Map Depot Detachment and on 12 November 1943 was assigned to the Peninsular Base Section. In January 1944, one officer and six enlisted men were detached from the unit and attached to Fifth Army, which in turn attached it to VI Corps. In May, the entire detachment was assigned to Fifth Army.

1712th Engineer Map Depot Detachment

The 2699th Engineer Map Depot Detachment (Provisional) was originally organized on 18 August 1943 at Oran, Algeria. The tentative Table of Organization authorized one 1st Lieutenant and twelve enlisted men. Of the enlisted men, six had received topographical training at Fort Belvoir, Virginia, or at Lexington, Kentucky. On 24 August 1943, the unit was confined in a large garage in Oran and remained segregated from all other troops until landing in Italy on D plus 7. During this period, the men assisted in handling the map breakdown for the "AVALANCHE" operation. On 1 September 1943, the breakdown being completed and the maps delivered to the various units, the depot personnel moved to the staging area outside of Algiers to await embarkation orders. The unit's changes of designation have been many, from Engineer Detachment (Map Supply) to its present name, the 1712th Engineer Map Depot Detachment.

597th Engineer Light Equipment Company

On 10 March 1945, the 597th Engineer Light Equipment Company was activated at Montecatini, Italy, utilizing the personnel of the 427th Engineer Dump Truck Company, which was disbanded the same day.

2750th Engineer Light Equipment Company

This organization was activated on 20 July 1944 near San Vincenzo, Italy. It was in an olive grove there that the first pieces of equipment and the first operators began to arrive. The unit was activated to supply and operate engineer equipment for all engineer units in Fifth Army, as well as to perform as much maintenance as possible. The majority of the men for the company came from combat organizations and had an average of 20 months overseas service. The 16th Armored Engineer Battalion furnished approximately 60 per cent of the personnel, including some excellent cooks who brought along with them a well stacked kitchen truck. Additional technicians were chosen from the 175th and 337th Engineer General Service Regiments, 19th Engineer Combat Regiment, 469th Engineer Maintenance Company, 85th Engineer Heavy Ponton Battalion and the 427th Engineer Dump Truck Company.

383rd Engineer Depot Company

The 383rd Engineer Depot Company was activated at Sesto, Italy, on 3 December 1944, utilizing the one officer and thirty-six enlisted men of the 1st Platoon of the 451st Engineer Depot Company as a nucleus.

450th Engineer Depot Company

This company, activated 2 February 1942 at Camp Shelby, Mississippi, trained in the United States until 1 July, when it sailed for England. The period of service there involved the operation of three engineer depots and unit training until the unit moved to Oran, Algeria, arriving on 11 November 1942. During the time spent in Africa, the company operated eighteen engineer depots for Mediterranean Base Section, Eastern Base Section and II Corps. On 1 June 1944, it was assigned to Fifth Army, with one platoon attached to Eastern Base Section and another to the Seventh Army. The company, less two platoons, arrived in Naples on 11 June 1944.

APPENDIX H

1st Platoon, 451st Engineer Depot Company

The 451st Engineer Depot Company was activated 15 May 1942 at Camp Gordon, Georgia. When training had been finished, the company moved to Fort Dix, New Jersey, and departed from Staten Island on 8 February 1943. Eight days later, an oil tanker hit the troop ship and she spent the next four days limping to Bermuda. For three sunlit weeks, the boys from the 451st vacationed on the isle, while being completely re-equipped and waiting for another ship in which to continue the voyage.

The 451st arrived at Casablanca on 18 March, and three days later took over control of an Atlantic Base Section depot. This assignment terminated 15 August. Two days later, the 1st Platoon arrived in Oran, was assigned to the Fifth Army and attached to VI Corps. The split between the 1st Platoon and the remainder of the company was to be permanent.

Preparing for the Italian campaign, the 1st Platoon was divided into two sections: eleven enlisted men and one officer to go on D Day to Italy with the 531st Engineers; 29 enlisted men and no officers to follow with the 661st Topographic Company. On 3 September, the first section went aboard ship and six days later landed on the beaches at Salerno to open an engineer dump.

2769th Engineer Depot Company

The 2769th Engineer Depot Company, a colored unit, was activated on 1 February 1945 near Sesto, Italy. Most of the personnel was drawn from the disbanded 387th Engineer Battalion (Separate). Since the unit was to be used for general engineering tasks rather than depot work, the men were selected accordingly. Immediately upon activation, the 2769th was attached to the 92nd Engineer Regiment.

Companies "A" and "D", 84th Engineer Camouflage Battalion 2916th Engineer Camouflage Company

The employment of the 84th Engineer Camouflage Battalion was rather unusual, with companies and platoons generally operating independently of the battalion headquarters. Two companies, "A" and "D", eventually became separate companies with the Fifth Army, with which the rest of the battalion had no connection whatsoever.

At Camp Livingstone, Louisiana, on 1 October 1942, Headquarters and Service Company of the 84th Engineer Camouflage Battalion formed four new line companies. In February 1943, after five months' training, the battalion was alerted for overseas duty. It shipped from Fort Dix, New Jersey, in separate increments on and after 1 April. In May, at Oran, Company "A" resumed its camouflage duties under the 84th Battalion's direction after the headquarters had collected all its scattered elements except one platoon. The 1st Platoon of Company "A" had arrived in Africa earlier and had been assigned to teach camouflage at the Fifth Army Engineer Training Center until 15 May, at which time it was transferred to the Army Leadership and Battle Training Center. On 2 June, the 4th Platoon began to instruct at another Fifth Army school, the Tank Destroyer Training Center at Sebdu.

Meanwhile, the whole of Company "A" was attached to Fifth Army for one month's training. On 13 June, the 2nd Platoon also left the company and was attached to Fifth Army's VI Corps to teach camouflage to units of that command. All that remained of Company "A" was the headquarters and the 3rd Platoon, and when they returned to Oran they were attached to an anti-aircraft unit and began camouflaging coastal installations. In this manner, Company "A" of the 84th continued to instruct Fifth Army units and supervise and construct camouflage installations throughout the summer and fall until it left for Italy in October, having been assigned to Fifth Army on 4 September 1943.

Company "D" of the 84th Engineers functioned similarly. It left the United States during the same period as Company "A", the first component on 4 April 1943. Although Company "D" was not, at this time, assigned to Fifth Army, some of its units were attached at various times to the Army's schools. They, too, provided camouflage instruction for the Engineer Training Center and constructed a camouflage demonstration area near Mostaganem in conjunction with the observation tour conducted by Company "A". The tour included a similar demonstration area built by Company "B", 84th Engineers, in the Arzew area. Company "D" acted as the First Airborne Camouflage Platoon with the 82nd Airborne Division and performed normal instructional work with the Twelfth Bomb Group, North Africa Theater of Operations and Mediterranean Base Section before leaving for Italy at Christmas time, 1943.

On 1 April 1945, in Sesto, Italy, Company "D", 84th Engineer Camouflage Battalion, was reorganized and redesignated the 2916th Engineer Camouflage Company.

1202nd and 1204th Engineer Composite Platoons

On 31 August 1942, several Engineer Fire Fighting Detachments were activated at Camp Claiborne, Louisiana. Basic training was completed, and Detachments #2 and #4 received special training at the New Orleans Staging Area, Camp Harahan, Louisiana. This training was completed in March 1943 and the units moved to Fort Dix, New Jersey. Detachment #4 left the United States on April Fool's Day, arriving at Casablanca on 12 April. It was assigned to the Atlantic Base Section and operated an Army Fire Station there until August. On 25 August, the unit was reorganized under the new Table of Organization and Equipment 5-337, dated 12 May 1943, and redesignated the 1204th Engineer Fire Fighting Platoon. The 1204th was assigned to the Fifth Army on 19 August 1943 and left Casablanca on the last of the month. September was spent in a bivouac area at Bizerte and aboard ship enroute to Italy.

Detachment #2 left the States one day later than its brother organization and landed at Oran. This unit set up and operated fire stations at Oran, Mers-El-Kebir, Tlemcen, Nemours and Oujda while assigned to Mediterranean Base Section. Detachment #2 was also reorganized (16 August 1943) and redesignated the 1202nd Engineer Fire Fighting Platoon. Four days later, the unit was assigned to the Fifth Army.

1206th Engineer Composite Platoon

The 1206th Engineer Composite Platoon was organized as the Engineer Fire Fighting Detachment #6 on 31 August 1942 at Camp Claiborne, at the same time Detachments #2 and #4 were formed. Training in fire fighting was received at Camp Harahan, Louisiana, before the unit sailed to Oran. After the platoon landed on 11 May 1943, it was discovered that its equipment had been sent to Algiers, and it was not recovered until 12 June, a month later. Many types of fires were encountered and extinguished during the African campaign, the biggest problem being water supply for the fire trucks.

On 25 July 1943, the unit was ordered to Sicily with the Seventh Army and left Bizerte, North Africa, on 25 July, landing at Licata on 9 August 1943. Again the problem was water supply, but the unit, redesignated on 9 August 1943, as the 1206th Engineer Fire Fighting Platoon, finally got enough water tankers to continue extinguishing fires. It was becoming increasingly evident that something must be developed to assist the fire fighters in combatting ammunition dump fires. On 15 November 1943, the unit was ordered to Naples via the Messina Ferry. The 1206th was assigned to Peninsular Base Section and worked in Naples until 9 February 1944, when it was attached to Fifth Army and ordered to Anzio.

1980th and 1981st Engineer Fire Fighting Platoons (Aviation)

The 1980th and 1981st Engineer Fire Fighting Platoons (Aviation) were activated at Bradley Field, Connecticut, on 9 April 1943. The platoons consisted of one officer and twenty-nine enlisted men. The enlisted men were drawn, for the most part, from the Airborne troops stationed at Bradley Field, with a small percentage of men with fire fighting experience scattered among the units.

After the units' organization, civilian firemen conducted a five-week training course in the fundamentals of combatting fires. When training was completed, the 1980th was alerted for overseas movement, and on 10 June 1943 sailed from the New York Port of Embarkation. The platoon arrived in North Africa on 21 June 1943 and bivouacked at La Senia, where it spent six weeks gathering its equipment from all parts of North Africa. The unit was assigned to the Eastern Base Section on 3 August and went to Bizerte for duty.

On 18 January 1944, while the unit was still in Bizerte, it was reorganized and assumed the present designation of 1980th Engineer Composite Platoon. The platoon gained much experience in Bizerte combatting all types of fires, which helped prepare it for the more hazardous duties which were to follow in Italy. The unit boarded an LST on 23 March 1944, bound for Naples, and arrived there on 26 March.

The 1981st Fire Fighting Platoon went to Corsica after North Africa, where it operated stations at Cervione, Mezzavia, Porto Vecchio and Ajaccio. On 10 March 1945, the unit was reorganized and redesignated the 1981st Engineer Aviation Fire Fighting Platoon. Four days later, it was assigned to Fifth Army and embarked from the port of Bastia, Corsica, arriving at Leghorn, Italy, the same day.

1621st Engineer Model Making Detachment

The 1621st Engineer Model Making Detachment was activated at Fort Belvoir, Virginia, on 3 September 1943. It was the desire of army commanders in the field that such units be created for the purpose of building terrain models in theaters of operations, close to the sources of information. Previously, all models were built in the States and were available only for large-scale operations. With units in the field, models can be constructed quickly and on the spot, enabling the planning sections to use them for even the smallest details. The detachment embarked for Africa on 23 October 1943 after an intense training program with the Engineer Board, Fort Belvoir. After approximately six weeks under Allied Force Headquarters in Oran, the Fifth Army requested a detachment of five men for work in the Italian campaign.

1628th Engineer Utilities Detachment

On 26 December 1943, the 2616th Engineer Utilities Platoon (Provisional) was activated, consisting of two officers and forty-eight enlisted men. It assembled at Arzew, Algeria, and soon moved by truck convoy to Oujda, French Morocco. There the platoon was attached to Headquarters upon the activation of Fifth Army. From the activation date, 5 January 1943, until Fifth Army Headquarters was established at Oujda, the platoon assisted in changing two school buildings into offices and quarters, furnishing and installing lights, heat, water and plumbing fixtures. It painted signs, constructed desks, cabinets, map rooms, and incidentals needed. In July, the platoon moved to Mostaganem, where it helped Army Headquarters prepare for "AVALANCHE". It constructed, painted, and marked the crates used for shipment of equipment, and also aided in the packing. In August, the platoon was divided into forward and rear echelons; the forward echelon preparing to embark with the advance units of the invasion forces which landed at Paestum on D Day. This unit has now been redesignated the 1628th Engineer Utilities Detachment.

1st British Infantry Division Royal Engineers

The Royal Engineers of the 1st British Infantry Division were composed of two Regular Army companies (6th Field Park Company and 23rd Field Company) and two Territorial Army companies (238th and 248th Field Companies). The two regular companies were part of the 1st Division for many years, and were among the first to land in France with the British Expeditionary Force in 1939. The 248th Field Company was recruited from the Hedford area and joined the division in December 1939. The 238th Field Company came from Paisley, Scotland. At the beginning of the war, it formed part of the famous 51st Highland Division and accompanied that division to France in 1940. It was transferred to the 1st Division in March 1940.

During the early months of the war, the engineers of the 1st Division carried out a great deal of defense construction in France. In the subsequent withdrawal, many major demolitions were carried out before final evacuation at Dunkirk. The period June 1940 - January 1943 was spent in England, the earlier part of this time having been devoted to defense work against invasion on the east coast of England and the latter part to training.

The division embarked for North Africa in February 1943 and became part of the First Army, taking over in the now famous Medjez-el-Bab sector in March. The engineers were responsible for gapping the many enemy minefields and the construction of a large number of the forward routes required for the advance and capture of Tunis in May. In June 1943, the 1st Division made an assault landing and captured Pantelleria. The engineers were responsible for the restoration of the routes on the island which had become almost non-existent owing to the heavy bombing and for the reorganization of the island's meager water supply. After the division's return to North Africa, the period from July to November was spent on the Cap Bon peninsula in training. In December 1943, the division embarked for Italy and concentrated around Cerignola. In January, it took part in the assault landings at Anzio.

6th British Armored Division Royal Engineers

In September 1940, as a result of a decision by the British War Office to create a number of Armored Divisions, the 625th Field Squadron, the 8th Field Squadron and the 144th Field Park Squadron were activated and after some months of individual training formed the divisional engineers for the 6th Armored Division.

After service in England until the latter part of 1942, the division moved in November of that year to North Africa with the Expeditionary Force later known as the First Army.

The squadrons served with the First Army throughout the Tunisian Campaign, withdrawing to rest near Philippeville in Algeria at the end of June 1943. During the Tunisian Campaign, the main engineer tasks were minelaying and the construction of roads and trails. During the rest period, work was done under local commanders and, of course, engineer training was engaged in.

6th British Armored Division Royal Engineers (cont'd).

In February 1944, the divisional engineers left the division and embarked for Italy. They landed at Taranto and moved northward to Sessa and were placed under the command of X Corps (British) for work on the Garigliano River. For this work, they were joined by the 42nd Field Company early in March.

By the end of March, the 6th Armored Division had concentrated at Piedimonte d'Alife, south of Cassino, and there the divisional engineers joined with their parent formation, after handing over their work on the Garigliano to the 313th Engineers of the 88th Division.

The engineers participated in the spring breakthrough and were continually assigned combat missions with the Eighth Army until 18 August. On this date, XIII Corps, of which the division was part, was attached to Fifth Army. By this time, the division had reached the neighborhood of Montevarchi, near Florence.

On 26 July, the 626th Field Squadron joined the division engineers. This squadron, formed like the others in England in September 1940, was originally part of the 8th Armored Division and came abroad in that formation in April 1942. On the break-up of the 8th Armored Division after Alamein, the squadron remained an independent Royal Engineer unit, eventually ending up as part of a Beach Group in Sicily in July 1943. It worked at various times under the command of V Corps (British), 1st Canadian Division, 8th Indian Division and X Corps (British), finally coming under command of the 6th British Armored Division.

8th Indian Division Engineers

The divisional engineers of the 8th Indian Division were formed at Roorkee, India, in January 1941, and consisted of Headquarters, Indian Engineers, the 7th, 66th and 69th Field Companies and the 47th Field Park Company, all from King George V's Own Bengal Sappers and Miners Group, Indian Engineers.

The Bengal Sappers and Miners were recruited mainly from the Punjab State, and consisted of Sikhs, Hindus from the traditional soldier races of India, and Punjabi Mussulmans noted for their loyalty to the crown. Each field company had one platoon of each class, the field park company being entirely Mussulman. All the King's Commissioned Officers were British, but each platoon was commanded by Viceroy Commissioned Officers: Indian officers of long service and experience.

In July 1941, the engineer units embarked for Persia and soon went to Iraq where they constructed defense works and trained for a year and a half. From 8 June 1942 to 1 October 1942, the 66th Field Company was detached from the division and moved under command of the 18th Indian Infantry Brigade to the Western Desert and assisted in halting Rommel's drive on Cairo. After laying many thousands of mines in the El Alamein defenses, the company returned to the construction of defense works in Iraq. After a final five months in Syria, the divisional engineers moved to Italy, where they disembarked on 24 September 1943.

In less than a month the division was in action on the Adriatic Coast, remaining so throughout the winter. At the end of April 1944, the divisional engineers completed training for an assault river crossing and accompanied the division when it switched to the sector in front of Cassino. In the great assault of 11 May, the 7th Field Company of the 8th Indian Division completed the only two Bailey bridges over the Gari River, one bridge having been launched by two Sherman tanks. The tasks that followed were normal to a rapid advance, and the engineers were fully occupied till the division went into rest near Foligno in July.

After three weeks' rest, the division took over from the French Corps to the north of Siena and after several further changes, it prepared to cross the Arno River in the sector opposite Pontassieve. When in front of Florence, the divisional engineers constructed a ford and cleared the Ponte Vecchio to enable supplies to reach the city.

It was at this stage that the division came under command of Fifth Army on 18 August 1944.

46th British Infantry Division Royal Engineers

The four engineer units of the British 46th Division were all formed in 1939. The 270th Field Company, Royal Engineers, originally a part of the 49th Division, came under the 46th (North Midland) Division in September 1939 after about six months' training. The other divisional organizations were the 271st and 272nd Field Companies, and the 273rd Field Park Company. These engineer units went to France with the division in April 1940, serving with the British Expeditionary Forces until being evacuated from Saint Malo in June of that year. Back in England, the companies worked on coastal defense installations and camp construction, and helped with anti-invasion measures of all types until May 1942. At this time, the units settled down to earnest battle training.

46th British Infantry Division Royal Engineers (cont'd).

On Christmas Day of that year, the 270th Field Company sailed for Algiers. In the Sedjanane area, the company carried out road maintenance and minefield laying until the withdrawal towards Tabarka. Roads were rebuilt to Cap Serrat, thus enabling the Royal Air Force to build the radio-location station there, and Bailey bridges were rebuilt on the Sedjanane-Djebel Abiad road. After Sedjanane was retaken by the 46th Division, the 270th took part in the final push to Tunis.

The 271st and 272nd Companies' roles were similar throughout the North African Campaign, with the 270th, in addition, having been committed as infantry troops near Beja in February. The 273rd Field Park Company worked in conjunction with these units and did road and bridge work as well as supplying material to the other engineer units. During the last days of June, the organizations were told that the division was liable to be called on for Operation "HERSHEY" on Sicily and later would take part in an invasion of the Italian mainland. July 1943 was spent in combined operation training at Djidjelli, and on 5 August the units were informed of the final plan, the landing on the Red and Green Beaches south of Salerno, Italy.

56th British Infantry Division Royal Engineers

During peacetime the 1st (London) Division was a formation of the Territorial Army. When conscription was introduced, the 2nd (London) Division was formed. In 1940, these two divisions were reformed and consolidated into the 1st (London) Motor Division. The 220th and 501st Field Companies of the former 1st and 2nd Divisions served as the Motor Division's engineers.

After the fall of France, the engineers, joined by the 563rd Field Park Company, began work on the anti-invasion defenses of the South Coast which included the erection of tubular scaffolding obstacles and pillboxes, the laying of beach mines, the destruction of two piers and the preparation of bridges and harbor installations for demolition. Work was also carried out on camp accommodations and general minefield training was continued. During this period, the 221st Field Company returned from Dunkirk and joined the division, which now became known as the 56th (London) Division.

In August 1942, the engineers went with their Division to Iraq to defend the oil wells against the potential German thrust through the Caucasus. There, they constructed camps and trained in bridging, demolitions, mine and road work. In April 1943, the units moved to Egypt and joined the Eighth Army. Their jobs in North Africa included some bridge and bypass work, but mine laying and, especially, minefield clearing were their main tasks. In June, the engineer units were joined in Tripoli by the 42nd Field Company. There, they began combined operations training for Italy and saw and trained with Bailey bridges for the first time.

The 501st Engineers had left the division in Egypt, and after training had gone to Sicily, landing on D plus three, where the unit was called upon to perform infantry as well as engineer work. After the fall of Messina, the company carried out intensive work on embarkation beaches preparatory to the Eighth Army's crossing of the Straits of Messina. Early in October, the 501st moved to Italy and joined the 56th Division just after it had crossed the River Volturno.

78th British Infantry Division Royal Engineers

The 78th British Infantry Division was formed in Scotland in May 1942. The Royal Engineer Companies allotted to the division were the 214th, 237th, and 256th Field Companies and the 281st Field Park Company. All engineer units had meritorious records behind them, having been formed before the war as territorial units in Stoke-on-Trent, Dundee, Manchester and Glasgow, respectively; two of them had fought in France in 1939 and 1940.

On 8 November 1942, the 78th Division landed on the North African coast. The next day, Algiers fell and the chase for Tunis began. In North Africa, the division engineers gained great experience in all types of military engineer work. To one of the companies fell the honor of building, at Medjezel-Bab, the first operational Bailey bridge. Vast minefields were laid, many roads and trails were built, mine lifting patrols were undertaken, and on occasion, engineer companies held parts of the line. Often sappers went into the assault with infantry companies to clear mines and blast trenches for them out of the solid rock of the Tunisian hillsides.

After the fall of Tunis, the division rested and trained until it embarked for Sicily in August 1943. In September, the Sicilian Campaign was finished, and the Eighth and Fifth Armies landed in Italy. Shortly thereafter, the 78th Division crossed over to join XIII Corps in its advance up the east coast. Winter was spent in the Appennines, where snow clearance became a major job. In January, the division joined the newly formed New Zealand Corps and moved up to the Cassino front. A great deal of mule and jeep trail work and mine work was done during this period.

78th British Infantry Division Royal Engineers (cont'd).

In early April, the divisional engineer troops moved back to rest and train, as Hannibal's troops had once done, in Capua. A month later, the engineers rejoined the division prepared to enter the offensive in the Liri Valley. In this offensive, and the subsequent advance through Rome to the north, there was endless work for the engineers: craters, bypasses, mines, route reconnaissance, etc. When the advance had reached Cortona, the division was relieved. The rest period was spent in Egypt, where, it is reported, the fog of war was replaced by the haze of alcohol. By the end of August 1944, elements of the division had returned to Italy. In mid-October, the division joined XIII Corps in the Fifth Army and was assigned a sector near Castel del Rio.

X British Corps Royal Engineers

The four Royal Engineer Companies of X Corps were originally all components of the Devon and Cornwall Fortress Company, Royal Engineers, which was activated during the First World War and was changed to a searchlight unit after the termination of hostilities. In May 1940, the Fortress Company was again converted, this time into three Field Companies, the 571st, 572nd and 573rd, and one Corps Field Park Company, the 570th. Until February 1941, the units were chiefly engaged in training and work on the beach defenses in southwest England.

On 4 February, the 570th Field Park Company embarked and preceded by one month the overseas movement of the three Field Companies. The 570th arrived in Egypt in April and was kept busy with the supplying of water, a major problem in the desert, and the collection and delivery of engineer supplies. In May, the other three companies arrived at Suez and after a short stay in the vicinity of Cairo they all went into the desert as XIII Corps Troops.

Late in 1941, XIII Corps moved back to Syria for refitting and its Corps Engineer units came under X Corps control. Prior to joining the Fifth Army, the units followed up the retreat of the Germans from El Alamein across North Africa to Enfidaville in Tunisia. On the completion of the North African campaign, X Corps troops moved back to the Tripoli area for refitting, training and recreation. They remained there until assigned to the Fifth Army, when they embarked by LST from Tripoli to Salerno.

XIII British Corps Royal Engineers

The engineer troops of XIII Corps, the 56th, 577th and 578th Field Companies, and the 576th Field Park Company started life as IV Corps engineer troops. The formation then consisted of Headquarters, Royal Engineers, 576th Field Park Company, 577th, 578th and 579th Field Companies. It was stationed in the south of England, where time was spent in training and building defenses. On 14 July 1942, the engineers, less the 579th Field Company, embarked for overseas and after a seven weeks' voyage landed at Suez, Egypt.

After a period of training, the engineer formation moved up to the western desert to be XIII Corps engineer troops, and took part in the final breakthrough, the main tasks being mine laying and lifting, and water supply. In December, the engineers moved from Egypt to Syria, where training in mountain warfare and bridging was done; then on down to Palestine for training in combined operations, and finally re-equipping and refitting. At the end of May, they went to Egypt for final training and embarked for Sicily.

On 13 July, XIII Corps landed in Sicily, and the engineers were immediately engaged on dock work and road maintenance. At the end of the campaign, a short time was spent refitting and then the unit crossed to the mainland of Italy on 5 September 1943. By this time, the 56th Field Company had been assigned to XIII Corps to augment the engineer strength. After the swift advance up the toe of Italy, the units crossed to the east coast to the Sangro Valley, where the winter was spent in maintaining roads and trails.

In March, the engineers again moved west, participated in the final battle of Cassino, and continued up the center of Italy to Florence. While the engineers were working on Arno River bridges at Florence, XIII Corps went under Fifth Army control on 18 August 1944.

46th Survey Company, South African Engineer Corps

Units of the South African Survey Service have been in operation continuously since July 1940. The South African Survey Company served a year in East Africa and a year in Egypt, then split into the 45th (Type A) and the 46th (Type B) Survey Companies on 3 April 1942. The 46th served with the British Eighth Army throughout the African Campaign from El Alamein to Tunis, then returned to Cairo in June 1943 to reorganize and refit.

The set up of a South African Survey Company (Type B) is unique, having no exact parallel in either the British or American Army. It is capable of undertaking the full responsibility of an Army Survey Company. It is commanded by a major, with a captain second in command. Two Survey Groups, each commanded by a captain, are trained to perform any type of field or air survey work. A Map Production Group (MPG) commanded by a captain, undertakes all finished drawings. A Checking and Records Section (CRS), also commanded by a captain, checks work at every stage of production, and is responsible for filing all map record material, and undertakes all geodetic computations.

The Printing Section, under direct command of the Unit Commanding Officer, is attached to the company from an entirely separate unit, the Mobile Map Printing and Printing Company, South African Engineer Corps. This section is commanded by a captain, and is equipped with two Demy printing machines. Lastly, the unit has attached motor mechanics with a well equipped workshop, medical and hygiene personnel, a carpenter, and an officer instrument-maker. The latter is equipped with a very fine mobile workshop in which he repairs and overhauls delicate survey instruments, and constructs instruments devised by members of the unit to assist in air survey and other work. The strength of the unit with the Fifth Army was approximately 25 officers and 240 enlisted men.

Briefly, the function of an Army Survey Unit is:

- a. To see that the guns are accurately sited on the map grid.
- b. To see that the targets are accurately located on the grid.
- c. To prepare and print all maps, plans, mosaics, etc., required by the Army.

The first of these functions is performed by one of the Survey groups, whose task it is to establish and maintain a network of triangulation over the whole of the Army front, based on the primary triangulation of the country, of such a density that Field Artillery Observation Battalions (United States) or Survey Regiments (British) are able, conveniently, at any time, to break down from it for the purpose of surveying-in the positions of the guns. If this Army Survey were not at all times well up with the guns, there would be a danger of their not being fixed in true relation to the map grid.

The second of the above functions is performed by the other Survey Group by:

- a. Revision, from air photos, of existing maps, to ensure that detail is accurately located relative to the grid.
- b. The preparation of a "block plot", which is a very careful radial line plot from air photos, on which hostile targets can be "cut-in" and accurately positioned.

The third function involves, very often, air survey work by a Survey Group, finished drawing by the Map Production Group, checking by the Checking and Records Section, and finally printing by the Litho Section of the Mobile Map Printing and Printing Company. Also, in addition to the air survey method of compiling a map, both Survey Groups have had considerable experience, before coming to Italy, in mapping by ground methods in the field, with or without the aid of air photos. This latter method produces a more accurate map.

On 14 August 1943, the 46th Survey Company was assigned to the Fifth Army for "AVALANCHE", and the unit moved by road from Cairo to Tripoli, embarked at Tripoli on 3 October and landed at Salerno on 8 October.

9th Engineer Battalion (Brazilian)

On 24 November 1943, the 9th Engineer Battalion (Brazilian), stationed in Aquidavana, Brazil, was designated for overseas service. After being reorganized on the same lines as an American Engineer Combat Battalion, the unit undertook a rigorous training period. For embarkation, the 9th Engineer Battalion was divided into three sections, each of which was composed of one of the line companies, plus elements of Headquarters and Service Company. The first echelon left Rio de Janeiro on 2 July 1944, and reached Naples fifteen days later. An instructional period was then begun which lasted into September.

APPENDIX I

CHARTS. FORMS AND ROUTE NUMBERING

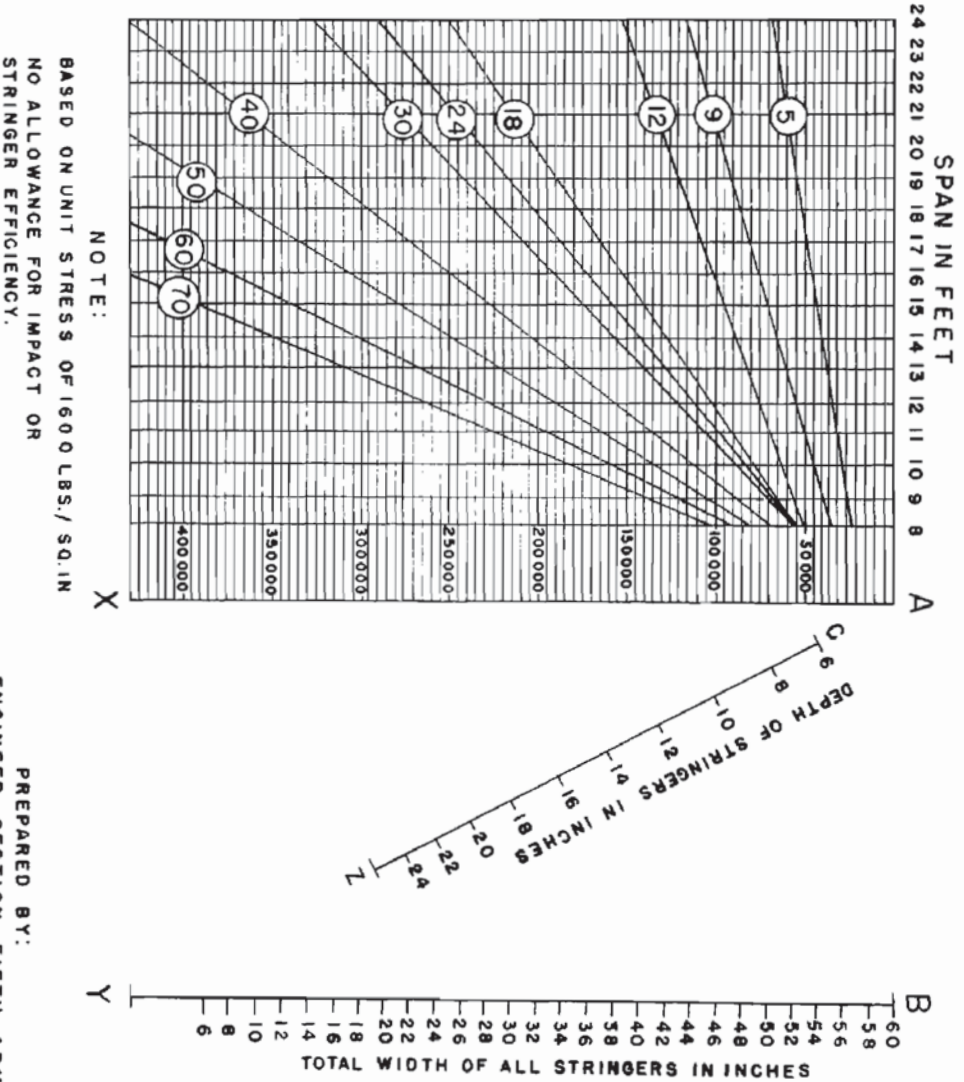
Diagram #1 Bridge Alignment Charts
Diagram #2 Work Order Form
Diagram #3 Unit Progress Report Form
Diagram #4 Route Numbering
Diagram #5 Load Classification Chart
Diagram #6 Load Classification Chart (Revised)
Diagram #7 Load Classification Chart (Floorbeams)

ALIGNMENT CHART FOR DETERMINING CLASS RATING OF EXISTING TIMBER BRIDGES OR FOR THE DESIGN OF NEW TIMBER BRIDGES

TO CLASSIFY
 FROM AXIS "B-Y" AT THE
 MEASURED TOTAL WIDTH
 OF STRINGERS, DRAW LINE
 THROUGH "C-Z" AT THE
 MEASURED DEPTH OF
 STRINGERS UNTIL IT
 INTERSECTS AXIS "A-X"
 THE INTERSECTION OF A
 HORIZONTAL LINE FROM
 THIS POINT AND THE
 VERTICAL LINE SHOWING
 MEASURED LENGTH OF
 SPAN GIVES THE CLASS
 RATING OF BRIDGE.

TO DESIGN

1. SELECT CLASS AND
 DECIDE LENGTH OF SPAN
 OR SPANS TO BE
 CONSTRUCTED.
2. AT INTERSECTION OF
 THESE TWO LINES,
 PROJECT LINE HORIZON-
 TALLY TO "A-X" AXIS.
3. A LINE FROM THIS POINT
 THROUGH "DEPTH OF
 STRINGERS," "C-Z," TO "B-Y"
 AXIS GIVES TOTAL WIDTH
 OF STRINGERS REQUIRED.
4. IF THIS FIGURE IS TOO
 LARGE SELECT SHORTER
 SPAN.



PREPARED BY:
 ENGINEER SECTION FIFTH ARMY

Diagram #2 (Sample Work Order Form)

COMMAND HQ FIFTH ARMY ENGINEERS
2626th Engineer Group (Prov)
APO 464 US ARMY

DATE _____

SUBJECT: Allocation of Work

TO: Commanding Officer, _____

1. You are directed to make reconnaissance, prepare and submit plans, assemble materials, and proceed with work as outlined below:

a. Nature of work: _____

b. Target Date:

(1) Begin: _____

(2) Complete: _____

c. You will refer to this operation as Job # _____

d. Priority Rating established for this job is: 1 - (OP);
2 - (AA); 3 - (A); 4 - (B)

BY COMMAND OF BRIGADIER GENERAL BOWMAN:

W. F. POE
Colonel, CE
S-3

Appendix I

Diagram #3 (Unit Progress Report)

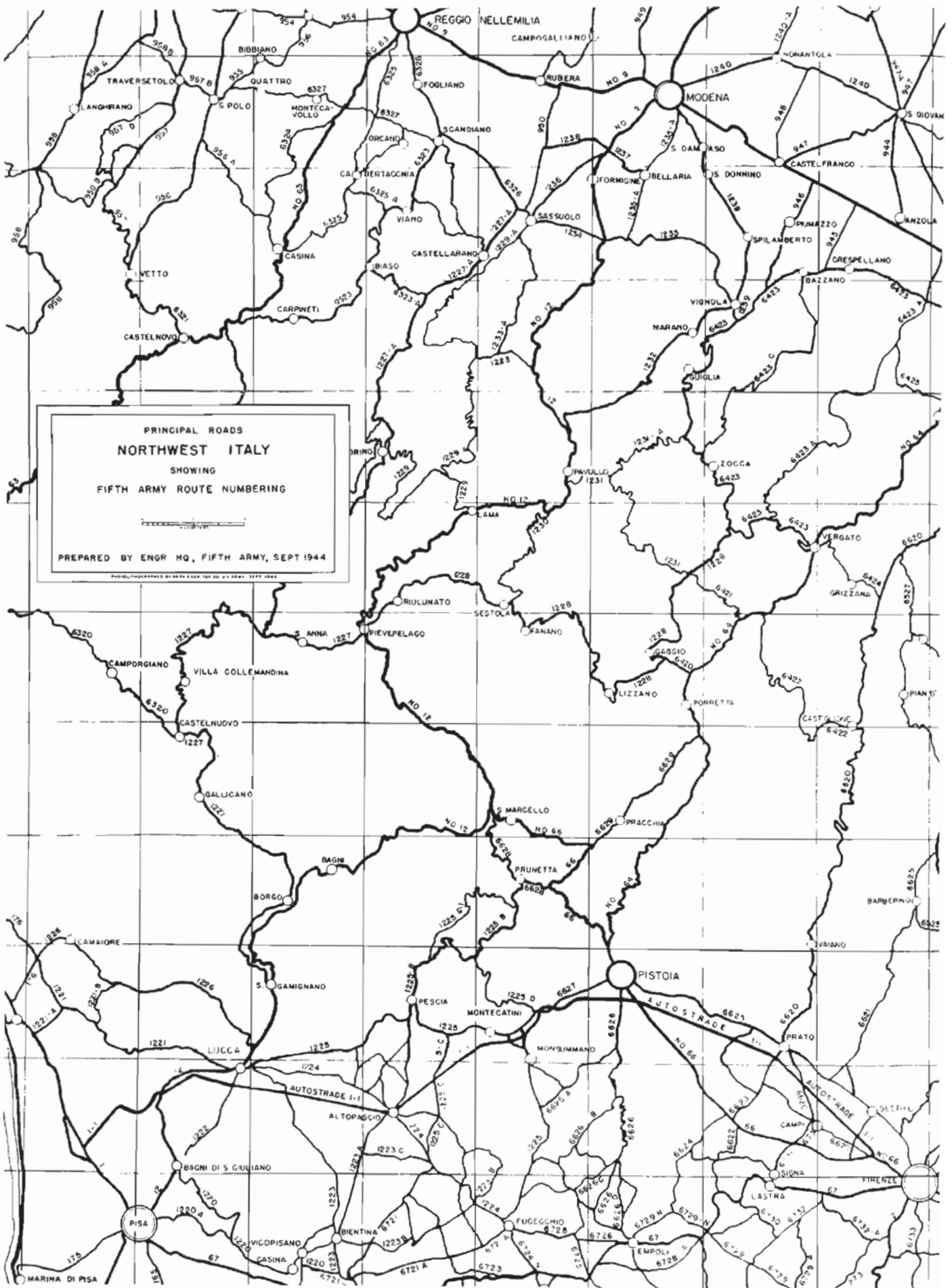
HEADQUARTERS 92ND ENGINEER GENERAL SERVICE REGIMENT
APO 464 U. S. Army

Subject: Report on Construction Work (THRU: 0600 hours _____ 1945)

To: Commanding General, Engineer Headquarters, Fifth Army.

Job No.	DESCRIPTION OF WORK	Date Started	% Comp.	Target Date	REMARKS

APPENDIX I DIAGRAM # 4



ALIGNMENT CHART TO AID IN THE DESIGN OR CLASSIFICATION OF SIMPLE STEEL STRINGER BRIDGES

TO DESIGN

1. SELECT CLASS AND ESTIMATE LENGTH OF SPAN OR SPANS TO BE CONSTRUCTED.
2. AT INTERSECTION OF THESE TWO LINES, PROJECT LINE HORIZONTALLY TO INTERSECTION WITH "A-X" AXIS
3. A LINE FROM THIS POINT THROUGH POINT ON "C-Z" AXIS CORRESPONDING TO DEPTH AND WIDTH OF I BEAMS TO BE USED WILL INTERSECT "B-Y" AXIS TO GIVE NUMBER OF STRINGERS REQUIRED.
4. IF THIS NUMBER IS TOO LARGE, USE SHORTER SPAN.
5. IN GENERAL, RATIO OF SPAN IN FEET TO DEPTH OF BEAM IN INCHES SHOULD NOT EXCEED 20.

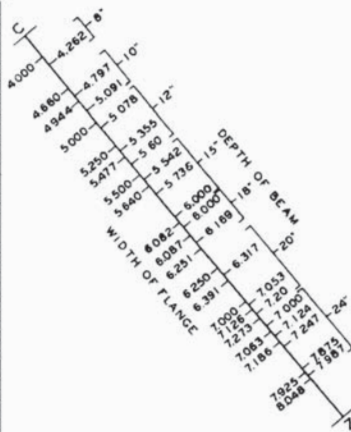
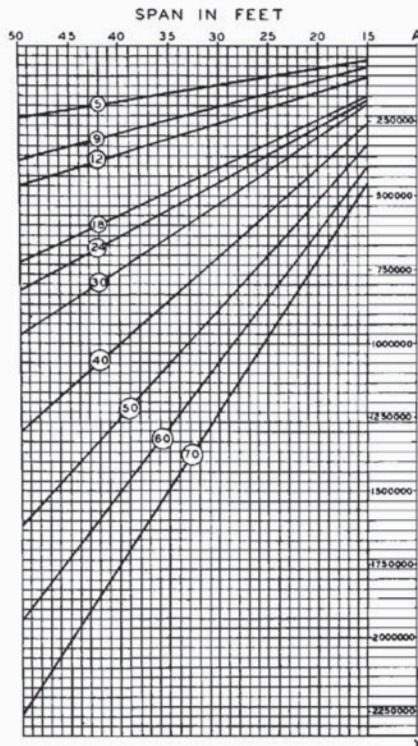
TO CLASSIFY

FROM AXIS "B-Y" AT NUMBER OF STRINGERS DRAW LINE THROUGH POINT ON "C-Z" AXIS CORRESPONDING TO TYPE OF STRINGERS AND INTERSECT "A-X" AXIS. THE INTERSECTION OF A HORIZONTAL LINE FROM THIS POINT AND THE VERTICAL LINE DESIGNATING SPAN IN FEET GIVES CLASS RATING OF BRIDGE

NOTE:

- (1). LATERAL BRACING BETWEEN STRINGERS SHOULD BE PROVIDED IN SPANS OF 15 FT. AND OVER.
- (2). MULTIPLY CLASS RATING OF BRIDGE BY 1.25 TO OBTAIN APP LOAD TO TRESTLE IN TONS FOR SPANS OVER 25'. UNDER 25' USE FACTOR OF 1.15.
- (3). FOR CLASSIFICATION OR DESIGN OF TWO-WAY BRIDGES, TWO WAY CLASS IS EQUIVALENT TO ONE WAY.

9	18
12	24
18	40
24	50
30	60
40	70



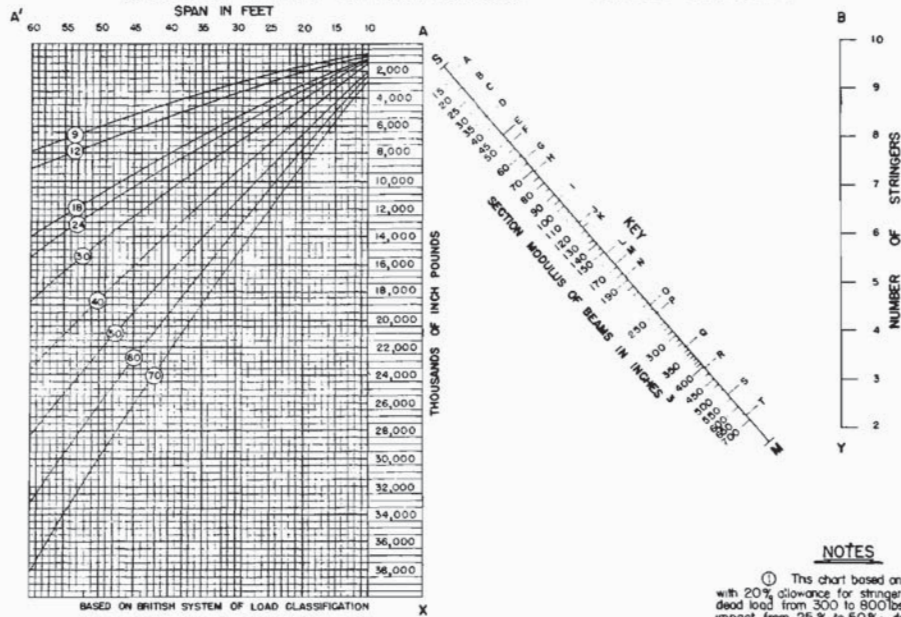
BASED ON $f_c = 18000$ LBS. / SQ IN. 20% ALLOWANCE FOR DEAD LOAD. 25%-50% ALLOWANCE FOR IMPACT DEPENDING UPON CLASS AND SPAN. SECTION MODULUS AS OF AMERICAN STANDARD BEAMS.

BEARING POWER PILES (DIAM)

CHARACTER OF SOIL	PENETRATION	PROBABLE SAFE LOAD IN LBS.	SAFE LOADS SQUARE WOOD POSTS		
			SIZE	LENGTH	SAFE LOAD
MUD	15	4500	4 x 4	4	15360
	30	10000	4 x 4	8	11520
SOFT CLAY	10	7000	4 x 4	10	9600
	15	10000	6 x 6	6	34560
COMPACT SILT	20	13000	6 x 6	8	31680
	30	20000	6 x 6	10	28800
STIFF CLAY	10	15000	6 x 6	12	25920
	15	23000	6 x 6	14	23040
COMPACT SAND	30	45000	6 x 6	16	20160
	8	16000	8 x 8	8	61440
	10	20000	8 x 8	10	57600
	12	24000	8 x 8	12	53760
	15	28000	8 x 8	14	49920
	20	36000	8 x 8	16	46080
SAND AND GRAVEL	30	48000	8 x 8	18	42240
	8	20000	8 x 8	20	38400
	10	24000	8 x 8	22	34560
	12	28000	8 x 8	24	30720
15	34000				
20	43000				

PREPARED BY:
ENGINEER SECTION
FIFTH ARMY

DESIGN OF SIMPLE-STRINGER BRIDGES — STEEL STRINGERS



BASED ON BRITISH SYSTEM OF LOAD CLASSIFICATION

TO DESIGN

- From point on "A-A" axis, corresponding to length of span to be constructed, drop a vertical line to me-t index line of desired class, and from this point, project a line horizontally to intersect A-X axis.
- Draw a straight line from this intersection through a point on axis "S-M", corresponding to section modulus of beams to be used, and intersect axis B-Y.
- Read on "B-Y" the required number of stringers for a single lane bridge.
- If this number is too large, use shorter span or heavier steel.
- For a 2 lane bridge, double number of stringers determined in operation 3.

TO CLASSIFY

- TO CLASSIFY AN EXISTING ONE WAY BRIDGE**
- From axis "B-Y" at number of stringers, draw a line through point on "S-M", corresponding to section modulus of beams, and intersect axis "A-X".
 - The intersection of a horizontal line from this point and a vertical line from the measured span gives the class rating of the bridge.
- TO CLASSIFY AN EXISTING TWO WAY BRIDGE**
- Proceed as for one way bridge, using, however, only one half the total number of stringers. The result will give the two way classification of the bridge.
 - See under "NOTES" for the one way classification of a 2 way bridge.

SECTION	KEY	S _M	KEY
8" x 6.5"	9" x 2.648"	13.5	A
10" x 8"	12" x 3.170"	20.9	B
12" x 8"	15" x 3.520"	26.9	C
14" x 8"	18" x 4.000"	35.0	D
16" x 8.5"	21" x 4.411"	46.2	E
18" x 8.75"	24" x 4.844"	51.9	F
20" x 9"	27" x 5.292"	62.7	G
22" x 10"	30" x 5.760"	70.7	H
24" x 11.5"	33" x 6.240"	84.1	I
27" x 13"	36" x 6.720"	117	J
30" x 15"	42" x 7.920"	151	K
33" x 15.75"	48" x 9.120"	184	L
		233	M
		290	N
		331	O
		403	P
		528	Q
		670	R

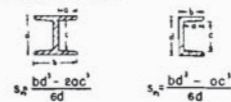
NOTES

- This chart based on $f_y=18000$ lbs/sq in, with 20% allowance for stringer efficiency, dead load from 300 to 800 lbs/lin ft, and impact from 25% to 50%; depending upon class and span.
- In general, ratio of span in inches to depth of beam in inches, should not exceed 75.
- For classification or design of two way bridges

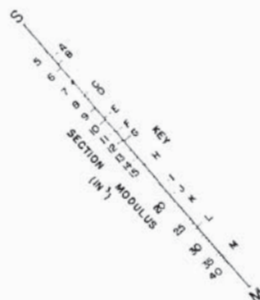
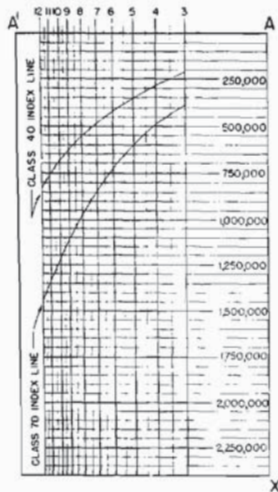
Two way cl. — Equivalent to one way —

9	18
12	24
16	30
24	40
30	50
40	70

- If center distance between stringers exceeds 36", floor beams should be used.
- Section modulus may be calculated as shown:



DESIGN OF SIMPLE-STRINGER BRIDGES — FLOOR BEAMS



DISTANCE BETWEEN CENTER-LINE OF FLOOR BEAMS-IN INCHES

TO DETERMINE ϕ DISTANCE OF FLOOR BEAMS

- ① From point on A-A axis, corresponding to distance in feet between main stringers, drop a vertical line to meet desired index line, and from this intersection project a line horizontally to intersect A-X axis.
- ② Lay off a straight line from point on A-X axis through point on S-M (corresponding to section modulus of floor beams to be used) to intersect axis B-Y.
- ③ From this point on B-Y, draw horizontal line to meet Spacing Index Line, and from this intersection drop a vertical line to axis Y-Y, reading required center distance in inches.
- ④ If projected line in operation ② does not intersect axis B-Y, the design must be altered by:
 - 1 Use of larger floor beams
 - 2 Use of additional main stringers to decrease floor beam span

NOTES

- ① This chart is valid only when three or more main stringers are used.
- ② With 6" lumber decking when the distance between main stringers does not exceed 36", no floor beams are required for class 70 loading. The limiting distance for cl 40 loads is 42".
- ③ Points A, B, C, etc on scale S.M. represent modulus of American Standard Sections. When other sections are used, section modulus must be determined and the value plotted on the S.M. scale.
- ④ The following values and assumptions were used:
 - 1 Maximum fiber-stress for steel 18,000 PSI
 - 2 Maximum point load for cl. 70, including impulse and distribution factor - 40,000 lbs.
 - 3 Load will be transmitted by decking to beams within 36" radius of point of application.

SECTION MODULUS & KEY FOR STANDARD SECTIONS				
I	J	K	S _m	Key
5X3.137"	6"X2.157"		5.4	A
	6"X3.443"	7"X2.299"	5.8	B
6"X3.443"			7.9	C
70"RR			8.19	D
	8"X2.435"		9.9	E
7"X3.755"	9"X2.485"	6"X2.157"	11.3	F
80"RR			12.9	G
8"X4.079"		7"X2.299"	15.1	H
	10"X2.888"		18.1	I
		8"X2.435"	19.8	J
		9"X2.485"	22.6	K
10"X4.797"	12"X3.170"		26.7	L
		10"X2.888"	36.2	M
8"X6"TIMBER				C

SECTION MODULUS MAY BE CALCULATED AS SHOWN

$$S_x = \frac{bd^3 - 2oc^3}{6d} \quad S_y = \frac{bd^3 - oc^3}{6d}$$

PREPARED BY ENGINEER HEADQUARTERS
FIFTH ARMY

APPENDIX J

BRIDGE LIST AND WORK ORDERS

Part #1 Bridge Chart
Part #2 Work Orders

APPENDIX J

PART 1

BRIDGES CONSTRUCTED BY FIFTH ARMY ENGINEERS
608 Days
9 September 1943 to 8 May 1945

	SALERNO AND NAPLES		VOLTURNO TO MAY 11TH		ANZIO BEACHHEAD		MAY 11TH TO THE ARNO		NORTHERN APENNINES		PO CAMPAIGN		TOTAL	
	9 September 1943 to 6 October 1943 28 Days		7 October 1943 to 11 May 1944 218 Days		22 January 1944 to 25 May 1944 125 Days		12 May 1944 to 1 September 1944 113 Days		2 September 1944 to 5 April 1945 216 Days		6 April 1945 to 8 May 1945 33 Days			
	No.	Total Feet	No.	Total Feet	No.	Total Feet	No.	Total Feet	No.	Total Feet	No.	Total Feet	No.	Total Feet
BAILEY, FIXED	8	620	174	16,890	7	390	191	16,250	498	45,000	85	10,620	963	94,400
BAILEY, FLOATING			8	2,433			2	570			2	1,452	12	4,455
TREADWAY, STEEL	5	495	23	3,045	7	330	52	3,722	75	6,014	11	4,833	173	18,438
CONCRETE, HEAVY			2	450			2	550	1	555	1	856	6	2,411
25 TON PONTON TRESSLE									2	205			2	225
F. B. E. (British) (FOLDING BOAT EQUIPMENT)			6	1,280			2	300	8	600			16	2,180
FOOT BRIDGE, M-1938							5	1,104	5	898			10	2,002
SMALL BOX GIRDER (Brit.)			1	48									1	48
INFANTRY SUPPORT	1	120	2	396			3	204	1	300	1	150	8	1,170
TOTAL	14	1,235	216	24,542	14	720	257	22,699	590	58,222	100	17,911	1,191	125,329
SEMI-PERMANENT	4	335	77	5,101	65	4,494	123	7,588	22	5,232			291	22,750
GRAND TOTAL	18	1,570	293	29,643	79	5,214	380	30,287	612	63,454	100	17,911	1,482	148,079

APPENDIX J
VOLTURNO TO MAY 1970

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
A-30	343rd Engrs.	Maintain road from Avelino to Benevento and Route No. 90 to Grattosinarda	14 Oct 1943	16 Oct 1943
A-31	343rd Engrs.	Construct a 165', 10 span timber bridge at Benevento	13 Oct 1943	16 Oct 1943
A-32	343rd Engrs.	Maintain road from Capua to Maddaloni	19 Oct 1943	5 Nov 1943
1	337th Engrs.	Construct timber bridge, 72' span, Class 40, 6-12' spans (N 704635)	17 Oct 1943	27 Oct 1943
2	337th Engrs.	Construct timber bridge, 2-way, Class 40, 81' span (N7165)	17 Oct 1943	25 Oct 1943
3	337th Engrs.	Construct 2-way, Class 40, 5-14' spans bridge (N716659)	17 Oct 1943	26 Oct 1943
4	337th Engrs.	Construct 2-way Class 40, 48' span timber bridge (N748699)	17 Oct 1943	28 Oct 1943
5	337th Engrs.	Construct 2-way Class 40, 96' span timber bridge (N795728)	19 Oct 1943	27 Oct 1943
6	337th Engrs.	Construct 2-way Class 40, 72' span timber bridge (N769749)	19 Oct 1943	27 Oct 1943
7	337th Engrs.	Replace 3-15' spans in bridge at N597550	18 Oct 1943	30 Oct 1943
8	337th Engrs.	Construct 38' span bridge and rebuild arches at N445597	18 Oct 1943	21 Oct 1943
9	337th Engrs.	Install 1,500 feet of road & construct culverts at 8th Evac. Hospital (N2955)	17 Oct 1943	19 Oct 1943
10	337th Engrs.	Clear streets in Pannarano (N5697)	15 Oct 1943	16 Oct 1943
11	337th Engrs.	Improve fills on road Sumonte-Rocabas-Cerana	15 Oct 1943	16 Oct 1943
12	337th Engrs.	Clear streets in Cervinara	15 Oct 1943	24 Oct 1943
13	337th Engrs.	Clear streets in Rotondi	19 Oct 1943	24 Oct 1943
14	337th Engrs.	Clear streets in Arpaia	19 Oct 1943	24 Oct 1943
15	337th Engrs.	Repair road from Cicciano to Cancellò	16 Oct 1943	26 Oct 1943
16	337th Engrs.	Patch road from Avelino to S. Angelo	15 Oct 1943	18 Oct 1943
17	337th Engrs.	Grade and ditch 0.6 miles of road (N4563)	22 Oct 1943	24 Oct 1943
18	337th Engrs.	Construct a 72', 2-way Class 40 bridge at N570570	10 Oct 1943	26 Oct 1943
19	337th Engrs.	Remove debris from streets in Cimifila	22 Oct 1943	26 Oct 1943
20	337th Engrs.	Construct 8', 2-way Class 40 bridge at N671801	23 Oct 1943	27 Oct 1943
21	337th Engrs.	Fill craters on road at N6960	24 Oct 1943	24 Oct 1943
22	337th Engrs.	Repair bomb craters and clear streets from N4761 to Naples	24 Oct 1943	26 Oct 1943
23	337th Engrs.	Remove fill from railroad and construct suitable grade crossing at N330690	26 Oct 1943	31 Oct 1943
24	337th Engrs.	Remove Bailey bridges at Benevento and Ponte, and transport to Trifilisco Bridge Depot	4 Nov 1943	5 Nov 1943
25	531st Engrs.	Construct 1-way Class 40 bridge across Volturno River at N030740	26 Oct 1943	9 Nov 1943
26	337th Engrs.	Repair water & sewage system at 38th Evac. Hospital	26 Oct 1943	4 Nov 1943
27	337th Engrs.	Construct suitable crossing over canal at N245665	27 Oct 1943	28 Oct 1943
28	337th Engrs.	Construct road marker signs and place on highways	27 Oct 1943	24 Feb 1944
29	343rd Engrs.	Repair roadway from Pte. Annibale to S. Maria	1 Nov 1943	6 Nov 1943
30	531st Engrs.	Dismantle Bailey bridge at O-0439 & transport to Cancellò Depot	26 Oct 1943	28 Oct 1943
31	337th Engrs.	Remove mines from Aversa and specific points in that vicinity	27 Oct 1943	2 Nov 1943
32	337th Engrs.	Dismantle Bailey Bridge at N182548 & transport to Capua Depot	27 Oct 1943	30 Oct 1943
33	337th Engrs.	Grade area for QM Depot at S. Maria	29 Oct 1943	31 Oct 1943
34	343rd Engrs.	Remove mines from road, from N210798 to NJ N194785 to Capua	28 Oct 1943	7 Nov 1943
35	343rd Engrs.	Repair bridge near Trifilisco and improve Capua-Trifilisco road	30 Oct 1943	11 Nov 1943
36	343rd Engrs.	Construct a pile bent bridge across the Volturno River at Capua	16 Oct 1943	9 Nov 1943
37	343rd Engrs.	Construct a timber trestle bridge across the Volturno River at Trifilisco	16 Oct 1943	3 Nov 1943
38	337th Engrs.	Construct a suitable bypass for, and remove Bailey bridge at N181775	31 Oct 1943	5 Nov 1943
39	531st Engrs.	Replace Bailey bridge at N653413 with timber trestle bridge	10 Oct 1943	9 Nov 1943
40	531st Engrs.	Construct a one way Class 70 bridge at N668568	30 Oct 1943	23 Nov 1943
41	531st Engrs.	Repair road from Nocera to San Saverino	20 Oct 1943	10 Nov 1943
42	531st Engrs.	Construct a suitable bypass on Avelino-S. Angelo road at N871550	21 Oct 1943	25 Oct 1943
43	531st Engrs.	Construct a timber trestle bridge near Oliveto at O-058329	30 Oct 1943	12 Nov 1943
44	531st Engrs.	Construct a pile bent, timber trestle bridge at Contursi	29 Oct 1943	10 Nov 1943
45	343rd Engrs.	Repair weak culvert with concrete slab at N270680	1 Nov 1943	8 Nov 1943
46	337th Engrs.	Construct a 35' one way Class 24 bridge over canal at N246665	30 Oct 1943	1 Nov 1943
47	337th Engrs.	Construct a one way dirt fill bypass at O-093766 and remove Bailey bridge	1 Nov 1943	9 Nov 1943
48	337th Engrs.	Remove mines from road, from Maddaloni to Benevento	1 Nov 1943	5 Nov 1943
49	343rd Engrs.	Remove mines along trolley track in Cardito	1 Nov 1943	4 Nov 1943
50	14 GHQ Troops	Remove mines, reported on roads from Aversa to Villa Literno & Aversa to Crispiano	3 Nov 1943	8 Nov 1943
51	337th Engrs.	Repair highway from Maddaloni to Amarsi to Piedmonte d'Alife	3 Nov 1943	9 Nov 1943
52	337th Engrs.	Run water lines, and repair latrines at 16th Evac Hosp.	1 Nov 1943	6 Nov 1943
53	531st Engrs.	Construct timber bridge near Romita (N873554)	1 Nov 1943	6 Nov 1943
54	14 GHQ Troops	Maintain road from Caivano to Aversa thence to Villa Literno to N055696	1 Nov 1943	CANCELLED
55	531st Engrs.	Construct timber bridge and remove Bailey bridge at N648488	26 Oct 1943	10 Nov 1943
56	343rd Engrs.	Prepare plans & make suitable crossing for Bailey bridge on Route 6 (N118889)	3 Nov 1943	21 Nov 1943
57	343rd Engrs.	Prepare plans & make suitable crossing for Bailey bridge, Route 6 (N11891)	3 Nov 1943	6 Nov 1943
58	343rd Engrs.	Repair, and bring to grade, dip in road at N104896	4 Nov 1943	4 Nov 1943
59	343rd Engrs.	Prepare plans and make suitable crossing for Bailey bridge at N087907	3 Nov 1943	6 Nov 1943
60	343rd Engrs.	Construct all-weather bypass at N088916	4 Nov 1943	8 Nov 1943
61	343rd Engrs.	Prepare plans, and make suitable crossing Bailey bridge at N093942	3 Nov 1943	13 Nov 1943
62	343rd Engrs.	Construct a 2-way substitute for Bailey bridge at N096959	3 Nov 1943	13 Nov 1943
63	531st Engrs.	Construct a 1-way Class 40 substitute crossing for Bailey bridge at N008771	4 Nov 1943	10 Nov 1943
64	531st Engrs.	Construct suitable bypass for Bailey bridge at N005776	4 Nov 1943	10 Nov 1943
65	540th Engrs.	Remove mines at Piazza di Armi at Caserta	4 Nov 1943	7 Nov 1943
66	540th Engrs.	Remove Bailey bridge near Eboli and transport to Trifilisco Depot	4 Nov 1943	7 Nov 1943
67	337th Engrs.	Prepare to operate gravel pit in vicinity of Capua	5 Nov 1943	6 Nov 1943
68	337th Engrs.	Repair plumbing and electrical systems in 36th General Hosp. at Caserta	4 Nov 1943	6 Nov 1943
69	337th Engrs.	Conduct night driving tests	6 Nov 1943	3 Dec 1943
			5 Nov 1943	CANCELLED

APPENDIX J

VOLTURNO TO MAY 11TH

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
70	343rd Engrs.	Remove mines and booby traps from Class I Depot at N0901 and grade area	6 Nov 1943	10 Nov 1943
71	540th Engrs.	Establish and maintain 1-way all weather route from Grazzanise to Brezza	8 Nov 1943	18 Nov 1943
72	540th Engrs.	Construct and maintain 2-way all weather route from Cancellio to Pizzone	8 Nov 1943	14 Nov 1943
73	337th Engrs.	Repair and maintain for 2-way all weather Class 40 traffic road from Qualiano to Villa Literno	8 Nov 1943	22 Nov 1943
74	14 GHQ Troops	Maintain roads: N055696-Cancellio bridge; N033735-Grazzanise-Capua, incl rd N149761-N110671	8 Nov 1943	3 Dec 1943
75	540th Engrs.	Prepare 2-way Class 40 all weather substitute for Bailey bridge at N022837	8 Nov 1943	20 Nov 1943
76	540th Engrs.	Prepare 1-way Class 40 all weather substitute for Bailey bridge at N006860	8 Nov 1943	2 Dec 1943
77	337th Engrs.	Search area on South bank of Volturno River at Pte. Annibale for mines	9 Nov 1943	15 Nov 1943
78	511st Engrs.	Examine bridge piers at Benevento for concealed explosives	9 Nov 1943	10 Nov 1943
79-a	343rd Engrs.	Repair blown bridge at H101986 to replace Bailey bridge	9 Nov 1943	11 Nov 1943
79-b	343rd Engrs.	Repair dip over stream at H100998	9 Nov 1943	29 Nov 1943
79-c	343rd Engrs.	Make level grade crossing at H088108	9 Nov 1943	24 Nov 1943
79-d	343rd Engrs.	Do necessary grading etc. at Army Dump at Vairano	9 Nov 1943	16 Nov 1943
80-a	343rd Engrs.	Repair bridge at H082021	9 Nov 1943	19 Nov 1943
80-b	343rd Engrs.	Repair and maintain road from H089018 to H068029	9 Nov 1943	29 Nov 1943
81	337th Engrs.	Repair and replace hand rails on bridge at N250799	10 Nov 1943	12 Nov 1943
82-a	337th Engrs.	Maintain road from Cairano to Candello	10 Nov 1943	3 Dec 1943
82-b	337th Engrs.	Construct 2-way Class 40 crossing at N285612	10 Nov 1943	16 Nov 1943
82-c	337th Engrs.	Construct 2-way Class 40 crossing at N338644	10 Nov 1943	16 Nov 1943
83	337th Engrs.	Construct blackout tent for Engineer map truck	10 Nov 1943	20 Nov 1943
84	343rd Engrs.	Construct 2-way Class 40 crossing at N105857 and remove Bailey bridge	12 Nov 1943	14 Nov 1943
85	540th Engrs.	Construct 2-way Class 40 crossing at M982872 to replace Bailey bridge	12 Nov 1943	5 Dec 1943
86	337th Engrs.	Locate and remove pot holes on Caserta-Pte. Annibale Road	13 Nov 1943	13 Nov 1943
87	540th Engrs.	Repair road crater at Cascano	15 Nov 1943	16 Nov 1943
88	337th Engrs.	Construct 30' two way Class 40 bridge & 200' fill at M954914	14 Nov 1943	22 Nov 1943
89	343rd Engrs.	Do necessary grading for QM Depot at Le Pezze	18 Nov 1943	3 Dec 1943
90	343rd Engrs.	Maintain for 2-way all weather traffic road from N078860 to N103896	18 Nov 1943	25 Nov 1943
91	540th Engrs.	Maintain road from Pizzone to Cascano	18 Nov 1943	23 Nov 1943
92	540th Engrs.	Replace Bailey bridge at N046865 with Class 40 two way crossing	18 Nov 1943	30 Nov 1943
93	540th Engrs.	Replace Bailey bridge at N044867 with Class 40 two way crossing	18 Nov 1943	4 Dec 1943
94	337th Engrs.	Repair bridge at Benevento	21 Nov 1943	25 Nov 1943
95	337th Engrs.	Repair crossings at Ponte	21 Nov 1943	WASHED OUT
96	540th Engrs.	Repair Cancellio bridge by raising lowered bent and levelling two spans	20 Nov 1943	22 Nov 1943
97	540th Engrs.	Maintain Cancellio bridge	20 Nov 1943	3 Dec 1943
98	540th Engrs.	Construct 2-way Class 40 timber bridge near Cascano at M9991	20 Nov 1943	17 Dec 1943
99	540th Engrs.	Construct 2-way Class 40 timber bridge near Cascano at M985915	16 Nov 1943	18 Dec 1943
100	337th Engrs.	Maintain road from Le Pezze to Dragoni to Alife to RJ H185060	17 Nov 1943	22 Nov 1943
101	337th Engrs.	Maintain road from Dragoni to Caiasso to Ponte Annibale	17 Nov 1943	5 Jan 1944
102	337th Engrs.	Repair road from Maddaloni to RJ N472607	17 Nov 1943	3 Dec 1943
103	337th Engrs.	Maintain road from Benevento to Avelino	17 Nov 1943	3 Dec 1943
104	337th Engrs.	Construct approaches for ponton bridge at Capua	17 Nov 1943	25 Nov 1943
105	343rd Engrs.	Make traffic count at Capua bridge for one day	22 Nov 1943	23 Nov 1943
106	343rd Engrs.	Do necessary grading and drainage for Ordnance Depot near Pietravairano	22 Nov 1943	3 Dec 1943
107	343rd Engrs.	Construct two 1-way all weather roads to serve railhead at Pignataro Station	21 Nov 1943	27 Nov 1943
108	540th Engrs.	Make traffic count for one day at Cancellio bridge	22 Nov 1943	23 Nov 1943
109	540th Engrs.	Construct two way Class 40, steel stringer, two span bridge, to replace Bailey at N042872	21 Nov 1943	1 Dec 1943
110	540th Engrs.	Construct two way Class 40, steel stringer, three span bridge, to replace Bailey at N041873	21 Nov 1943	8 Dec 1943
111	540th Engrs.	Construct approaches for Bailey Ponton Bridge across Volturno River at Grazzanise	22 Nov 1943	28 Nov 1943
112	343rd Engrs.	Construct new approaches, build 1-way Class 40 bridge, & remove Bailey at N088912	23 Nov 1943	3 Dec 1943
113	343rd Engrs.	Replace 90' DS Bailey with 2-way, Class 40 bridge over R.R.	23 Nov 1943	8 Dec 1943
114	343rd Engrs.	Construct a 1-way, all weather bypass and bridge at N070929	23 Nov 1943	8 Dec 1943
115	343rd Engrs.	Maintain 2-way, all weather, Class 40 loads from Vairano (H089018) to RJ (H-050171)	24 Nov 1943	25 Dec 1943
116	337th Engrs.	Maintain 2-way, all weather, Cl. 40 loads from Dragoni (N260968) to RJ (H285020) to Prata (H166140)	24 Nov 1943	5 Jan 1944
117	337th Engrs.	Replace Bailey bridge at H170070, with 2-way Class 40 bridge	24 Nov 1943	2 Dec 1943
118	14 GHQ Troops	Maintain contact with R.E. party building Grazzanise bridge and take over maintenance on comp.	23 Nov 1943	12 Dec 1943
119	540th Engrs.	Maintain for 2-way, all weather traffic, highway from RJ N-0078 to Madragone	24 Nov 1943	8 Dec 1943
120	540th Engrs.	Maintain for 2-way, all traffic (weather), No. 7 from Cascano to RJ N-0786 to Pizzone	23 Nov 1943	5 Jan 1944
121	540th Engrs.	Maintain for 2-way, all weather, Class 40, from Focello, North to RJ N-0288, and from RJ N-0488 to No. 7 near Francoise	24 Nov 1943	5 Jan 1944
122	337th Engrs.	Maintain routes Caserta-S. Maria, Ponte Annibale-Caserta	24 Nov 1943	2 Dec 1943
123	343rd Engrs.	Provide entrance and exit to QM dump at H-095960	26 Nov 1943	30 Nov 1943
124	337th Engrs.	Rebuild 5 span bridge at N696606 near Avelino	25 Nov 1943	2 Dec 1943
125	343rd Engrs.	Construct app. 700' gravel road for 95th Evac. Hosp. on Route 7	26 Nov 1943	1 Dec 1943
126	343rd Engrs.	Repair loading area, 263rd QM Depot at N-090978	30 Nov 1943	5 Dec 1943
127	337th Engrs.	Fill craters in unloading ramp W. of Caserta R.R. Station	28 Nov 1943	29 Nov 1943
128	14 GHQ Troops	Take over and operate gauging station at Capua	29 Nov 1943	2 Dec 1943
129	337th Engrs.	Fill pot holes with rock at QM Depot No. 514B at Caserta	29 Nov 1943	29 Nov 1943
130	343rd Engrs.	Construct roads & alleviate severe mud conditions, 38th Evac. Hospital at N180980	29 Nov 1943	11 Dec 1943
131	343rd Engrs.	Construct roads for 10th Med. Hosp.	30 Nov 1943	4 Dec 1943
132	344th Engrs.	Construct roads and prepare drainage trenches for QM Gas Depot, at N103890	2 Dec 1943	17 Dec 1943
133	337th Engrs.	Construct one way Class 12 bridge, 2-14' spans, at M629599	29 Nov 1943	3 Dec 1943
134	337th Engrs.	Construct 5-span, DS Bailey bridge, w/crib supports over Volturno River	30 Nov 1943	20 Dec 1943

APPENDIX J
PART # 2
VOLTURNO TO MAZ 11TR

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
135	349rd Engrs.	Take traffic count, Capua bridge, for night of 2 December	2 Dec 1943	3 Dec 1943
136	540th Engrs.	Take traffic count, Cancellio bridge, for night of 2 December	2 Dec 1943	3 Dec 1943
137	337th Engrs.	Construct signs for Transportation Section	1 Dec 1943	13 Dec 1943
138	349rd Engrs.	Construct roads and make necessary repairs for Ord. Depot at Venafro	2 Dec 1943	11 Dec 1943
139	540th Engrs.	Construct 2-way, Class 40 bridge on Route 7 and remove DD Bailey at H-022884	3 Dec 1943	2 Jan 1944
140	344th Engrs.	Locate and remove pot holes near Pte. Annibale bridge	3 Dec 1943	4 Dec 1943
141	344th Engrs.	Furnish detail to remove suspected explosives for Signal Section	8 Dec 1943	9 Dec 1943
142	343rd Engrs.	Maintain road from RJ N102990 to RJ H137024 to RJ N162984 to RJ H098960	4 Dec 1943	12 Dec 1943
143	337th Engrs.	Take road reconnaissance Guardia-Pontelandolfo-Campobasso and Prata-Bavindola-Isernia-Campobasso	5 Dec 1943	7 Dec 1943
144	344th Engrs.	Construct road signs for Transportation Section and post at Trifilecco bridge	5 Dec 1943	7 Dec 1943
145	337th Engrs.	Maintain road from Dragoni to Corps boundary at approx. H170000	4 Dec 1943	13 Dec 1943
146	344th Engrs.	Maintain road from Cancellio bridge-Villa Litterno-Army Rear-Aversa thru Fertillie	3 Dec 1943	5 Jan 1944
147	344th Engrs.	Maintain loop Caserta-S. Maria-Ponte Annibale-Caserta	3 Dec 1943	5 Jan 1944
148	344th Engrs.	Maintain road Caserta to Maddaloni; No. 7 Capua to Army Rear boundary; No. 87 Caserta to Army Rear boundary	5 Dec 1943	5 Jan 1944
149	344th Engrs.	Maintain road Capua-Pte. Annibale including maintenance Capua and Annibale bridges	3 Dec 1943	5 Jan 1944
150	343rd Engrs.	Provide 1-way all weather roads for 94th Evac. Hoop.	5 Dec 1943	1 Jan 1944
151	14 GHQ Troops	Maintain road from Grassanise bridge-Brezza-RJ w/ No. 6; Brezza-S. Andrea; S. Andrea-Mondragone	3 Dec 1943	5 Jan 1944
152	343rd Engrs.	Install Bailey bridge at H105857 to replace washed out fill	5 Dec 1943	8 Dec 1943
153	343rd Engrs.	Replace Bailey bridge at H105857 w/suitable 2-way Class 40 crossing	7 Dec 1943	11 Dec 1943
154	343rd Engrs.	Install Bailey bridge at H-086053 to replace washed out culvert	6 Dec 1943	CANCELLED
155	343rd Engrs.	Replace Bailey bridge at H-086053 w/suitable 2-way Class 40 installation	6 Dec 1943	13 Dec 1943
156	14 GHQ Troops	Complete all weather access road to tank farm at H140780	6 Dec 1943	10 Dec 1943
157	344th Engrs.	Construct signs for Transportation Section	7 Dec 1943	25 Dec 1943
158	344th Engrs.	Construct roads for 161 Med Bn	7 Dec 1943	12 Dec 1943
159	343rd Engrs.	Construct roads for French Hoop.	7 Dec 1943	13 Dec 1943
160	343rd Engrs.	Construct roads for 15th Evac. Hoop.	7 Dec 1943	13 Dec 1943
161	344th Engrs.	Construct roads for 8th Evac. Hoop.	7 Dec 1943	20 Dec 1943
162	540th Engrs.	Construct roads for Fifth Army Bridge Dump	7 Dec 1943	18 Dec 1943
163	344th Engrs.	Maintain road from RJ H-089910 on Rt. 6 to Teano-removing Bailey over RR at H-073926	8 Dec 1943	5 Jan 1944
164	344th Engrs.	Make road reconnaissance Maddaloni-Benevento	8 Dec 1943	11 Dec 1943
165	344th Engrs.	Aid in making culvert for 510th Q Depot	10 Dec 1943	12 Dec 1943
166	343rd Engrs.	Complete Vairano Railhead	10 Dec 1943	2 Jan 1944
167	540th Engrs.	Furnish pile driver and crew for Dragoni bridge	12 Dec 1943	20 Dec 1943
168	540th Engrs.	Maintain Cancellio bridge	13 Dec 1943	5 Jan 1944
169	344th Engrs.	Make technical survey of hospitals to determine electrical needs	12 Dec 1943	27 Dec 1943
170	343rd Engrs.	Maintain following roads: RJ H-040060 to Picilli; RJ H-060037 to Boiai; RJ H-068029 to Terra Corpo	12 Dec 1943	4 Mar 1944
171	344th Engrs.	Maintain following roads: Hwy 6, LePezze-Variano; LePezze-San Felice; from RJ N103990 to RJ at Pietravairano, South to RJ at H162985	12 Dec 1943	6 Jan 1944
172	344th Engrs.	Maintain road San Felice to Dragoni	13 Dec 1943	21 Dec 1943
173	344th Engrs.	Roads for M.P. Hospital, 161st Med. Bn.	15 Dec 1943	20 Dec 1943
174	540th Engrs.	Furnish detail for moving material from Sparanise to new Engineer depot	13 Dec 1943	15 Dec 1943
175	344th Engrs.	Maintain Rt. 7 from Capua to RJ H-078860; lateral road H-078860 to Route No. 6 at RJ H101896; Route No. 6 from RJ with No. 7 to LePezze	10 Dec 1943	5 Jan 1944
176	343rd Engrs.	Furnish same clearing detail for vehicle parking area at Capua Airport (H156788)	15 Dec 1943	31 Dec 1943
177	14 GHQ Troops	Maintain and repair road from Madragoni to RJ at H788840	20 Dec 1943	5 Jan 1944
178	337th Engrs.	Construct hospital roads at 3rd Conv. Hoop. at Pignattario	17 Dec 1943	6 Jan 1944
179	540th Engrs.	Maintain Hwy 6 from Capua bridge to junction w/Sparanise Rd (H103895), incl Capua bridge; Hwy 7 from junction w/Hwy 6 to junction Sparanise cut-off (H-078861)	20 Dec 1943	5 Jan 1944
180	337th Engrs.	Erect five portable wooden buildings for 3rd Conv. Hoop.	20 Dec 1943	7 Jan 1944
181	343rd Engrs.	Construct Ordnance Depot near Mignano, Vic of 5988117	20 Dec 1943	25 Dec 1943
182	344th Engrs.	Construct 20 signs and erect at R.R. crossings	20 Dec 1943	29 Dec 1943
183	343rd Engrs.	Construct Bailey bridge over railroad at H-094006	20 Dec 1943	20 Dec 1943
184	343rd Engrs.	Remove fill from tracks & construct Cl. 30, 1-way bridge in place of Bailey bridge at H-094006	20 Dec 1943	28 Dec 1943
185	343rd Engrs.	Construct necessary roads for 16th Evac. Hoop.	22 Dec 1943	29 Dec 1943
186	344th Engrs.	Maintain road from RJ H137022 to RJ H165060	22 Dec 1943	6 Jan 1944
187	344th Engrs.	Take over from 337th Engrs - maintenance of road from RJ H185060 to Prata	22 Dec 1943	5 Jan 1944
188	344th Engrs.	Construct Class 40 Bailey Trestle Bridge across Volturno River at H176056	22 Dec 1943	16 Jan 1944
189	337th Engrs.	Take over fr 344th Engrs-maintenance of road from Capua to Pte. Annibale Bridge, incl bridge; from 540th Engrs-maintenance of Capua Bridge	22 Dec 1943	5 Jan 1944
190	92nd Engrs.	Take over from 344th Engrs-maintenance of road from LePezze (H-098960) to RJ near Dragoni (H254970)	22 Dec 1943	23 Mar 1944
191	14 GHQ Troops	Construct HMC for 10 Corps at Sparanise: complete sufficient work to make railhead operable with access to stacking area, complete as permanent railhead	23 Dec 1943	5 Jan 1944
192	337th Engrs.	Erect signs on principle routes; contact PW prior to actual work for OK of sites	23 Dec 1943	28 Dec 1943
193	343rd Engrs.	Construct 2-way Cl. 40 timber bridge across double RR-NW of Vairano, vic of H-085020	23 Dec 1943	29 Dec 1943
194	344th Engrs.	Construct minimum roads (not over 700') for 162 Med Bn. Venereal Hoop, at approx H101982	23 Dec 1943	3 Jan 1944
195	92nd Engrs.	Take over fr 344th Engrs-maint of 1-way road fr RJ H137023 to RJ H162985, nr Pietralenara	26 Dec 1943	23 Mar 1944
196	540th Engrs.	Make traffic count of all vehicles crossing the Cancellio & Grassanise bridges	24 Dec 1943	30 Dec 1943
197	343rd Engrs.	Maintain for 2-way, all traffic Route 6 fr RJ at Vairano (H-088018) to H-012085	25 Dec 1943	13 Jan 1944
198	343rd Engrs.	Submit for approval plans; & construct 2-way Cl. 40 bridge over RR crossing at H-012085	25 Dec 1943	10 Jan 1944

APPENDIX J

VOLTURNO TO MAY 11TH

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
199	337th Engrs.	Make survey of Italian Barracks, W. of S. Maria to determine availability of water, electricity and sewage for 500 man rest camp	27 Dec 1943	28 Dec 1943
200	337th Engrs.	Construct approx. 2" asphalt wearing surface on Capua Bridge, arranged for 1-way traffic at all times	2 Jan 1944	4 Jan 1944
201	343rd Engrs.	Construct and deliver signs to Vairano Railroad, as requested by Transportation Section	30 Dec 1943	3 Jan 1944
202	337th Engrs.	Perform approx 3 days grading w/bulldozer for 5th Ord Bn. near Capua	2 Jan 1944	9 Jan 1944
203	343rd Engrs.	Enlarge railroad at Vairano to provide for unloading on west side of tracks	31 Dec 1943	9 Jan 1944
204	337th Engrs.	Repair road Benevento to RJ H582003, vic Pontelandolfo, by following work: Install Bailey bridge at N586997; DS Bailey at N636916; complete fill at N607992 for 2-way traffic	1 Jan 1944	4 Jan 1944
205	344th Engrs.	Furnish mine removing detail, to contact CO 5th Ord Bn, at Capua Airport, remove mines in area	31 Dec 1943	14 Jan 1944
206	540th Engrs.	Remove tree fr across Hwy 87, approx. 1.5 miles S. of Caserta; remove telephone poles from Hwy 7, 1.5 miles E. of Caserta	1 Jan 1944	2 Jan 1944
207	14 GHQ Troops	Construct suitable crossing (Bailey, or culvert) over stream at N129829	2 Jan 1944	3 Jan 1944
208	337th Engrs.	Take over fr 540th Engrs-Maintenance of roads; maint. of Canello bridge; const of culvert and fill on Hwy 7 at N105860; remove all of Bailey bridge on Hwy 7 at N-025583	5 Jan 1944	8 Apr 1944
209	92nd Engrs.	Take over fr 337th Engrs: Maint. of Capua & Pte Annibale bridges; maint for 2-way, Cl. 40 traffic rd fr Pte Annibale br to Caiazzo to Dragoni to Alife to RJ H185060; maintain for 2-way Cl. 40 traffic, road from Pte Annibale br to junction w/Route 6 at N170795	5 Jan 1944	25 Mar 1944
210	344th Engrs.	Construct exit & entrance roads for French Hoop, located at approx. N160130	3 Jan 1944	14 Jan 1944
211	92nd Engrs.	Take over fr 344th Engrs-2-way Cl. 40 traffic, road from RJ N102991 to RJ H185061, & Route 6 from N103896 to RJ H-088016	5 Jan 1944	23 Mar 1944
212	92nd Engrs.	Take over fr 540th Engrs, maint for 2-way, Cl. 40 traffic, Route 6 fr Capua Br. to RJ at N103896	5 Jan 1944	26 Mar 1944
213	344th Engrs.	Maintain for 2-way cl. 40 traffic: road fr Prato to RJ H17118 to RJ H-050174, road from Venafro to Colli	5 Jan 1944	16 Mar 1944
214	92nd Engrs.	Take over fr 337th Engrs following work: Maint of Dragoni bridge; maint of gauging station on Volturno River, near Caiazzo	5 Jan 1944	26 Mar 1944
215	92nd Engrs.	Repair 2-way bypass on Route 7, South of Capua at N182778	4 Jan 1944	CANCELLED
216	337th Engrs.	Take over fr 14 GHQ Trps: maint of roads for 2-way Cl.40 traffic road from Canello bridge to RJ N-002786 to Mondragone; rd fr RJ N-002786 to RJ N-029832; road fr RJ N-029832 to Brezza to RJ N172788; maint for 1-way Cl. 30 road fr Grazzania bridge to Brezza	6 Jan 1944	7 Mar 1944
217	337th Engrs.	Take over fr 344th Engrs, maint of road fr Bv at N-090912 to Teano	6 Jan 1944	7 Mar 1944
218	343rd Engrs.	Floor Caltri-Risorta Bridge (Hwy 6) w/2" lumber. Flooring laid parallel to traffic	7 Jan 1944	8 Jan 1944
219	337th Engrs.	Scarify, grade & provide drainage of rd fr RJ N203714 to S. Maria to Pte. Annibale Bridge	7 Jan 1944	15 Jan 1944
220	343rd Engrs.	Construct minimum required roads for 162 Med Bn (in vic of 16th Evac Hoop)	6 Jan 1944	9 Jan 1944
221	343rd Engrs.	Furnish minimum requirements for roads & hardstandings for E27 Engr Depot near Vairano	6 Jan 1944	19 Jan 1944
222	343rd Engrs.	Construct minimum required roads for 11th Evac. Hoop	8 Jan 1944	11 Jan 1944
223	343rd Engrs.	Take over from Corps, maintenance of road from RJ H033065 to H087075	7 Jan 1944	30 Mar 1944
224	92nd Engrs.	Grade hospital area at 94th Evac. Hoop. Machine grading only	8 Jan 1944	12 Jan 1944
225	92nd Engrs.	Mark Highway in accordance with Transportation instructions	8 Jan 1944	14 Jan 1944
226	92nd Engrs.	Construct Cl. 40 Bailey bridge over H.R. tracks at Biardo Station at N105959	10 Jan 1944	12 Jan 1944
227	343rd Engrs.	Repair & remodel W. Palace stables at Caserta-blackout, mess & sanitary facilities for rest	10 Jan 1944	21 Jan 1944
228	337th Engrs.	Supply mine demonstration team to 72 HAA Regt (RA) nr 92nd Gen. Hoop. Demonstration for 2 days.	13 Jan 1944	15 Jan 1944
229	175th Engrs.	Provide B-4 w/oper for 197th Ord Bn at S. Maria, N410700. Level off ruts & shape existing roads	11 Jan 1944	26 Jan 1944
230	92nd Engrs.	Repair bypass on Hwy 87, Caserta-Pte. Annibale, approx. N280760	11 Jan 1944	16 Jan 1944
231	344th Engrs.	Construct minimum requirements for access roads for Ord. Depot At N-070227	11 Jan 1944	19 Jan 1944
232	92nd Engrs.	Refloor Capua bridge w/2" material. Flooring laid parallel to traffic. 1-way traffic maint.	12 Jan 1944	13 Jan 1944
233	92nd Engrs.	Construct 2-way, Cl. 40, steel stringer bridge over RR at N184773, S. of Capua on Hwy 7	13 Jan 1944	27 Jan 1944
234	92nd Engrs.	Maintain rd fr Benevento to RJ H582003 nr Pontelandolfo. Maintenance will consist of patrolling semi-weekly; during and after heavy rains	14 Jan 1944	23 Feb 1944
235	92nd Engrs.	Take down section of wall & do necessary hand grading, Caserta RR Station	14 Jan 1944	13 Jan 1944
236	92nd Engrs.	Construct and install signs for Transportation Section	15 Jan 1944	10 Feb 1944
237	175th Engrs.	Furnish mtd grader w/oper to 337th Engrs, assist in maint of rd Pte Annibale to S. Maria to junction Hwy 87	15 Jan 1944	26 Jan 1944
238	92nd Engrs.	Repair holes on Route 7 thru S. Maria. Holes may be repaired by re-setting paving stone or asphalt patch	17 Jan 1944	21 Jan 1944
239	92nd Engrs.	Construct and erect RR crossing signs on Route 719 at N13705	16 Jan 1944	18 Jan 1944
240	92nd Engrs.	Procure from Depot E-26, red reflector discs & mark all obstructions on Hwy 6, priority to bridge and culvert abutments, arch forming W. gate of S. Maria	16 Jan 1944	25 Jan 1944
241	337th Engrs.	Procure from E-26, red reflector discs and install as markers for all bridges, culvert abutments and other obstruction on Hwy 7 within your area	16 Jan 1944	18 Jan 1944
242	343rd Engrs.	Perform work and install facilities for 2nd Med Lab		CANCELLED
243	92nd Engrs.	Do necessary blasting for latrines for 3rd Conv. Hoop.	17 Jan 1944	21 Jan 1944
244	175th Engrs.	Furnish shovel w/oper to load trucks for OC, 8 Pd Coy (Br) at quarry near Francolise	19 Jan 1944	31 Jan 1944
245	343rd Engrs.	Construct roads and hardstandings for Engr Depot & 469th Engr Maint Co. at Vairano	28 Jan 1944	1 Feb 1944
246	8 Pd Coy (Br)	Construct railroad facilities at Sparanise	18 Jan 1944	2 Feb 1944
247	8 Pd Coy (Br)	Construct Ord Depot & facilities for depot in vicinity of Teano: Hardstandings, fill ditches, build turnarounds, build roads	23 Jan 1944	6 Feb 1944
248	343rd Engrs.	Erect 3 huts, install interior and exterior electric and water lines, construct sump pit and drainage line, construct parking lot for 2nd Med Lab.	21 Jan 1944	26 Jan 1944
249	343rd Engrs.	Construct PW Detention area in vic of Vairano	20 Jan 1944	24 Jan 1944
250	344th Engrs.	Maintain road from Colli to Manello for 2-way all weather traffic	20 Jan 1944	5 Mar 1944
251	337th Engrs.	Maintain road from Teano to Rd junction N-028885 for 2-way all weather traffic	20 Jan 1944	31 Jan 1944

APPENDIX J

VOLTURRO TO MAY 11TH

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
252	344th Engrs.	Maintain 2-way, Cl. 40, all weather traffic road from RJ H103242-HL20183, incl maintenance of Bailey bridge across Volturro River upon completion	20 Jan 1944	21 Jan 1944
253	92nd Engrs.	Construct guards (wire or timber) at each end of blown bridge between Capua and Dragoni	20 Jan 1944	21 Jan 1944
254	92nd Engrs.	Furnish R-4 Bulldozer for 3 days work for 28th Ord and 529th Ord. Depots	1 Feb 1944	4 Feb 1944
255	344th Engrs.	Check area at H-015260 for 120 Holzmines, reported stacked with ammunition	21 Jan 1944	22 Jan 1944
256	92nd Engrs.	Remove Bailey Bridge at N-019610 and N-02257) and turn in to E-28	23 Jan 1944	25 Jan 1944
257	343rd Engrs.	Construct rest camp in E. wing of stables. Facilities to consist of blackout, sanitary & lighting	21 Jan 1944	18 Mar 1944
258	503 Pd Coy RC	Construct entrance road to Teano Rhd fr RJ 1000' N. of station, to enter Rhd vic of water tower. Clear debris from area	22 Jan 1944	25 Jan 1944
259	343rd Engrs.	Maintain for 2-way, Cl. 40 traffic, Hwy 6 from overpass at H-015078 to RJ G955155 to Venafro	21 Jan 1944	19 Mar 1944
260	343rd Engrs.	Maintain for 2-way, Cl. 40 traffic, from road junction G955155 to G902181	23 Jan 1944	20 Mar 1944
261	175th Engrs.	Furnish R-4 Anglelayer and utzd grader to grade area, remove 10 trees, construct 500' of road at site of 10th Field Hosp. (Route 6)	23 Jan 1944	27 Jan 1944
262	Co A, 85 Engr	Erect Class 30 BB at N-058952 on road at Teano	25 Jan 1944	27 Jan 1944
263	344th Engrs.	Construct hardstanding area & perform necessary grading for 301 QM Sterilization-Bath Unit	25 Jan 1944	28 Jan 1944
264	343rd Engrs.	Construct additional facilities at Vairano Rhd	25 Jan 1944	8 Feb 1944
265	92nd Engrs.	Place rock on roads being laid out by 175th Engrs at 10th Field Hosp (H-037061)	25 Jan 1944	28 Jan 1944
266	92nd Engrs.	Construct hardstandings for water point at N112998	25 Jan 1944	27 Jan 1944
267	337th Engrs.	Furnish minefield instruction team for work with "E" Force	25 Jan 1944	25 Mar 1944
268	175th Engrs.	Grade area for bivouac, improve existing roads, construct 1 new road & Cub Landing strip at Fifth Army CP	25 Jan 1944	30 Jan 1944
269	92nd Engrs.	Repair Capua bridge as follows: Repair pier No. 4 by replacing damaged pile and cap, build up penetration to a minimum of 20' on all bents, raise bridge to original elevation at Pier No. 4	25 Jan 1944	18 Mar 1944
270	14 GHQ Troops	Construct POL Dump at N097886, near Sparanise	26 Jan 1944	4 Feb 1944
271	175th Engrs.	Dismantle, and erect, portable buildings at Fifth Army Headquarters	26 Jan 1944	29 Jan 1944
272	85th Engrs.	Furnish pontoons to provide raft for pile driver of 337th Engrs, and power boats to move raft	29 Jan 1944	15 Mar 1944
273	85th Engrs.	Construct truck control tower at Vairano Rhd	29 Jan 1944	14 Mar 1944
274	337th Engrs.	Maintain road from Mondragone to RJ H878840, for 2-way traffic	28 Jan 1944	15 Mar 1944
275	175th Engrs.	Construct hardstanding for water point located at H-034064	30 Jan 1944	31 Jan 1944
276	14 GHQ Troops	Make reconnaissance of road from Teano to RJ H-087007	31 Jan 1944	2 Feb 1944
277	92nd Engrs.	Make reconnaissance of Route 87 from Caluzzo-Guardia-S. Lupo-Pontelandolfo	1 Feb 1944	4 Feb 1944
278	92nd Engrs.	Make reconnaissance of Route 7 from Kontesarchio to Benevento	2 Feb 1944	4 Feb 1944
279	175th Engrs.	Construct and erect signs for Transportatn on Section	1 Feb 1944	9 May 1944
280	175th Engrs.	Construct hardstandings for Vairano Rhd	1 Feb 1944	14 Feb 1944
281	337th Engrs.	Open road from Roccaravindola to Isernia by constructing 5 Class 40 Bailey bridges	31 Jan 1944	13 Feb 1944
282	343rd Engrs.	Place signs on Routes 6 and 85 for Transportatn Section	2 Feb 1944	10 Feb 1944
283	344th Engrs.	Maintain road and bridges from RJ H116240 to Isernia	3 Feb 1944	11 Feb 1944
284	92nd Engrs.	Construct barricade across south approach to old Pte. Annibale bridge	3 Feb 1944	3 Feb 1944
285	343rd Engrs.	Construct hardstandings for 94th Evac. Hosp.	3 Feb 1944	10 Feb 1944
286	175th Engrs.	Furnish 3/4 yd shovel to operate in quarry near Francolise	2 Feb 1944	15 Feb 1944
287	343rd Engrs.	Construct approximately 950' of gravel road for QM Class I Depot at H-040062	3 Feb 1944	6 Feb 1944
288	92nd Engrs.	Crush and stockpile in vic of crusher 1,900 cu yds of fine crushing & 1,200 cu yds of 1" to 2-1/2" stone	4 Feb 1944	9 May 1944
289	92nd Engrs.	Construct 2" to 3" asphalt surfacing on Pte. Annibale bridge	5 Feb 1944	20 Feb 1944
290	14 GHQ Troops	Provision of roads in Engr Stores Depot, Sparanise and improve access to dump	3 Feb 1944	17 Feb 1944
291	85th Engrs.	Grade area for QM Bakery at Ration Dump 539. Contact 263rd QM for details	4 Feb 1944	6 Feb 1944
292	14 GHQ Troops	Provision of turnaround for vehicles at 12 CCS Site; dump 20 tons of rock at site	3 Feb 1944	6 Feb 1944
293	344th Engrs.	Prepare, and submit plans for replacing Bailey bridges w/2-way Cl. 40 bridges on Rd from "25 Arch Bridge" to Isernia	4 Feb 1944	8 Feb 1944
294	175th Engrs.	Operate quarry, Vairano	3 Feb 1944	5 Mar 1944
295	14 GHQ Troops	Erect tanks and provide distribution at water points in Sparanise dump area	3 Feb 1944	3 Mar 1944
296	14 GHQ Troops	Provide access road to convey halt area south of Sparanise	3 Feb 1944	8 Feb 1944
297	14 GHQ Troops	Provision of convoy halt, in area Map Ref 087879	3 Feb 1944	8 Feb 1944
298	14 GHQ Troops	Provide turning loops on roads in Teano ammo circuit	3 Feb 1944	4 Feb 1944
299	14 GHQ Troops	Repair Ord building where practicable & provide exit road	1 Feb 1944	8 Feb 1944
300	14 GHQ Troops	Clear site for Canteen Depot and provide accommodations by erection of 3 Nissen huts	3 Feb 1944	4 Feb 1944
301	14 GHQ Troops	Make NW and Westside of Supply Depot area paliferer-proof	3 Feb 1944	11 Feb 1944
302	14 GHQ Troops	Improve corner at 065931	3 Feb 1944	6 Feb 1944
303	175th Engrs.	Perform grading operations at Fifth Army CP	4 Feb 1944	7 Feb 1944
304	14 GHQ Troops	Maintain road from Sparanise cutoff, from RJ H104897 to RJ 798 862; Teano to RJ H-027886; Teano to N035930 to H-027886; Cascano to Capelle to H-003893	5 Feb 1944	CANCELLED
305	85th Engrs.	Make necessary repairs to superstructure of bridge at N257790; fill pot holes and improve 1-way portion of Route 85 thru the town of Briano, & Route 87 at N270770	6 Feb 1944	14 Feb 1944
306	343rd Engrs.	Install 80' DS Bailey bridge over RR crossing at H-015078 and remove present fill with minimum of 6' side clearance	5 Feb 1944	14 Feb 1944
307	92nd Engrs.	Construct hardstandings for water points at H-074131 and H-035200	6 Feb 1944	13 Feb 1944
308	343rd Engrs.	Furnish 2 mine detector teams to sweep right-of-way for pipeline from G9714 to Trocchia	7 Feb 1944	10 Feb 1944
309	175th Engrs.	Construct 3 strand wire fence at north end of Army Engr area and furnish 1 load of fine crushed rock to Army Engineer drafting tent	6 Feb 1944	7 Feb 1944
310	92nd Engrs.	Furnish power shovel to load gravel trucks for Indian Division	6 Feb 1944	10 Feb 1944
311	175th Engrs.	Make survey, and prepare plans for lighting Teano and Sparanise Rnds for night operation	6 Feb 1944	8 Feb 1944

APPENDIX J
VOLTURNO TO MAY 11TH

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
312	343rd Engrs.	Procure Primary Rock Crusher No. Q321129 from II Corps. Contact Engr, II Corps as to desired location & operate quarry and crusher to furnish stone to II Corps	6 Feb 1944	28 Feb 1944
313	344th Engrs.	Perform necessary grading and enlargement of Ord Depot No. Q419, near Picoilli	7 Feb 1944	9 Feb 1944
314	343rd Engrs.	Send bulldozer to QM Depot Q 539, Mignano, to grade and cut road	6 Feb 1944	8 Feb 1944
315	85th Engrs.	Repair Repeater Station on right side of road in vic of Mignano on Route 6	8 Feb 1944	25 Mar 1944
316	175th Engrs.	Construct hardstanding for water point, located at H-0597	10 Feb 1944	14 Feb 1944
317	343rd Engrs.	Construct and erect signs on Routes 85 & 624, in accordance with list from Transportation Sect.	9 Feb 1944	9 May 1944
318	175th Engrs.	Install culvert, and place and compact with sheepsfoot roller, required fill between stations 1+00 and 6+00	11 Feb 1944	9 Mar 1944
319	92nd Engrs.	Stock pile quantities of stone on Route 6, from RJ w/Routes 7 to Vairano. Place signs on piles--Property of "US Army - Do Not Remove"	10 Feb 1944	20 Feb 1944
320	337th Engrs.	Stock pile quantities of stone on Hwy 7. Place signs on stock piles.--Property of "US Army - Do Not Remove"	10 Feb 1944	15 Feb 1944
321	175th Engrs.	Grade area and construct entrance roads for Bailey Bridge Depot at H990018, near Vairano	10 Feb 1944	11 Feb 1944
322	343rd Engrs.	Construct approximately 200' of entrance road for 54th Amb Unit at H-023189	10 Feb 1944	14 Feb 1944
323	92nd Engrs.	Mark minefield near Castel Murrone	11 Feb 1944	25 Feb 1944
324	92nd Engrs.	Replace or reinforce all bridges on road from Benevento to RJ near Pontelandolfo for Cl. 40	11 Feb 1944	18 Feb 1944
325	14 GHQ Troops	Improve Pignatoro Station for personnel rhd	12 Feb 1944	18 Feb 1944
326	85th Engrs.	Furnish 92nd Engrs. approximately 150' ponton bridge and power boat for use in repairing Capua Bridge	12 Feb 1944	18 Feb 1944
327	344th Engrs.	Replace Bailey bridge at H176297 w/2-way Cl. 24 "A" frame type bridge	13 Feb 1944	24 Feb 1944
328	344th Engrs.	Replace Bailey bridge at H181309 w/2-way Cl. 24, pile bent steel stringer bridge	17 Feb 1944	25 Feb 1944
329	92nd Engrs.	Clear ditches of mines, and mark carefully exact area cleared. Sufficient width will be cleared for opening of ditches	13 Feb 1944	23 Feb 1944
330	92nd Engrs.	Deliver asphalt to stations along Hwy 6 from junction w/Route 7 to Vairano	13 Feb 1944	16 Feb 1944
331	337th Engrs.	Deliver asphalt to stations along Hwy 7	13 Feb 1944	17 Feb 1944
332	337th Engrs.	Construct two way Cl. 40 American Bailey bridge across Volturno River at Cancelli Arnone	13 Feb 1944	20 Feb 1944
333	175th Engrs.	Lay PSP for landing strip at Fifth Army Cub Field. Strip to be 1,140' long, 2 strips wide	13 Feb 1944	14 Feb 1944
334	14 GHQ Troops	Construct Indian Transit Camp at H140845	13 Feb 1944	CANCELLED
335	14 GHQ Troops	Construct New Zealand Transit Camp at H122855	16 Feb 1944	19 Feb 1944
336	14 GHQ Troops	Construct No. 1, CRU at H122855	18 Feb 1944	CANCELLED
337	14 GHQ Troops	Construct No. 4, CRU at H113853	19 Feb 1944	24 Feb 1944
338	469th Engrs.	Construct 4 portable light units for Transportation Section	15 Feb 1944	25 Mar 1944
339	92nd Engrs.	Assist 88th Division in repairing road and replacing damaged culverts between Piedmonte and Pelese	13 Feb 1944	17 Feb 1944
340	337th Engrs.	Maintain for 2-way traffic, road from Teano to M980980; for 1-way traffic from H010766_H065800	15 Feb 1944	7 Mar 1944
341	337th Engrs.	Salvage materials from wreckage of Grazzanise and Cancelli bridges at the Cancelli RE Bridge	15 Feb 1944	25 Feb 1944
342	343rd Engrs.	Construct entrance approach to express hwy at G-075118	14 Feb 1944	20 Feb 1944
343	343rd Engrs.	Grade area for Ord. Depot at G1075118	14 Feb 1944	20 Feb 1944
344	175th Engrs.	Construct entrance and exit roads and do misc. grading for demonstration area, approximately 1 mile west of Fifth Army CP	14 Feb 1944	14 Feb 1944
345	175th Engrs.	Construct signs for Transportation Section	18 Feb 1944	26 Feb 1944
346	92nd Engrs.	Repair building, in S. Maria, for 10th Advances Depot Medical Stores	18 Feb 1944	18 Feb 1944
347	343rd Engrs.	Investigate report of "S" mines, extending along line from H-006203-006206-014206-006214	18 Feb 1944	19 Feb 1944
348	175th Engrs.	Construct hardstanding for water point at G963148	19 Feb 1944	19 Feb 1944
349	175th Engrs.	Reconstruct roads and require hardstandings for 95th Evac. Hoop at H110958	21 Feb 1944	23 Mar 1944
350	92nd Engrs.	Repair bridge at QM wood lot, located at Montella (N8752)	20 Feb 1944	6 Mar 1944
351	175th Engrs.	Furnish compressor and operator, w/blasting equipment, to shoot holes for latrines for 3rd Conv. Hospital at H145880	22 Feb 1944	29 Feb 1944
352	337th Engrs.	Stockpile 1 barrel of bitumen and 5 yds of 1/2" stone at every 1/3 kilometer on Route 7, from Capua bridge to Garigliano River	23 Feb 1944	23 Mar 1944
353	92nd Engrs.	Stockpile 1 barrel of bitumen and 5 yds of 1/2" stone at every 1/3 kilometer on Route 6, from junction with Route 7 to RJ G956155	23 Feb 1944	22 Mar 1944
354	175th Engrs.	Construct roads and do miscellaneous construction work for 5th Army Rear Echelon	22 Feb 1944	28 Feb 1944
355	92nd Engrs.	Construct bypasses at Vairano; south bypass for 1-way northbound traffic, north bypass for 2-way	22 Feb 1944	6 Mar 1944
356	469th Engrs.	Repair Fifth Army Engineer map truck, to include raising bows, filling in gap, and strengthening with plywood	23 Feb 1944	28 Feb 1944
357	175th Engrs.	Repair tile roof in Fifth Army CP area	24 Feb 1944	28 Feb 1944
358	469th Engrs.	Make electrical survey of 110th QM Bakery Co., and submit findings and recommendations	25 Feb 1944	28 Feb 1944
359	469th Engrs.	Check secondary crusher unit, operated by 92nd Engrs at Calvi Risorta quarry	25 Feb 1944	25 Feb 1944
360	175th Engrs.	Improve roads and crossings in Fifth Army Rear Echelon area	25 Feb 1944	28 Feb 1944
361	92nd Engrs.	Maintain Route 85 from junction w/Route 6 at Vairano to Venefro (excl)	28 Feb 1944	CANCELLED
362	92nd Engrs.	Maintain road net from RJ H185060 to RJ H120184 to junction w/Route 85 at H-050173	27 Feb 1944	29 Mar 1944
363	343rd Engrs.	Maintain road from RJ G965158 to G890250; from RJ G965160 to G943158; from G904176 to G895198	28 Feb 1944	28 Mar 1944
364	175th Engrs.	Furnish, and operate shovel to load gravel for 111th Engrs at gravel pit near Pratella	28 Feb 1944	20 Mar 1944
365	14 GHQ Troops	Reopen water point at H-071797, as an aid to supply demands in area	28 Feb 1944	2 Mar 1944
366	14 GHQ Troops	Repair entrance road to Ord Field Park at H160732	28 Feb 1944	29 Feb 1944
367	343rd Engrs.	Maintain Route 6 from Vairano (Excl) to Mt. Trocchia for heavy 2-way traffic	28 Feb 1944	30 Mar 1944
368	175th Engrs.	Construct 1-way Cl. 30 pile trestle, steel stringer bridge on Maddaloni-Amorosi Road	28 Feb 1944	7 Mar 1944
369	175th Engrs.	Investigate area shown on sketch, and remove mines if located	28 Feb 1944	29 Feb 1944
370	343rd Engrs.	Construct road network for New Zealand Corps	28 Feb 1944	20 Mar 1944
371	85th Engrs.	Construct 1-way Cl. 40 Bailey bridges at H-067958 and H-067956	29 Feb 1944	3 Mar 1944

APPENDIX J
VOLTURNO TO MAY 11TH

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
372	337th Engrs.	Furnish mine instruction team to 168th Infantry Regt	1 Mar 1944	25 Mar 1944
373	85th Engrs.	Construct 3 culverts, and fill shell crater on Teano road between N-067956 and 057952	3 Mar 1944	25 Mar 1944
374	175th Engrs.	Install approximately 300' of gravel apron for cub field at 5th Army Rear	29 Feb 1944	4 Mar 1944
375	84th Engrs.	Garnish camouflage nets for Engr Depot E-27	1 Mar 1944	5 Mar 1944
376	343rd Engrs.	Maintain road from G945176 to junction w/Hwy 6 at H931162	1 Mar 1944	31 Mar 1944
377	343rd Engrs.	Maintain road from RJ H918201 to junction w/Hwy 6 at H901195	1 Mar 1944	30 Mar 1944
378	175th Engrs.	Improve road from entrance to 10th Field Hosp to entrance to 6648 Casual Bn	4 Mar 1944	5 Mar 1944
379	343rd Engrs.	Construct 330' Cl. 40 Bailey bridge at N-058952, near Teano	4 Mar 1944	13 Mar 1944
380	337th Engrs.	Replace Bailey bridge at N-055695 with 2-way Cl. 40 timber bridge	7 Mar 1944	10 Mar 1944
381	337th Engrs.	Maintain road from Cancellio bridge (N-025747) to Villa Literno (N-065679)	5 Mar 1944	15 Mar 1944
382	175th Engrs.	Operate quarry in vic of Teano to produce quarry-run and crushed stone	8 Mar 1944	29 Mar 1944
383	175th Engrs.	Prepare plans for replacing 5 Bailey bridges on road from N-028883 to Teano, w/2-way Cl. 40 bridges or culverts	5 Mar 1944	7 Mar 1944
384	175th Engrs.	Maintain network of roads between Route 6 & 7, including Teano Road. Maintain all Bailey bridges on these roads	6 Mar 1944	27 May 1944
385	92nd Engrs.	Maintain Sparanise cut-off from N-078861 to N103896	6 Mar 1944	10 May 1944
386	92nd Engrs.	Maintain roads from N-088909 to Teano	6 Mar 1944	11 May 1944
387	343rd Engrs.	Maintain road from Teano (Excl) to RJ H980980	6 Mar 1944	18 Mar 1944
388	92nd Engrs.	Construct additional facilities for improvement of Sparanise Hhd	6 Mar 1944	19 Mar 1944
389	343rd Engrs.	Maintain road from G987116 to RJ G988080 to RJ H953960 to G988080, including maintenance of all Bailey bridges on these roads	6 Mar 1944	18 Mar 1944
390	92nd Engrs.	Take over from 175th Engrs the operation of quarry at Vairano	7 Mar 1944	20 Mar 1944
391	344th Engrs.	Take over from 343rd Engrs, maintenance of road from H-088076 to H-032066	6 Mar 1944	26 Mar 1944
392	344th Engrs.	Maintain Route 85 from Vairano (Excl) to Venafro; RJ H-050173 to Capriati to RJ H185060 to RJ N102968	6 Mar 1944	27 Mar 1944
393	92nd Engrs.	Prepare plans to provide overhead crossing at junction Routes No. 6 & 7	5 Mar 1944	12 Mar 1944
394	92nd Engrs.	Provide 1 Officer and detail to measure turning radius of various Ord. vehicles	7 Mar 1944	12 Mar 1944
395	337th Engrs.	Widen entrance, and grade area for QK Depot at N-020840	5 Mar 1944	18 Mar 1944
396	175th Engrs.	Install gravel roads at new Fifth Army CP area	8 Mar 1944	19 Mar 1944
397	14 GHQ Troops	Construct exit and entrance roads at ammunition hhd at Mignano	4 Mar 1944	24 Mar 1944
398	343rd Engrs.	Maintain road from Ponte to Sessa to junction w/Route 7 at H945913	9 Mar 1944	18 Mar 1944
399	92nd Engrs.	Maintain roads from H277030 to H185060	9 Mar 1944	19 Mar 1944
400	343rd Engrs.	Maintain road from Teano to Vairano	9 Mar 1944	25 Mar 1944
401	92nd Engrs.	Construct roads and hardstandings for water point at F163808	10 Mar 1944	18 Mar 1944
402	92nd Engrs.	Maintain roads at Engineer Depot at Sparanise	7 Mar 1944	18 Mar 1944
403	175th Engrs.	Construct landing field for cub planes at new Fifth Army CP	10 Mar 1944	15 Mar 1944
404	92nd Engrs.	Repair entrance to HQ CRASC at N101988	10 Mar 1944	11 Mar 1944
405	343rd Engrs.	Have 3 platoons report to CRE 6th Armored Engrs. to become familiar with maintenance problems of certain bridges	11 Mar 1944	18 Mar 1944
406	344th Engrs.	Have 1 platoon report to CRE 16th GHQ Troops, RE, to become familiar with maintenance problems of certain bridges	11 Mar 1944	18 Mar 1944
407	337th Engrs.	Construct highway overpass at junction of Routes 6 & 7	12 Mar 1944	19 Mar 1944
408	175th Engrs.	Replace Bailey bridges at N-032895, N-036901 and N-045908 with pipe culverts	11 Mar 1944	1 Apr 1944
409	175th Engrs.	Replace Bailey bridges at N-055937 and N-057938 with timber trestle bridges	11 Mar 1944	1 Apr 1944
410	343rd Engrs.	Remove 2500 sq ft of roof, cut 8 entrances in wall and install 2 water tanks for 110 QK Bakery	11 Mar 1944	18 Mar 1944
411	337th Engrs.	Investigate RR tunnel, vic of Cascano for mines and booby traps and remove same if encountered	11 Mar 1944	13 Mar 1944
412	343rd Engrs.	Clear mines from passageway leading into wood lot for AMG Mignano	11 Mar 1944	13 Mar 1944
413	27 Rd Const Coy	Maintain Route 6, including bridges from junction at N103990 to G-930162	11 Mar 1944	20 Mar 1944
414	CRE 8 Army Tps	Maintain road from RJ N-075973 to RJ H185060 to H16240; from Capriati (Incl) to junction with Route 85 at H-050174	11 Mar 1944	2 Apr 1944
415	27 Rd Const Coy	Construct hardstandings at H-190050 for Army Signal Park	11 Mar 1944	22 Mar 1944
416	27 Rd Const Coy	Construct hardstandings (200 yds x 250 yds) at site for 8 Army Troops Workshops	11 Mar 1944	20 Mar 1944
417	CRE 8 Army Tps	Erect 3 Nissen huts at H190050 for Army Signal Park	12 Mar 1944	18 Mar 1944
418	CRE 8 Army Tps	Construct hardstanding and erect 10 huts for CRASC 8 Army Troops	10 Mar 1944	21 Mar 1944
419	CRE 8 Army Tps	Construct hardstanding, roads, and erect huts at Army Main Camp site and Army Rear Camp site	8 Mar 1944	15 Mar 1944
420	27 Rd Const Coy	Build roads at ACD, Vairano, H-085000. Wire fence will be erected by CRE 8 Army Troops	12 Mar 1944	21 Mar 1944
421	CRE 8 Army Tps	Erect pilfer-proof fence around ACD Vairano	12 Mar 1944	15 Mar 1944
422	CRE 8 Army Tps	Construct and Repair roads and hardstandings at petrol site, at Vairano	12 Mar 1944	16 Mar 1944
423	CRE 14 GHQ Tps	Erect hut for Cable Construction at MR N103991	12 Mar 1944	17 Mar 1944
424	CRE 14 GHQ Tps	Supply materials and supervise erection of pilfer-proof fence at 32BIS, H087013	13 Mar 1944	25 Mar 1944
425	92nd Engrs.	Construct 130' DD Bailey Bridge at N578900	13 Mar 1944	16 Mar 1944
426	92nd Engrs.	Construct Rifle Range at N453774; targets to be placed northeast of firing positions	14 Mar 1944	3 Apr 1944
427	343rd Engrs.	Maintain road from RJ M928910 to RJ M878840, for 2-way all weather traffic	11 Mar 1944	30 Mar 1944
428	343rd Engrs.	Maintain road from RJ M878840 to RJ M864880, for 2 way all weather traffic	11 Mar 1944	30 Mar 1944
429	CRE, SA Corps Tps	Take over maintenance of Route 625 from Venafro to San Pietro, then north to San Vittori	15 Mar 1944	28 Mar 1944
430	CRE, SA Corps Tps	Maintain road from RJ Route 85, MR H106242 to RJ H083334, north of Colli	15 Mar 1944	3 Apr 1944
431	337th Engrs.	Check for and clear mines from Area, vic Fasanì, Cupa Casale, E-8992-9292-9393, and report completion of clearance	15 Mar 1944	13 Apr 1944
432	337th Engrs.	Construct traffic overpass at junction of Route 7 and 721	15 Mar 1944	25 Mar 1944
433	337th Engrs.	Check and clear mines, vic of H971-913, on Route 7, town of Cascano	15 Mar 1944	15 Mar 1944
434	337th Engrs.	Take over 92nd Engrs, maintenance of Route 7, from junction with Route 6, to and including Capua bridge; maintenance of Sparanise cut-off between Route 6 and 7	17 Mar 1944	8 Apr 1944

APPENDIX J

VOLTURNO TO KAY LITH

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
435	343rd Engrs.	Maintenance of road from Villa Litterno to Cancellò to Mondragone to RJ K876838, including maintenance of Cancellò bridge; maint. of road from RJ K994787 to Falciano to RJ M975890; maint. of road from M013806 to Nocellero to Carinolla to RJ with Route 7 at Cascano	17 Mar 1944	3 Apr 1944
436	344th Engrs.	Maintenance of road from Teano to RJ H980980; from Teano north to Variano; from L'ignano to RJ G988080 to RJ M955960 to Sessa to junction with Route 7 at 944913; from RJ G988080 to M955960	17 Mar 1944	19 May 1944
437	344th Engrs.	Maintenance of road from Teano to junction w/Route 6 at M090104	17 Mar 1944	1 May 1944
438	343rd Engrs.	Construct outlet road, do required Bulldozing and levelling for Ord Depot at G9902	15 Mar 1944	18 Mar 1944
439	92nd Engrs.	Repair bypass in vicinity of Ruviano, by graveling bypass and repairing existing bridge, or by installation of Bailey Bridge	16 Mar 1944	18 Mar 1944
440	343rd Engrs.	Replace 100' TS Bailey Bridge, and 070966, w/2 way class 24, 1 way class 40, wooden stringer, wooden trestle bridge	14 Mar 1944	18 Mar 1944
441	343rd Engrs.	Replace 40' SS Bailey Bridge, M068955, w/2 way Culvert	14 Mar 1944	17 Mar 1944
442	343rd Engrs.	Demolish wall in town Teano, as per request from Major Cousins, town Major	17 Mar 1944	18 Mar 1944
443	337th Engrs.	Check area for mines and construct inlet and outlet roads for 38th Evac, at M006859	13 Mar 1944	16 Mar 1944
444	343rd Engrs.	Clear mines and explosives from RR tunnel at M. Massico, M915860-M950825	16 Mar 1944	17 Mar 1944
445	84th Engrs.	Paint 170 vehicles, 756th Tank Bn, southeast of Benevento	14 Mar 1944	16 Mar 1944
446	84th Engrs.	Complete painting of 88th Div. Armored vehicles and guns	16 Mar 1944	21 Mar 1944
447	CRE, 8 Army Tps	Construct additional roads for Petrol dump at H089037	16 Mar 1944	20 Mar 1944
448	CRE, 8 Army Tps	Perform work at Fascist school, at Alife, H279026	17 Mar 1944	31 Mar 1944
449	343rd Engrs.	Construct roads and drainage for bridge depot at M924900	17 Mar 1944	30 Mar 1944
450	337th Engrs.	Improve flow of water in canals by lowering elevation of Culverts at M064800. Maintain one-way traffic at all times	20 Mar 1944	27 Mar 1944
451	337th Engrs.	Improve flow of water in canals by lowering elevation of Culverts at M062802. Maintain one-way traffic at all times	20 Mar 1944	23 Mar 1944
452	337th Engrs.	Improve flow of water in canals by lowering elevation of Culverts at M055807 (center ditch only) Maintain one-way traffic at all times	23 Mar 1944	23 Mar 1944
453	92nd Engrs.	Repair two breaks in levee located at K963765	19 Mar 1944	22 Mar 1944
454	343rd Engrs.	Improve flow of water in canal by replacement and lowering of culvert at M890800. Maintaining one-way traffic at all times	20 Mar 1944	31 Mar 1944
455	343rd Engrs.	Improve flow of water in canal by lowering elevation of culvert at M876839. Maintaining one-way traffic at all times.	20 Mar 1944	30 Mar 1944
456	343rd Engrs.	Gravel entrance and exit road in Engineer Depot at Sessa.	18 Mar 1944	26 Mar 1944
457	337th Engrs.	Construct minimum entrance and exit roads, plus one-way road to rear area for 8th Evac, M980880	18 Mar 1944	23 Mar 1944
458	343rd Engrs.	Install hard standing and roads for 161st Med Bn at M960858	18 Mar 1944	18 Mar 1944
459	92nd Engrs.	Render area vic M949677 safe for wrecking truck to remove w/c disabled by mine. Mark and Fence area	17 Mar 1944	23 Mar 1944
460	344th Engrs.	Construct hardstanding and road for 469th Engr Maint Co at M941909	18 Mar 1944	21 Mar 1944
461	337th Engrs.	Furnish hardstanding for water point at M123855	20 Mar 1944	27 Mar 1944
462	337th Engrs.	Furnish hardstanding for water point at M042841	20 Mar 1944	25 Mar 1944
463	337th Engrs.	Construct Bailey Bridge and hardstanding at Carinola station at M998992	18 Mar 1944	21 Mar 1944
464	344th Engrs.	Blade road running to British Rest Camp, located at M032949	18 Mar 1944	19 Mar 1944
465	CRE, 8 Army Tps	Erect barbed wire fence	19 Mar 1944	19 Mar 1944
466	CRE, Roads SAEC	Construct roads and hardstandings	19 Mar 1944	21 Mar 1944
467	CRE, SA Corps Tps	Maintenance of bridges on Route 85 from road junction with Route 6 - Variano to Isernia	18 Mar 1944	22 Apr 1944
468	CRE, Roads SAEC	Maintenance of Route 85 from road junction Route 85 and Route 6 - Variano to Isernia	18 Mar 1944	26 Mar 1944
469	337th Engrs.	Repair entrance road and area around tank shop at 529 Ord. Co. located at "Areop O Solmine"	19 Mar 1944	27 Mar 1944
470	075th Engrs.	Construct roads and hardstandings for Army Rear CP	19 Mar 1944	24 Mar 1944
471	075th Engrs.	Construct two-hole latrine box	20 Mar 1944	21 Mar 1944
472	92nd Engrs.	Erect two portable buildings for Fifth Army Rear CP	20 Mar 1944	23 Mar 1944
473	92nd Engrs.	Repair Route 7 from Capua to S. Maria with asphalt patch. Repairs to be started at Capua and worked toward S. Maria	20 Mar 1944	30 Mar 1944
474	343rd Engrs.	Construct roads for 161st Med Bn	21 Mar 1944	25 Mar 1944
475	92nd Engrs.	Remove two partitions, which are in danger of collapse, at 10th Advance Med. Depot, M214754	22 Mar 1944	22 Mar 1944
476	CRE, 8 Army Tps	Construct 8 Army Rest Camp	20 Mar 1944	1 Apr 1944
477	92nd Engrs.	Repair bridges and bypasses, Caiazzo to Amorosi for Class 30 traffic	21 Mar 1944	31 Mar 1944
478	92nd Engrs.	Install 8 head shower units at Fifth Army Scouting and Patroling School at M450771, nr Molano	23 Mar 1944	30 Mar 1944
479	DCE Tks 8 Army	Strengthen to Class 40 the following bridges: M290016, M291013, M296992, M310058	22 Mar 1944	1 Apr 1944
480	DCE Tks 8 Army	Do work at Ades Dump located at M098965	22 Mar 1944	28 Mar 1944
481	DCE Tks 8 Army	Do work at PW Cage at Vairano, M085004	22 Mar 1944	28 Mar 1944
482	DCE Tks 8 Army	Do work at DID and PD Bakeries, located at Vairano, M086016	22 Mar 1944	28 Mar 1944
483	DCE Tks 8 Army	Erection of Bailey Bridges: M455920, 70' DS; M482949, 80' DS; Amorosi, 150' DS and 160' DS with specials	22 Mar 1944	30 Mar 1944
484	075th Engrs.	Dismantel and erect at new Fifth Army Forward CP, 3 portables buildings	22 Mar 1944	27 Mar 1944
485	92nd Engrs.	Reinforce timber bridge at M280028, E of Alife, to carry class 70 traffic one-way	24 Mar 1944	24 Mar 1944
486	337th Engrs.	Install roads and hardstandings for 602nd VD Hosp. at M045859	21 Mar 1944	26 Mar 1944
487	337th Engrs.	Widen Route 7 in center of Cascano by removing approximately 40' of balcony and in support from houses	22 Mar 1944	25 Mar 1944
488	Co, D 84th Engrs	Drape all prefabricated blids and motor vans, tens down all roads and paths, construct flat tops at new Fifth Army CP area	20 Mar 1944	22 Mar 1944
489	CE Tks CMP	Maintain following roads: M185060 to 275020 to 285020 to M260965 to 280937 to 303862; from M098959 to M155966 to M210898 to 2260965; fr M170795 to M220810 to M303662; M100980 to M42846	22 Mar 1944	23 Apr 1944
490	DCE Tks 8 Army	Take over and operate gauging station at Caiazzo	25 Mar 1944	23 Apr 1944

APPENDIX J
VOLTURNO TO MAY 1944

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
491	CO, 11CE Wks CMF	Maintain Route 6 from RJ No. 6 and 632 at H103990 to G930162	24 Mar 1944	21 Apr 1944
492	CO, 11CE Wks CMF	Construct Class 30 Bailey Bridge over Calore River on site of old Roman bridge at M889	24 Mar 1944	27 Mar 1944
491	CO, 11CE Wks CMF	Maintain bridges on Route 6 from RJ 6 and 623 to H103990 to G930162	24 Mar 1944	23 Apr 1944
494	CO, 11CE Wks CMF	Strengthen to Class 30, existing timber and steel bridge at M44905	23 Mar 1944	30 Mar 1944
495	CO, 11CE Wks	Do necessary work at No. 4 CRD located at H145970	25 Mar 1944	27 Mar 1944
496	CO, 11CE Wks	Construct camp at No. 1 CRU located H106948	25 Mar 1944	28 Mar 1944
497	CO, 11CE Wks	Do necessary work at officers shop at Vairano located at M088006	25 Mar 1944	27 Mar 1944
498	CO, 11CE Wks	Do necessary work at ACP, Vairano, located at M085000	25 Mar 1944	28 Mar 1944
499	CO, 11CE Wks	Do necessary work at Advance Reinf. Sec. located at H154994	25 Mar 1944	27 Mar 1944
500	337th Engrs.	Maintenance of Route 7 from M945915 to Garigliano River	24 Mar 1944	2 Apr 1944
501	343rd Engrs.	Maintenance of Appian Way from M864880 to junction with Route 7 at Garigliano River; from M864 to Celiole to RJ 924921; RJ M881894 to junction with Route 7 at M880913	24 Mar 1944	14 May 1944
502	344th Engrs.	Maintenance of road from M946937 to Capua to junction with Route 7 at M877915	24 Mar 1944	3 Apr 1944
503	337th Engrs.	Maintenance of road from Villa Litterno, north to road junction M001786, incl maintenance of Cancellio bridge	24 Mar 1944	11 May 1944
504	11 CE Wks	Take over and operate water point at M222036	27 Mar 1944	28 Mar 1944
505	92nd Engrs.	Construct signs for Transportation Section	25 Mar 1944	2 Apr 1944
506	175th Engrs.	Install roads for Q-25 Depot, at M054927, all roads one-way with Culverts installed when req.	24 Mar 1944	5 Apr 1944
507	337th Engrs.	Maintain for two way traffic road from Sparanico to west entrance of Fifth Army Rear CP; maintain one way traffic, road from west entrance to junction with Route 7 near Francolise	26 Mar 1944	3 June 1944
508	344th Engrs.	Construct telephone lines from CP to Skipton Bridge, M885982. To be used for Bridge Towing system	25 Mar 1944	31 Mar 1944
509	92nd Engrs.	Furnish detail to grade and improve engineer area at new CP	25 Mar 1944	1 Apr 1944
510	175th Engrs.	Construct road for British Motor Park at new Fifth Army Forward CP	26 Mar 1944	29 Mar 1944
511	92nd Engrs.	Replace Bailey Bridge at M081680 and M980652 with Class 30, one way timber bridge	26 Mar 1944	7 Apr 1944
512	92nd Engrs.	Repair Culvert at H165858 and remove Bailey Bridge and transport same to E-212	27 Mar 1944	2 Apr 1944
513	CO, 11 CE Wks	Erect two Nissen Huts on site of BSD Vairano	27 Mar 1944	5 Apr 1944
514	CO, 11 CE Wks	Erect triple Dannert Concertina fence with two double gates	27 Mar 1944	30 Mar 1944
515	CO, 11 CE Wks	Amend WO-480. Omit construction of 8 Nissen Huts	25 Mar 1944	28 Mar 1944
516	CO, 11 CE Wks	Take over and operate water points: M034064, M035200, M058074, H112998, G961153, G988113, H125174, H109252	25 Mar 1944	20 Apr 1944
517	337th Engrs.	Install roads and hardstandings, dismantle and reerect two portable wooden bldgs, with water tower and sewage pits for 2nd Med. Lab, at M580880	27 Mar 1944	1 Apr 1944
518	343rd Engrs.	Construct roads and culverts for 98 GM Railroad Co at M954842	26 Mar 1944	1 Apr 1944
519	343rd Engrs.	Construct additional roads and drainage for Engr Depot at Sessa	26 Mar 1944	1 Apr 1944
520	344th Engrs.	Furnish 500 yds of rock delivered to 401st Hosp (French) at M065911	28 Mar 1944	3 Apr 1944
521	92nd Engrs.	Repair Route 7 from S. Maria to Capua with asphalt patch (permanent nature)	29 Mar 1944	14 Apr 1944
522	92nd Engrs.	Make report on bridges on following locations: H160130, H152118, H146108, H157081, H180014	29 Mar 1944	29 Mar 1944
523	344th Engrs.	Replace Bailey Bridge at G983070 with Culvert	29 Mar 1944	8 Apr 1944
524	344th Engrs.	Construct roads for Ord. M. Co's. located at G986006	28 Mar 1944	4 Apr 1944
525	343rd Engrs.	Construct minimum additional road, necessary for efficient operation of 18th Evac Hosp. M006854	29 Mar 1944	1 Apr 1944
526	344th Engrs.	Asset 71st Artillery Brigade in construction of temporary road at G937172	29 Mar 1944	30 Mar 1944
527	92nd Engrs.	Construct stationery cabinet for Engr Hqs.	30 Mar 1944	1 Apr 1944
528	92nd Engrs.	Replace Bailey Bridges at M034929, M033926, M018915, with 2-way Culverts	29 Mar 1944	19 Apr 1944
529	337th Engrs.	Install a 20 x 48' prefab wooden bldg for 2nd Med Lab, at 602nd VD Hosp, at M095855	1 Apr 1944	1 Apr 1944
530	Co, A 84th Engrs	Provide one platoon to advise and supervise and assist in placing of camouflage nets at 5A Rear	30 Mar 1944	9 Apr 1944
531	344th Engrs.	Improve road and remove debris in Teano	31 Mar 1944	7 Apr 1944
532	344th Engrs.	Remove Pill Box and grade off corner at intersection Route 725 and 7	31 Mar 1944	9 Apr 1944
533	175th Engrs.	Furnish and load 500 cubic yds of stone for 344th Engrs for French Hosp	30 Mar 1944	4 Apr 1944
534	175th Engrs.	Improve Teano Railroad by doing necessary work	31 Mar 1944	7 Apr 1944
535	337th Engrs.	Construct one way road to bypass village of Nocelleto	1 Apr 1944	1 Apr 1944
536	343rd Engrs.	Construct 1500' of one way road, repair two culverts and widen 600' of road for two way traffic for Ord. Depot northwest of Mondragone	31 Mar 1944	7 Apr 1944
537	337th Engrs.	Widen road intersection to provide free traffic flow in vicinity S. Andrea and Pizzone	1 Apr 1944	1 Apr 1944
538	175th Engrs.	Improve roads for Ord. Dump in vicinity of Casale	1 Apr 1944	CANCELLED
539	343rd Engrs.	Widen road through Carinola	1 Apr 1944	7 Apr 1944
540	92nd Engrs.	Make 20 Mess tables and install shelves; construct dummy house; make and install 25 silhouette targets for S and P School near St. Agata	31 Mar 1944	7 Apr 1944
541	92nd Engrs.	Deliver 75 yds rock to Italian Military Hosp off Route 7 at approx M906857	30 Mar 1944	30 Mar 1944
542	343rd Engrs.	Replace Bailey Bridges at M990796 and M994818 w/G1 30, 1-way timber bridges. Bailey bridge to be returned to E-212 near Sessa	31 Mar 1944	7 Apr 1944
543	92nd Engrs.	Construct Cl. 40 1-way timber bridge at M532913	31 Mar 1944	8 April 1944
544	343rd Engrs.	Construct Cl. 40 timber and steel overpass over RR at M969808	1 Apr 1944	2 Apr 1944
545	343rd Engrs.	Maintain Route No. 714 fr RJ M000787 to RJ M 874836 for 2-way all weather traffic	31 Mar 1944	19 May 1944
546	92nd Engrs.	Construct Cl. 24 2-way; Cl. 40, 1-way bridge near Teano, M063924 to replace Bailey Bridge	1 Apr 1944	14 Apr 1944
547	343rd Engrs.	Maintain rd fr RJ 975886 to RJ M971812 for 2-way all weather traffic	31 Mar 1944	19 May 1944
548	343rd Engrs.	Construct Bailey overpass at junction Route 7 and 724 near Cascano, & section of road	1 Apr 1944	12 Apr 1944
549	343rd Engrs.	Maintain Route 724 fr RJ 977919(Cascano) to RJ M-013853 (Nocelleto) for 2-way all weather traffic	31 Mar 1944	19 May 1944
550	343rd Engrs.	Maintain loop fr RJ M993786 to RJ M971812 to RJ M954792 for 2-way all weather traffic	31 Mar 1944	19 May 1944
551	343rd Engrs.	Maintain road fr RJ M985810 to RJ M994817 for 2-way all weather traffic, and patrol only road RJ M994817 to M-013853 (Nocelleto)	31 Mar 1944	19 May 1944

APPENDIX J
VOLTURRO TO MAY 11TH

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
552	344th Engrs.	Furnish 1 plat. for Falley Bridge and 1 plat. for Skipton Bldg to be atch to French Corps	1 Apr 1944	14 Apr 1944
553	85th Engrs.	The 2 radio operators assgd to Falley Bridge radio, will be atchd to French Corps for opns	1 Apr 1944	14 May 1944
554	337th Engrs.	Furnish mine instruction team to school cmdt Fifth Army S & P School at 0900 7 Apr'44, N455760	30 Mar 1944	3 Apr 1944
555	337th Engrs.	Construct road for traffic elimination on Route 7 at N-028884	7 Apr 1944	14 Apr 1944
556	175th Engrs.	Furnish D-7 w-operator to assist 343rd Engrs in construction fill near Cascano	31 Mar 1944	10 Apr 1944
557	337th Engrs.	Erect 4 portable buildings for CWS to be used as storage buildings	2 Apr 1944	CANCELLED
558	92nd Engrs.	Construct and alterations to Casa Reale Bldg at N 083827	3 Apr 1944	8 Apr 1944
559	337th Engrs.	Furnish mine instruction team to instruct approx 30 Officers and EW of 2630 Ord Bn in mine detection	3 Apr 1944	3 Apr 1944
560	343rd Engrs.	Construct entrance road for 46th Survey Co. at M929907	3 Apr 1944	7 Apr 1944
561	Co. D, 84th Engrs.	Furnish detail and paint spray unit for sample painting vehicles of COB, 1st Armored Div	5 Apr 1944	5 Apr 1944
562	344th Engrs.	Construct exit and entrance roads for ASP 4-25 at G-988108	1 Apr 1944	1 Apr 1944
563	343rd Engrs.	Construct roads and hardstandings for 16th Evac Hosp. at M965859	2 Apr 1944	6 Apr 1944
564	343rd Engrs.	Clear mines from beach area at Mondragone,	3 Apr 1944	10 Apr 1944
565	344th Engrs.	Patrol and give light maintenance to road M993998-H047019	1 Apr 1944	18 May 1944
566	92nd Engrs.	Erect 4 portable buildings for CWS to be used as storage buildings	4 Apr 1944	12 Apr 1944
567	344th Engrs.	Deliver 500 cu yds of rock to 422 Field Hoop (Fr) at G990041	5 Apr 1944	26 Apr 1944
568	337th Engrs.	Furnish mine removal team to clear area desired by ITC, vic of Salerno	6 Apr 1944	14 Apr 1944
569	175th Engrs.	Construct suitable hardstanding on 5 Army filling station under trees on W. Side of Cub field	5 Apr 1944	7 Apr 1944
570	344th Engrs.	Improve WT at M946945 by (1) widen entrance to turn-around (2) grade and surface turn-around (3) reinforce revetments at tower installations	6 Apr 1944	CANCELLED
571	343rd Engrs.	Improve wet point at M980811: by , gravel turnaround from entrance to dispensing installation; grade, widen, and gravel exit road	6 Apr 1944	9 Apr 1944
572	92nd Engrs.	Assist local power company to construct and repair transmission lines and sub-stations from Capua to Sparanise and from Carinole to Mandragone to pumping station near Lego	5 Apr 1944	20 Apr 1944
573	344th Engrs.	Construct facilities for Ord. Depot ASP 4-22 at G989008	26 Mar 1944	30 Mar 1944
574	343rd Engrs.	Construct following facilities for IT inclosure at M992899: grade approx 900' of road and repair surface; construct 1 culvert; construct 3 adjoining section of concertina inclosure 50'x 50' with gates; construct 3 latrine boxes	7 Apr 1944	17 Apr 1944
575	175th Engrs.	Grade athletic field for 5 Army CP Rear.	7 Apr 1944	7 Apr 1944
576	175th Engrs.	Grade area for sports ground at M073872 for British Inc. 5th Army Hq Rear	8 Apr 1944	9 Apr 1944
577	92nd Engrs.	Move reinforcing bars in back of Sparanise QM Dump; dismantle and re-erect tubular scaffolding structure where desired by QM	7 Apr 1944	20 Apr 1944
578	92nd Engrs.	Mark minefield approx 1 mile N. of Capua	7 Apr 1944	9 Apr 1944
579	343rd Engrs.	Construct approx 1100' of road, and 2 culverts for 56 Med. Bn. at N-002863	7 Apr 1944	9 Apr 1944
580	344th Engrs.	Replace Bailey Bridge at E-068968 with Cl. 40, 1-way, Cl. 24, 2-way bridge	7 Apr 1944	10 May 1944
581	92nd Engrs.	Drain as a malaria control measure, including repair of pumping facilities at mouth of canal near Lego Airfield	6 Apr 1944	26 May 1944
582	344th Engrs.	Replace Bailey bridge at G978068 with culvert	3 Apr 1944	8 Apr 1944
583	344th Engrs.	Replace Bailey bridge at G992965 with culvert	3 Apr 1944	8 Apr 1944
584	337th Engrs.	Perform drainage work as a malaria control measure in assigned area	7 Apr 1944	6 June 1944
585	343rd Engrs.	Perform drainage work as a malaria control measure in assigned area	7 Apr 1944	18 May 1944
586	175th Engrs.	Perform drainage work as a malaria control measure in assigned area	7 Apr 1944	21 May 1944
587	344th Engrs.	Perform drainage work as a malaria control measure in assigned area	7 Apr 1944	9 May 1944
588	344th Engrs.	Furnish mine removal sqd to assist in removal of minea from area occupied by Bty C 67 AA Gun	7 Apr 1944	12 Apr 1944
589	175th Engrs.	Remove Bailey bridges on Teano-Cascano road, located N010920, M988924 and M986925, replace with two way culverts	8 Apr 1944	30 Apr 1944
590	175th Engrs.	Remove Bailey bridges on Teano-Cascano road, located at N-008920, N-005919 and M980926 and replace with 1 way Cl. 30 bridges	11 Apr 1944	29 Apr 1944
591	92nd Engrs.	Construct pier for 26' Cris Craft boat, in canal approx M925748.	8 Apr 1944	12 Apr 1944
592	92nd Engrs.	Grade area for use as Cub landing strip at approx M124838	9 Apr 1944	10 Apr 1944
593	175th Engrs.	Clear mines from area to be used for Easter Services at 5th Army CP	7 Apr 1944	8 Apr 1944
594	175th Engrs.	Construct connecting road from point just north from Engineer Hqs to route No. 723	9 Apr 1944	13 Apr 1944
595	343rd Engrs.	Repair Villa at Mondragone Beach	8 Apr 1944	15 Apr 1944
596	92nd Engrs.	Perform following work for 92 QM Bhd Co. at Sparanise: grade 1200' gravel road; install 6 culverts for turnouts; grade area for storage	9 Apr 1944	15 Apr 1944
597	343rd Engrs.	Bypass at Falcianno, be constructed without destroying any houses	11 Apr 1944	14 Apr 1944
598	Co D, 84th Engrs.	Carry out project which includes aerial inspection, and concealment of dumps and other installations	10 Apr 1944	1 May 1944
599	344th Engrs.	Plans desired for preparation of construction of 1-way bypass at junction 7 and 725	11 Apr 1944	15 Apr 1944
600	344th Engrs.	Furnish approx 20 DT and necessary stone to complete priority roads for French Corps	11 Apr 1944	20 Apr 1944
601	337th Engrs.	Construct exit and entrance roads for 34 PRS, also parking area for approx 10 trks at M111855	12 Apr 1944	14 Apr 1944
602	344th Engrs.	Construct parking area for Transportation Section at Sessa, install 2 doors on Hassen Huts	12 Apr 1944	15 Apr 1944
603	337th Engrs.	Maintain road from M985871 (Carinola) to M987883 (S. Ruosi)	11 Apr 1944	18 May 1944
604	344th Engrs.	Replace 90' DS Bailey bridge at M995963 with 2-way permanent structure, classification at 24, 2-way; 40, 1-way	14 Apr 1944	14 May 1944
605	344th Engrs.	Remove 140' DD Bailey at M943918. Replace with 2-way Cl. 24, 1-way Cl. 40, Type H semi-permanent structure	16 Apr 1944	10 May 1944
606	337th Engrs.	Construct 8 sign container boards for Transportation Section	13 Apr 1944	14 Apr 1944
607	343rd Engrs.	Improve RR siding at Engr Depot; construct 1 crossing; construct hardstanding along siding (approx 30'x 900')	13 Apr 1944	17 Apr 1944
608	175th Engrs.	Grade 2 base ball diamonds for 5th Army Forward CP	13 Apr 1944	15 Apr 1944

APPENDIX J

VOLTURNO TO MAY 11TH

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
609	343rd Engrs.	Furnish mine removal team to work with 168th Inf. CR Det 11	13 Apr 1944	14 Apr 1944
610	92nd Engrs.	Improve facilities at Sparanise RHD.	14 Apr 1944	20 Apr 1944
611	337th Engrs.	Furnish mine instruction to 630 FA Bn on Route 6 at N133857, for 1 days school	16 Apr 1944	19 Apr 1944
612	337th Engrs.	Furnish bulldozer and operator to make runway for Sig. Depot 6-7, located at M987902	14 Apr 1944	14 Apr 1944
613	92nd Engrs.	Dispose of refuse dump, approx N250750, by bulldozing pit along side dump, push in garbage and cover minimum depth of 2 feet	14 Apr 1944	26 Apr 1944
614	175th Engrs.	Furnish and deliver 500 cu. yds of quarry run stone to 405th Evac Hosp (Tr), on Rt 723, N057934	16 Apr 1944	20 Apr 1944
615	343rd Engrs.	Erect tower for 45 AAA Brig at 5th Army AAA Firing point at approx N0446 (Tere Gavta)	16 Apr 1944	17 Apr 1944
616	343rd Engrs.	Improve road intersection at N012851	15 Apr 1944	18 Apr 1944
617	343rd Engrs.	Grade athletic field for 20th Special Service Co, at Carinola	17 Apr 1944	20 Apr 1944
618	337th Engrs.	Construction of QM Salvage Dump at Sparanise: approx 1600' roads; approx 800' walkway for cart traffic; parking area; grade area and provide drainage	16 Apr 1944	19 Apr 1944
619	337th Engrs.	Prepare sketches of Canello and Teano bridges.	17 Apr 1944	27 Apr 1944
620	92nd Engrs.	Make 10 signs for AES	17 Apr 1944	20 Apr 1944
621	343rd Engrs.	Construct approx 6000' of hard standing for 12th Med Bn at N004861	16 Apr 1944	18 Apr 1944
622	343rd Engrs.	Clear mines for approx 400 yds of beach front at Western end of Lago Airfield	17 Apr 1944	20 Apr 1944
623	337th Engrs.	Construct signs and frames for Transportation Section	16 Apr 1944	19 Apr 1944
624	337th Engrs.	Do necessary grading and construct culverts for 102 QM Bakery at N122854	18 Apr 1944	20 Apr 1944
625	337th Engrs.	Replace Bailey bridge at N055887, w/1 way semi-permanent bridge	18 Apr 1944	23 Apr 1944
626	343rd Engrs.	Construct roads and hardstandings for 3rd Conv Hosp. vic Macelleto and move and erect 5 portable prefab buildings	17 Apr 1944	24 Apr 1944
627	343rd Engrs.	Bury refuse dump and erect signs to prevent other units from dumping	18 Apr 1944	19 Apr 1944
628	343rd Engrs.	Construct sectional floor for operating tent at 8th Evac. Hosp.	18 Apr 1944	24 Apr 1944
629	343rd Engrs.	Clear area of mines for cublanding field immediately south of section of beach recently cleared at Mondragone	18 Apr 1944	24 Apr 1944
630	344th Engrs.	Replace Bailey bridge at G991032, w/2-way, Cl. 24 bridge, to be constructed with H-10 girders. Improve road in Conca to eliminate steep grade and sharp turn	8 Apr 1944	28 Apr 1944
631	337th Engrs.	Furnish mine instruction team to 248 FA Bn, at NJ 6 and 7	19 Apr 1944	20 Apr 1944
632	175th Engrs.	Furnish and deliver 15 truck loads of quarry run stone to French Engr TC at N037933 for improvement of roads	20 Apr 1944	20 Apr 1944
633	337th Engrs.	Furnish bulldozer or road patrol to level a Cricket pitch on Sportsground, British Inc. Rear	19 Apr 1944	21 Apr 1944
634	337th Engrs.	Check culverts on Brezza-S. Andrea road; check culverts on Route 7, between Capua bridge and junction with Route 6	21 Apr 1944	28 Apr 1944
635	337th Engrs.	Replaces Bailey bridge at N039826 at Brezza w/1-way Cl. 18 timber bridge	21 Apr 1944	21 Apr 1944
636	343rd Engrs.	Perform additional work at ASP C-424, Mondragone to permit expansion to adjacent area	21 Apr 1944	25 Apr 1944
637	343rd Engrs.	Construct bomb proof shelter capable of containing 12 people., at Iido, near Mondragone	20 Apr 1944	25 Apr 1944
638	175th Engrs.	Furnish mine detector sqd to sweep 3 to 5 miles of bridle path	20 Apr 1944	23 Apr 1944
639	343rd Engrs.	Construct 200 yd rifle range w/20 targets	21 Apr 1944	26 Apr 1944
640	343rd Engrs.	Apply calcium chloride as dust control measure on roads adjacent to Hosp. areas vic of Covinola	23 Apr 1944	5 May 1944
641	344th Engrs.	Furnish and transport approx 800 cu yds of quarry run stone for French Corps	20 Apr 1944	25 Apr 1944
642	337th Engrs.	Construct 1 culvert and grade area for 178 FA Brig	20 Apr 1944	23 Apr 1944
643	343rd Engrs.	Assist Red Cross in establishment of Recreation Center in Casanova	21 Apr 1944	1 May 1944
644	337th Engrs.	Cut down bank for entrance road to 109th Ord Co at M995909	22 Apr 1944	24 Apr 1944
645	337th Engrs.	Perform work for 178 FA Gp. ACP, at M999909; improve inlet and outlet road by bulldozing: smooth area at end of landing strip	22 Apr 1944	24 Apr 1944
646	337th Engrs.	Furnish mine instruction team to 17 FA Gp at G959027 for 2 days	25 Apr 1944	27 Apr 1944
647	Co D, 84th Engrs.	Camouflage new Radio Station in vic of Mondragone	24 Apr 1944	27 Apr 1944
648	337th Engrs.	Dispose of old garbage dump on Route 7 M953914	24 Apr 1944	27 Apr 1944
649	337th Engrs.	Furnish mine instruction team for 2 days to 178 FA Bn., Route 7, N110860	27 Apr 1944	2 May 1944
650	175th Engrs.	Furnish concrete mixer w/oper for soil stabilization, located Pozzuoli	24 Apr 1944	26 Apr 1944
651	337th Engrs.	Bulldoze entrance into bivouac area 94th QM Laundry, vic Francolise	23 Apr 1944	25 Apr 1944
652	337th Engrs.	Bulldoze and make fill to remove impounded water, vic M990909	24 Apr 1944	25 Apr 1944
653	337th Engrs.	Construct sign boards and paint sign blanks for Transportation Section	24 Apr 1944	2 May 1944
654	337th Engrs.	Dispose of garbage and refuse dump at N026825 near S. Andrea, by burying dump with minimum of 2' of dirt. Post "No Dumping" signs	25 Apr 1944	27 Apr 1944
655	175th Engrs.	Investigate and clear road of mines between Route 7 and village of Cassale	24 Apr 1944	28 Apr 1944
656	175th Engrs.	Camouflage cub landing strip at Fifth Army CP by applying oil to crushed rock section	25 Apr 1944	28 Apr 1944
657	337th Engrs.	Gravel approx 600' of road into AMG area. Furnish crushed rock for mess and kitchen tents	25 Apr 1944	27 Apr 1944
658	343rd Engrs.	Improve by scarifying and grading road from Mondragone South to Lego Airfield	26 Apr 1944	2 May 1944
659	92nd Engrs.	Clear mines from road to river approx 100 yds area along Volturno River for boat landing in vic of 74 Station Hosp.	26 Apr 1944	27 Apr 1944
660	92nd Engrs.	Furnish and deliver approx 40 poles to local electric company to complete transmission lines from Pignataro to Pignataro sub-station	26 Apr 1944	30 Apr 1944
661	92nd Engrs.	Construct cub landing strip for S & F School in vic of Airola	26 Apr 1944	28 Apr 1944
662	92nd Engrs.	Construct transmission line from pump house at N935753 to pump house on south side of river in vicinity of San Sossia	25 Apr 1944	15 May 1944
663	175th Engrs.	Grade baseball diamond for 3606 QM Truck Co, at Teano	28 Apr 1944	1 May 1944
664	Co A&B, 84 Engrs	Supply 1 paint spray unit, each to report to CO, 91 Recon and CO, 443 A/A Bn to spray armored vehicles of 36 Division	26 Apr 1944	1 May 1944
665	337th Engrs.	Improve roads and construct new entrance into Army Exchange Base, vic Sparanise	28 Apr 1944	2 May 1944
666	344th Engrs.	Construct barricade at demolished bridge on Route 621 east of Teano, N068927	28 Apr 1944	29 Apr 1944
667	175th Engrs.	Construct syphon, utilizing 1 of the existing culvert pipe to drain water impounded by RR fill north-east of Francolise, N055881	28 Apr 1944	21 May 1944

APPENDIX J

VOLTURNO TO MAY 11TH

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
668	337th Engrs.	Remove Bailey at N127827 and deliver to E-212	29 Apr 1944	29 Apr 1944
669	343rd Engrs.	Construct and gravel turnaround for WF M966824	28 Apr 1944	1 May 1944
670	343rd Engrs.	Install facilities for bathing beach at Mondragone for approx 200 officers, 30 ANC, 20 WAC, 20 MC	28 Apr 1944	7 May 1944
671	175th Engrs.	Grade entrance into Fifth Army trash dump. Maximum road is to be 150'	28 Apr 1944	4 May 1944
672	337th Engrs.	Improve traffic circle at junction of Route 7 in Sparanise road by constructing 2-way bypass	29 Apr 1944	2 May 1944
673	343rd Engrs.	Check and clear sufficient area between Mondragone Beach and II Corps Beach to provide area for AA Troops	28 Apr 1944	1 May 1944
674	344th Engrs.	Transport approx 600 cu. mtr. of stone and distribute on connecting roads from San Clemente to Route 725	28 Apr 1944	8 May 1944
675	344th Engrs.	Repair and maintain road from M950965-Carlo-S. Clemente-G988078, and S. Clemente-G977070	1 May 1944	19 May 1944
676	344th Engrs.	Repair and maintain road from G988036 S. Clemente (G965042)	1 May 1944	19 May 1944
677	175th Engrs.	Take over from 344th Engrs maint of roads fr M085910 to Teano, incl Teano loop and north to boundary at N O73973	1 May 1944	27 May 1944
678	337th Engrs.	Repair Capua bridge, work to be done at night, and 1-way traffic to be maintained	1 May 1944	10 May 1944
679	344th Engrs.	Construct entrance road for 8th Co, 2630 Ord Gp, near Rocca-Nonfina	30 Apr 1944	4 May 1944
680	92nd Engrs.	Construct a 250' x 125' concertina enclosed area for MP's located at N228776	1 May 1944	10 May 1944
681	337th Engrs.	Construct and install, or arrange for units to pick and install following signs for Trans Sect.	1 May 1944	27 May 1944
682	175th Engrs.	Furnish distributor and operator to oil road at Hqs 3 Algerian Div., vic Casale	1 May 1944	1 May 1944
683	175th Engrs.	Blade road from cub field to M/C Fifth Army CP	30 Apr 1944	1 May 1944
684	343rd Engrs.	Check and clear mines from area for company bivouac back of 56th Med Bn at M002863	1 May 1944	1 May 1944
685	92nd Engrs.	Grade athletic field for 3880 CM Gas Supply Co, at N103887	8 May 1944	10 May 1944
686	344th Engrs.	Clear mines for sufficient paths to enable GMS to remove bodies in vic of Pantano	2 May 1944	12 May 1944
687	337th Engrs.	Furnish mine instruction team to 437th AAA Bn., at M003885, for 2 days	2 May 1944	4 May 1944
688	343rd Engrs.	Construct road in rear of clinic line 3rd Conv Hosp	3 May 1944	4 May 1944
689	117th Engrs.	Dismantle and move to E-211 4 portable buildings at GWS Depot at M040874, vic Francoise	4 May 1944	8 May 1944
690	344th Engrs.	Transport 300 cu yds of stone for bridge approach roads fro French Corps	3 May 1944	5 May 1944
691	337th Engrs.	Furnish and deliver 1 load of crushed stone to G-4 rear for volley ball court	4 May 1944	4 May 1944
692	175th Engrs.	Deliver 20 truckloads of quarry run material to French Engr Training Center at M037933	4 May 1944	5 May 1944
693	337th Engrs.	Re: M0 689 (GWS Depot) Re-erect 1 of these buildings at 3rd Conv. Hosp.	4 May 1944	9 May 1944
694	Co A, 84th Engrs.	Arrange for painting of Howitzers and guns of 194th FA Gp, San Vittori	5 May 1944	12 May 1944
695	337th Engrs.	Do necessary grading work for spur track, Fifth Army Ord. Depot, Capua, N172777	4 May 1944	10 May 1944
696	343rd Engrs.	Furnish and deliver 15 loads of gravel for Shale quarry to 1980 FF Flat at M042868	5 May 1944	6 May 1944
697	337th Engrs.	Stock pile 1000 cu yds of crushed stone in quarry	5 May 1944	12 May 1944
698	175th Engrs.	Stock pile 1000 cu yds of crushed stone in quarry	5 May 1944	12 May 1944
699	343rd Engrs.	Prepare plans and assemble material for construction of bridge across Garigliano River	5 May 1944	7 May 1944
700	344th Engrs.	Prepare plans and assemble material for construction of bridge across Garigliano River	5 May 1944	7 May 1944
701	175th Engrs.	Furnish bulldozer for clearing area this headquarters	5 May 1944	7 May 1944
702	343rd Engrs.	Prepare plan for sprinkling gravel and macadam roads in your area, showing sections of roads, it will be possible to handle, by improvising & utilizing available equipment	5 May 1944	10 May 1944
703	343rd Engrs.	Construct 9000 volt transmission line from Caronola to Garigliano River. Pump stations, utilizing existing lines	6 May 1944	1 June 1944
704	337th Engrs.	Prepare plan for sprinkling gravel and macadam roads in your area, showing sections of roads, it will be possible to handle, by improvising & utilizing available equipment	5 May 1944	8 May 1944
705	344th Engrs.	Prepare plan for sprinkling gravel and macadam roads in your area, showing sections of roads, it will be possible to handle, by improvising & utilizing available equipment	5 May 1944	10 May 1944
706	343rd Engrs.	Stock pile 1000 cu yds of crushed stone in Mondragone quarry	8 May 1944	22 May 1944
707	92nd Engrs.	Draw necessary paint from Engr Depot and conduct experiments on helmet liners for MP's	5 May 1944	6 May 1944
708	175th Engrs.	Construct two map boxes and deliver to Engr Headquarters	5 May 1944	9 May 1944
709	344th Engrs.	Furnish concrete mixer and operator to 19th Engrs for 3 days	6 May 1944	9 May 1944
710	92nd Engrs.	Construct portable house for 3rd Special Wireless Station (Br)	6 May 1944	9 May 1944
711	175th Engrs.	Prepare plan for sprinkling gravel and macadam roads in your area, showing sections of roads it will be possible to handle by improvising and utilizing available equipment	5 May 1944	10 May 1944
712	175th Engrs.	Furnish blade to grade ball diamond for 437 AAA	5 May 1944	6 May 1944
713	343rd Engrs.	Supply one platoon with bulldozer to assist camouflage platoon in bldg and concealing parking lot at rest center Mondragone	6 May 1944	7 May 1944
714	343rd Engrs.	Construct gravel turn-around for water point	7 May 1944	10 May 1944
715	344th Engrs.	Have two divers report S-3 19th Engrs, 0800, 7 May	7 May 1944	9 May 1944
716	337th Engrs.	Construct minimum length of entrance road for 585th CM Laundry Co	7 May 1944	12 May 1944
717	344th Engrs.	Replace Bailey Bridge at G953960 with 2-way Culvert	9 May 1944	14 May 1944
718	344th Engrs.	Replace Bailey Bridge at G965042 with 2-way Culvert	9 May 1944	14 May 1944
719	92nd Engrs.	Remove Bailey Bridge at F118708 and return to Depot	8 May 1944	10 May 1944
720	344th Engrs.	Furnish and Transport 1000 tons of stone from M900956 to South of Corps boundary for French Corps	6 May 1944	9 May 1944
721	175th Engrs.	Extend landing strip at Fifth Army CP to RR	9 May 1944	12 May 1944
722	175th Engrs.	Re: 711 work order. Desire that two sprinklers (1000 gal.) be constructed and Route 723 be given first priority. Roads to and from RR, second priority. (Route 723-from Route 7 to Teano)	10 May 1944	30 May 1944

APPENDIX J
MAY 11TH TO THE ARMO

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
723	175th Engrs.	Grade road for 63rd Sig Bn	12 May 1944	12 May 1944
724	343rd Engrs.	Construct unloading area for Transportation Section, vic M877909	16 May 1944	18 May 1944
725	343rd Engrs.	Improve unloading area for Transportation Section, M895880	16 May 1944	19 May 1944
726	343rd Engrs.	Oil road from Corps boundary to RJ M000787	16 May 1944	17 May 1944
727	337th Engrs.	Furnish auger with operator to 343rd Engrs.	12 May 1944	17 May 1944
728	343rd Engrs.	Construct bypass road from Route 7 vic Cascano	11 May 1944	15 May 1944
729	337th Engrs.	Construct vehicle check bypass and improve existing road for convey parking area at TCP 5 intersection of Route 724 and 722	12 May 1944	13 May 1944
730	337th Engrs.	Provide entrance road for 56 J' Bn	12 May 1944	17 May 1944
731	344th Engrs.	Widen road for turnaround at water points	12 May 1944	13 May 1944
732	175th Engrs.	Maintenance of road from Teano to M980978, near Roccamonte	13 May 1944	27 May 1944
733	344th Engrs.	Gravel turnaround for water point at M973977	15 May 1944	15 May 1944
734	337th Engrs.	Construct 4 signs and erect at points RJ 7-722, 7-723, 7-724, 722-724	14 May 1944	17 May 1944
735	337th Engrs.	Construct 2 culverts of 12" pipe for entrance and exit road at QM Sterilization Units	14 May 1944	17 May 1944
736		V C I D		
737	343rd Engrs.	Furnish 4 loads of rock and construct wooden covers for soaking for 2nd Med Lab	15 May 1944	16 May 1944
738	343rd Engrs.	Do necessary grading for ASF 0426, South-west of E-211 on Route 714	17 May 1944	17 May 1944
739	343rd Engrs.	Relieve 235th Engrs. of all road network up to but not including Garigliano River	16 May 1944	22 May 1944
740	337th Engrs.	Furnish mine instruction team for 21 PZA Gp, vic of Marcianise at 200800 Eng.	20 May 1944	21 May 1944
741	343rd Engrs.	Take over from II Corps maintenance of all bridges across Garigliano River in II Corps area	17 May 1944	27 May 1944
742	344th Engrs.	Take over from French Corps maintenance of roads west side of Garigliano River from Pateley Br to M850953 to Castel Forte to Damiano to M850953	12 May 1944	17 May 1944
743	92nd Engrs.	Grade sports area for rear CP	18 May 1944	21 May 1944
744	343rd Engrs.	Construct 2-way Cl. 40, 1-way Cl. 70 bridge across Graigliano River, at M858943,	18 May 1944	23 May 1944
745	337th Engrs.	Construct 2-way Cl. 40, 1-way Cl. 70 bridge over Garigliano River at G808933, nr Minturno Br.	18 May 1944	23 May 1944
746	344th Engrs.	Construct ASF entrance road, vic Ansonia and check area for mines	18 May 1944	20 May 1944
747	92nd Engrs.	Salvage sand bags, deliver tied in bundles to E-211	20 May 1944	1 June 1944
748	344th Engrs.	Furnish mine clearance team to sweep area vic M858984 and G893045	19 May 1944	21 May 1944
749	85th Engrs.	Furnish 337th Engrs a 6 raft ponton & 1 extra ponton for pile driving opns at Minturno Bridge	17 May 1944	CANCELLED
750	92nd Engrs.	Construct 1,500 crosses for QM Procurement	19 May 1944	23 May 1944
751	337th Engrs.	Furnish crew to clear mines from right-of-way for pipeline fr present terminal to Garigliano R.	18 May 1944	24 May 1944
752	175th Engrs.	Take over maint of road network fr 344th Engrs.	18 May 1944	28 May 1944
753	344th Engrs.	Take from French Corps maint of following bridges: M908986, M907994, G910012, G902025, G893112	15 May 1944	23 May 1944
754	344th Engrs.	Clear mines from area 300 yds sq for J. Class 1 depot, vic M858988	19 May 1944	21 May 1944
755	344th Engrs.	Maintain main supply routes: San Martino-M910999, M944936-Lauro-M908996-Pateley Br-S. Clemente, patrol roads: S. Clemente-S. Nicola-Tread Br. G893112	12 May 1944	18 May 1944
756	337th Engrs.	Construct and install minimum road marker signs to show location of blood donor bank at 2 Med Lab	20 May 1944	25 May 1944
757	92nd Engrs.	Maintain assigned roads	10 May 1944	19 May 1944
758	337th Engrs.	Apply oil to road from Cancellone Nocelieto in 2 applications, total not to exceed 3 gal per sq yd	11 May 1944	20 May 1944
759	175th Engrs.	Maintain roads taken over from 344th Engrs.	19 May 1944	27 May 1944
760	175th Engrs.	Remove Bailey bridge decking on road at G912034	13 May 1944	20 May 1944
761	344th Engrs.	Check area at G784014 for mines and mark mined area	20 May 1944	20 May 1944
762	175th Engrs.	Salvage all engr materials in French Corps area west of Garigliano River	20 May 1944	9 June 1944
763	343rd Engrs.	Sweep area in vic of M739966 for mines, and construct access roads	20 May 1944	22 May 1944
764	343rd Engrs.	Furnish mine clearance detail to clear area from J. Ration Depot vic of Scavri, G745952	20 May 1944	20 May 1944
765	175th Engrs.	Furnish detail of 6 Drivers for road patrol and MCC to bring 6 M2D graders from E2-45 to Engineer Equipment Pool	21 May 1944	21 May 1944
766	92nd Engrs.	Apply oil to coast road from M877842 to M808933	15 May 1944	22 May 1944
767	175th Engrs.	Remove Bailey Bridge at M997998. Erect barricade each end of gap and erect signs "Road Closed Bridge Cut"	22 May 1944	23 May 1944
768	92nd Engrs.	Remove Bailey bridge M897925	22 May 1944	25 May 1944
769	92nd Engrs.	Dismantle and return to E-212 Bailey bridge M905902	CANCELLED	
770	343rd Engrs.	Furnish minimum 4 mine detector team or 6 maximum detector team to assist Signal Corps to clear right-of-way for pole line from Scavri to Fondi	21 May 1944	22 May 1944
771	343rd Engrs.	Check area for mines and construct minimum roads for 8th Evac. Hosp.	20 May 1944	23 May 1944
772	344th Engrs.	Maintain RJ M845977-G792059-G902020-S. Giorgio-G803117; patrol RJG873080-Vallenato G812112, G892114, G868101	19 May 1944	22 May 1944
773	175th Engrs.	Furnish 785th Engr Fine Line Co. 21 - 16 ton trailers for 4 days	21 May 1944	25 May 1944
774	344th Engrs.	Take over from French Corps: Bridges M858978-RJ M857987; M851984-M858984	13 May 1944	26 May 1944
775	92nd Engrs.	Replace bridges over twin canals on coast road-M820926 with Cl. 24, 2-way Cl. 40, 1-way timber bridge	23 May 1944	28 May 1944
776	92nd Engrs.	Apply oil to coast road from RJ M877842 RJ M808933	22 May 1944	28 May 1944
777	92nd Engrs.	Maintain assigned roads	22 May 1944	25 May 1944
778	92nd Engrs.	Take over all malaria control work from 343rd Engrs	22 May 1944	24 May 1944
779	343rd Engrs.	Check area of QM Class I and III Depot M564028 and grade road into Class III Depot	21 May 1944	22 May 1944
780	343rd Engrs.	Construct entrance road into ASF 30 M550016	21 May 1944	22 May 1944
781	85th Engrs.	Dismantle and return to E-212 Bailey bridge M905902	23 May 1944	CANCELLED
782	85th Engrs.	Remove 20' SS Bailey bridge at M897925 and return to E-212	23 May 1944	CANCELLED
783	343rd Engrs.	Check area for mines and provide suitable entrances to loan area at G610005	22 May 1944	22 May 1944
784	92nd Engrs.	Oil new roads at 8th Evac Hosp. at M878905	22 May 1944	24 May 1944
785	343rd Engrs.	Take over from II Corps maint of roads	22 May 1944	27 May 1944
786	92nd Engrs.	Take over maintenance of Route 7 from Capua (and bridge) to Sessa	23 May 1944	24 May 1944

APPENDIX J
MAY 1970 TO THE ARMO

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
787	92nd Engrs.	Oil main roads in front of French Hoops: M855985, G783078, G743089	23 May 1944	23 May 1944
788	344th Engrs.	Clear mines for J. Depot Q-5-20 vic 9771092	23 May 1944	23 May 1944
789	343rd Engrs.	Clear mines for 17th Vet Hosp at vic of M690965	23 May 1944	23 May 1944
790	344th Engrs.	Check site for water point at G806117 for mines	23 May 1944	23 May 1944
791	175th Engrs.	Check area for 4C) Collecting Co vic of L926754 for mines	23 May 1944	23 May 1944
792	343rd Engrs.	Check and clear area of mines for bridge depot vic of Itria	23 May 1944	CANCELLED
793	343rd Engrs.	Check and clear area of mines at L762976, G2nd B	23 May 1944	23 May 1944
794	92nd Engrs.	Take over maintenance and operation of beacon, M002782	24 May 1944	CANCELLED
795	344th Engrs.	Replace Bailey bridge at L9-7796 with 2-way culvert	24 May 1944	28 May 1944
796	343rd Engrs.	Check area at L737353 for mines. J. Dumps 515 and 516. Provide necessary roads	23 May 1944	23 May 1944
797	175th Engrs.	Improve bypass for all weather traffic and remove Bailey bridge at G991032	29 May 1944	3 June 1944
798	92nd Engrs.	Remove Bailey bridge without replacement at L544927	25 May 1944	25 May 1944
799	92nd Engrs.	Remove Bailey bridge at M862856, without replacement	25 May 1944	25 May 1944
800	343rd Engrs.	Check buildings in Formia for mines and booby traps. Bldgs to be used for Signal supplies only	23 May 1944	24 May 1944
801	175th Engrs.	Improve ford and approach at L875445 and remove Bailey bridge	24 May 1944	27 May 1944
802	92nd Engrs.	Replace Bailey bridge at L878916 with culvert	26 May 1944	1 June 1944
803	337th Engrs.	Check and clear area of mines for 2 AA Btry's at site of new bridges across Garigliano	23 May 1944	24 May 1944
804	343rd Engrs.	Check and clear areas of mines for following hospitals: NF Hosp, M858999, 1st Plat. 601 Clearing Co., 93rd Evac, G565017	22 May 1944	24 May 1944
805	175th Engrs.	Check and clear mines from area at G988063 for 3RO	25 May 1944	27 May 1944
806	337th Engrs.	Clear mines for pipeline right-of-way for 785th Pet. Dist Co, fr Garigliano to Fondi	21 May 1944	2 June 1944
807	343rd Engrs.	Construct road and entrance to 3005 BK Bakery at M593988	24 May 1944	26 May 1944
808	343rd Engrs.	Clear area at M703957 for Fifth Army AMG Depot	25 May 1944	25 May 1944
809	343rd Engrs.	Maintain twy bridge on Route 7, across Garigliano River	25 May 1944	28 May 1944
810	343rd Engrs.	Complete bypass thru Formia	25 May 1944	30 May 1944
811	343rd Engrs.	Maintain a 2-way traffic, except for bridge, road from Formia to Gaeta incl.	25 May 1944	27 May 1944
812	343rd Engrs.	Maintain for 2-way traffic, Route 7 from Formia to Bailey bridge near Itri	25 May 1944	27 May 1944
813	337th Engrs.	Replace Bailey bridge at M613982 with Cl. 40, 2-way, Cl. 70, 1-way bridge	25 May 1944	CANCELLED
814	337th Engrs.	Maintain for 1-way with turnouts, road from Itri-Sperlonga incl.	25 May 1944	29 May 1944
815	337th Engrs.	Maintain for 2-way traffic, road from Itri-French Corps boundary at G604066	25 May 1944	30 May 1944
816	337th Engrs.	Clear and maintain bypass around Itri for 1-way traffic	25 May 1944	2 June 1944
817	337th Engrs.	Maintain for 2-way traffic Route 7 from Bailey bridge M613982 to II Corps boundary at M601986	25 May 1944	1 June 1944
818	337th Engrs.	Remove following Bailey bridges: L807930, M808933, M834940, L846935, L9C2987, M901984	25 May 1944	26 May 1944
819	337th Engrs.	Check area for G2nd Qd. Bath Unit, vic of Fondi for mines	25 May 1944	CANCELLED
820	175th Engrs.	Remove Bailey Bridge at G966060. Erect barricades	27 May 1944	30 May 1944
821	175th Engrs.	Construct cub landing strip and do necessary work for new Army CP	25 May 1944	25 May 1944
822	337th Engrs.	Furnish demolition detail to NF Hosp at M885990, to assist in const of latrines	26 May 1944	27 May 1944
823	337th Engrs.	Collect capture German material and transport to E-211	24 May 1944	26 May 1944
824	337th Engrs.	Furnish mine clearing detail for 469th Engr Maint Co., vic of Fondi	24 May 1944	25 May 1944
825	337th Engrs.	Clear debris from vic Minturno Bridge	25 May 1944	CANCELLED
826	343rd Engrs.	Clear debris from vic Damiano Bridge	25 May 1944	1 June 1944
827	92nd Engrs.	Sprinkle with water, dirt road running along side Carano Cemetery	30 May 1944	30 May 1944
828	337th Engrs.	Clear area at G493058 for 93rd Evac Hosp.	26 May 1944	26 May 1944
829	337th Engrs.	Take over from II Corps Route 7 from Itri to RJ G524059 for 2-way traffic. Road from Sperlonga to RJ G498010 for 1-way traffic	26 May 1944	5 June 1944
830	337th Engrs.	Remove wall of demolished building near intersection Route 7 and Route 82 in Itri	26 May 1944	28 May 1944
831	92nd Engrs.	Blade and oil Route 7 bypass at Cascano	26 May 1944	27 May 1944
832	343rd Engrs.	Check Minturno and Damiano Bridges daily for settlement	26 May 1944	1 June 1944
833	92nd Engrs.	Furnish 5 bulldozer operators to operate D-7's at Anzio	26 May 1944	1 June 1944
834	337th Engrs.	Clear areas for 2-5-25 and Q-5-26 in vic of Terracina of mines. (G370004 and G366013)	26 May 1944	27 May 1944
835	343rd Engrs.	Remove Bailey Ponton Bridges below Damiano Bridge and return to E-212	27 May 1944	29 May 1944
836	343rd Engrs.	Remove white marker stakes along road to Damiano Bridge. Deliver to Corps Dump at Fondi	27 May 1944	27 May 1944
837	343rd Engrs.	Cancel all previous road assignments west of Garigliano River. Maintain assigned roads	27 May 1944	1 June 1944
838	92nd Engrs.	Improve road into 616 Clearing Co at L947908	26 May 1944	28 May 1944
839	337th Engrs.	Clear area at G499052 of mines for 602 Clearing Hosp. Dismantle 20' x 48' bldg and re-assemble for 602 Clearing Hosp.	27 May 1944	30 May 1944
840	343rd Engrs.	Clear area of mines and prepare entrance for 525 Field Hosp(DT) Vic of 95th Evac Hosp.	27 May 1944	27 May 1944
841	92nd Engrs.	Construct Cl. 7 Infantry Support Raft Bridge across Garigliano River just below Minturno Br.	27 May 1944	CANCELLED
842	337th Engrs.	Construct 2-way Cl. 40, 1-way Cl. 70, timber and steel semi-permanent bridge on Rt. 7 at M613983	27 May 1944	2 June 1944
843	344th Engrs.	Maintain assigned roads	26 May 1944	14 June 1944
844	92nd Engrs.	Load and return to E-212 all Bailey bridge material (except ponton Bailey) from Minturno Br., M807930; ABC Dr. B34940; Rossi Br, 846925 and Skipton Br 902987	26 May 1944	27 May 1944
845	92nd Engrs.	Take over from 337th Engrs manufacture of all signs, frames, and special signs, requested by Transportation Officer	27 May 1944	CONTINUOUS
846	337th Engrs.	Maintain assigned roads	26 May 1944	2 June 1944
847	337th Engrs.	Clear area of mines and prepare entrances for 56th Evac Hosp. at G497072	27 May 1944	28 May 1944
848	92nd Engrs.	All previous road assignments are cancelled. Maintain newly assigned roads	26 May 1944	4 June 1944
849	92nd Engrs.	Remove and transport to E-212, Bailey bridge at M868925	28 May 1944	28 May 1944
850	175th Engrs.	Remove without replacing-transport to E-212, Bailey bridge at G907113	28 May 1944	3 June 1944
851	343rd Engrs.	Construct turnout and check point for casual vehicles, at L731959	28 May 1944	29 May 1944
852	343rd Engrs.	Replace 50' SS Bailey bridge at M848965 with culvert	28 May 1944	29 May 1944
853	343rd Engrs.	Replace 40' SS Bailey bridge at M656947 with culvert	29 May 1944	29 May 1944

APPENDIX J

MAY 11TH TO THE ARMO

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
854	175th Engrs.	All previous road assignments are cancelled. Maintain new assigned road net work	26 May 1944	29 May 1944
855	337th Engrs.	Complete roads in CM Depots 35-25 and 35-26	27 May 1944	28 May 1944
856	343rd Engrs.	Clear area at M708958 of mines for 5th Army Rear CP	27 May 1944	CANCELLED
857	337th Engrs.	Take over from II Corps maintenance of roads. It is desired that all bypasses be improved and that Route 7 be maintained for Class 70 loads	26 May 1944	2 June 1944
858	337th Engrs.	Pick up and transport to Fondi RR Station, captured equip at 1330981, G265078	27 May 1944	28 May 1944
859	144th Engrs.	Clear area at 0602095 of mines, for 403rd Collecting Co.	27 May 1944	28 May 1944
860	343rd Engrs.	Clear area at M631953 of mines for 525 Field Hosp. (AMC)	27 May 1944	29 May 1944
861	337th Engrs.	Clear area at M403997 of mines, for Sterilization & Bath Unit	28 May 1944	30 May 1944
862	337th Engrs.	Clear area at M608995 of mines, for 161st Med. Bn.	28 May 1944	29 May 1944
863	337th Engrs.	Construct entrance to VD Hosp (602nd Clearing Co) at G459052	28 May 1944	30 May 1944
864	92nd Engrs.	Construct 30 prefab wooden culverts and transport to E-211	28 May 1944	10 June 1944
865	92nd Engrs.	Remove Bailey bridge at G895925 and transport to E-212	27 May 1944	28 May 1944
866	337th Engrs.	Clear area at G540045 of mines for 477 Ord Evac Co.	28 May 1944	CANCELLED
867	175th Engrs.	Loan to 785 Petroleum Dist. Co., 1 D-7 w/operator	28 May 1944	29 May 1944
868	343rd Engrs.	Remove Bailey Bridge at M807928, and transport to E-212	29 May 1944	29 May 1944
869	344th Engrs.	Clear area of mines for 401st Collecting Co., at G594145	28 May 1944	28 May 1944
870	175th Engrs.	Maintain Carigliano Bridge at G910012 & G907993. Patrol road from G910012 to S. Giorgio.	28 May 1944	29 May 1944
871	337th Engrs.	Remove Dam at M400998 & M449989	29 May 1944	3 June 1944
872	92nd Engrs.	Remove Bailey Bridge at M966892 - no replacement	30 May 1944	1 June 1944
873	92nd Engrs.	Remove Bailey Bridge at M999890 - no replacement	30 May 1944	1 June 1944
874	92nd Engrs.	Furnish 1 platoon to work at Bridge Depot E-212	29 May 1944	29 May 1944
875	92nd Engrs.	Transport 96 Bailey Pontons from Carigliano River to Canello Dump, if not damaged, if damaged, to Capua	27 May 1944	30 May 1944
876	344th Engrs.	Maintain assigned roads	29 May 1944	30 May 1944
877	337th Engrs.	Clear mines from right of way for signal lines from Fondi to Terracina	29 May 1944	29 May 1944
878	337th Engrs.	Replace Bailey Bridge at G310029 with 2/way Class 40, 1 way Class 70	29 May 1944	29 May 1944
879	92nd Engrs.	Furnish 1 Company to operate Bridge Depot E-212 on 24 hours basis	29 May 1944	14 June 1944
880	175th Engrs.	All previous road assignments cancelled. Maintain newly assigned roads	29 May 1944	3 June 1944
881	337th Engrs.	Make investigation and submit plans for draining or lowering water in Pontine Marsh	30 May 1944	3 June 1944
882	337th Engrs.	Construct and oil necessary roads for 93rd Evac. Hosp., at G493058	30 May 1944	CANCELLED
883	92nd Engrs.	Dispatch oil distributor to CO, 337th Engrs, to oil roads for 93rd Evac. Hosp.	30 May 1944	CANCELLED
884	92nd Engrs.	Clear area of mines at M913913 for 59th Evac. Hosp and prepare necessary approaches into area.	30 May 1944	3 June 1944
885	337th Engrs.	Remove rubble etc., from shoulder of Route 7 at TCP 17, G525058 to provide turnout for Convoys	30 May 1944	2 June 1944
886	343rd Engrs.	Construct Railhead of Minturno station, Scavri (M765950)	30 May 1944	3 June 1944
887	344th Engrs.	Clear area of mines for 401 Coll. Co., at G495215	30 May 1944	4 June 1944
888	344th Engrs.	Check area for mines at G388223 for ASF. Construct access roads and minimum circulation roads required for operation of dump	30 May 1944	2 June 1944
889	175th Engrs.	Dismantle and transport to E-212, 230' DS Bailey Bridge at M907993	30 May 1944	7 June 1944
890	337th Engrs.	Clear area of mines at G323146 for 95th Evac. Hosp.	30 May 1944	CANCELLED
891	92nd Engrs.	Remove tramway vicinity of Falciano, M9585 and return to Anzio Engr Depot	31 May 1944	1 June 1944
892	337th Engrs.	Construct and oil roads for 56th Evac Hosp at G497072	31 May 1944	4 June 1944
893	92nd Engrs.	Dispatch oil distributor to CO, 337th Engrs, to oil roads for 56th Evac. Hosp.	31 May 1944	5 June 1944
894	343rd Engrs.	Check and clear area of mines at M768951 for 3299 CM Serv. Co.	31 May 1944	1 June 1944
895	92nd Engrs.	Remove tramway, vic of Skipton Bridge, M907990	1 June 1944	1 June 1944
896	337th Engrs.	Pick up searchlight at M249934 and deliver to E-212. Pick up timbers on road near M5495	31 May 1944	5 June 1944
897	92nd Engrs.	Furnish Air compressor with operator to report senior Bridge instructor at F190780	3 June 1944	4 June 1944
898	337th Engrs.	Check all Culverts on Route 7 between Itri and Terracina and install adequate Culverts for drainage	1 June 1944	4 June 1944
899	343rd Engrs.	Remove partially wall in Formia, vic of damaged 150mm German gun	1 June 1944	1 June 1944
900	92nd Engrs.	Furnish one distributor to 175th Engrs, for oiling roads in new CP area	1 June 1944	6 June 1944
901	343rd Engrs.	Prepare and assemble materials for two-way class 40, one-way class 70, bridge across Tiber R.	2 June 1944	7 June 1944
902	337th Engrs.	Prepare and assemble materials for two-way class 40, one-way class 70, bridge across Tiber R.	2 June 1944	8 June 1944
903	92nd Engrs.	Remove Bailey bridge overpass at Cascano and return to E-212	2 June 1944	3 June 1944
904	175th Engrs.	Remove Bailey bridge at M058952, vic of Teano, and return to E-212	2 June 1944	9 June 1944
905	337th Engrs.	Clear mines at G285201 for 802nd Air Evac Hosp. Field. Construct runway	1 June 1944	5 June 1944
906	92nd Engrs.	Furnish detail to dismantle two prefabricated and one Mission hut at Fifth Army Rear	1 June 1944	5 June 1944
907	92nd Engrs.	Construct filing cabinet for O & E Section	3 June 1944	6 June 1944
908	92nd Engrs.	Remove Bailey Bridge overpass at F143846 (Route 6 & 7)	2 June 1944	4 June 1944
909	92nd Engrs.	Maintain following roads: Maintenance of Route 7 from Carigliano River to Formia; from Damiano bridge to Minturno to junction with Route 7 at M760946; from San Croce north to Corps boundary, G793033; operation of Carigliano pumping station and maintenance of Minturno and Damiano Bds.	2 June 1944	9 June 1944
910	343rd Engrs.	Maintain newly assigned roads (taken over from 337th Engrs)	2 June 1944	10 June 1944
911	92nd Engrs.	Remove Bailey Bridge at M171796 (overpass)	2 June 1944	4 June 1944
912	175th Engrs.	Maintain newly assigned roads including maintenance of all Bailey Bridges	2 June 1944	5 June 1944
913	344th Engrs.	Maintain newly assigned roads. Survey to be made of all Bailey bridges and submit overlay of locations	2 June 1944	8 June 1944
914	337th Engrs.	All previous road assignments are cancelled. Maintain newly assigned roads	2 June 1944	8 June 1944
915	92nd Engrs.	Assist 59th Evac Hosp., at M913913 with construction of soakage and latrine pits	2 June 1944	2 June 1944
916	337th Engrs.	Check area for mines for Engr IV Corps	2 June 1944	3 June 1944
917	337th Engrs.	Clear area for Cub landing field for Engr IV Corps. Construct landing strip	2 June 1944	4 June 1944

APPENDIX J
MAY 11TH TO THE ARMO

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
918	144th Engrs.	Check area for 62nd Ord Bn. Construct minimum and access and circulation roads	2 June 1944	5 June 1944
919	137th Engrs.	Dismantle 20 x 48' portable bldg for 2nd Fed Lab. at K975884 and reassemble at new area vic of 15th Evac Hosp	3 June 1944	5 June 1944
920	92nd Engrs.	Check areas to be designated by GRO, of mines, vic of S. Maria Infento and Castellforte	3 June 1944	7 June 1944
921	92nd Engrs.	Improve short turn on Route 82 at G613036	5 June 1944	9 June 1944
922	92nd Engrs.	Pick up white actal posts along Applan Way, M830910-K870870 and Cellole RR road. Salvage concertina vic Damiano bridge	4 June 1944	5 June 1944
923	175th Engrs.	Install Route and Town marker signs at G774091, Esperia and along Esperia - Pico road	4 June 1944	6 June 1944
924	137th Engrs.	Repair Bascole bridge, located on coast road, M330982 and remove treadway bridge	5 June 1944	9 June 1944
925	137th Engrs.	Remove debris from mouth of canal at K321978	6 June 1944	8 June 1944
926	92nd Engrs.	Refloor highway bridge at M400998 then remove Bailey Bridge at M400998	5 June 1944	10 June 1944
927	92nd Engrs.	All previous road maintenance assignments are cancelled. Maintain newly assigned roads	4 June 1944	11 June 1944
928	141rd Engrs.	Construct drafting and stool for Engr Hq. Fifth Army	5 June 1944	CANCELLED
929	175th Engrs.	Clear two bldgs for AMG, 8 Army at Gaeta	5 June 1944	7 June 1944
930	92nd Engrs.	Dismantle 6 portable bldgs, for 3rd Conv. Hosp., vic Carinola	5 June 1944	6 June 1944
931	92nd Engrs.	Clear area of mines for 618th Clearing Co, at M605986	6 June 1944	7 June 1944
932	92nd Engrs.	Pick up pontoons at Damiano bridge (K858943) and transport damaged boats to Capua, undamaged to E-212	6 June 1944	12 June 1944
933	137th Engrs.	Remove Bailey Bridge at M285966, without replacement	6 June 1944	7 June 1944
934	175th Engrs.	Pick up surplus parts of Bailey bridge at G126275 and transport to E2-202	6 June 1944	7 June 1944
935	137th Engrs.	Maintain road from G112240 to Cisterna to RJ F986440	5 June 1944	8 June 1944
936	144th Engrs.	Maintain newly assigned roads	5 June 1944	8 June 1944
937	175th Engrs.	All previous road assignments cancelled. Maintain newly assigned roads. Improve bypasses G613162-G510236 and remove Bailey bridges on road	5 June 1944	9 June 1944
938	137th Engrs.	Construct two class 70 one-way timber and steel bridges at G171007 and G172008	5 June 1944	9 June 1944
939	92nd Engrs.	Clear area of mines for 85th QM Co, vic. of Aurunca RR station	5 June 1944	6 June 1944
940	143rd Engrs.	Maintain roads from Cisterna to RJ G064432; from RJ G064412 to RJ G095492 to RJ F986440, from G064431 to RJ F991441	5 June 1944	6 June 1944
941	92nd Engrs.	Construct 20 additional prefab culverts (RE: work order 864)	8 June 1944	11 June 1944
942	137th Engrs.	Repair damaged bridge at G068285 to carry two-way class 40, one-way class 70 traffic	6 June 1944	9 June 1944
943	137th Engrs.	Check bridge at G094258 and reinforce if necessary to carry two-way Class 40, one-way Class 70 traffic	6 June 1944	9 June 1944
944	540th Engrs.	Clear bldgs of mines and booby traps, contact Col. Hedding	5 June 1944	10 June 1944
945	92nd Engrs.	Remove Bailey bridge at M449991	6 June 1944	9 June 1944
946	92nd Engrs.	Dismantle two portable bldgs for 2nd Med. Lab.	6 June 1944	7 June 1944
947	137th Engrs.	Maintain newly assigned roads	7 June 1944	11 June 1944
948	137th Engrs.	Clear right of way for Pipe line (785th Engrs) from Fondi to Terracina	6 June 1944	9 June 1944
949	175th Engrs.	Take over maintenance of roads from 144th Engrs	6 June 1944	11 June 1944
950	187th Engrs.	Maintain for two-way traffic, road RJ F770330 - Ardea-RJ F737535-RJ F735620-bridge at F720605	6 June 1944	13 June 1944
951	143rd Engrs.	Maintenance of roads from Route 7 RJ F977440 - Genzono, Southern Loop to Albano (P882482) to city limits of Rome	7 June 1944	12 June 1944
952	175th Engrs.	Clear mines in vicinity of G285203, for 403 Coll. Co	6 June 1944	7 June 1944
953	187th Engrs.	Furnish bulldozer with operator for clearing stumps and ground surface to enlarge Cemetery vic of Nettuno, P883189	6 June 1944	8 June 1944
954	137th Engrs.	Replace treadway bridge at G126099, with suitable Culvert	7 June 1944	9 June 1944
955	175th Engrs.	Furnish one platoon to assist loading Engineering Section at Fifth Army CP	7 June 1944	7 June 1944
956	143rd Engrs.	Furnish one platoon to assist in the setting up of Engineer Section at new Fifth Army CP	7 June 1944	7 June 1944
957	175th Engrs.	Salvage engineer materials (misc. items) and return to specified dumps	7 June 1944	14 June 1944
958	143rd Engrs.	Check area and bldg for mines and booby traps for 38th Evac Hosp. at F698657	7 June 1944	8 June 1944
959	92nd Engrs.	Investigate "Snake" at ASP-O-432, south of Terracina	7 June 1944	10 June 1944
960	137th Engrs.	Construct two-way, all weather bypass on Route 7, west end of Velletri	7 June 1944	11 June 1944
961	143rd Engrs.	Furnish 4 two-1/2 ton trucks, 2-1 ton trailers and 15 man detail to report to Col. Ladd at old CP	8 June 1944	CANCELLED
962	144th Engrs.	Maintain newly assigned roads	7 June 1944	14 June 1944
963	143rd Engrs.	Furnish one Company to build Fifth Army Rest Center	8 June 1944	15 June 1944
964	540th Engrs.	Pick up "R" mines and deliver to E-2-201	8 June 1944	CANCELLED
965	175th Engrs.	Remove Bailey Bridge across Gerigliano at G910010, transport to E-2-202	9 June 1944	13 June 1944
966	137th Engrs.	Construct 270' TD Bailey (Cl. 70) and 270' TS Bailey (Cl. 40), 3 span, continuous girder bridges	7 June 1944	14 June 1944
967	187th Engrs.	Replace Bailey Bridge at F773310, with 2-way Cl. 40, 1-way Cl. 70, timber & steel bridge	7 June 1944	14 June 1944
968	187th Engrs.	Construct Cl. 70, 1-way, Cl. 40, 3-way bridges at F780422 and F784418	8 June 1944	10 June 1944
969	92nd Engrs.	Take over from 137th Engrs maintenance of Rt. 7 from Terracina to RJ G111240	7 June 1944	16 June 1944
970	175th Engrs.	Take over maintenance and patrol of roads as directed	8 June 1944	13 June 1944
971	540th Engrs.	Investigate mines and grenades stored in basement of bldg used by AMG in Littoria City	8 June 1944	14 June 1944
972	143rd Engrs.	Clear air strip of mines for sub field (Area designated by Arty Sect)	8 June 1944	10 June 1944
973	137th Engrs.	Pick up "R" mines and deliver to E2-201	7 June 1944	9 June 1944
974	187th Engrs.	Remove treadway bridges at 940299 and 918289	9 June 1944	9 June 1944
975	137th Engrs.	Furnish mine and booby trap instructor and team to 232nd Engr C Co, 442nd C Team, vic F885200	10 June 1944	14 June 1944
976	137th Engrs.	Clear mines for 11th. Evac Hosp, vic F254841	9 June 1944	14 June 1944
977	137th Engrs.	Furnish 1 bulldozer w/operator to clear area for 542 OM, Cl. II and IV Depot, vic Cecchegnon-atta (F750570)	10 June 1944	15 June 1944
978	137th Engrs.	Removed charged "Snakes" at G015262, O18271, F985278 and 901280 & return to E2-17	9 June 1944	13 June 1944

APPENDIX J
MAY 11TH TO THE ARMO

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
979	337th Engrs.	Clear area of mines for 162nd Med Bn. at F691647	9 June 1944	10 June 1944
980	337th Engrs.	Mark mine field area in old beachhead sector within designated unit areas	10 June 1944	CANCELLED
981	343rd Engrs.	Mark mine field area in old beachhead sector within designated unit areas	10 June 1944	CANCELLED
982	175th Engrs.	Remove Treadway bridges at G405343 and 364999 and return to Bridge depot E-2-19., place barricades	10 June 1944	12 June 1944
983	92nd Engrs.	Maintain and patrol roads in newly assigned areas	11 June 1944	18 June 1944
984	344th Engrs.	Maintain Route 2 from city limits of Rome to RJ F658796	11 June 1944	12 June 1944
985	337th Engrs.	Maintain newly assigned roads	10 June 1944	13 June 1944
986	343rd Engrs.	Clear area of mines for 615th Med Clearing Station at P812542	10 June 1944	11 June 1944
987	337th Engrs.	Clear air field of mines for an air evac hosp at F400765	10 June 1944	13 June 1944
988	337th Engrs.	Clear area of mines for 5th Army AA firing point at F500626	11 June 1944	13 June 1944
989	387th Engrs.	Dismantle prefab hut of 602nd Clearing Co (F942256)	11 June 1944	11 June 1944
990	337th Engrs.	Erect prefab hut of 602nd Clearing Co at F708661	12 June 1944	14 June 1944
991	92nd Engrs.	Clear area of mines-M820980, M815995, M905020. Detail to rpt at Carym Cemetery, M925898	11 June 1944	12 June 1944
992	540th Engrs.	Reconnaissance w/Naval representative of beaches R-5 and R-6, vic of Ladispoli	11 June 1944	CANCELLED
993	343rd Engrs.	Construct overpass at P875445 for Cl. 40, 1-way, max lgth, 6-ton prime mover w/trailer	11 June 1944	14 June 1944
994	92nd Engrs.	Maintain roads that have been newly assigned in addition to previous assignments	11 June 1944	15 June 1944
995	387th Engrs.	Remove and transport to E2-201, treadway bridges located at F938310, 0008268, F933291, F935279 and F903273	12 June 1944	15 June 1944
996	337th Engrs.	Maintain newly assigned roads as MSR. Widen bridge at F560695 & demolished road block	12 June 1944	19 June 1944
997	343rd Engrs.	Maintain newly assigned roads (Route 7 from Velletri to Rome, from RJ F768992, RJ F726607)	12 June 1944	20 June 1944
998	175th Engrs.	Move Engr supply equip, located at Ansonia, to Rome Engr Depot E2-17	12 June 1944	14 June 1944
999	344th Engrs.	Check area for mines for 551st Amb. Co., vic of Vetralla at A405149	12 June 1944	14 June 1944
1000	337th Engrs.	Check runway at Tarquina Airport for use by air evac units at A150080	12 June 1944	13 June 1944
1001	337th Engrs.	Check area for mines for 402nd Collection Co, 162nd Med Bn at A172007	12 June 1944	13 June 1944
1002	175th Engrs.	Remove Bailey bridges at G468264 and 202182 and transport to E2-19	13 June 1944	15 June 1944
1003	175th Engrs.	Remove Bailey bridges at G407207 and 202394 and construct bypasses	13 June 1944	14 June 1944
1004	175th Engrs.	Maintain roads from: G202436 to G198492; G112240 to G128283 to G182163; G129283 to G085375	13 June 1944	15 June 1944
1005	337th Engrs.	Check area for mines for 163rd Med Bn (615th Holding Hosp) at P412767 & F773727	13 June 1944	14 June 1944
1006	337th Engrs.	Furnish mtd grader to grade playing field and small area range for IV Corps Arty	14 June 1944	15 June 1944
1007	344th Engrs.	Replace Bailey bridge at F655816 with 2-way Cl. 40, 1-way Cl. 70 bridge	14 June 1944	19 June 1944
1008	343rd Engrs.	Send 6-ton prime mover w/20 ton trlr and pick up & deliver to Anzio motor launch	14 June 1944	20 June 1944
1009	343rd Engrs.	Construct plywood shelves for Topo Section	15 June 1944	21 June 1944
1010	337th Engrs.	Clear mines for beach near Pyrgi for 5th Army AA Firing Point	14 June 1944	19 June 1944
1011	344th Engrs.	Locate & return to E222- 2 air compressors trlr mtd, A6102 and F7373, Diesel trk, w/crane A4808	15 June 1944	25 June 1944
1012	175th Engrs.	Pick up Bailey bridge spares vic of G217423 and return to E2-20	15 June 1944	17 June 1944
1013	92nd Engrs.	Salvage Engr supplies vic F933267 and return to E2-201	15 June 1944	16 June 1944
1014	344th Engrs.	Maintain all roads as MSR. Repair road for 2-way traffic, A263300, A325271, A378257	15 June 1944	19 June 1944
1015	175th Engrs.	Maintain and patrol all roads as MSR's	15 June 1944	28 June 1944
1016	337th Engrs.	Take over from IV Corps, maintenance of Hwy 1 from RJ F175905-Montalto -incl A030190, North on Route 136 to Valentano including A213422	16 June 1944	28 June 1944
1017	343rd Engrs.	Furnish bulldozer to excavate garbage pit for 15th Evac Hosp, P690695	15 June 1944	18 June 1944
1018	337th Engrs.	Furnish mine detector sqd to check area vic VI Corps Arty CP, vic F500628	15 June 1944	16 June 1944
1019	337th Engrs.	Dismantle 2 span bridge built by 36th Engrs at P362788 and replace w/single span Cl. 40, 2-way Cl- 70, 1-way bridge	15 June 1944	16 June 1944
1020	175th Engrs.	Remove bridges at G380243, 244458, and 246458- to E2-20; remove bridge G127276; remove bridge, construct bypass at G323188	16 June 1944	19 June 1944
1021	175th Engrs.	Maintain all new assigned roads as MSR (All prior road assignments cancelled)	16 June 1944	20 June 1944
1022	92nd Engrs.	Remove bridges at P914310, 906291, 751375, 765311,	16 June 1944	23 June 1944
1023	92nd Engrs.	Maintain following roads: Rt 7 fr G430035 to Cisterna to Velletri to Albano to F778640. From Anzio to F75445 to Rt 7; fr F880445 to junction w/Rt 7 at F850523; fr F765592 to F798602	15 June 1944	19 June 1944
1024	92nd Engrs.	Set up and maintain water point 1/2 mile west of Anzio on coast road	15 June 1944	CANCELLED
1025	337th Engrs.	Furnish bulldozer for work at P305815 for 5th Army AA Firing Point	16 June 1944	18 June 1944
1026	175th Engrs.	Furnish mtd road grader or bulldozer to build fire wall at Q5-44 Gas- Dump, 1 mile north of Civitavecchia on Rt 1	16 June 1944	18 June 1944
1027	92nd Engrs.	Furnish detail of 30 men to strike Engr Has and to load equip on trucks	17 June 1944	19 June 1944
1028	337th Engrs.	Furnish detail of 30 men to set up Engr Hqs	17 June 1944	19 June 1944
1029	92nd Engrs.	Furnish mine detector sqds to clear paths to bodies, vic M765955 for GRO (47th QM GR Co.), Carano, (M925898)	17 June 1944	4 July 1944
1030	337th Engrs.	Replace Bailey bridge at A137081 with 2-way Cl. 40, 1-way Cl. 70 bridge. Bypass to be constructed	18 June 1944	22 June 1944
1031	337th Engrs.	Replace culvert with Cl. 40, 2-way Cl. 70, 1-way bridge at A065148	19 June 1944	25 June 1944
1032	92nd Engrs.	Remove bridges at F730415, F591518, F598490, F642452 and F700526	17 June 1944	23 June 1944
1033	343rd Engrs.	Investigate, deactivate, and remove mines located in Italian Police Station at 16 Via Subeniano Rome	18 June 1944	19 June 1944
1034	337th Engrs.	Furnish bulldozer to construct entrance road to PRU Section area at Tarquina Airport, A150080	17 June 1944	19 June 1944
1035	92nd Engrs.	Remove Bailey bridge at G273084, G288098, G205220, G120250 and P962241	18 June 1944	22 June 1944
1036	343rd Engrs.	Construct table top for Topo Section	18 June 1944	19 June 1944
1037	92nd Engrs.	Maintain following roads: Rt 1 from Civitavecchia to Vaccina to F715674; from RJ at F618658 to F628585 to F702601 to Tiber River; from F702601 to F691662 to junction w/Rt 1; including maintenance of 2 BB across Tiber River at F718603	19 June 1944	26 June 1944
1038	175th Engr	Relieve 344th Engrs fr maint of Rt 2 from RJ w/Rt 225-P657798-RJ w/Rt 18 at F395150	19 June 1944	28 June 1944

APPENDIX J
MAY 11TH TO THE ARNO

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
1039	144th Engrs.	Maintain following road, relieving 337th Engrs of Route 136, from Canino - Valentano	19 June 1944	26 June 1944
1040	137th Engrs.	Maintain Route 115 from RV AL17084 - Tuscania (A248259) as MSR, in addition to prov. aspd work.	18 June 1944	28 June 1944
1041	343rd Engrs.	Take over from IV Corps maintenance of following roads: Route 1 from A020182 - Albesna River; Route 74, from junction with Route 1 to Corps boundary at E947458 and including bridge at E697420	19 June 1944	25 June 1944
1042	337th Engrs.	Prepare plans for approval and replace Bailey and Treadway Bridges at A023190 on Route 1, with Class 40, 2/way Class 70 one-way bridges	18 June 1944	25 June 1944
1043	337th Engrs.	Clear mines and fill crater for Sappion Gen., area near Viterbo and develop runway for transport landing	17 June 1944	19 June 1944
1044	343rd Engrs.	Prepare plans for approval and replace 130' DD Bailey, E679420, with 2/way Class 40, one-way Class 70 crossing	18 June 1944	23 June 1944
1045	343rd Engrs.	Prepare plans for approval and replace Treadway at E698374	19 June 1944	19 June 1944
1046	84th Engrs.	Prepare signs for Engr Hqs	19 June 1944	28 June 1944
1047	92nd Engrs.	Relieve 48th Engrs from operation of Beacon at F659798	19 June 1944	28 June 1944
1048	343rd Engrs.	Furnish two mine detectors teams to report to CO, 56th Med. Bn, on Route 1, below Grossetto, to be placed on DS with 56th Med. Bn	19 June 1944	26 June 1944
1049	343rd Engrs.	Assume maintenance of Highway 1 from E678420 to and incl. town of Grossetto	20 June 1944	25 June 1944
1050	344th Engrs.	Replace 120' DS Bailey bridge at A365423, with 2/way Class 40, one-way Class 70.	20 June 1944	CANCELLED
1051	344th Engrs.	Replace 70' DS Bailey bridge at A355463, with 2/way Class 40, one-way Class 70 bridge	20 June 1944	26 June 1944
1052	344th Engrs.	Replace 90' DS Bailey bridge at A363508, with Culvert and Fill	20 June 1944	25 June 1944
1053	344th Engrs.	Replace 90' DS Bailey bridge at A292548, with 2/way Class 40, one-way Class 70 bridge or Culvert	20 June 1944	26 June 1944
1054	344th Engrs.	Replace 70' DS Bailey bridge at A407340, with 2/way Class 40, one-way Class 70 bridge or Culvert	20 June 1944	24 June 1944
1055	92nd Engrs.	Furnish grader for 5th Army AA Firing point at F305815	20 June 1944	22 June 1944
1056	337th Engrs.	Furnish bulldozer with operator to scoop out loading platform for QM Depot, Q5-45, located 1 mile north of Civitavecchia, on Route 1	21 June 1944	23 June 1944
1057	337th Engrs.	Take over Air Beacon from IV Corps	22 June 1944	28 June 1944
1058	344th Engrs.	Construct 2/way Class 40 bridge, bypass at A030460	21 June 1944	25 June 1944
1059	Co. A, 84th Engrs	Paint 90 vehicles for 193 Tank Bn	19 June 1944	22 June 1944
1060	92nd Engrs.	Widen bridge for two-way traffic, at A186883	21 June 1944	25 June 1944
1061	92nd Engrs.	Upon completion of WO 1029, send mine clearance squad to GRS, Nettuno	6 July 1944	10 Aug 1944
1062	175th Engrs.	Furnish motorized grader to construct roads in 47 ASP.	19 June 1944	21 June 1944
1063	344th Engrs.	Remove 10' treadway at A279234.	21 June 1944	25 June 1944
1064	175th Engrs.	Maintain Route 2 from Vetralla to Viterbo as Class 70 highway	22 June 1944	28 June 1944
1065	175th Engrs.	Disassemble Ice Plant at Nettuno and store for shipment at Engr Depot, Anzio	22 June 1944	25 June 1944
1066	540th Engrs.	Construct Class 18 Bailey bridge over RR to connect Strada del Capucini with Via Isenzo	21 June 1944	29 June 1944
1067	343rd Engrs.	Check road leading to bldg at E585688 for mines, for Vet Hqs and Remount Station	22 June 1944	21 June 1944
1068	175th Engrs.	Pick up 8 truck loads of Bailey equipment at A430274 and deliver to E2-23	21 June 1944	26 June 1944
1069	337th Engrs.	Furnish mine instruction team to 601st and 602nd FA Bn, located at F938470, Nemi	24 June 1944	28 June 1944
1070	92nd Engrs.	Arrange and dismantle Bailey bridge at F495896	24 June 1944	28 June 1944
1071	337th Engrs.	Sprinkle all bypasses on Route 1 in assigned area	21 June 1944	1 Aug 1944
1072	343rd Engrs.	Sprinkle all bypasses on Route 1 in assigned area	21 June 1944	4 Aug 1944
1073	387th Engrs.	Recondition Water Supply and Sewage system for Civitavecchia, from reservoir location to port area	22 June 1944	1 Aug 1944
1074	344th Engrs.	Remove 30' Steel Treadway bridge at A297385. Replace with one-way Class 9 Timber bridge	24 June 1944	26 June 1944
1075	343rd Engrs.	Furnish detail to operate Air Beacon at E747468	24 June 1944	26 June 1944
1076	343rd Engrs.	Construct Culvert crossing at E587632	23 June 1944	24 June 1944
1077	337th Engrs.	Check area at A168130 for mines, for 18th QM S & B Co and 585th Laundry	24 June 1944	25 June 1944
1078	344th Engrs.	Furnish two mine detectors to work with 51st Signal Bn for one week	23 June 1944	CANCELLED
1079	344th Engrs.	Pick up German bridging truck and Equipment on Highway 2 at A206690	24 June 1944	28 June 1944
1080	343rd Engrs.	Prepare plans, assemble materials and replace 70' DS Bailey bridge at E578818 with 2/way Class 40, one-way Class 70 bridge or Culvert	24 June 1944	26 June 1944
1081	337th Engrs.	Maintain Route 1 from A020192 to road junction E704363 - Route 74 from junction with Route 1 to Corps boundary E950458	25 June 1944	28 June 1944
1082	343rd Engrs.	Prepare plans, assemble materials and replace 80' DS Bailey bridge at E607806 with 2/way Class 40, 1/way Class 70 Bridge or Culvert	24 June 1944	1 July 1944
1083	343rd Engrs.	Prepare plans, assemble materials and replace 50' DS Bailey bridge at E613707 with 2/way Class 40, 1/way Class 70 bridge or culvert	24 June 1944	2 July 1944
1084	343rd Engrs.	Prepare plans, assemble materials and replace 80' DS Bailey bridge at E635670 with 2/way Class 40, 1/way Class 70 bridge or culvert	24 June 1944	CANCELLED
1085	343rd Engrs.	Relieve IV Corps Engrs of maintenance of Route 1 from Grossetto to E574818	23 June 1944	CANCELLED
1086	344th Engrs.	Remove Bailey bridges located at A260749, A27112 and A269735	25 June 1944	CANCELLED
1087	344th Engrs.	Maintain newly assigned roads as MSR. All previous assignments are cancelled	25 June 1944	CANCELLED
1088	337th Engrs.	Investigate bridge on Route 1B at A382140 and post with appropriate class and speed signs	24 June 1944	28 June 1944
1089	337th Engrs.	Improve entrance into ASP -447, vicinity Civitavecchia and Tarquinia	24 June 1944	25 June 1944
1090	175th Engrs.	Furnish detail of men and one platoon of dump trucks to load and transport to E-2-23, a 300' treadway float at E695370	24 June 1944	25 June 1944
1091	343rd Engrs.	Check area at E698264 for mines, for II Corps Headquarters	24 June 1944	26 June 1944
1092	92nd Engrs.	Furnish Bulldozer to QM Depot, Q5-45 vicinity of Civitavecchia	25 June 1944	29 June 1944
1093	337th Engrs.	Take over from 343rd Engrs operation of Beacon at E747468	25 June 1944	28 June 1944
1094	337th Engrs.	Furnish utility detail to Fifth Army Rest Center, Fatic Mussolini and take over work fr 343rd E	25 June 1944	4 July 1944

APPENDIX J
MAY 11TH TO THE ARMO

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
1095	337th Engrs.	Furnish two mine detector teams to report 54th Med Bn, relieve detail from 343rd Engrs	25 June 1944	5 July 1944
1096	337th Engrs.	Construct two Culverts and fill at A168032	26 June 1944	28 June 1944
1097	92nd Engrs.	Construct 50 prefab Hexagonal Culverts	26 June 1944	18 July 1944
1098	175th Engrs.	Furnish trucks and men to load approximately 8 loads of Bailey bridge parts, located at 4420270	27 June 1944	27 June 1944
1099	344th Engrs.	Furnish mine detectors squad to 1st Armd Signal Bn at E970790	27 June 1944	28 June 1944
1100	337th Engrs.	Furnish detail to blast latrine holes for 3rd Conv. Hosp, vic Grossetto	27 June 1944	28 June 1944
1101	175th Engrs.	Furnish 5 trucks to transport Bailey bridge parts to bridge Depot E-2-23	27 June 1944	28 June 1944
1102	337th Engrs.	Furnish D-7 to level area for gas station, vic. Orbetello, for 785th Engr P/L Co	27 June 1944	28 June 1944
1103	344th Engrs.	Inspect and render safe from mines and booby traps, Consorzio Warehouse only in Montefiascone	27 June 1944	27 June 1944
1104	344th Engrs.	Maintain newly assigned roads	26 June 1944	28 June 1944
1105	343rd Engrs.	Extend Airplane landing strip at Marina De Grossetto, 300'	26 June 1944	28 June 1944
1106	175th Engrs.	Take over maintenance of Route 2 from Viterbo to town limits of Montefiascone	28 June 1944	28 June 1944
1107	337th Engrs.	Take over maintenance of Route 1 from E574818- RJ E344857	28 June 1944	7 July 1944
1108	175th Engrs.	Furnish 6 x 6 for purpose of transporting maps from Rome to Fifth Army CP	27 June 1944	27 June 1944
1109	337th Engrs.	Prepare plans, assemble materials, and replace 70' DS Bailey bridge at E578818, with 2/way Class 40, 1/way Class 70 bridge or culvert	27 June 1944	30 June 1944
1110	337th Engrs.	Prepare plans, assemble materials, and replace 80' DS Bailey bridge at E624680, with 2/way Class 40, 1/way Class 70 bridge or culvert	27 June 1944	1 July 1944
1111	92nd Engrs.	Relieve 337th Engrs of maintenance of Route 1 from Civitavecchia to RJ A025188	28 June 1944	30 June 1944
1112	337th Engrs.	Construct two holdfast or ballards for tanker shore anchors; furnish bulldozer to clear rubble at Stefano, E629299	28 June 1944	28 June 1944
1113	343rd Engrs.	Grade road for 3rd Conv. Hosp, vic Grossetto	28 June 1944	CANCELLED
1114	343rd Engrs.	Install sinks, unblock drain to sewer and wire 6 rooms for 2nd Med Lab vic Grossetto	28 June 1944	CANCELLED
1115	343rd Engrs.	Construct convoy entrance and check area for mines at TCP 27, E703363	28 June 1944	CANCELLED
1116	343rd Engrs.	Transport Bailey bridge stacked on road at E679420	28 June 1944	CANCELLED
1117	92nd Engrs.	Construct convoy entrance and exit, and check area for mines at TCP 24, A169030	28 June 1944	30 June 1944
1118	CRE, 5 Corps Tps	Maintain newly assigned roads. Route 2 and 136 to be given priority	28 June 1944	8 July 1944
1119	337th Engrs.	Furnish shovel and operator to load trucks for IV Corps at mine stockpile at E168860	29 June 1944	7 July 1944
1120	92nd Engrs.	Maintain Route 1 from A025188 - E695375; Route 136 from A025188 - A145309; patrol Route 74 from E702361 - 955453; operate beacon at E747468	29 June 1944	2 July 1944
1121	337th Engrs.	Make recon. of following roads: Grossetto, Castiglione - Follonica - RJ with Route 1. Submit plans for overpass and Clover leaf at E368862	29 June 1944	3 July 1944
1122	92nd Engrs.	Maintain Route 2 from F656798 - Vetralla - A385390	29 June 1944	3 July 1944
1123	337th Engrs.	Construct 2/way overpass and Clover leaf to eliminate left hand turn at RJ V228882	28 June 1944	3 July 1944
1124	344th Engrs.	Open road from Corps boundary, E910640- RJ E993678 for light casual traffic	29 June 1944	24 July 1944
1125	92nd Engrs.	Replace Bailey bridge at E372985 with steel stringer bridge	25 June 1944	1 July 1944
1126	92nd Engrs.	Construct entrance and exit for convoy parking area and do minimum grading for TCP 26, A442250	30 June 1944	1 July 1944
1127	337th Engrs.	Maintain Route 1 from E695375 - E576818, for Class 70 traffic	29 June 1944	4 July 1944
1128	92nd Engrs.	Clear area of mines for 133rd Malaria Cont. Unit, 105th Station Hosp, F171952	30 June 1944	1 July 1944
1129	92nd Engrs.	Barricade damaged bridge on Route 1B, at A382140. Post signs	30 June 1944	1 July 1944
1130	387th Engrs.	Clear area and assist in setting up Engr Hqs CP, at A6688	1 July 1944	2 July 1944
1131	92nd Engrs.	Furnish one platoon to Engr Hqs, to assist in loading. Also 1-2 1/2 ton truck	1 July 1944	2 July 1944
1132	175th Engrs.	Furnish mine detector squad to Co. C, 1st Armd Signal Bn, at E970790	30 June 1944	2 July 1944
1133	175th Engrs.	Furnish two mine detector squads to 51st Signal Bn, at A180790	30 June 1944	2 July 1944
1134	337th Engrs.	Furnish Bulldozer to construct entrance across ditch for 38th Evac. Hosp, F495925	1 July 1944	2 July 1944
1135	337th Engrs.	Maintain Route 1 from E344857 - V180960	30 June 1944	30 July 1944
1136	337th Engrs.	Maintain Route 156 from RJ with Route 1 - V588950	3 July 1944	30 July 1944
1137	337th Engrs.	Furnish two mine detector teams to clear beaches for Fifth Army Rest Center at Marina De Grossetto at E530610	1 July 1944	3 July 1944
1138	337th Engrs.	Grade road for 3rd Conv. Hosp vic Grossetto	1 July 1944	7 July 1944
1139	337th Engrs.	Do following work for 2nd Med Lab. south of Grossetto: Install sinks, unblock drain to sewer and wire 6 rooms	1 July 1944	7 July 1944
1140	337th Engrs.	Construct Convoy entrance and exit, check area for mines at TCP 27 at E703363	1 July 1944	7 July 1944
1141	92nd Engrs.	Transport Bailey bridge stacked on road at E679420	1 July 1944	2 July 1944
1142	565th Field Coy	Develop and maintain Route 159 from junction with Route 1 at Venturina - Fratani, 3470000. Post road with signs	30 June 1944	1 July 1944
1143	387th Engrs.	Construct Rest Camp at Marina De Grossetto	1 July 1944	4 July 1944
1144	175th Engrs.	Maintain newly assigned roads	1 July 1944	12 July 1944
1145	175th Engrs.	Pick up approx. 10 loads of Bailey bridge material at A209684 on Route 2	2 July 1944	3 July 1944
1146	92nd Engrs.	Pick up and transport to bridge depot bailey and treadway material at A089502 and E126556	2 July 1944	6 July 1944
1147	175th Engrs.	Complete construction of 2/way bypass at A365424. Remove Bailey bridge	1 July 1944	7 July 1944
1148	175th Engrs.	Complete restoration of masonry arch bridge at A181714, by construction fill	2 July 1944	7 July 1944
1149	175th Engrs.	Repair masonry bridge at A244645 by filling blown spans and erecting Bailey bridges across two channel spans	1 July 1944	11 July 1944
1150	92nd Engrs.	Maintain newly assigned roads	1 July 1944	22 July 1944
1151	175th Engrs.	Complete fill at A097667. Remove Bailey bridge and return to Depot	2 July 1944	5 July 1944
1152	337th Engrs.	Maintain Route 71 from its junction with Route 1 to Roccastrada	3 July 1944	10 July 1944
1153	337th Engrs.	Establish and maintain Beacon at E4075	2 July 1944	11 July 1944
1154	337th Engrs.	Furnish mine clearance team to clear area for 549th Amb. Co at E550795	3 July 1944	3 July 1944
1155	92nd Engrs.	Dismantle and return to E2-23, 60' DS Bailey bridge at F875580	4 July 1944	4 July 1944

APPENDIX J
MAY 11TH TO THE ARMO

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
1156	175th Engrs.	Check area for mines at ASF, 0444, 0793010	3 July 1944	3 July 1944
1157	337th Engrs.	Construct FT Enclosure and lock up for US personnel at Picomino	3 July 1944	CANCELLED
1158	337th Engrs.	Pick up sections of treadway bridge, E775751	3 July 1944	7 July 1944
1159	337th Engrs.	Remove trestle treadway at E701678. Post signs	3 July 1944	5 July 1944
1160	337th Engrs.	Furnish mine detector crew to 62nd QM Bn RJ E470920, to sweep area for laundry unit	4 July 1944	7 July 1944
1161	387th Engrs.	Furnish two road patrols and sgt to report to Engr Hqs.	3 July 1944	4 July 1944
1162	Co A, 85th Engrs	Put all Bailey Pontons, motor bogs, trailers and boats into operational shape, including batteries	3 July 1944	6 July 1944
1163	337th Engrs.	Construct 2-way Cl. 24, 1-way Cl. 40 bridge or culvert, vic of Prata, V5593	3 July 1944	CANCELLED
1164	337th Engrs.	Maintain RJ 7324 from RJ V587950 to intersection w/Rt 73, 0610019	3 July 1944	10 July 1944
1165	92nd Engrs.	Prepare plan for small bridge and bypass at E641668	4 July 1944	7 July 1944
1166	175th Engrs.	Dispatch 2 graders for emergency work for 5th Army Hq	3 July 1944	4 July 1944
1167	337th Engrs.	Clear area of mines near overpass V238867	4 July 1944	4 July 1944
1168	175th Engrs.	Construct culvert & fill at V697836, to replace bombed bridge	3 July 1944	5 July 1944
1169	175th Engrs.	Construct Cl. 24 bridge and bypass or repair existing bridge for Cl. 24 traffic at V794832	3 July 1944	6 July 1944
1170	175th Engrs.	Maintain road network for 1-way traffic	3 July 1944	22 July 1944
1171	337th Engrs.	Dispatch 2 graders for emergency work at Fifth Army Hq	3 July 1944	4 July 1944
1172	175th Engrs.	Mine detector teams must be increased in order to clear 12 mile x 40' strip daily	3 July 1944	27 July 1944
1173	92nd Engrs.	Install refrigerator for 12th Med Supply Co, located 3 miles south of Grocetto	4 July 1944	7 July 1944
1174	175th Engrs.	Maintain following roads: Rt 146 fr RJ V804850 to RJ V792990. Rt 712B fr V792990 to RJ V705989 Rt 73 fr RJ 705989 to RJ 3690019	3 July 1944	22 July 1944
1175	92nd Engrs.	Straighten out "S" turn at E628674 and E452871, round off north-east corner at intersection No. 1 and 156 at E369861	5 July 1944	7 July 1944
1176	92nd Engrs.	Remove 80' TS Bailey Bridge at F875445. No replacement	5 July 1944	5 July 1944
1177	92nd Engrs.	Construct a track "pull-off" at E614713 for 100 trucks. Check area for mines	5 July 1944	7 July 1944
1178	92nd Engrs.	Construct turnout area for TCP 28 at N607796. Cut entrance and exit to convoy assembly area	4 July 1944	6 July 1944
1179	92nd Engrs.	Relieve 337th Engrs of Maint. of Rt 1, from bridge over Albegno River to junction with Rt 73 including (at E608796)	3 July 1944	10 Aug 1944
1180	337th Engrs.	Construct overpass to eliminate left hand turns at southbound traffic on Rt 1, vic of Follonica	4 July 1944	7 July 1944
1181	337th Engrs.	Construct bridge or culvert across Omone River at E648625	5 July 1944	7 July 1944
1182	92nd Engrs.	Improve bypass around Grocetto by filling 2 craters	4 July 1944	8 July 1944
1183	92nd Engrs.	Replace Bailey bridge on Rt 74 at A030460 and A088502, with Cl. 9, 1-way bridges	6 July 1944	8 July 1944
1184	337th Engrs.	Relieve Corps Engrs of maint of 1. fr V182964 to Ceoina (excl)	4 July 1944	5 Aug 1944
1185	337th Engrs.	Clear landing strip 50' wide for length of field at Siena Airfield at 0780220. Clear area 150' x 150' for parking	5 July 1944	5 July 1944
1186	175th Engrs.	Maintain Rt 2 from Radicofani to Monterani, Rt 146 from RJ V792991-0786071	5 July 1944	22 July 1944
1187	337th Engrs.	Maintain the following roads: Rt 159 fr junction w/Rt 1, V230885- RJ V469002, RJ 159-V325926-V391899, Rt 156, V488919-2469002	7 July 1944	30 July 1944
1188	337th Engrs.	Improve bypasses around treadways between Roccastrada and Monticiano-remove Treadways	7 July 1944	11 July 1944
1189	337th Engrs.	Maintain Rt. 56 fr RJ V48820-2460175	7 July 1944	10 July 1944
1190	337th Engrs.	Remove all obstructions on Rt. 156 to V480920, Rt. 7124 fr V480920 to junction w/Rt 73	6 July 1944	15 July 1944
1191	337th Engrs.	Make hourly traffic count of overpasses and clover leaf at Venturina (V2387) for 1 week	7 July 1944	16 July 1944
1192	92nd Engrs.	Make hourly traffic count at junction, Rt. 1 and 71 for 1 week	7 July 1944	15 July 1944
1193	92nd Engrs.	Maintain Rt 73 fr junction w/Rt 1-Roccastrada exclusive	8 July 1944	16 July 1944
1194	92nd Engrs.	Investigate and erect barriers and warning signs at collapsed bridge on Tuscania-Fianeano Rd.	6 July 1944	6 July 1944
1195	92nd Engrs.	Maintain Rt. 1 from junction w/Rt 73 RJ V368862	8 July 1944	10 Aug 1944
1196	92nd Engrs.	Maintain Rt. 2 from S. Lorenzo - Radicofani inclusive	8 July 1944	25 July 1944
1197	92nd Engrs.	Clear mines for parking area at intersection at Route 1 and 1B, TCP 24	7 July 1944	24 July 1944
1198	337th Engrs.	Install guide posts across fill on bypass & then remove 60' DS Bailey bridge, V168929	8 July 1944	13 July 1944
1199	337th Engrs.	Pick up 6 pieces of treadway bridge at E525909	8 July 1944	10 July 1944
1200	175th Engrs.	Clear airfield of mines, vic 0745105, fill craters and level runway for Surgeon General, Air Evac	7 July 1944	12 July 1944
1201	337th Engrs.	Furnish D.7 w/oper to assist British Engrs to construct bypass, vic Frosini	8 July 1944	10 July 1944
1202	175th Engrs.	Maintain Rt. 2 from Monteroni-Siena (excl), Rt. 146 from 0786071 to junction w/Rt. 73	8 July 1944	22 July 1944
1203	337th Engrs.	Pick up 4 pieces of Treadway at following locations: V606965, V618999, 0444005,	7 July 1944	11 July 1944
1204	175th Engrs.	Clear mines for 817th M at 0655233	9 July 1944	10 July 1944
1205	175th Engrs.	Pick up Bailey bridge material on Rt. 146 and return to CEF Depot at Siena	9 July 1944	10 July 1944
1206	175th Engrs.	Pick up Bailey bridge material on Rt. 2 from Aquapendente-Siena	9 July 1944	9 July 1944
1207	175th Engrs.	Construct culvert and fill on Rt. 2 at 0885105	9 July 1944	15 July 1944
1208	175th Engrs.	Improve and gravel bypass and construct culvert at 0007914. Remove Bailey bridge.	10 July 1944	14 July 1944
1209	175th Engrs.	Replace Bailey bridge at 0905080 with culvert or "A" frame type bridge, Cl. 40, 1-way, Cl. 24, 2-way	9 July 1944	10 July 1944
1210	175th Engrs.	Construct Cl. 40, 1-way, Cl. 24-2-way, semi-permanent bridge to replace Bailey bridge at V952976	9 July 1944	13 July 1944
1211	175th Engrs.	Remove debris from Rt. 2, thru Sarrevalle, check and revise classification of damaged masonry bridge and erect signs	10 July 1944	22 July 1944
1212	175th Engrs.	Improve 2 bypasses around town of S. Quirico D'Orcia for 1-way traffic	10 July 1944	21 July 1944
1213	175th Engrs.	Improve bypass for 2-way traffic and construct culvert on Rt. 146 at V803915	8 July 1944	10 July 1944
1214	175th Engrs.	Replace Bailey bridge on Rt. 146 at V800960 w/2-way bypass & culvert.	8 July 1944	10 July 1944
1215	337th Engrs.	Repair masonry arch bridge at 2443005 and remove 40' SS Bailey bridge	10 July 1944	14 July 1944
1216	175th Engrs.	Improve bypass and construct 2-way culvert on Rt. 146 at V792992	9 July 1944	11 July 1944

APPENDIX J
MAY 11TH TO THE ARMO

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
1217	175th Engrs.	Remove Bailey bridge at E812845. Erect signs	9 July 1944	10 July 1944
1218	175th Engrs.	Replace Bailey bridge at W028899 w/culvert and fill	10 July 1944	21 July 1944
1219	92nd Engrs.	Construct culvert and fill on Rt. 2 at A192736	9 July 1944	21 July 1944
1220	175th Engrs.	Remove Bailey bridge at A192736,	8 July 1944	11 July 1944
1221	175th Engrs.	Improve bypass for 2-way traffic and construct culvert at W068654	9 July 1944	23 July 1944
1222	175th Engrs.	Improve bypass and construct culvert for low level bridge on Rt. 2 at A132842	10 July 1944	11 July 1944
1223	92nd Engrs.	Remove 2 floating Bailey bridges across Albegna River at E595374	8 July 1944	11 July 1944
1224	175th Engrs.	Install route marker signs on all assigned routes and FEC principle supply routes	10 July 1944	12 July 1944
1225	337th Engrs.	Furnish crushed rock to 39th Engrs.	10 July 1944	14 July 1944
1226	337th Engrs.	Install 3 culverts and clear ditch for 56th Evac Hosp, V263927	11 July 1944	11 July 1944
1227	92nd Engrs.	Denine area for gas bulk storage at E670447	10 July 1944	18 July 1944
1228	39th Engrs.	Furnish 1 company and mine clearing teams to clear new CP of mines and improve roads	11 July 1944	20 July 1944
1229	92nd Engrs.	Pick up Bailey bridge panel at CP Cub Field	11 July 1944	15 July 1944
1230	337th Engrs.	Improve dip on Rt. 156 at O474089	10 July 1944	14 July 1944
1231	92nd Engrs.	Check all bridges, culverts and drainage on Rt. 1. Submit plans necessary to maintain as all weather route	11 July 1944	15 July 1944
1232	92nd Engrs.	Replace culvert at G386866 by culvert or bridge to take care of flow	11 July 1944	22 July 1944
1233	337th Engrs.	Clear area of mines for new CP and construct necessary roads	11 July 1944	13 July 1944
1234	92nd Engrs.	Grade area for Q5-16 Gas Dump, E614796	12 July 1944	12 July 1944
1235	337th Engrs.	Check all drainage structures on Rt. 1 and install or lower culverts where necessary	11 July 1944	24 July 1944
1236	337th Engrs.	Widen "Y" junction, at Rt. 156 and 159, Q469002, to permit single swing turn from 1 to the other	11 July 1944	12 July 1944
1237	92nd Engrs.	Maintain newly assigned roads: From Paganic to Ariccidoese, to RW A246642 and S. Flora to Piangastagnaio to A181714	12 July 1944	CANCELLED
1238	337th Engrs.	Construct Cl. 70, 1-way, Cl. 40, 2-way, permanent steel and timber bridge across Cecina ^d at site of demolished bridge	12 July 1944	30 July 1944
1239	337th Engrs.	Construct Cl. 70, 2-way, Cl. 40, 2-way, pile bent bridge across Cornia River, Q240870	13 July 1944	22 July 1944
1240	92nd Engrs.	Furnish 1 plat. to assist in striking and setting up Engr Rq CP.	13 July 1944	15 July 1944
1241	337th Engrs.	Furnish road patrol w/oper to grade entrance and exit roads for E2-28, at Q383234	14 July 1944	16 July 1944
1242	337th Engrs.	Pick up roadway trestles on Rt. 68 between Rt. 1- Volterra	15 July 1944	16 July 1944
1243	337th Engrs.	Restore all levees, in assigned area, to original condition	15 July 1944	3 Aug 1944
1244	92nd Engrs.	Restore all levees, in assigned area, to original condition	15 July 1944	11 Aug 1944
1245	92nd Engrs.	Take over, patrol of Rt. 73 from Roccastrada-Monticiano	14 July 1944	17 July 1944
1246	92nd Engrs.	Prepare plans, assemble material, construct 2-way Cl. 40, 1-way Cl. 70, bridge across Ombrone River on Rt. 1 south of Grocetta	14 July 1944	18 July 1944
1247	92nd Engrs.	Construct entrance and exit roads for convoy parking on Rt. 1 at Km 167, across road from convoy rest area	15 July 1944	15 July 1944
1248	92nd Engrs.	Prepare plans, assemble materials, construct 2-way Cl. 40, 1-way Cl. 70 bridge on Rt. 1, at E607800	15 July 1944	18 July 1944
1249	92nd Engrs.	Construct 500 type G9 and 500 type S-1 wooden signs for Transportation Section	15 July 1944	30 July 1944
1250	CRE 5 Corps Tps	Improve or construct bypasses around weak bridges or bottlenecks on Rt. 2 from Siena-Buonconvento., exclusive of bridge, V952976	15 July 1944	15 July 1944
1251	CRE 5 Corps Tps	Maintain Rt. 73 from Roccastrada-Monticiano	16 July 1944	14 Aug 1944
1252	337th Engrs.	Maintain and patrol road from RW V502970-RW w/Rt 73 at Q676042	16 July 1944	30 July 1944
1253	175th Engrs.	Increase rating of bridge under construction at V952976 to Cl. 70, 1-way, Cl. 40, 2-way	16 July 1944	23 July 1944
1254	337th Engrs.	Furnish mine instruction team to work with 54 Mine Section (British)	17 July 1944	20 July 1944
1255	92nd Engrs.	Install 3 obstacle courses in vic of Grocetta	16 July 1944	25 July 1944
1256	337th Engrs.	Enlarge culvert on Rt. 156, approx V440850	17 July 1944	22 July 1944
1257	337th Engrs.	Check, w/Transportation Section the signing of 8th Army Supply Route (posting for 1-way traffic etc)	17 July 1944	23 July 1944
1258	337th Engrs.	Clear roads to beach, and clear and mark area approx 200 yds long on beach at Q144193	17 July 1944	18 July 1944
1259	337th Engrs.	Check and clear mines for bivouac area of 101 MP Co., Q183180, Cecina	17 July 1944	28 July 1944
1260	337th Engrs.	Clear sufficient path to allow Malaria Control Units to spray creek at 5th Army CP's, Q185070 and Q160175	18 July 1944	20 July 1944
1261	337th Engrs.	Check and clear mines from bivouac area for 405th Engrs., at Q110306	12 July 1944	19 July 1944
1262	337th Engrs.	Maintain following road nets: Rt 68, 6821 and 6824 (Rt 68 to be MSR)	18 July 1944	10 Aug 1944
1263	337th Engrs.	Furnish mtd grader w/oper to grade rough spots on cub landing strip at 5th Army CP Fwd	18 July 1944	19 July 1944
1264	92nd Engrs.	Construct 2-way Cl. 40, 1-way Cl. 70, semipermanent steel and timber bridge across Ombrone R. South of Grocetta	18 July 1944	8 Sept 1944
1265	92nd Engrs.	Construct 2-way Cl. 40, 1-way Cl. 70, bridge at E606800	18 July 1944	20 July 1944
1266	92nd Engrs.	Open drainage ditches at Km 172.8 (E653567) and Km 168.8 (E653539) to allow water to flow thru undamaged bridges	19 July 1944	2 Aug 1944
1267	92nd Engrs.	Construct culvert at Km 169.6 (E654548)	19 July 1944	1 Aug 1944
1268	387th Engrs.	Furnish bulldozer to construct road and crossing for 36th Evac Hosp, at Q173148	18 July 1944	25 July 1944
1269	337th Engrs.	Check and clear mines from bldg and bivouac area for Radio Station, Societa Solvoiet, Rosignano	19 July 1944	20 July 1944
1270	337th Engrs.	Furnish mine detector team to clear area at Air Strip near CP for 886 ANES British	19 July 1944	20 July 1944
1271	337th Engrs.	Oil road in front of 615th Holding Co., at Cecina Airport	10 Aug 1944	11 Aug 1944
1272	92nd Engrs.	Remove obstructions and lift gates for malaria control	21 July 1944	2 Aug 1944
1273	175th Engrs.	Construct fill to replace span of arch bridge at Q695013	17 July 1944	22 July 1944
1274	175th Engrs.	Construct culvert at Q698020 to replace b'omp bridge	17 July 1944	20 July 1944
1275	175th Engrs.	Construct culvert on Rt. 73 at Q679048 to replace blown bridge	17 July 1944	20 July 1944

APPENDIX J
MAY 1944 TO THE ARMO

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
1276	337th Engrs.	Construct sectional screens for 15th Evac Hosp. at Q3833	21 July 1944	30 July 1944
1277	337th Engrs.	Check beach area for 46th Survey Co. at Q107295	22 July 1944	23 July 1944
1278	92nd Engrs.	Construct 4 standard signs for 2750th Engr Co., & 1 lge upright type	22 July 1944	23 July 1944
1279	337th Engrs.	Grade ball diamond for 115th QM Bn., at V190228	22 Aug 1944	23 Aug 1944
1280	337th Engrs.	Construct cub landing strip. Strip to be minimum width of 30' and length 1500'	22 July 1944	23 July 1944
1281	175th Engrs.	(420 Band) Give band concert at Engr. Hq	23 July 1944	24 July 1944
1282	337th Engrs.	Construct 2-way Cl. 40, 1-way Cl. 70, semi-permanent bridge to replace Bailey bridge at Q268235	23 July 1944	30 July 1944
1283	337th Engrs.	Send booby trap expert to report at Castiglioneccello, Q0931, for purpose of checking villas	23 July 1944	24 July 1944
1284	337th Engrs.	Repair shoulders of road from Q196050-Q191048	23 July 1944	25 July 1944
1285	175th Engrs.	Furnish mine detector and to check and make safe area 100 x 200 yds for TCP 31, Q676042	23 July 1944	23 July 1944
1286	175th Engrs.	Furnish personnel as mine detection unit to clear path 20' wide from 1 mile south of Cavalero to Leghorn for 31st Signal Bn	23 July 1944	25 July 1944
1287	337th Engrs.	Improve RJ 68 and 6822 at Q30211 to permit easy swing	23 July 1944	25 July 1944
1288	337th Engrs.	Maintain and patrol Rd 163 fr Rt. 1 to Rt. 68. Sharp curve to be eased and metalled at Q256168	23 July 1944	5 Aug 1944
1289	337th Engrs.	Clear area for 2nd Aux. Surg. Co. at Q143203	23 July 1944	23 July 1944
1290	337th Engrs.	Furnish mine clearance detail to work at Co A, 51st Sig Bn from Poggibonai to Florence	24 July 1944	25 Aug 1944
1291	337th Engrs.	Construct Cl. 70, 1-way, Cl. 90, 2-way semi-permanent bridge demolished bridge at Q233230	24 July 1944	28 July 1944
1292	337th Engrs.	Maintain Rt. 68 from Saline, East to Corps boundary, at Costel S. Gimignano as cl. 70 road	24 July 1944	10 Aug 1944
1293	337th Engrs.	Improve bypasses on Rt. 6821 to carry 2-way traffic	23 July 1944	10 Aug 1944
1294	337th Engrs.	Improve bypasses on Rt. 6824 from Saline - RJ Q400150, for 2-way dry weather traffic	23 July 1944	27 July 1944
1295	337th Engrs.	Repair by masonry construction, arch bridge at Q350400	23 July 1944	10 Aug 1944
1296	175th Engrs.	Grade cub landing strip for IV Corps, at Q028427	23 July 1944	25 July 1944
1297	Co E, 84th Engrs.	Spray and paint tents for Adv. Hq AAI, at A1645	17 July 1944	24 July 1944
1298	337th Engrs.	Send distributor w/oper to 1108th Gp, near Pecioli	24 July 1944	25 July 1944
1299	175th Engrs.	Clear mines from area for Radar Station at Q115227	24 July 1944	25 July 1944
1300	175th Engrs.	Maintain Rt. 1 from junction w/Rt. 68 near Cecina, to Leghorn exclusive, as Cl. 70, all weather highway	25 July 1944	24 Aug 1944
1301	175th Engrs.	Repair transmission line from Solvay Plant to transformer station at Leghorn	24 July 1944	3 Aug 1944
1302	92nd Engrs.	Do necessary work at Fifth Army CP	26 July 1944	28 July 1944
1303	175th Engrs.	Furnish 2 mtd graders w/oper to report to 1108th Gp.	26 July 1944	6 Aug 1944
1304	337th Engrs.	Furnish bulldozer to report to 12th Med Depot, Q378232	26 July 1944	27 July 1944
1305	337th Engrs.	Clear mines from area and grade entrance and exit roads for Engr Depot at Q225235	28 July 1944	1 Aug 1944
1306	92nd Engrs.	Move refrigerator for 12th Med Depot to Q378232	28 July 1944	28 July 1944
1307	175th Engrs.	Clear mines for Radar Station at Q035420	28 July 1944	29 July 1944
1308	92nd Engrs.	Furnish rd patrol for 8th Repl. Depot, V300970	27 July 1944	9 Aug 1944
1309	337th Engrs.	Smooth and re-work entrance road for 32nd Field Hosp, Q406255	28 July 1944	10 July 1944
1310	92nd Engrs.	Construct signs for Transportation Section	28 July 1944	11 Aug 1944
1311	337th Engrs.	Do necessary work for Transportation Section	28 July 1944	30 July 1944
1312	92nd Engrs.	Send officer (w/knowledge of electricity) to examine pumping station near E2-27, Piombino	29 July 1944	30 July 1944
1313	337th Engrs.	Improve surface of Rt. 68 from junction w/Rt. 1 to Saline	30 July 1944	10 Aug 1944
1314	92nd Engrs.	Maintain road net, also maintenance of 3 overpasses	31 July 1944	10 Aug 1944
1315	175th Engrs.	Maintain Rt. 1A (165) fr Rt. 1 to junction w/Rt. 171	30 July 1944	26 Aug 1944
1316	337th Engrs.	Do work for depot Q5-34, located at Q1823	31 July 1944	1 Aug 1944
1317	92nd Engrs.	Perform necessary electrical work for operation of Piombino Pumping Station	30 July 1944	3 Aug 1944
1318	92nd Engrs.	Remove dam across Fiume Pecora	31 July 1944	5 Aug 1944
1319	337th Engrs.	Construct 9 operating tables for 33rd Field Hosp.	31 July 1944	9 Aug 1944
1320	337th Engrs.	Send personnel, which marked minefield, to remark Fifth Army CP Minefields	31 July 1944	6 Aug 1944
1321	175th Engrs.	Furnish bulldozer for No. 1 MORU, to fill trench and dug out, at Q035420	30 July 1944	30 July 1944
1322	92nd Engrs.	Furnish bulldozer for 1 day to assist CVS in constructing rifle range near Grosseto	30 July 1944	1 Aug 1944
1323	337th Engrs.	Oil roads for 94th Evac Hosp, Rt Q146212, 15th Evac, Q370322, and 32nd Field Hosp, Q406255	2 Aug 1944	8 Aug 1944
1324	337th Engrs.	Furnish bulldozer to 3rd Conv Hosp, at Q358408	1 Aug 1944	9 Aug 1944
1325	337th Engrs.	Construct mound for gas loading point, rear CP, 5th Army Hq	7 Aug 1944	9 Aug 1944
1326	337th Engrs.	Maintain newly assigned roads	1 Aug 1944	3 Aug 1944
1327	92nd Engrs.	Check, mark, and record all minefields in assigned area	1 Aug 1944	25 May 1945
1328	337th Engrs.	Check, mark, and record all minefields in assigned area	1 Aug 1944	10 Aug 1944
1329	175th Engrs.	Check, mark, and record all minefields in assigned area	1 Aug 1944	11 Aug 1944
1330	337th Engrs.	Perform work for Ord ASP at Q620410	2 Aug 1944	8 Aug 1944
1331	709 A&W CO.	Erect 3 prefab huts for 2nd Med Lab., at Q358408	2 Aug 1944	8 Aug 1944
1332	92nd Engrs.	Move transformer for AMG from Castelnuovo to Larderella	2 Aug 1944	3 Aug 1944
1333	92nd Engrs.	Remove overpass at W368862, Piononica	3 Aug 1944	3 Aug 1944
1334	709 A & W CO.	Remission 6 rolls coir setting and lay road in CP area	2 Aug 1944	4 Aug 1944
1335	337th Engrs.	Furnish grader with operator to grade unloading area at Depot E2-10 at Q280226	2 Aug 1944	3 Aug 1944
1336	92nd Engrs.	Maintain newly assigned roads: Rt. 1 fr S. Vincenzo to junction w/Rt. 68; patrol Rt. 163 from RJ at Q193150 to RJ at Q303193	9 Aug 1944	27 Aug 1944
1337	337th Engrs.	Furnish grader w/operator to improve roads at new CP area	3 Aug 1944	3 Aug 1944
1338	175th Engrs.	Draw and install 15 KW Generator in Medical Rest Center, Castiglioneccello	3 Aug 1944	4 Aug 1944
1339	2750th Engrs.	Furnish asphalt distributor w/operator for approx 10 days	3 Aug 1944	13 Aug 1944
1340	175th Engrs.	Furnish mine clearing team to FNB, at Q028427	3 Aug 1944	6 Aug 1944
1341	175th Engrs.	Maintain newly assigned roads: Rt. 1 from Cecina to Leghorn; Routes 170, 171, 173, 165 and 682a; 68 from Cecina to Riparbella	5 Aug 1944	7 Aug 1944
1342	2750th Engrs.	Furnish crane w/oper to 92nd Engrs at M004024	3 Aug 1944	4 Oct 1944

APPENDIX J
MAY 11TH TO THE ARNO

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
1343	337th Engrs.	Furnish mine team to check area for Q: Dump Q-5-32 at Q552526	4 Aug 1944	5 Aug 1944
1344	337th Engrs.	Furnish mine team to check area for Q: Dump Q-5-35, at Q571489	4 Aug 1944	5 Aug 1944
1345	337th Engrs.	Prepare area for 5th Army Pwd CP	4 Aug 1944	11 Aug 1944
1346	337th Engrs.	Prepare area for 5th Army Gear CP	5 Aug 1944	11 Aug 1944
1347	2750th Engrs.	Continue equipment release of Quickway Crane and 2-20 ton trailers to 337th Engrs.	5 Aug 1944	15 Aug 1944
1348	2750th Engrs.	Furnish 1 Air Compressor, W499372 to 337th Engrs.	5 Aug 1944	15 Aug 1944
1349	92nd Engrs.	Furnish 785th Engrs w/D-8 tractor and oper	5 Aug 1944	10 Aug 1944
1350	175th Engrs.	Construct all weather traffic elimination circle near junction, Rts. 1, 68, 165	5 Aug 1944	14 Aug 1944
1351	337th Engrs.	Improve RJ Routes 68 & 6824 at Saline	6 Aug 1944	8 Aug 1944
1352	2750 Engrs.	Furnish Oil Distributor to 337th Engrs.	5 Aug 1944	10 Aug 1944
1353	337th Engrs.	Furnish Oil distributor to oil road for 56th Evac. Hoop	8 Aug 1944	9 Aug 1944
1354	2750 Engrs.	Furnish 1 D-8 tractors to 337th Engrs.	6 Aug 1944	10 Aug 1944
1355	2750 Engrs.	Furnish Prime Mover to 2nd Bn. 175th Engrs at Castiglione della Pescaia to haul material for bridge installations on Route 1	7 Aug 1944	11 Aug 1944
1356	337th Engrs.	Furnish mine detector team to sweep area for car-turnaround at General's private beach	7 Aug 1944	8 Aug 1944
1357	337th Engrs.	Check area for mines for 180th Signal Repair Co. at Q606455	7 Aug 1944	8 Aug 1944
1358	337th Engrs.	Make recon. in vic. Certaldo and Poggibonsi for location of an Air Evac. strip	8 Aug 1944	9 Aug 1944
1359	337th Engrs.	Furnish Air compressor and blasting crew and equipt. to drill sumps for 15th Evac. Hoop.	8 Aug 1944	10 Aug 1944
1360	337th Engrs.	Furnish mine instruction team for one day course for Co. A, 719th Railway Op. Bn.	12 Aug 1944	12 Aug 1944
1361	337th Engrs.	Construct Cub field for Army CP	9 Aug 1944	DISCONTINUED
1362	337th Engrs.	Check area at 56th Evac. Hoop, and do work required to get ambulances out during wet weather	8 Aug 1944	10 Aug 1944
1363	73rd CRE Tks	Maintain road network	8 Aug 1944	10 Aug 1944
1364	175th Engrs.	Repair and improve Route 6921 for 1-way traffic	8 Aug 1944	9 Aug 1944
1365	337th Engrs.	Furnish bulldozer to cut entrance roads within ASP 419 at Q670601	10 Aug 1944	12 Aug 1944
1366	92nd Engrs.	Construct cub field at CP location	9 Aug 1944	CANCELLED
1367	92nd Engrs.	Take over from 337th maintenance of road net	9 Aug 1944	12 Sept 1944
1368	92nd Engrs.	Furnish mine detector squad to check for mines for 1554th Engr Evy Pon. Bn.	9 Aug 1944	11 Aug 1944
1369	709th Artisan Tks	Furnish cub landing field at CP	8 Aug 1944	29 Aug 1944
1370	2750th Engr Lt Equip. Co.	Furnish primary and secondary units of Rock crusher to quarry at Q665710 to work for 73 CRE Tks	9 Aug 1944	19 Aug 1944
1371	337th Engrs.	Furnish 1 Arc welder w/operator to 92nd Engrs to work on Ombone River Bridge	10 Aug 1944	15 Aug 1944
1372	2750 Engr L.E. Co	Furnish equipment for work with 92nd Engrs, (2 graders - 1 shovel)	9 Aug 1944	12 Aug 1944
1373	2750 Engr L.E. Co	Furnish equip. to 175th Engrs: 2 Carryalls - 1 grader, 1 plu. and 1 secondary rock crusher - 1-3/4 yd shovel	9 Aug 1944	10 Sept 1944
1374	73 CRE Tks	Maintain road from V325925 to E392898	10 Aug 1944	15 Aug 1944
1375	92nd Engrs.	Send detail to PX Thae. to pick up mine and check areas, at S. Vincenzo	9 Aug 1944	10 Aug 1944
1376	337th Engrs.	Construct roads for 8th Evac. Hoop	10 Aug 1944	22 Aug 1944
1377	92nd Engrs.	Furnish mine detector team to open path, vic. Transportation Hq, Q295240	10 Aug 1944	10 Aug 1944
1378	2750 Engrs.	Furnish crane, Q040246, to 92nd Engrs, Grossetto	9 Aug 1944	10 Aug 1944
1379	337th Engrs.	Grade area for Engr Hq & construct fence at new Fifth Army CP	12 Aug 1944	DISCONTINUED
1380	175th Engrs.	Pick up and return to E 228, all Bailey bridge parts left at bridge sites in your area	11 Aug 1944	11 Aug 1944
1381	2750 Engrs.	Furnish welding machine to 405th Engrs.	10 Aug 1944	22 Aug 1944
1382	337th Engrs.	Prepare plans and assemble materials for 2-way, Class 70 bridge across Arno River	11 Aug 1944	27 Aug 1944
1383	337th Engrs.	Dismantle and remove prefabricated girders.	11 Aug 1944	22 Aug 1944
1384	92nd Engrs.	Furnish mine crew to check area for 473 Engr Maint. Co. at Q278273	12 Aug 1944	12 Aug 1944
1385	92nd Engrs.	Furnish mine clearing detail at Special Service Thae. at Cecina	11 Aug 1944	12 Aug 1944
1386	337th Engrs.	Grade 2 roads for QM Depot, Q-528 at Q330463	11 Aug 1944	12 Aug 1944
1387	92nd Engrs.	Furnish grader w/operator to improve roads at Fifth Army CP	12 Aug 1944	13 Aug 1944
1388	2750 Engrs.	Furnish concrete mixer M-13638 to MRS at Cecina RR station	12 Aug 1944	1 Sept 1944
1389	337 Engrs.	Construct 1-way, Class 70, 2-way Class 40 bridge to replace fill on Route 65	12 Aug 1944	2 Sept 1944
1390	2750 Engrs.	Furnish rock crusher, and 3/4 yd shovel to 337th Engrs.	11 Aug 1944	3 Sept 1944
1391	2750 Engrs.	Continue equipt. release of Quickway crane to 337th Engrs	15 Aug 1944	2 Sept 1944
1392	2750 Engrs.	Continue equipt. release of Quickway crane to 92nd Engrs.	15 Aug 1944	1 Sept 1944
1393	2750 Engrs.	Furnish distributor to 175th Engrs.	12 Aug 1944	5 Sept 1944
1394	2750 Engrs.	Furnish grader to 337th Engrs.	12 Aug 1944	7 Sept 1944
1395	337th Engrs.	Build 75 additional yds of road at 56th Evac Hoop, at Q381454	13 Aug 1944	19 Aug 1944
1396	337th Engrs.	Furnish mine clearing detail to re-check ASP 18, Q620430	14 Aug 1944	15 Aug 1944
1397	337th Engrs.	Maintain Route 68 from Volterra to Colle	13 Aug 1944	27 Aug 1944
1398	709 Art & Svc Co	Construct portable boxing ring at Special Service Office, Fifth Army	8 Aug 1944	26 Aug 1944
1399	2750 Engrs.	Furnish grader to 92nd Engrs.	14 Aug 1944	4 Sept 1944
1400	2750 Engrs.	Furnish concrete mixer to 337th Engrs.	14 Aug 1944	6 Sept 1944
1401	337th Engrs.	Maintain and patrol all newly assigned roads	14 Aug 1944	22 Aug 1944
1402	92nd Engrs.	Furnish detail and Quick Way crane to unload piling at Grosseto	15 Aug 1944	18 Aug 1944
1403	2750 Engrs.	Continue equipt. release of Quickway to 92nd Engrs.	15 Aug 1944	8 Sept 1944
1404	92nd Engrs.	Pick up and transport Bailey bridge panels and other parts lying on Route 163 at Q265170 to E-228	15 Aug 1944	15 Aug 1944
1405	92nd Engrs.	Construct 2 folding tables for Engr. Hq.	15 Aug 1944	27 Aug 1944
1406	92nd Engrs.	Widen and improve entrance road for 477th Ord Evac. Co	15 Aug 1944	17 Aug 1944
1407	2750 Engrs.	Furnish secondary rock crusher to 92nd Engrs	15 Aug 1944	20 Aug 1944
1408	92nd Engrs.	Improve entrance road to 101 LP area	16 Aug 1944	18 Aug 1944
1409	175th Engrs.	Prepare plans and assemble materials for 2 way Class 70 bridge across Arno, vic. Route 1	15 Aug 1944	18 Aug 1944
1410	2750th Engrs.	Release Quickways to 175th Engrs	16 Aug 1944	20 Aug 1944

APPENDIX J
MAY 11TH TO THE ARNO

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
1411	2750th Engrs.	Continue release of asphalt distributor to 175th Engrs	15 Aug 1944	30 Aug 1944
1412	2750th Engrs.	Continue release of cement mixer to MRS	15 Aug 1944	1 Sept 1944
1413	92nd Engrs.	Widen road junction at Q186221 to permit full swing of all trucks	17 Aug 1944	18 Aug 1944
1414	92nd Engrs.	Furnish one case of explosives and detonating equip. to loosen material in bridge at Q350400	17 Aug 1944	19 Aug 1944
1415	337th Engrs.	Furnish electric welder with operator to 92nd Engrs	18 Aug 1944	25 Aug 1944
1416	2750th Engrs.	Continue release on 3 D-8 tractors to 338th Engrs	16 Aug 1944	24 Sept 1944
1417	175th Engrs.	Prepare plans and assemble materials for bridges across canal N. of Leshorn, approx. Q050540	18 Aug 1944	30 Aug 1944
1418	337th Engrs.	Construct 2-way Class 40, 1-way Class 70 bridge on Route 68 at Q679309	18 Aug 1944	29 Aug 1944
1419	2750th Engrs.	Furnish distributor to 73 CRE	18 Aug 1944	15 Sept 1944
1420	337th Engrs.	Construct Class 40/70 bridge on Route 68 at Q685312	17 Aug 1944	15 Sept 1944
1421	92nd Engrs.	Construct entrance and grade storage area for 655th Signal Bn at Piombino	18 Aug 1944	20 Aug 1944
1422	337th Engrs.	Clear area for mines at Ord. Dump, Q808521, vic Spadaluza	18 Aug 1944	28 Aug 1944
1423	337th Engrs.	Open Route 6832 and 265 for 1-way traffic from S. Gimignano - Poggibonsi	19 Aug 1944	22 Aug 1944
1424	337th Engrs.	Clear area, vic. Casciano for OM Class 1 and 3 depot at Q740571	19 Aug 1944	23 Aug 1944
1425	337th Engrs.	Prepare plans for replacing all Bailey bridges on Route 2 from Poggibonsi to Casciano with Class 40 bridges, 2-way/Class 70 bridges, 1-way	19 Aug 1944	2 Sept 1944
1426	92nd Engrs.	Construct Culvert on Route 163 at Q255170 and install drain at Q270173	20 Aug 1944	3 Sept 1944
1427	337th Engrs.	Furnish mine instruction team to instruct Officer personnel of Fifth Army CP (Fwd and Rear)	21 Aug 1944	23 Aug 1944
1428	337th Engrs.	Construct Class 40 Bailey bridge at Q685360 for all weather traffic	19 Aug 1944	22 Aug 1944
1429	337th Engrs.	Prepare area for Fifth Army CP	19 Aug 1944	21 Aug 1944
1430	337th Engrs.	Furnish shovel w/operator to load rock for IV Corps	19 Aug 1944	29 Aug 1944
1431	92nd Engrs.	Construct sink for Topo Sec.	21 Aug 1944	24 Aug 1944
1432	337th Engrs.	Maintain newly assigned roads as MSR	20 Aug 1944	23 Aug 1944
1433	175th Engrs.	Maintain newly assigned roads as MSR	20 Aug 1944	30 Aug 1944
1434	92nd Engrs.	Remove 80' DS Bailey bridge at Q517117	20 Aug 1944	22 Aug 1944
1435	73rd CRE	Construct 2-way timber culvert on Route 6831 at V540980	20 Aug 1944	CANCELLED
1436	73rd CRE	Remove 80' Bailey bridge at 2441006 on Route 159	22 Aug 1944	24 Aug 1944
1437	2750th Engrs.	Furnish Welding machine to 92nd Engrs. at E548626	22 Aug 1944	22 Aug 1944
1438	2750th Engrs.	Furnish compressor to 337th Engrs	22 Aug 1944	23 Aug 1944
1439	337th Engrs.	Prepare Engr Eqs. area in new Fifth Army CP	23 Aug 1944	26 Aug 1944
1440	337th Engrs.	Strengthen bridge across river at Q751585	23 Aug 1944	25 Aug 1944
1441	337th Engrs.	Construct necessary entrance and interior roads for ASP Q-419 at Q671603	23 Aug 1944	25 Aug 1944
1442	175th Engrs.	Contact IV Corps and assist in construction of Rest Camp	22 Aug 1944	25 Aug 1944
1443	2750th Engrs.	Continue maint. release on towed grader to 92nd Engrs	21 Aug 1944	25 Aug 1944
1444	92nd Engrs.	Furnish mine detail to check area S.C.M. vic. Q185120	22 Aug 1944	23 Aug 1944
1445	337th Engrs.	Construct roads and grade area for 16th Evac. Hosp at Q725526	23 Aug 1944	26 Aug 1944
1446	337th Engrs.	Construct roads and grade area for 8th Evac. Hosp at Q750590	23 Aug 1944	28 Aug 1944
1447	2750th Engrs.	Furnish tractor D-8 to 337th Engrs.	23 Aug 1944	24 Aug 1944
1448	"B" AGRE	Maintain newly assigned roads	23 Aug 1944	17 Sept 1944
1449	337th Engrs.	Maintain newly assigned Roads as MSR	23 Aug 1944	12 Sept 1944
1450	2750th Engrs.	Furnish distributor to 92nd Engrs	23 Aug 1944	10 Sept 1944
1451	2750th Engrs.	Furnish concrete mixer to MRS	24 Aug 1944	11 Sept 1944
1452	337th Engrs.	Furnish mine instruction team to train unit of Brazilian Expeditionary Force	25 Aug 1944	30 Aug 1944
1453	1554th Engrs.	Transport Bvy. ponton Equip. from E2-27A to E2-31 (Q652386)	26 Aug 1944	29 Aug 1944
1454	92nd Engrs.	Furnish one platoon to strike Engr Hqs. and one truck to haul trailer each day (26-27 Aug)	26 Aug 1944	30 Aug 1944
1455	337th Engrs.	Furnish one platoon to set up Engr Hqs	26 Aug 1944	1 Sept 1944
1456	175th Engrs.	Take over from 94th Engrs construction of MRS bridges between Cecina and Colle Salvetti	25 Aug 1944	3 Sept 1944
1457	CRE, 73rd	Protect pumps at wells and machinery in pumping plants by sandbagging	26 Aug 1944	4 Sept 1944
1458	73rd CRE Tps	Maintain newly assigned roads	3 Sept 1944	8 Sept 1944
1459	73rd CRE Tps	Assist local electric company in partially restoring power to Florence	25 Aug 1944	5 Sept 1944
1460	73rd CRE Tps	Repair main water lines from pumping station to Ponte Vecchio	25 Aug 1944	5 Sept 1944
1461	175th Engrs.	Check area vicinity Q147254, for mines	25 Aug 1944	27 Aug 1944
1462	73rd CRE Tps	Construct 600' of water line from Florence pumping station to connect with main water line	25 Aug 1944	7 Sept 1944
1463	73rd CRE Tps	Clear debris from both approaches to Ponte Vecchio in Florence	25 Aug 1944	23 Sept 1944
1464	VOID	VOID		
1465	345th Engrs Det	Remove 120' of Floating Treadway at P895702	26 Aug 1944	22 Sept 1944
1466	92nd Engrs.	Construct 1000 wooden sign blanks for highway markers	27 Aug 1944	20 Sept 1944
1467	2750th Engrs.	Furnish grader to 1108th Group	25 Aug 1944	11 Sept 1944
1468	2750th Engrs.	Furnish grader to 1108th Group	25 Aug 1944	21 Sept 1944
1469	387th Engrs.	Maintain newly assigned roads	28 Aug 1944	3 Sept 1944
1470	2750th Engrs.	Furnish shovel to 73rd CRE	25 Aug 1944	22 Sept 1944
1471	175th Engrs.	Pick up ten lengths of "Tubbi Bonna" pipe 17-1/4" x 16' in Leshorn and deliver to 73rd CRE	26 Aug 1944	23 Sept 1944
1472	175th Engrs.	Remove demolished steel girder bridge from canal at Q053533	25 Aug 1944	20 Sept 1944
1473	2750th Engrs.	Continue release on 3 D-8 tractors to 338th Engrs.	26 Aug 1944	20 Sept 1944
1474	175th Engrs.	Maintain newly assigned roads	29 Aug 1944	18 Sept 1944
1475	337th Engrs.	Grade roads and improve area for ASP 19 at Q670603	25 Aug 1944	17 Sept 1944
1476	2750th Engrs.	Continue release of quickway crane to 337th Engrs.	25 Aug 1944	27 Sept 1944
1477	175th Engrs.	Remove Bailey bridge at Q055518 with culvert and fill	27 Aug 1944	30 Aug 1944
1478	2750th Engrs.	Furnish compressors to 175th Engrs	26 Aug 1944	19 Sept 1944
1479	92nd Engrs.	Furnish bulldozers to grade and improve Route 146 from Grosseto to junction with Route 149	16 Sept 1944	20 Sept 1944
1480	92nd Engrs.	Maintain newly assigned roads	28 Aug 1944	30 Aug 1944
1481	175th Engrs.	Oil road in front of 615 Clearing Co, Q140465	28 Aug 1944	18 Sept 1944
1482	2750th Engrs.	Furnish distributor to 175th Engrs	26 Aug 1944	18 Sept 1944

APPENDIX J
MAY 1944 TO 15 SEP 1944

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
1483	1554th Engrs.	Do necessary grading and bulldozing to prepare railhead at Cecina (Q1720)	28 Aug 1944	15 Sept 1944
1484	92nd Engrs.	Take over from 14th Air Construction Group maintenance of Route 73 from 1677044 to Siena	29 Aug 1944	12 Sept 1944
1485	92nd Engrs.	Paint in Route 7366 from 706880 to junction with Route 68 at Colle di Val Elsa on MSR	29 Aug 1944	12 Sept 1944
1486	175th Engrs.	Furnish experience mine clearance officer to check Fifth Army firing point, N. of Cecina	27 Aug 1944	14 Sept 1944
1487	117th Engrs.	Check proposed bivouac area of Bailey ponton platoon for mines	27 Aug 1944	12 Sept 1944
1488	1750th Engrs.	Furnish 117th Engrs. primary and secondary 1-7632135	27 Aug 1944	15 Sept 1944
1489	117th Engrs.	Take over from II Corp. maintenance of Route 2, from junction w/68 to Casciano	29 Aug 1944	12 Sept 1944
1490	92nd Engrs.	Construct portable boxing cage for Special service	28 Aug 1944	31 Aug 1944
1491	117th Engrs.	Improve and grade exit and entrance roads to Q Det 2 537, at Q740571	28 Aug 1944	31 Aug 1944
1492	117th Engrs.	Furnish mine detector squad to check area for 1811th Ponton Platoon, Q662388	28 Aug 1944	31 Aug 1944
1493	175th Engrs.	Oil roads in area of 117th Evac. Hosp	27 Aug 1944	31 Aug 1944
1494	117th Engrs.	Construct 2/way Class 40 bridge across Arno River in Florence, vic. Ponte de Ferro	27 Aug 1944	6 Sept 1944
1495	2750 Engrs.	Continue release of grader and primary and secondary crushers to 175th Engrs	31 Aug 1944	18 Sept 1944
1496	2750 Engrs.	Furnish shovel to 175th Engrs.	19 Aug 1944	14 Sept 1944
1497	2750 Engrs.	Furnish MTD grader to 117 Engrs.	28 Aug 1944	15 Sept 1944
1498	2750 Engrs.	Furnish crane to 92nd Engrs.	28 Aug 1944	18 Sept 1944
1499	2750 Engrs.	Furnish crane to 73rd CRE	28 Aug 1944	18 Sept 1944
1500	1554th Engrs.	Furnish 1 - 4 boat rafts w/crews, to operate on 24 hr. basis, to 117th Engrs	28 Aug 1944	13 Sept 1944
1501	2750th Engrs.	Furnish distributor to 175th Engrs	30 Aug 1944	15 Sept 1944
1502	117th Engrs.	Gravel roads in 8th Evac and 16 Evac. Hosp. areas	29 Aug 1944	3 Sept 1944
1503	117th Engrs.	Furnish welding machines w/operator to 73 CRE, and all possible assistance to expedite water service	29 Aug 1944	22 Sept 1944
1504	Co D, 84th Engrs.	Furnish detail to paint CP and 100 trailers	11 Sept 1944	14 Sept 1944
1505	1554th Engrs.	Furnish 4 trailers and crane covers to assist 175th Engrs in transportation of piles	30 Aug 1944	16 Sept 1944
1506	175th Engrs.	Construct 2/way Class 40, 1/way Class 70 bridge on Route 1, at Q057526	31 Aug 1944	20 Sept 1944
1507	175th Engrs.	Replace Bailey bridge on Route 1, at Q057525	31 Aug 1944	15 Sept 1944
1508	175th Engrs.	Replace Bailey bridge with 2/way Class 40, 1/way Class 70 bridge at Q057528	31 Aug 1944	18 Sept 1944
1509	175th Engrs.	Replace Bailey bridge with 2/way Class 40, 1/way Class 70 bridge at Q051521	31 Aug 1944	20 Sept 1944
1510	175th Engrs.	Construct 2/way Class 40, 1/way Class 70 bridge across Arno on Route 1, vic. Pisa	5 Sept 1944	18 Sept 1944
1511	117th Engrs.	Do grading and bulldozing at Depot Q5-37 at Q740571	31 Aug 1944	31 Aug 1944
1512	187th Engrs.	Do grading and excavation for fire protection at Depot Q5-18 at Q172216	31 Aug 1944	4 Sept 1944
1513	2750th Engrs.	Continue equipment release of welder, arc, to 92nd Engrs.	29 Aug 1944	5 Sept 1944
1514	175th Engrs.	Furnish of acer and 2 or 3 mine clearance ICG's to supervise personnel of AAA Bn in removal of mines in area of Fifth Army firing point.	31 Aug 1944	24 Sept 1944
1515	2750th Engrs.	Furnish secondary rock crusher to 92nd Engrs.	31 Aug 1944	6 Sept 1944
1516	175th Engrs.	Erect suitable barricades at Q031-417	30 Aug 1944	30 Aug 1944
1517	117th Engrs.	Furnish 5 dump truck with 2 drivers to CRE 73rd Corps Trps., at Florence	31 Aug 1944	20 Sept 1944
1518	175th Engrs.	Furnish welding machine with 2 operators to same unit as above at South bank of Arno River, at Florence	31 Aug 1944	19 Sept 1944
1519	117th Engrs.	Furnish 1 welder to 73 CRE Corps Trps. at Florence	31 Aug 1944	31 Aug 1944
1520	117th Engrs.	Move tractor D-8 to 73 CRE Corps Trps., at Ponte Vecchio	31 Aug 1944	19 Aug 1944
1521	2750th Engrs.	Extend equipment release on D-8 dozer to 117th Engrs.	31 Aug 1944	9 Sept 1944
1522	2750th Engrs.	Furnish 2-2 1/2 ton truck w/drivers to back up 2 generators at Rome Rest Center	31 Aug 1944	7 Sept 1944
1523	2750th Engrs.	Pick up 1/4 yd shovel from PBS and deliver to IV Corps	31 Aug 1944	4 Sept 1944

APPENDIX J

THE ARNO THROUGH THE WINTER STATIC PHASE

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
1524	387th Engrs.	Take over construction of Cecina Railroad	1 Sept 1944	3 Sept 1944
1525	387th Engrs.	Maintain newly assigned roads; Route 1 from junction of Route 68 to RJ at Q056372; Route 165 from junction with Route 1 to RJ at Q143393	1 Sept 1944	1 Oct 1944
1526	2750th Engrs.	Extend release on D-7 tractors to 337th Engrs.	1 Sept 1944	5 Sept 1944
1527	2750th Engrs.	Extend release on Cuckway Crane to 73rd CRE	1 Sept 1944	3 Sept 1944
1528	"B" AGRE	Collect misc. Bailey bridge parts on roads in your area	1 Sept 1944	6 Sept 1944
1529	337th Engrs.	Furnish detail to install generators in Florence. Report to 73rd CRE	1 Sept 1944	19 Sept 1944
1530	175th Engrs.	Furnish detail to install generators in Florence. Report to 73rd CRE	1 Sept 1944	8 Sept 1944
1531	175th Engrs.	Supervise clearing of strip for AJA Firing Point, 800 x 40 yds	31 Aug 1944	6 Sept 1944
1532	405th Engrs.	Provide water and sanitary facilities for Officers Hotel in Florence	1 Sept 1944	7 Sept 1944
1533	2750th Engrs.	Pick up 1/2 yd shovel from PBS at Leghorn	1 Sept 1944	6 Sept 1944
1534	387th Engrs.	Pick up Sommerfeld mat on road leading to beach in old CP area	2 Sept 1944	3 Sept 1944
1535	337th Engrs.	Furnish mine detail to check area near 51st Sig Bn, Q716446	2 Sept 1944	2 Sept 1944
1536	337th Engrs.	Gravel area, 200 x 20', for 3853 Gas Supply Co, at Q731511	3 Sept 1944	5 Sept 1944
1537	337th Engrs.	Improve additional roads in ASF 20, Q806522	3 Sept 1944	5 Sept 1944
1538	337th Engrs.	Construct 5 ditches and grade area for Depot Q5-32, Q590526	4 Sept 1944	5 Sept 1944
1539	92nd Engrs.	Remove 140' TS Bailey bridge at Civitavecchia	2 Sept 1944	10 Sept 1944
1540	2750th Engrs.	Continue release of oil distributor to 175th Engrs.	2 Sept 1944	5 Sept 1944
1541	2750th Engrs.	Furnish 8 yd carry-all to 175th Engrs.	2 Sept 1944	5 Sept 1944
1542	2750th Engrs.	Furnish compressor to 73 CRE	2 Sept 1944	9 Sept 1944
1543	92nd Engrs.	Maintain Rt. 2 from Siena to Poggabona	3 Sept 1944	12 Sept 1944
1544	2750th Engrs.	Furnish distributor to 337th Engrs.	2 Sept 1944	11 Sept 1944
1545	337th Engrs.	Construct 40/70 pile bent highway bridge, Q692352	4 Sept 1944	12 Sept 1944
1546	337th Engrs.	Replace Bailey bridge with 40/70 pile bent bridge at Q695369	4 Sept 1944	12 Sept 1944
1547	337th Engrs.	Replace Bailey bridge with 40/70 bridge, at Q695372	4 Sept 1944	12 Sept 1944
1548	337th Engrs.	Open underpass immediately north of RI in Florence	3 Sept 1944	9 Sept 1944
1549	92nd Engrs.	Clear 50' x 900' cub strip and grade 20' of strip as run-way at 5th Army CP	2 Sept 1944	5 Sept 1944
1550	175th Engrs.	Maintain Rt. 67 from junction w/Rt. 1 to IV Corps boundary (Q693685)	2 Sept 1944	27 Sept 1944
1551	387th Engrs.	Maintain Rt. 1 from RJ Q058370 to Ardenza (Q030430)	3 Sept 1944	3 Sept 1944
1552	337th Engrs.	Make reconnaissance and submit report on work required to open Rt. 67, from Florence West to II Corps boundary	2 Sept 1944	3 Sept 1944
1553	92nd Engrs.	Check area and bldg for Arty Section, vic of Guicciardini	2 Sept 1944	5 Sept 1944
1554	337th Engrs.	Prepare plans, for replacing all Bailey bridges on Rt. 2 from Casciano to Florence	3 Sept 1944	7 Sept 1944
1555	CRE 73	Install and operate 2-400 KW Generators in Florence Area	2 Sept 1944	23 Sept 1944
1556	175th Engrs.	Clear mines from existing airfield South of Pisa at Q085620	2 Sept 1944	12 Sept 1944
1557	337th Engrs.	Furnish officer for inspection of buildings for postal use in Florence	4 Sept 1944	5 Sept 1944
1558	2750th Engrs.	Furnish two 2-1/2 ton trucks to CE, Region 8, Siena	4 Sept 1944	12 Sept 1944
1559	2750th Engrs.	Furnish shovel to 337th Engrs., at Q746669	4 Sept 1944	5 Sept 1944
1560	175th Engrs.	Construct 1-way Cl. 40 Bailey bridge across Arno River at Q370614	4 Sept 1944	11 Sept 1944
1561	92nd Engrs.	Assist local power company to repair transmission lines from EJA to 7 Km South-east of Tavernuzze	4 Sept 1944	12 Sept 1944
1562	337th Engrs.	Maintain Rt. 67 from Florence to Q693685	4 Sept 1944	28 Sept 1944
1563	Br. Det. 345th Engr	Remove 45' Treadway's at Q820257 and Q868240	9 Sept 1944	13 Sept 1944
1564	2750th Engrs.	Furnish compressor to 175th Engrs.	7 Sept 1944	11 Sept 1944
1565	2750th Engrs.	Extend release of 3/4 yd shovel to 175th Engrs	7 Sept 1944	12 Sept 1944
1566	1554th Engrs.	Assist 175th Engrs. in constructing bridge across Arno River at Pisa	6 Sept 1944	17 Sept 1944
1567	175th Engrs.	Maintain Rt. 1 from Q060574 to Pisa; exclude Rt. 67B from Rt. 1 to Rt. 67	6 Sept 1944	29 Sept 1944
1568	2750th Engrs.	Extend release on grader to 1108th Engr Gp	5 Sept 1944	6 Sept 1944
1569	92nd Engrs.	Furnish 2 R-4 dozers to 175th Engrs.	6 Sept 1944	12 Sept 1944
1570	387th Engrs.	Maintain Rt. 165 from Q142392 to junction w/Rt. 67B	3 Sept 1944	7 Sept 1944
1571	2750th Engrs.	Furnish concrete mixer to 577 Field Coy RE	6 Sept 1944	10 Sept 1944
1572	175th Engrs.	Construct 1/40 Bailey bridge across Elsa River on Rt. 67 at Ponte Tresa	5 Sept 1944	8 Sept 1944
1573	337th Engrs.	Construct 2/40, 1/70 bridge across Greve River on Rt. 67, at S. Lorenzo	7 Sept 1944	10 Sept 1944
1574	2750th Engrs.	VOID		
1575	2750th Engrs.	Extend release on grader to 387th Engrs.	9 Sept 1944	11 Sept 1944
1576	2750th Engrs.	Extend release on distributor to 387th Engrs.	7 Sept 1944	15 Sept 1944
1577	92nd Engrs.	Replace Bailey bridge at Q708318 with pile bent, steel stringer, 40/70 bridge (90' LS)	8 Sept 1944	16 Sept 1944
1578	92nd Engrs.	Replace Bailey bridge at Q95324 with pile bent, steel stringer, 40/70 bridge (110' TS)	8 Sept 1944	16 Sept 1944
1579	92nd Engrs.	Replace Bailey bridge at Q745272 with pile bent, steel stringer, 40/70 bridge (80' LC)	8 Sept 1944	13 Sept 1944
1580	337th Engrs.	Haul 12-20 loads of gravel to W Dump 5-37, Q740571	6 Sept 1944	10 Sept 1944
1581	387th Engrs.	Pick up Bailey panel and other parts lying in ditch on Rt. 68, 2 miles east of junction 1, 165 and 68	8 Sept 1944	9 Sept 1944
1582	92nd Engrs.	Pick up Bailey parts on north side of road near Q745270	8 Sept 1944	10 Sept 1944
1583	"B" AGRE	Remove Bailey bridges at Q694594, Q955541, Q879526, Q965515, R010498, R010450, R007445, R012463 and R032421. Erect barricades when bridges are pulled	9 Sept 1944	12 Oct 1944
1584	337th Engrs.	Repair partially blown bridge on Rt. 67, at Q685686	8 Sept 1944	10 Sept 1944
1585	337th Engrs.	Effect permanent repairs to bridge at Q685686	8 Sept 1944	14 Sept 1944
1586	337th Engrs.	Maintain Rt. 67 from Q693685 to Q640694	7 Sept 1944	20 Sept 1944
1587	337th Engrs.	Construct 1/40 Bailey bridge across Canal in Florence Q701780	8 Sept 1944	12 Sept 1944
1588	2750th Engrs.	Furnish 2 dozers (D-8) and 1 prime mover w/20 ton trlr to 175th Engrs	7 Sept 1944	12 Sept 1944
1589	337th Engrs.	Submit plans for Cl. 40, 1-way Bailey across Arno River at Q655690, vic of Siena	7 Sept 1944	13 Sept 1944
1590	175th Engrs.	Construct 2-way Cl. 40, 1-way Cl. 70, Bailey bridge across Arno River at Pisa on Rt. 1	8 Sept 1944	1 Oct 1944

APPENDIX J

THE ARNO THROUGH THE WINTER STATIC PHASE

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
1591	175th Engrs.	Replace Bailey at Ponte Evolo, Rt. 67 (Q423605) by 2-way Cl. 40, 1-way Cl. 70, semi-permanent steel and timber bridge	8 Sept 1944	15 Sept 1944
1592	175th Engrs.	Replace Bailey on Rt. 67 at Montelupo (Q600648), by 2-way Cl. 40, 1-way Cl. 70, semi-permanent steel and timber bridge	8 Sept 1944	17 Sept 1944
1593	Br. Det 345th Engr	Pick up and return to Bridge Depot E2-31 (Poggibonsi) excess Bailey parts on Hwy 6832 at Q643334	8 Sept 1944	14 Sept 1944
1594	175th Engrs.	Replace inadequate culvert at Q620674 with Cl. 70 1-way, Cl. 40, 2-way, bridge or culvert	12 Sept 1944	20 Sept 1944
1595	92nd Engrs.	Perform work necessary for operation of Class III Depot, vic of Bangino, Q730510	8 Sept 1944	17 Sept 1944
1596	2750th Engrs.	Extend equipment release - 1 shovel 1/4 yd to 73 CRE	6 Sept 1944	15 Sept 1944
1597	175th Engrs.	Replace Bailey bridge on Rt. 67 (Q294586) w/2-way Cl. 40, 1-way Cl. 70, semi-permanent steel and timber bridge	11 Sept 1944	15 Sept 1944
1598	92nd Engrs.	Make investigation of Ord. Depot Area 19 (Q670603)	8 Sept 1944	16 Sept 1944
1599	2750th Engrs.	Extend equipment release of Quickway Crane to 73 CRE	8 Sept 1944	18 Sept 1944
1600	2750th Engrs.	Extend equipment release of Quickway Crane to 337th Engrs	11 Sept 1944	17 Sept 1944
1601	2750th Engrs.	Extend equipment release of 1 shovel (1/2 yd) to 337th Engrs	6 Sept 1944	18 Sept 1944
1602	Br Det 345th Engr	Pick up at Depot E2-32 sufficient Bailey to make up 80' DS and deliver to 119th Road Const. Co. (British), at A893151	7 Sept 1944	18 Sept 1944
1603	337th Engrs.	Deliver 1 load of crushed rock to Hqs Command at CP	8 Sept 1944	10 Sept 1944
1604	337th Engrs.	Install Cl. 40 Bailey on Rt. 67 at Q736682	7 Sept 1944	10 Sept 1944
1605	405th Engrs.	Install water, electric and sanitary facilities for EM Rest Center at Florence	8 Sept 1944	11 Sept 1944
1606	337th Engrs.	Furnish mine clearing detail to clear width of 20' of both shoulders of road from Cerbaia to RJ Q733616, via Laronola	8 Sept 1944	10 Sept 1944
1607	92nd Engrs.	Furnish grader for Hqs Cndt, Fifth Army Fwd CP	8 Sept 1944	12 Sept 1944
1608	175th Engrs.	Furnish 1 officer to make recon of dump area at Q235607 for 87th Ord Bn	9 Sept 1944	12 Sept 1944
1609	175th Engrs.	Furnish officer and non-com to meet with AKG Art expert at Municipio at Pisa	9 Sept 1944	21 Sept 1944
1610	337th Engrs.	Furnish mine checking detail to check villa in Florence	9 Sept 1944	10 Sept 1944
1611	92nd Engrs.	Furnish grader to Fifth Army Fwd Air Strip	10 Sept 1944	23 Sept 1944
1612	337th Engrs.	Replace 50' DS Bailey bridge at Q873368, with 2 span steel stringer bridge	10 Sept 1944	24 Sept 1944
1613	337th Engrs.	Investigate area for 15th Evac Hosp in park in Florence	10 Sept 1944	24 Sept 1944
1614	337th Engrs.	Replace 7 TS Bailey bridges at Q740488, with pile trestle, steel girder bridge	10 Sept 1944	24 Sept 1944
1615	337th Engrs.	Grade and gravel minimum roads in depot E2-33 at Q730726	10 Sept 44	24 Sept 1944
1616	92nd Engrs.	Construct Rhd in vic of Colle Solvetti in accordance with plan	10 Sept 1944	22 Sept 1944
1617	2750th Engrs.	Furnish distributor for 278th Trke Section at 73 CRE Wrks.	10 Sept 1944	24 Sept 1944
1618	337th Engrs.	Furnish mine teams to clear lines for Signal Corps	10 Sept 1944	24 Sept 1944
1619	337th Engrs.	Take over maintenance of Bailey bridge across Arno River at Ponte Vittorio in Florence	10 Sept 1944	29 Sept 1944
1620	337th Engrs.	Drive 8 piles to support pipe line across Greve River, for 73 CRE Tps	11 Sept 1944	14 Sept 1944
1621	175th Engrs.	Construct minimum improvements for Ord Dump at Q235607	12 Sept 1944	12 Sept 1944
1622	337th Engrs.	Install dual carriageway bridge, Cl. 70, across Greve River at Q736685	11 Sept 1944	14 Sept 1944
1623	2750th Engrs.	Deliver rock crusher to 337th Engrs.	10 Sept 1944	14 Sept 1944
1624	92nd Engrs.	Move refrigerator from 12th Med Depot to present location at Pharmacy Bldg, Florence	11 Sept 1944	12 Sept 1944
1625	2750th Engrs.	Extend release of compressor to 73 CRE	10 Sept 1944	14 Sept 1944
1626	92nd Engrs.	Furnish mine clearing detail to check bivouac for Hqs Cndt, 5th Army	11 Sept 1944	12 Sept 1944
1627	337th Engrs.	Furnish mine clearing detail to clear area for CWS Depot	11 Sept 1944	12 Sept 1944
1628	175th Engrs.	Proceed with minimum grading and road building for 87th Ord Bn, at Q235607	11 Sept 1944	CANCELLED
1629	175th Engrs.	Furnish mine clearing detail to check large area for 8th Repl. Depot, at Q420600	11 Sept 1944	13 Sept 1944
1630	387th Engrs.	Remove 2 - 50' DS Bailey bridge overpasses, V728882 and V216893	11 Sept 1944	14 Sept 1944
1631	175th Engrs.	Construct 40/70 bridge (semi-permanent) on Rt. 67 at Q552637	11 Sept 1944	20 Sept 1944
1632	337th Engrs.	Furnish mine clearing details to check and clear area for new 5th Army CP	11 Sept 1944	13 Sept 1944
1633	337th Engrs.	Construct minimum roads at Engr Depot E2-34 at Q736722	12 Sept 1944	19 Sept 1944
1634	387th Engrs.	Remove 40' SS Bailey bridge at Q090418	12 Sept 1944	13 Sept 1944
1635	92nd Engrs.	Remove Bailey bridges at various sites and return to Bridge Depot E2-33	12 Sept 1944	18 Sept 44
1636	1554th Engrs.	Furnish 337th Engrs 2-4 boat rafts and 2 powered ponton boats for pile driving at Signa Bridge	12 Sept 1944	20 Sept 1944
1637	1554th Engrs.	Assist in moving bridging materials from Piombino to E2-33	12 Sept 1944	29 Sept 1944
1638	387th Engrs.	Remove following Bailey bridges: 50' SS at Q363468; 30' SS, at Q358467; 100' TS at Q436346; 60' TS at Q392293	12 Sept 1944	12 Sept 1944
1639	92nd Engrs.	Remove Bailey bridges at various sites and return to E-2-33	12 Sept 1944	15 Sept 1944
1640	92nd Engrs.	Remove 100' TD North of Grosseto	11 Sept 1944	12 Sept 1944
1641	337th Engrs.	Maintain newly assigned roads	14 Sept 1944	20 Sept 1944
1642	175th Engrs.	Construct 40/70 semi permanent bridge at Q423605	12 Sept 1944	25 Sept 1944
1643	387th Engrs.	Maintain Route 1 from Q032429 to S. Vincenzo, Route 165 from Colle Salvetti to Cecina; Route 6824 from Q288585 to Saline - Route 68 to Cecina	12 Sept 1944	22 Oct 1944
1644	92nd Engrs.	Maintain newly assigned roads (Route 2 from Siena to Poggibonsi; Route 6725 from Q500603 to Poggibonsi)	12 Sept 1944	20 Sept 1944
1645	16 AGRE	Maintain newly assigned roads	12 Sept 1944	14 Oct 1944
1646	16 AGRE	Remove Bailey bridges from various sites and return to E-2-33	12 Sept 1944	14 Oct 1944
1647	337th Engrs.	Construct 1/40 Bailey bridge across Arno River at Signa	12 Sept 1944	20 Sept 1944
1648	92nd Engrs.	Construct 1/9 bridge to provide access to Castelfiorentino cemetery at Q550510	12 Sept 1944	15 Sept 1944
1649	1554th Engrs.	Take over maintenance of floating bridges across Arno River	12 Sept 1944	14 Sept 1944
1650	1554th Engrs.	Salvage all floating bridge equipt. from Arno River, incl. damaged trestle bridges	12 Sept 1944	14 Sept 1944
1651	337th Engrs.	Take over maintenance of Bailey bridge at Q768702	12 Sept 1944	29 Sept 1944
1652	337th Engrs.	Furnish one platoon to load bridge material at E-2-27A Piombino	11 Sept 1944	1 Oct 1944
1653	3 CRE	Supervise and assist civilians in repair of sewers in Florence	12 Sept 1944	2 Oct 1944
1654	337th Engrs.	Salvage Bailey bridge from Arno River at Q640695	13 Sept 1944	14 Sept 1944

APPENDIX J

THE ARNO THROUGH THE WINTER STATIC PHASE

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
1655	337th Engrs.	Furnish detail to dismantle 3 temporary bldgs at 5th Army CP and erect at new CP	14 Sept 1944	14 Sept 1944
1656	337th Engrs.	Erect 1 portable bldg. at 5th Army CP	13 Sept 1944	13 Sept 1944
1657	387th Engrs.	Dismantle portable bldg. in CG area of old 5th Army CP, in Cecina	12 Sept 1944	12 Sept 1944
1658	387th Engrs.	Construct 40/70 bridge on Rt. 68 at Q370228	12 Sept 1944	19 Sept 1944
1659	387th Engrs.	Repair hwy bridge on Rt. 1 at Q199190	12 Sept 1944	16 Sept 1944
1660	337th Engrs.	Construct frames for 33 arch ways at 14th Evac Hosp (Q790715)	12 Sept 1944	16 Sept 1944
1661	2750th Engrs.	Extend release on D-R tractor to 337th Engrs.	14 Sept 1944	16 Sept 1944
1662	337th Engrs.	Check area for mines for Class III Dump 25-44 at Q741762	14 Sept 1944	15 Sept 1944
1663	337th Engrs.	Check area for mines for Class II and IV Depot 45-43 at Q755724	15 Sept 1944	15 Sept 1944
1664	2750th Engrs.	Furnish welder to 73 CRE, to rot to 588 Army Tpn Coy at Fonte di Vittoria (Q744688)	13 Sept 1944	13 Sept 1944
1665	92nd Engrs.	Furnish mine clearing team to assist 337th Engrs at 5th Army CP	13 Sept 1944	13 Sept 1944
1666	73 CRE	Repair 600mm water line across Arno River at Q800677	14 Sept 1944	16 Sept 1944
1667	175th Engrs.	Furnish mine clearing team to assist 337th Engrs at 5th Army CP	13 Sept 1944	13 Sept 1944
1668	92nd Engrs.	Clear 9 bays along road from Carbaia (Q685593) to RJ Q733616	13 Sept 1944	14 Sept 1944
1669	92nd Engrs.	Furnish detail to strike Engr Hqs	14 Sept 1944	16 Sept 1944
1670	337th Engrs.	Maintain road from Q583592 to Q730560	14 Sept 1944	15 Sept 1944
1671	337th Engrs.	Maintain Bailey bridge at Q768702	14 Sept 1944	14 Sept 1944
1672	337th Engrs.	Check area for mines and build roads for 473rd Maint Plat, at Q760745	14 Sept 1944	14 Sept 1944
1673	337th Engrs.	Maintain beacon at Q726575	15 Sept 1944	24 Sept 1944
1674	16 ACRE	Maintain Bailey bridge across Arno River at Q855675	15 Sept 1944	12 Oct 1944
1675	337th Engrs.	Check area for mines for PW Escort Co.	15 Sept 1944	16 Sept 1944
1676	92nd Engrs.	Replace Bailey bridge on Rt. 67 at Q245593, with 40/70, bridge "A" frame type	15 Sept 1944	18 Sept 1944
1677	387th Engrs.	Replace Bailey bridge at Q137566, with 40/70, timber and steel bridge	15 Sept 1944	1 Oct 1944
1678	175th Engrs.	Replace Bailey bridge at Q314661 with 40/70 bridge	15 Sept 1944	25 Sept 1944
1679	175th Engrs.	Clear mines for B. E. P. bivouac area at Q050640	15 Sept 1944	16 Sept 1944
1680	175th Engrs.	Replace Bailey bridge at Q294584 with 40/70 bridge	16 Sept 1944	24 Sept 1944
1681	175th Engrs.	Clear mines from pump house north of Fiam	15 Sept 1944	16 Sept 1944
1682	175th Engrs.	Replace Bailey bridge at Q328581 with 2-way Cl. 40, 1-way Cl. 70 bridge or culvert	15 Sept 1944	25 Sept 1944
1683	175th Engrs.	Replace Bailey bridge at Q360590 with 2-way, Cl. 40, 1-way Cl. 70 bridge	15 Sept 1944	27 Sept 1944
1684	2750th Engrs.	Extend release of asphalt distributor to 387th Engrs	15 Sept 1944	15 Sept 1944
1685	2750th Engrs.	Furnish concrete mixer to 175th Engrs.	14 Sept 1944	14 Sept 1944
1686	92nd Engrs.	Construct Cl. 40, 2-way, Cl. 70, 1-way bridge at Q601648 to replace Bailey near Montelupo	17 Sept 1944	29 Sept 1944
1687	387th Engrs.	Make recon and pull following Bailey's: Follonica-Valpiano-Massa-Prata-Rt. 7324 to Rt. 73-73, to RJ 5705. Chiusdivo-Montiera-Venturina	16 Sept 1944	16 Oct 1944
1688	175th Engrs.	Blade debris from Rt. 67; widen roadways for 2-way traffic; contact J17 re: debris on hwy remove obstructions; widen road vic of Fornacette	15 Sept 1944	24 Sept 1944
1689	2750th Engrs.	Furnish 1/2 yd shovel to 19th Engrs.	15 Sept 1944	18 Sept 1944
1690	175th Engrs.	Replace Bailey on Rt. 1 at Q088643 with 1-way Cl. 40, 1-way Cl. 70, semi-permanent bridge	16 Sept 1944	20 Sept 1944
1691	2750th Engrs.	Furnish the 15th Airfield Const. Co. at Florence-2 graders and 2 towed scrapers	15 Sept 1944	10 Oct 1944
1692	387th Engrs.	Remove following Bailey's: Q223391, Q219402, Q156240	16 Sept 1944	20 Sept 1944
1693	2750th Engrs.	Furnish equip. to help move 473rd Engr Maint. Co.	16 Sept 1944	5 Oct 1944
1694	337th Engrs.	Check area for 34th Chem Co.	16 Sept 1944	18 Sept 1944
1695	337th Engrs.	Check factory bldg at Florence for site for 5th Army Rear	16 Sept 1944	17 Sept 1944
1696	2750th Engrs.	Furnish Quickway Crane and 1200 air compressor to 175th Engrs.	15 Sept 1944	19 Sept 1944
1697	92nd Engrs.	Clear area for AS2 O-419 at Q671603	16 Sept 1944	19 Sept 1944
1698	337th Engrs.	Improve road and construct culvert or bypass on Rt. to 615th Clearing Hosp., Q763738	15 Sept 1944	19 Sept 1944
1699	2750th Engrs.	Extend equipment release of concrete mixer, loaded, 14 cu ft. to 16th ACRE	15 Sept 1944	19 Sept 1944
1700	337th Engrs.	Check and mark minefields at new 5th Army CP	14 Sept 1944	14 Sept 1944
1701	92nd Engrs.	Dismantle prefab hut in old CP area at Tavernelle and load on truck	17 Sept 1944	17 Sept 1944
1702	387th Engrs.	Take down and transport to FMS Depot at Pionbino 3 prefab huts, bring back 2 new huts, to 5th Army CP	17 Sept 1944	20 Sept 1944
1703	16 ACRE	Remove and transport Bailey bridges at Q945259, Q969250, Q972237, Q971402, to E2-33	17 Sept 1944	12 Oct 1944
1704	92nd Engrs.	Remove and transport Bailey bridges at Q921294, Q911200, Q912322, Q891253 to E2-33	17 Sept 1944	18 Sept 1944
1705	16 ACRE	Remove, dismantle and transport Bailey bridge at R153202 on Rt. 7337 to E2-33	16 Sept 1944	17 Sept 1944
1706	1338 Engrs.	Construct Cl. 40 Bailey on Rt. 66 at Q699720	17 Sept 1944	19 Sept 1944
1707	16 ACRE	Remove and transport the 40' SS Bailey bridge at R154201 to E2-33	17 Sept 1944	17 Sept 1944
1708	73 CRE Vks	Mark and wire off bldgs in Florence Command for mines; mark and wire off suspected mined areas at FAAC	16 Sept 1944	18 Sept 1944
1709	1338th Engrs.	Furnish bulldozer for Btry A, 403 AAA at Q789721	16 Sept 1944	16 Sept 1944
1710	1338th Engrs.	Construct 24' road from Q772719 to via Vittoria at Q775728	18 Sept 1944	21 Sept 1944
1711	1338th Engrs.	Remove and return Bailey bridge at Q739682 to E2-33	18 Sept 1944	24 Sept 1944
1712	2750th Engrs.	Extend equip. release as Quickway crane and compressor to 73 CRE Vks	16 Sept 1944	18 Sept 1944
1713	1338th Engrs.	Pick up 400 KW generator from PBS and install in EM Rest Center in Florence	18 Sept 1944	13 Oct 1944
1714	137 Engrs.	Construct an entrance, turn-around and exit for 38th Evac Hosp at Q108668	18 Sept 1944	18 Sept 1944
1715	2750th Engrs.	Furnish welding equipment w/oxygen to 387th Engrs.	17 Sept 1944	11 Oct 1944
1716	2750th Engrs.	Extend release on shovel, to IV Corps	17 Sept 1944	11 Oct 1944
1717	175th Engrs.	Check area for mines for 235th QM Bn at Q260600	18 Sept 1944	20 Sept 1944
1718	1338th Engrs.	Furnish mine clearance team to check for mines and booby traps at Q808719	18 Sept 1944	19 Sept 1944
1719	1338th Engrs.	Pick up an additional 400 KW generator from PBS	19 Sept 1944	13 Oct 1944
1720	1338th Engrs.	Furnish equipment and drive 14 piles for water mine bridge across Greve River	18 Sept 1944	21 Sept 1944
1721	92nd Engrs.	Remove 40' DS Bailey bridge at Q630447	19 Sept 1944	20 Sept 1944
1722	92nd Engrs.	Remove 90' Footbridge at Q480544	18 Sept 1944	20 Sept 1944

APPENDIX J

THE ARNO THROUGH THE INTER-SECTOR PHASE

JOB NO	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
1721	92nd Engrs.	Make 48 hr. Traffic count on Route 6725, vic. Castelflorentino	19 Sept 1944	20 Sept 1944
1724	1554th Engrs.	Furnish baste to construct raft or bridge for 1338th, to place stone around piers of Fonte de Ferra	20 Sept 1944	20 Sept 1944
1725	92nd Engrs.	Take over and maintain Route 2 from Poggibonni to S. Casciano	19 Sept 1944	21 Sept 1944
1726	2750th Engrs.	Extend release on two compressors to 175th Engrs. Furnish compressor to Co. B, 175th Engrs.	19 Sept 1944	1 Oct 1944
1727	2750th Engrs.	Furnish mixer and compressor to 175th Engrs.	19 Sept 1944	1 Oct 1944
1728	16 AGRE	Take over from 13th Corps maintenance of Route 67 from junction with Route 69 to Dicomano and Route 6921 from Florence to RJ Borgo S. Lorenzo	19 Sept 1944	28 Sept 1944
1729	1554th Engrs.	Improve approaches to Pontedera bridge, across Arno River	19 Sept 1944	29 Sept 1944
1730	1338th Engrs.	Maintain newly assigned roads	19 Sept 1944	29 Sept 1944
1731 A	387th Engrs.	Furnish one platoon to load bridging material out of Depot E2-28	20 Sept 1944	26 Sept 1944
1731 B	2750th Engrs.	Furnish grader to 182nd Engrs	19 Sept 1944	22 Sept 1944
1732	1338th Engrs.	Erect water level gauge for Arno River at Ponte Ferro or Fonte Vittorio. Take readings every four hours and notify 1554th Engrs daily	20 Sept 1944	4 Oct 1944
1733	2750th Engrs.	Furnish D-8 bulldozer to 110th Engrs at Q880930	20 Sept 1944	20 Sept 1944
1734	2750th Engrs.	Furnish D-8 bulldozer (now at 175th Engrs) to 387th Engr bridge site on Route 165 at 137568	19 Sept 1944	19 Sept 1944
1735	1338th Engrs.	Furnish detail to accompany Capt. Bracker of IRU to check blgrs for mines	19 Sept 1944	20 Sept 1944
1736	1338th Engrs.	Maintain roads from Signa bridge to Route 65 for dump traffic	19 Sept 1944	21 Sept 1944
1737	1338th Engrs.	Clear debris from platform 50' x 50' and cut lane 100' long to be wide enough for 6 x 6 for rear Echelon at Headquarters	20 Sept 1944	21 Sept 1944
1738	1338th Engrs.	Maintain newly assigned roads	21 Sept 1944	29 Sept 1944
1739	2750th Engrs.	Extend equip. release on Quickway crane to 73 CRE	20 Sept 1944	26 Sept 1944
1740	2750th Engrs.	Extend equip. release on Quickway crane and air compressor to 175th Engrs.	25 Sept 1944	27 Sept 1944
1741	92nd Engrs.	Furnish Arc welder w/operator to 73 CRE	25 Sept 1944	29 Sept 1944
1742	2750th Engrs.	Furnish Arc welder to 73 CRE	19 Sept 1944	CANCELLED
1743	92nd Engrs.	Remove and transport to E2-33, the following Bailey bridges: Q835564, Q836545, Q837604 & Q835584	21 Sept 1944	29 Sept 1944
1744	92nd Engrs.	Maintain newly assigned roads	21 Sept 1944	2 Oct 1944
1745	2750th Engrs.	Furnish Asphalt distributor to 73 CRE	21 Sept 1944	25 Sept 1944
1746	2750th Engrs.	Furnish Arc welding machine w/operators to 175th Engrs	20 Sept 1944	25 Sept 1944
1747	175th Engrs.	Repair cut in levee alongside Bailey at north bank near S. Romano (Q880614)	21 Sept 1944	25 Sept 1944
1748	1338th Engrs.	Conduct mine instruction school for Army Hqs.	20 Sept 1944	26 Sept 1944
1749	387th Engrs.	Furnish bulldozer and operator to fall in trenches at Fifth Army AAA firing point near Vada	21 Sept 1944	24 Sept 1944
1750	175th Engrs.	Furnish detail to continue supervision of mine clearance at AAA firing point near Vada	21 Sept 1944	24 Sept 1944
1751	1554th Engrs.	Pick up 12 lengths of 1000mm pipe and deliver to Fontignano pumping station	20 Sept 1944	26 Sept 1944
1752	2750th Engrs.	Extend equip. release on Quickway crane to 1338th Engrs. (169th Engrs)	20 Sept 1944	25 Sept 1944
1753	92nd Engrs.	Furnish officer of CRS at Castelflorentino cemetery an overlay of road from Route 67 to country.	21 Sept 1944	26 Sept 1944
1754	92nd Engrs.	Remove following Bailey bridges: Q945259, Q969250 and Q972237 and transport to E2-23	21 Sept 1944	24 Sept 1944
1755	1338th Engrs.	Grade and gravel 125 yds of one way road through Gas dump 25-44 at 741762 on Route 6625	21 Sept 1944	26 Sept 1944
1756	73 CRE Tks.	Provide facilities for 2 PAC's; provide urinal accommodations in Piazza Vittorio Emanuele; erect latrines in leave car park	22 Aug 1944	23 Sept 1944
1757	73 CRE Tks.	Make necessary repairs at Grand Hotel, Florence	27 Aug 1944	27 Sept 1944
1758	73 CRE Tks.	Make necessary alterations to accommodate 40 Club at Hotel Balestri	27 Aug 1944	5 Oct 1944
1759	73 CRE Tks.	Rehabilitate pumps in Montignano pumping station	4 Sept 1944	27 Sept 1944
1760	73 CRE Tks.	Install 400mm main across Greve River; install 1000mm main across Griveve River	4 Sept 1944	8 Oct 1944
1761	73 CRE Tks.	Commence work on 50 Rest Camp pending approval of final plans	16 Sept 1944	16 Oct 1944
1762	73 CRE Tks.	Check and make ready for work Ice factory TR 2792691	29 Aug 1944	14 Oct 1944
1763	73 CRE Tks.	Repair kitchens, water supply, oven and stoves at Garrison Hqs. billets, 82 Via Cavour	27 Aug 1944	10 Oct 1944
1764	73 CRE Tks.	Repair roof, install kitchen sewers and water supply for Carreli Hosp. (Military)	12 Sept 1944	24 Sept 1944
1765	73 CRE Tks.	Repair roof - close openings at NAAFI store, 16 Enrico Poggi	27 Aug 1944	10 Sept 1944
1766	73 CRE Tks.	Repair ceilings, doors, windows at Officers club, 7 Via Turnabuone	27 Aug 1944	12 Sept 1944
1767	73 CRE Tks.	Conversion of Royal reception hall at Florence railway station to form restaurant and wine bar	12 Sept 1944	20 Oct 1944
1768	73 CRE Tks.	General repairs - water supply - kitchen at Excelsior Hotel, Florence	27 Aug 1944	25 Oct 1944
1769	73 CRE Tks.	Lay two 450mm water mains from 700mm main on S. bank at Arno to 600mm mains on N. Bank of Arno River	5 Sept 1944	23 Sept 1944
1770	73 CRE Tks.	Check water supply and drains, check lighting and fly proof kitchen at 13 Corps Rest Center, Florence	3 Aug 1944	1 Oct 1944
1771	73 CRE Tks.	Mark and wire off bldgs. and areas known to be mined, mark suspected areas until investigated, clear mines where necessary	16 Sept 1944	30 Sept 1944
1772	2750th Engrs.	Furnish 3/4 yd shovel to 387th Engrs	22 Sept 1944	25 Sept 1944
1773	387th Engrs.	Remove Baileys at Q86343 and Q881312 on Route 6724 and transport to E2-23	22 Sept 1944	24 Sept 1944
1774	1338th Engrs.	Construct minimum entrance and exit roads for 56th Evac. Hosp.	20 Sept 1944	26 Sept 1944
1775	175th Engrs.	Check bivouac area for mines at Q2959 for 630th MP Bn.	22 Sept 1944	24 Sept 1944
1776	2750th Engrs.	Furnish primary crusher to 1338th Engrs.	22 Sept 1944	22 Oct 1944
1777	175th Engrs.	Furnish bulldozer, equipmt. and detail to install roads to ASF at Q247265, N. of Canal	22 Sept 1944	26 Sept 1944
1778	175th Engrs.	Check area for mines at Q172592 for 115th MI	22 Sept 1944	22 Sept 1944
1779	73 CRE Tks.	Repair break in sewer on Via del Fonte Alle Lasse, Florence to make road 2/way	22 Sept 1944	28 Sept 1944
1780	1338th Engrs.	Construct 70' DS Bailey bridge over partially blown Arch bridge on Route 6620 at 7621775	22 Sept 1944	22 Sept 1944
1781	1338th Engrs.	Place mine warning signs and erect barricades on lane about 1/2 mile N. of Fifth Army CP	23 Sept 1944	24 Sept 1944
1782	16 AGRE	Remove following Bailey bridges at Q878494, Q912401 and Q895488	23 Sept 1944	9 Oct 1944

APPENDIX J
THE ARNO THROUGH THE JITTER STATIC PLAGE

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
1781.	92nd Engrs.	Remove Bailey bridge at 3790654	26 Sept 1944	29 Sept 1944
1784	387th Engrs.	Maintain Route 67E from junction with Route 1 to junction with Route 67	24 Sept 1944	16 Nov 1944
1785	387th Engrs.	Pick up 15 KV generator at Med. Rest Center, 3 KVA at laundry and 5 KVA at Officers Villa at Castiglancello	24 Sept 1941	25 Sept 1944
1786	2750th Engrs.	Furnish concret mixer to 1338th Engrs.	23 Sept 1944	3 Oct 1944
1787	73 CRE	Supply power to Fifth Army Rear Hq in tobacco factory on priority A as approved by G-4	20 Sept 1944	23 Sept 1944
1788	1338th Engrs.	Maintain Route 6620 from Prato to 0708946	23 Sept 1944	22 Oct 1944
1789	1338th Engrs.	Make 24 hour traffic count at Ponte Vittorio and Ponte Ferro	24 Sept 1944	1 Oct 1944
1790	92nd Engrs.	Remove following Bailey bridges at 0685360, 560390, 611439 and 568491	24 Sept 1944	1 Oct 1944
1791	387th Engrs.	Maintain Route 67 from Pisa to Montelupo	27 Sept 1944	27 Oct 1944
1792	92nd Engrs.	Maintain Route 67 from 0615690 to Montelupo	26 Sept 1944	22 Oct 1944
1793	16 AGRE	Maintain Route 6521 from junction with Route 6524 at Borgo S. Lorenzo to RO10975 near Casaglia	24 Sept 1944	4 Nov 1944
1794	2750th Engrs.	Furnish 815th Aviation Engrs. 1-12 yd and 1-Byd scraper	24 Sept 1944	1 Oct 1944
1795	1338th Engrs.	Repair masonry Arch bridge on Route 6620 at 0691775, with civilian labor when finished remove Bailey bridge	24 Sept 1944	6 Oct 1944
1796	1338th Engrs.	Construct Class 40 2/way, Class 70 1/way pile bent, steel stringer bridge on Route 66 at 0703410	24 Sept 1944	3 Oct 1944
1797	1338th Engrs.	Construct 7' enclosure in vic. Florence S. of Arno River, nr. Route 67	24 Sept 1944	28 Sept 1944
1798	175th Engrs.	Maintain Route 12 from Pisa to Lucca	26 Sept 1944	18 Oct 1944
1799	175th Engrs.	Maintain Route 1 from Pisa to Viareggio	26 Sept 1944	21 Oct 1944
1800	2750th Engrs.	Furnish transportation to haul bridging material from bivouac area, Co. A, 387th Engrs, to E2-31	24 Sept 1944	30 Sept 1944
1801	175th Engrs.	Make 24 hour traffic count at Empoli bridge for 5 day period.	25 Sept 1944	30 Sept 1944
1802	387th Engrs.	Furnish detail to load stream crossing equipt. at 0294574	24 Sept 1944	24 Sept 1944
1803	1338th Engrs.	Install necessary culverts for proper drainage for 56th Evac. Hosp. at 0876929	26 Sept 1944	29 Sept 1944
1804	2750th Engrs.	Extend equipt. release on 1 yd shovel to 19th Engrs.	26 Sept 1944	10 Oct 1944
1805	1338th Engrs.	Improve road into 615th Holding Hosp.	25 Sept 1944	26 Sept 1944
1806	16 AGRE	Remove and transport the following Bailey bridges: 0822408, 0840386, 0858171, 0871168, 0945605, 0945605, to E2-31	25 Sept 1944	14 Oct 1944
1807	1338th Engrs.	Construct a standard "Sign Ladder" and erect at Route 6524 and Route 65	25 Sept 1944	28 Sept 1944
1808	2750th Engrs.	Extend release on compressor to 175th Engrs.	27 Sept 1944	3 Oct 1944
1809	1338th Engrs.	Construct Class 40, 2/way, Class 70, 1/way bridge on Route 66 at 0582798	26 Sept 1944	3 Oct 1944
1810	92nd Engrs.	Gravel approx. 300 yds of road at 8th Evac. Hosp., 0750590	26 Sept 1944	1 Oct 1944
1811	Co. D, 84th Engrs.	Construct necessary signs as ordered	26 Sept 1944	30 Sept 1944
1812	16 AGRE	Replace Bailey bridge at 0962643 with culvert and fill	27 Sept 1944	2 Oct 1944
1813	16 AGRE	Submit plans for replacement of 80' DD on Route 69 at 0961644 with Class 40, 2/way, Class 70 1/way bridge	25 Sept 1944	27 Sept 1944
1814	16 AGRE	Submit plans for replacement of 80' DD on Route 69 at 0958627, with Class 40, 2/way, Class 70 1/way bridge	25 Sept 1944	27 Sept 1944
1815	387th Engrs.	Maintain road from S. Romano to Castelfranco di Sotto	26 Sept 1944	22 Oct 1944
1816	1338th Engrs.	Widen existing roads and construct entrances to storage bays at Ord. Depot 0.424 at 0895070	26 Sept 1944	5 Oct 1944
1817	387th Engrs.	Furnish platoon to load 300 tons barbed wire, concertina and pickets at Depot E2-30 on Route 68	27 Sept 1944	27 Sept 1944
1818	92nd Engrs.	Construct approx. 100 yd Barbed wire fence and mark 300 yd fence with tape at EM Rest Center, Florence	28 Sept 1944	2 Oct 1944
1819	2750th Engrs.	Furnish Electric Arc Welder to 73 CRE	26 Sept 1944	29 Sept 1944
1820	2750th Engrs.	Extend equipt. release on 1/4 yd shovel to 387th Engrs.	26 Sept 1944	3 Oct 1944
1821	1338th Engrs.	Replace Bailey bridge on Route 65 across Sieve River at 0823912 with 2/way Class 40, 1/way Class 70 semi-permanent bridge	27 Sept 1944	5 Oct 1944
1822	1338th Engrs.	Replace Bailey bridge on Route 65 at 0814918 with Class 40, 2/way, Class 70, 1/way semi-permanent timber and steel bridge	27 Sept 1944	5 Oct 1944
1823	175th Engrs.	Construct Class 40, 2/way, Class 70, 1/way semi-permanent bridge across Serchio River at 0058705	28 Sept 1944	16 Oct 1944
1824	175th Engrs.	Replace Bailey bridge on Route 12 at 0135701 with Class 40, 2/way, Class 70, 1/way Timber Br.	28 Sept 1944	3 Oct 1944
1825	175th Engrs.	Replace Bailey bridge on Route 12 at 0142784 with Class 40, 2/way, Class 70, 1/way semi-permanent bridge	28 Sept 1944	8 Oct 1944
1826	1338th Engrs.	Furnish mine detector team to check area at 0822786 for 180th Sign. Repair Co.	28 Sept 1944	28 Sept 1944
1827	92nd Engrs.	Check road leading into QM Officer club in Florence	28 Sept 1944	19 Sept 1944
1828	1338th Engrs.	Widen road and excavate hole for oil tank for QM Depot 5-44	28 Sept 1944	1 Oct 1944
1829	1338th Engrs.	Construct minimum entrance and exit roads for 16th Evac. Hosp. nr. Firenzuola, at 1907067	28 Sept 1944	CANCELLED
1830	2750th Engrs.	Extend equipt release on 25 cu yd crusher, primary & crusher secondary to 387th Engrs.	27 Sept 1944	7 Oct 1944
1831	2750th Engrs.	Furnish Co. E, 175th Engrs, 25 cu yd crusher, primary and crusher secondary	28 Sept 1944	31 Oct 1944
1832	1338th Engrs.	Cut three vehicle entrances into mark at road junction Routes 65 and 6524	29 Sept 1944	6 Oct 1944
1833	73 CRE Wks.	Assist AMG in demolition of Ponte della Carraia and clear debris caused by demolition	25 Sept 1944	15 Oct 1944
1834	1338th Engrs.	Maintain Route 6524 from junction with Route 65 to Cigno	29 Sept 1944	25 Oct 1944
1835	1338th Engrs.	Maintain Route 65 from 0841184 to Bivio	29 Sept 1944	22 Oct 1944
1836	1338th Engrs.	Maintain Route 6620 from 0703946 to Montepiano	28 Sept 1944	20 Oct 1944
1837	73 CRE Wks.	Meet representatives from Ord. and decide on best methods of evacuating explosives	28 Sept 1944	30 Sept 1944
1838	16 AGRE	Furnish estimate of time, plant and troops required to construct improvements for use of Via Pesantina and the construction of a bridge at Ponte Alla Boda	29 Sept 1944	30 Sept 1944

APPENDIX J

THE ARNO THROUGH THE WINTER STATIC PHASE

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
1839	92nd Engrs.	Maintain following bridges: Signa Bridge, Ponte Vittoria Bridge, Ponte di Ferro	30 Sept 1944	25 Feb 1945
1840	92nd Engrs.	Maintain newly assigned roads: Rt. 66 from Pistoia to Florence; Rt. 6731 from Q660690 to Q680727; Route 1-1 (Autostrada) from Q740718 to Q688778	29 Sept 1944	25 Feb 1945
1841	175th Engrs.	Maintain newly assigned roads: Autostrada from Q453843 to Q541850	29 Sept 1944	6 Nov 1944
1842	92nd Engrs.	Remove Bailey across Arno River at Empoli and transport to E2-33	30 Sept 1944	5 Oct 1944
1843	387th Engrs.	Maintain Rt. 1 from Q045495 to Pisto bridge	29 Sept 1944	16 Nov 1944
1844	2750th Engrs.	Extend equipment release on crushers to 1338th Engr C. Gp	28 Sept 1944	15 Oct 1944
1845	92nd Engrs.	Replace 2 Bailey's at Q754578 on Rt. 2 with 1 span 40' steel and timber bridge	29 Sept 1944	12 Oct 1944
1846	92nd Engrs.	Replace 2 Bailey's at Q766642 on Rt. 2 with 2 span 60' steel and timber bridge	29 Sept 1944	9 Oct 1944
1847	92nd Engrs.	Remove without replacement following Bailey's: 60' DS at Q477705; 120' TS at Q650712	30 Sept 1944	2 Oct 1944
1848	175th Engrs.	Remove without replacement following Bailey's: 190' SS at Q313608; 140' DD at Q345616	30 Sept 1944	3 Oct 1944
1849	2750th Engrs.	Furnish shovel to 39th Engrs at Q863097	29 Sept 1944	8 Oct 1944
1850	175th Engrs.	Maintain freeway bridges at Q163804 and Q090720	30 Sept 1944	17 Oct 1944
1851	175th Engrs.	Maintain Rt. 1 from Viareggio to bridge at V981852	30 Sept 1944	21 Oct 1944
1852	2750th Engrs.	Furnish tractor D-8 to 1338th Engrs at Q823912	29 Sept 1944	4 Oct 1944
1853	1338th Engrs.	Furnish shovel with operator to 39th Engrs. at L863097	29 Sept 1944	3 Oct 1944
1854	16 AGRE	Repair breaks in surface of Rt. 69 with asphalt patches	30 Sept 1944	30 Oct 1944
1855	1338th Engrs.	Furnish mine crews to assist 51st Signal in construction of signal line to Bologna	30 Sept 1944	16 Oct 1944
1856	73 CRE Wks	Supervise and assist civilian authorities in construction of permanent bridges to replace Bailey's at Q768702; Q780701; Q805675; Q812719	30 Sept 1944	15 Nov 1944
1857	92nd Engrs.	Check depot area of 98 QX Rhd Co at L903065	30 Sept 1944	2 Oct 1944
1858	1338th Engrs.	Bulldoze entrances and exits into area for 98th QX Rhd Co Depot at L903065	30 Sept 1944	1 Oct 1944
1859	1554th Engrs.	Remove freeway bridge at Q293599 and transport to Depot E2-33	29 Sept 1944	1 Oct 1944
1860	175th Engrs.	Construct 1-way Cl. 40 across Ombrone River at Q515855	30 Sept 1944	1 Oct 1944
1861	1338th Engrs.	Release Lt. Shreiner for 4 days to instruct 99th and 100th Chem Bns in mine warfare	30 Sept 1944	5 Oct 1944
1862	2750th Engrs.	Furnish 2 prime movers with 20 ton trailers to 175th Engrs., to transport bridging equipment from Pisa Bridge to Serchio Bridge	29 Sept 1944	1 Oct 1944
1863	2750th Engrs.	Extend equipment release of 3 compressors and 1 crane truck to 175th Engrs.	30 Sept 1944	15 Oct 1944
1864	387th Engrs.	Under turn at junction of Rts. 165 and 67B to permit free turn East to North bound traffic	30 Sept 1944	30 Sept 1944
1865	1338th Engrs.	Install Cl. 40 Bailey at Q823912 to provide 2-way traffic	30 Sept 1944	1 Oct 1944
1866	16 AGRE	Pick up and deliver 30' SS Bailey at Q005604 to E2-33	1 Oct 1944	9 Oct 1944
1867	92nd Engrs.	Clear mines from area at L866086 for 204th QX Depot at Q52, Cl.III Truckhead	30 Sept 1944	1 Oct 1944
1868	1338th Engrs.	Construct entrance and exit roads for 204th QX Depot at Q52, Cl.III Truckhead at L866086	30 Sept 1944	5 Oct 1944
1869	1338th Engrs.	Send officer to make reconnaissance for Cl. I Depot on Rt. 65 at L865110	30 Sept 1944	30 Sept 1944
1870	1554th Engrs.	Furnish and operate 2 boat rafts to wade 175th Engrs in construction of bridge on Rt. 1 across Serchio River at Q057705	1 Oct 1944	16 Oct 1944
1871	73 CRE Wks	Extend facilities at Carreggi Hosp. at Florence from 500 to 800 beds	26 Sept 1944	30 Sept 1944
1872	73 CRE Wks	Examine all machinery and put in order at Welfare Centre (13 Corps Rest Center-Camelle Club). Also list of stores necessary to put in operation	28 Sept 1944	7 Oct 1944
1873	73 CRE Wks	Overhaul electrical installations in blocks occupied in 108th S. A. Hospital- Carreggi Hosp.	30 Sept 1944	7 Oct 1944
1874	73 CRE Wks	Make 6 dough troughs for military bakeries (Br) Florence Area	3 Oct 1944	14 Oct 1944
1875	73 CRE Wks	Repair wear after completion of 600mm water main. Include repairs to pipe tunnel if possible	24 Sept 1944	8 Oct 1944
1876	2750th Engrs.	Extend equipment release of 12 cu yd scraper and 8 cu yd scraper to 815th Engr Avn Bn	1 Oct 1944	10 Oct 1944
1877	92nd Engrs.	Clear rubble from road leading to Sesto at Q755767 to make road 2-way	2 Oct 1944	5 Oct 1944
1878	405th Engrs.	Make necessary repairs to maintain furnishing water to Tubercular Sanitarium (94th Evac Hosp) at Q825772	1 Oct 1944	8 Oct 1944
1879	92nd Engrs.	Furnish detail to clear mines from area to make water repairs at Tubercular Sanitarium now occupied by 94th Evac Hosp at Q825772	1 Oct 1944	6 Oct 1944
1880	2750th Engrs.	Extend equipment release on electric arc welder to 175th Engrs.	1 Oct 1944	5 Oct 1944
1881	175th Engrs.	Construct 2-way Cl. 40, 1-way Cl. 70 bridge on Rt. 1 across twin canals at Q079682	3 Oct 1944	10 Oct 1944
1882	1338th Engrs.	Do necessary work at Ord. Depot C-425	2 Oct 1944	11 Oct 1944
1883	1338th Engrs.	Furnish 20 loads of gravel to 3rd Conv Hosp.	2 Oct 1944	5 Oct 1944
1884	2750th Engrs.	Extend equipment release on 1 concrete mixer to 1338th Engrs.	4 Oct 1944	18 Oct 1944
1885	2750th Engrs.	Extend equipment release on 1 compressor, air to 175th Engrs.	1 Oct 1944	15 Oct 1944
1886	2750th Engrs.	Extend equipment release on 1 shovel, 3/4 yd to IV Corps Engrs.	2 Oct 1944	15 Oct 1944
1887	2750th Engrs.	Furnish 185th Engrs 1 air compressor for training purposes (Q803920) on Rt. 6525.	2 Oct 1944	15 Oct 1944
1888	92nd Engrs.	Construct 2 - 15' steel or wooden standards for lighting facilities at Vicarello Rhd	2 Oct 1944	4 Oct 1944
1889	1338th Engrs.	Construct entrance and exit and fill shell craters for (2nd Plat. 98 Rhd Co.) at L838072	2 Oct 1944	6 Oct 1944
1890	2750th Engrs.	Furnish D-8 bulldozer to 235th Engrs.	2 Oct 1944	8 Oct 1944
1891	1338th Engrs.	Maintain newly assigned roads	2 Oct 1944	CANCELLED
1892	92nd Engrs.	Maintain newly assigned roads	3 Oct 1944	CANCELLED
1893	175th Engrs.	Furnish Bailey bridge experts to advise Engineer of 92nd Division	2 Oct 1944	3 Oct 1944
1894	2750th Engrs.	Furnish 12 cu yd scraper and 1 D-8 to CO, "D", 175th Engrs.	3 Oct 1944	9 Oct 1944
1895	92nd Engrs.	Construct platform for Surgeon tent at 33rd Field Hosp.	4 Oct 1944	11 Oct 1944
1896	1554th Engrs.	Remove heavy Ponton bridge from Arno River at Q053624	3 Oct 1944	9 Oct 1944
1897	387th Engrs.	Accomplish work on drainage canal North and South-west of Lucca to prevent flood overflowing Lucca plain	4 Oct 1944	20 Oct 1944
1898	73 CRE Wks.	Construct timber trestles to carry 2-300mm pipes across Mignone Canal at LR 789598; lay and connect to main- 2-300mm pipes	1 Oct 1944	12 Oct 1944
1899	73 CRE Wks	Carry out minor works services for Garrison	29 Sept '44	30 Oct 1944
1900	73 CRE Wks	Make necessary repairs at Pensione - Lungarno, Acciaiuoli	29 Sept 1944	12 Oct 1944

APPENDIX J

THE ARNO THROUGH THE WINTER STATIC PHASE

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
1901	92nd Engrs.	Take over from 1338th Engrs, construction and graveling of roads in Depot E2-33 at Q710726	4 Oct 1944	19 Oct 1944
1902	2750th Engrs.	Furnish mtzd grader to Co. A, 182nd Engrs, at Q825923	4 Oct 1944	9 Oct 1944
1903	92nd Engrs.	Replace Bailey on Rt. 66 at Q637738	4 Oct 1944	20 Oct 1944
1904	92nd Engrs.	Replace Bailey over Ombrone River with 2-way Cl. 40, 1-way Cl. 70 timber bridge at Q549840	4 Oct 1944	20 Oct 1944
1905	92nd Engrs.	Replace inadequate culvert with two steel British type shelter culverts at Q595783	4 Oct 1944	1 Nov 1944
1906	92nd Engrs.	Replace inadequate culvert with a British arc bridge at Q627743	4 Oct 1944	11 Nov 1944
1907	92nd Engrs.	Replace inadequate culvert at Q607765 with Cl. 40, 2-way, Cl. 70, 1-way	4 Oct 1944	22 Oct 1944
1908	92nd Engrs.	Replace inadequate culvert at Q616756 with Cl. 40, 2-way, Cl. 70, 1-way	4 Oct 1944	27 Oct 1944
1909	92nd Engrs.	Replace inadequate culvert at Q604768 with brick arc bridge	4 Oct 1944	27 Oct 1944
1910	92nd Engrs.	Furnish bulldozer to level parking area at 788671 - Florence	4 Oct 1944	6 Oct 1944
1911	175th Engrs.	Replace 110' TS at Q365782 with Cl. 40, 2way, Cl. 70, 1-way, semi-permanent bridge	4 Oct 1944	29 Oct 1944
1912	175 Engrs	Replace 130' DB at Q143787 with Cl. 40, 2-way, Cl. 70, 1-way, timber bridge	5 Oct 1944	5 Nov 1944
1913	175th Engrs.	Replace 110' TS at Q364781 with Cl. 40, 2-way, Cl. 70, 1-way bridge	4 Oct 1944	14 Oct 1944
1914	92nd Engrs.	Check are for mines for 615th Clearing Hoop	4 Oct 1944	9 Oct 1944
1915	92nd Engrs.	Remove demolished iron bridges at Q666693 and Q637696	5 Oct 1944	14 Oct 1944
1916	387th Engrs.	Unload 3 carloads of piling Colle Solvetti Rhd	5 Oct 1944	6 Oct 1944
1917	92nd Engrs.	Deliver 15 loads of rock to 3d Conv Hoop. at Q834785	6 Oct 1944	5 Oct 1944
1918	1338th Engrs.	Prepare area for new Army CP, L840070	5 Oct 1944	22 Oct 1944
1919	1338th Engrs.	Replace 70' DS Bailey bridge at L852091 with Cl. 40, 2-way, Cl. 70, 1-way bridge	6 Oct 1944	14 Oct 1944
1920	92nd Engrs.	Furnish 3 mine detector teams to check are for new 5th Army CP	5 Oct 1944	5 Oct 1944
1921	92nd Engrs.	Supervise construction of 2 masonry bridges, Q685686 and Q691775	5 Oct 1944	9 Oct 1944
1922	1338th Engrs.	Construct roads for 8th Evac Hoop, at L855105	5 Oct 1944	18 Oct 1944
1923	2750th Engrs.	Furnish 1-3/4 yd shovel to 39th Engrs. at Pietramala (L870119) on Rt. 65	5 Oct 1944	8 Oct 1944
1924	2750th Engrs.	Continue equipment release on primary and secondary crushers to 387th Engrs.	7 Oct 1944	9 Oct 1944
1925	1554th Engrs.	Remove Treadway bridge across Arno River in vic of Cascina	6 Oct 1944	6 Oct 1944
1926	175th Engrs.	Construct pile trestles over Serchio River in vic of Lucca to support Cl. 40 Bailey to replace Treadway	20 Oct 1944	25 Oct 1944
1927	1338th Engrs.	Repair 3 places South of Pass, Q8996 on Rt. 6524	5 Oct 1944	16 Oct 1944
1928	2750th Engrs.	Extend release on 3/4 yd shovel to 39th Engrs.	9 Oct 1944	17 Oct 1944
1929	2750th Engrs.	Extend equipment release on 1/2 yd shovel to 19th Engrs.	11 Oct 1944	16 Oct 1944
1930	2750th Engrs.	Furnish 1 mtzd grader and 1 towed grader to 1338th Engrs.	6 Oct 1944	15 Oct 1944
1931	1338th Engrs.	Make reconnaissance, of Natural Methane gas installations at L8712	6 Oct 1944	6 Oct 1944
1932	387th Engrs.	Gravel driveway thru Cl. III, QM Gas Tank Truck filling depot at Q300590	7 Oct 1944	29 Oct 1944
1933	92nd Engrs.	Provide platoon to prepare new Hq area; provide usual detail to assist in move to new location	7 Oct 1944	12 Oct 1944
1934	92nd Engrs.	Erect overhead light line at Vicarello Rhd and install and connect generator	6 Oct 1944	9 Oct 1944
1935	387th Engrs.	Furnish detail to unload 3 car loads of piling and 3 car loads of prefab girders	6 Oct 1944	7 Oct 1944
1936	92nd Engrs.	Furnish mine crew to inspect bldg for Red Cross in Seato	7 Oct 1944	9 Oct 1944
1937	175th Engrs.	Furnish mine detector team to check area for B.E.P. staging area (vehicle)	7 Oct 1944	9 Oct 1944
1938	2750th Engrs.	Furnish electric arc welder to 92nd Engrs.	7 Oct 1944	8 Oct 1944
1939	92nd Engrs.	Furnish 2 bulldozers to 182nd Engrs on Rt. 6524	6 Oct 1944	14 Oct 1944
1940	1338th Engrs.	Construct necessary roads for bridge depot E2-33 at L872070	8 Oct 1944	13 Oct 1944
1941	2750th Engrs.	Furnish welding equip with oxygen to 175th Engrs.	8 Oct 1944	12 Oct 1944
1942	175th Engrs.	Maintain Rt. 64 from Pistoia to Taviano L600065	8 Oct 1944	6 Nov 1944
1943	2750th Engrs.	Furnish Quickway Cranes to 16th Armored Engrs at L599060	8 Oct 1944	9 Oct 1944
1944	16 AGRE	Check and clear verges of minee on roads RJ Q737586-RJ Q733612 and Q737586 to Q745942	9 Oct 1944	14 Oct 1944
1945	1338th Engrs.	Extend maintenance of Rt. 6620 to Castiglione incl.	8 Oct 1944	20 Oct 1944
1946	1338th Engrs.	Construct ASP Q-426 vic of L862183	9 Oct 1944	15 Oct 44
1947	2750th Engrs.	Furnish concrete mixer to 815th Engrs Avn	9 Oct 1944	11 Oct 1944
1948	1338th Engrs	Construct roads and hardstandings for 94th Evac Hoop. at L856178	10 Oct 1944	16 Oct 1944
1949	1338th Engrs.	Maintain Rt. 65 to RJ with 6530 at L865165	10 Oct 1944	CANCELLED
1950	92nd Engrs.	Draw 3 rolls of Sommerfeld -matting and install at 3rd Conv Hoop at Q834185	10 Oct 1944	11 Oct 1944
1951	92nd Engrs.	Remove 2 demolished overpasses on Autostrada at 235th QM Bn	10 Oct 1944	11 Oct 1944
1952	73 CRE Tks	Remove and transport 80' SS Bailey at Q805675 to Bridge Depot E2-33	11 Oct 1944	20 Oct 1944
1953	387th Engrs.	Furnish detail and equip to unload piling, Bailey bridging and prefab girders in Colle Solvetti Rhd	10 Oct 1944	21 Nov 1944
1954	92nd Engrs.	Furnish personnel to supervise Italian labor to lay 4 rolls of Sommerfeld track in Castelfiorentine Cemetery	11 Oct 1944	13 Oct 1944
1955	1338th Engrs.	Pick old Bailey bridge parts along Rt. 6528 and return to Bridge Depot E2-33	12 Oct 1944	13 Oct 1944
1956	92nd Engrs.	Remove without replacement and transport to E2-33: Q800529, Q794543, Q710549, Q775567, Q776562, Q789558	11 Oct 1944	15 Oct 1944
1957	1338th Engrs.	Construct 2-way Cl. 200 lb, 1-way Cl. 350 lb, footbridges to connect Signal Section with Engr Hqs	12 Oct 1944	13 Oct 1944
1958	2750th Engrs.	Furnish 1 mtzd grader with operator to 1628th Engr Util. Det at 5th Army Hq	12 Oct 1944	18 Oct 1944
1959	1338th Engrs.	Improve for casual traffic lateral road between RJ 6620 at L730845 and RJ with 6525 at Q784956	12 Oct 1944	22 Oct 1944
1960	2750th Engrs.	Furnish mtzd. grader with operator to 182nd Engrs at Q835922	12 Oct 1944	11 Oct 1944
1961	1554th Engrs.	Furnish 2-8 ton trailers with prime movers to assist 175th Engrs in transporting bridge material to Q145781	12 Oct 1944	CANCELLED
1962	1338th Engrs.	Grade roads for 405th Engrs at L907077, L840070, Q892947 and Q819924	12 Oct 1944	19 Oct 1944
1963	92nd Engrs.	Furnish 162nd Med Bn with 20 loads of stone	12 Oct 1944	25 Oct 1944
1964	16 AGRE	Salvage all Bailey bridge parts from washed out bridges at Incisa and Borgo S. Lorenzo	12 Oct 1944	25 Oct 1944
1965	2750th Engrs.	Extend equipment release on D-8 tractor and 1-12 yd scraper to 175th Engrs for constructing fill for bridge approaches	13 Oct 1944	17 Oct 1944

APPENDIX J

THE ARNO THROUGH THE WINTER STATIC PHASE

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
1966	2750th Engrs.	Extend equip release on 1 electric arc welder to 92nd Engrs.	13 Oct 1944	19 Oct 1944
1967	73 CRE Wks	Assist AMG in clearing of demolished bridges from Maggona Canal	13 Oct 1944	31 Oct 1944
1968	2750th Engrs.	Furnish equipment to move R-4 dozer in Engr Depot E2-L76 to E2-34	13 Oct 1944	14 Oct 1944
1969	175th Engrs.	Salvage all possible parts of washed out Bailey at Q148800 and return to E2-33	13 Oct 1944	14 Oct 1944
1970	387th Engrs.	Remove and transport to Bridge Depot E2-33 the 120' TS Bailey at Q060569	13 Oct 1944	14 Oct 1944
1971	1338th Engrs.	Furnish 80 yds of stone to 22 QM Car Co, 5th Army CP	12 Oct 1944	15 Oct 1944
1972	16 ACRE	Maintain roads as Cl. 40: Rt. 6528 from Piraizuola to S. Andrea; Rt. 67 from Diomano to S. Benedetto	13 Oct 1944	CANCELLED
1973	175th Engrs.	Chek are for mines for 263rd QM Bn at Q015743	14 Oct 1944	14 Oct 1944
1974	175th Engrs.	Make recon of roads (secondary road to Rt. 64)	14 Oct 1944	15 Oct 1944
1975	2750th Engrs.	Pick up D-8 at 235th Engrs and deliver to 182nd Engrs.	14 Oct 1944	31 Oct 1944
1976	1338th Engrs.	Release 10 loads of gravel to Hq and Hqs Co, 5th Army Rq	13 Oct 1944	15 Oct 1944
1977	92nd Engrs.	Investigate flooding of area near Radar Station, near Depot E2-33	14 Oct 1944	15 Oct 1944
1978	175th Engrs.	Construct Cl. 40, 2-way, Cl. 70, 1-way timber bridge on Rt. 1-1 at Q388800	16 Oct 1944	9 Nov 1944
1979	175th Engrs.	Construct Cl. 40, 2-way, Cl. 70, 1-way, timber bridge on Rt. 1-1 at Q384796	16 Oct 1944	9 Nov 1944
1980	175th Engrs.	Construct Cl. 40, 2-way, Cl. 70, 1-way, timber bridge on Rt. 1-1 at Q356774	16 Oct 1944	9 Nov 1944
1981	175th Engrs.	Construct Cl. 40, 2-way, Cl. 70, 1-way, timber bridge on Rt. 1-1, at Q403180	16 Oct 1944	21 Oct 1944
1982	175th Engrs.	Construct Cl. 40, 2-way, Cl. 70, 1-way, timber bridge on Rt. 1-1 at Q429815	16 Oct 1944	7 Nov 1944
1983	175th Engrs.	Construct Cl. 40, 2-way, Cl. 70, 1-way, timber bridge on Rt. 1-1 at Q429815	16 Oct 1944	8 Nov 1944
1984	1338th Engrs.	Maintain Rt. 6620 to Bailey bridge incl. at L749193	15 Oct 1944	20 Oct 1944
1985	1338th Engrs.	Release 10 loads of gravel to 1628th Engrs.	14 Oct 1944	15 Oct 1944
1986	2750th Engrs.	Extend equipment release on 1 shovel to IV Corps	16 Oct 1944	31 Oct 1944
1987	2750th Engrs.	Furnish 1 mtd grader to 92nd Engrs, near Sesto	14 Oct 1944	31 Oct 1944
1988	2750th Engrs.	Extend equip release on 1 set of crushers to 1338th Engrs.	16 Oct 1944	31 Oct 1944
1989	2750th Engrs.	Extend equip release on 1 compressor to 185th Engrs.	16 Oct 1944	31 Oct 1944
1990	92nd Engrs.	Construct 1000 signs with pickets for Transportation Section	15 Oct 1944	30 Oct 1944
1991	92nd Engrs.	Assist with rock hauling, the Depot personnel, in resurfacing and re-ditching of roads in Engr Depot E2-32	15 Oct 1944	25 Oct 1944
1992	1338th Engrs.	Move crusher unit as far North on Rt. 65 as light line permits and put into 20 hr operation	15 Oct 1944	15 April '45
1993	2750th Engrs.	Extend equip release to 175th Engrs on 3 Air Compressors, 1 Quickway Crane and 1 Welding Equip Set.	16 Oct 1944	26 Oct 1944
1994	92nd Engrs.	Place permanent top on Army Engr CP Trailer	17 Oct 1944	20 Oct 1944
1995	Co D, 84th Engrs	Chek over and winterize Engr Ho Weapons Carrier, including repairs to body and construction of permanent top	15 Oct 1944	25 Oct 1944
1996	1338th Engrs.	Replace Bailey and Treadway with culvert and fill on Route 65 at L865118	15 Oct 1944	19 Oct 1944
1997	2750th Engrs.	Extend equip. release on 1 - 12 yd scraper and 1-8 yd scraper to 815th Engrs.	15 Oct 1944	22 Oct 1944
1998	73 CRE Wks.	Install 6 showers in American Officers Club at Florence	15 Oct 1944	22 Oct 1944
1999	2750th Engrs.	Extend equip. release on 3/4 yd shovel to the 175th Engrs.	15 Oct 1944	26 Oct 1944
2000	1554th Engrs.	Transport Bailey bridge in dump at San Romano, to Depot E2-33, Florence	16 Oct 1944	22 Oct 1944
2001	387th Engrs.	Maintain fixed bridge across Arno at Pisa	16 Oct 1944	8 Dec 1944
2002	387th Engrs.	Construct and erect warning signs at approaches to Pisa bridge	16 Oct 1944	17 Oct 1944
2003	92nd Engrs.	Reinforce Montalupo Bridge by addition of steel I Beams or Channels to ends of Bailey girders	16 Oct 1944	20 Oct 1944
2004	92nd Engrs.	Remove 60' BS Bailey at Q754581 and transport to E2-33	16 Oct 1944	18 Oct 1944
2005	73 CRE Wks	Repair entrance road to Air Evac Station (Br)	12 Oct 1944	16 Oct 1944
2006	73 CRE Wks	Convert Casa - del G.I.L. Florence into EPI Restaurant	28 Oct 1944	25 Jan 1945
2007	92nd Engrs.	Grade roads located at Q685590	16 Oct 1944	18 Oct 1944
2008	92nd Engrs	Remove 100' TS Bailey at Q760644 and transport to E2-33	16 Oct 1944	18 Oct 1944
2009	1338th Engrs.	Grade hum from road leading to Ammo Dump ASP 25, near 5th Army Cub Field	17 Oct 1944	19 Oct 1944
2010	387th Engrs.	Repair lighting system at Vicarello Depot	16 Oct 1944	16 Oct 1944
2011	92nd Engrs.	Make recon and perform work for 110 QM Bakery on Rt. 2 at Q755653	16 Oct 1944	20 Oct 1944
2012	1338th Engrs.	Furnish mine instruction team for work with 92nd Engrs.	18 Oct 1944	22 Oct 1944
2013	1338th Engrs.	Construct minimum roads and install drainage system for 15th Evac Hosp on Rt. 6511 at L872229	18 Oct 1944	25 Oct 1944
2014	2750th Engrs.	Extend equip release on concrete mixer 14 cu yd to 1338th Engrs.	19 Oct 1944	5 Nov 1944
2015	1338th Engrs.	Furnish 53rd Ord Gp 500 yds of run rock gravel	18 Oct 1944	30 Oct 1944
2016	1338th Engrs.	Furnish mine instruction team to instruct 500 replacements in use of mines and bobby traps	18 Oct 1944	CANCELLED
2017	175th Engrs.	Construct Cl. 40, 2-way, Cl. 70, 1-way, semi-permanent bridge on Rt. 64 at Q563002	18 Oct 1944	14 Nov 1944
2018	175th Engrs.	Construct Cl. 40, 2-way, Cl. 70, 1-way bridge to replace 45' Treadway on Rt. 64 at Q564008	19 Oct 1944	30 Nov 1944
2019	92nd Engrs.	Make reconnaissance of gravel requirements for gas dump Q5-54 at Sesto	18 Oct 1944	19 Oct 1944
2020	175th Engrs.	Construct Cl. 40, 2-way, Cl. 70, 1-way, semi-permanent bridge on Rt. 64 at Q563004	18 Oct 1944	18 Nov 1944
2021	2750th Engrs.	Furnish electric arc welder to H & S Co, 405th Engrs at Q738667	17 Oct 1944	25 Oct 1944
2022	387th Engrs.	Construct Cl. 40, 2-way, Cl. 70, 1-way bridge on Hwy 67 at Q361590 to replace inadequate culvert	18 Oct 1944	16 Nov 1944
2023	175th Engrs.	Construct Cl. 40, 2-way, Cl. 70, 1-way, semi-permanent on Rt. 64 at Q560995 to replace 70' DS Bridge	20 Oct 1944	10 Nov 1944
2024	175th Engrs.	Construct Cl. 40, 2-way, Cl. 70, 1-way bridge, utilizing existing arc bridge on Rt. 64 at Q568013	20 Oct 1944	8 Nov 1944
2025	1554th Engrs.	Furnish 2 tractors with semi-trailer to 175th Engrs	18 Oct 1944	25 Oct 1944
2026	387th Engrs.	Maintain following routes: Rt. 1 from Arno River to Serchio River; Rt. 12 from Pisa to Q120766	19 Oct 1944	31 Jan 1945
2027	175th Engrs.	Move and transport to 5th Army Bridge Depot E2433 the 280' DS over Serchio River at Q059708	19 Oct 1944	20 Oct 1944
2028	2750th Engrs.	Extend equip release on Quickway Crane to 16th Engrs.	20 Oct 1944	30 Oct 1944
2029	1338th Engrs.	Construct 3 roll connection PT Enclosure at L868125	19 Oct 1944	24 Oct 1944
2030	2750th Engrs.	Extend equip release on towed grader and mtd grader to 1338th Engrs.	21 Oct 1944	10 Nov 1944

APPENDIX J

THE ARNO THROUGH THE WINTER STATIC PHASE

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
2031	92nd Engrs.	Prepare plans for 2/way Class 40, 1/way Class 70 semi-permanent bridge across Ombrone River on Route 6627	18 Oct 1944	20 Oct 1944
2032	2750th Engrs.	Extend equipt. release on 3/4 yd shovel to 19th Engrs.	21 Oct 1944	10 Nov 1944
2033	2750th Engrs.	Extend equipment release of set of rock crushers to 187th Engrs.	21 Oct 1944	10 Nov 1944
2034	2750th Engrs.	Furnish compressor, to 1338th Engrs.	20 Oct 1944	10 Nov 1944
2035	2750th Engrs.	Furnish D-8 tractor and Road Rooter to 19th Engrs, on Route 65	19 Oct 1944	25 Oct 1944
2036	387th Engrs.	Remove 40' DS Bailey at Q182618	20 Oct 1944	CANCELLED
2037	175th Engrs.	Furnish 67th Ord. Bn., 100 cu yds of Quarry run stone	20 Oct 1944	26 Oct 1944
2038	92nd Engrs.	Make reconn. of road, vic. of 80' DS bridge at Q588811. Remove bridge if reconn. warrants it.	20 Oct 1944	20 Oct 1944
2039	2750th Engrs.	Furnish cargo truck w/drivers to assist in transportation of men and elect. apparatus	20 Oct 1944	10 Nov 1944
2040	175th Engrs.	Construct 2/way Class 40, 1/way Class 70 bridge to replace Bailey on Route 64 at L567011	21 Oct 1944	15 Nov 1944
2041	84th Engrs.	Ascertain location of dummy Bailey bridge in Army area. Report them and repair.	21 Oct 1944	28 Oct 1944
2042	84th Engrs.	Furnish detail of men to level and surface Engr Hq. Area.	20 Oct 1944	20 Oct 1944
2043	92nd Engrs.	Construct exit and entrance roads and interior roads from QM. class II Depot at Q741762, vic. Sesto	21 Oct 1944	1 Nov 1944
2044	175th Engrs.	Furnish mine removal personnel to clear road crater on Route 66, at Q510912	21 Oct 1944	21 Oct 1944
2045	175th Engrs.	Open and operate Quarry to furnish stone for Army installations	20 Oct 1944	27 Apr 1945
2046	1338th Engrs.	Pick up, service, repair and hold for use, Fiat snowplow located on Route 65	21 Oct 1944	2 Nov 1944
2047	1338th Engrs.	Surface 2 roads for 8th Evac. Hosp, and construct walks	20 Oct 1944	25 Oct 1944
2048	175th Engrs.	Pick up, service, repair and hold for use Fiat snowplow, located on Route 64	21 Oct 1944	22 Oct 1944
2049	1338th Engrs.	Perform work at 16th Evac. Hosp	20 Oct 1944	22 Oct 1944
2050	1338th Engrs.	Open and operate quarry as far forward as practicable in vic. of Route 65	22 Oct 1944	15 Apr 1945
2051	92nd Engrs.	Maintain Route 65 from junction w/6524 to Futa Pass, Q820045	21 Oct 1944	CANCELLED
2052	387th Engrs.	Maintain Route 1, from Serchio Bridge to U980654	22 Oct 1944	11 Dec 1944
2053	92nd Engrs.	Make traffic count for 5 days at dual-carriageway Bailey bridge on Route 67	22 Oct 1944	27 Oct 1944
2054	1338th Engrs.	Load and transport to Engr Depot, engineer equipt., located on Route 65 at L875119	22 Oct 1944	24 Oct 1944
2055	1338th Engrs.	Construct minimum roads for 47th QM GR at L865100 on Route 65	22 Oct 1944	1 Nov 1944
2056	387th Engrs.	Remove debris from bridges upstream from Route 1	22 Oct 1944	11 Oct 1944
2057	1338th Engrs.	Furnish air compressor and operator to perform drilling and blasting operations for ORS at L868108	22 Oct 1944	1 Nov 1944
2058	1338th Engrs.	Maintain and improve Route 6529 from junction w/65 East to junction w/917	23 Oct 1944	CANCELLED
2059	175th Engrs.	Maintain Route 6620 from Prato to L750195	30 Oct 1944	6 Nov 1944
2060	1338th Engrs.	Level area for X-ray and 2 operation tents for 15th Evac. Hosp. at L872229	22 Oct 1944	24 Oct 1944
2061	387th Engrs.	Repair drainage system of Vicarelli Railroad	22 Oct 1944	24 Oct 1944
2062	1338th Engrs.	Improve hardstandings at water point	23 Oct 1944	31 Oct 1944
2063	1338th Engrs.	Improve entrances into TCP at Rv 65 and 6524	23 Oct 1944	24 Oct 1944
2064	1554th Engrs.	Remove 2 treadway bridges at Q640700, 40 yds. S. of 67	23 Oct 1944	25 Oct 1944
2065	175th Engrs.	Pick up snow plows, repair and transport to 2750 Engrs	24 Oct 1944	25 Oct 1944
2066	1338th Engrs.	Repair Fifth Army Cub strip by bringing to grade section that has settled due to rain	23 Oct 1944	24 Oct 1944
2067	92nd Engrs.	Furnish 100 cu. yd Quarry run stone to 212 Signal Depot	23 Oct 1944	15 Nov 1944
2068	387th Engrs.	Furnish bulldozer to clear rubble for 29th Station Hosp, Pisa at Q108655	24 Oct 1944	24 Oct 1944
2069	2750th Engrs.	Furnish D-8 Tractor to 169th Engrs.	24 Oct 1944	10 Nov 1944
2070	73 CRE	Cold storage plant (Col. Smith)	22 Oct 1944	12 Nov 1944
2071	92nd Engrs.	Replace Bailey bridge, Q505865 with 2/way Class 40, 1/way Class 70 semi-permanent bridge	23 Oct 1944	6 Nov 1944
2072	92nd Engrs.	Furnish 50 cu yds. Quarry run stone to Co. A- 405th Engrs.	24 Oct 1944	24 Oct 1944
2073	387th Engrs.	Replace Bailey bridge, Q284757 with 1/way Class 70 Culvert	25 Oct 1944	9 Nov 1944
2074	92nd Engrs.	Check area for mines at QM cl. III Depot (Q546) at Q595826	24 Oct 1944	25 Oct 1944
2075	387th Engrs.	Replace 50' Bailey bridge, Q277758 with 2/way Class 40, 1/way Class 70 semi-permanent bridge	24 Oct 1944	5 Nov 1944
2076	92nd Engrs.	Take over from 1338th Engrs, and maintain Route 6524 from junction w/65 to Giogo Pass at Q908986	24 Oct 1944	24 Jan 1945
2077	175th Engrs.	Replace Bailey bridge, L571015, with 2/way Class 40, 1/way Class 70 semi-permanent bridge	25 Oct 1944	14 Nov 1944
2078	175th Engrs.	Replace Bailey bridge, L594088, with 2/way Class 40, 1/way Class 70 semi-permanent bridge	25 Oct 1944	4 Jan 1945
2079	2750th Engrs.	Extend release on air compressor, Quickway, welding and cutting equip. to 175th Engrs.	27 Oct 1944	12 Nov 1944
2080	92nd Engrs.	Take over maintenance of Route 6627 from junction with 64 to junction with Autostrada at Q451843	25 Oct 1944	6 Nov 1944
2081	1338th Engrs.	Replace 10' SS Bailey bridge at L006173 with 2-way Class 40 bridge or culvert	26 Oct 1944	CANCELLED
2082	1338th Engrs.	Replace 40' DS Bailey bridge at L947061 with 2-way Class 24, 1-way Class 40 timber bridge	26 Oct 1944	30 Oct 1944
2083	1338th Engrs.	Improve bypass to low level Bailey at L004140 to take all-weather traffic	26 Oct 1944	1 Nov 1944
2084	1338th Engrs.	Relieve 13 Corps of maintenance of Route 6528 from M004140 to junction with Route 937; thence on Route 937 to Junction with Route 6529	26 Oct 1944	Cancelled
2085	16 AGRE	Construct Class 24 Bailey to make 2-way traffic at L954093	26 Oct 1944	31 Oct 1944
2086	175th Engrs.	Make reconn. of roads to be cleared of mines for Fifth Army fire wood supply	26 Oct 1944	29 Oct 1944
2087	2750th Engrs.	Furnish Quickway Crane to 92nd Engrs.	25 Oct 1944	4 Nov 1944
2088	2750th Engrs.	Furnish 2 prime movers and 20 ton trailers to 92nd Engrs. to haul steel from Borgo San Lorenzo to Pistoia	25 Oct 1944	15 Nov 1944
2089	1338th Engrs.	Make traffic count on Route 6529; Route 937 at junction to determine number of British and American vehicles on each route	26 Oct 1944	5 Nov 1944
2090	92nd Engrs.	Construct barricades for 8 windows, 1-2 hole latrines and 2 doors with frames for FY enclosure on Route 67 S7 of Florence	25 Oct 1944	27 Oct 1944
2091	92nd Engrs.	Furnish 1 primary rock crusher to 1338th Engrs	25 Oct 1944	18 Nov 1944
2092	387th Engrs.	Construct Class 70, 1-way, Class 40, 2-way overpass for RR track at Q214770 on Autostrada	26 Oct 1944	8 Nov 1944

APPENDIX J

THE ARNO THROUGH THE WINTER STATIC PHASE

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
2093	175th Engrs.	Make 5 day traffic count of bridge over Sarchio River at Q148800	26 Oct 1944	1 Nov 1944
2094	387th Engrs.	Furnish IV Corps quarry run stone from your quarry near Bagni d. S. Giuliano	26 Oct 1944	20 Nov 1944
2095	92nd Engrs.	Make reconn. and do minimum work to make passable road for 549th Amb. Co., on Route 66, 600 yds N of 51st Signal bivouac area	26 Oct 1944	27 Oct 1944
2096	92nd Engrs.	Establish stock piles of sand along Route 65, in section maintained	27 Oct 1944	7 Jan 1945
2097	1338th Engrs.	Establish stock piles of sand along Route 65, in section maintained	27 Oct 1944	10 Nov 1944
2098	175th Engrs.	Replace Bailey bridge at L599062 with Class 40 2/way, Class 70 1/way bridge	27 Oct 1944	10 Nov 1944
2099	2750th Engrs.	Furnish D-8 dozer and 12 yd scraper to 387th Engrs.	27 Oct 1944	31 Oct 1944
2100	1338th Engrs.	Furnish mine instruction team to 9th Engr Bn (Brazilian)	28 Oct 1944	1 Nov 1944
2101	1554th Engrs.	Furnish 3 prime movers w/trailers to transport I beams for 175th Engrs.	28 Oct 1944	31 Oct 1944
2102	387th Engrs.	Maintain Route 1 from U920854 to U965884	28 Oct 1944	31 Jan 1945
2103	387th Engrs.	Make survey of canals and drainage system in vic. Viareggio to determine action necessary to prevent flooding of Route 1	27 Oct 1944	28 Oct 1944
2104	175th Engrs.	Construct 70' DS Bailey at Q719395 for South African Railway Construction Engineers	28 Oct 1944	30 Oct 1944
2105	2750th Engrs.	Furnish pile driver to 387th Engrs at Q280758	28 Oct 1944	1 Nov 1944
2106	92nd Engrs.	Construct entrance road for 299th QM Shoe Repair Co., at Q815920	29 Oct 1944	4 Nov 1944
2107	1338th Engrs.	Salvage Bailey bridge at M004140. Prepare plans for reconstruction	29 Oct 1944	1 Nov 1944
2108	1338th Engrs.	Furnish bulldozer to Gas dump Q5-1 at L905076	28 Oct 1944	5 Nov 1944
2109	92nd Engrs.	Furnish mine detail to clear area for antennae for Fifth Army Weather Station	28 Oct 1944	1 Nov 1944
2110	2750th Engrs.	Extend release on 2 Rock Crushers to 175th Engrs.	1 Nov 1944	30 Nov 1944
2111	2750th Engrs.	Furnish concrete mixer to 175th Engrs. at L577020	29 Oct 1944	8 Nov 1944
2112	92nd Engrs.	Furnish mine removal squad to clear path to body at Q678925	30 Oct 1944	31 Oct 1944
2113	2750th Engrs.	Extend equipt. release on 3/4 yd shovel to 19th Engrs.	1 Nov 1944	15 Nov 1944
2114	2750th Engrs.	Extend equipt. release on 3/4 yd shovel to 39th Engrs.	1 Nov 1944	15 Nov 1944
2115	2750th Engrs.	Extend equipt. release on 3/4 yd shovel to IV Corps Engrs.	1 Nov 1944	15 Nov 1944
2116	2750th Engrs.	Extend equipt. release on grader to 92nd Engrs.	1 Nov 1944	15 Nov 1944
2117	2750th Engrs.	Extend releases on D-8 tractor, grader, compressor and primary and secondary rock crushers to 1338th Engrs.	1 Nov 1944	14 Nov 1944
2118	92nd Engrs.	Construct 30' Class 40 2/way, Class 70 1/way bridge at Q528867	30 Oct 1944	17 Dec 1944
2119	92nd Engrs.	Construct roads, drainage, and hardstandings for Pistoia Railhead	30 Oct 1944	8 Nov 1944
2120	1338th Engrs.	Furnish 30 yds of stone to 61st MP Co	30 Oct 1944	2 Nov 1944
2121	2750th Engrs.	Move 3/4 yd shovel from Depot E2-34 to 185th Engr Quarry site at Q559109	29 Oct 1944	31 Oct 1944
2122	2750th Engrs.	Furnish D-8 bulldozer operator to Brazilian Engineers to instruct Brazilians	29 Oct 1944	1 Nov 1944
2123	2750th Engrs.	Furnish D-8 tractor to IV Corps Engineers	31 Oct 1944	10 Nov 1944
2124	2750th Engrs.	Extend release on D-8 tractor and 12 yd scraper to 387th Engrs	1 Nov 1944	10 Nov 1944
2125	92nd Engrs.	Maintain Route 6524 from Giogo Pass to Route 6528 at Firenuola	31 Oct 1944	24 Jan 1945
2126	92nd Engrs.	Improve road net work at ASP Depot at Q671603	31 Oct 1944	5 Nov 1944
2127	387th Engrs.	Clear debris from main channel in drainage ditches at U971848, U972848, U982853, U988854	1 Nov 1944	15 Nov 1944
2128	1338th Engrs.	Furnish bulldozer to widen existing ammo bays, and air compressor with operator to work quarry in ammo dump.	31 Oct 1944	10 Nov 1944
2129	92nd Engrs.	Do necessary work for ASP Depot at Q671603	1 Nov 1944	9 Nov 1944
2130	1338th Engrs.	Extend time period of mine instruction team to Brazilian Expeditionary Force	1 Nov 1944	4 Nov 1944
2131	175th Engrs.	Maintain Route 64 up to and including Bailey bridge at L588148	1 Nov 1944	6 Nov 1944
2132	1554th Engrs.	Furnish 3 Autocar truck tractors to pick up three units of Asphalt mixing plant and deliver to 119 Road Construction Co (Br.)	1 Nov 1944	13 Nov 1944
2133	92nd Engrs.	Check area for 3840th QM Gas Filling point	1 Nov 1944	1 Nov 1944
2134	92nd Engrs.	Maintain Autostrada from Q453843 to Q403809	1 Nov 1944	6 Nov 1944
2135	387th Engrs.	Maintain Autostrada from Q120766 to Q403809	1 Nov 1944	31 Jan 1945
2136	1338th Engrs.	Construct 220' continuous Bailey bridge at M004140	1 Nov 1944	28 Nov 1944
2137	175th Engrs.	Replace Bailey bridge at Q570033 with Class 40 2/way, Class 70 1/way semi-permanent bridge	3 Nov 1944	22 Nov 1944
2138	175th Engrs.	Replace treadway bridge at Q550990 with Class 40 2/way, Class 70 1/way bridge	1 Nov 1944	5 Dec 1944
2139	84th Engrs.	Furnish labor to condition Engineer Hqs	2 Nov 1944	8 Nov 1944
2140	16 AGRE	Maintain Route 6528 to junction with Route 937 vic. Castel del Rio	31 Oct 1944	28 Nov 1944
2141	92nd Engrs.	Construct roads to radar station at Q723723	2 Nov 1944	6 Nov 1944
2142	92nd Engrs.	Furnish 10 loads of quarry run stone to TCP 45	1 Nov 1944	8 Nov 1944
2143	1338th Engrs.	Move and install 2-400 KW generators, now at EM Rest Center, Florence, to new location near transformer station at Montecatini	2 Nov 1944	5 Nov 1944
2144	175th Engrs.	Clear mines from right-of-way for transmission line from Piano del Rocca to S. Romano	2 Nov 1944	17 Nov 1944
2145	1338th Engrs.	Fill sag holes and smooth present road in 94th Evac. Hosp. area near Monghidoro	5 Nov 1944	9 Nov 1944
2146	1338th Engrs.	Furnish bulldozer to cut two humps from Fifth Army Cuh landing strip near Firenuola	2 Nov 1944	5 Nov 1944
2147	92nd Engrs.	Furnish 40 loads quarry run stone to 2nd platoon 602nd Clearing Station	2 Nov 1944	9 Nov 1944
2148	92nd Engrs.	Furnish 100 loads quarry run stone to 115th QM Bn.	2 Nov 1944	20 Nov 1944
2149	92nd Engrs.	Furnish 20 loads quarry run stone to 601st Clearing Co	2 Nov 1944	8 Nov 1944
2150	92nd Engrs.	Construct signs for City Command Section	2 Nov 1944	26 Nov 1944
2151	92nd Engrs.	Furnish 100 yds of quarry run stone to 8th Ord. Co	2 Nov 1944	10 Nov 1944
2152	2750th Engrs.	Pick up 1 D-7 bulldozer at Engr Depot E2-34 and deliver to 313th Engrs.	1 Nov 1944	2 Nov 1944
2153	175th Engrs.	Widen entrance for QM Storage Depot at Q 521876	3 Nov 1944	3 Nov 1944
2154	1338th Engrs.	Repair Culvert and fill at L842075	2 Nov 1944	4 Nov 1944
2155	2750th Engrs.	Furnish Quickway crane to 1338th Engrs, at L842075	2 Nov 1944	5 Nov 1944
2156	2750th Engrs.	Furnish 2 Prime movers and 20-ton trailers to 1338th Engrs	3 Nov 1944	5 Nov 1944
2157	16 AGRE	Strengthen cube piers on Bailey bridge at M004140 by welding angles crisscrossed along faces of cubes	5 Nov 1944	9 Nov 1944

APPENDIX J

THE ARNO THROUGH THE WINTER STATIC PHASE

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
2158	1338th Engrs.	Deliver 50 loads of quarry run stone to 11 Corps Engr	5 Nov 1944	5 Nov 1944
2159	92nd Engrs.	Furnish bulldozer to prepare area for ASP 0428 at 0660797	5 Nov 1944	12 Nov 1944
2160	92nd Engrs.	Construct 2-way Class 40, 1-way Class 70 bridge on Route 65 at 0819822	5 Nov 1944	15 Nov 1944
2161	92nd Engrs.	Build up to original road level the dip on Route 67 at 06169	6 Nov 1944	20 Nov 1944
2162	1338th Engrs.	Improve army cub strip	5 Nov 1944	17 Nov 1944
2163	2750th Engrs.	Extend equipment release on Quickway Crane to 92nd Engrs.	5 Nov 1944	9 Nov 1944
2164	1554th Engrs.	Pick up and deliver to E2-13 the 40'DS Bailey at 0182638	5 Nov 1944	5 Nov 1944
2165	1338th Engrs.	Furnish 8th Evac. Hosp. 40 yds of quarry run stone	5 Nov 1944	21 Nov 1944
2166	1338th Engrs.	Operate and maintain two generators at Montecatini	6 Nov 1944	CANCELLED
2167	92nd Engrs.	Pick up and deliver to Army Bridge Depot E2-13 all Bailey loads and parts along road net	5 Nov 1944	21 Nov 1944
2168	16 AGRE	Pick up and deliver to Army Bridge Depot E2-13 all Bailey loads and parts along road net	6 Nov 1944	8 Nov 1944
2169	175th Engrs.	Construct piers for Bailey over Serchio at Lucca in accordance with your plan	6 Nov 1944	27 Nov 1944
2170	175th Engrs.	All previous road maintenance assignments are cancelled. Maintain road net newly assigned.	6 Nov 1944	CANCELLED
2171	1338th Engrs.	Repair bridge on exit road for 16th Evac. Hosp at Firenguola	7 Nov 1944	10 Nov 1944
2172	1338th Engrs.	Furnish 100 yds of quarry run stone at quarry site to Hq and Hq. Co, Fifth Army, also 30 yds crushed stone	6 Nov 1944	18 Nov 1944
2173	175th Engrs.	Furnish mine teams to check minimum roads for Fifth Army Wood Supply at Q040713 and Q022773	7 Nov 1944	27 Nov 1944
2174	2750th Engrs.	Extend equipt. release on 3/4 yd shovel with pile driver attachments	6 Nov 1944	15 Nov 1944
2175	175th Engrs.	Remove Bailey bridge at Q180619, erect signs	8 Nov 1944	26 Nov 1944
2176	1554th Engrs.	Transport Bailey bridge parts from Q180615 to Depot E-231	8 Nov 1944	10 Nov 1944
2177	92nd Engrs.	Clear mine area to allow Italians to work on flood control gates	7 Nov 1944	12 Nov 1944
2178	92nd Engrs.	Make survey of levee system along Route 66	7 Nov 1944	10 Nov 1944
2179	92nd Engrs.	Construct 4-10 hole latrines and 5 four hole latrines for 38th Evac. Hosp.	6 Nov 1944	9 Nov 1944
2180	2750th Engrs.	Extend release on set of crushers to 387th Engrs.	11 Nov 1944	5 Dec 1944
2181	2750th Engrs.	Extend release on shovel to 19th Engrs.	11 Nov 1944	11 Nov 1944
2182	2750th Engrs.	Furnish Electric Arc Welder to 92nd Engrs	7 Nov 1944	25 Dec 1944
2183	2750th Engrs.	Extend equipt. release on D-8 tractor and one 12 yd scraper to 387th Engrs.	11 Nov 1944	20 Nov 1944
2184	16 AGRE	Provide accommodations for No. 5 Transit Camp	9 Nov 1944	24 Nov 1944
2185	2750th Engrs.	Extend equipt. release on D-8 tractor, grader, towed compressor to 1338th Engrs	11 Nov 1944	11 Nov 1944
2186	2750th Engrs.	Furnish 175th Engrs, carryall with D-8 tractor for fill at bridge site on Route 64	7 Nov 1944	13 Nov 1944
2187	2750th Engrs.	Furnish truck and driver to transport personnel and material for AMG in constructing transmission line from Florence to Rifredi	8 Nov 1944	14 Nov 1944
2188	175th Engrs.	Assist AMG in construction of transmission line from Piano del Rocca to S. Romano	8 Nov 1944	24 Nov 1944
2189	175th Engrs.	Pick up and deliver to Army Bridge Depot E2-16 all Baileys dismantled along Autostrada; along Highway 64	8 Nov 1944	20 Nov 1944
2190	1554th Engrs.	Remove without replacement following Bailey bridges: 761, 729, 725, 728 and deliver to Fifth Army Depot	7 Nov 1944	14 Nov 1944
2191	92nd Engrs.	Furnish 150 loads of quarry run stone to Q-57 Depot	9 Nov 1944	8 Dec 1944
2192	1338th Engrs.	Furnish 5 loads of quarry run stone to Psychological Warfare Br. Sec., Fifth Army Hqs.	8 Nov 1944	10 Nov 1944
2193	175th Engrs.	Furnish mine clearance detail to check several areas in Montecatini	8 Nov 1944	9 Nov 1944
2194	73 CRE Wks	Investigate road condition Special Wireless Section vic. Scandici	8 Nov 1944	10 Nov 1944
2195	2750th Engrs.	Furnish 175th Engrs, Grader motorized	9 Nov 1944	5 Dec 1944
2196	2750th Engrs.	Extend equipt. release to 175th Engrs, on Concrete mixer, towed, 7 cu. ft.	9 Nov 1944	14 Nov 1944
2197	92nd Engrs.	Assist 14th Div. with tractor in moving from location at Q817918	9 Nov 1944	13 Nov 1944
2198	92nd Engrs.	Repair piers of Ponte Ferro bridges at Florence to permit Class 40 traffic over both bridges	11 Nov 1944	3 Dec 1944
2199	92nd Engrs.	Furnish 1st Plat, 602nd Clearing Co, 40 loads of quarry run stone at quarry site	9 Nov 1944	11 Nov 1944
2200	175th Engrs.	Perform work for 38th Evac. Hosp. at Pistoia	10 Nov 1944	30 Nov 1944
2201	92nd Engrs.	Repair bridge on Route 65 at Q824912	11 Nov 1944	15 Nov 1944
2202	92nd Engrs.	Furnish 102nd M Bakery with 10 truck loads of quarry run rock	10 Nov 1944	1 Dec 1944
2203	92nd Engrs.	Supervise and furnish necessary material and civilian transportation to repair 150' gap in vic. of Signa	9 Nov 1944	18 Dec 1944
2204	387th Engrs.	Construct 2-way Class 40, 1-way Class 70 semi-permanent bridge on Route 1	10 Nov 1944	24 Nov 1944
2205	387th Engrs.	Construct 2-way Class 40, 1-way Class 70 semi-permanent bridge on Route 1	10 Nov 1944	27 Nov 1944
2206	175th Engrs.	Construct Class 18 Bailey at Q529881	11 Nov 1944	13 Nov 1944
2207	22nd Engrs.	Furnish Transportation Section 10 loads of quarry run stone at quarry site	11 Nov 1944	13 Nov 1944
2208	1554th Engrs.	Furnish one R-4 dozer with 2 operators to report to Engr Hq, Fifth Army (Fwd)	11 Nov 1944	12 Nov 1944
2209	Co B, 84th Cam Bn	Supply motorized air compressor with crew to work on cub field and screens for IV Corps.	11 Nov 1944	17 Nov 1944
2210	175th Engrs.	Furnish D-7 and operator to report at Taviano	11 Nov 1944	16 Nov 1944
2211	2750th Engrs.	Extend equipt. release on Grader, motorized, to 182nd Engrs.	11 Nov 1944	17 Nov 1944
2212	1338th Engrs.	Remove damaged walls from G-3 bldg., at Fifth Army Hq.	12 Nov 1944	20 Nov 1944
2213	1338th Engrs.	Construct entrance and interior roads for 15th Field Hosp. at Q8393	12 Nov 1944	24 Nov 1944
2214	92nd Engrs.	Improve interior roads to 56th Evac. Hosp. at Q876925	12 Nov 1944	28 Nov 1944
2215	2750th Engrs.	Furnish prime movers and trailers to move D-8 tractor and 3/4 yd shovel from Florence to Marina di Pisa	12 Nov 1944	24 Nov 1944
2216	92nd Engrs.	Improve by use of bulldozer the two access roads to Autostrada	12 Nov 1944	18 Nov 1944
2217	2750th Engrs.	Extend release on Air compressor and Quickway to 175th Engrs.	13 Nov 1944	20 Nov 1944
2218	92nd Engrs.	Check area at Q822772 for mines	13 Nov 1944	15 Nov 1944
2219	175th Engrs.	Remove 40'SS Bailey at Q410819 and 80'DS at Q428816	13 Nov 1944	14 Nov 1944
2220	92nd Engrs.	Check house at Frespiano, Route 65 for 3111 Signal Service Co.	13 Nov 1944	15 Nov 1944
2221	92nd Engrs.	Improve roads into Shower and Bath Unit, Route 6528	13 Nov 1944	16 Nov 1944
2222	1338th Engrs.	Investigate amount of work required at Depot Q56 at L863093 to function as pipe head	13 Nov 1944	14 Nov 1944
2223	1554th Engrs.	Make investigation of ASP in Prato to determine needs of unit.	13 Nov 1944	14 Nov 1944

ATTACHMENT J

THE ARMO THROUGH THE INTER-STATE SPACE

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
2224	1338th Engrs.	Erect 23 prefabricated bents and construct frames and flo to for ward tents for 24th Hosp. at 1858112	14 Nov 1944	14 Dec 1944
2225	2750th Engrs.	Furnish quickway Crane to 1338th Engrs	13 Nov 1944	14 Dec 1944
2226	1338th Engrs.	Smooth roads in 8th Evac. Hosp at 1858112	14 Nov 1944	15 Nov 1944
2227	2750th Engrs.	Extend equip. release on Grader, motorized, to 92nd Engrs	16 Nov 1944	15 Dec 1944
2228	92nd Engrs.	Furnish 100 cu yds of quarry run stone to 8th Ord. M. Maintenance Co	14 Nov 1944	17 Nov 1944
2229	92nd Engrs.	Furnish 1338th Engrs 200 yds of quarry run gravel for graveling roads in 15th Field Hosp area	14 Nov 1944	17 Nov 1944
2230	2750th Engrs.	Furnish 92nd Engrs, one quickway crane	14 Nov 1944	23 Nov 1944
2231	2750th Engrs.	Extend equipment releases: Air Compressor; Curer; Grader; D-7 Tractor to 1338th Engrs	15 Nov 1944	30 Nov 1944
2232	2750th Engrs.	Extend release on motorized grader to 1338th Engrs	16 Nov 1944	30 Nov 1944
2233	2750th Engrs.	Furnish motorized grader to 137th Engrs	5 Nov 1944	20 Nov 1944
2234	1338th Engrs.	Do work to establish all winter weather standards and release for '5-6 Derot at 1867003	15 Nov 1944	1 Dec 1944
2235	2750th Engrs.	Extend equip. release on 1/4 yd shovel to 137th Engrs	16 Nov 1944	30 Nov 1944
2236	1338th Engrs.	Take over maintenance of road from 1911158 to 1914168 on 2-way Class 4C, 1-way Class 70 road	14 Nov 1944	COMPLETED
2237	1554th Engrs.	Construct rubble and rock ramp for new Engr Depot E2-37 in Lesto	15 Nov 1944	17 Nov 1944
2238	92nd Engrs.	Furnish 35 loads of quarry run rock to 785th Ord. Co	15 Nov 1944	23 Nov 1944
2239	2750th Engrs.	Extend release on 3/4 yd shovel to 137th Engrs	16 Nov 1944	30 Nov 1944
2240	2750th Engrs.	Extend release on 3/4 yd shovel to IV Corps Engrs	16 Nov 1944	30 Nov 1944
2241	387th Engrs.	Take over maintenance of road on west side of Cerchio River from Mucca (195796) to Borgo A. Kozzano (2233938)	16 Nov 1944	26 Dec 1944
2242	92nd Engrs.	Augment maintenance of Route 65 from Florence to Futa Pass	16 Nov 1944	24 Apr 1945
2243	1338th Engrs.	Furnish D-7 bulldozer to cut and level area for Fifth Army Supply	16 Nov 1944	20 Nov 1944
2244	1338th Engrs.	Furnish towed grader to II Corps Engrs	15 Nov 1944	10 Dec 1944
2245	1338th Engrs.	Extend release to furnish bulldozer and air compressor to JSP O-427	11 Nov 1944	20 Nov 1944
2246	1554th Engrs.	Draw lumber and construct floor for 2 radio equip. tents at Fifth Army Engr Hq.	15 Nov 1944	17 Nov 1944
2247	1554th Engrs.	Load and haul to Depot E2-36 the following Baileys: Q150774; Q13796; Q188800 on Autostrada at Q143787 on Route 12	16 Nov 1944	22 Nov 1944
2248	1338th Engrs.	Construct necessary culverts for drainage; furnish machine for shaping roads; furnish 1000 loads quarry rock to Ammo Dump ASP O-430 at Cullina (1872068)	16 Nov 1944	26 Nov 1944
2249	92nd Engrs.	Furnish supervisory personnel and construct 1-way Class 12 timber bridge for IV Class 3 Depot at Prato	16 Nov 1944	23 Nov 1944
2250	1554th Engrs.	Construct Class 40 Bailey on Route 66 at 1768702 and alongside existing Bailey bridge	17 Nov 1944	18 Nov 1944
2251	1554th Engrs.	Construct 1-way Class 18 Bailey over canal at 26382 for Ammo Depot ASP O-428. Also submit plans to replace Bailey with 1-way Class 12 timber bridge	17 Nov 1944	5 Dec 1944
2252	16 AGRE	Increase clearance of entrance gate to pass vehicles entering 4 C.R.D. in cement factory Pontecive	17 Nov 1944	18 Nov 1944
2253	2750th Engrs.	Furnish rock crusher, primary, 25 cu yd to II Corps Engr	17 Nov 1944	21 Nov 1944
2254	1554th Engrs.	Furnish bulldozer to do minimum necessary work for Ammo Dump ASP O-428 in Prato	16 Nov 1944	20 Nov 1944
2255	387th Engrs.	Furnish 100 yds of quarry run rock at quarry site to 57th Ord. Bn.	17 Nov 1944	14 Dec 1944
2256	92nd Engrs.	Furnish officer or NCO with demolition kit and up to 50 lbs of explosive to supervise AWG Italian personnel in demolition of wall at Prato	18 Nov 1944	20 Nov 1944
2257	92nd Engrs.	Furnish 50 loads of quarry run rock to 162nd Medical Bn	17 Nov 1944	25 Dec 1944
2258	16 AGRE	Do work on Bailey across Sieci River on Route 67 at C901703 with additional 10' and change Class to 60; Repair masonry; Replace damaged parts	16 Nov 1944	20 Nov 1944
2259	175th Engrs.	Hire and train 6 Italian carpenter foremen at each hospital site, starting with 38th Evac. Hosp.	18 Nov 1944	5 Dec 1944
2260	92nd Engrs.	Furnish 50 yds quarry run rock to 79th Ordnance	18 Nov 1944	20 Nov 1944
2261	2750th Engrs.	Furnish truck 2 1/2 ton with driver to pick up detail at Engr Depot E2-37, proceed to 54th Med. Bn. to haul barbed wire to E2-37	19 Nov 1944	20 Nov 1944
2262	175th Engrs.	Allocation of sawmill, owned by Italian civilian, Locca, for operation	15 Nov 1944	27 Apr 1945
2263	92nd Engrs.	Furnish maximum of 10 loads of quarry run rock to 262nd Ordnance Maintenance Co	18 Nov 1944	20 Nov 1944
2264	641 EAM Coy RE (dep)	Repair 120 KV line	12 Nov 1944	21 Nov 1944
2265	73 CRE	Assist 1 C.R.U. with stores, supervision and tools. Provide water point	20 Nov 1944	11 Dec 1944
2266	2750th Engrs.	Extend release on D-8 to 387th Engrs.	21 Nov 1944	20 Dec 1944
2267	2750th Engrs.	Extend release on Grader to 137th Engrs.	21 Nov 1944	5 Dec 1944
2268	387th Engrs.	Replace 90' TS Bailey bridge with 2-way Class 4C, 24 bridge at 186783	21 Nov 1944	5 Dec 1944
2269	175th Engrs.	Furnish mine clearing team to check area for 29th Station Hosp.	28 Nov 1944	29 Nov 1944
2270	92nd Engrs.	Replace 70' Bailey bridge with 2-way Class 4C, 1-way Class 70 semi-permanent steel and timber bridge	10 Nov 1944	26 Nov 1944
2271	1338th Engrs.	Conduct experiments using "bee-hives", shaped charges, to determine possibility of providing footings for pile bents	20 Nov 1944	24 Nov 1944
2272	1554th Engrs.	Have Officer investigate heating and electric system of Anglo-American Hotel	20 Nov 1944	20 Nov 1944
2273	92nd Engrs.	Furnish 20 truck loads of gravel to 110th Engrs.	21 Nov 1944	21 Nov 1944
2274	1554th Engrs.	Furnish 2 ponton tractors and trailers to E2-32	20 Nov 1944	30 Nov 1944
2275	92nd Engrs.	Furnish 10 loads stone to 262nd Ord. Maintenance Co.	20 Nov 1944	21 Nov 1944
2276	92nd Engrs.	Furnish 10 loads stone to 123rd Ord. vic. Barberino	21 Nov 1944	2 Dec 1944
2277	2750th Engrs.	Furnish motorized quickway Crane to 92nd Engrs.	21 Nov 1944	1 Dec 1944
2278	2750th Engrs.	Extend release on quickway Crane to 92nd Engrs.	24 Nov 1944	1 Dec 1944
2279	1338th Engrs.	Relieve 19th Engrs of operation of oil pot air beacon on Route 65 at 1853089	22 Nov 1944	28 Apr 1945
2280	2750th Engrs.	Extend release on D-8 Tractor and 12 yd Scraper to 175th Engrs.	22 Nov 1944	29 Nov 1944
2281	92nd Engrs.	Furnish the 13rd Field Hosp with 40 truck loads of gravel	21 Nov 1944	6 Dec 1944
2282	175th Engrs.	Construct railhead at Pistoina	22 Nov 1944	3 Dec 1944
2283	387th Engrs.	Replace 70' DS and 40' SS Baileys over twin canals at 1965085 with 2-way 40, 1-way Class 70 bridges	24 Nov 1944	9 Dec 1944

APPENDIX J
THE ARNO THROUGH THE WINTER STATIC PHASE

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
2284	387th Engrs.	Replace 80' DS Bailey at 0981852 with 2 span, 2-way Class 40, 1-way Class 70 timber bridge	24 Nov 1944	14 Dec 1944
2285	92nd Engrs.	Furnish 250 yds of rock to the 79th Ordnance at quarry site	21 Nov 1944	15 Dec 1944
2286	387th Engrs.	Replace 30' DS Bailey at 2061822 with 2-way Class 24, 1-way Class 40 timber bridge	23 Nov 1944	4 Dec 1944
2287	1338th Engrs.	Furnish 143rd Signal Co. with 100 loads of quarry run rock to Army CP	22 Nov 1944	CANCELLED
2288	387th Engrs.	Relieve 117th Engrs of maintenance of following roads, incl Bailey bridges: Route 1221 from Lucca to JW with 1221-A; Route 1221-A from RJ with 1221 to Viareggio; Road from Monte S. Quattro to 3145806	23 Nov 1944	31 Jan 1945
2289	1338th Engrs.	Furnish 100 yds quarry run stone to Hq. Co., Fifth Army	23 Nov 1944	29 Nov 1944
2290	2750th Engrs.	Extend release on Concrete Mixer to 175th Engrs.	24 Nov 1944	29 Nov 1944
2291	2750th Engrs.	Furnish Concrete Mixer to 1338th Engrs	22 Nov 1944	18 Dec 1944
2292	2750th Engrs.	Deliver 8 yd Carryall to 235th Engrs	22 Nov 1944	26 Nov 1944
2293	92nd Engrs.	Furnish 25 truck loads of river run gravel to 525th Ordnance Co.	23 Nov 1944	3 Dec 1944
2294	92nd Engrs.	Replace Bailey bridge at 0691721 with Class 40 2-way, Class 70 1-way, semi-permanent bridge	23 Nov 1944	5 Feb 1945
2295	92nd Engrs.	Replace culvert at 0595781 with Class 40, 2-way, Class 70 1-way bridge	23 Nov 1944	10 Jan 1945
2296	92nd Engrs.	Investigate cause of flooding on Route 6625 in vic. of Depot 05-41 at 0775719	23 Nov 1944	23 Nov 1944
2297	175th Engrs.	Send officer to classify bridge constructed by ASP 28 in Prato	23 Nov 1944	23 Nov 1944
2298	1554th Engrs.	Construct suitable entrance for trucks for 3298th Service Co., at 0799980	23 Nov 1944	29 Nov 1944
2299	1338th Engrs.	Make survey of requirements for winterizing program at 94th Evac. Hosp.	23 Nov 1944	23 Dec 1944
2300	92nd Engrs.	Bulldoze a radar hole possession for 403rd AAA in vic. 1895050	24 Nov 1944	26 Nov 1944
2301	175th Engrs.	Furnish carpenters and civilian workers to assist in winterizing 16th Evac. Hosp.	24 Nov 1944	26 Dec 1944
2302	405th Engrs.	Install one gasoline driven centrifugal pump for operation at CC Villa	25 Nov 1944	26 Nov 1944
2303	73 CRE Wks	Install plumbing and lighting facilities for 20 Court Martial Holding Centre	25 Nov 1944	11 Feb 1945
2304	73 CRE Wks	Supply latrines for South African Leave and Transit Camp	26 Nov 1944	30 Nov 1944
2305	73 CRE Wks	Do work in construction of Military Cemetery	28 Nov 1944	20 Dec 1944
2306	1554th Engrs.	Furnish two rafts with crews to 92nd Engrs at Ponte Ferro bridge in Florence	26 Nov 1944	4 Dec 1944
2307	2750th Engrs.	Furnish Primary Crusher to II Corps Engrs.	16 Nov 1944	10 Dec 1944
2308	1554th Engrs.	Construct roof over 3 bldgs. at 473rd Engr area	26 Nov 1944	22 Dec 1944
2309	2750th Engrs.	Extend release on two compressors and one crane to 175th Engrs.	26 Nov 1944	25 Dec 1944
2310	92nd Engrs.	Furnish 25 loads of river run gravel to 262nd Ord. Maintenance Co (AA)	25 Nov 1944	4 Dec 1944
2311	1554th Engrs.	Improve road by filling up dip. at 0775719	26 Nov 1944	2 Dec 1944
2312	2750th Engrs.	Extend Work Order No. 2187	23 Nov 1944	4 Dec 1944
2313	92nd Engrs.	Construct culvert at 1813021 and furnish quarry run rock to improve entrance road for 22 TAC	26 Nov 1944	3 Dec 1944
2314	2750th Engrs.	Furnish Arc Welder to 387th Engrs.	26 Nov 1944	3 Dec 1944
2315	387th Engrs.	Assist 29th Station Hosp., to establish itself in stadium in Lucca	27 Nov 1944	8 Dec 1944
2316	1338th Engrs.	Conduct mine school for Montecatini City Command Section	28 Nov 1944	29 Nov 1944
2317	175th Engrs.	Replace Bailey bridge at 0465847 with Class 40, 2-way, Class 70, 1-way bridge or culvert	28 Nov 1944	1 Dec 1944
2318	92nd Engrs.	Furnish 150 yds river run gravel to 94th Ordnance IV Co	26 Nov 1944	4 Dec 1944
2319	2750th Engrs.	Extend release on 8 yd towed scraper to 235th Engrs.	27 Nov 1944	6 Dec 1944
2320	1338th Engrs.	Furnish 500 loads quarry run stone to Hq Co., Fifth Army	27 Nov 1944	28 Feb 1945
2321	92nd Engrs.	Pick up 5-tons of paint and arrange with S-4, 387th Engrs., for distribution	28 Nov 1944	30 Nov 1944
2322	2750th Engrs.	Furnish motorized grader to 310th Engrs	28 Nov 1944	30 Nov 1944
2323	92nd Engrs.	Pick up and distribute stoves for snow stations	28 Nov 1944	29 Nov 1944
2324	92nd Engrs.	Construct signs for all snow posts	28 Nov 1944	4 Dec 1944
2325	92nd Engrs.	Furnish 30 loads river run gravel to 550th Ambulance Co	28 Nov 1944	14 Dec 1944
2326	1338th Engrs.	Furnish 150 loads of quarry run stone to Depot 05-3	28 Nov 1944	8 Dec 1944
2327	1338th Engrs.	Grade and widen entrance road and level area for Depot 05-3 at 1838072	30 Nov 1944	2 Dec 1944
2328	16 AGRE	Salvage Bailey bridge at M006178; pick up all unused Bailey bridging in vic. of bridge at M004140 and return to bridge depot E2-36	29 Nov 1944	2 Dec 1944
2329	1338th Engrs.	Sort out and return to bridge depot E2-36 all Bailey bridge parts at M004140	29 Nov 1944	4 Dec 1944
2330	387th Engrs.	Furnish 6 loads of quarry run stone to 121st Service Sqdn., Pisa	29 Nov 1944	4 Dec 1944
2331	175th Engrs.	Construct fill to replace bypass at 0451831	29 Nov 1944	7 Jan 1945
2332	387th Engrs.	Assist in necessary construction to winterize 29th Station Hosp., Lucca	29 Nov 1944	20 Dec 1944
2333	1338th Engrs.	Grade road, improve road junction for turning, and furnish gravel for ASP 31	30 Nov 1944	3 Dec 1944
2334	2750th Engrs.	Extend release on 3/4 yd shovel to 19th Engrs.	1 Dec 1944	8 Dec 1944
2335	1338th Engrs.	Investigate suspected mine field adjacent to military cemetery at 18611	30 Nov 1944	2 Dec 1944
2336	2750th Engrs.	Extend release on 8 yd scraper to 235th Engrs.	1 Dec 1944	10 Dec 1944
2337	2750th Engrs.	Extend release on 1/2 yd shovel to 39th Engrs.	1 Dec 1944	6 Dec 1944
2338	2750th Engrs.	Extend release on 3/4 yd shovel to IV Corps Engrs.	1 Dec 1944	8 Dec 1944
2339	2750th Engrs.	Extend release on quickway crane to 92nd Engrs.	1 Dec 1944	11 Dec 1944
2340	2750th Engrs.	Extend release on D-8 tractor, 3/4 yd shovel and primary and secondary rock crushers, to the 387th Engrs.	1 Dec 1944	30 Dec 1944
2341	2750th Engrs.	Extend release on D-8 tractor, 12 yd scraper, concrete mixer, primary and secondary crushers, to the 175th Engrs.	1 Dec 1944	15 Dec 1944
2342	2750th Engrs.	Extend release on towed grader, mtd grader, air compressors (2), and concrete mixer to the 1338th Engrs.	1 Dec 1944	20 Dec 1944
2343	2750th Engrs.	Furnish road router to 175th Engrs	30 Nov 1944	9 Dec 1944
2344	73 CRE Wks	Provide kitchen facilities, lighting, heating, showers, and do painting for UDF Rest Camp	27 Nov 1944	21 Dec 1944
2345	2750th Engrs.	Furnish 12 yd scraper, 2-8 yd scrapers, and 1 D-8 tractor to 175th Engrs.	1 Dec 1944	15 Dec 1944
2346	1338th Engrs.	Furnish 70 loads of quarry run stone to 22nd TAC	1 Dec 1944	14 Dec 1944
2347	1338th Engrs.	Assemble materials for 2-span, semi-permanent bridge, at 1867248	1 Dec 1944	13 Dec 1944
2348	2750th Engrs.	Extend release on quickway crane and mtd grader to 92nd Engrs	1 Dec 1944	14 Dec 1944
2349	16 AGRE	Pick up and transport to E2-36, all Bailey bridging at 0975727 and 0959703	2 Dec 1944	2 Dec 1944
2350	73 CRE Wks	Do work in Cronica block at Carreia, for 127 South African General Hospital	2 Dec 1944	30 Dec 1944

APPENDIX J
THE ARNO THROUGH THE WINTER STATIC PHASE

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
2351	73 CRE Wks	Do necessary work for 29 Independent Indian Field Butchery	2 Dec 1944	15 Dec 1944
2352	92nd Engrs.	Furnish 300 cu yds river-run gravel to 8th Ord MM Co.	2 Dec 1944	26 Dec 1944
2353	16 AGRE	Maintain Aoe Route from Castel del Rio to MO28200 and maintenance of Arrow Route from Marradi to Palazzuolo incl	1 Dec 1944	28 Jan 1945
2354	73 CRE Wks	Repair two caved in places in sewer line on Via Querciola, leading to GM Dump 5-41 on Rt. 6520	2 Dec 1944	7 Dec 1944
2355	92nd Engrs.	Assist 79th Ord in improving area by furnishing material for culvert and quarry run rock at quarry	2 Dec 1944	10 Dec 1944
2356	92nd Engrs.	Replace inadequate culvert at Q595783 with 2-way Cl. 40, 1-way Cl. 70 timber bridge	3 Dec 1944	10 Jan 1945
2357	73 CRE Wks	Construct 150 yds of new road 24' wide and with 1 pipe culvert at Q773720	30 Nov 1944	14 Dec 1944
2358	73 CRE Wks	Erect 4 Nissen and 2 Romany huts for L.R. Depot Via Pescicchi	5 Dec 1944	20 Dec 1944
2359	1338th Engrs.	Place Officer and assistants on TD with 1108th Engrs to assist in training 3 AAA Bns in mine-warfare	10 Dec 1944	1 Jan 1945
2360	1554th Engrs.	Maintain Bailey Bridges at: Q779960, Q784955, Q787937, Q796916 and Q775918	3 Dec 1944	22 Jan 1944
2361	1554th Engrs.	Deliver 24 Panel, 24 Decking loads of Bailey Bridging to 1755th Engrs on Rt. 65 at L859112	4 Dec 1944	4 Dec 1944
2362	92nd Engrs.	Furnish 40 loads of river-run gravel to 123rd Ord vic of Barberino	3 Dec 1944	30 Dec 1944
2363	1338th Engrs.	Furnish 200 yds of primary rock to 92nd Engrs for use on Rt. 65 vic of S. Lucia and Puta Pass	3 Dec 1944	5 Feb 1945
2364	16 AGRE	Priority on WO 2328 has been changed to read "1 - OP"	2 Dec 1944	3 Dec 1944
2365	92nd Engrs.	Furnish bulldozer, to pull searchlight and generator to firm ground, vic of 5th Army CP	3 Dec 1944	4 Dec 1944
2366	1554th Engrs.	Dismantle and haul to Bridge Depot E2-36 50' SS Bailey at Q529881; place "Cl. 12" signs at timber bridge adjacent to Bailey	4 Dec 1944	6 Dec 1944
2367	92nd Engrs.	Erect prefab bldg or Nissen hut at 3rd Conv Hosp.	4 Dec 1944	12 Dec 1944
2368	92nd Engrs.	Furnish 601st Clearing Co with 50 loads of quarry run rock	4 Dec 1944	20 Dec 1944
2369	175th Engrs.	Maintain Rt. 66 from junction with 64 to junction with 6629	6 Dec 1944	CANCELLED
2370	92nd Engrs.	Furnish 20 loads of quarry run rock to the 1st Plat. of 601st Clearing Co.	3 Dec 1944	13 Dec 1944
2371	92nd Engrs.	Furnish 50 loads of quarry run rock to the 15th Field Hosp	4 Dec 1944	1 Jan 1945
2372	92nd Engrs.	Furnish 50 loads of river run rock to the 15th Field Hosp.	4 Dec 1944	1 Jan 1945
2373	2750th Engrs.	Furnish 3/4 yd shovel to 1338th Engrs.	4 Dec 1944	2 Jan 1945
2374	92nd Engrs.	Furnish 25 loads of quarry run rock to 56th Evac Hosp.	4 Dec 1944	1 Jan 1945
2375	1338th Engrs.	Reshape 150 yds of entrance road and level convey assembly area for ACRO -4-30 on Rt. 6528 at L873068	4 Dec 1944	6 Dec 1944
2376	Co D, 84th Engrs.	Assist 56th Evac Hosp in winterizing ward tents	5 Dec 1944	22 Dec 1944
2377	1338th Engrs.	Construct 1-20' x 20' x 6' earthen banked, static water storage tanks for fire fighting at GM Cl. III Depot Q5-6 on Rt. 65 at L863093	5 Dec 1944	14 Dec 1944
2378	1338th Engrs.	Furnish 3 truck loads of quarry run rock to 532nd AAA Trucking Co.	4 Dec 1944	6 Dec 1944
2379	1338th Engrs.	Widen and grade 1000' of road for 63rd Sig Bn north of 5th Army CP	6 Dec 1944	8 Dec 1944
2380	92nd Engrs.	Pick up and return all Bailey parts along 6524 between Firenzeuola and Scarperia and return E2-36	5 Dec 1944	5 Dec 1944
2381	1338th Engrs.	Furnish 817th Engrs Avn Bn 500 loads of quarry run rock	10 Dec 1944	CANCELLED
2382	175th Engrs.	Construct 2-way Cl. 40, 1-way Cl. 70, semipermanent bridge at L990106	6 Dec 1944	25 Dec 1944
2383	2750th Engrs.	Furnish prime movers and trailers to move salvaged D-7 tractors from 473rd Maint Co. to Engr Depot E2L76 in Leghorn. Return new D-7's to 473rd Engrs at Sede	5 Dec 1944	24 Dec 1944
2384	1338th Engrs.	Furnish Depot Q5-56 100 lin ft of culvert pipe(dia 12") and sufficient rock to provide hard-standing. Culvert to be installed by depot personnel	6 Dec 1944	5 Feb 1945
2385	175th Engrs.	Furnish mine team to recheck roads and paths to woodcock piles for 5th Army wood supply	6 Dec 1944	15 Dec 1944
2386	92nd Engrs.	Clear right of way thru minefield 150' in length to repair leak in gas line at Q830990	7 Dec 1944	8 Dec 1944
2387	92nd Engrs.	Establish flood warning system for Arno River Valley. Warn the following Services; whs gauge at Florence reaches 17.0: GM, Trans, Surgeon, 5th Army Rear, Engr, PBS and this Hq	6 Dec 1944	28 Dec 1944
2388	175th Engrs.	Construct Cl. 40, 140' TD Bailey bridge over stream at L410021	7 Dec 1944	13 Dec 1944
2389	2750th Engrs.	Furnish towed grader to 92nd Engrs.	6 Dec 1944	18 Dec 1944
2390	1554th Engrs.	Fill 4 craters, clear rubble, and grade hardstanding area at North-end of Prato Bnd	5 Dec 1944	10 Dec 1944
2391	92nd Engrs.	Furnish 150 loads of quarry run rock to Army Base GM Dump Q5-7 at Q755705	7 Dec 1944	29 Dec 1944
2392	175th Engrs.	Furnish mine team to clear area for communication lines for Co. A, 63rd Sig Bn from Viareggio North and also from Pistoia North	7 Dec 1944	6 Jan 1945
2393	92nd Engrs.	Furnish 16 loads of gravel to 13 Corps Troops	7 Dec 1944	23 Jan 1945
2394	1338th Engrs.	Furnish 10 loads of secondary crushed rock to 39th Engrs	7 Dec 1944	4 Jan 1945
2395	1338th Engrs.	Furnish 10 yds of quarry run rock to 1980th Engr FP Plat	7 Dec 1944	14 Dec 1944
2396	92nd Engrs.	Furnish 150 yds of quarry run gravel to 94th Ord MM Co. Cancel WO 2318		
2397	1554th Engrs.	Arrange with the 387th Engrs to haul all Bailey's dismantled to E2-36	4 Dec 1944	19 Dec 1944
2398	1554th Engrs.	Pick up 900' of 1/4" of wire rope at E2-37. Load up 62 light ponton balk at E2-36. Deliver to 1755th Engrs.	7 Dec 1944	8 Dec 1944
2399	175th Engrs.	Repair bridge at entrance at British Bnd at Prato	9 Dec 1944	19 Dec 1944
2400	175th Engrs.	Construct 2-way Cl. 40, 1-way Cl. 70, 2 span semi-permanent bridge at L583116	12 Dec 1944	21 Jan 1945
2401	175th Engrs.	Conduct survey of feasibility and necessity of sewage system to be connected to city system of Pistoia for 38th Evac Hosp	8 Dec 1944	12 Dec 1944
2402	1338th Engrs.	Maintain the following routes: 65 from RJ of Rt. 6530 and Rt. 65 (L865764) to RM 70 (L873218)	11 Dec 1944	2 Jan 1945
2403	175th Engrs.	Make investigation and submit plans for replacing all Bailey's on Rt. 6620 with Cl. 40, 2-way, Cl. 70. 1-way, semi-permanent steel and timber bridges	9 Dec 1944	11 Dec 1944
2404	175th Engrs.	Furnish 7 EM with knowledge of culvert bridge construction to instruct new battalion at 1108th Engrs.	11 Dec 1944	31 Dec 1944
2405	92nd Engrs.	Erect 2- 64' prefab huts for 602nd Clearing Co. V.D. Hoap.	10 Dec 1944	20 Dec 1944
2406	Co B, 84th Engrs.	Assist 15th Field Hoap in winterizing wall tents	6 Dec 1944	22 Dec 1944
2407	92nd Engrs.	Furnish 500 cu yds of quarry run rock to 42 Ord Bn	9 Dec 1944	3 Jan 1945

APPENDIX J

THE ARNO THROUGH THE WINTER STATIC PHASE

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
2408	1338th Engrs.	Replace inadequate culvert on Rt. 65 at L842075	9 Dec 1944	22 Dec 1944
2409	175th Engrs.	Submit plans for replacement of Bailey's on Rt. 6620 at Q717989 and L 728029	9 Dec 1944	12 Dec 1944
2410	1338th Engrs.	Furnish 100 yds of quarry run rock to 785th Engr Pipeline Co	10 Dec 1944	CANCELLED
2411	1338th Engrs.	Extend equipment loan of towed grader to II Corps Engrs.	9 Dec 1944	12 Dec 1944
2412	2750th Engrs.	Extend equip release of primary rock crusher to II Corps Engrs.	11 Dec 1944	23 Dec 1944
2413	2750th Engrs.	Furnish 1 circular air powered saw to Co. D, 84th Engrs for use on construction of winter frames for 15th Field Hosp.	9 Dec 1944	24 Dec 1944
2414	92nd Engrs.	Furnish 75 cu yds quarry run stone to 405th Engrs	9 Dec 1944	1 Jan 1945
2415	1554th Engrs.	Furnish 5 ponton tractors and trailers to 175th Engrs for hauling logs between Viareggio and Lucca	10 Dec 1944	19 Dec 1944
2416	175th Engrs.	Construct 2-way Cl. 40, 1-way Cl. 70, semi-permanent bridge at Q399890	11 Dec 1944	14 Jan 1945
2417	2750th Engrs.	Extend release on Quickway Crane for use in saw mill operation	11 Dec 1944	18 Jan 1945
2418	2750th Engrs.	Furnish Quickway Crane to 175th Engrs to load logs for saw mill operation	10 Dec 1944	17 Jan 1945
2419	2750th Engrs.	Furnish 3/4 yd shovel to 92nd Engrs (Co D) on Rt 6524	11 Dec 1944	6 Jan 1945
2420	1554th Engrs.	Deliver 140' DB Bailey to 117th Engrs at Q260977	10 Dec 1944	11 Dec 1944
2421	2750th Engrs.	Furnish asphalt distributor to 92nd Engrs for use on Rt. 66	10 Dec 1944	31 Dec 1944
2422	92nd Engrs.	Furnish 235th Engrs with 200 loads of quarry run rock	10 Dec 1944	CANCELLED
2423	175th Engrs.	Replace 60' DS Bailey on Rt. 6620 at L728029 with culvert and fill	12 Dec 1944	23 Dec 1944
2424	16 AGRE	Construct 2-way Cl. 40, 1-way Cl. 70, steel stringer, semi-permanent bridge at Q983740 to replace 150' TD Bailey (No 599)	12 Dec 1944	26 Dec 1944
2425	2750th Engrs.	Furnish 500 CPM Air Compressor to Co. D, 175th Engrs to winterize 16th Evac Hosp.	11 Dec 1944	24 Dec 1944
2426	1554th Engrs.	Send detail of 10 men to 1628th Engr Util Det. to construct roof on G-3 bldg at Army CP	12 Dec 1944	15 Dec 1944
2427	73 CRE Wks	Expand 54 Reek Camp by rehabilitation of "Commando" Bldg	12 Dec 1944	25 Jan 1945
2428	1338th Engrs.	Maintain and improve the following roads: Rt. 65 from road junction to Rt. 6527 to KM 70; Rt. 6529 from RJ 65 to junction between 6529 and 937; Rt. 937 from junction with Rt. 6529 with Rt. 6528; Rt. 6528 from RJ Rt 65 to Firenzuala	12 Dec 1944	CANCELLED
2429	92nd Engrs.	Release to 110th Engrs, 25 truck of gravel	13 Dec 1944	17 Dec 1944
2430	2750th Engrs.	Furnish 3/4 yd shovel to 39th Engrs.	11 Dec 1944	25 Dec 1944
2431	1338th Engrs.	Winterize mess and CP tents at 8th Evac Hosp on Rt. 65	13 Dec 1944	25 Dec 1944
2432	1554th Engrs.	Clear mud from Depot Q5-7 at Q755705	14 Dec 1944	CANCELLED
2433	1338th Engrs.	Construct 2-way Cl. 40, 1-way Cl. 70, semi-permanent bridge on Rt. 65 at L867248	14 Dec 1944	30 Dec 1944
2434	1554th Engrs.	Drain and grade road vic of Army Salvage Depot Q5-45 (Q775719)	14 Dec 1944	21 Dec 1944
2435	175th Engrs.	Install electric wiring in Pistoia Rhd	14 Dec 1944	1 Jan 1945
2436	92nd Engrs.	Furnish 45 loads of gravel to 32 Field Hosp	14 Dec 1944	30 Dec 1944
2437	92nd Engrs.	Release 10 loads of river gravel to 785th Ord Co	13 Dec 1944	1 Jan 1945
2438	16 AGRE	Remove without replacement 50' SS Bailey at R004753 and transport to 5th Army Bridge Depot	16 Dec 1944	17 Dec 1944
2439	175th Engrs.	Replace 90' DS Bailey on Rt. 6620 at Q722999 with 2-way Cl. 40, 1-way Cl. 70, semi-permanent bridge	16 Dec 1944	10 Jan 1945
2440	2750th Engrs.	Furnish asphalt distributor with hand spray bar to Hqs 185th Engrs for use in patching Rt. 65	14 Dec 1944	1 Jan 1945
2441	2750th Engrs.	Furnish mtd grader to 92nd Engrs.	15 Dec 1944	CANCELLED
2442	16 AGRE	Maintain Bailey and bypass at M004140	16 Dec 1944	20 Jan 1945
2443	92nd Engrs.	Furnish 20 loads of gravel to 550th Amb Co.	15 Dec 1944	22 Dec 1944
2444	73 CRE Wks	Supply necessary glazing material to 251 Ital Div	14 Dec 1944	17 Dec 1944
2445	73 CRE Wks	Construct cook house for 252 OR's for British Increment at 5th Army Rear	15 Dec 1944	10 Jan 1945
2446	175th Engrs.	Pick up materials your unit can use from railroad yard at Prachia	16 Dec 1944	8 Jan 1945
2447	2750th Engrs.	Extend equip release on towed grader and Quickway Crane to 92nd Engrs.	16 Dec 1944	8 Jan 1945
2448	2750th Engrs.	Extend release on mtd grader to 110th Engrs.	16 Dec 1944	10 Jan 1945
2449	2750th Engrs.	Extend release on 3/4 yd shovel and primary rock crusher to 19th Engrs	16 Dec 1944	9 Jan 1945
2450	2750th Engrs.	Extend release on 1/2yd shovel to 39th Engrs.	16 Dec 1944	6 Jan 1945
2451	2750th Engrs.	Extend release on 3/4 yd shovel to IV Corps Engrs.	16 Dec 1944	7 Jan 1945
2452	2750th Engrs.	Extend equip release on 8 yd scraper to 235th Engrs.	16 Dec 1944	12 Jan 1945
2453	2750th Engrs.	Extend equip release on D-8 tractor and 3/4 yd shovel to 387th Engrs.	16 Dec 1944	11 Jan 1945
2454	2750th Engrs.	Extend release on 3 D-8 tractors, 2-12 yd scrapers, 1-8 yd scraper, 1 concrete mixer, 1 set of rock crushers to 175th Engrs.	16 Dec 1944	10 Jan 1945
2455	2750th Engrs.	Extend release on towed grader, motorized grader and two air compressors to 1118th Engrs	16 Dec 1944	8 Jan 1945
2456	2750th Engrs.	Furnish concrete mixer to 185th Engrs	16 Dec 1944	7 Jan 1945
2457	2750th Engrs.	Extend release or furnish replacement machines for rock crusher units at 387th Engrs	16 Dec 1944	8 Jan 1945
2458	175th Engrs.	Erect 2 prefab. bldgs. for 32nd Field Hosp at L603085 and 1 prefab. bldg. for 16th Evac. Hosp. at Pistoia	15 Dec 1944	6 Jan 1945
2459	2750th Engrs.	Extend release on road router to 175th Engrs.	15 Dec 1944	7 Jan 1945
2460	92nd Engrs.	Furnish 100 loads of gravel to 84th Chemical Bn	16 Dec 1944	19 Dec 1944
2461	92nd Engrs.	Furnish 45 loads of gravel to 85th Inf. Div.	16 Dec 1944	1 Jan 1945
2462	1338th Engrs.	Clear and make safe an area at L819015 for Artillery exhibition	16 Dec 1944	17 Dec 1944
2463	1338th Engrs.	Install one 30 KW generator and 2-16 KW generators at 15th Army Grp, Siena	16 Dec 1944	CANCELLED
2464	1338th Engrs.	Send representative to cub field near Siena to meet Col. Walker	17 Dec 1944	17 Dec 1944
2465	1338th Engrs.	Furnish D-7 dozer to Hq. Cndt. Fifth Army CP	16 Dec 1944	18 Dec 1944
2466	387th Engrs.	Furnish 100 yds of secondary crushed rock to 1212 Railway Construction Group, RE	20 Dec 1944	15 Jan 1945
2467	73 CRE Wks	Repair section of Route 66, lying within Florence area, by installation of permanent type patches	17 Dec 1944	23 Dec 1944
2468	1554th Engrs.	Furnish 6 tractors and trailers to 175th Engrs	17 Dec 1944	19 Dec 1944
2469	73 CRE Wks.	Maintain all assigned roads as principal arteries	18 Dec 1944	22 Jan 1945
2470	92nd Engrs.	Furnish 40 loads of gravel to 602nd Clearing Co.	17 Dec 1944	25 Dec 1944
2471	1338th Engrs.	Furnish 25 loads of rock to 178th Field Artillery Bn	18 Dec 1944	3 Jan 1945

APPENDIX J

THE ARNO THROUGH THE WINTER STATIC PHASE

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
2472	2750th Engrs.	Furnish 2 Novas, 100 GPM, diaphragm pumps to 405th Engrs.	17 Dec 1944	18 Dec 1944
2473	73 CRE Wks.	Install lighting facilities in Cathedral in Florence	19 Dec 1944	22 Dec 1944
2474	92nd Engrs.	Investigate feasibility of using civilian power to light 15th Evac. Hosp.	19 Dec 1944	20 Dec 1944
2475	92nd Engrs.	Furnish 40 loads river run gravel to 601st Clearing Co	18 Dec 1944	29 Dec 1944
2476	1554th Engrs.	Construct culvert at Q505860	20 Dec 1944	24 Dec 1944
2477	92nd Engrs.	Furnish 150 yds of gravel to 67th Ordnance Bn	19 Dec 1944	25 Dec 1944
2478	92nd Engrs.	Erect prefab. hut for dental clinic at 602nd Clearing Hosp	19 Dec 1944	24 Dec 1944
2479	1338th Engrs.	Furnish 2 men to assist Fifth Army Utilities Platoon in erection of prefab. huts	20 Dec 1944	28 Dec 1944
2480	1554th Engrs.	Pick up all bridging parts in vic. of AAF Motor Pool in Pontedera and return to E2-36	20 Dec 1944	21 Dec 1944
2481	1338th Engrs.	Furnish 50 loads of quarry run rock to 81st Reconnaissance Sqdn.	20 Dec 1944	1 Jan 1945
2482	175th Engrs.	Furnish Officer to meet with representatives of Transportation Section, G-4, and Railway Operating Co to determine amount of work required for establishment of temporary railhead	20 Dec 1944	23 Dec 1944
2483	92nd Engrs.	Furnish 20 loads of gravel to 585th OM Laundry Co	20 Dec 1944	25 Dec 1944
2484	1338th Engrs.	Furnish 50 loads of quarry run stone to 785th Engineer Pine Line Co	20 Dec 1944	5 Feb 1945
2485	92nd Engrs.	Furnish 10 loads of gravel to 3642nd OM Truck Co	21 Dec 1944	22 Dec 1944
2486	1554th Engrs.	Convert Bailey transoms into distributing siders	22 Dec 1944	CANCELLED
2487	92nd Engrs.	Erect 2 prefab. huts for NP Hospital at 601st Clearing Co	21 Dec 1944	1 Jan 1945
2488	73 CRE Wks.	Convert premises at 31 Via Panzani, Florence, to accommodate 12 Officers cshop	21 Dec 1944	30 Dec 1944
2489	73 CRE Wks.	Maintain Bailey bridges at Ponte di Ferro and Ponte Vittoria	26 Dec 1944	CONTINUOUS
2490	1338th Engrs.	Furnish 2 enlisted men to assist Q5-3 Bation Depot in erection of 2 prefab. huts	22 Dec 1944	10 Jan 1945
2491	92nd Engrs.	Furnish 30 loads of river run gravel to 110th OM Bakery Co	22 Dec 1944	4 Jan 1945
2492	92nd Engrs.	Remove partially demolished overpass at Q676790	23 Dec 1944	25 Dec 1944
2493	1554th Engrs.	Maintain Route 6625 from limits of Florence Command to Sesto	23 Dec 1944	24 Apr 1945
2494	175th Engrs.	Furnish D-7 bulldozer operator to instruct 1108th Engr Co. Op. in use of machine	22 Dec 1944	10 Jan 1945
2495	1554th Engrs.	Construct roof on two sections of bldgs. for 400 Engr Maintenance Co	22 Dec 1944	10 Jan 1945
2496	1554th Engrs.	Replace Bailey bridge at Q709758 with fill. Return bridge to E2-36	21 Dec 1944	28 Dec 1944
2497	1554th Engrs.	Replace Bailey bridge at Q707759 with 30' single span, Class 40, 2-way, Class 70, 1-way bridge	21 Dec 1944	25 Jan 1945
2498	92nd Engrs.	Dig disposal pit for 56th Evac. Hosp.	29 Dec 1944	1 Jan 1945
2499	175th Engrs.	Make survey of bldgs. to be used as Hospital for 3rd General Hosp.	22 Dec 1944	23 Dec 1944
2500	2750th Engrs.	Extend release on commraqsor to 175th Engrs.	22 Dec 1944	25 Dec 1944
2501	2750th Engrs.	Furnish Quickway Crans to 1338th Engrs.	23 Dec 1944	26 Dec 1944
2502	84th Engrs.	Furnish personnel to 185th Engrs., to assist in making prefab. tent floors	23 Dec 1944	1 Jan 1945
2503	405th Engrs.	Assist 185th Engrs. in making survey of water piping requirements for 15th Army Group CP	23 Dec 1944	1 Jan 1945
2504	2750th Engrs.	Furnish secondary rock crusher to 92nd Engrs	23 Dec 1944	CANCELLED
2505	1338th Engrs.	Construct buttressed encampment for 15th Army Group in Florence	23 Dec 1944	3 Jan 1945
2506	73 CRE Wks.	Assist in installation of 15th Army Group CP in Florence	23 Dec 1944	3 Jan 1945
2507	84th Engrs.	Paint 6 signs for Engr. Hqs. and 6 signs for Fire Dept. as directed	23 Dec 1944	26 Dec 1944
2508	92nd Engrs.	Furnish truck (2 1/2-ton or larger) to haul 2 wheeled trailer from Engr. Hqs. to Engr. Depot E2-37	23 Dec 1944	23 Dec 1944
2509	2750th Engrs.	Furnish concrete mixer, 7 cu ft., to 1338th Engrs.	24 Dec 1944	25 Dec 1944
2510	84th Engrs.	Procure 200 yds of burlap and paint one side white and deliver to Engr. Depot	26 Dec 1944	30 Dec 1944
2511	92nd Engrs.	Furnish 1338th Engrs with 200 loads of river run gravel from quarry at Q637696	24 Dec 1944	7 Jan 1945
2512	92nd Engrs.	Furnish 40 loads of quarry run stone from Scarperia quarry to 602nd Clearing Hospital	25 Dec 1944	7 Jan 1945
2513	175th Engrs.	Gravel two parking lots 75' by 100' and assist Hospital personnel in the installation of small stoves at 3rd Conv. Hospital	25 Dec 1944	1 Jan 1945
2514	1554th Engrs.	Dismantle one prefab. hut at 3rd Conv. Hospital in Florence and transport to Pistoia and erect at 16th Evac. Hosp	25 Dec 1944	30 Dec 1944
2515	16 AGRE	Maintain Route 9394 from M054040 to M096162; route 6521 from Marradi (M090015) to M182147	25 Dec 1944	3 Feb 1945
2516	387th Engrs.	Maintain Route 12 from Lucca to Bagni di Lucca (Q260980), effective 27 Dec.	27 Dec 1944	24 Jan 1945
2517	2750th Engrs.	Extend release on shovel and towed grader to 92nd Engrs.	26 Dec 1944	30 Dec 1944
2518	2750th Engrs.	Extend releases on crusher unit, 3 D-8 tractors and 3 towed scrapers to 175th Engrs.	26 Dec 1944	3 Jan 1945
2519	73 CRE Wks.	Maintain the flood warning system for Arno Valley	27 Dec 1944	10 Feb 1945
2520	175th Engrs.	Construct Railhead at Montecatini. Draw and install 40'SS Bailey bridge	27 Dec 1944	10 Jan 1945
2521	175th Engrs.	Maintain Route 6422 from Castiglione to Riola (L650199) and Route 6620 from Castiglione to RJ at L759215	27 Dec 1944	28 Jan 1945
2522	2750th Engrs.	Furnish 3/4 yd shovel to 175th Engrs.	27 Dec 1944	15 Jan 1945
2523	1108th Engrs.	Prepare plans to replace dual carriageway bridge at Q736685 (S. Lorenzo) with Class 40, 2-way, Class 70, 1-way semi-permanent bridge or modify existing bridge	27 Dec 1944	29 Dec 1944
2524	1108th Engrs.	Prepare plans to replace Bailey at Fonte d' Elaso with Class 40, 2 way, Class 70, 1 way	27 Dec 1944	29 Dec 1944
2525	73 CRE Wks.	Repair bldgs. at Q735685, occupied by 1733 Italian Work Shop	28 Dec 1944	3 Feb 1945
2526	1554th Engrs.	Submit reconn. report on sites for heavy ponton bridge across Arno R. between Pisa and Sigma	28 Dec 1944	30 Dec 1944
2527	387th Engrs.	Check minimum area for mines for Clearing Co. in vic. of 178th Evac. Hosp.	28 Dec 1944	29 Dec 1944
2528	73 CRE Wks.	Make repairs to, or replacement of, damaged parts of 90'LD Bailey at Q780701 on Route 6625	29 Dec 1944	31 Dec 1944
2529	1338th Engrs.	Make reconn. of following roads: from junction at 67B and 165 to junction at 68 and 165 to Poggibonsi to Pino on Route 6725. Show work necessary to restore to 2 way Class 40 roads	28 Dec 1944	29 Dec 1944
2530	77 CRE Wks.	Manufacture beds for Ordnance. Ordnance to supply all stores except timber	1 Jan 1945	31 Jan 1945
2531	92nd Engrs.	Repair break in levee of Arno R. vic. Sigma bridge	30 Dec 1944	15 Feb 1945
2532	92nd Engrs.	Deliver earth auger, trailer mounted, to stadium in Lucca	28 Dec 1944	30 Dec 1944
2533	175th Engrs.	Contact AMG, Pistoia, for location and necessary details to "shoot" civilian quarry	30 Dec 1944	1 Jan 1945
2534	77 CRE Wks.	Assist 11th Field Sanitary Section with stoves at Disinfection Centre	31 Dec 1944	31 Jan 1945
2535	1338th Engrs.	Re: WO 2359. Allow mine instruction team conducting for 3AAA Bn (school) to train more completely	1 Jan 1945	CANCELLED
2536	16 AGRE	Maintain Route 6737 from Diomane to Borgo S. Lorenzo and Route 6424A from Borgo S. Lorenzo to S. Pietro an MSR	1 Jan 1945	3 Feb 1945

APPENDIX J

THE ARMO THROUGH THE WINTER STATIC PHASE

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
2537	71 CRE Wks.	Repair and mold gate at Army Exchange Warehouse, 782-15, in Florence	1 Jan 1945	2 Jan 1945
2538	1108th Engrs.	Improve West entrance into Ponte d'Elia bridge by revetment to eliminate 20' of Bailey and strengthen entire structure to Cl. 70	1 Jan 1945	5 Jan 1945
2539	1108th Engrs.	Effect changes in dual carriage bridge on Rt. 67 at Q716685 to give Cl. 40, 2-way, Cl. 70, 1-way	1 Jan 1945	5 Jan 1945
2540	2750th Engrs.	Extend release on 500 CFM Compressor to 175th Engrs.	31 Dec 1944	30 Jan 1945
2541	92nd Engrs.	Replace 100' TS Bailey at L902047 with culvert and fill	3 Jan 1945	15 Jan 1945
2542	92nd Engrs.	Replace 90' TS Bailey at L902031 with culvert and fill	3 Jan 1945	23 Feb 1945
2543	92nd Engrs.	Replace 70' DS Bailey at L905018 with culvert and fill	3 Jan 1945	2 Feb 1945
2544	92nd Engrs.	Construct 2 hole latrine for 33rd Field Hosp. and deliver to their location on Rt. 65	1 Jan 1945	3 Jan 1945
2545	1338th E & 71 CRE	Phase II of 15th Army Group accommodation	3 Jan 1945	3 Jan 1945
2546	2750th Engrs.	Extend release on 2 Nova, Diaphragm 100 CFM Pumps P-21828 and P-21912 to 405th Engrs.	1 Jan 1945	16 Feb 1945
2547	2750th Engrs.	Furnish scraper 8 cu yd, to 175th Engrs.	1 Jan 1945	1 Jan 1945
2548	2750th Engrs.	Extend release to 387th Engrs: D-8 tractor; primary rock crusher; secondary rock crusher and 3/4 yd shovel	1 Jan 1945	3 Jan 1945
2549	2750th Engrs.	Extend releases to 19th Engrs: Primary rock crusher, 1/2 yd shovel and 3/4 yd shovel	1 Jan 1945	4 Jan 1945
2550	2750th Engrs.	Furnish Quickway Crane with clam shell attachments to 1108th Engrs., at Ponte d'Elia Bailey Bridge on Rt. 67	1 Jan 1945	6 Jan 1945
2551	2750th Engrs.	Extend releases to 1338th Engrs: Asphalt distributor, mtd grader, air compressor, compressor and concrete mixer	1 Jan 1945	18 Jan 1945
2552	2750th Engrs.	Extend release on Quickway Crane to 92nd Engrs.	1 Jan 1945	8 Jan 1945
2553	92nd Engrs.	Replace 70' DS Bailey at Q869920 with 2-way Cl. 24, 1-way Cl. 40 semi-permanent bridge	3 Jan 1945	10 Jan 1945
2554	387th Engrs.	Submit plan for replacement of 70' DS Bailey on Rt. 12 at Q213882 with 2-way Cl. 24, 1-way Cl. 40, structure	3 Jan 1945	4 Jan 1945
2555	92nd Engrs.	Replace 110' TS Bailey at Q819834 with 1-way Cl. 12 low level auxiliary bridge	4 Jan 1945	8 Jan 1945
2556	1338th Engrs.	Operate quarry on Rt. 65 near Filigare. Furnish II Corps 10 loads of crushed stone daily	4 Jan 1945	17 Feb 1945
2557	175th Engrs.	Install minimum adequate sewage system for 38th Evac Hosp at Q402821	1 Jan 1945	30 Jan 1945
2558	92nd Engrs.	Construct 2 turnouts for convoy chaining and dechaining station on Rt. 65, vic S. Lucia	3 Jan 1945	5 Jan 1945
2559	2750th Engrs.	Furnish secondary rock crusher to 92nd Engrs. on Rt. 6524 near S. Piero	1 Jan 1945	5 Jan 1945
2560	1338th Engrs.	Furnish 12 loads of quarry run rock to 109th Engrs. at L911154	3 Jan 1945	7 Jan 1945
2561	387th Engrs.	Furnish detail to tar concrete slab roof of Tobacco Warehouse in Lucca	5 Jan 1945	11 Jan 1945
2562	1338th Engrs.	Furnish mine instruction teams to 10th Mtn Div	1 Jan 1945	7 Jan 1945
2563	2750th Engrs.	Furnish primary rock crusher to 1338th Engrs.	3 Jan 1945	8 Jan 1945
2564	77 CRE Wks	Provide 107th Gen Hosp. with hot plates for keeping meals hot	5 Jan 1945	15 Jan 1945
2565	77 CRE Wks	Erect 9 bay Messon Hut at 5th Army Rear British Increment	3 Jan 1945	12 Jan 1945
2566	1338th Engrs.	Check heating system of AA Club in Florence	5 Jan 1945	7 Jan 1945
2567	1338th Engrs.	Winterize the 33rd Field Hosp on Rt. 65	5 Jan 1945	15 Jan 1945
2568	405th Engrs.	Install 300' of pipeline and 2 faucets for lab at 601 Clearing Co.	7 Jan 1945	12 Jan 1945
2569	92nd Engrs.	Replace 80' DS Bailey bridge on Rt. 66 at Q699720 with culvert and fill- opening to consist of 2 - 9' pipes	6 Jan 1945	11 Jan 1945
2570		CANCELLED		CANCELLED
2571	1338th Engrs.	Furnish 10 loads of quarry run stone to QM Depot Q-46	5 Jan 1945	5 Feb 1945
2572	1338th Engrs.	Submit plans for replacing 180' TS Bailey bridge at R015778, with Cl. 40, 2-way, Cl. 70, 1-way semi-permanent bridge	6 Jan 1945	9 Jan 1945
2573	2750th Engrs.	Furnish concrete mixer, 7 cu yd, to 1108th Engrs at San Lorenzo bridge	7 Jan 1945	10 Jan 1945
2574	2750th Engrs.	Extend equip release on Quickway Crane to 1108th Engrs	6 Jan 1945	9 Jan 1945
2575	2750th Engrs.	Extend release on Quickway Crane to 1338th Engrs.	6 Jan 1945	11 Jan 1945
2576	175th Engrs.	Submit plans for replacement of bridge nos: 844, 853, 908, 910 and 918, with Cl. 40, 2-way, Cl. 70, 1-way semi-permanent bridges	7 Jan 1945	8 Jan 1945
2577	1554th Engrs.	Furnish 5 tractors with trailers and 1 mtd crane to 175th Engrs. to load and haul logs	7 Jan 1945	14 Jan 1945
2578	92nd Engrs.	Furnish 150 yds of quarry run stone to 94th Ord MM Co	7 Jan 1945	23 Jan 1945
2579	2750th Engrs.	Furnish grader, mtd to 92nd Engrs.	7 Jan 1945	24 Jan 1945
2580	92nd Engrs.	Furnish 150 loads of quarry run or river gravel to QM Depot Q5-7	8 Jan 1945	20 Jan 1945
2581	2750th Engrs.	Furnish D-8 Tractor to 1338th Engrs.	8 Jan 1945	24 Jan 1945
2582	77 CRE Wks	Make power survey of requirements of Excelsior Hotel, Florence. Submit findings to Hq.	10 Jan 1945	10 Jan 1945
2583	77 CRE Wks	Construct Cl. 40 bridge at crossing 55, Florence, 789698. Remove Bailey Bridge at 780702	10 Jan 1945	14 Jan 1945
2584	2750th Engrs.	Extend releases on D-8, primary and secondary crushers to 175th Engrs.	11 Jan '45	30 Jan 1945
2585	175th Engrs.	Construct Cl. 40, 2-way, Cl. 70, 1-way bridge to replace Bailey bridge at I586146	11 Jan 1945	17 Mar 1945
2586	387th Engrs.	Replace Bailey bridges at Q287775 and Q296770 with culvert and fill	10 Jan 1945	17 Jan 1945
2587	1338th Engrs.	Construct road to bivouac area 63rd Sig Bn	10 Jan 1945	15 Jan 1945
2588	92nd Engrs.	Furnish 8 loads of gravel, cinders, or rock to 16th Evac Hosp.	10 Jan 1945	18 Jan 1945
2589	1338th Engrs.	Replace Bailey bridge at R015778 with 2-way Cl. 40, 1-way Cl. 70, semi-permanent bridge	11 Jan 1945	23 Jan 1945
2590	2750th Engrs.	Furnish Quickway Crane to 1338th Engrs.	11 Jan 1945	18 Jan 1945
2591	1554th Engrs.	Furnish 6 ponton tractors and trailers to haul piling for 1338th Engrs	10 Jan 1945	12 Jan 1945
2592	1338th Engrs.	Prepare plans for replacement of Bailey bridges at Q779960, Q785955, Q787937, Q775911, Q796916	11 Jan 1945	20 Jan 1945
2593	92nd Engrs.	Furnish 300 loads, river run gravel to 47th Ord Bn.	11 Jan 1945	9 Feb 1945
2594	77 CRE Wks	Investigate possibility of constructing individual heaters for linotype machines for FWB Printing and Paper Office	12 Jan 1945	15 Jan 1945
2595	387th Engrs.	Replace Bailey bridge at Q214880 with Cl. 24, 2-way, Cl. 40, 1-way, semi-permanent bridge	14 Jan 1945	20 Jan 1945
2596	2750th Engrs.	Extend equipment release on secondary rock crusher to 92nd Engrs.	14 Jan 1945	18 Jan 1945
2597	1338th Engrs.	Erect 8 or more prefab huts for winterization program of 5th Army CP	12 Jan 1945	21 Jan 1945
2598	92nd Engrs.	Release 40 loads of river run gravel to 602 Clearing Co.	14 Jan 1945	4 Feb 1945

APPENDIX J

THE ARMO THROUGH THE WINTER STATIC PHASE

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
2599	175th Engrs.	Release 50 loads of crushed rock to IV Corps Engrs.	14 Jan 1945	24 Jan 1945
2600	175th Engrs.	Install and maintain 1-400 KW Generator at 24th Gen Hosp	11 Jan 1945	30 Jan 1945
2601	1554th Engrs.	Extend release on Quickway Crane and 5 ponton tractor trailer units to 175th Engrs.	15 Jan 1945	22 Jan 1945
2602	2750th Engrs.	Extend release on 1-3/4 yd shovel and 1-1/2 yd shovel to 19th Engrs.	16 Jan 1945	21 Jan 1945
2603	2750th Engrs.	Extend release on concrete mixer, primary crusher, mtzd grader and 2 compressors to 1338th Engrs	16 Jan 1945	18 Feb 1945
2604	2750th Engrs.	Extend release on 3/4 yd shovel, towed grader, mtzd grader and Quickway Crane to 92nd Engrs.	16 Jan 1945	15 Feb 1945
2605	2750th Engrs.	Extend release on 3/4 yd shovel, D-8 tractor and primary and secondary crushers to 387th Engrs.	16 Jan 1945	14 Feb 1945
2606	2750th Engrs.	Extend release on 3/4 yd shovel, and air compressor to 175th Engrs.	16 Jan 1945	13 Feb 1945
2607	16 CORE	Replace Bailey bridge at Q908887 with culvert and fill	15 Jan 1945	17 Jan 1945
2608	175th Engrs.	Repair masonry abutments on bridges on Rt. 64 using Italian masons where possible	16 Jan 1945	CANCELLED
2609	92nd Engrs.	Furnish 200 yds of gravel or crushed stone to 15th Army Group	15 Jan 1945	23 Jan 1945
2610	405th Engrs.	Furnish supply of water to reservoir tanks on 8 bldgs of City Command Section, Montecatini	14 Jan 1945	15 Jan 1945
2611	405th Engrs.	Make water survey of city system in Montecatini	15 Jan 1945	18 Jan 1945
2612	77 CRE Tks	Conduct survey of original heating system in Florence EM Rest Center	15 Jan 1945	18 Jan 1945
2613	92nd Engrs.	Furnish 30 loads of river run gravel to 601 Clearing Hosp.	15 Jan 1945	18 Jan 1945
2614	175th Engrs.	Furnish mine instruction team to teach 1 British Brigade in laying and detecting mines and booby traps	17 Jan 1945	18 Jan 1945
2615	405th Engrs.	Install necessary tanks, lines and pumps to insure reliable water supply in case of failure of city system, for 15th Evac at Florence	16 Jan 1945	20 Jan 1945
2616	92nd Engrs.	Remove partly demolished overhead concrete bridge on autostrada	17 Jan '45	4 Feb 1945
2617	1338th Engrs.	Maintenance and snow removal on Rt. 937 from BJ with 6539 to Sassaleone as MSR	18 Jan 1945	7 Mar 1945
2618	92nd Engrs.	Furnish 10 loads river run gravel to 33rd Field Hosp.	16 Jan 1945	16 Jan 1945
2619	77 CRE Tks	Render premises at 185 Via Edmondo Amdrea suitable for use by 719 BEME	17 Jan 1945	1 Feb 1945
2620	92nd Engrs.	Furnish 80 loads of river run gravel to 33rd Field Hosp.	17 Jan 1945	18 Mar 1945
2621	77 CRE Tks	Construct bath house for 4500 men at No. 2 MRS site	17 Jan 1945	31 Jan 1945
2622	77 CRE Tks	Construct bath house for 2000 men at No. 5 Transit Camp	17 Jan 1945	31 Jan 1945
2623	1338th Engrs.	Furnish bulldozer to Fifth Army CP	1 Jan 1945	28 Jan 1945
2624	92nd Engrs.	Furnish river run gravel to 13 Corps Engrs	17 Jan 1945	23 Jan 1945
2625	92nd Engrs.	Furnish 35 loads of gravel to 56th Evac Hosp.	17 Jan 1945	24 Jan 1945
2626	1338th Engrs.	Open route from Q785955 to 1730045 (BJ with Route 6620) for Class 12 Traffic	18 Jan 1945	14 Feb 1945
2627	92nd Engrs.	Have inspection made of spans at bivouac area of 188th Ord. Bn on Via Vittoria Emanuel off Route 65	18 Jan 1945	18 Jan 1945
2628	1338th Engrs.	Construct 1 way Class 40, semi-permanent bridge to replace 80' DS at 892067 on Route 6528	18 Jan 1945	2 Feb 1945
2629	1338th Engrs.	Grade area to erect prefab hut at 22nd GM Car Co. bivouac area at Fifth Army CP (Pwl)	18 Jan 1945	18 Jan 1945
2630	1338th Engrs.	Surface Fifth Army Cmb strip on Route 65 at Q829901.	19 Jan 1945	22 Jan 1945
2631	1338th Engrs.	Furnish mine instruction team with complete display of all types of mines and booby-traps to 47th Field Park Coy Indian Engrs.	19 Jan 1945	31 Jan 1945
2632	84th Cam Bn.	Winterize weapons carrier (Fifth Army Engr Vehicle No. 11)	20 Jan 1945	27 Jan 1945
2633	405th Engrs.	Install necessary changes in city water system of Montecatini	19 Jan 1945	31 Jan 1945
2634	92nd Engrs.	Furnish additional 150 loads river run gravel for maintenance of Army Class I Dump Q5-7 at Q755705	20 Jan 1945	7 Feb 1945
2635	1338th Engrs.	Construct Class 30 bridge on Route 6621 at Q775918 in accordance with plan 1338.5	20 Jan 1945	7 Feb 1945
2636	1338th Engrs.	Construct Class 40 1 way bridge at Q796916 near Barberino	20 Jan 1945	5 Feb 1945
2637	1338th Engrs.	Construct 1 way Class 12 Bridge at Q779960 near Barberino in general accordance with plan 1338.6	20 Jan 1945	28 Jan 1945
2638	1338th Engrs.	Install temporary heating facilities at EM Rest Center at Florence	20 Jan 1945	26 Jan 1945
2639	77 CRE Tks	Repair heating system at EM Rest Center at Florence	20 Jan 1945	16 Feb 1945
2640	92nd Engrs.	Conduct electric power survey of 9th MRU at Fifth Army Hq, Rear	20 Jan 1945	23 Jan 1945
2641	175th Engrs.	Furnish explosives equipment and crew to shoot 10 holes in civilian quarry near Pistoia	20 Jan 1945	23 Jan 1945
2642	2750th Engrs.	Furnish Quickway Crane to 337th Engrs for use in test driving of piles in Serchio River	20 Jan 1945	10 Feb 1945
2643	1338th Engrs.	Erect additional 4 prefab huts at 8th Evac. Hosp.	20 Jan 1945	5 Feb 1945
2644	77 CRE Tks	Erect fences at Valle LaCallina, Terre del Gallo to protect property, also brick up 2 doors.	24 Jan 1945	30 Jan 1945
2645	2750th Engrs.	Extend release on D-8 Tractor and Quickway Crane to 1338th Engrs	22 Jan 1945	31 Jan 1945
2646	2750th Engrs.	Furnish Primary Crusher to 92nd Engrs	20 Jan 1945	5 Feb 1945
2647	1338th Engrs.	Construct Class 12 1 way bridge to replace Bailey at Q785755	22 Jan 1945	6 Feb 1945
2648	1338th Engrs.	Construct 1 way Class 40 bridge at Q787937 to replace Bailey	21 Jan 1945	7 Feb 1945
2649	1554th Engrs.	Furnish rafts and necessary equipment with operating personnel to assist in construction of bridge across Serchio at Q235945	21 Jan 1945	4 Feb 1945
2650	92nd Engrs.	Remove barbed wire fences along Highway 65 S. of San Lucio	21 Jan 1945	26 Jan 1945
2651	175th Engrs.	Carry out additional work at Montecatini Railroad	20 Jan 1945	6 Feb 1945
2652	175th Engrs.	Contact Maj. Cordone and examine bridge, condemned, at Montecatini	22 Jan 1945	23 Jan 1945
2653	1554th Engrs.	Furnish 3 tractor trailers to 1338th Engrs, to haul piling from Leghorn to vic. Barberino	22 Jan 1945	23 Jan 1945
2654	2750th Engrs.	Furnish concrete mixer, to 337th Engr C. Bn.	22 Jan 1945	31 Jan 1945
2655	175th Engrs.	Construct bleacher seats in bldg to be used for gymnasium at Pistoia. Seats to be 70' long and 1 tiers high	24 Jan 1945	30 Jan 1945
2656	1554th Engrs.	Proceed with construction of 92 each bow adapters as shown in current AFHQ Engr Intell. Bulletin	23 Jan 1945	18 Feb 1945
2657	77 CRE Tks	Assist AMG to reconstruct Ponte Carrara bridge piers; Ponte Ferro bridge; be prepared to replace Ponte Trinita Bailey with Flambo	1 Jan 1945	20 Apr 1845
2658	175th Engrs.	Deliver 20 loads of quarry run rock to 3rd Convalescent Hosp. in Montecatini	24 Jan 1945	28 Jan 1945
2659	2750th Engrs.	Furnish D-8 tractor to 1338th Engrs.	24 Jan 1945	15 Feb 1945
2660	405th Engrs.	Winterize 2-1500 gal. canvas tanks and 2 pumps for 15th Evac. Hosp	2 Jan 1945	28 Jan 1945
2661	1338th Engrs.	Erect prefab. hut for ski hut, in vic. act. at Routes 6529 and 65	25 Jan 1945	29 Jan 1945
2662	1338th Engrs.	Construct "cut off" road for Depot Q5-6	28 Jan 1945	29 Jan 1945

APPENDIX J

THE ARMO THROUGH THE WINTER STATIC PHASE

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
2663	1554th Engrs.	Furnish 2 tractor trailers to 182nd Engrs. to haul piling from Leghorn to vic Barberino	24 Jan 1945	26 Jan 1945
2664	92nd Engrs.	Furnish 50 loads of quarry run rock to 602nd Clearing Co.	25 Jan 1945	19 Feb 1945
2665	2750th Engrs.	Extend release on primary and secondary rock crushers to 175th Engrs.	26 Jan 1945	15 Feb 1945
2666	175th Engrs.	Shape site for chainin and dechainin point at 1521936. Check area for mines	25 Jan 1945	31 Jan 1945
2667	1554th Engrs.	Replace Bailey bridge at 1689790 with Cl. 40, 2-way, Cl. 70, 1-way, semi-permanent bridge	25 Jan 1945	1 Mar 1945
2668	2750th Engrs.	Extend release on D-8 tractor, atzd grader, 2 compressors, Quickway Crane, concrete mixer, and primary crusher to 1338th Engrs.	1 Feb 1945	15 Feb 1945
2669	2750th Engrs.	Extend release on atzd grader, Quickway Crane, and 3/4 yd shovel to 92nd Engrs.	1 Feb 1945	15 Feb 1945
2670	2750th Engrs.	Extend release on 1/2 yd and 3/4 yd shovels to 19th Engrs.	1 Feb 1945	15 Feb 1945
2671	2750th Engrs.	Extend release on 3/4 yd shovel to 175th Engrs.	1 Feb 1945	15 Feb 1945
2672	2750th Engrs.	Extend release on 2 Diaphragm Pumps to 405th Engrs.	1 Feb 1945	28 Feb 1945
2673	1554th Engrs.	Haul piling from Leghorn Depot to L216948 for 337th Engrs.	25 Jan 1945	25 Jan 1945
2674	1338th Engrs.	Replace Bailey bridge at 1985237 with culvert and fill	26 Jan 1945	16 Feb 1945
2675	1338th Engrs.	Pick up 400 KW Generator from Leghorn Depot, and install and hook up with 2 generators now in operation in Montecatini	4 Feb 1945	11 Feb 1945
2676	1338th Engrs.	Replace Bailey bridge at 1981229 with culvert and fill	26 Jan 1945	13 Feb 1945
2677	187th Engrs.	Furnish 6 loads of quarry run rock to 170th Evac Hosp	26 Jan 1945	27 Jan 1945
2678	187th Engrs.	Furnish a maximum of 5 loads of secondary rock per day to 337th Engrs.	27 Jan 1945	31 Jan 1945
2679	1338th Engrs.	Do utility work for 5th Army EM Rest Center in Florence	26 Jan 1945	20 Feb 1945
2680	405th Engrs.	Install gasoline driven booster pump at 5th Army EM Rest Center in Florence	27 Jan 1945	28 Jan 1945
2681	1338th Engrs.	Furnish 20 loads of quarry run rock to 101 MP Bn.	26 Jan 1945	11 Feb 1945
2682	77 CRE Wks	Repair billets and strengthen entrance for HQ 21 Beach Gp	27 Jan 1945	20 Feb 1945
2683	92nd Engrs.	Construct 40' single span Cl. 40, 2-way, Cl. 70, 1-way, bridge at Q703719	27 Jan 1945	12 Feb 1945
2684	77 CRE Wks	Rehabilitate "Commando" Bldg at 54 Rest Camp	27 Jan 1945	8 Feb 1945
2685	77 CRE Wks	Carry out work at Ski Refuge, Consuma	24 Jan 1945	5 Feb 1945
2686	77 CRE Wks	Carry out work at 26 Detention and Field Punishment Camp	1 Feb 1945	24 Feb 1945
2687	1338th Engrs.	Construct Cl. 18, 1-way single span bridge leading to CP Area, 5th Army CT	27 Jan 1945	29 Jan 1945
2688	92nd Engrs.	Include the access road into 5th Army CT in your snow clearance	28 Jan 1945	5 Mar 1945
2689	175th Engrs.	Maintain Routes 1-1, 12, 1221 and 1. Take over operation of saw mill	1 Feb 1945	CANCELLED
2690	92nd Engrs.	Maintain Rt. 6620 from Prato to Castiglione	7 Feb 1945	28 Apr 1945
2691	2750th Engrs.	Furnish Arc Welder to 92nd Engrs.	28 Jan 1945	15 Feb 1945
2692	92nd Engrs.	Construct hardstandings for 5th Army Cub Field at Q829901	30 Jan 1945	2 Feb 1945
2693	1338th Engrs.	Erect 2 prefab huts for 101 MP Bn.	30 Jan 1945	5 Feb 1945
2694	35 CRE Wks	Construct EPI Restaurant at Cotton Mill	29 Jan 1945	18 Feb 1945
2695	175th Engrs.	Erect 2 prefab huts for 3rd Conv Hosp.	2 Feb 1945	10 Feb 1945
2696	2750th Engrs.	Exchange serviceable crusher for deadlined crusher at 92nd Engr. quarry	30 Jan 1945	2 Feb 1945
2697	2750th Engrs.	Deliver 1/2 yd shovel to 39th Engrs. Pick up 3/4 yd shovel at 39th Engrs. and deliver to 400th Engr Maint Co.	30 Jan 1945	2 Feb 1945
2698	1554th Engrs.	Haul approximately 400 loads of gravel to 400th Engr Maint Co.	30 Jan 1945	9 Mar 1945
2699	2750th Engrs.	Furnish asphalt distributor to 92nd Engrs.	30 Jan 1945	13 Feb 1945
2700	2750th Engrs.	Furnish compressor to 1628th Engr Util. Det	30 Jan 1945	31 Jan 1945
2701	1338th Engrs.	Shape dump roads at ASP O-427 and O-431	30 Jan 1945	31 Jan 1945
2702	92nd Engrs.	Extend limits of responsibility for road maintenance on Rt. 65 to Km. 49	31 Jan 1945	4 Mar 1945
2703	1338th Engrs.	Make surveys of power requirements at all Divisional CP's and Army Hosp. Installations	30 Jan 1945	10 Feb 1945
2704	92nd Engrs.	Raise load capacity of Sigma Bridge to Cl. 70	1 Feb 1945	12 Feb 1945
2705	1554th Engrs.	Replace Bailey Bridge at Q588911 with 1-way Cl. 18 semi-permanent bridge	31 Jan 1945	20 Feb 1945
2706	77 CRE Wks	Do necessary work at Elementary School at Brozzi	4 Feb 1945	20 Feb 1945
2707	1554th Engrs.	Dismantle Bailey bridge at Q452708 and return to bridge depot	1 Feb 1945	7 Feb 1945
2708	84th Engrs.	Use Italian Masking Plat. for repair and maintenance of road parallel to RR tracks	1 Feb 1945	12 Apr 1945
2709	92nd Engrs.	Furnish 11 Corps Engrs, 300 yds of gravel from pit near S. Piero	31 Jan 1945	4 Feb 1945
2710	92nd Engrs.	Furnish 115 W with 50 loads of gravel from pit near S. Piero	1 Feb 1945	12 Mar 1945
2711	2750th Engrs.	Extend release on concrete mixer to 1108th Engrs.	1 Feb 1945	7 Feb 1945
2712	175th Engrs.	Investigate wiring system, location of generators, and power requirements of 170th Evac Hosp	2 Feb 1945	5 Feb 1945
2713	77 CRE Wks	Increase load rating of Bailey bridge at Q768702 to Cl. 70	3 Feb 1945	8 Feb 1945
2714	92nd Engrs.	Construct chain check point in vic of TCP 45 on Rt. 65	3 Feb 1945	12 Feb 1945
2715	175th Engrs.	Furnish 20 loads of primary crushed rock per day to IV Corps	2 Feb 1945	1 Mar 1945
2716	1554th Engrs.	Dismantle Bailey bridge at Q856898 and return to Bridge Depot	3 Feb 1945	16 Feb 1945
2717	92nd Engrs.	Erect prefab hut for Dental Clinic, 602nd Clearing Co	3 Feb 1945	9 Feb 1945
2718	1338th Engrs.	Furnish materials, tools, and supervisin. personnel to repair prefab hut for Q5-3	2 Feb 1945	7 Feb 1945
2719	1338th Engrs.	Move 1 Plat. to Montecatini to do work requested for Rest Camp	6 Feb 1945	11 Feb 1945
2720	2750th Engrs.	Furnish towed grader to 92nd Engrs.	6 Feb 1945	15 Feb 1945
2721	92nd Engrs.	Release 35 loads of gravel to 56th Evac Hosp.	5 Feb 1945	10 Feb 1945
2722	2750th Engrs.	Furnish D-8 tractor to 92nd Engrs.	8 Feb 1945	15 Feb 1945
2723	77 CRE Wks	Construct roads, hardstandings, and wire fences for 105 DID	6 Feb 1945	19 Mar 1945
2724	77 CRE Wks	Construct, roads, hardstandings and wire fences for 69 DID	6 Feb 1945	19 Mar 1945
2725	2750th Engrs.	Furnish 3/4 yd shovel to IV Corps Engrs.	6 Feb 1945	20 Feb 1945
2726	92nd Engrs.	Furnish 7 loads of river run gravel to Has 15th Army Group	5 Feb 1945	11 Feb 1945
2727	1338th Engrs.	Install 135 bundles of PSP at 15th Army Group Airfield	7 Feb 1945	11 Feb 1945
2728	175th Engrs.	Replace Bailey bridge at Q465954 with 2-way Cl. 24, 1-way Cl. 40, semi-permanent bridge	7 Feb 1945	21 Feb 1945
2729	175th Engrs.	Replace Bailey bridge at Q507918 with 2-way Cl. 24, 1-way Cl. 40, semi-permanent bridge	8 Feb 1945	24 Feb 1945
2730	92nd Engrs.	Furnish 40 yds secondary crushed rock to 1554th Engrs.	7 Feb 1945	18 Mar 1945
2731	1554th Engrs.	Replace Bailey bridge at Q705760 with 2-way Cl. 40, 1-way Cl. 70, pile trestle bridge	10 Feb 1945	11 Mar 1945

APPENDIX J
THE ARNO THROUGH THE WINTER STATIC PHASE

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
2732	92nd Engrs.	Drive pile supports for replacement of bridge on Autostrada at 7705760	24 Feb 1945	28 Feb 1945
2733	1338th Engrs.	Construct north-bound and south-bound chain points at L858112	8 Feb 1945	CANCELLED
2734	2750th Engrs.	Extend release on concrete mixer to 1108th Engr Gp.	7 Feb 1945	12 Feb 1945
2735	92nd Engrs.	Furnish 15 loads of quarry run rock to 31st Ord Co.	7 Feb 1945	15 Feb 1945
2736	175th Engrs.	Maintain Rt. 12 from Lucca to Bagni di Lucca	8 Feb 1945	5 Mar 1945
2737	2750th Engrs.	Extend release on primary crusher to 92nd Engrs.	7 Feb 1945	15 Feb 1945
2738	175th Engrs.	Furnish 15 loads of quarry run rock to 87th Div Rest Center at Montecatini	8 Feb 1945	15 Feb 1945
2739	1338th Engrs.	Replace Bailey bridge at L977832 with 2-way Cl. 30., 1-way Cl. 60. semi-permanent bridge	9 Feb 1945	21 Feb 1945
2740	92nd Engrs.	Furnish 15 loads of quarry run rock to 55th Amb Co.	8 Feb 1945	19 Feb 1945
2741	92nd Engrs.	Furnish explosives and equip to aid in removal of debris caused by demolished bridge near S. Piero a Fonte on Hwy 66	10 Feb 1945	11 Mar 1945
2742	175th Engrs.	Investigate cause of flooding of drainage ditch at 1006th Bakery area	9 Feb 1945	10 Feb 1945
2743	92nd Engrs.	Furnish mine clearance detail to clear road and area around 5,000 tons of coal at 5617745	10 Feb 1945	15 Feb 1945
2744	1338th Engrs.	Conduct power surveys for 34th, 91st and 92nd Divisions	10 Feb 1945	16 Feb 1945
2745	92nd Engrs.	Oper. section of Rt. 1-1 from Prato to Pistoia for Cl. 40, 2-way, Cl. 70, 1-way traffic	10 Feb 1945	12 Mar 1945
2746	1554th Engrs.	Furnish 3 tractor trailers to haul piling to 175th Engrs.	11 Feb 1945	11 Feb 1945
2747	2750th Engrs.	Furnish D-E tractor to 92nd Engrs.	10 Feb 1945	28 Feb 1945
2748	1554th Engrs.	Haul piling from Montecatini to Prato for 92nd Engrs.	8 Feb 1945	8 Feb 1945
2749	92nd Engrs.	Furnish 300 yds quarry run rock to 90th J. Rd Co.	11 Feb 1945	8 Mar 1945
2750	77 CRE Tks	Repair air raid warning system in Florence	5 Feb 1945	15 Feb 1945
2751	92nd Engrs.	Furnish 20 loads of quarry run rock to 31st Ord Co.	11 Feb 1945	1 Mar 1945
2752	92nd Engrs.	Furnish HQ Co, 5th Army, maximum of 5yds crushed rock from Foglio Quarry	12 Feb 1945	12 Feb 1945
2753	77 CRE Tks	Prepare Staging Camp at Fontasieve	9 Feb 1945	11 Feb 1945
2754	1554th Engrs.	Place equipment at disposal of, and perform work for, 2-1, Engr Bn, 4th Army, to facilitate movement of wedding party from church to Engr Mess.	3 Mar 1945	3 Mar 1945
2755	92nd Engrs.	Make repairs at cut-out in vic of Chain Check Post No. 3 at Montecatini	12 Feb 1945	21 Feb 1945
2756	1554th Engrs.	Furnish 5 trucks to haul logs from Viareggio to Lucca for 175th Engrs.	11 Feb 1945	27 Feb 1945
2757	92nd Engrs.	Furnish 60 loads of gravel to 477th Ord Co.	11 Feb 1945	15 Feb 1945
2758	1338th Engrs.	Maintain Rt. 937 from present forward point to Bailey bridge inclusive at 1966268	15 Feb 1945	27 Feb 1945
2759	175th Engrs.	Furnish 2 mine clearing details to clear lanes for pipe line from Fontedera to Pistoia	15 Feb 1945	25 Feb 1945
2760	175th Engrs.	Furnish 20 loads of quarry run rock to Montecatini Rest Camp	14 Feb 1945	21 Feb 1945
2761	92nd Engrs.	Furnish detail with necessary equipment to cut logs for fire wood	14 Feb 1945	16 Feb 1945
2762	77 CRE Tks	Install latrines etc. at CMP Guard Room at 80 Via del Arno	27 Feb 1945	4 Mar 1945
2763	2750th Engrs.	Extend release on asphalt distributor, D-8 tractor, towed grader, mtd crane, and primary crusher to 92nd Engrs.	16 Feb 1945	28 Feb 1945
2764	2750th Engrs.	Extend release on compressor, mtd grader, mtd crane, concrete mixer, primary crusher, and D-8 tractors to 1338th Engrs.	16 Feb 1945	28 Feb 1945
2765	2750th Engrs.	Extend release on primary and secondary crushers, and 3/4 yd shovel to 175th Engrs.	16 Feb 1945	28 Feb 1945
2766	2750th Engrs.	Extend release on 1/2 and 3/4 yd shovels to 19th Engrs.	16 Feb 1945	28 Feb 1945
2767	2750th Engrs.	Furnish mtd compressor to 175th Engrs.	15 Feb 1945	28 Feb 1945
2768	1338th Engrs.	Furnish bulldozer or grader for work in area of Depot Q5-3	15 Feb 1945	17 Feb 1945
2769	92nd Engrs.	Make power survey at 3rd Photo Intel. Det. at 5th Army Photo Center in Florence	15 Feb 1945	16 Feb 1945
2770	92nd Engrs.	Furnish 75 loads of river run gravel to 383rd Engr Depot Co.	16 Feb 1945	2 Mar 1945
2771	175th Engrs.	Cut and furnish to AKG, rough cut timbers and planks for falsework in construction of Ponte Serraglio at Q266965	17 Feb 1945	28 Feb 1945
2772	92nd Engrs.	Construct Rhd at Campo di Marte Station, Florence	16 Feb 1945	11 Mar 1945
2773	175th Engrs.	Grade to soft ball diamonds for Montecatini Rest Center	21 Feb 1945	25 Feb 1945
2774	175th Engrs.	Recondition ARC Club in Montecatini	18 Feb 1945	26 Apr 1945
2775	175th Engrs.	Improve Routes 1224 and 6721 from Altopascio to Gallero to Staffoli	17 Feb 1945	16 Mar 1945
2776	92nd Engrs.	Furnish 6 loads of river run gravel to 5th Ord Bn	17 Feb 1945	24 Feb 1945
2777	92nd Engrs.	Furnish 50 loads of river run gravel to 15th Field Hosp.	17 Feb 1945	24 Mar 1945
2778	2750th Engrs.	Furnish Quickway Crane, weldin. equip, 3/4 yd shovel, concrete mixer and prime mover to 92 Engrs	17 Feb 1945	15 Mar 1945
2779	92nd Engrs.	Furnish 20 loads of quarry run rock to 161st Med Bn	15 Feb 1945	21 Feb 1945
2780	77 CRE Tks	Install showers at Voortrekker Club, Florence	20 Feb 1945	3 Mar 1945
2781	2750th Engrs.	Furnish asphalt distributor to 175th Engrs.	19 Feb 1945	28 Feb 1945
2782	2750th Engrs.	Furnish secondary rock crusher to 92nd Engrs.	16 Feb 1945	28 Feb 1945
2783	1338th Engrs.	Check wiring, generator installation, and power requirements of 8th Evac Hosp.	17 Feb 1945	18 Feb 1945
2784	2750th Engrs.	Furnish 3/4 yd shovel to 39th Engrs.	17 Feb 1945	28 Feb 1945
2785	92nd Engrs.	Furnish road patrol to Hqs Cndt, 5th Army CP	18 Feb 1945	19 Feb 1945
2786	92nd Engrs.	Classify bridge being used in Ord Depot Q-428	19 Feb 1945	19 Feb 1945
2787	1338th Engrs.	Maintain Rt. 6530 from junction with Rt. 65 to L795180	17 Feb 1945	7 Mar 1945
2788	2750th Engrs.	Furnish arc welder to 1338th Engrs.	19 Feb 1945	15 Mar 1945
2789	77 CRE Tks	Carry out work at No. 2 MI Room	20 Feb 1945	5 Mar 1945
2790	175th Engrs.	Maintain Rt. 1227 from junction with Rt. 1226 at Q194805 to Q220979	21 Feb 1945	27 Apr 1945
2791	175th Engrs.	Furnish 6 loads of quarry run rock to 91st Div. Rest Center	21 Feb 1945	21 Feb 1945
2792	92nd Engrs.	Furnish mine detail to check area for Russian Repatriation Area	21 Feb 1945	28 Feb 1945
2793	92nd Engrs.	Furnish 300 loads of rock to 42nd Ord Bn.	21 Feb 1945	16 Mar 1945
2794	92nd Engrs.	Construct latrine boxes, mess tables, and winterize tents for Russian Nationalist Camp	21 Feb 1945	26 Feb 1945
2795	2750th Engrs.	Furnish secondary rock crusher and 3/4 yd shovel to 1338th Engrs.	21 Feb 1945	15 Mar 1945
2796	1338th Engrs.	Shape main road thru Depot Q5-10 to eliminate ruts	21 Feb 1945	27 Feb 1945
2797	175th Engrs.	Furnish 8 yds of primary crushed rock per day to 61st Tunneling Coy, Railway Construction Engineers, S.A.E.C.	23 Feb 1945	17 Mar 1945

APPENDIX J

THE ARMO THROUGH THE WINTER STATIC PHASE

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
2798	1338th Engrs.	Maintain 3 - 400 KW Generators at Florence	25 Feb 1945	23 Apr 1945
2799	175th Engrs.	Maintain 3 - 400 KW Generators at Montecatini	25 Feb 1945	23 Apr 1945
2800	1554th Engrs.	Repair road at M. Dump 25-41 at Castello on Hwy 6625 at 1770739	21 Feb 1945	27 Feb 1945
2801	77 CRE Wks	Level pile of debris for Florence Refugee Center, 66th Via Della Scala, Florence	24 Feb 1945	28 Feb 1945
2802	175th Engrs.	Assist in the construction of training aids for B. E. F. Repl. Depot.	27 Feb 1945	1 Mar 1945
2803	175th Engrs.	Make survey of power requirements of 894 T.D. Bn.	23 Feb 1945	23 Feb 1945
2804	2750th Engrs.	Furnish towed grader and std grader to 1338th Engrs.	13 Feb 1945	15 Mar 1945
2805	2619th Engrs.	Construct map file case for Engr Hqs.	13 Apr 1945	1 Apr 1945
2806	92nd Engrs.	Furnish 3 loads of river run gravel to Mqs Co, 5th Army	21 Feb 1945	24 Feb 1945
2807	92nd Engrs.	Furnish 200 yds of gravel to 5th Ord Bn.	23 Feb 1945	16 Mar 1945
2808	1338th Engrs.	A. sist Ord. Section in installation of map board in conference hut in 5th Army CP	23 Feb 1945	26 Feb 1945
2809	175th Engrs.	Maintain Rt. 64 up to and including Silla Bridge at 1588148	26 Feb 1945	4 Mar 1945
2810	2750th Engrs.	Furnish trackcavator and std grader to 92nd Engrs.	24 Feb 1945	15 Mar 1945
2811	92nd Engrs.	Furnish 20 loads of quarry run rock to 31st Ord Co.	24 Feb 1945	26 Feb 1945
2812	405th Engrs.	Improvise and install 1-6 to 8 man shower unit for Russian Nationalist Camp	24 Feb 1945	6 Mar 1945
2813	77 CRE Wks	Do necessary work at the Robertson Club, Florence	1 Mar 1945	28 Mar 1945
2814	77 CRE Wks	Erect 3 hatted and tented camps at Carregi Hosp. to accommodate 600 beds	24 Feb 1945	20 Mar 1945
2815	2750th Engrs.	Furnish concrete mixer to 1338th Engrs.	25 Feb 1945	10 Mar 1945
2816		VOID		VOID
2817	405th Engrs.	Furnish machinery and operators to drill foundation holes for piles of Silla Bridge, 1588158	28 Feb 1945	13 Mar 1945
2818	1554th Engrs.	Install reinforced heavy ponton bridge at old site near Pias for 39th Engr Training School	25 Feb 1945	25 Feb 1945
2819	92nd Engrs.	Install electric lines and lights in ten pyramidal and 2 wall tents in Russian Nationalist Camp	25 Feb 1945	1 Mar 1945
2820	175th Engrs.	Maintain Rt. 67 from Florence to junction of Route 67 and 67B	26 Feb 1945	5 Mar 1945
2821	Naval Party JIG	Maintain Rt. 1 from Viareggio to Pietrasanto and Rt. 1221 from Viareggio to Lucca	26 Feb 1945	15 Apr 1945
2822	77 CRE Wks	Repair, renovate, and put in operation, the electrical and hydraulic systems required at golf course near Florence, for watering area	27 Feb 1945	5 Mar 1945
2823	175th Engrs.	Maintain Rt. 66 from Florence to Pistoia and Rt. 6731 from Signa to junction with Rt. 66	26 Feb 1945	4 Mar 1945
2824	175th Engrs.	Furnish earth auger with operator to dig 350 post holes of 92nd Engrs.	26 Feb 1945	17 Mar 1945
2825	77 CRE Wks	Install pumps at Robertson Club	3 Mar 1945	17 Mar 1945
2826	92nd Engrs.	Oil main supply route from Autostrada thru Prato to point on Rt. 6620 beyond city limits	1 Mar 1945	22 Mar 1945
2827	1338th Engrs.	Construct Detention Cage to hold 150 garrison prisoners	28 Feb 1945	12 Mar 1945
2828	92nd Engrs.	Maintain Rt. 65 to RV with Rt. 6528 and 6528 to Firenzuola	3 Mar 1945	CANCELLED
2829	92nd Engrs.	Furnish 150 yds of gravel to QM Depot Q5-7	28 Feb 1945	25 Mar 1945
2830	1338th Engrs.	Grade, provide adequate drainage, and lay double width P6P mat for 750' air strip adjacent to south edge of 5th Army CP	28 Feb 1945	8 Mar 1945
2831	2750th Engrs.	Extend equip release on asphalt distributor, +2 D-8 tractors, towed grader, Quickway Crane and primary and secondary crushers to 92nd Engrs.	1 Mar 1945	15 Mar 1945
2832	2750th Engrs.	Extend equip release on 2 D-8 tractors, compressor, towed scraper and primary crusher to 1338th Engrs.	1 Mar 1945	15 Mar 1945
2833	92nd Engrs.	Furnish 100 loads of river run gravel to 280th QM Refrigeration Co.	1 Mar 1945	9 Mar 1945
2834	2750th Engrs.	Extend equip release on 1/2 yd shovel to 19th Engrs.	1 Mar 1945	15 Mar 1945
2835	2750th Engrs.	Extend equip release on 3/4 yd shovel to 39th Engrs.	1 Mar 1945	15 Mar 1945
2836	2750th Engrs.	Extend release on 2 Diaphragm pumps to 405th Engrs.	1 Mar 1945	31 Mar 1945
2837	2750th Engrs.	Furnish 8 yd towed scraper to 1108th Engrs.	1 Mar 1945	15 Mar 1945
2838	2750th Engrs.	Furnish Quickway Crane to 1338th Engrs.	1 Mar 1945	15 Mar 1945
2839	2750th Engrs.	Extend release on asphalt distributor to 175th Engrs.	1 Mar 1945	10 Mar 1945
2840	2750th Engrs.	Extend release on 3/4 yd shovel, compressor and primary and secondary crushers to 175th Engrs.	1 Mar 1945	15 Mar 1945
2841	92nd Engrs.	Furnish 20 loads of quarry run stone to 5th Army Stockade	1 Mar 1945	5 Mar 1945
2842	1554th Engrs.	Reinforce jeep bridge at A.P. Depot in Prato to carry CL. 12 load	2 Mar 1945	16 Mar 1945
2843	1338th Engrs.	Extend cover surveys of all Infantry Divisions in 5th Army to include all specific units within Divisions	3 Mar 1945	16 Mar 1945
2844	2750th Engrs.	Furnish Quickway Crane and 3/4 yd dragline to 16th Engrs.	3 Mar 1945	2 Apr 1945
2845	2750th Engrs.	Transfer primary and secondary rock crushers and 3/4 yd shovel now with 175th Engrs to 1108th Engrs.	3 Mar 1945	2 Apr 1945
2846	175th Engrs.	Make investigation of work required to open drainage ditch for AMG, vic Viareggio	4 Mar 1945	5 Mar 1945
2847	77 CRE Wks	Carry out alterations and additions to existing bldgs and install fittings for NAFFI Institute at Prato	4 Mar 1945	17 Mar 1945
2848	77 CRE Wks	Install latrines etc. at "Y" Indian Rest Camp	5 Mar 1945	17 Mar 1945
2849	77 CRE Wks	Make necessary alterations at 107 S. A. General Hosp.	7 Mar 1945	21 Mar 1945
2850	2750th Engrs.	Furnish primary rock crusher to 39th Engrs.	5 Mar 1945	4 Apr 1945
2851	2750th Engrs.	Furnish D-8 tractor and 12 yd scraper to 1338th Engrs.	5 Mar 1945	9 Mar 1945
2852	92nd Engrs.	Maintain Rt. 65 from Q810730 to junction with Rt. 6520; Rt. 6528 from junction with Rt. 65 to Firenzuola	4 Mar 1945	26 Apr 1945
2853	92nd Engrs.	Maintain Rt. 1-1 from Q748718 to Q660800; Rt. 6623 from Q660800 to junction with Rt. 6620 at Prato	4 Mar 1945	26 Apr 1945
2854	92nd Engrs.	Replace Bailey bridge at Q713780 wit. 21. 40. l-way. timber and steel semi-permanent bridge	4 Mar 1945	13 Mar 1945
2855	175th Engrs.	Maintain Rt. 6627 from Q452842 to Pistoia; Rt. 1-1 from Q452842 to Q120765; Rt. 12 from Q120765 to Q122670; Rt. 64 from junction with Rt. 66 up to and incl. Silla Bridge, 1588148; Rt. 66 from Pistoia to junction with Rt. 6629; Rt. 66 from Florence Area boundary to Pistoia; Rt. 6731 from junction of Rt. 66 to the junction of Rt. 67	5 Mar 1945	27 Apr 1945
2856	1554th Engrs.	Furnish 2 ponton tractors and trailers to haul logs for 175th Engrs.	5 Mar 1945	12 Mar 1945

APPENDIX J

THE ARNO THROUGH THE WINTER STATIC PHASE

JOB NO	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
2857	2nd Engrs.	Furnish 5 loads of gravel to 101st T B Co	5 Mar 1945	6 Mar 1945
2858	175th Engrs.	Furnish asphalt distributor to 1108th Engrs.	6 Mar 1945	12 Mar 1945
2859	77 CRE Sks.	Make necessary repairs to gate at Army Exchange Warehouse, 14 Via Panciatichi, Florence	7 Mar 1945	9 Mar 1945
2860	1338th Engrs.	Cover pipe line in Dump 25-6	7 Mar 1945	9 Mar 1945
2861	92nd Engrs.	Improve entrance road into Gas Depot 45-44 at 4741762	8 Mar 1945	24 Mar 1945
2862	2750th Engrs.	Furnish arc welder to 1338th Engrs.	7 Mar 1945	21 Mar 1945
2863	175th Engrs.	Maintain Rt. 1-1 from 542851 to 566890	8 Mar 1945	7 Apr 1945
2864	CRE Ssk Group	Maintain Rt. 1-1 from 9452842 to 120765; Rt. 12 from 1120765 to 1122670	7 Mar 1945	3 Apr 1945
2865	1338th Engrs.	Maintain Rt. 65 from junction with Rt. 6528 to 1782218; Rt. 6529 from junction with Rt. 65 to junction with Rt. 937; Rt. 937 from junction Rt. 6529 to 1466268 Rt. 6530 from junction with Rt. 65 to 1873142	7 Mar 1945	30 Apr 1945
2866	2750th Engrs.	Furnish 2 Gallion graders to 1108th Engr Gp	7 Mar 1945	6 Apr 1945
2867	92nd Engrs.	Replace Bailey bridge at 1739165 with culvert	7 Mar 1945	25 Mar 1945
2868	92nd Engrs.	Replace Bailey bridge at 1735132 with Cl. 40, 2-way, Cl. 70, 1-way, semi-permanent bridge	7 Mar 1945	23 Mar 1945
2869	1338th Engrs.	Furnish 1 E, familiar with erection of prefab bldgs, to assist 15th Army Gp in erection of 2 bldgs at CP in Florence	8 Mar 1945	16 Mar 1945
2870	2750th Engrs.	Furnish secondary crusher unit to 3rd Airfield Constructor Gp	8 Mar 1945	6 Apr 1945
2871	92nd Engrs.	Furnish 6 loads of stone to Russian Nationalist Camp	8 Mar 1945	10 Mar 1945
2872	92nd Engrs.	Furnish 15 loads of stone to 310th Fed Bn	9 Mar 1945	10 Mar 1945
2873	92nd Engrs.	Furnish road patrol to level drill field of 5th Army Rear	10 Mar 1945	11 Mar 1945
2874	1554th Engrs.	Pick up from EC-L-76 and deliver to 39th Engrs, all 22 HP motors allotted to 5th Army	10 Mar 1945	13 Mar 1945
2875	175th Engrs.	Maintain Rt. 64 to RJ with Rt. 6421 at 1630195	10 Mar 1945	27 Apr 1945
2876	92nd Engrs.	Furnish mine clearance team to check area vic of South of S. Lucia Chain Point	10 Mar 1945	13 Mar 1945
2877	2750th Engrs.	Extend equip release on 105 Air Compressor to 175th Engrs.	9 Mar 1945	31 Mar 1945
2878	1338th Engrs.	Grade area for drill field at 5th Army CP	10 Mar 1945	11 Mar 1945
2879	175th Engrs.	Construct Cl. 40, 2-way, Cl. 70, 1-way bridge at Marano, 1626195, to replace 80' DS and 60' DS Bailey's	10 Mar 1945	26 Mar 1945
2880	175th Engrs.	Prepare plans and assemble materials for high level bridge across Po River, vic Ostiglia	10 Mar 1945	28 Apr 1945
2881	92nd Engrs.	Prepare and submit plans for Cl. 40, 2-way, Cl. 70, 1-way bridges to replace 240' BS at 1749193, and 150' BS at 1754234	11 Mar 1945	16 Mar 1945
2882	92nd Engrs.	Replace Bailey Bridge on Rt. 6625, with 1-way Cl. 30 bridge	10 Mar 1945	26 Mar 1945
2883	92nd Engrs.	Replace Bailey bridges at 1649837 and 583878 with 1-way Cl. 30 bridges	10 Mar 1945	21 Mar 1945
2884	2750th Engrs.	Extend release on concrete mixer to 182nd Engrs.	11 Mar 1945	19 Mar 1945
2885	2750th Engrs.	Extend release on crane, truck mtd, to 182nd Engrs.	12 Mar 1945	25 Mar 1945
2886	175th Engrs.	Grade Rt. 12 from junction of Rt. 12 with 67 to junction with Rt. 66 to permit passing of M-25 Tank Transporters and trailers.	14 Mar 1945	26 Mar 1945
2887	1338th Engrs.	Conduct mine detection and recognition school for selected personnel of 133rd Sig Bn., at 1845085	14 Mar 1945	17 Mar 1945
2888	1338th Engrs.	Furnish mine instruction team with museum to instruct 2 Bns of Artillery	19 Mar 1945	25 Mar 1945
2889	2750th Engrs.	Furnish asphalt distributor to 1108th Engrs.	12 Mar 1945	15 Mar 1945
2890	92nd Engrs.	Release 6 loads of primary rock to Hq Co., 5th Army In Rear	14 Mar 1945	17 Mar 1945
2891	1338th Engrs.	Maintain Route from 1908219 to 1870157 and from 1862173 to 1913158	15 Mar 1945	29 Apr 1945
2892	1554th Engrs.	Patch entrance road to 5th Army Engr Club	16 Mar 1945	16 Mar 1945
2893	92nd Engrs.	Gal a 400' section of Rt. 65 in front of 5th Army Signal Section	13 Mar 1945	15 Mar 1945
2894	92nd Engrs.	Oil Rt. 6 25 by the 602nd Clearing Co to alleviate the dust	19 Mar 1945	22 Mar 1945
2895	77 CRE Sks.	Repair breaks in city water mains along Hwy 65 without interrupting 2-way traffic, to supply water to 15 Section of Florence	15 Mar 1945	25 Mar 1945
2896	77 CRE Sks.	Investigate power requirements of Officina Elettromeccanica, Florence, and advise of demand can be supplied	15 Mar 1945	17 Mar 1945
2897	2750th Engrs.	Furnish 1 mtd air compressor to 175th Engrs.	14 Mar 1945	31 Mar 1945
2898	92nd Engrs.	Furnish mine detection team to check bivouac area for Hwy Opn Bn in Florence	15 Mar 1945	16 Mar 1945
2899	1338th Engrs.	VOID	VOID	
2900	2750th Engrs.	Furnish Tractor D-8 to 1628th Engr Util Det	16 Mar 1945	1 Apr 1945
2901	1338th Engrs.	Make cover survey of 56th Evac Hosp	16 Mar 1945	17 Mar 1945
2902	2750th Engrs.	Extend release on concrete mixer to 92nd Engrs.	14 Mar 1945	13 Apr 1945
2903	2750th Engrs.	Extend release on primary and secondary crushers to 92nd Engrs.	14 Mar 1945	13 Apr 1945
2904	2750th Engrs.	Extend release on Traxcavator to 92nd Engrs	14 Mar 1945	30 Mar 1945
2905	92nd Engrs.	Furnish mine clearing team to check area for 1710th Sig Serv Co.	16 Mar 1945	17 Mar 1945
2906	2750th Engrs.	Extend equip releases on the following 2 D-8 tractors, towed grader, mtd grader, primary and secondary crushers, 3/4 yd shovel and compressor to 1338th Engrs.	16 Mar 1945	31 Mar 1945
2907	2750th Engrs.	Extend equipment release on towed grader and asphalt distributor to 92nd Engrs.	16 Mar 1945	31 Mar 1945
2908	1338th Engrs.	Furnish 40 loads of primary rock, not to exceed 4 loads per day to US Cemetery at Mt. Senz	17 Mar 1945	25 Mar 1945
2909	2750th Engrs.	Extend release of 1/2 yd shovel to 10th Engrs.	16 Mar 1945	11 Mar 1945
2910	92nd Engrs.	Make route survey of road from Barberano to Montepiano	16 Mar 1945	16 Mar 1945
2911	175th Engrs.	Cancel C 2775, Maintain Routes 1224 and 1720 from Altoscuolo to Galleno to Q145684	16 Mar 1945	29 Apr 1945
2912	175th Engrs.	Construct arbores and soakage pit at B.E.F. Repl Depot	18 Mar 1945	5 Apr 1945
2913	2750th Engrs.	Furnish towed grader and Quickway crane with dragline attachment to 19th Engrs.	17 Mar 1945	31 Mar 1945
2914	1338th Engrs.	Maintain Rt. 6530 from 1823142 to junction with Rt. 6527 at 1782193	20 Mar 1945	21 Apr 1945
2915	92nd Engrs.	Construct railhead at Praggana, 1750226	11 Mar 1945	8 May 1945
2916	1338th Engrs.	Furnish experienced personnel with tools to supervise construction of prefab hut at 05-1	19 Mar 1945	22 Mar 1945
2917	2750th Engrs.	Furnish arc welder to 40th Engr Maint Co	18 Mar 1945	13 Apr 1945

APPENDIX J

THE ARNO THROUGH THE WINTER STATIC PHASE

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
2918	2750th Engrs.	Extend release on concrete mixer to 182nd Engrs.	21 Mar 1945	31 Mar 1945
2919	92nd Engrs.	Contact 160th Ordnance at 745712. Unit requested concrete foundations for their machinery. suggest you attempt design with logs, etc.	10 Mar 1945	21 Mar 1945
2920	2750th Engrs.	Furnish motorized grader and quickway crane to 16th Engrs.	19 Mar 1945	15 Apr 1945
2921	175th Engrs.	Repair bridge on Route 1 over Serchio River by raising abutments to grade and remove section of old bridge that has shifted against piling	20 Mar 1945	13 Apr 1945
2922	175th Engrs.	Repair all bridges built by you on Route 1-1 between Pistoia and Lucca by bringing to grade at abutments where necessary	20 Mar 1945	31 Mar 1945
2923	175th Engrs.	Replace curled portions of asphalt pavement at the overpass on Route 66 (528068) with stable mix	20 Mar 1945	22 Mar 1945
2924	92nd Engrs.	Assemble materials, rebuild abutments and do preliminary work on bridge across the Setta River near Legaro	20 Mar 1945	16 May 1945
2925	92nd Engrs.	Assemble materials and do preliminary work towards replacing Bailey across Setta River on Route 6620 at Pian di Setta	20 Mar 1945	29 Apr 1945
2926	1338th Engrs.	Furnish 6 loads of crushed stone to Supply Officer, Hq. Co., Fifth Army	20 Mar 1945	20 Mar 1945
2927	2750th Engrs.	Furnish IV Corps Engrs., one road roofer	20 Mar 1945	15 Apr 1945
2928	77 CRE Tks.	Repair and maintain traffic circuit for Rifredi Railhead	20 Mar 1945	11 May 1945
2929	597th Engrs.	Furnish Quickway Crane to 16th Arm. Engrs	20 Mar 1945	20 Apr 1945
2930	77 CRE Tks.	Provide boilers and cylinders to maintain hot water supply for 12 showers when using low grade fuel for (Court Martial and Holding Centre)	22 Mar 1945	15 Apr 1945
2931	77 CRE Tks.	Redecorate 32 Indian Rest Camp, Florence	20 Mar 1945	30 Mar 1945
2932	2750th Engrs.	Furnish D-8 Tractor with overhead loader to 92nd Engrs.	22 Mar 1945	21 Apr 1945
2933	2750th Engrs.	Furnish Asphalt Distributor to 92nd Engrs.	20 Mar 1945	21 Mar 1945
2934	2750th Engrs.	Extend release on 3/4 yd shovel to 643rd Engrs.	20 Mar 1945	13 Apr 1945
2935	1554th Engrs.	Construct one-way Class 4C, and 2-way Class 24 timber and steel bridge on Route to British Railhead in Florence	21 Mar 1945	30 Mar 1945
2936	1338th Engrs.	Furnish Bulldozer to level and widen existing road for CM Depot, Class 1 at 1865161	22 Mar 1945	24 Mar 1945
2937	77 CRE Tks.	Work at Convalescent Depot 'ing, Saltino (Hotels Acqua Belle, Savoia, Belvedere and Grand)	20 Mar 1945	7 Apr 1945
2938	77 CRE Tks.	Prepare rock bound macadam bypass section of Route 65 from 08274 to 08173, to provide drainage	23 Mar 1945	6 Apr 1945
2939	175th Engrs.	Assist Signal Corps in installation of communication lines by furnishing two mine clearing teams to clear right of way	23 Mar 1945	30 Mar 1945
2940	1554th Engrs.	Furnish ponton tractors and trailers to 175th Engrs for hauling logs to Lucca	23 Mar 1945	1 Apr 1945
2941	597th Engrs.	Furnish 1 Athey loader and one Quickway Crane to 1108th Engrs.	23 Mar 1945	22 Apr 1945
2942	84th Engrs.	Send detail to 527th and 539th Field Artillery Bns. to instruct personnel in Camouflaged principles	24 Mar 1945	25 Mar 1945
2943	77 CRE Tks.	Construct 12 window screen frames for Fifth Army Rest Center in Florence	24 Mar 1945	28 Mar 1945
2944	1554th Engrs.	Make arrangements with 92nd Engrs to transport 75 piles from Montecatini to Castiglione	23 Mar 1945	27 Mar 1945
2945	92nd Engrs.	Shape up truck entrance and road net of Depot E2-29	25 Mar 1945	CANCELLED
2946	1338th Engrs.	Furnish bulldozer to 63rd Signal Bn. to shape an entrance road and motor pool area at 1860090	25 Mar 1945	26 Mar 1945
2947	92nd Engrs.	Oil Route 6524 by 56th Evac. Hoop. near Scarperia to alleviate the dust	26 Mar 1945	1 Apr 1945
2948	92nd Engrs.	Furnish 150 loads of quarry run rock or quarry waste to Army Class 1 truckhead 05-41	25 Mar 1945	23 Apr 1945
2949	77 CRE Tks.	Return to E2-36 all Bailey bridging stocked at 768702 on Route 66	24 Mar 1945	26 Mar 1945
2950	1554th Engrs.	Tiden Route 12 from junction of Route 12 with Route 67 to junction with Route 66 to permit passing of M-25 tank transporters and trailers	26 Mar 1945	28 Mar 1945
2951	92nd Engrs.	Furnish 1628th Engrs. with 4 loads of primary run stones	25 Mar 1945	29 Mar 1945
2952	1338th Engrs.	Tiden bypass to permit the passing of an M-25 transporter, trailer and load thru the town of Loiano on Route 65	27 Mar 1945	29 Mar 1945
2953	597th Engrs.	Furnish 3/4 yd shovel with operators to 185th Engrs.	24 Mar 1945	21 Apr 1945
2954	77 CRE Tks.	Install at 54 Rest Center, 6 additional 72" ranges of bluff cookers	26 Mar 1945	5 Apr 1945
2955	405th Engrs.	Furnish one Hale Dump with accessories and two operators to 175th Engrs for use in producing and testing jet pile driving rig for construction of bridges	27 Mar 1945	27 Mar 1945
2956	77 CRE Tks.	Make power survey of L'Inerva Hotel in Florence	27 Mar 1945	28 Mar 1945
2957	1338th Engrs.	Furnish mine instruction team with museum to instruct 1 Artillery Bns.	28 Mar 1945	4 Apr 1945
2958	92nd Engrs.	Furnish 3 trucks to pick up officers at 8th Replacement Depot	28 Mar 1945	28 Mar 1945
2959	597th Engrs.	Furnish motorized grader and operator to 235th T Bn	28 Mar 1945	1 Apr 1945
2960	1338th Engrs.	Maintain newly assigned roads, Route 5527 from L219044 to L782228	28 Mar 1945	22 Apr 1945
2961	92nd Engrs.	Maintain Route 6620 from L768242 to L650170	28 Mar 1945	26 Apr 1945
2962	1338th Engrs.	Furnish mine team with museum to ETC 2 at 0617840	5 Apr 1945	12 May 1945
2963	84th Engrs.	Furnish detail for supervision of camouflage at Ballon Dump 15-11	29 Mar 1945	2 Apr 1945
2964	92nd Engrs.	Move remaining two platoons of Co. "F" to ETC 2 at 0617840	29 Mar 1945	30 Mar 1945
2965	175th Engrs.	Maintain Route 1-1 (Autostrada) from 7452842 to 7182774 at Lucca	1 Apr 1945	CANCELLED
2966	3rd Air Const Gp.	Maintain Route 1 from FBG boundary at 0090670 to Pietrosanto and Routes 1:21 and 1:21A from Vioreggio to Lucca	1 Apr 1945	10 May 1945
2967	2750th Engrs.	Furnish asphalt distributor and operator to 1338th Engrs.	1 Apr 1945	30 Apr 1945
2968	77 CRE Tks.	Convert Rovezzara Barracks to British Military Prison	3 Apr 1945	16 Jun 1945
2969	2750th Engrs.	Extend release on 1 distributor and one Traxcavator to 92nd Engrs.	30 Mar 1945	13 Apr 1945
2970	1338th Engrs.	Furnish 1 sprinklers and drivers to 88th Div.	30 Mar 1945	31 Mar 1945
2971	1338th Engrs.	Furnish mine team to check paths in 15th Army Group Area	30 Mar 1945	31 Mar 1945
2972	92nd Engrs.	Furnish 6 loads of stone to Hq. Co., Fifth Army Rear	29 Mar 1945	3 Apr 1945
2973	175th Engrs.	Furnish mine team to check area for 170th Evac. Hoop.	30 Mar 1945	11 Mar 1945
2974	2750th Engrs.	Extend releases on exempt. to 1338th Engrs.	30 Mar 1945	30 Apr 1945
2975	1554th Engrs.	Construct 2-way Class 4C, 1-way Class 20, 2 open timber and steel bridge at 789698	31 Mar 1945	9 Apr 1945

APPENDIX J
THE PO CAMPAIGN

JOB NO.	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
3000	92nd Engrs.	Construct marker on level spot, vic. Prato, to be shaped as cross, each arm 100 yds long and 10 yds wide, using white cloth	5 Apr 1945	7 Apr 1945
3001	2750th Engrs.	Extend release on mtd. grader to 1108th Engrs.	6 Apr 1945	25 Apr 1945
3002	175th Engrs.	Dismantle and prepare for movement 2 of the 400 KW generators at Montecatini Power Station	6 Apr 1945	12 Apr 1945
3003	1138th Engrs.	Furnish 6 loads of crushed rock to 3rd Air Tac. Recon. Grp.	6 Apr 1945	7 Apr 1945
3004	92nd Engrs.	Contact Capt. Forams at Campo Marte Railhead to secure from him statement covering ideas on making railhead site safe from pilferage	7 Apr 1945	7 Apr 1945
3005	1138th Engrs.	Furnish 1 Prime Mover and Trailers to Engr Depot E2-17	7 Apr 1945	11 Apr 1945
3006	92nd Engrs.	Furnish 2 Prime Movers and Trailers to Engr Depot E2-17	7 Apr 1945	13 Apr 1945
3007	2750th Engrs.	Furnish 1 Prime Mover and Trailer to Engr Depot E2-17	7 Apr 1945	11 Apr 1945
3008	1138th Engrs.	Conduct electrical power survey on 3rd Field Hosp.	7 Apr 1945	9 Apr 1945
3009	77 CRE Wks.	Make investigation of request for additional electricly for Pignone, Florence	7 Apr 1945	10 Apr 1945
3010	1138th Engrs.	Enlarge present PW enclosure near Pietramala to 300' x 400', using triple concertina	8 Apr 1945	9 Apr 1945
3011	175th Engrs.	Construct PW enclosure 300' x 400', designed to be triple concertina with 2 towers	7 Apr 1945	10 Apr 1945
3012	1554th Engrs.	Furnish ponton trailers to haul piling. Trucks to report to 175th Engrs., at Pistoia RHD	7 Apr 1945	10 Apr 1945
3013	92nd Engrs.	Make necessary improvements at junction of Route 6621 and 1-1 near Prato	8 Apr 1945	12 Apr 1945
3014	2750th Engrs.	Transfer shovel from 1108th Engrs to 175th Engrs.	6 Apr 1945	5 May 1945
3015	597th Engrs.	Transfer crushing and screening plant from 1108th Engrs., to 175th Engrs.	6 Apr 1945	5 May 1945
3016	175th Engrs.	Replace 40' SS Bailey at Q405820 with 1-way CI 24, semi-permanent bridge	9 Apr 1945	16 Apr 1945
3017	175th Engrs.	Arrange to secure Italian Carpenters to construct between 90 and 100 packing boxes by contacting Utility Officer, 171st Evac. Hosp.	9 Apr 1945	20 Apr 1945
3018	92nd Engrs.	Construct 7-8 hole latrine boxes for 171st Evac. Hosp.	8 Apr 1945	15 Apr 1945
3019	597th Engrs.	Furnish D-8 bulldozer with operator to 1108th Engrs.	9 Apr 1945	19 Apr 1945
3020	175th Engrs.	Do necessary work to improve Pistoia Railhead	9 Apr 1945	12 Apr 1945
3021	175th Engrs.	Construct PW enclosure at Pistoia, use triple concertina for fence	9 Apr 1945	14 Apr 1945
3022	597th Engrs.	Furnish Air Compressor to 785th Pipe Line Co at Barberino	9 Apr 1945	21 Apr 1945
3023	2750th Engrs.	Furnish Bulldozer D-8 to 1108th Engrs	9 Apr 1945	18 Apr 1945
3024	2750th Engrs.	Furnish concrete mixer to 1108th Engrs.	9 Apr 1945	19 Apr 1945
3025	92nd Engrs.	Furnish 6 loads of crusher screenings to Fifth Army Rear	8 Apr 1945	13 Apr 1945
3026	77 CRE Wks.	Install hot plates at 54 Rest Centre	8 Apr 1945	22 Apr 1945
3027	77 CRE Wks.	Repair roads at 107th Gen. Hosp.	6 Apr 1945	16 Apr 1945
3028	92nd Engrs.	Install additional barbed wire and concertina at Campo Marte Railhead	10 Apr 1945	16 Apr 1945
3029	92nd Engrs.	Extend release on 2 prime movers and trailers to Engr Depot E2-17	11 Apr 1945	13 Apr 1945
3030	2750th Engrs.	Extend release of 1 prime mover and trailer to Engr Depot E2-17	11 Apr 1945	13 Apr 1945
3031	1138th Engrs.	Extend release of 3 prime movers and trailers to Engr Depot E2-17	11 Apr 1945	13 Apr 1945
3032	1554th Engrs.	Extend release of furnishing 5 ponton trailers to 175th Engrs.	10 Apr 1945	17 Apr 1945
3033	2750th Engrs.	Deliver concrete mixer to 19th Engrs. at 1917219 on Route 6511	10 Apr 1945	19 Apr 1945
3034	1138th Engrs.	Furnish 6 loads of crusher run stone to Transportation Section	10 Apr 1945	11 Apr 1945
3035	1138th Engrs.	Construct guard towers and one 8 hole latrine for PW enclosure at Pietramala	11 Apr 1945	13 Apr 1945
3036	1138th Engrs.	Furnish two 1 man mine clearance teams to Surgeon for clearing mines from Hosp. installations	12 Apr 1945	15 May 1945
3037	597th Engrs.	Furnish one 3/4 yd crane to 701st Railway Grand Division	11 Apr 1945	12 Apr 1945
3038	175th Engrs.	Maintain Route 1 from Querceta, 0953947 to Massa	12 Apr 1945	28 Apr 1945
3039	3rd Air Con. Grp.	Maintain Route 1 from Pietrasanta, 0977921 to Querceta, 0953947	12 Apr 1945	11 May 1945
3040	92nd Engrs.	Furnish mine clearance detail to clear mines for 785th Pipe Line Co., at Barberino	12 Apr 1945	24 Apr 1945
3041	175th Engrs.	Dismantle portable steel bldg. at 16th Evac. Hosp. and transport to E2-17	16 Apr 1945	18 Apr 1945
3042	1554th Engrs.	Construct 4 sets of bolsters for 25-ton truck tractors and dolly	12 Apr 1945	22 Apr 1945
3043	2750th Engrs.	Extend release of road rooster to IV Corps Engrs.	15 Apr 1945	30 Apr 1945
3044	2750th Engrs.	Furnish asphalt distributor to 92nd Engrs.	13 Apr 1945	13 May 1945
3045	92nd Engrs.	Inspect damaged bridge at 0654828 and repair if possible	13 Apr 1945	16 Apr 1945
3046	92nd Engrs.	Release 15 loads of secondary crushed rock to 224th and 226th Engrs.	13 Apr 1945	15 Apr 1945
3047	2750th Engrs.	Furnish Quickway Crane to 169th Engrs.	14 Apr 1945	21 Apr 1945
3048	1138th Engrs.	Furnish Officer and mine clearance detachment to accompany CIC into Bologna	20 Apr 1945	20 May 1945
3049	1138th Engrs.	Prepare 2-400 KW generators with transformers for movement forward	15 Apr 1945	22 Apr 1945
3050	77 CRE Wks.	Complete Carregi Hospital to scale "A"	14 Apr 1945	12 May 1945
3051	597th Engrs.	Extend release on crane, truck, mtd and grater mtd to 16th Armd. Engrs.	15 Apr 1945	15 May 1945
3052	2750th Engrs.	Extend release on crane, truck, mtd and grater mtd to 16th Armd. Engrs.	14 Apr 1945	15 May 1945
3053	92nd Engrs.	Shape up exit from parking lot at Pratolino, so 10-ton trailer trucks can turn into Route 65	11 Apr 1945	16 Apr 1945
3054	2750th Engrs.	Furnish Quickway Crane and operator to 19th Armd. Engrs.	15 Apr 1945	30 Apr 1945
3055	597th Engrs.	Furnish grader to 121st Liaison Sqdn., vic. 15th Army Group Hqs.	15 Apr 1945	15 Apr 1945
3056	2750th Engrs.	Furnish Galion Grader to 1138th Engrs	15 Apr 1945	15 Apr 1945
3057	2619th Engrs.	Construct file case for O & E Section, Engr Hqs.	11 Apr 1945	21 Apr 1945
3058	77 CRE Wks.	Do necessary alterations at Alhambra Club	22 Apr 1945	26 May 1945
3059	2750th Engrs.	Extend release on concrete mixer to 1108th Engrs	19 Apr 1945	3 May 1945
3060	2750th Engrs.	Extend release on D-8 bulldozer to 1108th Engrs.	18 Apr 1945	26 Apr 1945
3061	597th Engrs.	Extend release on D-8 bulldozer to 1108th Engrs.	19 Apr 1945	26 Apr 1945
3062	597th Engrs.	Furnish 3/4 yd shovel to 1138th Engrs.	16 Apr 1945	15 May 1945
3063	92nd Engrs.	Manufacture 1000 Route Number Blanks, 18" x 18" wood, unpainted for Transportation Section	16 Apr 1945	22 Apr 1945
3064	1554th Engrs.	Haul approx. 15 long piles from Pistoia Railhead to Marengo dump	15 Apr 1945	17 Apr 1945
3065	597th Engrs.	Furnish 3/4 yd shovel to 175th Engrs. Pick up 1/2 yd shovel and transport to 2750th Engrs.	16 Apr 1945	30 Apr 1945
3066	2750th Engrs.	Furnish 1/2 yd shovel to 19th Engrs.	17 Apr 1945	30 Apr 1945
3067	92nd Engrs.	Manufacture 7 trailers signs, 15" x 4" wood, red lettering on white	17 Apr 1945	CANCELLED
3068	175th Engrs.	Replace Bailey at U945956 with 2-way, CI 40, 1-way, CI 70 semi-permanent bridge	15 Apr 1945	25 Apr 1945

APPENDIX J
THE PO CAMPAIGN

JOB NO	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
3069	175th Engrs.	Extend maintenance responsibility on Route 64 from L630195 to L695255	17 Apr 1945	27 May 1945
3070	92nd Engrs.	Prepare Routes 6623 and 6620 from Autostrada to north edge of Prato for re-oiling	18 Apr 1945	CANCELLED
3071	92nd Engrs.	Re-oil unpaved section of Route 65 bypass from 28274 to 28173	19 Apr 1945	26 Apr 1945
3072	175th Engrs.	Maintain and Patrol Route 177 from U924220 to U887976	17 Apr 1945	26 Apr 1945
3073	1338th Engrs.	Clear areas from right of way along Hwy 65 for construction of communication lines. (102nd Sigm. Const. Bn)	18 Apr 1945	10 May 1945
3074	1338th Engrs.	Construct 2-way Cl. 40, Cl 70, 1-way semi-permanent bridge at Vergato, on Route 64	18 Apr 1945	27 Apr 1945
3075	175th Engrs.	Clear areas from right-of-way along Hwy 64, for construction of communication lines	18 Apr 1945	28 Apr 1945
3076	2750th Engrs.	Furnish crane, mtd to 1338th Engrs	19 Apr 1945	23 Apr 1945
3077	92nd Engrs.	Oil Rt. 6620, going thru the city of Prato	21 Apr 1945	26 Apr 1945
3078	175th Engrs.	Make traffic count on Rt. 64 at Collana and at North edge of Porretta	19 Apr 1945	22 Apr 1945
3079	597th Engrs.	Furnish 1/2 yd shovel with pile driving attachment to 175th Engrs.	19 Apr 1945	26 Apr 1945
3080	77 CRE Wks	Replace Bailey at Ponte S. Trinita with Flambo Bridge of same classification. Return all Bailey parts to 5th Army Bridge Depot E2-36	22 Apr 1945	30 Apr 1945
3081	1338th Engrs.	Maintain Rt. 64 from L695255 to L758308	20 Apr 1945	1 May 1945
3082	175th Engrs.	Maintain Rt. 6629 from L594088 to L503990 to L410024; Rt. 12 from L410024 to L350006	20 Apr 1945	26 Apr 1945
3083	1338th Engrs.	Maintain Rt. 65 from L871218 to L866234; Rt. 6531 from L866234 to L904218	20 Apr 1945	23 Apr 1945
3084	597th Engrs.	Furnish D-8 dozer with operator to CM Salvage Dump, Q5-45, at Florence		
3085	1338th Engrs.	Operate salvage lumber depot in vic. of 185th Engrs.	19 Apr 1945	20 May 1945
3086	77 CRE Wks.	Take over from 1338th Engrs., the operation of 400 KW Generator Plant in Florence	22 Apr 1945	24 May 1945
3087	1338th Engrs.	Furnish mine detector team, and do necessary work for Advance CP, vic. L723278, incl. Sub strip.	20 Apr 1945	22 Apr 1945
3088	1338th Engrs.	Furnish transporter and prime mover to haul D-7 dozer from Army CP to Advance CP	20 Apr 1945	21 Apr 1945
3089	2750th Engrs.	Furnish concrete mixer, 7 cu ft., to 1338th Engrs near Vergato at bridge site (L695255) for use in construction of timber trestle bridge	20 Apr 1945	1 May 1945
3090	92nd Engrs.	Oil main roads within 94th Evac. Hosp., at Monchidoro, to settle dust	21 Apr 1945	22 Apr 1945
3091	1338th Engrs.	Pick up and deliver for storage at Engr Salvage Dump at L862114, following concertina wire: 133th Engrs., 5 SA and 116 Engrs.	20 Apr 1945	30 Apr 1945
3092	77 CRE Wks.	Carry out recommendations of report on Cold Stores, Florence, as regards repair of Liquid Ammonia pump	21 Apr 1945	3 May 1945
3093	597th Engrs.	Furnish finisher asphalt, crawler, mtd, 12', to 175th Engrs.	21 Apr 1945	11 May 1945
3094	1338th Engrs.	Reconstruct portions of the demolished section of Route 64 at Praduro (L805369) to give 2-way, Cl. 40, 1-way, Cl 70 traffic	22 Apr 1945	25 Apr 1945
3095	1338th Engrs.	Construct Bailey on Route 6620 across Reno River at L815374.	21 Apr 1945	30 Apr 1949
3096	1338th Engrs.	Maintain following Routes: Route 65 from L866234 to L880330; Route 64 from L758308 to L809381; Route 6620 from L766249 to L809381; Route 6424 from L754215 to L697262	21 Apr 1945	25 Apr 1945
3097	1338th Engrs.	Replace 110' TS Bailey at L707277 with 2-way Cl 40, 1-way Cl 70, semi-permanent bridge	22 Apr 1945	30 Apr 1945
3098	597th Engrs.	Furnish following to 169th Engrs: Shovel crawler, mtd 1/2 yd; shovel, crawler mtd 1/2 yd; Compressor, Air, 105 cfm, truck mtd	22 Apr 1945	6 May 1945
3099	92nd Engrs.	Take down Bailey bridge 740 at L773118 on Route 6527 and return to Bridge Depot E2-36	23 Apr 1945	26 Apr 1945
3100	175th Engrs.	Maintain newly assigned roads	21 Apr 1945	1 May 1945
3101	175th Engrs.	Furnish air compressor for drilling holes in boulders and furnish blasting materials for 47th Graves Reg. Co.	21 Apr 1945	22 Apr 1945
3102	1338th Engrs.	Construct entrance and do minimum bulldozing work for CM Cl 1 Dump at L758308	22 Apr 1945	CANCELLED
3103	77 CRE Wks.	Arrange civilian contract for interior painting at American Red Cross at Florence	23 Apr 1945	24 Apr 1945
3104	3rd Air Const Gp	Replace 70' DS Bailey at U988912 with 2-way Cl. 40, 1-way, Cl 70 semi-permanent bridge	21 Apr 1945	1 May 1945
3105	175th Engrs.	Construct culvert at U897965, U903960 and U893970	15 Apr 1945	28 Apr 1945
3106	2750th Engrs.	Furnish 2 D-8's to 169th Engrs.	21 Apr 1945	6 May 1945
3107	92nd Engrs.	Dismantle portable huts at L862090 on Rt. 6528 and at L850085 on Rt. 65 for 63rd Sig Bn	23 Apr 1945	26 Apr 1945
3108	1338th Engrs.	Maintain Rt. 65 from L880330 to Bologna	21 Apr 1945	1 May 1945
3109	1338th Engrs.	Furnish prime mover and transporter to pick up D-7 from Army Advance CP	22 Apr 1945	23 Apr 1945
3110	1338th Engrs.	Construct FT Enclosure, vicinity of Meglis, L8343 on Rt. 64	22 Apr 1945	24 Apr 1945
3111	597th Engrs.	Furnish primary and secondary crusher to 3rd Airfield Construction Gp.	22 Apr 1945	22 Apr 1945
3112	2750th Engrs.	Withdraw crusher working at 3rd Air Construction Gp. Do not remove until 597th has installed their primary and secondary unit.	22 Apr 1945	23 Apr 1945
3113	1338th Engrs.	Construct Bailey across Reno River at L835467, to be as high a class as possible, using only 1 story panels above decking	22 Apr 1945	23 Apr 1945
3114	1338th Engrs.	Reconstruct for Cl. 70 loads, highway bridge on Rt. 9 at L849505	22 Apr 1945	24 Apr 1945
3115	2750th Engrs.	Furnish 2 - 6 yd scrapers to 169th Engrs.	21 Apr 1945	6 May 1945
3116	406th Engrs.	Furnish prime mover and 20 ton trailer to haul Quonsett barges at Port of Leghorn	21 Apr 1945	30 Apr 1945
3117	2750th Engrs.	Furnish prime mover and 20 ton trailer to haul Quonsett barges at Port of Leghorn	21 Apr 1945	30 Apr 1945
3118	224th Engrs.	Furnish prime mover and 20 ton trailer to ha 1 Quonsett barges at Port of Leghorn	21 Apr 1945	30 Apr 1945
3119	226th Engrs.	Furnish prime mover and 20 ton trailer to haul Quonsett barges at Port of Leghorn	21 Apr 1945	
3120	92nd Engrs.	Maintain Rt. 6531 from L766249 to L885185; Rt. 6530 from L782193 to L885185 and Rt. 65 from L885185 to L858094	23 Apr 1945	26 Apr 1945
3121	1338th Engrs.	Construct 2-way Cl. 40, 1-way Cl. 70, timber trestle, steel stringer bridge at L726280	23 Apr 1945	4 May 1945
3122	92nd Engrs.	Clear area near Monterumici (L825286) of mines	23 Apr 1945	23 Apr 1945
3123	1338th Engrs.	Move 2-400 KW Generators, 1 from Florence and 1 from Leghorn to Bologna and set up	22 Apr 1945	30 Apr 1945
3124	92nd Engrs.	Remove without replacement Bailey bridges Nos. 963, 965 and 929, to Florence	24 Apr 1945	24 Apr 1945
3125	1338th Engrs.	Construct Cl. 70 Bailey over blown portion of bridge on Rt. 9 at L801530	24 Apr 1945	24 Apr 1945
3126	1338th Engrs.	Increase size of Mello PW Holding Camp to 400' x 400', with 4 additional latrines and 2 towers	23 Apr 1945	25 Apr 1945
3127	2750th Engrs.	Extend release on crane, truck, mtd 5 to 6 ton to 1338th Engrs.	23 Apr 1945	8 May 1945
3128	1338th Engrs.	Maintain road net on Rt. 64 from Praduro to Bologna	23 Apr 1945	25 May 1945

APPENDIX J
THE PO CAMPAIGN

JOB NO	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
3129	175th Engrs.	Remove without replacement and transport to Florence Depot Bridge No. 93, 80' SS at L599058	24 Apr 1945	24 Apr 1945
3130	224th Engrs.	Remove without replacement Bailey's and transport to Bridge Depot at Bologna	25 Apr 1945	6 May 1945
3131	92nd Engrs.	Provide detail to move Cmd Hq 5th Army Engrs	24 Apr 1945	26 Apr 1945
3132	1338th Engrs.	Replace 70' TS Bailey at L905348 with 2-way Cl. 40, 1-way Cl. 70, semi-permanent bridge	25 Apr 1945	30 Apr '45
3133	910 Wks SEC, RE	Operate 39 Stores Dump, Borgo S. Lorenzo	24 Apr 1945	21 May 1945
3134	910 Wks SEC, RE	Maintain and patrol following roads: 6524 and 6528; 937; and 6529; patrol 6521 and 934-Florence to Palazuolo, Report state of roads	24 Apr 1945	21 May 1945
3135	92nd Engrs.	Pick up Bailey parts on Rt. 6620 and transport to Bologna Bridge Depot	25 Apr 1945	30 Apr 1945
3136	1338th Engrs.	Pick up Bailey parts at Rt. 6530 and transport to Bologna Bridge Depot	25 Apr 1945	5 May 1945
3137	92nd Engrs.	Maintain Rt. 6620 to Praduro	25 Apr 1945	2 May 1945
3138	92nd Engrs.	Clear path of mines for gasoline pipeline between Rt. 65 at Loiano and Rt. 64	24 Apr 1945	21 May 1945
3139	1338th Engrs.	Clear area of mines for 8th Repl. Depot on Rt. 943	25 Apr 1945	28 Apr 1945
3140	2750th Engrs.	Furnish Quickway Crane to 1338th Engrs. at RJ No. 12 and 1245 in Poggio	25 Apr 1945	6 May 1945
3141	92nd Engrs.	Dismantle at Army CP and load on Transportation trks 6 prefab huts for 15th Army Group	25 Apr 1945	28 Apr 1945
3142	1554th Engrs.	Furnish 10 prime movers and transporters to haul piling for Po bridge	27 Apr 1945	2 May 1945
3143	175th Engrs.	Remove Bailey's on Rt. 177, Rt. 1 between Massa and Rt. 180, Rt. 1227 South of bridge at Q237947 and any other bridges not on IER below Arrade	25 Apr 1945	CANCELLED
3144	2750th Engrs.	Furnish asphalt distributor to 1338th Engrs.	26 Apr 1945	10 May 1945
3145	1338th Engrs.	Convert present SS Bailey across Reno River on Rt. 9 at Bologna to Carry Cl. 70 traffic. Construct second Bailey along side present bridge for Cl. 40 traffic	26 Apr 1945	4 May 1945
3146	405th Engrs.	Establish means to furnish sufficient water to two PW Enclosure at F7101 on Rt. 12 and at S. Benedetto at F5810	26 Apr 1945	5 May 1945
3147	2750th Engrs.	Move a D-7 tractor from Army Pwd CP to Nogara at junction of Rts. 12 and 6925	26 Apr 1945	26 Apr 1945
3148	400th Engrs.	Move 400th tractor to new location in Modena	27 Apr 1945	30 Apr 1945
3149	597th Engrs.	Locate bivouac area and move to Modena	27 Apr 1945	30 Apr 1945
3150	2750th Engrs.	Furnish 2 air compressors and 1/2 yd shovel to 224th Engrs.	27 Apr 1945	27 May 1945
3151	597th Engrs.	Furnish asphalt finisher, asphalt distributor and 1/2 yd shovel to 224th Engrs	27 Apr 1945	27 May 1945
3152	ETC NO. 2	Dismantle all prefab bldgs on Rt. 1-1 and Rt. 64 and transport to Florence Engr Depot	29 Apr 1945	6 May 1945
3153	ETC NO. 2	Dismantle all prefab bldgs on Rt. 65 and transport to Engr Depot in Florence or 8th Evac Hosp. site.	28 Apr 1945	7 May 1945
3154	ETC NO. 2	Remove without replacement Bailey bridges and transport to E2-42, Modena	27 Apr 1945	7 May 1945
3155	ETC NO. 2	Remove without replacement Bailey's and transport to E2-42, Modena	27 Apr 1945	6 May 1945
3156	ETC NO. 2	Maintain Rt. 64 from Q511869 and L696355	27 Apr 1945	22 May 1945
3157	ETC NO. 2	Relieve 175th Engrs of patrol and maintenance of listed routes: Rt. 6629 from L594083 to Q503990; Rt. 66 from Q503990 to Q513899 and Rt. 12, from L410024 to L350005	27 Apr 1945	18 May 1945
3158	2750th Engrs.	Furnish 1 crusher, primary 25 cu yds and crusher secondary, 25 cu yds to 224th Engrs.	27 Apr 1945	26 May 1945
3159	3rd Air Const Gp	Replace 100' TS Bailey at U962938 with 2-way Cl. 40, 1-way Cl. 70, semi-permanent timber and steel bridge	24 Apr 1945	15 May 1945
3160	ETC NO. 2	Maintain Rt. 65 from Florence Area Command to Radiciosa Pass at L873130	27 Apr 1945	17 May 1945
3161	2750th Engrs.	Furnish asphalt distributor mtd, grader mtd, Galion., air compressor, primary and secondary crusher and 3/4 yd shovel to 224th Engrs.	27 Apr 1945	26 May 1945
3162	ETC NO. 2	Maintain Rt. 65 from Radiciosa Pass to north edge of Loiano	27 Apr 1945	22 May 1945
3163	175th Engrs.	Maintain Rt. from P851038 to P844043 to P835045 (On Rt. 1) thence on Rt. 1 to La Spezia also Rt. 62	25 Apr 1945	30 Apr 1945
3164	3rd Air Const Gp	Maintain Rt-1 from U953947 at Querceta to P910014 in Massa	25 Apr 1945	22 May 1945
3165	92nd Engrs.	Maintain Rt. 65 from Loiano to L904437 Rt. 6424 from L754125 to L697262	27 Apr 1945	2 May 1945
3166	ETC NO. 2	Maintain Rt. 6623 from Autostrada to junction with Rt. 6620 at Prato; Rt. 6620 from junction with Rt. 6623 in Prato to L754215; Rt. 6530 between Rts 65 and 6620	27 Apr 1945	18 May 1945
3167	1338th Engrs.	Clear Palazzo Reale Bldg (L566668) in Modena of mines and booby traps for 5th Army Hq Rear	21 Apr 1945	29 Apr 1945
3168	1338th Engrs.	Replace tread on 110' TS Bailey at L789611	27 Apr 1945	27 Apr 1945
3169	1338th Engrs.	Construct PW Enclosure at L805515	27 Apr 1945	5 May 1945
3170	2750th Engrs.	Furnish grader to build cub strip for 15th Army Gp at Bologna	27 Apr 1945	28 Apr 1945
3171	1338th Engrs.	Maintain following routes: Rt. 9 from L849502 to L569661; Rt. 12 from L569661 to Ostiglia	27 Apr 1945	16 June 1945
3172	92nd Engrs.	Replace 110' TS Bailey at L363717 with 25' wide, Cl. 40, 2-way, Cl. 70, 1-way, semi-permanent bridge	28 Apr 1945	7 May 1945
3173	92nd Engrs.	Replace 90' TS Bailey at L460673 with 25' wide, Cl. 40, 2-way, Cl. 70, 1-way, semi-permanent bridge	28 Apr 1945	30 May 1945
3174	92nd Engrs.	Replace Bailey on Rt. 9 at L175816 with 25' wide, Cl. 40, 2-way, Cl. 70, 1-way, semi-permanent bridge	28 Apr 1945	15 May 1945
3175	1338th Engrs.	Repair bridge at L605640 to provide for Cl. 40, 2-way, Cl. 70, 1-way, traffic	28 Apr 1945	4 May 1945
3176	1338th Engrs.	Replace 180' TS Bailey at L620638 with 25' wide, Cl. 40, 2-way, Cl. 70, 1-way, semi-permanent bridge	29 Apr 1945	18 May 1945
3177	1338th Engrs.	Replace 70' TS Bailey at L801530 with 25' wide, Cl. 40, 2-way, Cl. 70, 1-way, semi-permanent bridge	28 Apr 1945	CANCELLED
3178	92nd Engrs.	Maintain Rt. 9 from L569661 in Modena to L100856 in Parma	28 Apr 1945	CONTINUOUS
3179	1338th Engrs.	Pick up and deliver to Bridge Depot E2-42 Modena all Bailey bridging and stream crossing equip at Pietramala Dump on Rt. 65	28 Apr 1945	30 Apr 1945
3180	1338th Engrs.	Pick up and deliver to E2-42 all Bailey bridging parts from Rt. 64 from Vergato to Bologna; temporary Dump at L830456; Temporary Dump at Riola	28 Apr 1945	10 May 1945
3181	92nd Engrs.	Pick up and deliver to E2-42 all Bailey parts along Rt. 6620 from Grizzano to Intersection of Rt. 64 at Praduro	28 Apr 1945	2 May 1945

APPENDIX J
THE PO CAMPAIGN

JOB NO	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
3182	1338th Engrs.	Maintain Floating Treadway at F788105 below Ostiglia	28 Apr 1945	2 May 1945
3183	1338th Engrs.	Maintain Floating Bailey bridge across Adige River at Abbaredo. Maintain approach roads to bridge	28 Apr 1945	CANCELLED
3184	1554th Engrs.	Maintain Treadway Bridge across Po River at F613130	28 Apr 1945	20 May 1945
3185	1554th Engrs.	Repair existing bridge across Mincio River at F601150 at Governolo	28 Apr 1945	1 May 1945
3186	92nd Engrs.	Construct 2 FW Enclosures at F7101 and F5180	27 Apr 1945	1 May 1945
3187	92nd Engrs.	Maintain Route 949 from Modena to Carpi and Route 6238 from Carpi to Ponton bridge across PO River at F588140 and road to treadway across PO River at E613130	28 Apr 1945	25 May 1945
3188	2750th Engrs.	Furnish Quickway Crane to 175th Engrs.	28 Apr 1945	18 May 1945
3189	597th Engrs.	Furnish 1/2 yd crane to 175th Engrs.	28 Apr 1945	18 May 1945
3190	92nd Engrs.	Maintain Route 9 from Parma to Piacenza	28 Apr 1945	CONTINUOUS
3191	ETC No. 2	Maintain supply of road oil now in storage at Prato Railhead	29 Apr 1945	17 May 1945
3192	92nd Engrs.	Maintain river gauge on PO River at Piacenza	28 Apr 1945	25 May 1945
3193	1338th Engrs.	Maintain river gauge on PO River at Ostiglia	28 Apr 1945	29 May 1945
3194	287 Work SecRE	Furnish mine clearance team to Bologna City Command to check bldgs.	29 Apr 1945	26 May 1945
3195	287 Work SecRE	Do necessary work at 53 roadhead	24 Apr 1945	30 Apr 1945
3196	287 Work SecRE	Do necessary work at 108th Gen. Hosp.	24 Apr 1945	28 Apr 1945
3197	1338th Engrs.	Maintain Route 947 from L840510 to Felonica	28 Apr 1945	12 May 1945
3198	1338th Engrs.	Strengthen Bailey bridge across Adige River at Verona	30 Apr 1945	3 May 1945
3199	92nd Engrs.	Pick up 19 pieces of dock board (foot bridge H1938) at L844287 and deliver to E2-42	30 Apr 1945	1 May 1945
3200	1338th Engrs.	Construct CI 40, 2 way, CI 70, 1 way, semi-permanent bridge to replace Bailey on Route 64 at L758308	25 Apr 1945	5 May 1945
3201	1338th Engrs.	Construct 2 FW enclosures at sites to be determined by Provost Marshal - Fifth Army	25 Apr 1945	28 Apr 1945
3202	ETC No. 2	Provide guard on armored vehicles being stored vic. Pietola and being guarded by 175th Engrs.	29 Apr 1945	22 May 1945
3203	597th Engrs.	Furnish D-8 tractors with 8 yd scrapers to 175th Engrs.	29 Apr 1945	18 May 1945
3204	175th Engrs.	Construct pile bent supported, semi-permanent, CI 50/90 high level bridge across PO River, on Route 12 at Ostiglia	29 Apr 1945	18 May 1945
3205	1338th Engrs.	Pick up 25 rolls of coir matting from 3rd Depot Unit, Florence, and take to cub strip at Fifth Army CP, L725760, and lay strip 900' in length	28 Apr 1945	30 Apr 1945
3206	2750th Engrs.	Furnish 2 air compressors to 175th Engrs.	28 Apr 1945	18 May 1945
3207	92nd Engrs.	Remove mud from pavement on Route 942 adjacent to Fuel Dump at L8157 immediately	28 Apr 1945	29 Apr 1945
3208	1338th Engrs.	Maintain Route 12 from Ostiglia to Verona and Route 10 from Lake Mincio to Nogara	29 Apr 1945	18 June 1945
3209	1338th Engrs.	Take passable approach roads leading to M2 treadway bridge at F780105 from Route 12	28 Apr 1945	4 May 1945
3210	1338th Engrs.	Maintain river gauge on Adige River at Verona	29 Apr 1945	18 June 1945
3211	1554th Engrs.	Remove 75' treadway bridge at L621138 and deliver to E2-42	29 Apr 1945	2 May 1945
3212	77 CRE Tks.	Construct roadways, walls, etc at British Empire Cemetery, Florence	30 Apr 1945	7 May 1945
3213	1338th Engrs.	Investigate and submit plan, connecting Railway bridge across Adige River at Verona	30 Apr 1945	30 Apr 1945
3214	1338th Engrs.	Construct and maintain floating Bailey, CI 40 and anti-mine barrier across PO River, vic of Ostiglia	25 Apr 1945	28 Apr 1945
3215	1338th Engrs.	Construct and maintain Floating Bailey CI 40 and anti-mine barrier across Adige River vic Legnano	28 Apr 1945	29 Apr 1945
3216	1338th Engrs.	Maintain Floating Treadway at F893258, vic. Legnano	24 Apr 1945	CANCELLED
3217	1338th Engrs.	Transport prefab hut at old Fifth Army CP at Traversa to Fifth Army CP at Verona	28 Apr 1945	29 Apr 1945
3218	92nd Engrs.	Furnish detail to moya Command Hq., Fifth Army Engrs. on 1st and 2nd of May	1 May 1945	2 May 1945
3219	92nd Engrs.	Replace 50' SS Bailey at L816372 with CI 40, 2 way CI 70, 1 way semi-permanent bridge	30 Apr 1945	1 May 1945
3220	92nd Engrs.	Replace 30' SS Bailey bridge on Route 6620 at L823127 with CI 40, 2 way 70, 1 way semi-permanent bridge	30 Apr 1945	1 May 1945
3221	92nd Engrs.	Replace Bailey on Route 6620 at L801269 with CI 40, 2 way CI 70, 1 way semi-permanent bridge	10 May 1945	12 May 1945
3222	92nd Engrs.	Replace Bailey on Route 6620 at L768242 with CI 40, 2 way, CI 70, 1 way semi-permanent bridge	13 May 1945	15 May 1945
3223	1338th Engrs.	Remove Bailey bridges at L773826 and L802840 to bridge depot at Modena	30 Apr 1945	3 May 1945
3224	1338th Engrs.	Install 2-400 KW Generators now in Bologna at Verona	30 Apr 1945	8 May 1945
3225	2750th Engrs.	Furnish grader, mtd., to 1338th Engrs.	30 Apr 1945	15 May 1945
3226	ETC No. 2	Take up pierced steel plank at flight strip on Route 65 at L830058. Box clips and stack planking at a guarded site	1 May 1945	3 May 1945
3227	1554th Engrs.	Construct floating bridge across PO River vic. of present Ponton bridge.	29 Apr 1945	29 May 1945
3228	1338th Engrs.	Dismantle M2 Floating treadway bridge at Legnago; construct reinforced M1 floating treadway vic of Piacenza and dismantle M2 treadway at F777104	30 Apr 1945	2 May 1945
3229	ETC No. 2	Maintain Route 65 from North edge of Loiane at L863238 to RJ in Bologna at L877480	1 May 1945	22 May 1945
3230	ETC No. 2	Construct 2500 Route No Blanks, 18" x 18", unpainted	1 May 1945	10 May 1945
3231	92nd Engrs.	Replace Bailey at F478248 with CI 40, 2 way, CI 70, 1 way, semi-permanent bridge	1 May 1945	14 May 1945
3232	597th Engrs.	Pick up Athey loader from 185th Engrs., at L899426	30 Apr 1945	30 Apr 1945
3233	2750th Engrs.	Pick up concrete mixer on Route 64 South of Vergato. Also roofer on Route 64 south of Vergato	30 Apr 1945	30 Apr 1945
3234	1338th Engrs.	Clear MSR's through Verona of rubble and road blocks	30 Apr 1945	30 Apr 1945
3235	92nd Engrs.	Construct air strip for Fifth Army Rear, Modena	1 May 1945	2 May 1945
3236	597th Engrs.	Extend equip. release on crane Quickway, to 1108th Engr Group	1 May 1945	15 May 1945
3237	2750th Engrs.	Furnish one boom for 1/2 yd shovel to 185th Engrs.	1 May 1945	15 May 1945
3238	ETC No. 2	Maintain and operate galvance lumber depot on Hwy. 65 at L865105	1 May 1945	18 May 1945
3239	597th Engrs.	Furnish 1/2 yd crane to 175th Engrs.	1 May 1945	15 May 1945
3240	ETC No. 2	Maintain Route 64 from L696255 to L808381 at RJ Routes 64 and 6620	1 May 1945	15 May 1945
3241	2750th Engrs.	Furnish Athey loader now with 92nd Engrs., to 175th Engrs.	3 May 1945	22 May 1945
3242	597th Engrs.	Furnish road grader to 1554th Engrs.	3 May 1945	18 May 1945
3243	1338th Engrs.	Construct CI 40 2 way CI 70 1 way across Adige River at P55537, Verona	2 May 1945	17 May 1945
			2 May 1945	15 May 1945

APPENDIX J
THE PO CAMPAIGN

JOB NO	UNIT EMPLOYED	DESCRIPTION OF WORK	DATE STARTED	DATE COMPLETED
1244	92nd Engrs.	Repair two spans of bridge at P883941	2 May 1945	5 June 1945
1245	1338th Engrs.	Clear outskirts of Verona (F690550) and surrounding grounds of mines and booby traps	3 May 1945	4 May 1945
1246	92nd Engrs.	Repair damaged single span bridge at K724065	2 May 1945	10 May 1945
1247	92nd Engrs.	Remove rubble from LSR through Piacenza	2 May 1945	3 May 1945
1248	92nd Engrs.	Repair masonry hand rail on bridge at K672108	2 May 1945	12 May 1945
1249	92nd Engrs.	Repair section of blown arch at K700081	2 May 1945	18 May 1945
1250	92nd Engrs.	Repair mine crater in bridge at P927924	2 May 1945	15 May 1945
1251	92nd Engrs.	Repair damaged bridge at L020885 by replacing one way timber span with two span	2 May 1945	6 June 1945
1252	92nd Engrs.	Remove road block at Reggio	2 May 1945	2 May 1945
1253	92nd Engrs.	Change LSR through Parma to go south of town, rather than north	2 May 1945	2 May 1945
1254	1338th Engrs.	Construct CI 40, 2 way, CI 70 1 way at L801530	2 May 1945	7 May 1945
1255	1338th Engrs.	Construct CI 40 floating bridge across PO River at Piacenza	3 May 1945	8 June 1945
1256	1338th Engrs.	Maintain Route 11 from Verona to 25th Easting	3 May 1945	25 May 1945
1257	ETC No. 2	Maintain Route 6620 from L754215 to L808181; Route 6424 from L754215 to L698263	2 May 1945	22 May 1945
1258	ETC No. 2	Salvage triangular cloth, Air Craft marker, vic. Pistoia	2 May 1945	6 May 1945
1259	597th Engrs.	Furnish crane mtd to 235th Engrs	3 May 1945	17 May 1945
1260	597th Engrs.	Furnish D-8 bulldozer to 175th Engrs.	3 May 1945	18 May 1945
1261	2750th Engrs.	Furnish Quickway Crane to 175th Engrs.	3 May 1945	18 May 1945
1262	92nd Engrs.	Do necessary work at 3rd Conv. Hosp., F5046	4 May 1945	9 May 1945
1263	2750th Engrs.	Furnish concrete mixer to 1338th Engrs	3 May 1945	15 May 1945
1264	3rd Air Con Cp	Maintain Route from Massa to Sarzana	1 May 1945	18 May 1945
1265	1338th Engrs.	Make reconn. of Route 12 from Verona to Rovereto	4 May 1945	4 May 1945
1266	92nd Engrs.	Maintain Route 11 from Verona to IV Corps boundary on west side of Kincio River	4 May 1945	CONTINUOUS
1267	ETC No. 2	Remove without replacement and transport to E2-42 the following Bailey bridges: L666277, L686258, L643234, L618240, L571198, L563178, L553169, L568158, L500147, L521137 & L528134	6 May 1945	21 May 1945
1268	92nd Engrs.	Construct FW enclosure for 40,000 prisoners	5 May 1945	11 May 1945
1269	CANCELLED	CANCELLED	CANCELLED	CANCELLED
1270	1338th Engrs.	Construct CI 40 floating bridge across Adige River at Legnano	5 May 1945	13 May 1945
1271	175th Engrs.	Pick up and hold miscellaneous stream crossing equip. on PO River as follows: CI 40 raft and engines at Felonica, equip. at P8904 and CI 15 raft at P8904	4 May 1945	11 May 1945
1272	2750th Engrs.	Furnish D-8 dozer to 529th Ordnance at Modena	5 May 1945	1 June 1945
1273	1338th Engrs.	Repair and reconstruct bridge at L733567 to take CI 40/70 loads	6 May 1945	14 May 1945
1274	1338th Engrs.	Furnish necessary tools, material and supervision to a German Engineer Bn to construct latrines etc. for 40,000 PW cage	5 May 1945	12 May 1945
1275	92nd Engrs.	Obtain requirements for work needed at Hospital Center, Mantova from Surgeon office Fifth Army, Rear	6 May 1945	6 May 1945
1276	1554th Engrs.	Pick up and return to E2-42 all stream crossing pile on north bank of Po River at P6512	6 May 1945	9 May 1945
1277	92nd Engrs.	Maintain Route 11 from IV Corps boundary to Brescia; Autostrada from Brescia to Bergamo	5 May 1945	CONTINUOUS
1278	92nd Engrs.	Place skin decking on German bridge at Mantova	6 May 1945	8 May 1945
1279	1338th Engrs.	Maintain Route 12 from Verona to Rovereto	5 May 1945	18 June 1945
1280	1338th Engrs.	Move all bridging from Speedy bridge dump at F757255 on Route 10 to bridge depot E2-46, Verona	6 May 1945	10 May 1945
1281	1338th Engrs.	Pick up miscellaneous bldgs. from former Fifth Army CP at Traversa and install at CP's in Verona	6 May 1945	11 May 1945
1282	597th Engrs.	Furnish Quickway crane to 175th Engrs.	6 May 1945	20 May 1945
1283	597th Engrs.	Furnish grader mtd to 1338th Engrs.	6 May 1945	20 May 1945
1284	597th Engrs.	Furnish grader mtd to 1338th Engrs. (169th Engrs)	6 May 1945	20 May 1945
1285	597th Engrs.	Furnish Quickway crane to 1338th Engrs.	6 May 1945	20 May 1945
1286	92nd Engrs.	Make arrangements with 365th Infantry to construct a transit PW cage in vic. of K6512 S. of Rt 9	5 May 1945	15 May 1945
1287	ETC No. 2	Load 10 prefab bldgs. at old Fifth Army CP at Traversa for 1338th Engrs.	6 May 1945	7 May 1945
1288	1338th Engrs.	Check old arsenal area at P662522 for mines and booby traps, for 881st Ordnance	7 May 1945	8 May 1945
1289	1338th Engrs.	Construct concertina enclosure for delinquency for 630th MP Bn.	6 May 1945	7 May 1945
1290	ETC No. 2	Maintain Route 64 from L808381 to L877480	8 May 1945	22 May 1945
1291	1338th Engrs.	Construct roads for CI 2 and 4 depot Q5-34 at L552667, Modena	8 May 1945	12 May 1945
1292	92nd Engrs.	Do work for hospital center at Mantova	8 May 1945	7 June 1945
1293	1338th Engrs.	Construct CI 40, 2 way, CI 70, 1 way semi-permanent bridge at P897456	10 May 1945	15 May 1945
1294	1338th Engrs.	Construct CI 40, 2 way, CI 70, 1 way semi-permanent bridge at F768915	10 May 1945	18 May 1945
1295	664th Art Tk Co	Do necessary engineering work at 55 Roadhead at Piacenza	7 May 1945	12 May 1945

APPENDIX K

WATER SUPPLY OPERATIONS

APPENDIX K

WATER SUPPLY OPERATIONS

Part I

Introduction.

The Italian Campaign offered a real opportunity to note the failure or success of military water supply. The following comments are the result of continuous observation of water supply operations during the battle of Italy and are followed by accurate charts and graphs compiled during the period (see Part II).

Consumption.

A total of 454,765,000 gallons of potable water was consumed during the campaign with the following table showing the breakdown by phases:

<u>Phase</u>	<u>Dates</u>	<u>Consumption</u>
Salerno to Volturmo	9 Sept. 1943 - 6 Oct. 1943	2,300,000
Garigliano	6 Oct. 1943 - 11 May 1944	96,839,000
Anzio Beachhead	22 Jan. 1944 - 25 May 1944	45,756,000
Rome - Arno	11 May 1944 - 1 Sept. 1944	88,540,000
Appennines	1 Sept. 1944 - 5 Apr. 1945	183,060,000
Po Valley	5 Apr. 1945 - 8 May 1945	<u>38,270,000</u>
Total	-	454,765,000

Organization.

The 405th Engineer Water Supply Battalion operated as the main service unit during the campaign. It produced 337,468,000 gallons of water or 74 per cent of the total consumption. Divisional and Corps Engineer Battalions and Regiments supplied the remaining 26 per cent. All units reported to Army their operation by weekly summary.

Maps & Information.

The water supply overprint on a 1:100,000 scale proved to be the popular map used for combined reconnaissance and operation. Additional information for provincial areas was found through publications similar to "The Sorgenti Italiane" and "Acquedotti & Fognatura".

Equipment.

Portable sand filtration and chlorination units operated satisfactorily for divisional demands. An average of 30,000 gallons per day proved to be the total division operating production and this quantity was readily supplied by the four portable units allotted. Turbid water always produced an additional burden for the portable equipment and the necessity for a clear understanding of the value of pre-coagulating and settling during storm periods was one of the major water supply lessons learned during the Italian Campaign.

The water supply equipment operated by the Water Supply Battalion consisted chiefly of mobile purification units and deep well turbine installations developed by the spudding/in of percussion or rotary well drilling rigs. Clear water sources were turned into water points by the combination of line chlorinators or wall type chlorinators in conjunction with booster pumps. Tankers of 700-gallon capacity and 1500-gallon semi-trailer type proved very essential to the operations undertaken by Fifth Army and their value to an army in the field should always be recognized. Sand filtration likewise proved superior to diatomaceous filtration when operating adjacent to each other in an attempt to satisfy normal demands from disturbed streams.

Operation.

Daily operation of an average of twenty water points by the Battalion was required in the campaign and water output from these locations varied from 15,000 to 130,000 gallons per day. Turnaround construction was an essential aid during the bad weather period and vehicle lines had to be served by multiple dispensing points.

Water Supply Operations (cont'd).

Well drilling was utilized at thirty-five different locations in an effort to recover water for Army demands. Twenty of these attempts proved successful, returning yields varying from 150 - 200 gallons per minute. The Peerless Hi Lift Pump was the popular installation.

Installations handled by the Water Supply Battalion were chiefly medical sites and bakery installations. It was felt that field installations of elevated storage and minor distribution require constant aid for the supply and movement coordination.

Laboratory analysis followed the Army water supply throughout the campaign. Freedom of gas after 48-hour incubation was the frequent report on residualized water of 1.4 parts per million chlorine content. Bacterial counts on some raw waters proved interesting in certain sections with zero counts being recorded at some locations.

Contamination of water supply was not encountered except for a few civilian reports. One particular report asserted that strychnine had been used by the enemy, but laboratory analysis cleared samples of locations utilized by the engineers.

Exceptional features of the operation were:

(1) The employment of homing pigeons as messengers and daily reports from isolated water point locations to the headquarters of the company or battalion.

(2) The employment of a South African soldier as water diviner to locate underground sources within a forward area after repeated drilling had failed to produce quantities of water. Conclusive results on water divination were not attained, however, as adequate water was not found during the forty-one days that the soldier was attached to the Water Supply Battalion from the South African Engineer Corps.

Tactical features of the campaign included the need for airfield and road sprinkling in areas productive of excessive dust. Water supply tankers and pumps were the quickest answer to dusty roads under enemy observation. Also, the number of vehicle accidents was reduced by a few 1500-gallon semi-trailers working on dirt roads.

Camouflage of forward installations was adhered to with turnaround covers being required at special locations. Both the garnished fish net and the shrimp net were utilized by the Water Supply Battalion.

Distillation was not continually employed by water supply units, although at Anzio it served as a solution to smoke generator operational difficulties caused by the high chemical content of the natural water then available. Other distillation units were initially used in the port areas of Naples.

Municipal Systems.

During the campaign, the retreating enemy seriously damaged the water installations of Naples, Rome, and Florence.

In Naples, the combined efforts of American Engineers and municipal employees repaired blown sections of the Serino Aqueduct and cast iron mains leading to the Scudillo and Capidimonte reservoirs.

In Rome, civilian employees repaired pressure main breaks, which the combination of artillery and air support had fractured at various locations along the Acqua Marcia mains between Tivoli and Rome. Demolitions had damaged the gallery wells at the source near Acosta and this repair was later completed by the Acqua Marcia Firm. One distribution main was lost when the bridge at the northeast extremity of the city was destroyed, but six other distribution mains were soon available after the city was entered.

In Florence, major distribution destruction was carried out by the enemy in the decision to blow the Arno and Greve River bridges. This repair as well as pumping station reconditioning was accomplished by British Engineers and municipal employees.

The Anconella filter plant and the Montignano pumping station escaped destruction. Emergency water points were set up along the North bank of the Arno and served initial military and civilian demands until construction relieved the city.

TOTAL EFFECTIVE STRENGTH GRAPH






WEEKLY INTERVALS

EFFECTIVE STRENGTH
500,000

400,000
300,000
200,000
100,000
0

1943 1944
MONTH
SEPT OCT NOV DEC JAN FEB MAR APR MAY JUNE JULY AUG SEPT

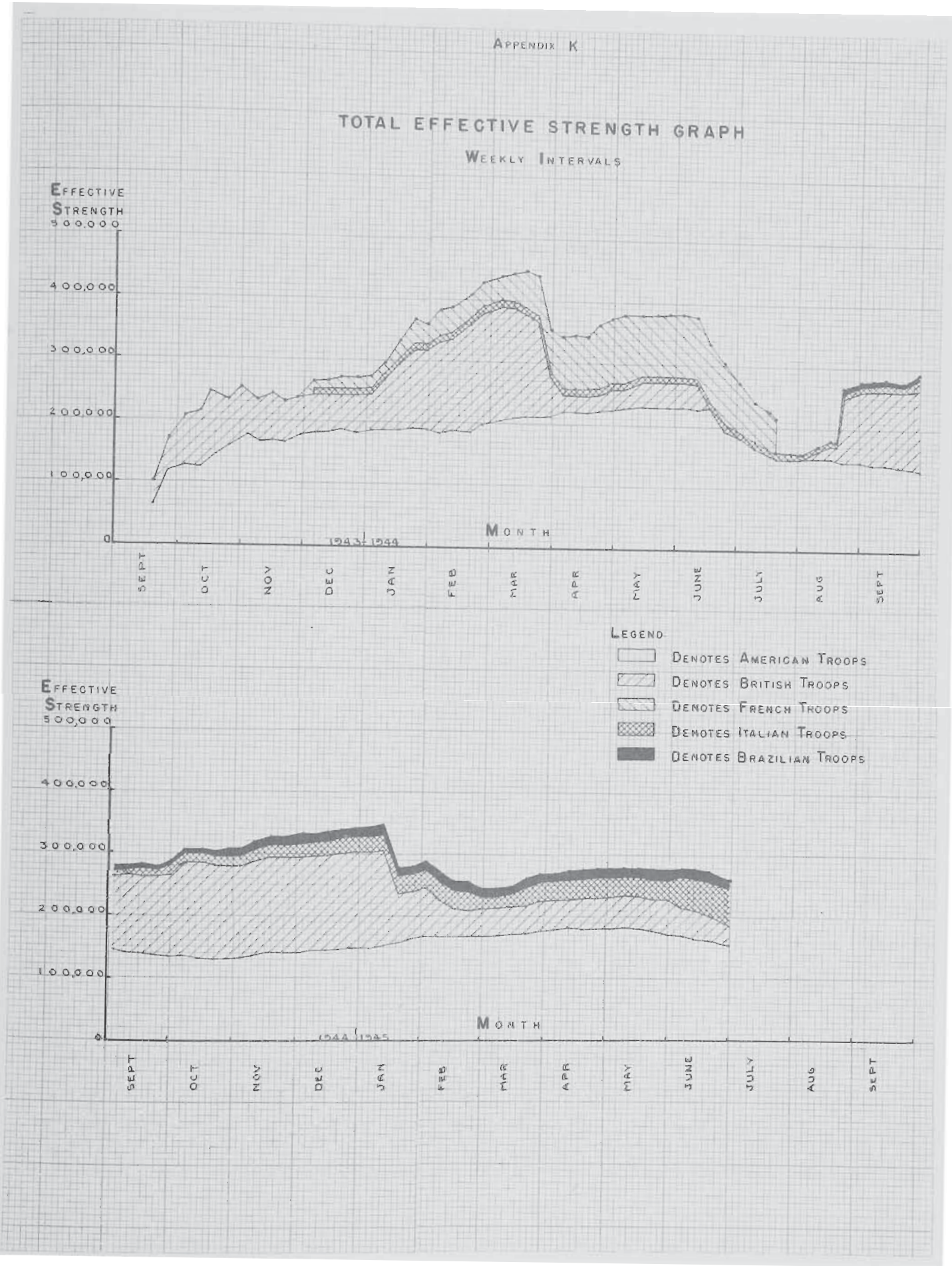
LEGEND

-  DENOTES AMERICAN TROOPS
-  DENOTES BRITISH TROOPS
-  DENOTES FRENCH TROOPS
-  DENOTES ITALIAN TROOPS
-  DENOTES BRAZILIAN TROOPS

EFFECTIVE STRENGTH
500,000

400,000
300,000
200,000
100,000
0

1944 1945
MONTH
SEPT OCT NOV DEC JAN FEB MAR APR MAY JUNE JULY AUG SEPT



WATER SUPPLY CONSUMPTION—EFFECTIVE STRENGTH
COMPARATIVE GRAPHS

U.S.
GALLONS

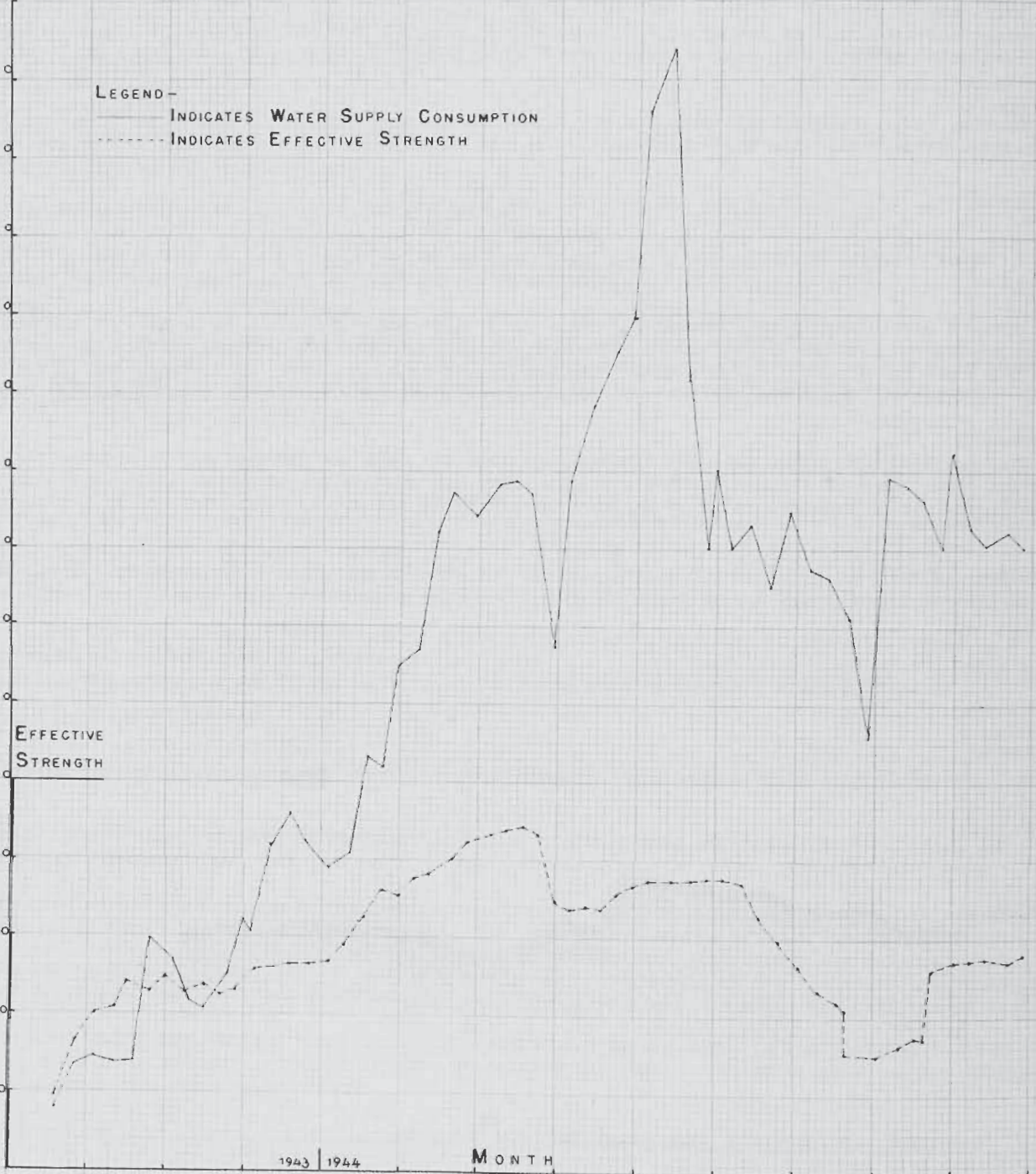
1 500 000
1 400 000
1 300 000
1 200 000
1 100 000
1 000 000
900 000
800 000
700 000
600 000
500 000
400 000
300 000
200 000
100 000

LEGEND—
—— INDICATES WATER SUPPLY CONSUMPTION
----- INDICATES EFFECTIVE STRENGTH

EFFECTIVE
STRENGTH

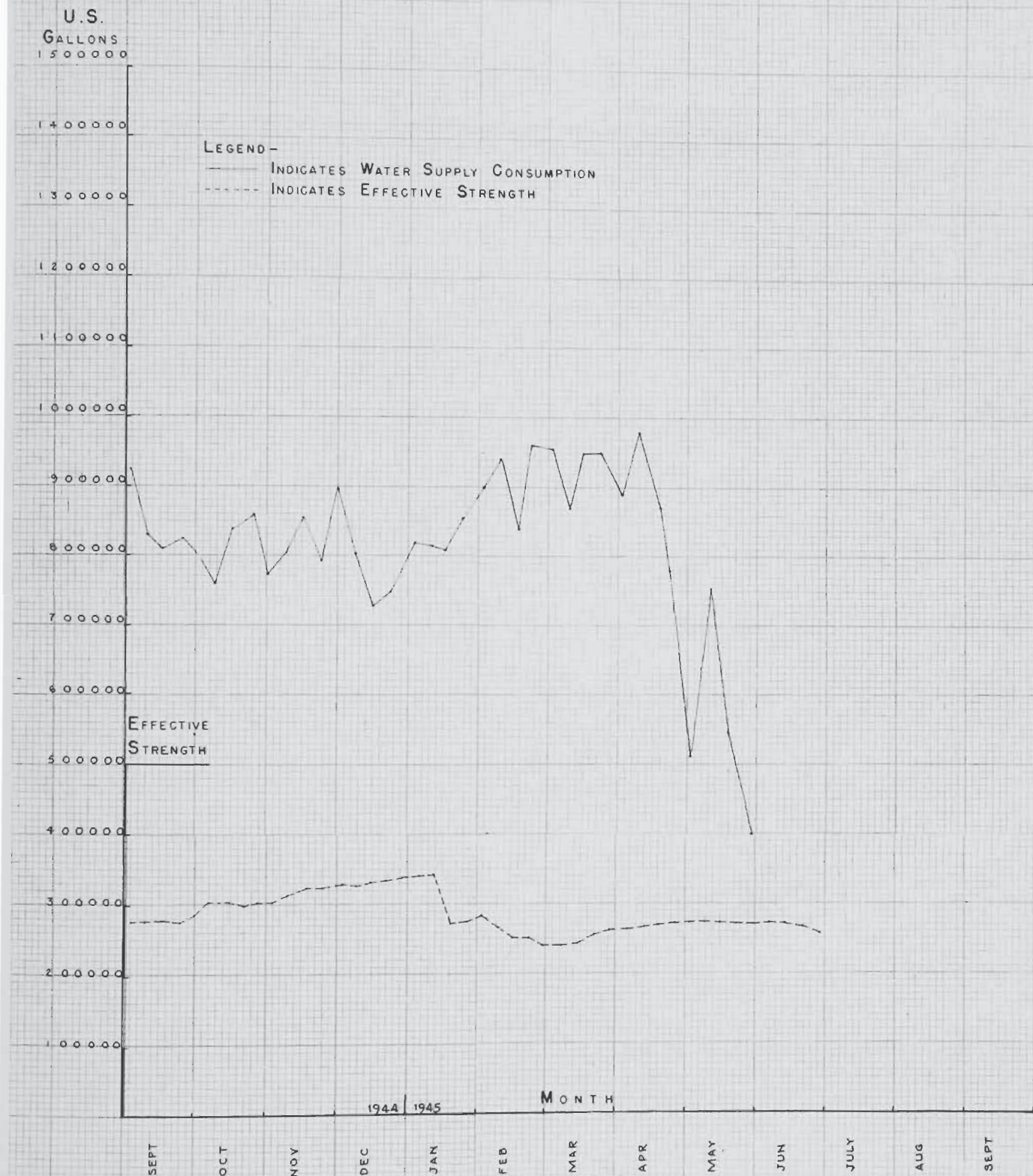
1943 | 1944 MONTH

SEPT OCT NOV DEC JAN FEB MAR APR MAY JUN JUL AUG SEPT



APPENDIX K

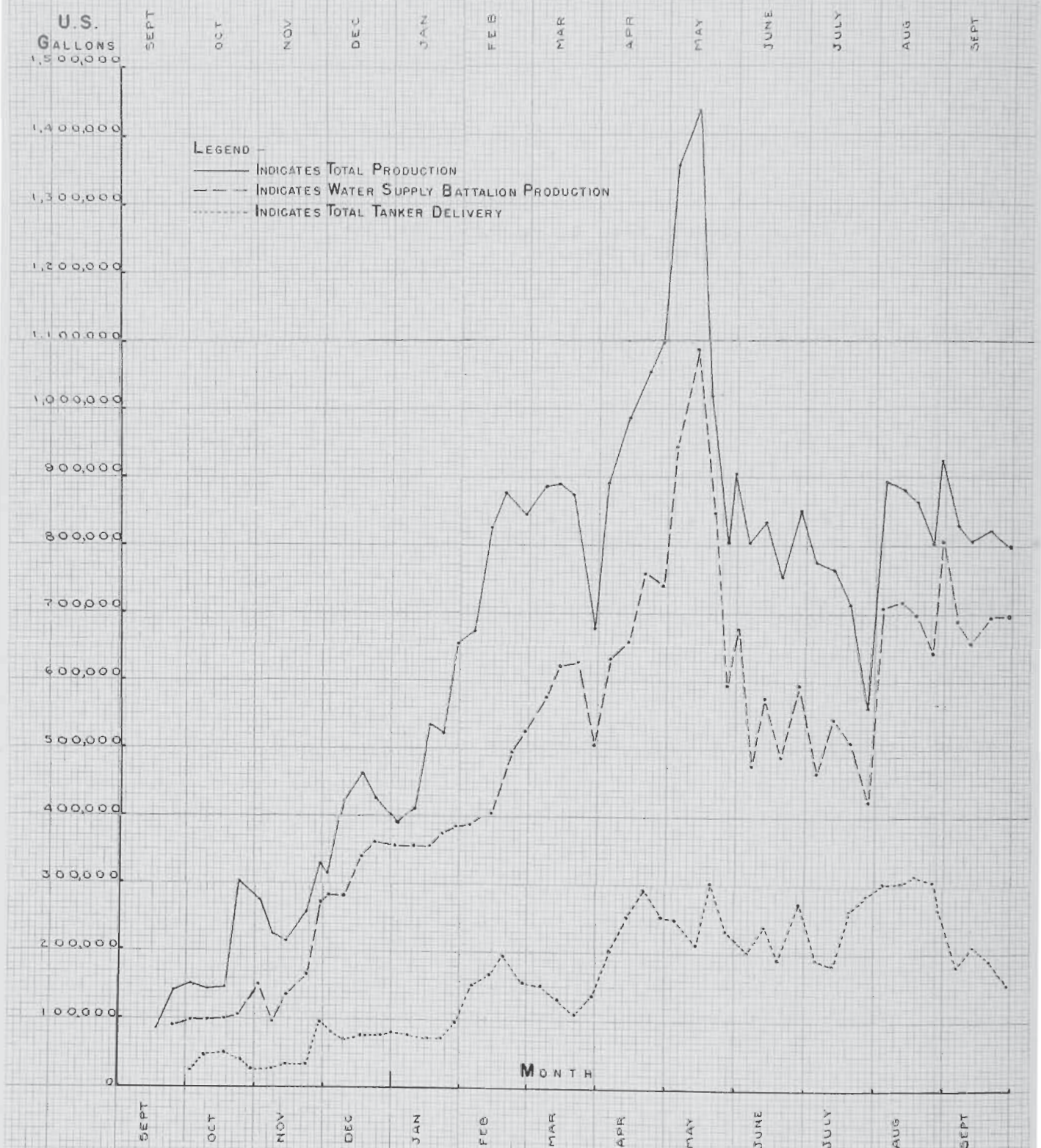
WATER SUPPLY CONSUMPTION—EFFECTIVE STRENGTH
COMPARATIVE GRAPHS



WATER SUPPLY CONSUMPTION GRAPH

DAILY TOTAL - WEEKLY INTERVALS

1943-1944



1943-1944

WATER SUPPLY CONSUMPTION GRAPH

DAILY TOTAL — WEEKLY INTERVALS

U.S.
GALLONS
1,500,000

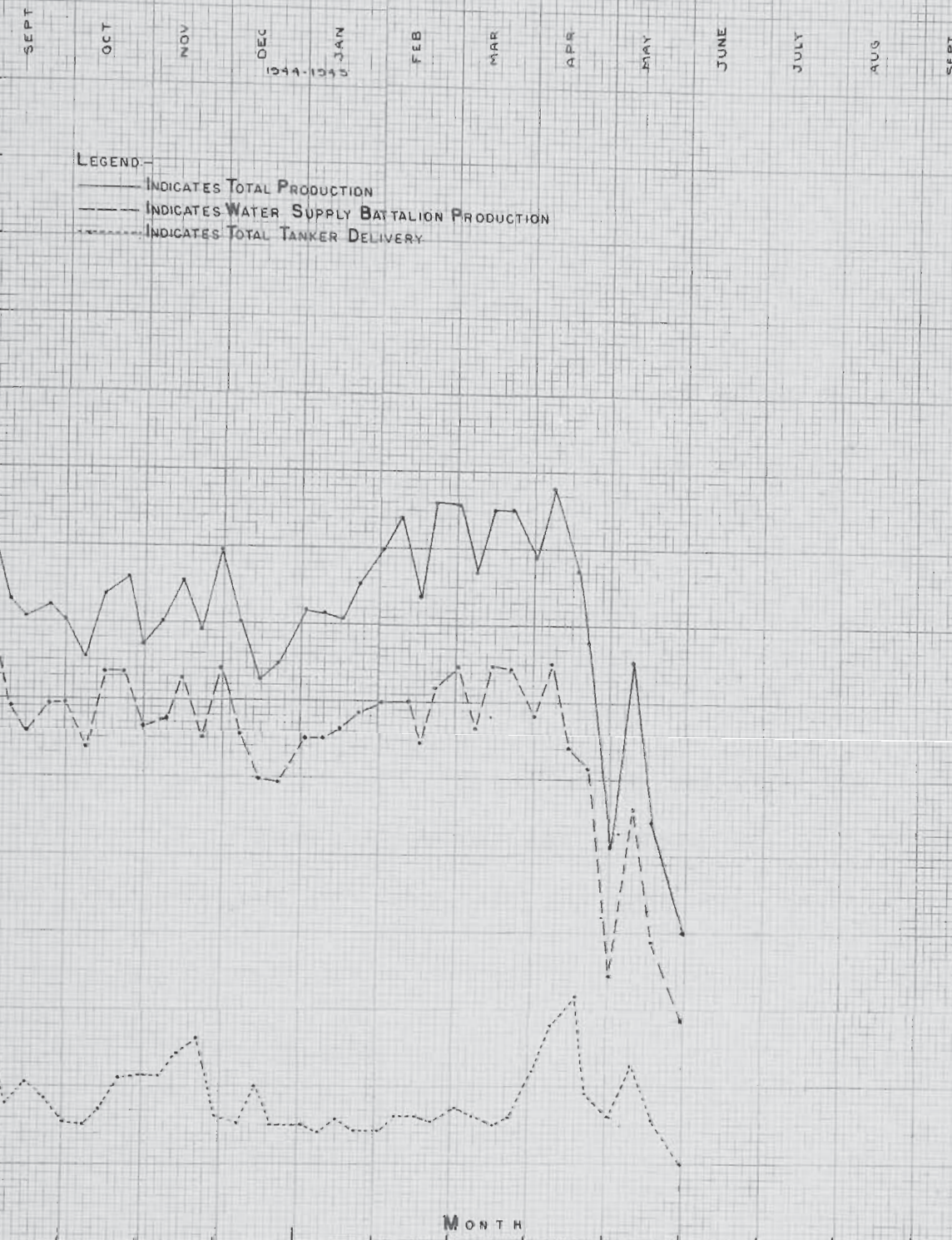
SEPT OCT NOV DEC JAN FEB MAR APR MAY JUNE JULY AUG SEPT
1944-1945

LEGEND—

- INDICATES TOTAL PRODUCTION
- - - INDICATES WATER SUPPLY BATTALION PRODUCTION
- · · INDICATES TOTAL TANKER DELIVERY

1,400,000
1,300,000
1,200,000
1,100,000
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0

MONTH
SEPT OCT NOV DEC JAN FEB MAR APR MAY JUNE JULY AUG SEPT
1944-1945

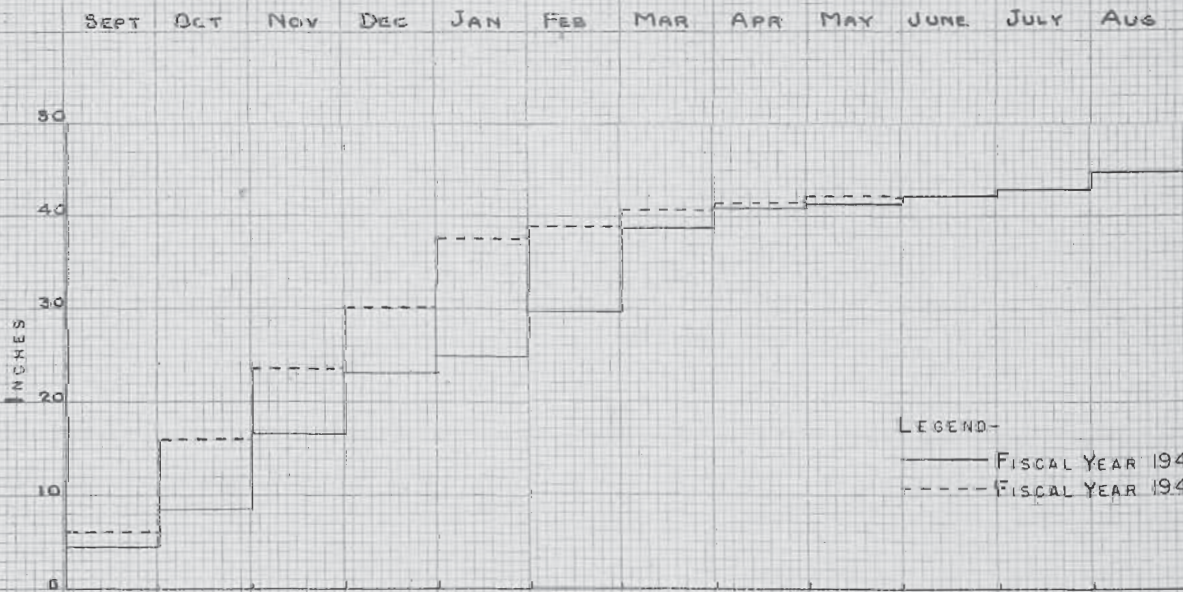


APPENDIX K

COMMAND POST RAINFALL CHART
(MILLIMETERS)

DAYS	1943	1944			1944	1945			1945	1946	1947	1948
	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG
1			0.7	5.2	10.5		14.1	1.0	3.0			
2			37.1				5.2		2.0			
3		24.1	20.4	0.8	0.3		5.1	0.2			1.8	2.0
4			0.3	29.4	1.9		3.0	16.8	0.7			1.1
5				4.3	27.6	5.2	12.3	13.1				
6		2.4	23.2		3.1	6.6		16.0				
7		114.7	35.3		12.1	2.9						11.3
8		1.4	24.8		71.7	4.7						
9			12.0		4.3	7.9	16.5	21.9	1.7			13.7
10	34.7	73.3	1.2	15.8	2.1	0.4	2.3	3.7	9.1			42.1
11				3.2	45.9		30.6	5.8	1.7	1.9	T	
12				16.3	0.8	14.7		8.8		5.7		
13				5.5		9.1			T			
14			3.0		1.7			2.3	6.2			
15			19.6	50.8		7						
16			3.2	28.4	12.7			13.7	0.1			
17			11.5	31.7		3.3						
18				3.0		2.1		1.5				1.2
19			37.6	3.7			37.3	4.0				1.2
20	5.3	11.1	41.4	2.3			19.3		5.7			6.2
21			5.5		10.0			1.6		T		3.2
22			7.7		38.5					T		
23			6.5	1.3	4.1	0.6		21.7	2.0	2.0	T	
24			35.7	0.4	6.4	2.1	2.2	23.8	7.8	2.3	5.3	
25			6.6	9.4	14.1	0.8		1.2	1.5	3.7		
26			24.1		8.5	10.5	3.4	57.4	12.1	25.7	12.0	0.3
27			2.3	1.4	15.8				1.1	10.3	2.7	0.2
28	5.8		0.1	0.2	4.3		5.3	0.2	25.0	4.5		
29			3.4	3.6				13.8		0.4		
30	74.7	16.8	13.1	5.7		0.3				6.5		
31			6.2		28.7		1.1		1.9			
TOTAL MM.	109.4	101.2	211.6	162.3	460	124.0	37.2	53.0	10.1	23.2	15.7	55.7
	153.8	251.1	192.7	164.6	188.8	32.4	41.9	16.9	18.5	0.3		
TOTAL INS.	4.3	4.0	8.3	6.4	1.8	4.5	8.8	2.1	0.4	0.9	0.6	2.2
	6.0	9.9	7.6	6.5	7.4	1.3	1.7	0.7	0.7	T		
ACCUMULATED	4.3	8.3	16.6	23.0	24.8	29.7	38.5	40.6	41.0	41.9	42.5	44.7
TOTAL (INCHES)	6.0	15.0	23.5	30.0	37.4	38.7	40.4	41.1	41.8			

ACCUMULATED RAINFALL GRAPH



Appendix K

DAILY WATER SUPPLY CONSUMPTION (U. S. Gallons)
Month of September 1943

CO-ORD	UNIT	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
S867994	405th Engrs.	3600	3400	3345	2465	2185	5350	6480	1440	3335	2756	2215	3560	2195	4195	3285
N856037	405th Engrs.	74000	78000	80200	32075	65790	98990	21240	20800	27675	33655	23970	24155	26475	24740	25615
N884060	405th Engrs.	200000	300000	363510	52155	61833	129850	127540	134125	112360	84265	92083	82090	82285	55790	47905
N836088	540th Engrs.	20000	20000	20000	20000	20000	20000	21260	22315	22515	24630	23895	20250	20405	29835	20580

DAILY WATER SUPPLY CONSUMPTION (U. S. Gallons)
Month of October 1943

CO-ORD	UNIT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
S867994	405th Engrs.	4400	2195	5920	10000	8690	10334	7335	1650	3985	WF OUT						
N856037	405th Engrs.	26290	24640	37760	22085	23575	20190	22770	22090	22660	23215	25800	19000	18295	19320	17545	9495
N836088	405th Engrs.	24335	15550	3100	16820	22450	21995	18790	18490	23555	22945	21510	22800	16095	17575	15095	8620
N884060	405th Engrs.	61285	52570	51415	42475	50830	88220	40595	38730	37465	39400	35980	32300	31275	28000	WF OUT	
N641429	405th Engrs.				1370	9345	7960	5975	7220	6375	7270	7517	7145	8000	9405	14910	11000
N860225	405th Engrs.						1135	3629	3140	5320	6020	6105	6340	5725	5995	9560	7490
N691577	405th Engrs.				11635	35755	33950	21125	30500	40300	43920	32367	37615	33155	23670	24445	26770
N579371	405th Engrs.												260	350	350	680	1250
N884060	531st Engrs.	18000	18500	25000	17500	19265	14750	15000	1100	12500	1150	8500	6500	6000	5000	4500	6000
	111th Engrs.	22515	20400	25210	21470	23380	24140	18470	25000	28000	29000	36000	42000	38000	36000	34000	39600
DRY POINT	405th Engrs.	20600	23900	24350	27800	30900	40700	29200	33200	38100	42200	34600	37800	36650	23000	32000	29360
AIRPORT SPRINKLING	405th Engrs.	80000	80000	80000	80000	80000	80000	80000	80000	80000	43500						

Month of October 1943

CO-ORD	UNIT	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
N856037	405th Engrs.	7590	10110	9595	8010	7015	11265	WF OUT								
N836088	405th Engrs.	10574	13605	12885	12830	11885	13105	14535	14500	15715	15620	14765	16155	15640	15865	14230
N641429	405th Engrs.	7270	7875	9105	6380	6260	7530	5195	6065	6290	3575	5205	5640	2630	3630	2430
N860225	405th Engrs.	8580	6415	7495	7435	7035	6220	5190	6655	5775	7075	5820	4300	4595	5080	5400
N691577	405th Engrs.	27100	22655	25525	30640	32550	25105	31140	26430	25130	21130	29110	18995	17870	11055	11100
N504705	405th Engrs.	18500	22510	16695	13175	14000	16000	13620	WF OUT							
N322715	405th Engrs.	18985	21150	18890	12525	8665	WF OUT									
N348700	405th Engrs.		3000	2500	2340	8700	9695	14195	11630	12320	7000	12880	4820	WF OUT		
N277756	405th Engrs.								21705	30525	40080	32880	44765	32000	38000	
N884060	531st Engrs.	17000	22000	24020	19120	17500	19250	18790	21225	23000	24780	23980	WF OUT			
	111th Engrs.	40000	42385	37220	53200	56385	58000	56675	48365	58000	58000	58000	58000	58000	58000	58000
N277756	2616th Engrs.					23895	21415	19535	21395	29400	17110	19070	23500	30150	30870	29790
DRY POINT	405th Engrs.	18200	16000	14700	14000	2800	2100	8000	7000	7500	8000	8000	7000	6500		
AIRPORT SPRINKLING	405th Engrs.					7500	30000	30000	30000	30000	30000	30000	30000	30000	30000	
TANKER HAUL	405th Engrs.	31300	29850	27260	57160	63100	58900	91400	88000	87200	77700	22900	16100	18100	18100	22000

Appendix K

DAILY WATER SUPPLY CONSUMPTION (U. S. Gallons)
Month of November 1943

CO-ORD	UNIT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
N691577	405th Engrs.	8190	6465	5505	3920	4925	5290	1480	2175	500	425	WF OUT				
N278542	405th Engrs.	18775	19470	19800	19225	22500	24655	19050	15905	16250	18100	24165	21500	26250	22000	22200
N277756	405th Engrs.	58900	55945	65570	66505	61475	63280	53175	42565	54425	52010	53515	59580	52885	61175	53705
N505705	405th Engrs.		300	300	300	1000	1200	975	2030	2005	550	WF OUT				
N225755	405th Engrs.				1165	5880	6765	13350	12405	13835	18080	18525	23010	21985	22465	23865
N309896	405th Engrs.	27000	25235	24725	26965	23035	22840	16380	13090	WF OUT						
N276978	405th Engrs.	2850	5775	10065	10065	10950	10550	13350	5985	11250	8690	15290	16725	14485	12665	14750
N186610	405th Engrs.	31665	31712	32138	WF OUT											
N153657	405th Engrs.	10300	9400	WF OUT												
N132614	405th Engrs.	2385	1135	1930	WF OUT											
R076126	405th Engrs.									4310	33625	40810	45580	46585	25585	WF OUT
N277756	2616th Engrs.	33577	26255	32160	29320	23800	13548	16305	21320	23415	19075	26010	23500	16605	18564	14485
	16th Engrs.	16580	18885	19835	24090	28355	25205	25060	26330	23000	28615	29790	29570	26375	26095	21910
	111th Engrs.	95000	55000	55000	55000	55000	55000	55000	57000	57000	57000	57000	57000	57000	57000	33000
N225816	19th Engrs.													7786	7786	7786
TANKER HAUL	405th Engrs.	24600	23000	24000	28600	34700	41700	40500	29800	20100	34900	46200	56900	52425	32425	32425
Month of November 1943																
CO-ORD	UNIT	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
N278542	405th Engrs.	21650	WF OUT													
N277756	405th Engrs.	59925	72165	69765	72195	63600	69710	72185	66575	53485	66160	64715	67950	66225	57955	65935
N225755	405th Engrs.	27460	33550	27900	29615	28050	28085	33000	29375	30760	34020	32210	31150	31990	31425	24975
N180778	405th Engrs.						940	3090	3805	10695	24560	22400	11550	13225	13720	18440
N160978	405th Engrs.										10000	20000	30000	31500	28200	57100
N163809	405th Engrs.											64780	65655	58600	58000	70420
N277756	2616th Engrs.	26940	17580	19550	20490	20478	19585	20190	16365	18795	12125	8260	7250	6135	6925	6270
	16th Engrs.	22175	23580	25530	28690	24964	21845	19880	16200	18200	14000	20620	18345	22255	18660	21820
	111th Engrs.	33000	33000	33000	33000	33000	33000									
W095015	405th Engrs.								990	4814	4814	4814	4814	4814	4814	4814
N225816	19th Engrs.	7786	7786	7786	7786	WF OUT										
N266819	19th Engrs.	2425	2425	2425	2425	2635	2635	2635	WF OUT							
W072991	19th Engrs.				2375	2764	2764	2764	2764	2764	2764	2764	5947	5947	5947	5947
N124955	235th Engrs.						3215	3540	2505	4045	3325	3695	3670	3730	3665	
N112998	235th Engrs.							5580	6190	14565	23480	23850	20220	23760	24910	
B155035	235th Engrs.									4405	4930	8090	8405	9785	11905	8480
DRY POINT	405th Engrs.	25200	23500	25990	27300	31500	28000	32900	26100	39400	41000	65300	75945			
TANKER HAUL	405th Engrs.	12800	8500	8500	4200	15100	19400	13000	13100	8700	10000	9900				

Appendix K

DAILY WATER SUPPLY CONSUMPTION (U. S. Gallons)
Month of January 1944

CO-ORD	UNIT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
N275752	2616th Engrs.	6985	6255	9295	8045	6055	7889	6805	7468	7040	7855	8480	8265	7970	8135		
N275750	405th Engrs.	50420	60870	55305	58720	61530	68315	69060	63020	68155	78580	74320	73690	79960	82065	70140	82275
N229755	405th Engrs.	24730	27445	29980	28650	24060	23825	22675	22280	24445	24015	21260	25865	24720	26180	21970	23090
N180778	405th Engrs.	55000	58980	58450	54700	59100	54150	51000	63720	58950	55700	67450	52200	76050	61150	60100	54200
F300911	405th Engrs.	2835	8020	13165	11110	10920	9920	7745	3400	8695	8045	7920	14975	9565	9205	12900	7580
N163809	405th Engrs.	60765	64400	51390	37630	53615	44450	39965	42465	47090	34745	41005	37200	45110	31600	34855	43375
N112998	405th Engrs.	13560	28220	33650	38600	37620	34775	38940	43445	54475	47800	37720	43495	35025	36610	42875	44685
N275830	405th Engrs.	3600	5600	4200	2100	5600	2100	2800									
N068931	405th Engrs.						7350	17990	16710	27940	28215	34820	35900	29700	31550	33650	32150
N222036	405th Engrs.	24715	21445	18440	13195	14195	14355	15070	15125	17615	19715	18840	15270	16025	16030	14500	13430
H034064	405th Engrs.	16250	20845	25745	23245	20390	26090	24355	19075	24855	22705	21455	22380	25045	22930	27135	24485
H160122	405th Engrs.	1400	11485	8590	6040	5790	5135	6895	9505								
H103307	405th Engrs.	3810	9645	23000	10085	11560	13590	14405	19745	7245							
H074131	405th Engrs.	33190	58065	34495	47900	27975	32785	29200	8730	8085	7505	6490	8715	8505	9390	8270	11360
H004095	405th Engrs.	10435	12530	12465	17265	15635	16255	15955	14858	16945	17160	17250	14700	17750	17935	18580	20365
H072991	19th Engrs.	9380	9380	9380	9380			15493	15493	15493	15493	15493	15493	15493	15493	17781	17781
H095015	19th Engrs.	14410	14410	14410	14410	14410	14410	8504	8504	8504	8504	8504	8504	8504	8504	8018	8018
TANKER HAUL	405th Engrs.	7745	6970	6035	5065	3765	3190	855								61500	34200
TANKER HAUL	405th Engrs.	17060	27700	23790	21025	18230	22480	21350	11910	2125							
TANKER HAUL	405th Engrs.				1900	3835	5055	7480	10235	10820	9385	8885	13385	11975	10680	22750	17550
N139339	16th Engrs.		9010	12230	12400	4600	7980	11900	7770	10450	7505	10650	7100	7995	8890	NP OUT	
N175345	16th Engrs.		11075	12655	10795	11755	11385	10250	11280	8325	10035	10015	12340	11300	10140	13250	
N183806	16th Engrs.		15160	16775	15260	13765	13785	13055	15605	13770	16010	14520	15825	19610	15750	7820	
H161125	C. E. F.														6500	8000	8800
H035200	C. E. F.														50000	48700	38800
H104309	C. E. F.														19500	15300	12800
DRY POINT	C. E. F.														13600	11100	11300

Month of January

CO-ORD	UNIT	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
N275750	405th Engrs.	80285	74950	77330	67305	72165	77030	68600	24040	3760						
N225755	405th Engrs.	36905	34375	33630	22490	19485	18295	20805	5950							
N180778	405th Engrs.	54200	50350	54800	60750	56750	53225	52200	40000							
N300911	405th Engrs.	9470	8455	7965	7505	6820	7560	7885	6745	8845	7275	6940	4635	5650	5355	6740
N163809	405th Engrs.	45215	46100	42375	42300	39210	66750	49885	58880	57630	71470	52445	67390	68390	58700	53000
N112998	405th Engrs.	36170	36090	32760	36585	33150	38370	41285	53810	42640	40705	46920	21850	55225	68675	57000
N068931	405th Engrs.	34280	32040	32005	31760	34110	33015	30865	33880	35040	34300	36680	40560	38870	33220	35150
N222036	405th Engrs.	15040	20215	23495	27795	26936	36912	39435	40609	34675	37210	45800	40860	29795	27905	24579
H034064	405th Engrs.	24860	25925	31240	32755	36410	41870	33075	28450	31025	29715	13785	22200	26020	36110	19640
H074131	405th Engrs.	14570	17850	23020	76095	23215	27125	24275	25275	16190	25230		24505	29590	31225	37995
H004095	405th Engrs.	19175	18330	22230	19940	23040	21990	27910	27750	31740	28745	34490	35930	36115	29490	30060
H072991	19th Engrs.	17781	17781	17781	17781	17781	17781	20768	20768	20768	20768	20768	20768			
TANKER HAUL	405th Engrs.	54700	43700	43500	34600	36000	29990	32110	37110	38400	44200	44900	41400	37400	40100	37000
TANKER HAUL	405th Engrs.	20855	30305	30440	30200	32395	36765	43425	45090	49995	52445	46590	54925	60165	58350	65160
H161125	C. E. F.	4600	5000	5700	4900	3800	4700	4200	6100	3000	3000	3800	3400	3500	1600	
H035200	C. E. F.	42700	45800	48100	44600	45700	45800	40000	43000	37600	36700	25700	37700	42000	41800	
H104309	C. E. F.	10300	9800	11300	12300	10800	11900	11000	12900	14900	12300	13600	13000	12300	13500	
DRY POINT	C. E. F.	10800	10200	9300	8900	10700	10300	9300	10300	10700	7800	9700	9200	9000	7600	
N369997	405th Engrs.								3475	4240	1255	820	935	945	1615	
	111th Engrs.								10500	17080	16060	12080	8080	10080	14080	

Appendix K

DAILY WATER SUPPLY CONSUMPTION (U. S. Gallons)
Month of February 1944

CC-CRD	UNIT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
N275572	2616th Engrs.	14615	17510	15575	13840	14185	15510	16715	16605	17045	18525	22095	22215	22225	20985	18698
N300911	405th Engrs.	6120	8305	17715	22560	22715	20890	16230	14130	13350	12800	3385	5335	5300	3400	3250
N163809	405th Engrs.	64080	64075	46480	51150	50065	42450	42495	46675	41940	44550	52300	67100	54660	50725	50675
N112998	405th Engrs.	56300	59425	58760	61100	6600	39950	38125	42250	28500	38950	20250	26150	20400	22450	24090
N068931	405th Engrs.	30075	36570	30360	34350	63910	43170	36360	43560	55270	46930	47520	59300	56320	44970	41740
R034064	405th Engrs.	14985	32065	23375	32090	25160	39615	26465	31745	32595	18010	12830	2770		6095	11730
R074131	405th Engrs.	29320	25665	30600	20245	23520	28050	28685	25245	14060	28140	2835	9225	12470	14495	16240
R005095	405th Engrs.	33900	33905	41590	34500	24750	36110	32420	32600	26500	25550	11665	14875	15795	29930	31395
R035200	405th Engrs.	27855	29050	26440	28115	33970	26500	20915	21090	27575	26515	51480	42720	50405	47060	36385
E222036	405th Engrs.	35410	28093	28275	26860	40720	32705	28835	34740	28865	31875	28156		23660	21095	22950
N369997	405th Engrs.	1530	1105	950	1414	1225	985	1876	9705	12330	5685	7650				
N275830	405th Engrs.					4500	10500	15000	15000	18400	18800	7000	14100	18000	18300	16300
N439908	405th Engrs.								305	635	1145	3232	3720	3645	4295	4275
TANKER HAUL	405th Engrs.	37700	46300	40100	60800	18980	25590	31106	30385	31480	35285	23065	24885	101130	64007	80333
TANKER HAUL	405th Engrs.	9445	12920	14200	17225	21925	23965	28935	23110	25330	20805	15690	24935	26250	22840	20580
TANKER HAUL	405th Engrs.	64525	82920	61855	48015	18995	19495	20700	15025	20850	16480	22195	70800	74000	83500	62100
TANKER HAUL	405th Engrs.	15110	15410	16935	19875	18770	10550	10305	13395	8230	9300	10095	8965			
H125174	C. E. F.	4800	3700	3900	3800	3800	4600	3310	3970	3270	3310	2620	3930	3810	3300	3600
R035200	C. E. F.	37600	37600	43900	42300	33600	44700	31435	39455	45415	39455	53775	57485	70585	57500	65900
H104308	C. E. F.	14000	12100	13300	11300	15800	11400	10345	10230	11330	9755	9875	9058	7515	10400	9600
TANKER HAUL	C. E. F.	17200	12300	11900	12300	10000	10000	11110	14610	14970	12415	11010	12830	14990	14600	13200
0964259	1st Algerian	7155	9095	6190	8280	7335	7280	7180	7440	7200	7440	7505	7785	8475	9150	9670
H107321	2nd Moroccan	7560	7560	7560	7560	9060	7560	7500	7500	3000	3000	3000	3000	3000	3000	3000
R001317	2nd Moroccan						3000	4500	4500	4500	3000	3000	3000	3000	1500	3000
H040295	2nd Moroccan											1500	3000	4500	4500	4500
P890220	16th Engrs.	4440	7460	9620	10090	7540	8925	6450	12595	9645	10100	8230	14080	15310	13050	14605
P873239	16th Engrs.	15660	12900	12280	8440	10980	11555	12635	13645	12880	11335	16540	14300	13070	15190	15000
	111th Engrs.	6204	6204	6204	6204	6204	6204	6204	18103	18103	18103	18103	18103	18103	18103	18107
H054046	19th Engrs.	20164	20164	20164	20164	18206	18206	18206	18206	18206	18206	18206	13416	13416	13416	13416
P964239	10th Engrs.	3825	3990	4525	4155	4580	6400	6570	6840	6665	3200	5135	5575	5685	5970	5145
P941268	10th Engrs.	1940	2530	2590	2930	4390	2420	1300	2940	2690	975	2450	3085	3645	3455	3510
P960167	10th Engrs.	5455	5090	7535	6030	7800	6190	10090	11425	9815	10280	11230	11030	12180	16475	15075
P903195	39th Engrs.	4870	6770	8170	7160	8830	3755	7395	5480	7940	7245	9210	10715	8580	8075	8535
P919202	120th Engrs.	9270	11005	10970	8000	8050	12735	13105	15660	12870	10110	2250	9815	11120	14080	15565
P815247	120th Engrs.		850	5025	5295	7115	9325	9305	7385	8710	6730	9055	11825	12825	13295	12995
P869200	405th Engrs.	12395	13750	17010	24080	26940	28140	30785	24175	27820	18755	27020	29680	29370	23380	20280
P883183	405th Engrs.	42920	47850	45680	51000	46710	48785	43655	47185	35300	41000	48255	52530	46530	51030	63615
P864175	36th Engrs.	13185	11135	9405	6370	10775										
G989109	19th Engrs.													7962	7962	7962
G963153	405th Engrs.														19800	17150
G988113	405th Engrs.												17015	21110	20425	17130
H359003	405th Engrs.												8705	8420	16600	15530

Appendix K

DAILY WATER SUPPLY CONSUMPTION (U. S. Gallons)
Month of February 1944

CO-ORD	UNIT	16	17	18	19	20	21	22	23	24	25	26	27	28	29
N275752	2616th Engrs.	13670	11740	14025	13795	13645	10190	12885	10030	10550	6000	12000	12000	12800	13500
N300911	405th Engrs.	2610	7710	8250	8150	8840	3810	5940	8570	4120	6480	1140	1755	2805	3680
H161809	405th Engrs.	54275	59870	52975	66550	63100	64550	64100	55225	57250	56000	47500	58165	52275	54320
H112998	405th Engrs.	25700	20180	25250	21110	32925	29000	28500	20050	23000	23160	24750	27825	23980	23650
H068931	405th Engrs.	46010	46250	41210	50000	44530	44265	46770	41210	43960	40070	48620	45260	46730	45410
H034064	405th Engrs.	22155	22785	26855	34150	27610	26930	31515	25645	25645	28185	26270	23035	23375	20425
H074131	405th Engrs.	15590	12110	14125	12312	14355	13495	15717	13500	12885	13625	15555	16740	17835	20400
H004095	405th Engrs.	32550	33975	34455	28670	30685	32170	37925	25465	4490	15255	6540	4990	20180	20170
H035200	405th Engrs.	32675	18275	42390	45120	41925	47270	51195	36490	46150	44865	45875	47695	50130	49635
H232036	405th Engrs.	25535	36875	27980	26360	27330	27130	28195	24665	22950	25940	25285	24185	28780	29540
H275830	405th Engrs.	9000	14600	10300	14700	11800	9500	16400	8700	19300	9000	14100	6600	10100	11700
H439908	405th Engrs.	4900	5160	4685	5450	5505	5400	5770	5450	6155	6205	5455	5810	1690	
H058074	405th Engrs.	53835	56940	55815	35145	46760	54015	49640	52050	80490	56050	63735	21360	76250	102605
TANKER HAUL	405th Engrs.	72420	79725	74500	77200	54300	51900	63200	44730	65300	46600	47400	52400	57300	56300
TANKER HAUL	405th Engrs.	21320	23685	26025	28535	29930	29665	27880	22325	29195	27830	33265			
TANKER HAUL	405th Engrs.	46900	60000	51900	61800	60020	60800	58000	52500	76000	56000	63900	75900	43500	54300
H125174	C. E. P.	3800	3300	3500	6300	4500	6000	5400	4700	5700	5700	5900	5000	6700	5800
H035200	C. E. P.	58300	66100	57500	51200	55200	48500	56500	50500	51100	70700	65900	61900	54200	61600
H103308	C. E. P.	8800	7900	8100	9100	8400	9200	9000	7500	8100	8400	7500	9000	10000	9900
TANKER HAUL	C. E. P.	13400	13300	14000	13700	15400	17200	16400	14400	16100	17200	15600	17700	16800	17100
G964259	1st Algerian	8730	8345	8605	8275	8730	8150	7160	8515	8855	9000	9640	9825	10145	9580
H107321	2nd Moroccan	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
H001317	2nd Moroccan	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
H040295	2nd Moroccan	4500	6000	5000	6000	6000	7500	7500	6000	6000	7500	9000	9000	7500	9000
F890220	16th Engrs.	13315	17010	15914	15070	17680	14255	19750	13805	14815	16640	17580			
F873239	16th Engrs.	5845	10450	3265	4600	4555	6465	8290	6190	10650	8445	8915			
H054046	19th Engrs.	13416	13416	13416											
F964239	10th Engrs.	5495	5475	5820	5305	4825	6200	6205	5370	7930	7720	6390			
F941268	10th Engrs.	2790	3010	1740	730	1780	1860	1620	1085	1135	1840	1260			
F960167	10th Engrs.	17125	20905	22270	21430	22820	22920	18120	21890	22380	23240	21800			
F903195	39th Engrs.	6830	6020	6900	7425										
F919202	120th Engrs.	13625	13825	15300	8010	18275	17750	17090	16710	17640	17780	16600			
F815247	120th Engrs.	9615	11455	5670	5880	9835	10855	13545	9525	9385	10465	8530			
F869200	405th Engrs.	22055	16630	15580	5900	3755	3545	4995	2250						
F917183	405th Engrs.											6250	17450		
F883183	405th Engrs.	39015	55650	51905	65025	66265	71930	66500	54395	65065	74300	38795			
F858222	405th Engrs.						3880	4290	6530	6575	5990	7125			
F864175	36th Engrs.	5490	7320	7570	6095	5580	6730	8430	8750	10270	7885	8240			
G989109	19th Engrs.	7962	7962	7962											
G963153	405th Engrs.	18850	16325	21880	24780	27440	24975	29710	29885	22730	39355	38665	39675	36365	38455
G988113	405th Engrs.	19571	20820	17305	17135	21610	23100	23110	22342	38300	38505	8085	13345	39755	48795
H359003	405th Engrs.	10535	16665	16715	19715	18250	19150	20145	18940	19940	21440	16705	18295	17775	16925

Appendix K

DAILY WATER SUPPLY CONSUMPTION (U. S. Gallons)
Month of March 1944

CO-ORD	UNIT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
N300911	405th Engrs.	4120	3530	3840													
N163809	405th Engrs.	53875	63505	66625	68475	62210	65300	54400	54385	53655	53500	62540	43500	47560	43700	47405	56100
N112998	405th Engrs.	28050	24360	25450	25050	20840	22125	22225	27400	26250	29310	30725	23900	29050	28150	34050	27600
N275830	405th Engrs.	6000	9000	6000	10400	9000	8100	11100	10300	9600	1400		700		2100		700
N068911	405th Engrs.	43790	53890	44265	50540	42980	46490	48530	49390	46525	50860	43760	44070	49530	45770	50745	48450
N222036	405th Engrs.	25285	31470	28740	25690	30330	26035	23755	17650	13325	15945	13565	13415	17500	15405	19720	17685
H034064	405th Engrs.	10350	24858	25815	25585	22280	26645	22544	26405	27625	30855	34955	28620	31820	34355	26670	33305
N073131	405th Engrs.	13655	15250	15775	15700	15250	11765										
H004095	405th Engrs.	7395	20870	19780	17300	10155	23810	22815	25650	24400	29765	27350	24800	21370	29095	29895	25795
H035200	405th Engrs.	57775	63485	59035	59500	59515	59790	66085	57030	54695	53045	58485	43390	53890	55645	49540	46120
H058074	405th Engrs.	113455	105850	84015	114315	93770	92275	79904	76075	79460	84710	78795	63555	80305	67575	78145	78645
R359003	405th Engrs.	11500	8955	6070	7025	470	295	45									
G963153	405th Engrs.	12300	17580	31560	19550	11570	22860	38695	41825	40935	40040	45200	42365	49305	39280	45890	45920
G988113	405th Engrs.	2235	42175	41355	3935	39825	46500	47845	46990	50915	52235	48995	43160	51350	48485	50250	49445
M980811	405th Engrs.										2730	10830	11260	15155	18785	23360	26429
TANKER HAUL	405th Engrs.	58900	54300	49000	50500	45500	32900	47100	40700	37410	29800	43000	37400	39700	38200	37100	43400
TANKER HAUL	405th Engrs.	34515	24715	40875	58355	63085	58510	67935	66855	64645	64420	58460	50180	71355	72155	72300	68535
TANKER HAUL	405th Engrs.	60500	56900	53700	42300	18300	19400	19900	18400	18400	19900	21000	20000	21400	21300	19100	19200
F064175	36th Engrs.	5845	6931	7855	6898	8345	8800	9830	9665	8404	7295	11485	8130	11225	11355	12530	10175
F917183	405th Engrs.	6600	10300	23650	9900	11550	16000	20250	24400	23050	26050	26800	9450	21200	24950	26800	24200
F883183	405th Engrs.	50200	70735	56005	62020	56645	51215	58085	55890	56775	58110	49380	53895	67255	64995	67700	59000
F848222	405th Engrs.	9085	3200	7900	8020	7850	7700	8168	8235	7775	7850	7550	7850	8250	8150	8300	8100
F861202	405th Engrs.	39635	40175	56945	53700	49560	61240	60125	59900	57545	69025	61220	50980	72715	66785	67705	66040
F890220	16th Engrs.	8470	15175	15495	13615	13680	14480	14920	13020	13255	14355	19375	9275	17345	15670	17820	14760
F871219	16th Engrs.	6295	10955	10080	10180	8310	11755	10325	10365	10385	11600	12855	7370	11455	11675	10830	10635
F964219	10th Engrs.	3990	2985														
F928205	10th Engrs.			150	680	740	620	580	575								
F960167	10th Engrs.	24890	28190	26555	26855	27080	31470	27340	20520	30500	25440	23940	21455	20100	20280	18400	17490
F903195	39th Engrs.	8610	10935	10035	9400	8754	10425	11520	9945	10565	11265	9305	11290	11840	11315	10985	11600
F919202	120th Engrs.	3990	8985	17635	8480	16330	14110	15890	15210	18390	19850	19155	4680	21000	19135	17545	20960
F815247	120th Engrs.	5455	5610	5345	4515	3015	4310	3875	1865								
F899204	120th Engrs.		2560	3330	2750	3160	3625	4450	5530	4710	2860	4060	6030	9495	6355	4630	5715
F973220	10th Engrs.	300	1295	1175	1390	1290	1555	1730	1390	1290	1555	1730	1605	1670	1590	1605	1640
G94259	1st Algerian	10025	9555	9500	9665	9480	9190	9245	9075	9300	9505	9810	9020	9655	9425	10215	9480
H107321	2nd Moroccan	1500	1500	1500	1500	1500	40	30	40	20	40	30	40	30	30	30	20
H001317	2nd Moroccan	3000	3000	3000	3000	3000	4500	6000	6000	6000	4500	4500	6000	6000	6000	7500	6000
H040395	2nd Moroccan	9000	9000	9000	9000	9000	9000	9000	9000	7500	7500	9000	9000	9000	9000	7500	6000
H125174	C. E. F.	5800	6300	5300	5800	5900	6000	5100	3400	4300	3700	4700	4500	5100	3700	4000	2400
H035200	C. E. F.	62400	56000	62600	57500	67600	66300	75600	69100	69300	69900	67100	68800	66200	71200	67900	60200
H104308	C. E. F.	9600	10300	8500	9500	9900	5400	1600	4600	3900	3400	2900	2900	4100	3300	3000	2900
H111241	C. E. F.						4600	5100	5800	6200	5700	6800	5500	5400	5700	5900	5600
TANKER HAUL	C. E. F.	18400	18900	16800	16600	18300	10400	12400	10600	9300	10980	12920	11040	13503	13500	11740	11080
	2616th Engrs.	9430	11115	11645	12580	11115	9630	10600	10150	11680	11460	11305	10510	8560	9545	12875	10375
N355804	19th Engrs.						5452	5452	5452	5452	5452	5452	5452	5452			
N421759	19th Engrs.														11141	11141	11411
	111th Engrs.													31590	31590	31590	31590

Appendix K

DAILY WATER SUPPLY CONSUMPTION (U. S. Gallons)

Month of March 1944

CO-ORD	UNIT	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
M163809	405th Engrs.	42250	40050	42610	37700	47005	36195	39725	57300	50450	60360	67346	70450	67220	67220	70415
M112998	405th Engrs.	31050	36975	31800	32825	30350	35500	28500	31000	35515	27865	40795				
M275830	405th Engrs.	1400	700	2100	700											
M068931	405th Engrs.	52355	55320	50810	56995	50150	56905	47485	52370	54510	62530	55490	57730	57450	51355	52375
M222036	405th Engrs.	24185	25835	21450	27805	27045	21930	20750	25190	25800	20980	3000				
M034064	405th Engrs.	21610	32270	31820	32485	31495	35375	36095	40850	42755	36615	41865	35570	21550		
M004095	405th Engrs.	21955	25705	28775	11935	29620	500									
M035200	405th Engrs.	59475	56050	64465	55695	58200	50540	57450	60625	61325	60400	82175	75150	41600		
M058074	405th Engrs.	67080	60360	69220	71080	72295	82330	71725	89285	75945	66025					
M839188	405th Engrs.										37910	44390	42625	55667	48490	50965
M963153	405th Engrs.	55065	54265	61230	50855	52960	54715	52690	60220	53495	55015	50260	51750	41600		
M988113	405th Engrs.	54065	55900	64490	55190	52625	58450	56655	67940	57935	57085	58970	59780	33580		
M980811	405th Engrs.	28598	30995	29970	31280	37410	35870	31375	35095	38765	36705	35900	33970	12750	42910	42475
M916946	405th Engrs.							2050	28010	28475	32255	34775	36545	39085	31525	28525
TANKER HAUL	405th Engrs.	41700	36900	38200	40300	43600	45400	39900	39200	4500	6000	4500	4500	5500	4500	7500
TANKER HAUL	405th Engrs.	67960	46345	46245	44660	48400	48490	48530	48170	51900	51800	58500	73000	81300	92600	92500
TANKER HAUL	405th Engrs.	18500	18500	16300	17800	17800	16300	13300	12700	14200	11200					
M864175	36th Engrs.	11855	13165	11895	13050	9585	8775	10585	12265	10200	9815	10035	9045	9675	10225	9210
M917183	405th Engrs.	23100	25900	24100	24800	28130	27600	17200	25400	28650	27400	29400	30300	32650	32900	31050
M883183	405th Engrs.	57070	51995	53125	55250	55600	56105	56116	41030	37585	40010	41690	46055	45975	40290	40030
M858222	405th Engrs.	8250	8050	7800	8200	8350	8150	8350	8250	1870	5695	9355	11010	9000	8375	7810
M861202	405th Engrs.	67395	69840	75570	72020	73850	71345	56235	74800	72920	68675	67010	58465	62830	63025	63675
M890220	16th Engrs.	18875	17705	16450	15880	19965	19645	17085	21875	21190	19065	22145	21095	27960	24915	24540
M873239	16th Engrs.	11765	11295	12410	11460	13180	14495	10025	12580	11125	12130	13100	21605	13300	14340	10900
M964239	10th Engrs.			1530	1520	1485	1555	1445	1725	1740	1410	5245	3720	3225	3080	3095
M928205	10th Engrs.		1345	1445	1680	1340	1835	1795	2665	2660	7685	11650	9520	9315	9730	10070
M960167	10th Engrs.	18650	16000	10040	13450	14445	12615	16500	15430	14445	14355	15030	15365	14680	10420	11300
M903195	39th Engrs.	10615	11920	11540	12075	10495	11960	11365	11870	12945	14280	14595	14325	15225	14585	13580
M919202	120th Engrs.	23560	25000	22165	22165	23755	21480	16030	20580	20080	20925	21030	21070	19810	19325	16640
M899204	120th Engrs.	7775	9570	8435	9045	9535	9995	15415	12345	14250	14725	16030	16175	18000	17500	17825
M973220	10th Engrs.	1580	1625	1445	1680	1340	1835	1795	2665	2060						
M954259	1st Algerian	9575	9750	10305	10250	9635	9435	9105	10100	9175	9000	9755	8230	8435	8455	4200
M107321	2nd Moroccan	30														
M003317	2nd Moroccan	7500	6000	7500	7500	9000	9000									
M040395	2nd Moroccan	6000	6000	6000	6000	6000	6000									
M125174	C. E. F.	3400	2300	3300	5400	6900	6600	7300	8600	10900	7700	8800	7600	3400		
M035200	C. E. F.	67700	68300	60300	61100	59700	53500	57300	62200	57500	58200	58800	48000	50800	36000	
M104308	C. E. F.	2800	2300	3600		3000	3000	3000								
M111241	C. E. F.	5200	6900	5600	6900	9600	9700	10700	11600	9900	12100	11700	10400	14300		
TANKER HAUL	C. E. F.	11000	10540	12020	15220	11460	11070	9505	11065	12225	12050	14360	2945	3245	5675	3920
M934943	C. E. F.						13800	14300	21100	18800	16700	17400	16300	15400	15400	15300
	2616th Engrs.	9455	8020	12085	10660	9780	10370	9310	11950						11950	11720
M355804	19th Engrs.	5452	5904	5904	5904	5904	5904	5904	5904							
M421759	19th Engrs.	11141	11731	11731	11731	11731	11731	11731	11731							
	111th Engrs.	31590	31590	31590	36500	35600	35600	35600	35600	35600	35600	40100	40100	40100	40100	40100
M985001							9235	21700	16120	16900	9950	14150	18040	14300	14150	13400
M905991	C. E. F.									1010	755	1500	1500	1500	2000	2000
M990028	2nd Moroccan											540	875	1380	2425	2125

Appendix X

DAILY WATER SUPPLY CONSUMPTION (U. S. Gallons)
Month of May 1944

CO-ORD	UNIT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
N161809	405th Engrs.	19350	22850	31550	30420	61795	67150	75850	77330	8050	20850	66700	37700	47100	50250	52450	33070
N068931	405th Engrs.	61900	59925	64060	61800	72150	70155	56530	58040	51260	50415	63290	53550	53640	51220	55475	47060
N041841	405th Engrs.	106175	108150	102150	98935	96165	102690	112050	116420	120700	117300	107840	99600	99210	96280	100115	106750
N980811	405th Engrs.	45970	42495														
M967824	405th Engrs.			52505	46830	53925	55430	51905						61205	54570	62370	58870
M985001	405th Engrs.	21400	22850	23300	23400	20250	24800	15800	31000								
G987025	405th Engrs.	2800	5600	5600	5600	17200	16700	16400	16835	40090	40890	40475	48550	53305	57785	15970	40845
M884913	405th Engrs.	15720	14250	15065	13425	22480	29640	25095	22530	18110	32315	40035	32135	36730	17440	18715	48545
M879853	405th Engrs.	80010	86255	69710	64000	77175	77235	78695	81450	92435	93220	80400	81450	87025	77210	84275	60105
M908862	405th Engrs.	35835	35965	34084	27905	29525	28950	53240	57795	47635	35275	60555	56820	66290	58460	66605	65740
N123855	405th Engrs.	59435	61415	68325	80225	75325	79145	71325	72360	85890	77195	43710	73490	66495	66640	98695	105410
N079878	405th Engrs.	6220	6280	6670	4350	6580	5175	7480	5370	7690	7425	9500	6280	7260	6825	8225	5830
M973977	405th Engrs.						18200	14575	17985	29365	30900	32130	32475	32385	33690	36220	32280
M961985	405th Engrs.						24000	24000	24000	21000	21000	21000	21000	15000	15000	12000	12000
M914943	405th Engrs.	14900	32650	31900	29470	31755	29450	28310	27360	18215	24250	24000					
G 965044	405th Engrs.													16800	19500	5500	
G914014	405th Engrs.															1700	14290
M942918	405th Engrs.																28990
	UNIT HAUL	96700	88200	106500	97100	95800	103400	104200	89000	115700	112900	108900	109800	100200	86600	108100	118500
TANKER HAUL	405th Engrs.	2550	4200	4900	7000	8900	10000	17200	21600	29100	31000	27800	29000	30100	35600	23100	12600
TANKER HAUL	405th Engrs.	61769	53407	62170	65215	66620	66280	60365	65160	67620	66935	58580	71350	59955			
TANKER HAUL	405th Engrs.	15050	16100	18200	43100	63000	70200	68600	74900	81700	70000	74200	16100	72200	38500	58000	72500
ROAD SPRINKLING	405th Engrs.	77500	93100	80000	82100	76800	111300	91600	98200	115000	127900	151800	152100	10800	30100	21100	43000
G989028		15000	15000	16000	16500	16500	18000	18000	18000	21000	21000	15000	12000	12000	12000	6000	
G885005		2540	2910	2710	2660			2110	4000	4000	4000	4000	4000	4000	4000		
G886009		928	980	980	928	950	1020	1020									
G867070																1500	3000
M905992		4810	4600	8600	6610	6620	6200	7400	6000	5000	16000	16500	14000	18900	21200	17400	10600
G898028			1740	2235	1490	5710	6100	4850									
G965042		9100	9862	10400	12650	18300	19600										
K934943		40600	39500	39700	38800	39800	20000										
M973976		12400	11100	15300	13400	8400											
M858978																	11100
M962982		20900	23100	20300	19400	20900	20300									1300	3500
M943917		12000	15100	13600	16800	22500	33400	34300	32700	37100	36700	40200	37800	41700	30900		
M885843	19th Engrs.	14288	14288	14288	14288	14288	17085	17085	17085	17085	17085	17085	17085	17085			
M912792	19th Engrs.	12884	12884	12884	12844	12884	18861	18861	18861	18861	18861	18861	18861	13279	13279	13279	13279
F917173	540th Engrs.	12000	12000	12000	12000	12000	12000	12000	12000	12000	12000	12000	12000	12000	12000	12000	12000
F863176	540th Engrs.	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
	111th Engrs.	32400	32400	32400	32400	32400	32400	81000	81000	81000	81000	81000	81000	81000	81000	81000	81000
	2616th Engrs.						13975	16075	21200	21200	21700	22000	22900	20600	19700	22100	22100
F834227	5th Division	7000	6800	6600	7400	7600	7600	9400	8700	9800	9200	9800	10400	10300	3350	3700	3750
F848215	1st Division	2900	3100	2900	2600	3400	3000	3900	3450	3600	3500	3750	3350	3750			
F901196	94th Engrs.	11685	11910	11095	12740	13270	10460	12170	11685	11460	11360	13295	11808	12035	10925	12545	10205
F968172	39th Engrs.	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300	5300	5300	3300	3300	3300	3300
F899204	120th Engrs.	46895	47170	46165	44380	49500	46320	47720	52590	53395	77675	62875	68405	69270	78665	72820	89365
F923211	120th Engrs.	3960	10120	10605	9830	3055	8215	8380	7590	8090	7815	7445	8100	10765	8210	6840	6470
F896231	120th Engrs.		520	1935	2710	2305											
F957168	10th Engrs.	28080	36710	32360	34270	36630	32050	33425	43635	40255	35695	40510	37930	40855	55470	58030	52225
F971133	10th Engrs.	7600	12230	11340	15155	12080	11810	12010	12425	13450	11240	13060	13875	13585	12495	15390	13890
F962116	10th Engrs.	10665	15510	15305	14450	15050	15520	15260	18010	15800	15320	15290	14875	14385	13850	14630	15110
F956168	405th Engrs.															11400	13300
F968215	109th Engrs.	10000	10000	10000	10000	10000	10000	10500	10000	12000	11000	10000	10000	10000	10000	10000	11500
F883183	405th Engrs.	92580	121955	121505	106940	93200	111855	76260	107970	139335	115240	115480	108140	114400	124460	125915	112705
F861202	405th Engrs.	73530	68010	75445	79145	86470	83925	86810	95725	46675	52295	54035	67930	49915	65785	61785	51110
F858223	405th Engrs.	9550	10145	10415	9170	10005	10390	10125	4160	9995	10745	10650	9780	9610	9085	9416	11750
F839118	405th Engrs.	82645	76465	80030	87400	83625	76200	72935	80255	98010	109225	85365	87175	108995	100630	99130	96895
F917187	405th Engrs.	8400	11200	7000	9100	13300	9100	10500	7000	6300	7000	12600	17600	16800	13000	15400	19000
F915190	405th Engrs.	17900	39160	38120	30800	36190	37300	38820	40500	45420	45400	36360	40125	55970	40750	44020	51450
F858223	405th Engrs.	58650	50010	59670	62905	64390	62990	59025	62160	62895	62545	53960	63080	54810	49885	51410	55150
F860180	405th Engrs.	3119	3397	2500	2310	2230	3290	2140	3000	3725	4390	4620	8270	5145	6540	5585	5080
F890223	16th Engrs.	33000	33000	34000	34000	34000	34000	29165	13210	38575	28585	29710	33258	33995	33900	15355	38570
F883229	16th Engrs.	25000	25000	25000	25000	25000	25000	19710	19575	19920	24970	25095	28505	23620	25990	21525	28220
F891215	16th Engrs.	5000	8000	8000	9000	9000	9000	11475	15850	14075	10080	12670	14115	12765	14140	16225	13810

Appendix K
DAILY WATER SUPPLY CONSUMPTION (U. S. Gallons)
Month of July 1944

CO-ORD		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
A356463	405th Engrs.	19350	17150	19050	18900	20400	17350	18850	19200	14900	16700	13250	12300	4900	2150			
A252263	405th Engrs.	30410	21950	22425	10120	10000	4325	400										
A442248	405th Engrs.	28600	31700	18500	23800	20740	19300	16400	17350	12250	15050	11550	12200	10350	13800	17850	15250	
A093778	405th Engrs.	1590	1795	1570	1180	720	7515	6700	500									
E996768	405th Engrs.	16550	15240	13100	10205	5750	800	650	3505	2900	2450	2900	150					
E836891	405th Engrs.	15100	15100	32350	30605	29800	50730	60250	64750	63275	67775	65800	56730	49150	36620	30535	32750	
V802913	405th Engrs.	26910	36585	31340	12585													
E643641	405th Engrs.	64575	41115	64395	60520				20750	28915	21560	23890	23305	18770	19295	17815	15886	
E612809	405th Engrs.	59115	61690	44355	46980	42700	27500	22850	33800	20175	16745	22220	25355	26805	31570	25080	23440	
E703295	405th Engrs.	34725	18025	12850	21800	24200	32450	39925	40695	28075	35250	34450	33725	31000	32385	34100	35100	
E635657	405th Engrs.	31960	38890	38790	11555	24225	35000	39145										
V430832	405th Engrs.	11780	15380	14675	19480	20165	20115	16315	14788	8195	11405	11905	14555	8910	10320			
W003917	405th Engrs.															5140	7350	
F579487	405th Engrs.	14790	14620	6965														
F526650	405th Engrs.	4090	3600	7700	11200													
F714669	405th Engrs.	21005	18625	24600	36525	22075												
F192901	405th Engrs.	116170	14240	21870	31754	29445	39370	25015	24995	15854	2650	17415	19460	28795	28250	22070	28065	
A148068	405th Engrs.	47285	28945	43550	45030	45045	43870	40990	39430	35965	30495	26535						
A115277	405th Engrs.	41005	22595	32685	27575	27550	15450	31710	19365	18050	18250	19500	18110	16950	32425	37600	36570	
E635663	405th Engrs.				40000	52025	43755	31560	25750	32990	31115	40410	44320	47045	37190	65450	58425	
V230876	405th Engrs.	20790	45450	53990	69405	71410	62275	71240	90305	78470	105655	102490	115805	129755	146915	112600	98685	
Q162208	405th Engrs.					16740	21626	28995	30755	30780	35499	40700	47380	40210	100315	86597	124194	
Q856178	405th Engrs.									8200	23050	32650	50075	49425	49060	48675	42560	
Q651185	405th Engrs.									3750	12775	14040	16600	14150	12200	11900	7150	
Q362215	405th Engrs.																1050	
Q200025	405th Engrs.														2115	13025	26060	26780
Q628275	405th Engrs.																9600	11600
TANKER HAUL	405th Engrs.	33230	37905	21000									7000	6300	9800			
UNIT HAUL	405th Engrs.	100800	109300	103800	102300	99600	96700	92500	90200	82900	80900	80200	70000	76900	79800	81100	80600	
UNIT HAUL	405th Engrs.	28700	37500	35900	45800	30100	24000	28700	23100	25400	28700	27400	25700	32900	26900	20100	24100	
UNIT HAUL	405th Engrs.	12600	14000	13300	12600	15400	14700	22400	39900	34400	32200	22200	26100	26100	29600	27700	30600	
ROAD SPRINKLING	405th Engrs.	96400	168500	129300	74500	64200	55500	62400	37700	12100	20600	21300	22000	27600	35800	43800	42300	
	316th Engrs.															3360	3360	3360
	16th Engrs.	67400	67500	67400	67400	67400	67400	74000	74000	74000	74000	74000	74000	74000	74000			
	313th Engrs.	67000	67000	67000	67000	67000	67000	67000	36450	36450	36450	36450	36450	36450	38900	38900	38900	
	109th Engrs.	55200	55200	55200	55200	55200	55200	65450	65450	65450	65450	65450	65450	65450	60300	60300	65300	
	19th Engrs.	21300	21300	21300	21300	21300	21300	9000	9000	9000	9000	9000	9000	9000	3900	3900	3900	
	1108th Engrs.							58560	58600	58560	58560	58560	58560	58560	32000	32000	32000	
A172708	C. E. F.	10900	9400	9400	8900	6400												
A252622	C. E. F.	16900	16400															
E985792	C. E. F.	5600	6200	7200	3400	2500	3000											
W029899	C. E. F.	13400	20500	6100	3600	3500	2100											
W060862	C. E. F.	4000	5800	14800	7200	2900												
V950977	C. E. F.			2900	24400	19400	25300	31100	25700	21100	17800	5700	9700	8400	9300	10000	8800	
0823170	C. E. F.							19700	43000	45400	56200	47300	54200	55400	72900	65900	71600	
Q744275	C. E. F.										500	500	1500	3000	3000	4500	4500	

Appendix K

DAILY WATER SUPPLY CONSUMPTION (U. S. Gallons)
Month of July 1944

CO-ORD	UNIT	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
A442248	405th Engrs.	18000	17350													
E826426	405th Engrs.									3000	3000	9800	4500	7500	7800	4550
E838691	405th Engrs.	23900	16800	23695	19150	8750	11990	8050	6500	400						
V802912	405th Engrs.				4500	9320	9200	11525	9340	8070	5600	8620	7850	7500	7300	6590
E643641	405th Engrs.	17155	31080	57300	42130	43870	55605	52925	57055	43340	54295	81950	15860	90600	47400	65150
E612809	405th Engrs.	26825	22070	27905	26455	49070	19425	14050	18240	23215	21670	5000				
E703295	405th Engrs.	35200	37350	34300	38150	23550	24450	23250	22500	40150	36830	15500				
O154490	405th Engrs.											1565	3200	45495	27180	
W003917	405th Engrs.	9100	12000	6250												
Q043467	405th Engrs.							9845	15275	20025	23905	29170	21085	45495	47800	51760
Q190050	405th Engrs.							35000	35000	35000	35000	35000	35000	35000	35000	35000
F192901	405th Engrs.	12660	10565	10565	14400	14980	17625	15885	19605	18940	17615	4160				
A116277	405th Engrs.	19750	18115	3500												
E635663	405th Engrs.	63555	56730													
V303878	405th Engrs.	11220	10770	12405	13466	12553	20445	14581	18295	16750	21480	20215	20950	32343	25440	24820
V230876	405th Engrs.	135150	131730	103505	51725	108535	148310	152250	119755	122535	159935	137505	134920	127295	213791	127935
Q162208	405th Engrs.	101220	118915	143730	142245	157920	66590	983330	136835	145830	155180	161265	199690	152075	154280	159160
Q856178	405th Engrs.	40600	41600	44150	56350	59100	67715	92970	77230	82550	49190	57690	31525	11925	25275	24854
Q362215	405th Engrs.	14470	25105	35395	8610	920	17550	29395	30110	36775	33305	36075	37080	36520	20475	38590
O676250	405th Engrs.	3800	6350	5800	8850											
Q200025	405th Engrs.	38195	39145	40750	32950	41500	6030	31995	31770	38990	32090	34335	37300	39310	7240	26970
Q342385	405th Engrs.			4830	10124	17070	14210	17780	18000	19415	22970	27525	34270	38005	37785	46825
Q628275	405th Engrs.	12850	16000	14200	20560	30300	32675	16700	13200	9300	10100	10300	12600	14100	10200	9460
UNIT HAUL	405th Engrs.	88000	80500	80000	79400	83300	97000	88700	87800	86400	94900	98500	106700	106500	103000	98500
UNIT HAUL	405th Engrs.	34900	32300	38800	7000		49350	49950	50550	52550	63750	60960	57900	52000	47000	48600
TANKER HAUL	405th Engrs.							3500	7700	4900	11200	7000	11200	16800	22600	24000
UNIT HAUL	405th Engrs.	28700	32200	34300	36600	35700	45400	40200	55000	51400	46000	45100	44700	39200	44800	47600
ROAD SPRINKLING	405th Engrs.	43700	63800	66700	41300	44900	63100	60100	69900	71300	65900	98700	79600	58100	59000	59700
	316th Engrs.	3360	3360	3360	3360							40000	40000	40000	40000	40000
	16th Engrs.					67000	67000	67000	67000	67000	67000	67000				
	313th Engrs.	38900	38900	38900	38900											
	109th Engrs.	60300	60300	60300	60300											
	19th Engrs.	3900	3900	3900	3900							21100	21100	21100	21100	21100
	1108th Engrs.	32000	32000	32000	32000	15300	15300	15300	15300	15300	15300	27900	28900	27900	27900	27900
Q283437	C. E. F.					9400	9400	9400	9400	9400	9400					
Q324490	C. E. F.					15000	18000	18000	18000	18000	18000					
Q479499	C. E. F.					4000	4000	4000	4000	4000	4000	4000				

Appendix K

DAILY WATER SUPPLY CONSUMPTION (U. S. Gallons)
Month of August 1944

CO-ORD	UNIT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
E643641	405th Engrs.	54000	57350	66900	43900	58400	42600	46900	38200	8150	7650	23200	20400	21550	20900	22450	22050
B826426	405th Engrs.	6500	6600	5000	6000	8300	9950	4530	4100	25300	9400	12450	21675	14850	19200	20200	18100
K160857	405th Engrs.			5265	29125	32340	34475	34500	39750	36375	39200	36825	35200	36250	34850	29025	32000
Q858178	405th Engrs.			32250	9150												
Q190050	405th Engrs.	24000	35800	38000	44600	38700	32600	35300	34500	38230	16800	38400	37400	37400	40200	38100	34800
Q199021	405th Engrs.	10515	21880	32830	37485	44220	50500	63320	50335	47935	40695	40425	45345	44770	47820	54265	61430
Y230876	405th Engrs.		89805	138130	126500	121405	87510	105275	84800	81175	70440	74350	92500	82745	88005	99585	83700
Y303878	405th Engrs.			29175	26775	28950	33900	28900	30300	31100	29100	28075	26000	26600	89900	29000	29000
Q362215	405th Engrs.	36325	35040	29675	52740	64730	49075	38730	26505	38210	20350	42345	45245	36685	30995	38490	49545
Q342385	405th Engrs.	49860	42140	29800	28740	36100	42800	39400	34700	27350	40050	26800		5930	15080	12060	10435
Q043467	405th Engrs.	36525	16070	20475	21385	21600	35385	26190	40640	31280	31860	45620	28010	14995	12905	22340	22610
Q100488	405th Engrs.	31810	51710	38200													
Q245524	405th Engrs.	1915	1915	2720	3715	32730	7385	20400	20015	16925	14500	13760	27880	16835	20395	20210	20555
Q346216	405th Engrs.	24000	30550	31050													
Q324490	405th Engrs.		8680	51330	63875	39415	71595	54235	41440	60225	45740	56715	81055	52720	36680	44320	66040
Q186171	405th Engrs.		59100	42580	39700	46100	38700	43600	49400	88600	48800	61400					
Q162208	405th Engrs.	158185	149070	155560	140885	142235	141935	149390	167835	119875	136780	128825	139525	132470	146440	190725	202850
Q178455	405th Engrs.							3150	8850	12050	6085	12815	16980	28110	17525	25870	30070
Q612438	405th Engrs.							15655	25285	21000	13150	20735	16995	24955	19135	29725	38740
Q167552	405th Engrs.				4360	4325	5455	4890	3775	4115	4895	5855	5160	4290	5420	4770	
Q552496								11585	11390	6250	11775	22180	21805	22190	29185	29580	
UNIT HAUL	405th Engrs.	101700	102200	105400	94100	109200	79400	102500	95900	108600	99400	82700	92400	102300	110600	103200	115300
UNIT HAUL	405th Engrs.	47300	48300	59000	55000	49500	54450	48800	51000	49100	51400	56500	64000	50700	54200	58700	62000
TANKER HAUL	405th Engrs.	18500	6100	2800												15000	15000
UNIT HAUL	405th Engrs.	39200	38900	36400	63300	42900	57000	85200	79600	61400	65700	67400	62200	64300	69200	70900	69100
TANKER HAUL	405th Engrs.	10900	12600	11900	14700	11900	13900	12600	13300	14000	14700	14700	14700	12600	17300	8600	
ROAD SPRINKLING	405th Engrs.	18000	36000	34500	39000	28400	13000	18000	27000	28500		12000	7500	9000	12000	3000	2000
ROAD SPRINKLING	405th Engrs.	46300	28300	31300	46200	44800	45500	32200	2800	12500	3500	14000	16300	14800	3500	41100	44700
Q324490	19th Engrs.	19600	19600														
Q615345	19th Engrs.	8300	8300	21200	21200	21200	21200	21200	21200	21200	24300	24300	24300	24300	24300	24300	24300
	316th Engrs.	40000	40000	40000	38100	38100	38100	38100	38100	38100	38100	23000	23000	23000	23000	23000	23000
	1108th Engrs.	21100	21000	21000	44500	44500	44500	44500	44500	44500	46750	46750	46750	46750	46750	46750	46750
	313th Engrs.	44300	44300	44300	44300	44300	44300	44300	44300	44300	44300	44300					
	16th Engrs.				37600	37600	37600	37600	37600	37600	21150	21150	21150	21150	21150	21150	21150
Q474408	337th Engrs.												6000	9655	9630	8000	

Appendix E

DAILY WATER SUPPLY CONSUMPTION (U. S. Gallons)
Month of August 1944

CO-ORD	UNIT	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
B643641	405th Engrs.	22700	23100	17350	21600	19150	28100	24300	17400	18000	17400	17000	17350	16250	17100	16500
B826426	405th Engrs.	15250	10600	4800	3150	2050	500									
Q029430	405th Engrs.									29430	29100	24950	23740	24900	25700	28650
E160857	405th Engrs.	30950	29255	21050	30350	29310	30100	25150								
Q858178	405th Engrs.	10500	29000	21000	22500	13000	8600	9000								
Q190050	405th Engrs.	37000	35300	72550	75650	78280	87880	97995	90500	88700	37200	36500	39000	37300	35800	36000
Q199021	405th Engrs.	55995	43750	44950	45335	44870	56500	52410	45230	53295	52930	46450	39405	44575	54480	48245
V230876	405th Engrs.	34700	88200	38100	36300	35800	38600	37800	36600	38000	104160	45200				
V303878	405th Engrs.	26600	27500	30100	30200	31800	29115	31600	30800	41500	44095	46100	5600			
Q362215	405th Engrs.	66025	75100	90700	95875	121070	81570	100755	59460	76530	72905	71050	51535	42100	38485	106935
Q342385	405th Engrs.			23300	23000	31850	27050	28600	46050	44200				20330	50170	45210
Q043467	405th Engrs.	27900	26875	25495	12555	17445	21605	15955	7950							
Q755579	405th Engrs.												9425	24155	39095	47575
Q730516	405th Engrs.								9900	20985	27180	30810	37070	29870	37640	34690
Q245524	405th Engrs.	26050	29710	32165	17200	16795	17710	20530	18820	21125	16570	17760	24035	25640	22170	21670
Q346216	405th Engrs.	22000	47600	38800	38200	44000	39200	36600	23800	27800	28000	28000	20600	21700	14800	18900
Q324490	405th Engrs.	49620	48955	55500	37620	44685	38345	34540			44630	19360	39670	36625	41855	40295
Q100488	405th Engrs.									900	10320	13650	8015	11750	14330	12230
Q752460	405th Engrs.								700	2075	10605	23535	27315	34160	44830	37445
Q162208	405th Engrs.	60405	105960	129250	137645	149650	155105	164365	163740	161720	156150	133465	133160	134080	131400	119030
Q178455	405th Engrs.	27685	21495	24415	22205	27870	24245	33205	29620	27530	21330	25560	20200	43000		
Q612438	405th Engrs.	36705	35395	39645	44165	45610	50805	36660	44255	44115						
Q167552	405th Engrs.	5020	4815	5760	5705	5735	7090	7285	12925	17250	18120	21990	20785	20375	17715	20155
Q552496	405th Engrs.	47675	35870	72245	55890	79580	99710	94215	105650	86040	56980	68450	77790	75160	64745	69300
UNIT HAUL	405th Engrs.	98200	100100	81100	80200	87500	103600	114100	98800	103600	103400	87800	100700	106100	86800	108800
UNIT HAUL	405th Engrs.	63900	51500	50600	61400	68800	64800	67300	60900	51100	70200	75000	65700	76900	64200	82600
TANKER HAUL	405th Engrs.	10500	18000	18000	19500	18000	15000	7000	10500							
UNIT HAUL	405th Engrs.	69300	84800	74800	62100	62100	51000	53000	51600	52300	49500	46000	45300	45200	46000	39000
ROAD SPRINKLING	405th Engrs.	10500	3000	6000	9000	6000	6000	13000	6000	9000	16500	7500	13500	10500	21000	21000
ROAD SPRINKLING	405th Engrs.	48200	62300	52100	55600	65300	78800	80400	84500	78200	71100	65500	77000	55500	68700	43700
Q793503	19th Engrs.					15000	15000	15000	15000	15000						
Q615345	19th Engrs.	24300	24300	22000	22000	22000	22000	22000	22000	22000						
	316th Engrs.	23000	23000	22500	22500	22500	22500	22500	22500	22000	28000	28000	28000	28000	28000	28000
	1108th Engrs.	46750	46750	40000	40000	40000	40000	40000	40000	30400	30400	30400	30400	30400	30400	30400
	313th Engrs.		27000	27000	27000	27000	27000	27000	27000							
	16th Engrs.	21150	21150	19000	19000	19000	19000	19000	19000	23600	23600	23600	23600	23600	23600	23600
Q474408	337th Engrs.	9000	9400	8700	6000	8700	9290	5500	8665	8065	5100	4000	9040	13110	10715	11915

Appendix E

DAILY WATER SUPPLY CONSUMPTION (U. S. Gallons)

Month of October 1944

CO-ORD	UNIT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Q552496	405th Engra.	10275	10850	9700	9650	10325	10100	9300	5150	3800	3500	3800	3000	3300	1500		
Q730516	405th Engra.	8050	5975	1050													
Q776690	405th Engra.	54990	44390	39575	45365	45445	46150	48460	35600	48280	49250	42300	31250	56020	52600	53050	54150
L743093	405th Engra.									2700	5200	6650	6375	7250	9400	7100	8000
Q770700	405th Engra.	33925	51050	37200	35875	41250	49050	48850	53550	25325	12500	36925	35750	35075	39400	41800	39625
Q574623	405th Engra.	16100	5500	4350	5500	5650	5400	6750	1700								
Q811692	405th Engra.	47850	48900	41300	40000	38550	30300	29100	31500	30850	49500	33550	40950	42050	37150	34100	42000
Q663806	405th Engra.	15200	3700	18375	10324	20025	23900	22150	23100	21100	20300	21500	19600	22600	24500	21750	22050
Q204806	405th Engra.	15500	15200	29700	23900	14425	19550	16500	12050	14500	21600	20750	30050	30200	26450	27300	22150
Q135705	405th Engra.	13925	10675	12730	13930	20265	19750	25875	24860	23420	22930	29145	22535	31600	39440	36800	36580
Q285751	405th Engra.	24760	23320	21450	21145	17445	20230	16840	16910	11315	14145	14280	7890	5765	4370	5825	2395
Q452837	405th Engra.	7300	10085	11065	10100	9625	9540	6670	5285	7115	8570	7860	6125	7660	5260	5865	7775
L907070	405th Engra.		2300	8850	19100	18050	23650	26850	30000	30200	30450	36000	34050	33850	35950	36800	31350
Q825911	405th Engra.	12215	7205	25160	30985	15950	21420	23520	19890	22240	22935	27215	36490	39900	33180	20990	6775
Q892947	405th Engra.	19025	20015	14455	17285	17800	27950	30750	18950	27920	30145	35710	30100	31380	37855	43450	29950
Q820824	405th Engra.	58845	40775	36945	35325	23765	23695	31890	22990	15430	25000	15800	24230	21025	25470	20375	24230
L840070	405th Engra.					10720	27035	19505	20520	23730	24280	34275	39305	43125	44630	41495	38445
2784694	405th Engra.	117670	107740	115100	89815	75795	82515	83825	81780	122315	101120	82565	88765	89250	96550	86845	87700
2755579	405th Engra.	16375	20095	14975	18520	23125	25820	16740	10595	18415	12775	14225	12775	8450	7350		
Q418586	405th Engra.	43200	43200	40000	43200	44000	46800	46800	46800	42900	44850	48750	48800	48800	46800	29900	48750
Q784694	405th Engra.	186000	186000	186000	186000	186000	186000	186000	186000	198000	198000	186000	186000	186000	114000	198000	113400
L872119	405th Engra.															4385	4300
L870140	405th Engra.														4200	6600	16040
UNIT HAUL	405th Engra.	72300	61600	64500	70500	55700	57800	56300	59200	70700	76400	63600	63400	72600	75000	69900	57600
UNIT HAUL	405th Engra.	18350	26100	42400	35300	35700	37100	57500	54100	59900	66700	86400	55000	49800	69600	61400	61900
TANKER HAUL	405th Engra.	8100	10200	11600	11600	6500	8800	11700									
UNIT HAUL	405th Engra.	66000	55900	48200	46700	44000	32300	37800	41600	41800	39000	35000	42600	41900	41000	43300	40000
ROAD SPRINKLING	405th Engra.	1500		3700	2100												
	1108th Group	30000	30000	30000	30000	30000	24900	24900	24900	24900	24900	24900	24900	24900	24200	24200	24200
	16th Engra.						28610	37897	24426	17627	28431	30468	36889	27741	20545	17530	23270
	19th Engra.	8100	8100	8100	8100	8100	8100										
	19th Engra.							7200	7200	7200	7200	7200	7200	7200	6200	6200	6200
L887180	19th Engra.														6200	6200	6200
	316th Engra.	46700	46700	46700	46700	46700	41080	41080	41080	41080	41080	41080	41080	32200	32200	32200	32200
	313th Engra.	22700	22700	22700	22700	22700	20000	20000	20000	20000	20000	20000	20000	29000	29000	29000	29000

Appendix K

DAILY WATER SUPPLY CONSUMPTION (U. S. Gallons)

Month of October 1944

CO-UNIT		17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Q730516	405th Engrs.	5500	6950	7450	8450											
Q776690	405th Engrs.	36460	58000	48250	58500	83800	72400	70460	40500	35600	38650	44450	47900	43500	39650	39550
Q770700	405th Engrs.	41925	46700	40500	48100	41950	42100	44550	47150	46500	43900	48350	46800	41600	40250	51050
U972848	405th Engrs.												1275	2895	4005	17125
C811692	405th Engrs.	35450	43550	40050	44450	37500	38800	39550	30300	38150	33900	40700	38050	34350	36100	28500
Q663806	405th Engrs.	23750	24350	24250	27650	24350	26300	26450	27000	26850	26650	26750	28250	26250	28750	26550
Q204806	405th Engrs.	33950	27250	35450	28300	26150	28850	24825	29370	30850	18225	31550	30150	30600	25700	32800
Q135705	405th Engrs.	38470	49465	64975	59770	55935	54695	65470	55075	68565	66460	87285	89450	30580	94740	108910
Q285751	405th Engrs.	5095	3490			700	1900	2200	2825	3150	3975	4750	4750	4600	4660	5200
C452837	405th Engrs.	7045	7310	6310	8340	6980	5995	7300	7235	5920	5720	4915	6290	5585	5780	6230
L907070	405th Engrs.	34800	45100	42450	45600	43650	41350	40500	36350	39250	38500	46300	41800	50100	39550	48150
Q825911	405th Engrs.	29565	33415	27150	33255	20800	28775	25450	25475	24050	23000	24550	25005	22200	30450	30925
Q892947	405th Engrs.	41900	45900	44690	54020	50455	51630	55650	53950	63940	30090	29320	30320	28360	30300	37740
Q820824	405th Engrs.	24075	22100	18465	16305	19755	17095	18360	14080	18410	14385	14575	16935	15845	17110	17205
L840070	405th Engrs.	36195	31665	31110	31970	28980	23955	27905	33055	23600	17780	35580	28670	27445	28730	33300
Q784694	405th Engrs.	99575	99575	97155	100045	83560	86355	73800	87780	86005	86975	76865	75565	71085	79915	95655
Q418586	405th Engrs.	35100	46800	48900	42900	42900	39000	46800	43850	42900	39000	43500	46800	42900	40950	46800
Q784694	405th Engrs.	108000	186000	156000	162000	72000	60000	108000	60000							
L872119	405th Engrs.	7700	11140	11400	17290	16765	14705	21850	11080	16460	16470	26300	22295	15570	19780	18850
L870140	405th Engrs.	26635	30920	38070	38575	34435	30245	40485	45430	28205	39045	31450	41745	40255	50000	42280
UNIT HAUL	405th Engrs.	54500	67700	75900	83100	95000	87500	89100	56100	56100	62600	65600	68600	62700	67700	61800
UNIT HAUL	405th Engrs.	65500	63800	67200	71200	79700	88200	83200	79400	89100	91100	78900	66300	71200	91400	78600
UNIT HAUL	405th Engrs.	47000	46100	42800	42600	47400	44300	37900	41500	38600	40800	40700	41300	43300	43500	47800
TALTER HAUL	405th Engrs.										5100	8600	11600	13000	23000	16700
	1108th Group.	24200	24200	24200	24200	24500	24500	24500	24500	24500	24500	24500	24000	24000	24000	24000
	16th Engrs.	23033	27405	25311	30211	29936	27532	27002	26101	24568	22717	21705	30000	35000	33000	33000
L887180	19th Engrs.	6200	6200	6200	6200											
	19th Engrs.	6200	6200	6200	6200	6200	6200	6200	6200	6200	6200	6200	8010	8010	8010	8010
	316th Engrs.	32200	32200	32200	11200	11200	11200	11200	11200	11200	11200	8010	8010	8010	8010	8010
	313th Engrs.	29000	29000	29000	33000	33000	33000	33000	33000	33000	33000	33000	30000	30000	30000	30000
	39th Engrs.											3680	13300	13300	13300	13300
	310th Engrs.						20000	20000	20000	20000	20000	20000	20000	26200	26200	26200

Appendix K

DAILY WATER SUPPLY CONSUMPTION (U. S. Gallons)

Month of November 1944

CO-ORD	UNIT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Q811692	405th Engrs.	31250	46300	33200	39500	50000	35900	34200	44600	43450	42900	42900	6000			
Q776690	405th Engrs.	43200	37050	38200	49050	42675	46350	46650	44450	43250	47150	45900	52050	55300	53675	57890
Q770700	405th Engrs.	48350	43800	46250	47700	47050	47900	49750	53550	51900	53650	48250	49650	48500	48700	55350
Q663806	405th Engrs.	37090	32695	34835	37750	40975	39220	38670	35670	35240	39250	39990	31940	31060	32250	33385
Q822910	405th Engrs.	31825	23600	18200	28350	20160	22215	24100	24450	29140	28900	32140	29650	33905	30800	31450
Q204806	405th Engrs.	30400	20520	30650	32300	25900	20850	28200	30770	24950	27850	25150	22825	25850	25050	22600
Q135705	405th Engrs.	98825	125565	89655	82445	78460	88330	85185	93875	78500	70810	69710	68120	74750	77430	74165
Q452837	405th Engrs.	9440	8500	6730	8915	78460	14845	18040	13120	16765	21180	24075	20940	11880	14715	9325
Q227977	405th Engrs.	5260	5500	6000	6400	6600	5450	9000	5330	4600	3450	2300				
U972848	405th Engrs.	21195	18195	18955	21510	18925	19265	20265	23520	23305	20865	23235	22200	23180	22840	20850
I447003	405th Engrs.													2140	3780	3660
I840070	405th Engrs.	33645	33840	26905	25385	36645	42300	38660	34515	33830	37715	39705	42185	37995	38410	37430
I870140	405th Engrs.	43105	42055	35080	46425	44380	40770	40650	33030	35170	31145	34355	43815	37935	48790	35995
I872119	405th Engrs.	14500	17950	20150	22900	23600	27275	23250	25300	24150	21150	21550	24400	23500	24250	25100
L907070	405th Engrs.	42800	38950	36450	42150	39350	30350	25900	24850	25600	21450	26600	25800	24800	27350	25050
Q784694	405th Engrs.	95685	99535	103475	91490	88770	82440	88980	96920	87465	83830	80420	95545	96610	96710	118575
Q784694	405th Engrs.		72000	168000	120000	84000										120000
Q820824	405th Engrs.	16800	10300	24000	18620	19020	24450	17720	15555	13815	16315	13360	18420	19535	16534	16320
Q418586	405th Engrs.	46800	40950	49200	50400	55200	38400	42000	42000	37800	39900	35700	41300	32400	42000	46200
Q513891	405th Engrs.													3260	14255	15805
UNIT HAULS	405th Engrs.	69600	72600	99500								97800	90400	102300	92600	101800
TANKER HAUL	405th Engrs.				92000	100800	99300	101000	88300	86300	95000					
UNIT HAUL	405th Engrs.	82500	81600	73300								92450	78600	105700	98000	104500
TANKER HAUL	405th Engrs.				111000	72200	67800	90200	88500	83500	88800					
UNIT HAUL	405th Engrs.	46800	43600	30100	20200	28300	24100	26100	21700	24000	18700	19000	19400	19000	16500	19700
TANKER HAUL	405th Engrs.	18600	19000	18300	25700	26000	25700	20400	20100	19000	18700	22700	23000	20800	21800	21100
	16th Engrs.	22000	22000	22000	24300	24300	24300	24300	24300	24300	24300	20280	24330	28345	23690	28635
	310th Engrs.	26200	26200	26200	27000	27000	27000	27000	27000	27000	27000	28300	28300	28300	28300	28300
	313th Engrs.	30000	30000	30000	31100	31100	31100	31100	31100	31100	31100	19400	19400	19400	19400	19400
	316th Engrs.	8010	8010	8010	4210	4210	4210	4210	4210	4210						
	109th Engrs.				21000	27000	9000	12000	14000	11000	12000	11000	11000	12000	11000	13000
	1108th Engrs.	2400	2400	2400	3300	3300	3300	3300	3300	3300	15000	15000	15000	15000	15000	15000
	39th Engrs.	13340	13340	13340	13734	13734	13734	13734	13734	13734	13000	13000	13000	13000	13000	13000
	19th Engrs.	6000	6000	6000	6200	6200	6200	6200	6200	6200	6200	6200	7000	7000	7000	7000

Appendix K

DAILY WATER SUPPLY CONSUMPTION (U. S. Gallons)
 Month of November 1944

CO-ORD	UNIT	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Q776690	405th Engrs.	62250	45050	53600	50800	57100	59100	59100	57400	80650	64350	59450	55500	63900	64650	60150
Q770700	405th Engrs.	58350	44150	42750	44200	42800	47200	56500	62300	63550	43200	49300	44650	48750	47680	48950
Q663806	405th Engrs.	17250	30200	28350	27900	29100	30850	27850	7500	28600	26350	28550	27750	27000	28500	28550
Q892947	405th Engrs.	37515	36555	35645	31990	33700	33550	35570	31310	33650	30930	29020	27935	28975	35155	29800
Q822910	405th Engrs.	24050	21235	22065	24400	23100	25650	32050	38055	36700	28825	29600	34695	35030	38400	38600
Q204806	405th Engrs.	20270	23700	23400	21200	23675	19850	23200	23500	27450	23450	23170	25700	22550	19720	26720
Q135705	405th Engrs.	87355	77965	70730	61615	59870	60695	62705	48895	61295	58335	51790	58295	55760	63005	53810
Q452837	405th Engrs.	20040	17035	14545	14840	13335	15720	19510	14115	23750	17495	22410	24615	26420	25950	26290
U972848	405th Engrs.	20660	19710	16515	22095	21045	21165	21370	18580	17405	17950	17120	20155	18415	18025	20505
L447003	405th Engrs.	5330	4290	5115	4360	4315	4600	4390	4545	4420	4340	3330	4000	3530	3745	3380
L840070	405th Engrs.	39490	39375	39430	40555	35700	36935	40910	40040	39365	45600	39560	42500	42445	39120	34140
L870140	405th Engrs.	28980	43720	32480	24205	31970	32910	35745	33195	36560	36035	25300	29385	31490	38965	32570
L872119	405th Engrs.	25500	22550	25700	23800	18200	24050	24800	24400	24050	22300	26800	23100	23450	26750	25250
L907070	405th Engrs.	21750	21200	20950	20950	25400	21200	20950	21500	19500	22000	23250	20800	18350	20250	22350
Q784694	405th Engrs.	110784	113755	113195	122030	116160	106615	117735	105590	50605	114190	112300	111960	110580	105425	113270
Q784694	405th Engrs.	180000				108000										
Q820824	405th Engrs.	21290	18398	17005	16745	13485	14045	12440	14585	10850	4705	5560	5460	4000	3670	
Q418586	405th Engrs.	45000	36000	39600	50400	54600	55000	50000	44000	46200	45000	45000	45000	54000	50000	50000
Q513891	405th Engrs.	17030	15555	15800	15885	18025	20310	18040	17720	18225	30340	21795	28235	29895	27875	27330
UNIT HAUL	405th Engrs.	109200	103900	110400	99400	105900	100100	98800	105300	83400	82600	75500	84300	83800	109400	84300
UNIT HAUL	405th Engrs.	107400	108200	84700	96100	105800	103800	117100	43100	20500	21800	26700	20400	20400	27400	24600
UNIT HAUL	405th Engrs.	14300	18700	17100	19000	20100	21100	23600	22500	21500	20400	22200	18200	18600	19000	19300
TANKER HAUL	405th Engrs.	20400	22400	24500	23100	20200	23900	22300	25300	23000	20200	23200	23200	22500	23200	26000
	16th Engrs.	27440	28695	26105	24840	30630	29790	31575	33775	30465	27800	27800	27800	27800	27800	27800
	310th Engrs.	28300	28300													
	313th Engrs.	19400	19400	26500	26500	26500	26500	26500	26500	26500	28800	28800	28800	28800	28800	28800
	316th Engrs.										3720	3720	3720	3720	3720	3720
	109th Engrs.	11000	11000	10900	10665	10900	11700	12000	12400	11500	11450	13250	12950	12850	13800	13400
	1108th Engrs.	15000	14500	14500	14500	14500	14500	14500	14500	17100	17100	17100	17100	17100	17100	17100
	39th Engrs.	13000	14000	14000	14000	14000	14000	14000	14000	14620	14620	14620	14620	14620	14620	14620
	19th Engrs.	7000	7000	7000	6500	6500	6500	6500	6500	7000	7000	7000	7000	7000	7000	7000
Q030903	317th Engrs.			1780	1850	2035	1510	1930	3055	1810	3165	1385	1635	1780	1185	1655
Q061824	317th Engrs.			800	440	505	995	980	995	810	1610	1235	1653	1345	1295	1500
Q209995	317th Engrs.			1775	2125	1855	2650	2315	2465	1545	2050	2900	3000	2750	2495	3565
Q231967	317th Engrs.			2000	1760	1150	1790	1050	1060	1300	1200	1400	1800	1240	1560	1050

Appendix K

DAILY WATER SUPPLY CONSUMPTION (U. S. Gallons)
Month of December 1944

CO-ORD	UNIT	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Q776690	405th Engra.	59500	57950	63900	66400	55200	53100	48500	56000	58550	58750	88650	63500	60450	54500	49950
Q770700	405th Engra.	38175	35350	29300	29350	28900	28950	33450	32100	32600	31955	30150	29900	30500	29135	33200
Q663806	405th Engra.	28350	29300	29350	28900	28950	31150	32500	36800	35050	36650	35450	29700	29700	30500	31150
Q892947	405th Engra.	56280	40500	51200	42500	42750	40040	39345	43290	38885	37625	46760	39060	41800	39465	41090
Q822910	405th Engra.	43250	41470	40045	40200	44050	41195	44720	33825	30350	30250	25600	32290	31200	28200	25000
Q204806	405th Engra.	22595	17605	20585	23070	15365	19775	17015	18045	20610	26780	30315	43900	40585	53260	45850
Q135705	405th Engra.	41750	51850	53400	50350	57340	50550	49250	64800	36950	54200	45650	55900	54200	73150	60600
Q452837	405th Engra.	10730	16695	12555	14980	13820	15290	13295	16450	12210	15320	11615	14120	15655	16430	11435
Q513891	405th Engra.	29170	26235	27215	27455	28430	28100	26460	28715	22585	25075	27470	27600	28250	26050	26495
U972848	405th Engra.	16100	12980	15045	12710	6685	10705	11015	13525	12300	14325	15295	16510	16155	18250	16705
L447003	405th Engra.	5110	4170	4500	4275	4925	4870	5605	4920	5195	5590	15925	11720	13160	12275	12220
L840070	405th Engra.	35740	49435	34550	35870	39485	32150	29230	29545	28745	37860	29210	37095	32740	33365	38280
L870140	405th Engra.	43945	32775	39265	46270	44860	40965	35230	35550	33375	33765	25060	34925	34990	32050	28375
L872119	405th Engra.	20200	21850	17600	17000											
L907070	405th Engra.	20700	21850	21100	21800	20000	18900	18550	18700	18105	17350	16500	20100	19500	20600	21200
Q807977	405th Engra.	6625	8650	1800	7500	8375	7600	6740	7800	6130	8410	7300	6960	5230	5375	5485
Q784694	405th Engra.	91620	82100	96180	108000	100810	86760	96170	100985	101030	101765	64145	118660	100460	110010	128430
Q418586	405th Engra.	50000	45000	50000	50000	50000	50000	50000	50000	35000	55000	60000	60000	62000	60000	55000
L862242	405th Engra.		1400	2100	3500	2100	1500	2300	2800		2800	2800	2800		2800	2100
L585116	405th Engra.	18165	18845	16910	17060	18960	19250	18685	15735	12555	13815	12000	14415	13490	10315	12775
TANKER HAUL	405th Engra.	98600	88900	100300	98700	89900	93000	95100	72800	106500	95800	106100	109400	101500	113100	96900
TANKER HAUL	405th Engra.	42700	47700	32000	24600	22400	21700	26300	28000	30800	32200	32100	32200	34400	39500	39100
TANKER HAUL	405th Engra.	44500	42400	38700	45000	43000	43100	34100	26600	27300	25200	28000	41600	34900	29800	34700
L868119						19480	11840	11495	25350	31745	20300	19370	19575	18620	19570	27335
	16th Engra.	26140	26140	26140	26140	26140	26140								38640	38640
	310th Engra.	23100	23100	23100	23100	23100	23100	18710	18710	18710	18710	18710	18710	18500	18500	18500
	313th Engra.	30340	30340	30340	30340	30340	30340	33730	33730	33730	33730	33730	33730	33730	27300	27300
	316th Engra.	8315	8315	8315	8315	8315	8315	6765	6765	6765	6765	6765	6765	6765	6765	12280
	109th Engra.	17200	17200	17200	17200	17200	17200	12960	12960	12960	12960	12960	12960	12960	5570	5570
	39th Engra.	16255	16255	16255	16255	16255	16255	10456	10456	10456	10456	10456	10456	10456	11040	11040
	19th Engra.	5960	5960	5960	5960	5960	5960	5960	8620	8620	8620	8620	8620	8620	8620	
	317th Engra.	6147	6147	6147	6147	6147	6147								17540	17540
	317th Engra.	4470	4470	4470	4470	4470	4470									
	B. E. P. 9th.					18340	18340	18340	18340	18340	18340				21140	21140

Appendix K

DAILY WATER SUPPLY CONSUMPTION (U. S. Gallons)
 Month of January 1945

CO-ORD	UNIT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Q776690	405th Engrs.	47700	55100	62050	57750	62900	64550	57350	55300	53450	64400	59300	57000	57950	57200	64100	55000
Q770700	405th Engrs.	28250	30200	29000	27435	26550	25800	26765	28600	27280	26700	26500	32450	28455	30570	28500	28970
Q663806	405th Engrs.	29600	32100	29500	32650	33100	25100	36200	36150	35100	34900	33700	32600	43150	32550	33550	34900
Q829947	405th Engrs.	33780	39985	39845	37800	39250	37200	37035	32540	37460	40910	38240	39270	37250	34465	42310	40215
Q822910	405th Engrs.	25700	26100	27050	27700	29150	27350	29860	29730	25950	31150	28450	29500	25050	27800	29000	30350
Q204806	405th Engrs.	53350	50300	53850	48345	50850	51300	57700	45500	50800	56000	47800	46300	48475	43550	48050	48800
Q135705	405th Engrs.	59750	41000	48500	56250	49450	55550	50750	67300	67000	67500	68150	61180	60500	80800	83900	79400
Q452837	405th Engrs.	12935	12030	20015	16975	10115	14230	15200	13200	17600	22230	24015	21025	30295	25825	26670	29155
Q513891	405th Engrs.	25360	29260	27150	24155	28325	24340	26075	27930	26375	24070	27370	27500	24635	29640	26757	28590
Q807977	405th Engrs.	5375	6485	5370	5150	5230	6570	5670	4310	4405	4800	5545	6050	7880	6650	7240	7550
U972848	405th Engrs.	16040	17365	17035	17085	18055	19560	18625	16975	17100	18210	19335	17615	17600	16150	16105	17880
L447003	405th Engrs.	11755	12780	11710	11720	12150	12540	12650	12300	11465	5651	6770	7105	7545	7215	7540	6885
L585116	405th Engrs.	11790	11400	12950	14210	10610	11525	12250	10965	13295	9085	11235	10650	10250	11550	12125	
L907070	405th Engrs.	21350	20650	22100	22900	21400	19150	19900	20200	21100	19950	19900	22050	18600	21100	20550	20500
L870140	405th Engrs.	34675	41670	26530	32745	26930	28220	20295	19800	8115	16900	20405	18300	18300	27595	27945	24730
L840070	405th Engrs.	29020	32685	42750	37705	38875	30240	42550	40295	38290	32170	29430	26570	34975	32080	40435	44890
L862242	405th Engrs.	2800	2100	1400	2100	2800	2800	2800	3600	2100	2800	2800	2800	2100	2100	2100	2800
L868119	405th Engrs.	28025	24495	27700	25375	27375	25050	19900	24300	23850	25450	26940	28945	21015	18840	27250	19320
Q784694	405th Engrs.	94540	112250	110600	110925	116580	117080	108640	104860	119890	107500	106200	118635	119510	126310	110480	104350
Q418586	405th Engrs.	50000	65000	60000	60000	62000	55000	60000	60000	55000	55000	50000	60000	60000	55000	50000	50000
TANKER HAUL	405th Engrs.	99600	109100	112700	112100	112700	108000	106200	101000	110100	100000	90400	108500	117600	98900	110000	111300
TANKER HAUL	405th Engrs.	47800	58900	26300	36600	28600	27100	28000	27900	26800	20000	25500	27000	24000	27300	30400	26500
TANKER HAUL	405th Engrs.	15400	15400	15400	14700	14000	14000	12600	14000	13300	16100	14700	13300	16100	19900	15400	17500
	9th B. E. F.	21140	21140	21140	21140	21000	21000	21000	21000	21000	21000	21000	21000	14140	14140	14104	14140
	16th Engrs.	38640	38640	38640	38640	38640	24060	24060	24060	24060	24060	24060	24060	23730	23730	23730	23730
	109th Engrs.													9570	9570	9570	9570
	109th Engrs.	5570	5570	5570	5570	6570	2900	2900	2900	16720	16720	16720	16720	16720	16720	16720	9640
	310th Engrs.	18500	18500	18500	18500	18500	17560	17560	17560	17560	17560	17560	17560	17560	18750	18750	18750
	313th Engrs.	27300	27300	27300	27300	27300	27300	26970	26970	26970	26970	26970	26970	27970	9390	9390	9390
	316th Engrs.	12280	12280	12280	12280	12280	13360	13360	13360	13360	13360	13360	13360	13360	14300	14300	14300
	317th Engrs.	16110	16110	16110	16110	12225	12225	12225	12225	12225	12225	12225	12225	12225	16240	16240	16240
	19th Engrs.	8570	8570	8570	8570	8570	8570	7890	7890	7890	7890	7890	7890	9230	9230	9230	9230
	39th Engrs.	9780	9780	9780	9780	9780	10640	10640	10640	10640	10640	10640	10640	11840	11830	11830	11830
	39th Engrs.	1260	1260	1260	1260	1260	3165	3165	3165	3165	3165	3165	3165	2260	2260	2260	2260
	39th Engrs.													331	331	331	331

Appendix K

DAILY WATER SUPPLY CONSUMPTION (U. S. Gallons)

Month of January 1945

CO-ORD	UNIT	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Q776690	405th Engra.	54850	63600	65550	69200	59800	65700	61350	62400	65000	63850	60550	64900	63050	61400	62600
Q770700	405th Engra.	30600	31630	28950	28410	29290	32075	33275	30265	32350	31370	27615	29290	26900	27790	32975
Q663806	405th Engra.	35400	32700	33250	34100	32800	35600	36300	30450	30800	31250	43450	36700	34580	35700	33800
Q892947	405th Engra.	41420	36240	39560	40590	31865	29085	34575	36065	34650	48590	36550	39540	41200	33350	33635
Q822910	405th Engra.	28250	29850	27520	27700	23900	28325	26400	32050	27650	10000	16600	29300	27500	28925	34450
Q204806	405th Engra.	49950	47050	51650	50100	46350	45845	45000	45300	37350	50100	53750	55350	52100	52650	50750
Q135705	405th Engra.	85750	80150	82200	70600	88200	77300	71050	73650	74875	86350	82300	82200	88600	81950	75550
Q452837	405th Engra.	25970	23065	17275	23260	24390	26330	23310	20435	27500	16430	24295	18380	20915	19215	23865
Q513891	405th Engra.	26450	22585	27355	24795	22030	25910	26100	25670	26135	22930	23235	23930	22290	23995	24660
U972848	405th Engra.	18190	17885	7280	12585	16110	16970	17600	15985	12360	16530	16705	16605	17230	16785	16675
L447003	405th Engra.	7375	7730	7730	7790	7705	7435	8030	7965	6135	5590	5210	4015			
I907070	405th Engra.	21100	21500	21700	22300	21700	20450	19250	18950	20100	22200	23900	23850	20900	22650	21150
L870140	405th Engra.	26050	30070	30330	30745	33130	32095	28635	34225	32080	31650	32555	37935	37620	22320	31830
L840070	405th Engra.	33860	42210	36570	40620	43725	38775	42045	40885	42165	42050	40710	40475	38060	38520	39395
Q807977	405th Engra.	6780	7380	7600	7800	6850	7540	7850	7850	7250	5800	7050	7350	7400	14860	10560
L862242	405th Engra.	2800	2800	2800	2100	2800	2800	2800	2800	2800	2800	3500	3500	2800	2800	2800
L868119	405th Engra.	22575	10250	22300	22540	19975	22525	19200	23075	21185	17300	20525	18220	19760	18815	19600
Q784694	405th Engra.	115410	103505	96525	117035	100780	97500	100210	99665	107335	106855	113805	126395	102810	100910	98000
Q418586	405th Engra.	50000	60000	50000	60000	50000	60000	62400	57600	62500	62300	62400	65000	65000	60000	60000
TANKER HAUL	405th Engra.	118500	111200	114700	108200	110800	101900	103300	109500	102000	104700	101900	99500	105100	106100	106000
TANKER HAUL	405th Engra.	27700	26800	26100	23000	24400	26100	26100	22800	24700	23600	23300	24000	29200	27700	24800
TANKER HAUL	405th Engra.	14700	18900	14700	15400	16800	16800	16100	16100	16100	12700	16100	16100	15400	17500	16100
	9th B. E. F.	14140	14140	14140	11250	11240	11240	11240	11240	11240	23330	23330	23330	23330	23330	23330
	16th Engra.	23730	23730	23730	21880	21880	21880	21880	21880	21880	23210	23210	23210	23210	23210	23210
	109th Engra.	9570	9570	9570	10000	10000	10000	10000	10000	10000	10000	8290	8290	8290	8290	8290
	109th Engra.	3780	3780	3780	6860	6860	6860	6860	6860	6860	6860	7290	7290	7290	7290	7290
	109th Engra.	5860	5860	5860	13710	13710	13710	13710	13710	13710	13710	13430	13430	13430	13430	13430
	310th Engra.	18750	18750	18750	23530	23530	23530	23530	23530	23530	23530	23530	28980	28980	28980	28980
	313th Engra.	9390	9390	9390	14020	14020	14020	14020	14020	14020	14020	13865	13865	13865	13865	13865
	316th Engra.	14300	14300	14300	7630	7630	7630	7630	7630	7630	7630	8775	8755	8755	8755	8755
	317th Engra.	16240	16240	16240	26020	26020	26020	26020	26020	26020	26020	34215	34215	34215	34215	34215
	19th Engra.	2050	2050	2050	2050	3790	3790	3790	3790	3790	3790	3790	4340	4340	4340	4340
	19th Engra.	9230	9230	9230	9780	9780	9780	9780	9780	9780	9780	7120	7120	7120	7120	7120
	39th Engra.	11850	11850	11850	12620	12620	12620	12620	12620	12620	12620	12360	12360	12360	12360	12360
	39th Engra.	2260	2260	2260	3380	3380	3380	3380	3380	3380	3380	3570	3570	3570	3570	3570
	39th Engra.	331	331	331	330	330	330	330	330	330	330	450	450	450	450	450
	1108th Engra.				4730	4730	4730	4730	4730	4730	4730	21930	21930	21930	21930	21930
	6th S. African E.											12860	12860	12860	12860	12860

Appendix K

DAILY WATER SUPPLY CONSUMPTION (U. S. Gallons)
Month of February 1945

CO-ORD	UNIT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Q776690	405th Engrs.	62950	57140	61050	59800	71380	65780	62900	60100	58750	56800	57550	51850	58450	63550	59550
Q770700	405th Engrs.	28320	29075	34450	35400	44900	33100	40390	32300	30200	27250	20400	20700	30150	34350	35100
Q663806	405th Engrs.	35550	35400	34900	33500	38900	34950	37100	37300	39200	36800	35000	38600	36500	37250	36650
Q892947	405th Engrs.	31165	36975	38395	42050	38995	43300	43610	43225	44100	40700	50465	40080	39150	37105	40180
Q822910	405th Engrs.	35000	37750	34350	34000	33660	31900	34265	32625	33680	32520	27700	31600	34650	30205	33750
Q204806	405th Engrs.	54500	50550	59340	49750	53600	53330	49700	50600	55945	47650	54325	46750	48850	55650	53275
Q135705	405th Engrs.	73800	93650	76350	78100	79600	71850	77550	64950	66250	73100	60550	70400	67350	62350	63350
Q452837	405th Engrs.	26715	24120	17820	20915	21905	27555	34220	24955	10370	24715	23970	16155	30240	31375	27035
Q513891	405th Engrs.	25210	25415	27280	24165	28335	26995	27120	27955	21975	28160	26955	31250	27450	24545	26100
Q411842	405th Engrs.	800000	800000	750000	765000	725000	700000	835000	835000	800000	825000	875000	890000	890000	850000	850000
Q972848	405th Engrs.	16125	15505	14890	13270	16690	13600	17155	17450	17900	16430	23685	19915	17960	18275	19275
L907070	405th Engrs.	20200	20000	18450	15550	17250	20250	20300	21100	21150	19550	20350	28000	27000	23000	17800
L870140	405th Engrs.	28420	30570	31610	38885	27925	32135	33945	34780	30325	26680	26695	27755	27410	29835	24885
L840070	405th Engrs.	39005	30925	32735	34635	30640	29150	29150	33370	35885	30335	33935	31420	32455	39025	28565
L868119	405th Engrs.	17235	19550	22880	20175	23825	20535	22985	23125	24300	19450	17150	28155	28225	22950	28450
Q807977	405th Engrs.	9395	9800	10390	12750	11850	12625	13405	8125	12625	12600	12850	13395	12825	11980	11920
L862242	405th Engrs.	2800	3600	2800	5200	2800	2800	3500	4300	3500	3500	6500	7400	10200	6800	6400
L726096	405th Engrs.															1000
Q784694	405th Engrs.	107985	104185	87505	106910	67680	103720	111110	100210	96340	103315	100885	114145	105890	114120	100285
Q418586	405th Engrs.	65000	60000	65000	65000	65000	62000	65000	65000	60000	60000	60000	65000	65000	65000	65000
Q792716	405th Engrs.			60000	18000	8000	18000	15000	15000	8000	22000	2000		8000	12000	9000
Q784694	405th Engrs.				60000											
Q785720	405th Engrs.	25200	9000	27000	46200	52800	57600	33000	36000	30000	30000	14000	33000	42000	43000	43000
TANKER HAUL	405th Engrs.	142000	106000	101700	98700	100450	105900	103000	99300	98500	107200	113500	100200	107300	101000	117800
TANKER HAUL	405th Engrs.	27800	27800	27200	31500	33200	29400	40000	39400	28900	35100	33900	34000	37400	33500	31300
TANKER HAUL	405th Engrs.	14700	16800	16800	19600	21700	20300	21700	21000	18200	21000	21700	23100	22400	20300	21000
S.A.	6th Engrs.	12860	12860	13570	13570	13570	13570	13570	13570	13570	13570	13570	13570	13570	13570	13570
	9th B.E.F.	23330	23330	19870	19870	19870	19870	19870	19870	19870	19625	19625	19625	19625	19625	19625
	16th Engrs.	23210	23210	22627	22627	22627	22627	22627	22627	22627	22370	22370	22370	22370	22370	22370
	19th Engrs.	7120	7120	7120	7980	7980	7980	7980	7980	7980	7980	7980	7980	7455	7455	7455
	19th Engrs.	4340	4340	4340	3755	3755	3755	3755	3755	3755	3755	3850	3850	3850	3850	3850
	39th Engrs.	12360	12360	12360	11470	11470	11470	11470	11470	11470	11750	11750	11750	11750	11750	11750
	39th Engrs.	3570	3570	3235	3235	3235	3235	3235	3235	3235	3285	3285	3285	3285	3285	3285
	39th Engrs.	450	450								1380	1380	1380	1380	1380	1380
	109th Engrs.	8290	8290	6570	6570	7580	6570	6570	6570	6570	4715	4715	4715	4715	4715	4715
	109th Engrs.	7290	7290	4430	4430	4430	4430	4430	4430	4430	6930	6930	6930	6930	6930	6930
	109th Engrs.	13430	13430	14430	14430	14430	14430	14430	14430	14430	11645	11645	11645	11645	11645	11645
	126th Engrs.			1460	1460	1460	1460	1460	1460	1460	800	800	800	800	800	800
	310th Engrs.	28980	28980	31430	31430	31430	31430	31430	31430	31430	30275	30275	30275	30275	30275	30275
	313th Engrs.	13865	13865	14170	14170	14170	14170	14170	14170	14170	14665	14665	14665	14665	14665	14665
	316th Engrs.	8755	8755	12140	12140	12140	12140	12140	12140	12150	22860	22860	22860	22860	22860	22860
	317th Engrs.	34215	34215	17460	17460	17460	17460	17460	17460	17460	12110	12110	12110	12110	12110	12110
	1108th Engrs.	21930	21930	15270	15270	15270	15270	15270	15270	15270	51645	51645	51645	51645	51645	51645

Appendix K

DAILY WATER SUPPLY CONSUMPTION (U. S. Gallons)
Month of February 1945

CO-ORD	UNIT	16	17	18	19	20	21	22	23	24	25	26	27	28
Q776690	405th Engrs.	59000	61200	60900	56350	63000	61700	60400	63500	58550	60900	58850	63300	65150
Q770700	405th Engrs.	37100	34300	38100	33150	36850	36200	33800	34100	31900	39650	36700	38500	39900
Q663806	405th Engrs.	37100	41000	47000	38250	49450	41400	49300	43200	43900	43700	41500	45600	46500
Q892947	405th Engrs.	35995	30055	35625	34275	32940	36650	38830	39615	32850	33970	32160	29200	34655
Q822910	405th Engrs.	26300	28000	28350	25100	28500	28875	26650	28400	29200	26365	27785	26650	31950
Q204806	405th Engrs.	45400	23200	20975	20700	41250	41200	44250	47150	51350	41100	56750	47350	46850
1135705	405th Engrs.	57100	52900	53650	57600	51900	54250	60500	59000	61700	53650	60450	53400	57950
Q452837	405th Engrs.	24790	18355	18035	19420	18410	21885	20685	21435	21500	18670	17625	21880	19880
Q513801	405th Engrs.	52820	45830	20795	26445	23505	24155	21945	23515	24895	25930	29975	24765	24705
Q411842	405th Engrs.	850000	890000	825000	830000	850000	850000	875000	825000	830000	842000	810000	825000	850000
Q972848	405th Engrs.	16240	15305	17060	15655	16810	17585	16065	17435	14825	14205	13020	17150	14870
1586142	405th Engrs.									2100	3960	4060	7535	9170
1907070	405th Engrs.	19050	17600	16700	18100	18800	20000	16450	19200	17750	19150	18150	18800	18300
1870140	405th Engrs.	22750	26120	24820	20720	26290	25785	25715	28575	32585	29460	30550	26350	27830
1840070	405th Engrs.	24300	25120	24770	21035	27910	25125	25815	35730	35175	25480	36300	25585	33715
1868119	405th Engrs.	27000	29750	22050	25350	19600	25805	25380	22800	27150	31950	28100	25275	27650
Q807977	405th Engrs.	12100	12200	10100	8850	8150	9350	9900	10175	11600	9650	11700	8125	11000
1862242	405th Engrs.	9400	9400	9400	10100	10800	12400	7800	7000	10800	8400	9100	9300	9200
1726096	405th Engrs.	5000	3000	3000	3000	3000	3000	3000	3000			4100	7000	9175
Q418586	405th Engrs.	60000	60000	60000	50000	60000	65000	65000	65000	60000	60000	60000	65000	65000
Q784694	405th Engrs.	108650	110420	94535	105135	92140	107965	107810	101395	103810	103230	104430	115250	99655
1792716	405th Engrs.				17000	14000	15000		8000		15000	15000		9000
Q785720	405th Engrs.	30000		51000	50000	48000	48000	48000	48000	48000	48000	36000	48000	51000
TANNER HAUL	405th Engrs.	136700	114300	117700	94500	100200	107300	105900	108600	104000	102700	105000	111600	109900
TANNER HAUL	405th Engrs.	31200	31400	28500	28900	29100	21500	27800	29200	35200	25800	26700	41800	43400
TANNER HAUL	405th Engrs.	21000	17500	17500	18900	17500	17500	17500	16800	19600	18200	23100	23100	25200
	6th S.A. Engrs.	13570												
	9th B.E.F.	19625	29865	29865	29865	29865	29865	29865	29770	29770	29770	29770	29770	29770
	16th Engrs.	22370	18190	18190	18190	18190	18190	18190	26430	26430	26430	26430	26430	26430
	19th Engrs.	7455	11100	11100	11100	11100	11100	11100	8000	8000	8000	8000	8000	8000
	19th Engrs.	3850	1920	1920	1920	1920	1920	1920	3740	3740	3740	3740	3740	3740
	39th Engrs.	11750						24220	24220	24220	24220	24220	24220	24220
	39th Engrs.	3285												
	39th Engrs.	1380	4080	4080	4080	4080	4080	4080	4340	4340	4340	4340	4340	4340
	109th Engrs.	4715	6430	6430	6430	6430	6430	6430	8360	8360	8360	8360	8360	8360
	109th Engrs.	6930	5180	5180	5180	5180	5180	5180	5360	5360	5360	5360	5360	5360
	109th Engrs.	11645	14420	14420	14420	14420	14420	14420	10570	10570	10570	10570	10570	10570
	126th Engrs.	800	745	745	745	745	745	745	745	4657	4675	4675	4675	4675
	310th Engrs.	30275	29540	29540	29540	29540	29540	29540	29540	38235	38235	38235	38235	38235
	313th Engrs.	14665	16410	16410	16410	16410	16410	16410	16410	16410	15705	15705	15605	15705
	316th Engrs.	22860	22860	22860	27520	27520	27520	27520	27520	27520	19765	19765	19765	19765
	317th Engrs.	12110	14295	14295	14295	14295	14295	14295	14295	14295	17470	17470	17470	17470
	1108th Engrs.	51645	14555	14555	14555	14555	14555	14555	14555	14555	12760	12760	12760	12760

APPENDIX L

ENGINEER ROUTE REPORT NO. 3

This is a sample Engineer Route Report based on a study of air photos and prepared by the Engineer Photo Interpreter. These Route Reports were issued for all main roads in prospective Fifth Army Areas. The original classification " SECRET " has now been removed.

S E C R E T
12 JULY 44

ENGINEER PHOTOGRAPHIC INTELLIGENCE SECTION
FIFTH ARMY PHOTO CENTRE

ENGINEER ROUTE REPORT NO. 3

Highway No. 12 from LUCCA to MODENA.

GENERAL:

Highway No. 12 is a 2 lane hard surface road having a macadam surface 16 to 18 feet wide and an over all width including shoulders of 20 to 24 feet. It passes over extremely mountainous terrain and curves in the vicinity of PONTE RICCHIASASS and MEZZOLATO limit it to vehicles with 45 foot turning radius.

The terrain over which this road passes is very rugged. It follows along the SERCHIO Valley through the mountains and is cut by numerous canyons, gullies and small drains. Along this section the road is corniced at numerous points and can be blocked by craters as bypassing is not possible due to the steep dissected terrain. The mountains in the southern section consist of a mixture of out crops, varying from limestone to sand stone with occasional out crops of clays and shale. Bulldozing should be fairly easy where bulldozing is required. These mountains are both tree covered and cultivated. The northern section of the road from LAMA to MODENA passes over rolling to flat cultivated terrain. There are very few streams in this section and movement off the road will be fairly good.

There are about 45 bridges and numerous smaller culverts on this road that are likely sites for demolition. Two bridges have been destroyed (Partisan activity) and one damaged. There are 4 bridges on this route that have span lengths greater than 150 feet. One of these will require a bridge for the initial reopening of the route.

If complete demolition is carried out on this road from 16 to 25 days of Engineer work will be required to reopen it. The construction of 16 bridges will be necessary for the initial reopening. Material necessary for construction will be 1500 feet of Bailey bridge, 250 feet of trestle bridge, culverts and tracking material

DETAILS:

1. 105/IV/215880 Bridge over gully. Single span concrete, 30 ft overall length and 20 ft. high. The gully has V-shaped banks of soft material. The road is corniced and this is a built up area. Will be very difficult to bypass and will probably require a bridge. No alternate route.
12PRB 90 3056 - 7
2. 105/IV/194893 Bridge over flume. Single span concrete, 75 ft. span and 5 ft. high. The flume has vertical masonry banks. The wet gap is 50 ft. wide. The bridge is built on a skew to the flume. A bridge will be required. No alternate route.
12PRB 90 3058 - 9
3. 105/IV/227928 Bridge over gully. Single span concrete, length 50 overall length and 10 ft. high. The gully has a sandy channel and low banks of soft material. No obstacle can be initially crossed above bridge.
12PRB 90 4108 - 9
4. 105/IV/234933 Bridge over gully. Single span concrete, 25 ft. span length, 60 ft. overall length and 15 ft. high. The gully has sloping banks of soft material. 1 hour of bulldozing will be required for a bypass above the bridge. No alternate route.
12PRB 90 4109 - 10
5. 105/IV/237945 Bridge over gully. Single span concrete, 25 ft. span length, 75 ft. overall length and 10 ft. high. The gully has low sloping banks of soft material. 1/2 hour of bulldozing will be required for a bypass above the bridge. Probably no obstacle to combat vehicles.
12PRB 90 3110 - 11
6. 97/III/245965 Bridge over gully. Single span concrete, 35 ft. span length, 75 ft. overall length and 10 ft. high. The gully has a sandy channel and banks of soft material. 1 hour of bulldozing will be required for a bypass above the bridge. No obstacle to combat vehicles.
12PRB 90 4138 - 9

Appendix L

E.R.R. NO. 3 12 July 44 (cont'd).

7. 97/III/259963 Bridge over stream, multiple span concrete, 140 ft. overall length and 15 ft. high. The stream has sloping and steep banks of soft material. The channel is braided and gravelly, with a width of about 100 ft. 1 hour of bulldozing will be required for a bypass above the bridge.
12PRB 90 4137 - 8
8. 97/III/266965 Bridge over gully. Single span concrete, 45 ft. span length, 75 ft. overall length. The gully has sloping banks of soft material. About 2 hours of bulldozing will be required for a bypass 100 yards above the bridge. No alternate route.
12PRB 90 3135 - 6
9. 97/III/290967 Bridge over gully. Single span concrete, 50 ft. span length, 70 ft. overall length and 25 ft. high. The gully has steep banks of soft material. Will be difficult to bypass due to road being corniched on the south and buildings. Bypass will require about 3 hours of bulldozing. No alternate route.
12PRB 90 4134 - 5
10. 97/III/305981 Bridge over gully blown, resulting gap 75 ft. long and 20 ft. high. Gully has steep banks and mountains come down to the road. A bridge will be required. No alternate route. Road closed to vehicles.
12PRB 90 4133 - 4
11. 97/III/315997 Bridge over T. LIMA blown. Single span masonry arch, 90 ft. span length, 150 ft. overall length and 60 ft. high. The stream has steep banks of soft material. The blown gap is 60 ft. wide. A bridge will be required. Road closed to traffic. No alternate route.
12PRB 99 4099 - 100
12. 97/III/323998 Bridge over stream. Multiple (?) span masonry or concrete, 60 ft. span length, 150 ft. overall length and 35 ft. high. The stream has a braided gravelly channel and steep banks of soft material. A bridge will be required. No alternate routes.
12PRB 99 4100 - 1
13. 97/III/336005 Bridge over gully. Single span concrete, 35 ft. span length, 75 ft. overall length and 20 ft. high. The gully has V-shaped banks of soft material. 3 hours of bulldozing will be required to prepare a bypass above the bridge.
12PRB 99 4102 - 3
14. 97/III/344004 Bridge over gully. Single span concrete, 25 ft. span length and 15 ft. high. The gully has V-shaped banks of soft material. About 1 hour of bulldozing will be required. No alternate route.
12PRB 99 4103 - 4
15. 97/II/368002 Bridge over gully. Single span masonry or concrete, 80 ft. overall length and 30 ft. high. The gully has steep banks of soft material. The channel width is 30 ft. wide. A bridge will be required. No alternate route.
12PRB 99 4103 - 4
16. 97/II/373003 Bridge over gully. Single span concrete, length, 55 ft. overall length and 25 ft. high. The gully has V-shaped banks of soft material. 3 hours of bulldozing will be required.
12PRB 99 4104 - 5
17. 97/II/374003 Bridge over ravine. Single span concrete, length, 95 ft. overall length and 25 ft. high. The ravine has V-shaped banks of soft material. 3 hours of bulldozing will be required.
12PRB 99 4104 - 5
18. 97/II/384999 Bridge over canyon. Single span concrete, length, 150 ft. overall length and 50 ft. high. The canyon has V-shaped banks of soft material. The west abutment damaged by demolition but bridge repaired. A bridge will be required. No alternate route.
12PRB 99 4105 - 6
19. 97/II/386999 Bridge over ravine. Single span concrete, length, 70 overall length and 20 ft. high. The ravine has V-shaped banks of soft material. 3 hours of bulldozing will be required for a bypass above the bridge. No alternate route.
12PRB 99 4105 - 6
20. 97/II/387999 3 bridges and culverts over gullies. Road is corniched and bulldozing will be required.
12PRB 99 4105 - 6

E.R.R. No. 3 12 July 44 (cont'd).

21. 97/II/390998 Bridge over ravine. Single span concrete, 80 ft. overall length and 50 ft.? high. The gully has V-shaped banks of soft material. A bridge will be required. No alternate route.
12PRB 99 4105 - 6
22. 97/II/397002 Bridge over gully. Single span concrete, 65 overall length and 20 ft.? high. The gully has V-shaped banks of soft material. 3 hours of bulldozing will be required for a bypass above the bridge. No alternate route.
12PRB 99 4106 - 7
23. 97/II/397003 Bridge on curve over canyon. Single span masonry or concrete, 120 overall length and 40 ft. high. The canyon has V-shaped banks of soft material. A bridge will be required. If the complete bridge is destroyed only 40 ft. launching area will be available for the construction of a bailey bridge. No alternate route.
12PRB 99 4106 - 7
24. 97/II/409015 2 culverts over gullies. 1 hour of bulldozing will be required.
12PR 771 4091 - 2
25. 97/II/409020 Bridge over gully. Single span concrete or masonry 90' overall length and 25 ft. high. The gully has V-shaped tree covered banks of soft material. 2 hours of bulldozing will be required above the bridge.
12PR 771 4091 - 2
26. 97/II/411028 Bridge over gully. Single span concrete, 50 ft. span length, 100 overall length and 20 ft.? high. The gully has V-shaped banks of rocky material. The road along this section is corn-iched and bypassing will be extremely difficult. A bridge will be required. No alternate route.
12PR 771 3091 - 2
27. 97/II/411031 Bridge over ravine. Single span concrete, 50 ft. span length, and 25 ft.? high. The gully has vertical banks of rocky material. The road is corniched and a bridge will be required.
12PR 771 3091 - 2
28. 97/II/396067 Bridge over P. SESTAIONE, 2 span concrete, 200 ft. span length, 375' overall length and 140 ft. high. The stream flows through a narrow tree lined canyon. The channel is braided gravelly and 75 feet wide. A bridge will be required, as there are no suitable bypass sites. No alternate route.
12PR 771 3088 - 9,
29. 97/II/376090 2 culverts, over gullies. About 1 hour of bulldozing will be required.
12PR 771 3085 - 6
30. 97/II/370093 Road passes through a dense forest and can be blocked by felled trees. No bridge
to 97/III/329114 details.
12PR 771 3084 - 5
31. 97/III/329114 Bridge over gully. Single span masonry or concrete length, 75 ft. overall length and 15 ft.? high. The gully has tree covered V-shaped banks of soft material. 2 hours of bulldozing will be required. No stereo cover.
12PR 771 3081
32. 97/III/327116 Bridge over gully. Single span concrete or masonry, 75 ft. overall length and 15 ft.? high. The gully has tree lined V-shaped banks of soft material. 2 hours of bulldozing will be required, for a bypass above the bridge.
12PR 771
33. 97/III/327116 Culverts, some bulldozing will be required.
to 314140 12PR 771
34. 97/III/314140 Bridge over canyon. 3 (?) span concrete, 270 ft.? span length, 375 ft. overall length and 65 ft. high. The canyon has V-shaped banks of soft material. Extremely difficult to bypass. 8 hours of bulldozing will be required for a steep bypass above the bridge.
12PR 771 3078 - 9
35. 97/IV/315147 Bridge over gully. Single span concrete or masonry, 35 ft. span length, 90 ft. overall length and 30 ft. high. The gully has steep banks of soft material. 3 hours of bulldozing will be required for a bypass above the bridge.
12PR 771 3077 - 8

Appendix L

E.R.R. No. 3 12 July 44 (Cont'd).

36. 97/IV/316150 Bridge or culvert over gully. Single span masonry or concrete, 25 ft. span length, 50 ft. overall length and 15 ft. high. The gully has steep banks of soft material. About 1 hour of bulldozing will be required for a bypass above the bridge.
12PR 771 3077 - 8
37. 97/IV/299175 Bridge over T. TAGLIOLE, 4 span concrete, 350 ft. span length, 440 ft. overall length and 35 ft. high. The stream has a braided channel and sloping banks of soft material. 4 hours of bulldozing and track laying will be required for a bypass above the bridge. No alternate route.
NP 239 4102 - 3
38. 97/IV/296181 Bridge over R. PERTICARO, 3(?) span masonry arch, 155 ft. span length, 180 ft. overall length and 45 ft. high. The stream has sloping banks of soft material, and a gravelly braided 100 ft. wide, with very little water, 6 July. 4 hours of bulldozing will be required for a steep bypass above the bridge. No alternate route.
NP 239 4103 - 4
39. 97/IV/298187 Bridge over gully. Single (?) span, masonry arch? 50 ft. (?) span length, 145 ft overall length and 50 ft. high. The gully has V-shaped banks of soft material. A bridge will be required as this is a built up area with no suitable bypass sites.
NP 239 4104 - 5
40. 97/IV/291191 Bridge over stream. Single span masonry arch, 30 ft. span length, 145 overall length and 35 ft. high. The stream has steep, tree covered banks of soft material. A bridge will be required as there are no suitable bypass sites.
12PR 771 4073 - 4
41. 97/IV/295200 Bridge over gully. Single span masonry arch, 35 ft. span length, 110 ft. overall length and 30 ft. high. The gully has V-shaped banks of soft material. 4 hours of bulldozing will be required for a bypass above the bridge.
12PR 771 4073 - 4
42. 97/IV/296201 Bridge over gully. Single span masonry arch, 25 ft. span length, 90 ft. overall length and 60 ft. high. The gully has V-shaped banks of soft material. A bridge will be required. No alternate route.
12PR 771 4073 - 4
43. 97/IV/299200 Bridge over gully. Single span masonry arch, 25 ft. span length, 75 ft. overall length and 15 ft. high. The gully has V-shaped banks of soft material. 1 hour of bulldozing will be required above bridge.
12PR 771 4073 - 4
44. 97/IV/306213 Bridge over gully. Single span masonry arch, 35 ft. span length, 100 ft overall length and 30 ft. high. The gully has V-shaped banks of soft material. 3 hours of bulldozing will be required above the bridge.
12PR 771 3071 - 2
45. 97/IV/306217 Bridge over gully. Single span masonry arch, 35 ft. span length, 110 ft. overall length and 50 ft. high. The gully has V-shaped banks of soft material. 3 hours of bulldozing will be required above the bridge.
12PR 771 3071 - 2
46. 97/IV/312228 Bridge over gully. Single span masonry arch, 35 ft. span length, 125 ft. overall length and 25 ft. high. The gully has V-shaped banks of soft material. 2 hours of bulldozing will be required above the bridge.
12 PR 771 3069 - 70
47. 97/IV/309238 Bridge over gully. Single span masonry arch, 50 ft. span length, 109 ft. overall length and 50 ft. high. The gully has V-shaped banks of soft material. A bridge will be required. The span length of this bridge appears to have been destroyed by demolition and repaired.
12PR 771 3069 - 70
48. 97/IV/466295 Bridge over gully. Single span masonry arch, 30 ft. span length, 125 ft. overall length and 40 ft. high. The gully has V-shaped banks of soft material. Combat vehicles can cross at cart crossing 100 yards below bridge. A bridge will be required to reopen the road.
12PR 771 3052 - 3

E.R.R. No. 3 12 July 44 (Cont'd).

/s/ Henry L. Clark
HENRY L. CLARK
1st Lt., C.E.
Fifth Army Photo Center

DISTRIBUTION LIST 'E'

ANNEX :

On all Engineer Route Reports and Engineer Interpretation Reports the following conditions apply:

1. Bridge length given or lengths over spans. Unless otherwise stated, this length also indicates the width of the stream or gully as well as the probable blown gap.
2. Unless as stated otherwise, the streams and gullies may be considered dry.
3. Bridge widths are only given when bridge is extremely narrow.
4. Rail crossings are only discussed where a road over-pass exists.
5. Very small gullies and culverts are omitted.
6. Bulldozing estimates are based on a D-7 angledozer and a one-way by pass.
7. All measurements are subject to up to 20% error.
8. Bypass is based on dry weather conditions. Bridges or suitable culverts will be required for all-weather crossings.

APPENDIX M

SPECIAL ENGINEER REPORT

This is a sample River Study based on air photos and prepared by the Engineer Photo Interpreter. These were issued for all large rivers in prospective Fifth Army Areas. The original classification "SECRET" has now been removed.

S E C R E T
24 Sept. 44ENGINEER AND MILITARY GEOLOGY SECTION
FIFTH ARMY PHOTO CENTER

SPECIAL ENGINEER REPORT

PO RIVER from 74/390055 to and inclusive of bridge at 63/869064

Source: 682A/43 22 Sept.

NOTE:

This report is a summary of all previous PO RIVER reports in this area and includes all new developments along the PO. This report supersedes all previous reports along this section of the PO.

DATA: "STRATEGIC ENGINEERING STUDY NO. 59."

The RIVER PO is 420 miles long and drains a basin of 26,800 square miles. Average maximum discharge 182,500 cu. ft. per sec, average minimum 5,500 and a mean discharge of 60,700 cu. ft. per sec. The maximum recorded discharge was 315,000 cu. ft. per sec. in 1917. The River is leveed from CREMONA to its mouth. In places the levees are several miles apart to permit enlargement of channels during floods. The lower PO has a channel 650 to 1600 ft. wide.

The PO has a fairly regular discharge with two high water periods, June and November. Flood stages are 20 to 30 ft. above lower water stage. Sudden floods in the basin are uncommon, but unusually high stages may occur every few years when heavy summer rains coincide with high water from melting Alpine snows.

The PO is navigable up to the junction of SESIA RIVER 337 miles up-stream: 87 miles by boats up to 180 tons; remainder by smaller boats.

GENERAL:

The river along this stretch has a wet gap varying from 655 to 2300 ft with an average width of 1000 ft. The banks are usually 15 to 20 feet high and slope at 1 to 2. In small areas the banks have gentle slopes. Levees 15 to 20 ft high with macadam roads on top, parallel the river. At some points they form the bank. Inside the levees and along the river banks in dense forest. A good network of single and double lane roads exist inside of the levees.

River crossings will be limited to floating bridges and ferries. Numerous ferry landings and bridge sites exist along this stretch and are in use at present. These furnish the best crossing sites as they are located where the channel is narrow and tie in with the best road net.

The permanent bridges, other than pontoon, have been destroyed by bombs. Ground reports state that the permanent pontoon bridges can not be used during high water stages. Due to the width of wet gaps, ferries are used extensively both by civilians and the Enemy.

DETAILS:

I. 74/388057 to 74/398059 Ferry in use. On North bank are ferry site prepared. On South bank 3 sites prepared. Only 2 ferry boats of vehicle size can be seen. Ferry is 4000 ft long as it angles across river. This is not a suitable bridge site. 3008- 9

II. 62/394076 Ferry sites prepared. Several small boats and one 190 ft barge are tied near the site. South approach runs out on breakwater. Wet gap is 1430 ft. This is not a suitable bridge site. 3011 - 2

III. 62/376119 Three ferries tied to Island in river appear to be spares. No visible approaches along river. 3021 - 2

IV. 62/421117 Ferry crossing, possible site for the construction of a floating bridge or ferry crossing. Wet gap and channel width 1040 feet. Banks 10 to 15 feet high and slope at 1 to 1. Approach roads single lane dirt or gravel, 2 lane macadam road follows levees on North bank. Distance between levees 2600 feet. Trees inside levee on the South will furnish good cover. Suitable site for the construction of floating bridges or ferry crossings. Good working area on the South bank. Poor road net on the South. 3029 30

Appendix M

S.E.R. Con't.

V. 62/445114 Railway bridge, single track, 7 span, through truss bridge. Span length are 155' 225' 208' 208' 208' 180'. Total length 1400 feet. Spans 5, 6 and 7 are over wide sandbar on North bank of river. No 6 span has been dropped at North end of span by bombings. Trackage indicate that foot troop and possibly light traffic are using the dropped span as a ramp to get on the overwater, undamaged spans.

3033 - 4

VI. 62/447115 Pontoon bridge destroyed by bombs. Suitable site for construction of a floating bridge or ferry crossing.

Wet gap 700 feet wide
Channel 1060 feet wide
San bar extends out into the channel from the North bank 360 feet.
Distance between levees 2000 feet.

Approach on South cratered by bombs for 125 feet, on the North for 560 feet. Approach roads lead onto 2 lane macadam surface roads on top of levees.

Suitable site for the construction of a floating bridge or ferry crossing. Bulldozing will be required to repair the approach roads. Working area restricted by bank slopes and levee on the South.

3034 - 5

VII. 62/449114 Ferry crossing suitable site for a floating bridge or ferry crossing.

Wet gap and channel width 1065 ft.
Distance between top of banks 1200 feet.
Banks 20 to 30 feet high and slope at 1 to 2.
Bank approaches 2 lane gravel or dirt. 2 lane macadam roads follow the top of the

levees.

Suitable site for the construction of a floating bridge or ferry crossing. Working area on the South bank restricted by levee and bank slopes.

3034 - 5

VIII. 62/485107 Military crossing site under construction. Suitable site for construction of a floating bridge or ferry crossing.

Wet gap 875 feet wide.
Channel width 1400 ft.
Sanbars extend out into the channel 115 ft on the South and is tree covered; 460 ft. on the North and is bush covered.

The banks have gentle slopes onto the sandbars.

The approach roads (under construction) lead onto single lane dirt roads which join the 2 lane macadam roads on top of the levees. Suitable net for 2 way traffic.

Trees in both banks furnish good cover.

Suitable sites for construction of a floating bridge or ferry crossing. Working area restricted by trees and levee on the South bank.

3041-2

IX. 62/515113 Pontoon bridge site, bridge has been dismantled due to bombing and moved down streams. Suitable site for a floating bridge or ferry crossing.

Wet gap 1050 ft. wide.
Channel width 1370 ft. wide.

South bank 10 to 15 feet high and near vertical levee parallels bank. North bank low and sloping onto a sandbar. Sandbar extends out into channel on the North for 320 ft.

The approach roads are 2 lane macadam or gravel leading onto 2 lane macadam roads that follow top of levees. Trees inside of levee on the South will furnish good cover.

A suitable site for the construction of a floating bridge or ferry crossing. The South approach can be blocked by crateres but can be repaired with bulldozing.

3046 - 7

X. 62/520118 Pontoon bridge and ferry in use. pontoons dispersed. Good bridge and ferry site. Bridge is dispersed during day and reassembled at night.

Wet gap and channel width 675 ft.
Distance between top of banks 715 ft.
Banks 10 to 15 ft high and slope at 1 to 1.

The South approach roads are single lane dirt or gravel roads which run on a dirt fill to the landing bays. A 2 lane macadam road follows the top of levee on the South bank.

The North approach roads are single lane dirt roads leading to the 2 lane macadam road on top of levee.

Suitable site for the construction of a floating bridge or ferry crossing. The approach on the South can be blocked by crateres but repairs can be made with bulldozing.

3047 - 8

- XI. 62/548120 Small ferry in use. Good bridge and ferry site.
Wet gap is 860 ft.
Distance between tops of banks 1050 ft.
Banks are 10 to 15 ft high and slope at 1 to 2.
Approaches are one lane dirt roads leading to one lane dirt roads on top of levees.
3090 - 1
- XII. 62/566128 Prepared ferry sites and possible floating bridge or ferry crossing site. Considerable camouflage is being used on 2 ferries and approaches.
Wet gap and channel width between the bank approaches 920 to 1030 feet.
Distance between top of banks 970 to 1120 ft.
The banks are 15 to 25 ft high and slope at 1 to 1.
The approach road on the East is a 2 lane macadam road following the top of the levee.
The 2 approach roads on the West are single lane with dirt and or macadam surface.
Trees inside of levees on both banks furnish good cover.
Good ferry crossing and bridge site.
3094 - 5
- XIII. 62/587140 Pontoon bridge in use (pontoons dispersed as much as a mile in each direction). Best bridge site along this stretch. Bridge is assembled and used at night.
Wet gap and channel width 715 ft; distance between top of banks 800 ft.
North bank 20 to 25 ft high and slopes at 1 to 2. The South bank is 10 to 15 ft high and has gentle slope.
Levee 15 ft high follows along North bank. Levee 800 ft back from South bank. Two lane macadam roads on top of both levees.
Approach road on South 2 lane tarmac; on North 2 lane macadam.
Dense growth of trees inside of levee on South will furnish good cover.
3097 - 8
- XIV. 63/648122 Ferry in use. Possible bridging site. Wet gap 1200 ft.
On North side, approach in one lane dirt road; on South bank, approach is one lane dirt road to levee which carries one lane macadam road.
Two large barges are seen near by but tracks indicate little usage of ferry.
3072 3
- XV. 63/733125 Military rail bridge under construction nearly complete. Bridge is of the open girder, pile bent type. All but 5 of 28 spans are complete. Spans are 50 ft long, composed of 4 girders spaced 3 ft on center. Seven of the 19 needed girders can be seen near the bridge site.
The road bed is complete on the South bank and the rail has been laid to within 2500 ft of the bridge. No rail can be seen on the North side of the bridge (limit of cover) but road bed is prepared to bridge.
Ties and a center line footwalk have been laid on the nine North spans. Possibly the bridge will have a decking suitable for one lane vehicle traffic.
3107 - 8
- XVI. 63/737125 Two ferry landing on each bank. Good sight for ferry crossing. to 736129
Wet gap and channel width 1320 ft. Banks 25 to 30 ft high and slopes at 1 to 2 on the South and 1 to 1 on the North.
Distance between top of banks 1445 ft.
Approach roads on both banks single lane dirt and /or gravel.
Dense growth of trees on both banks gives good cover.
Due to channel width and wt gap, this site is only practical for ferry crossing.
12PRB992 3059 - 60
- XVII. 63/742120 Existing ferry crossings and good bridge sites.
Bank approaches exist at 2 points on North bank and 3 points on the South bank.
Wet gaps 780 to 900 ft wide.
Channel widths 780 to 900 ft wide.
North bank 20 ft high and 1 to 1 slope. Levee 20 ft high parralles bank.
South bank 10 to 15 ft high and gentle to 1 to 2 slope. Grades into sandbar which extends out into channel from 0 to 250 ft.
Two lane macadam road follow top of levee on North bank. New work of 2 and 1 lane macadam or gravel roads lead to landing sites on the South bank.
Dense growth of trees inside of levee on South will furnish good cover. Town of OSTIGLIA on North bank.
This is a good site for the construction of floating bridges and ferry crossings. Considerable bulldozing may be required to prepare new or improve approaches, if destroyed, on the North bank.
3109 - 10

S.E.R. Cont'd

- XVIII. 63/745114 Combined road and rail bridge (steel girder) on same piers destroyed by bombs. Road bridge has 2, 3, and 4 spans from the South destroyed; resulting gap 695 ft long and 45 ft high. The approach from the South is cratered, damaging the abutment.
The bridge was a 7 span steel girder bridge, 1570 ft span length and 45 ft high. Distance between top of banks 1280 ft. Wet gap and channel width 1195 ft. Levees 15 ft high parallel the banks with 2 lane macadam roads on top of levees. The banks are 30 ft high and slope at 1 to 2.
3109 - 10
- XIX. 63/777106 Possible bridge or ferry site.
Wet gap and channel width 1150 ft.
South bank 20 ft high and slopes at 1 to 1.
North bank 10 ft high and slopes at 1 to 2.
Distance between tops of banks 1240 ft.
Net work of 2 and 1 lane gravel or macadam roads on the South and North of Levees.
Single lane dirt roads lead to the water edge inside of levees.
Levees are 15 ft high and 4100 ft apart. Two lane macadam road follows top of South Levee. Levee crossing exist at numerous points.
Dense growth of trees inside of levees will furnish good cover.
Improvement of the bank approaches and roads will be required.
Suitable site for the construction of floating bridges in this area.
12PR992 3037 - 8 - 9
- XX. 63/808111 Suitable site for the construction of a ferry or floating bridge. Wet gap 540 to 650 ft wide. Channel width 1310 ft. Distance between top of banks 1490 ft. Banks 20 to 30 ft high and slope at 1 to 2. The South bank leads on to a sandbar which extends out into the channel 770 ft.
An approach road on the South single lane dirt leading on to the 2 lane waterbound macadam road on the levee. North approach road 2 lane waterbound macadam. Cart tracks lead down to the waters edge on both banks.
Considerable bulldozing will be required to prepare the bank approaches. Track laying may be required on the sandbar.
3120 - 1
- XXI. 63/837104 Possible bridge or ferry site. Poor approach roads. Wet gap and channel width 690 ft. Distance between top of banks 750 ft. Banks 15 to 20 ft high and slope at 1 to 2. The approach roads on both banks are single lane dirt tracks. Improvement of approach roads and construction of bank approaches will be required. Activity in this area indicates possible crossing site under construction.
3126 - 7
- XXII. 63/850098 to 847089 Good bridge or ferry sites along this stretch. Wet gap 640 to 920 ft wide. Channel width 830 to 1020 ft. The West bank slopes gently down to waters edge. East bank 20 ft high and slopes at 1 to 1. Ferry landing site in use at 843089.
Approach roads consist of 2 lane water bound macadam roads on top of levees. Existing net of single lane cart trails on West bank. Good working area and trees furnish good cover on the West. Construction of East bank approaches will be necessary other than at ferry site.
3128-4108 (no stereo)
- XXIII. 63/846088 Ferry and bridge site. Ferry now in use. Wet gap is 820 ft. Approaches and ferries are camouflaged. One lane dirt track leads from North bank to a two lane macadam road on top of levee. On South bank a one lane dirt road leads to a one lane macadam road on top of the levee.
4108 (no stereo)
- XXIV. 63/857066 Possible bridge or ferry site. Wet gap and channel width 810 ft. Distance between top of banks 925 ft. Banks 20 to 25 ft high and slope at 1 to 1.
Boat landing site on South bank. Bank approach adequate, leading on to 2 lane water bound macadam road on levee. Little used, one lane dirt approach road on the North bank joins 1 lane dirt road.
3172 - 3
- XXV. 63/869064 Pontoon bridge destroyed by bombs. Not a suitable bridge or ferry site. Wet gap at bridge site 1370 ft. Channel width 1815 ft. Sand bar on the South bank. Approach roads 2 lane water bound macadam.
3175 - 76

For the ARMY ENGINEER:

/s/ Jack K. Shurley
JACK K. SHURLEY
Captain, C. E.
Fifth Army Photo Centre

DISTRIBUTION : LIST 'E'

NOTE: Measurements subject to 10% error.

APPENDIX N

REHABILITATION OF FLORENCE

APPENDIX N

THE REHABILITATION OF FLORENCE

1. Army Engineer Troops.

Eighth Army advance party arrived 4 August 1944 and main body 10 to 12 August 1944.

The units were under Major J. E. Fennellow, R.E., and consisted of:

278th Works Section, R.E.
158th Bomb Disposal Platoon, R.E.
1st Canadian Drilling Section, R.C.E.) withdrawn when Fifth
Detachment, 290th Army Troops) Army took over.
Total strength 95 all ranks.

Fifth Army advance party arrived on 23 August 1944 and main body 24 to 31 August, except for one company which came up on 19 September.

It consisted of:-

73rd C.R.E. Works
588th Army Troops Company, R.E.
697th Artisan Works Company, R.E.
698th Artisan Works Company, R.E.
287th Works Section, R.E.
88th Mechanical Equipment Platoon, R.E.
15th Stores Section, R.E.

Total strength 921 all ranks.

2. Water Supply.

Florence had no water, when the Army reached it, other than the muddy Arno river, on whose banks the city stands. The normal city water is pumped electrically from three places on the South bank--Anconella, which has wells and a filter bed; San Niccolo, a booster station from Anconella; and Mantignano wells. The first two were in our hands from 12 August; Mantignano not till 5 September.

All pipes across the river had been demolished except two on the Ponte Vecchio. This famous bridge was the only one left standing, but to prevent its immediate use the Germans demolished the houses at both ends and sowed the debris liberally with mines. So liberally, in fact, that three of the mine laying party were killed on their own mines. The pipe from Mantignano had also been destroyed where it crossed the Greve river.

Eighth Army small team of Army Engineers set to work to get some water going. Three water points were established, one on the South side on 10 August and two on the North bank on 16 August.

By 18 August, 1,200,000 gallons per day were being pumped across Ponte Vecchio. Only one of the pipes here would hold water and it was leaking, but water reached the street hydrants for half a mile radius from the North end of the bridge. To get this supply, a 23-year-old petrol engine was coaxed to go and ran one pump till 8 September, when it finally packed up. It just managed to hold on till a new diesel engine had been installed on one of the other pumps. A small generator was also located and coupled to the diesel pump belonging to the filters. Enough electricity was produced to run a second pump.

The three old turbo pumps at San Niccolo, relics of the original pre-electric water supply, were serviced and put into operation. A new wier gate had to be fitted. This was done under fire on 12 August. Much to the annoyance of its builders, a Division unit blew it up the same night to get a patrol back and they had to build another one.

On 23 August, Fifth Army took over.

The Rehabilitation of Florence (cont'd).

Little more could be done to increase the supply till electricity was available, but the installation of another diesel started by Eighth Army was completed and a small turbo generating station three miles upstream was repaired and linked in. Shellfire made work on this overhead line a most uncomfortable occupation, when the morning mist cleared. These brought the daily total up to 2,100,000 gallons by 1 September.

Meanwhile, repair of the three main pipes across the river commenced. One of these, in a gallery under the wier at San Niccolo, had to be abandoned temporarily owing to flood. It was finally completed late in September. A temporary 18-inch welded pipe was also laid on top of the wier. This was fixed with steel stirrups leaded into holes bored in the wier and stood up to a lot of battering till the record flood of 2 November tore a 25-yard gap in it.

By 11 September, a 400 KW generator was set up and three serviceable mains had been established across the river. Twelve breaks had been disclosed when the debris was cleared from the Ponte Vecchio pair. The filter bed and flume leading to it were repaired. That day 3,800,000 gallons were pumped to the city and dried the wells out in doing it. The filter beds were also filled. In four days, the water started to come through and by 21 September 7,000,000 gallons were pumped, the normal maximum for that time of year.

Meanwhile, work on the Mantignano system was in hand. The reconnaissance party crept along the dusty white roads to it on 6 September, being pulled up three times by the Police for exceeding the speed limit of five miles per hour and being greeted by a couple of close ones on arrival.

All the wells had risen and flooded the pump motors. Two of the main pumps were serviceable, sufficient for present needs. Five miles of overhead line had almost all its wires off and the low tension control panels had had a shell through them, but the transformers and high tension switch-gear were untouched. A shell had burst the main in one place. The aqueduct with its 28-inch main lay in the bed of the Greve river.

Work started on these jobs next day, also on two 18-inch steel pipes, which were laid across the river in the underslung story of the triple-triple Bailey at Ponte Vittoria.

For a quick job over the Greve, the washouts on either side of the river were joined by a 16-inch pipe on a low level pile bridge. This was later replaced by a high level 39-inch steel pipe on a 30-foot high timber pile and trestle bridge on the line of the aqueduct.

On 18 September, all was set and pumping started, but early next morning a break developed a mile up the line. This was followed by another and it was not till 24 September that a regular 5,000,000 gallons per day was put through. This brought water to the top floor of 5-story buildings. Taller ones have their own booster pumps.

Various other minor pipes were repaired, high level pumps at the reservoirs were started up and Florence water supply was back to normal--except when the electricity failed. Even that may have been normal too.

3. Electric Power.

Two 400 KW generating sets arrived on 7 September on 40-ton transporters. They were pulled off onto timber foundations sunk in the ground and one was in operation from 11 September. The other was ready by 13 September, but had to be cannibalized to keep the first one running, while several new parts were made.

Unloading was no easy job. The front wheels of the tractor nearly left the ground several times, as the timber skids under the sets had only 6-inch bearing on the transporter trackways, which made friction very high.

No transformers came with the sets; local ones had to be adapted. Valdarno Electric Company produced 4 x 260/9,000 V x 300 KW ones, and altered them by bringing out the star points. Two of these in series raised the voltage from 400 V to 6,800 V and tramway auto transformers 6,800/10,000 V brought the voltage right for connecting to the mains.

Low Tension cable took some finding; nothing large enough could be found. The sets finally had three cables for each phase to the switchboard and five cables for each phase from there to the transformers. This installation is not in accordance with "normal" practice, but it works.

The main supply from Nera Montoro, 110 miles to the South, was brought into Florence on 17 September. The majority of the work was done by 540th Electrical and Mechanical Company, R.E., of No. 1 District, but 50 bays of very badly demolished line were put right by 92nd Engineer Regiment. Electric-

The Rehabilitation of Florence (cont'd).

ity was brought from Nera Montora to Casalnuovo at 60 KV. Thence to Florence at 30 KV. Initially this was transformed on a 3,000 KW transformer specially brought up by transporter.

The Italians had saved the large transformers at Casalnuovo by burying them under debris. Considerable repair was necessary and three months exposure to the weather had let a lot of water into the oil. The first one was not quite ready by 17 September. On this date, 56 cabins in Florence had been connected and 31 were energized with a peak load of 3,000 KW. By 14 November, 172 cabins had been connected and 104 energized, and all kinds of expedients were in force to keep the load down to the allotment of 7,000 KW.

4. Roads.

The military through routes were on the whole in good order. This standard has been maintained and improved. Ponte Vecchio approaches had to be cleared, first to enable pipe repairs to be carried out and secondly to make this into a civil traffic route across the river.

The eastern approach to the South end of the bridge was completed on 6 September, despite the efforts of the Fine Arts Society to impress on us that Art was more valuable than either water or movement. On this road lay the Columbaria Library with its ground floor still standing, and also the remains of the Ghibelline Tower, two corners only, one vertical and one leaning 2 degrees out of plumb.

Work was begun with a 3/8-yard shovel, but this was too slow, and two D-7 dozers were brought in, which pushed the rubble into the river. The Library was skirted with great care, but no books of value were found in the road or in the debris at either side. The Italian representatives of the Society worked in close collaboration with us and dozers were stopped often for them to check what was being pushed away.

It was unsafe for the machines to approach the leaning portion of the Ghibelline Tower. A committee meeting was held to determine its fate, at which the Deputy Commander of Florence Garrison was present, and it was brought down. The other corner, feeling lonely, fell of its own accord a second later.

The North approach was cleared by 23 September by a 3/4-yard shovel till the 19th, then a 3/8-yard. Eleven thousand yards of rubble were cleared away. Six thousand yards of rubble were removed from the South approach with a 3/8-yard shovel and a D-8 Dozer, but the machines had to be withdrawn for operational work and the clearing was finished by the City.

On these last two works, the Fine Arts Society worked in close cooperation, shoring up buildings, which it wished to preserve, well ahead of the machines. A city gang followed up the machines building a dry rubble retaining wall at each side of the road. The driver of the 3/4-yard shovel had a lucky escape while working. He picked up a trapped Tellermine with his bucket, cutting the pull igniter in half between the striker and the cap. Later, one of the wall builders dug out an "S" Mine and threw it away not knowing what it was. It did not go off though one of the prongs bent on landing.

5. Sewers.

The initial survey disclosed 2,400 meters of damaged sewers varying from 1 to 3 meters in height, some being 6 meters below street level. These were chiefly in the vicinity of the railway stations and yards. Clearance to provide a flow in the main ones was carried out by civil labor under military supervision. The work of rebuilding commenced on 7 September 1944 on contracts let by the local civil authority, all materials being supplied and transported to site by the Army.

Great difficulty was experienced in obtaining sufficient bricklayers; Florence had few and areas up to 10 miles round had to be scoured. The labor roll on this job never rose above 384, while 500 could easily have been employed. Full sewers due to rain considerably delayed the job. As work progressed further, minor damages were found increasing the total length to 2,536 meters.

On 6 November, a shortage of cement necessitated the abandonment of all sewers in uninhabited areas. Up to this time, 1,100 meters had been completed, and a further 150 meters had been repaired up to arch level. In this period of two months, 131,000 bricks have been used and 1,410 tons of cement, sand and aggregate delivered at the site.

6. Mine and Booby Trap Clearance.

The 158th Bomb Disposal Platoon, under Lieutenant Comyn, did exceptionally fine work on this. It worked right up forward and was often in front of the Division Field Companies.

The Rehabilitation of Florence (cont'd).

On 18 August, it was clearing mines in the debris on Ponte Rosso covered by an Infantry Platoon in the houses in the rear. The 238th Field Company arrived to take over. Lieutenant Comyn withdrew his party except for his lookout men and took the Field Company officers into the debris to demonstrate how he searched for mines. He was just about to disarm a Schumine, which he had picked up, when a German suicide squad opened fire on him from a flank. Sapper Smith, one of his lookouts, killed one German with his first shot and completely upset the aim of the other. The Infantry Platoon opened fire and the officers all got out safely.

A new use was found for old arms on this work--rapiers are excellent for prodding for Schumines.

During the period 12 August to 7 October, mines and booby traps as below were removed:-

Tellermine	457
Schumines	430
"S" Mines	426
Made up Anti-Tank Charges	37
Italian Wooden Box Mines	14
Stock Mines	<u>11</u>
Total -	1,375
Booby Traps	<u>158</u>
<u>Total</u>	<u>1,533</u>

The City civilian bomb disposal gang did very good work in clearing mines in the debris at Ponte Vecchio, under the supervision of this platoon.

7. Welfare and Hospitals.

Work on three hotels, one club and the railway station, now Fifth Army Rest Center, was begun between 20 and 29 August. Careggi Hospital, the Royal Reception Hall at the railway station, for NAAFI, and the conversion of an Autoparco into a British Rest Center began in September.

APPENDIX O

TRAINING PROGRAM FOR ENGINEER COMBAT BATTALION

HEADQUARTERS
1108TH ENGINEER COMBAT GROUP
Office of the Group Commander
APO #464, U. S. ARMY

2 December 1944

ENGINEER TRAINING)
:)
DIRECTIVE NO. 1)

TRAINING PROGRAM

1. Purpose: The purpose of this program is to furnish a general guide for the balanced training of an engineer combat battalion, reorganized from AAA, so that it may be prepared to take the field on short notice.
2. Objective: The objective of the program is to integrate and perfect the functional performance of the unit as a company, battalion, and as an operating team, so that it will fulfill its primary mission as combat engineers in an efficient manner.
3. Previous Training: It is contemplated that the troops have become physically hardened and can handle themselves independently, tactically, and technically as soldiers, squads, platoons and that they are disciplined and qualified in rifle marksmanship.
4. Time: The program is based on 8-hour training days, and is divided into a Basic and Advance course of 113 and 96 hours respectively. More time per day will be utilized when necessary in connection with Bailey bridging, treadway bridging, timber bridging and mine warfare. In the latter stages of the training period, night operations, regardless of weather, will become the rule rather than the exception.
 - a. Open Time: The open time will be used to compensate for interruptions, to bring elements of units up to standard, to provide refresher training, to introduce new features not provided herein, such as addresses by specially qualified individuals, or to provide time for disciplinary drills if desired by unit commanders.
 - b. The schedule set forth herein is designed so that if the program is interrupted before completion, the units will have as much of the most essential training as is possible. Units will keep in mind at all times that the schedule may be terminated at any time and every effort must be made to achieve maximum efficiency in as short a time as possible.
5. Scope:
 - a. The subjects herein are provide as essential elements and are not to be construed as complete. Subjects and hours are prescribed to insure that minimum standards will be met and that training objectives will be defined more clearly.
 - b. Periodic disciplinary drills may be included in the open time as is deemed essential by unit commander to bring the unit under control after extended field work.
 - c. Specialist training must be carried on concurrently with the general training, in order that required standards will be achieved in time for specialists to take their proper place in the team. Certain general training is considered essential, even for specialists. Basic training in mine warfare and Bailey bridging will be prescribed and handled separately from the general schedule for all specialists. Quotas for service schools will be allotted from this headquarters as they become available. Practical work will be afforded wherever practicable by placing men on detached service with operating units. Arrangements will be made by this headquarters.
 - d. Individual training will be reviewed as much as is necessary for continual improvement of standards and development of aggressiveness and adaptability.
6. Methods:
 - a. Practical training will be emphasized, requiring the troops actually to perform the operation involved.
 - b. Use of locally prepared charts, diagrams, and other training aids necessary for instruction will be encouraged.

Engr Training Directive #1
Hq 1108th Engr Combat Group
2 December 1944 - (Cont'd)

7. General: a. Requirements for training equipment and supplies will be coordinated by this headquarters.

b. Adjustment of unit programs to the extent required by time available for training and availability of training facilities is authorized.

c. Subjects will be eliminated and new subjects added only upon approval of the Group Commander.

d. Training schedules will be submitted to Group Headquarters for approval three days prior to their effective date.

8. Training Program: Attached herewith is schedule of subjects and hours on the following courses (outline of course included):

a. Basic Program: (Inclosure "A")

b. Advance Program: (Inclosure "B")

c. General Training for Staff & Specialists: (E.M.)(Inclosure "C")

d. Instructor's Course: Officers and NCO's (Inclosure "D")

e. Specialists Schools: (Inclosure "E")

CLARK
COMMANDING

OFFICIAL:
/s/ Morand
MORAND
S-3

Inclosure "A"

BASIC PROGRAM*

(15 December to 30 December, incl)

<u>Subject</u>	<u>Hours</u>
1. Mine Warfare.	32
2. Bailey Bridging	32
3. Explosives and Demolition	3
4. Engineer Tools and Equipment.	6
5. Timber Bridging and Culverts.	16
6. Treadway Bridging	4
7. Road Maintenance.	4
8. Revetments.	4
9. Rigging	4
10. Rafts and Crossing Expedients	4
11. Open Time	4
	<hr/>
	113

*Basic period - 14 days
Christmas Day excluded

BASIC PROGRAM

(15 December to 30 December, incl)

Course Outline - "MINE WARFARE"* (Tentative Schedule)

Hours

32 Scope: The course will cover the types, employment, and characteristics of land mines and booby traps of various nations. It will include methods to locate, disarm, defuze and remove these obstacles.

1. Land Mines.

- a. Types.
- b. Nomenclature and recognition.

2. Mine Firing Devices.

- a. Types.
- b. Nomenclature and recognition.

3. Booby Traps.

- a. Types.
- b. Employment.

4. Minefield Terminology.

5. Mine Employment and Laying. (Practical Work)

6. Mine Removal. (Practical Work)

32 Hours - Total

*References: FM 5-31, 1 November 1943.

BASIC PROGRAM

(15 December to 30 December, incl)

Course Outline - "BAILEY BRIDGING"*
(Demonstration-Lecture and Practical Work)

Hours
8

- (1. Purpose.
- (2. General Design.
 - a. Main supporting members.
 - b. Materials and method of fabrication.
 - c. Types of bridges.
 - (1) Single-Single
 - (2) Double-Single
 - (3) Triple-Single
 - (4) Double-Double
 - (5) Triple-Double
 - (6) Triple-Triple
- (3. Capacity - General.
- (4. Size of Work Parties.
- (5. Estimated Time for Construction.
- (6. Description and Use of Equipment.
 - a. Bridge Equipment
 - (1) Panel (15) End posts
 - (2) Panel Pin (16) Bearing
 - (3) Transom (17) Ramps
 - (4) Transom clamp (18) Ramp pedestal
 - (5) Roper (19) Footwalk
 - (6) Bracing frame (20) Rocking roller
 - (7) Sway brace (21) Plain roller
 - (8) Tie plate (22) Jack and jack shoe
 - (9) Bracing bolt (23) Wrenches
 - (10) Chord bolt (24) Lever
 - (11) Stringers (25) Carrying bar
 - (12) Chess (26) Chord jack
 - (13) Riband (curb) (27) Launching-nose link
 - (14) Riband bolt (28) Templates
 - b. Paragraph 6.a. will include the construction of two bays of S.S.
- 24 7. Construction. (Practical Work)
 - a. Size of bridge - capacity
 - b. Methods of launching.
 - c. Placing launching rollers.
 - d. Launching of the bridge. (40' Single-Single)
 - (1) Assembly of launching nose and bridge.
 - e. Dismantling bridge.
- 8. Maintenance of Bridges.

32 Hours - Total

*References: TM 5-277, 15 September 1943
FM 5-10, Chapter 10, Section XVII, 28 January 1944

BASIC PROGRAM

(15 December to 30 December, incl)

Course Outline - "EXPLOSIVES AND DEMOLITIONS"*

Hours

- $\frac{1}{2}$ 1. General
 - a. Explosives
 - b. Qualities of military explosives.
 - c. Standard explosives, TNT.
 - d. Substitutes (U. S. and enemy)
 - e. Detonating agents.
 - f. Characteristics of explosives.

- 1 2. Demolition Equipment
 - a. Service demolition equipment.
 - b. Blasting machines.
 - c. Galvanometer.
 - d. Fuze, blasting, time.
 - e. Cord, detonating (primacord)
 - f. Drill, detonating cord.
 - g. Crimper, cap.
 - h. Tape and twine.
 - i. Reel, wire, firing.
 - j. Lighter, fuze.
 - k. Caps.

- $\frac{1}{4}$ 3. Safety Precautions - Storage and Care of Explosives.
 - a. General.
 - b. Safety precautions.
 - c. Care and storage.

- $1\frac{1}{4}$ 4. Preparation of Charge.
 - a. Primers.
 - b. Packaging.
 - c. Electrical connections.
 - d. Detonating cord connections.
 - e. Dual firing systems.

3 Hours - Total

*References: FM 5-25, 29 February 1944;
FM 21-105, Chapter 6 and Check List No. 5, 2 June 1943.

BASIC PROGRAM

(15 December to 30 December, incl)

Course Outline - "ENGINEER TOOLS AND EQUIPMENT"*

Hours

- $\frac{1}{4}$ 1. General **
 a. Importance
 b. Care
 c. Safety
 d. Use
- 2 2. Engineer Hand Tools
 a. Axe
 b. Hatchet
 c. Adze
 d. Pick & pick mattock
 e. Shovels
 f. Saws
 g. Clawhammer
 h. Sledge
 i. Maul
 j. Peavy
 k. Bars
 l. Brush hook
 m. Machete
 n. Earth auger
 o. Wire cutters
 p. Side-cutting pliers
 q. Pocket knife
 r. Wrenches
 s. Brace and bit
 t. Ship-ring auger
 u. Plane
 v. Chisels
 w. Measuring tapes
 x. Squares
 y. Level
- $\frac{3}{4}$ 3. Engineer Tool Sets
 a. Squad
 (1) Carpenter
 (2) Pioneer
 (3) Demolition
 b. Platoon
 (1) Carpenter
 (2) Pioneer
 (3) Demolition
- 1 4. Engineer Power Tools
 a. Clay diggers
 b. Wood and rock drills
 c. Pavement breakers
 d. Hammers
 e. Wood saws (gasoline timber saw)
- 2 5. Practical Work

6 Hours - Total

*References: FM 5-225, 12 Dec 1942; FM 5-226, Chapter 3, 6 May 1943;
FM 21-105, Chapter 2, Check List Nos. 14 & 15, 2 June 1943.

**Paragraph 1, sub-paragraphs a to d, incl., will be applied to Paragraphs 2, 3, and 4.

BASIC PROGRAM

(15 December to 30 December, incl)

Course Outline - "TIMBER BRIDGING AND CULVERTS"*

Hours

- 8 1. Timber Bridging (12' site - less trestle) (Practical Work)
- a. Bridge terms.
 - b. Types and selection of materials.
 - c. Preparation of site prior to construction (Revetments)
 - d. Preparation of materials for construction.
 - e. Construction of simple stringer bridge.
 - (1) Abutments
 - (2) Stringers
 - (3) Flooring
 - (4) Curbs and handrails
- 8 2. Culverts. (Practical Work)
- a. Types
 - b. Sizes
 - c. Placing culverts
 - d. Expedients
 - e. Construction and emplacing of "Armco", box, and log culverts.

16 Hours - Total

*Reference: FM 5-10, Chapter 2, Section IV, and Chapter 9, Section IV to VI, incl., 28 January 1944
FM 21-105, Check List No. 3, 2 June 1943
FM 5-35, 15 February 1941

BASIC PROGRAM

(15 December to 30 December, incl)

Course Outline - "TREADWAY BRIDGING"*

Hours

- 4 1. Purpose - Description of Equipment.
 - a. M1 Treadway
 - b. M2 Treadway
- 2. Construction of 45' Treadway.
(Demonstration and critique)

4 Hours - Total

*Reference: FM 5-10, Chapter 10, Section 14, 28 June 1944

BASIC PROGRAM

(15 December to 30 December, incl)

Course Outline - "ROADS AND ROAD MAINTENANCE"*

Hours

- 1 (1. Types of Roads (Width)
- (2. Surfaces of roads (Types)
- (3. Capacity of Roads (Supply and Laterals)
- (4. General Terms Used in Connection with Road Maintenance
- (5. Drainage
 - a. Side ditches
 - b. Crown
 - c. Shoulders
 - d. Culverts
- (6. Organization, Material and Equipment for Winter Maintenance
(Rain and snow)
- (7. Snow Removal
- 3 8. Group Inspection of Selected Sites in Training Area and Vicinity

4 Hours - Total

*References: FM 5-10, 28 January 1944
FM 5-35, Chapter 2, Section 1, 15 February 1941
FM 21-105, Check List No. 13, 2 June 1943

NOTE: Paragraphs 1 to 7, incl., will be pointed out while on inspection
by instructors.

BASIC PROGRAM

(15 December to 30 December, incl)

Course Outline - "RETEMENTS"*

Hours

- 4 1. Revetments.
- a. Types
 - (1) Stone
 - (2) Timber
 - b. Uses
2. Practical Work Along Routes in Training Area.
- a. Reveting curves.
 - b. Reveting slide areas adjacent to roads.
 - c. Reveting draining ditches.
 - d. Reveting a bridge pier or a bridge abutment
(sandbags or rock)

4 Hours - Total

*Reference: FM 5-10, Chapter 2, Paragraphs 39 and 40.

BASIC PROGRAM

(15 December to 30 December, incl)

Course Outline - "RIGGING"*

Hours

- $\frac{1}{2}$ 1. General.
- a. Importance.
 - b. Care of rope
 - c. Uncoiling and coiling rope.
- $\frac{1}{2}$ 2. Definitions.
- 3 3. Knots and Their Uses.

4 Hours - Total

*References: FM 5-225, 12 December 1942
FM 21-105, Chapter 3. Check List No. 10, 2 June 1943
FM 5-35, 15 February 1941

BASIC PROGRAM

(15 December to 30 December, incl)

Course Outline - "RAFTS AND CROSSING EXPEDIENTS"* (Demonstration)

Hours

- 4
1. Reconnaissance Boat.
 - a. Purpose
 - b. Employment
 2. Assault Boat, M2.
 - a. Purpose
 - b. Employment
 3. Six-ton Pneumatic Float.
 - a. Purpose
 - b. Employment as a personnel carrier or an equipment raft.
 4. Utility Powerboat.
 - a. Purpose
 - b. Employment
 5. Assault Boat, M2 and Outboard Motor.
 - a. Purpose
 - b. Employment

4 Hours - Total

*Reference: FM 5-10, Chapter 19, 28 January 1944
TM 5-271, 27 March 1944

Inclosure "B"

ADVANCE PROGRAM*

(1 January to 15 January, incl)

<u>Subject</u>	<u>Hours</u>
1. Mine Warfare.	16
2. Bailey Bridging	12
3. Explosives and Demolitions.	8
4. Timber Bridging and Culverts.	20
5. Road Maintenance	8
6. Bridge Piers and Bridge Cribs	8
7. Rigging	8
8. Infantry Footbridge M1938	12
9. Open Time	4
	<hr/>
	96

* Advance period - 13 days.
31 December excluded
(Reassembling equipment)

ADVANCE PROGRAM

(1 January to 15 January, incl)

Course Outline - "MINE WARFARE"* (Tentative Schedule)

Hours

- 8 1. Mine Field Laying (Practical Work).
- 8 2. Mine Field Breaching and Clearance (Practical Work - Live Mines).

16 Hours - Total

*Reference: FM 5-31, 1 November 1943.

NOTE: Selected Officer and Enlisted Personnel will be sent to the British Mine Warfare School on a Battalion quota basis.

ADVANCE PROGRAM

(1 January to 15 January, incl)

Course Outline - "BAILEY BRIDGING"* (Demonstration-Lecture and Practical Work)

Hours

- 12 (1. Review of Nomenclature.
(2. Review of Types of Construction and Launching.
(3. Review of Working Parties.
(4. Transportation of Bridge.
(5. Construction Hints (Officer from 235th Engr Combat Bn).
(6. Selection and Preparation of Bridge Sites.
 a. Site requirements.
 b. Preparation of site.
(7. Construction of 90' D.S.
 a. Day problem.
 b. Night problem.

12 Hours - Total

*Reference: TM 5-277, 15 September 1943.
FM 5-10, Chapter 10, Section XVII, 28 January 1944.

NOTE: Selected Officer and Enlisted Personnel will be sent to the British School of Military Engineering on a Battalion quota basis.

ADVANCE PROGRAM

(1 January to 15 January, incl)

Course Outline - "EXPLOSIVES AND DEMOLITIONS"*

Hours

- 8 1. Calculation of Charges.
- a. Breaching charges.
 - b. Pressure charges.
 - c. Steel-cutting charges.
 - d. Road craters and anti-tank ditches.
2. Demolition Projects (Practical Work).
- a. General.
 - b. Bridge demolitions.
 - c. Miscellaneous demolitions.

8 Hours - Total

*Reference: FM 5-25, 29 February 1944
FM 21-105, Chapter 6, Check List No. 5, 2 June 1943.

ADVANCE PROGRAM

(1 January to 15 January, incl)

Course Outline - "TIMBER BRIDGING AND CULVERTS"*

Hours

- 12 1. Timber Bridging (18' site - with trestle) (Practical Work)
- a. Review of bridge nomenclature.
 - b. Review of bridge parts in order of construction.
 - c. Review of site preparation.
 - d. Construction of timber bent (to illustrate cap, post, sill and bracing.)
 - e. Construction of timber trestle bridge.
 - (1) Abutments and bent.
 - (2) Stringers.
 - (3) Bracing.
 - (4) Flooring.
 - (5) Curbs and handrails.
- 8 2. Pioneer Timber Bridge (Simple Stringer Bridge built from local standing timber) (Practical Work)

20 Hours - Total

*Reference: FM 5-10, Chapter 9, 28 January 1944
FM 5-35, 15 February 1941
FM 21-105, Chapter 9, Check List No. 3, 2 June 1943

ADVANCE PROGRAM

(1 January to 15 January, incl)

Course Outline - "ROAD MAINTENANCE"*

Hours

1. Practical Work on Training Area Routes, to include:
 - 2 a. Improvement or construction of drainage ditches.
 - 2 b. Improvement or construction of road crown (to include removal of mud or excess soil).
 - 3½ c. Improvement or construction of road surfaces (to include shell holes, craters, pot holes and rutting). The hauling of rock, aggregate, or binder will be determined by the number of trucks available.

- ½ 2. Summary of Road Maintenance Principles.

8 Hours - Total

*References: FM 5-10, 28 January 1944
FM 5-35, Chapter 2, Section 1, 15 February 1941
FM 21-105, Check List No. 13, 2 June 1943

ADVANCE PROGRAM

(1 January to 15 January, incl)

Course Outline - "BRIDGE PIERS AND BRIDGE CRIBS"*

Hours

- 8
1. Types.
 2. Uses.
 3. Construction of a Rock Filled Timber or Log Crib in a Stream Bed.
 4. Construction of a Prefabricated Bailey Bridge Pier.
 - a. Prefabricated Bailey Bridge Panel pier.
 - b. 20 Steel bridging cribs.

8 Hours - Total

*Reference: FM 5-10, Chapter 9, Paragraph 228
Military Engineering (Br) Vol III, Part I, Chapter 9
Bridging, 1941

ADVANCE PROGRAM

(1 January to 15 January, incl)

Course Outline - "RIGGING"*

Hours	
1	1. <u>Splices.</u>
1	2. <u>Use of Wire Rope or Cable.</u>
2	3. <u>Gin Pole.</u>
2	4. <u>Anchorage.</u> <u>a.</u> Deadman <u>b.</u> Holdfast
1½	5. <u>Blocks and Tackles.</u>
	6. <u>Safety Precautions.</u>
8 Hours - Total (Practical Work)	

*Reference: FM 5-225, 12 December 1942
FM 21-105, Chapter 3, Check List No. 10, 2 June 1943
FM 5-35, 15 February 1941

ADVANCE PROGRAM

(1 January to 15 January, incl)

Course Outline - "INFANTRY FOOTBRIDGE, M1938"**

Hours

- 12 1. Footbridge, M1938.
- a. Purpose.
 - b. Design.
 - c. Bridge Unit.
 - d. Employment.
 - e. Construction of bridge.

12 Hours - Total

*Reference: FM 5-10, Chapter 10, Section IX, 28 January 1944
TM 5-271, Chapter 10, 27 March 1944

Inclosure "G"

GENERAL TRAINING FOR STAFF AND SPECIALISTS*

<u>Subject</u>	<u>Hours</u>
1. Mine Warfare.	17
2. Bailey Bridging	8
3. Explosives and Demolitions.	3
4. Engineer Tools and Equipment.	4
	<hr/>
	32

* Period - 4 days for:

- Staff Enlisted Personnel
- Equipment Operation
- Maintenance Personnel
- Water Supply Personnel

GENERAL TRAINING FOR STAFF AND SPECIALISTS

Course Outline - "MINE WARFARE"* (Recognition Course)

Hours

- 17 (1. Land Mines.
 a. Types
 b. Nomenclature
(2. Mine Firing Devices.
 a. Types
 b. Nomenclature
(3. Booby Traps.
 a. Types
 b. Employment
(4. Mine Field Terminology.

17 Hours - Total

*Reference: FM 5-31, 1 November 1943

NOTE: Staff and specialists will attend Basic Course. An additional hour is included for one (1) evening class.

GENERAL TRAINING FOR STAFF AND SPECIALISTSCourse Outline - "BAILEY BRIDGING"* (Demonstration--Lecture)

Hours

- 8 (1. Purpose.
- (2. General Design.
- a. Main supporting members
 - b. Materials and method of fabrication
 - c. Types of bridges
 - (1) Single-Single
 - (2) Double-Single
 - (3) Triple-Single
 - (4) Double-Double
 - (5) Triple-Double
 - (6) Triple-Triple
- (3. Capacity - General.
- (4. Size of Work Parties.
- (5. Estimated Time for Construction.
- (6. Description and Use of Equipment.
- a. Bridge Equipment

<ul style="list-style-type: none"> (1) Panel (2) Panel pin (3) Transom (4) Transom clamp (5) Roper (6) Bracing frame (7) Sway brace (8) Tie plates (9) Bracing bolt (10) Chord bolt (11) Stringers (12) Chess (13) Riband (curb) (14) Riband bolt 	<ul style="list-style-type: none"> (15) End posts (16) Bearing (17) Ramps (18) Ramp pedestal (19) Footwalk (20) Rocking roller (21) Plain roller (22) Jack and jack shoe (23) Wrenches (24) Lever (25) Carrying Bar (26) Chord jack (27) Launching-nose link (28) Templates
---	---

8 Hours - Total

*Reference: TM 5-277, 15 September 1943
 FM 5-10, Chapter 10, Section XVII, 28 January 1944

NOTE: Staff and specialists will attend Basic Course.

GENERAL TRAINING FOR STAFF AND SPECIALISTS

Course Outline - "EXPLOSIVES AND DEMOLITIONS"*

Hours

- $\frac{1}{2}$ 1. General.
 - a. Explosives
 - b. Qualities of military explosives
 - c. Standard explosives, TNT
 - d. Substitutes (U. S. and enemy)
 - e. Detonating agents
 - f. Characteristics of explosives

 - 1 2. Demolition Equipment.
 - a. Service demolition equipment
 - b. Blasting machines
 - c. Galvanometer
 - d. Fuze, blasting, time
 - e. Cord, detonating (primacord)
 - f. Drill, detonating cord
 - g. Crimper, cap
 - h. Tape and twine
 - i. Reel, wire, firing
 - j. Lighter, fuze
 - k. Caps

 - $\frac{1}{4}$ 3. Safety Precautions - Storage and Care of Explosives.
 - a. General
 - b. Safety precautions
 - c. Care and storage

 - $1\frac{1}{4}$ 4. Preparation of Charge.
 - a. Primers
 - b. Packaging
 - c. Electrical connections
 - d. Detonating cord connections
 - e. Dual firing systems
- 3 Hours - Total

*Reference: FM 5-25, 29 February 1944; FM 21-105, Chapter 6 and Check List No. 5, 2 June 1943.

GENERAL TRAINING FOR STAFF AND SPECIALISTSCourse Outline - "ENGINEER TOOLS AND EQUIPMENT"**Hours

- $\frac{1}{4}$ 1. General **
- a. Importance
 - b. Care
 - c. Safety
 - d. Use
- 2 2. Engineer Hand Tools.
- a. Axe
 - b. Hatchet
 - c. Adze
 - d. Pick and pick mattock
 - e. Shovels
 - f. Saws
 - g. Clawhammer
 - h. Sledge
 - i. Maul
 - j. Peavy
 - k. Bars
 - l. Brush hook
 - m. Machete
 - n. Earth auger
 - o. Wire cutter
 - p. Side-cutting pliers
 - q. Pocket knife
 - r. Wrenches
 - s. Brace and bit
 - t. Ship-ring auger
 - u. Plane
 - v. Chisels
 - w. Measuring tapes
 - x. Squares
 - y. Level
- $\frac{3}{4}$ 3. Engineer Tool Sets.
- a. Squad
 - (1) Carpenter
 - (2) Pioneer
 - (3) Demolition
 - b. Platoon
 - (1) Carpenter
 - (2) Pioneer
 - (3) Demolition
1. 4. Engineer Power Tools.
- a. Clay diggers
 - b. Wood and rock drills
 - c. Pavement breakers
 - d. Hammers
 - e. Wood saws (gasoline timber saw)

4 Hours - Total

*Reference: FM 5-225, 12 December 1942; FM 5-226, Chapter 3, 6 May 1943;
FM 21-105, Chapter 2, Check List Nos. 14 & 15, 2 June 1943.

**Paragraph 1, sub-paragraphs a to d, incl., will be applied to Par. 2, 3, & 4.

Inclosure "D"

INSTRUCTOR'S COURSE

(10 December to 14 December)

<u>Subject</u>	<u>Hours</u>
1. Mine Warfare	9
2. Bailey Bridging.	4
3. Explosives and Demolitions	3
4. Engineer Tools and Equipment	2
5. Timber Bridging and Culverts	6
6. Road Maintenance, Cribbing and Revetments . .	8
	<hr/>
	32

*Nomenclature and Recognition Course - 4 Days
Officers and NCO's.

INSTRUCTOR'S COURSE

(10 December to 14 December)

Course Outline - "MINE WARFARE"* (Demonstration-Lecture)

Hours

9 Scope: The course will cover the types, employment, and the characteristics of land mines and booby traps of various nations. It will include methods to locate, disarm, defuze and remove these obstacles.

1. Land Mines.

- a. Types
- b. Nomenclature and recognition

2. Mine Firing Devices.

- a. Types
- b. Nomenclature and recognition

3. Booby Traps.

- a. Types
- b. Employment

4. Minefield Terminology.

9 Hours - Total

*Reference: FM 5-31, 1 November 1943

INSTRUCTOR'S COURSE

(10 December to 14 December)

Course Outline - "BAILEY BRIDGING"* (Demonstration-Lecture)

Hours

- 4 1. Purpose.
2. Types.
3. Description and Use of Equipment.

a. Bridge Equipment

- | | |
|--------------------|--------------------------|
| (1) Panel | (15) End posts |
| (2) Panel pin | (16) Bearing |
| (3) Transom | (17) Ramps |
| (4) Transom clamp | (18) Ramp pedestal |
| (5) Roper | (19) Footwalk |
| (6) Bracing frame | (20) Rocking roller |
| (7) Sway brace | (21) Plain roller |
| (8) Tie plate | (22) Jack and jack shoe |
| (9) Bracing bolt | (23) Wrenches |
| (10) Chord bolt | (24) Lever |
| (11) Stringers | (25) Carrying bar |
| (12) Chess | (26) Chord jack |
| (13) Ribans (curb) | (27) Launching-nose link |
| (14) Ribans bolt | (28) Templates |

- b. Paragraph 3a. will include the construction of two bays of Single-Single.

4 Hours - Total

*Reference: TM 5-277, 15 September 1943
FM 5-10, Chapter 10, Section XVII, 28 January 1944

INSTRUCTOR'S COURSE

(10 December to 14 December)

Course Outline - "EXPLOSIVES AND DEMOLITIONS" *

<u>Hours</u>	
$\frac{1}{2}$	1. <u>General.</u> <ul style="list-style-type: none">a. Explosivesb. Qualities of military explosivesc. Standard explosives, TNTd. Substitutes (U.S. and enemy)e. Detonating agentsf. Characteristics of explosives
1	2. <u>Demolition Equipment.</u> <ul style="list-style-type: none">a. Service demolition equipmentb. Blasting machinesc. Galvanometerd. Fuze, blasting, timee. Cord, detonating (primacord)f. Drill, detonating cordg. Crimper, caph. Tape and twinei. Reel, wire, firingj. Lighter, fuzek. Caps
$\frac{1}{4}$	3. <u>Safety Precautions - Storage and Care of Explosives.</u> <ul style="list-style-type: none">a. Generalb. Safety precautionsc. Care and storage
$1\frac{1}{4}$	4. <u>Preparation of Charge.</u> <ul style="list-style-type: none">a. Primersb. Packagingc. Electrical connectionsd. Detonating cord connectionse. Dual firing systems
3 Hours	- Total

*Reference: FM 5-25, 29 February 1944
FM 21-105, Chapter 6 & Check List No. 5, 2 June 1943

INSTRUCTOR'S COURSE

(10 December to 14 December)

Course Outline - "ENGINEERS TOOLS AND EQUIPMENT"*

Hours

- $\frac{1}{4}$ 1. General **
- a. Importance
 - b. Care
 - c. Safety
 - d. Use
- 1 2. Engineer Hand Tools. (Demonstration)
- | | |
|--------------------------|------------------------|
| a. Axe | n. Earth auger |
| b. Hatchet | o. Wire cutters |
| c. Adze | p. Side-cutting pliers |
| d. Pick and pick mattock | q. Pocket knife |
| e. Shovels | r. Wrenches |
| f. Saws | s. Brace and bit |
| g. Clawhammer | t. Ship-ring auger |
| h. Sledge | u. Plane |
| i. Maul | v. Chisels |
| j. Peavy | w. Measuring tapes |
| k. Bars | x. Squares |
| l. Brush hook | y. Level |
| m. Machete | |
- $\frac{1}{2}$ 3. Engineer Tool Sets.
- a. Squad
 - (1) Carpenter
 - (2) Pioneer
 - (3) Demolition
 - b. Platoon
 - (1) Carpenter
 - (2) Pioneer
 - (3) Demolition
- $\frac{1}{2}$ 4. Engineer Power Tools.
- a. Clay diggers
 - b. Wood and rock drills
 - c. Pavement breakers
 - d. Hammers
 - e. Wood saws (gasoline timber saw)

2 Hours - Total

*Reference: FM 5-225, 12 December 1942
FM 5-226, Chapter 3, 6 May 1943
FM 21-105, Chapter 2, Check List Nos. 14 & 15, 2 June 1943

**Paragraph 1, sub-paragraphs a to d, incl., will be applied to Par. 2, 3, & 4

Appendix O

INSTRUCTOR'S COURSE

(10 December to 14 December)

Course Outline - "TIMBER BRIDGING AND CULVERTS"*

Hours

- 6 1. Inspection of Selected Sites in the Training Area and Vicinity.
- a. The following points will be covered:
 - (1) Nomenclature and recognition of bridge parts including substructure and superstructure.
 - (2) Design and capacity estimation - Use of bridge card.
 - (3) Types of culverts, site requirements and placing.

6 Hours - Total

*Reference: FM 5-10, Chapter 9, Sections 1, 2, & 5, 28 January 1944.

INSTRUCTOR'S COURSE

(10 December to 14 December)

Course Outline - "ROAD MAINTENANCE, CRIBBING AND REVETMENTS"*

Hours

- 8 1. Inspection of Selected Routes and Sites in the Training Area.
Course Will Include:
- a. Principles of road design - nomenclature.
 - b. Drainage.
 - (1) Ditches.
 - (2) Crown.
 - (3) Culverts.
 - c. Capacity of Roads.
 - (1) Supply (M.S.R.)
 - (2) Tactical.
 - (3) Laterals.
 - d. Types of Road Maintenance (Organization)
 - (1) "Gang" Method.
 - (2) Patrol Method.
 - e. Maintenance technique during winter months.
 - (1) Cribbing.
 - (2) Reveting.

8 Hours - Total

- *References: FM 5-10, 23 January 1944.
FM 5-35, Chapter 2, Section 1, 15 February 1941.
FM 21-105, Check List No. 13, 2 June 1943.

Inclosure "E"

SPECIALIST'S SCHOOLS

(15 December to 15 January)*

<u>Subject</u>	<u>Hours</u>
1. Heavy Equipment:	
<u>a.</u> D-7 Bulldozer	176
<u>b.</u> R-4 Bulldozer	176
<u>c.</u> Road Grader, Motorized	176
<u>d.</u> Compressers, Air	176
2. Diesel Mechanics	176
3. Water Supply	176
4. Engineer Reconnaissance	4 (per class)
5. Demolitions	176

* Christmas Day and 31 December excluded.

SPECIALIST'S SCHOOLS

(15 December to 15 January)

Course Outline - "SPECIALISTS"

Hours

1. Equipment Specialists personnel will be assigned on temporary duty to engineer units in the Fifth Army area for training.
- 176 2. Specialist's training will include:
 - a. 1st and 2nd echelon maintenance.
 - b. Operation of heavy motorized equipment.
 - c. Diesel mechanics.
 - d. Care and functioning of water points.
(setting-up and taking-down)
 - e. Demolition technique (Quarry work and general).

176 Hours for each Equipment Specialists.

NOTE: Reconnaissance specialists will receive initial training in the Group Training Area. Four (4) hours per each class (32 hours) will be allotted. Classes will be based on practical work and evening lecture-demonstration.

APPENDIX P

CONVERSION AND TRAINING OF THE 224TH AND
226TH ENGINEER GENERAL SERVICE REGIMENTS

The following is a true copy of the original order except for the removal of Appendices B and C.

COMMAND HEADQUARTERS, ENGINEERS FIFTH ARMY
APO 464 U. S. ARMY
(ETC-2)

28 March 1945

ADMINISTRATIVE DIRECTIVE
NUMBER 1

GENERAL PLAN	I
PERSONNEL	II
SUPPLY	III
TRAINING	IV

I GENERAL PLAN

This directive constitutes an outline procedure for disbandment of the 366th Infantry Regiment, activation of the 224th and 226th Engineer General Service Regiments, and the preliminary training of the two new units.

II PERSONNEL

Detailed instructions which follow will be executed in the order in which they are listed.

Disbandment

1. The Final Roster will be based on the final morning reports rendered for 27 March 1945.
2. After checking the completeness and accuracy of morning reports, the following closing remark will be entered under "Record of Events": "This is the final morning report for (unit designation), 366th Infantry Regiment, having been disbanded ___ March 1945, per G.O. No. ___, Hq. Fifth Army, dated ___ March 1945 . Strength as of disbandment: Officers ___; WO ___; EM ___."
3. Upon completion, the morning reports will be forwarded to the 10th Machine Records Unit, where a roster will be run and returned for a final check. After checking for errors, the roster will be returned to the 10th MRU.
4. Transfer of Officer personnel will be accomplished after Commanding Officers of the Regiments concerned have designated those officers who will remain with the new organizations, and their personnel records cleared.
5. Transfer of enlisted personnel will be accomplished as follows:
 - a. Following notification to the 366th Infantry Regiment of its disbandment, a list will be called for from each Infantry Company Commander which will contain, according to priority, the names of not more than five enlisted men whom he feels do not possess the necessary qualifications for conversion to Engineer soldiers. The lists submitted will not contain the names of enlisted men on rotation, temporary duty to the United States, in confinement, or awaiting trial by Courts-Martial.
 - b. Upon receipt of lists in a. above, the conversion chart (Appendix "A") will be completed by this headquarters, thus "fixing" the disposition of all troops with exception of four companies; Hq & Hq Co., Service Co., Cannon Co., and Hq Co., 2nd Br., 366th Infantry. These will be further considered in forming the two Hq and Serv. Companies for the new Engr. G. S. Regiments.
 - c. The conversion chart, attached as Appendix "A", establishes which Infantry units become basic units in the two new Engineer organizations. Upon setting up the final assigned strengths as of the activation date, excess personnel in Infantry companies will become apparent and physical transfers will be ordered as follows:

(1) To newly activated units understrength from similar units overstrength, informally upon order of the former C.O., 366th Infantry Regiment.

Adm. Directive #1 Command Hq, Engrs 5th Army dtd 28 Mar 1945 - cont'd.

(a) Movement orders for units newly activated will be issued by this headquarters as soon as personnel transfers have been completed for each unit. This will take place in the following sequence:

<u>New Unit Designation</u>	<u>Old Unit Designation</u>
Co. A & 1st Bn Hq, 226th Engr G.S. Regt.	H Co, 366th Inf. Regt.
Co. B, 226th Engr G.S. Regt.	L Co, 366th Inf. Regt.
Co. C, 226th Engr G.S. Regt.	M Co, 366th Inf. Regt.
Co. D, & 2d Bn Hq, 226th Engr G.S. Regt.	Hq Co, 3d Bn, 366th Inf. Regt.
Co. E, 226th Engr G.S. Regt.	I Co, 366th Inf. Regt.
Co. F, 226th Engr G.S. Regt.	K Co, 366th Inf. Regt.
Med. Det., 226th Engr G.S. Regt.	Med. Det., 366th Inf. Regt.
Hq. & Service Co., 226th Engr G.S. Regt.	Service Co., 366th Inf. Regt.

(b) Movement of the 226th Engr G.S. Regt. will begin on 30 March 1945 and will be completed not later than 31 March 1945. Areas are designated on the attached map (Appendix B).

(c) Companies assigned to the 224th Engr G.S. Regt. will remain in their present positions.

(2) Excess personnel including approximately 68 Medical Detachment enlisted men who will be transferred to the Replacement Depot by orders issued by the Engineer, Fifth Army, will be attached to the Cannon Company during the time necessary to complete their records prior to their physical transfer to the Replacement Depot. After date of disbandment, above personnel will be carried on the morning report of the H&S Co., 226th Engr G.S. Regt., with appropriate remarks entered as to their status.

Activation

6. Assignment of officer personnel of the 226th Engr G.S. Regt. will be arranged by the Regimental Commander. Excess officers to be transferred to Replacement Depot will be attached to Headquarters, 226th Engr. G.S. Regt. and transferred upon clearance from their former unit.

7. Concurrent with the assignment of enlisted personnel as outlined in 5c. above, manning tables (Appendix C), for personnel of an Engineer G.S. Regiment, broken down to company strength (including Medical Detachment) will be issued to appropriate commanders, which will be used as a basis for compilation of the Initial Roster required in activation.

8. Initial Rosters will be prepared as follows:

a. On the manning tables indicated in par 7 above, appropriate commanders will enter the name, grade, and serial number of every enlisted man assigned to his unit. These tables will be filled out without undue emphasis being placed on other than key assignments, and will be completed for both Engineer G.S. Regiments on 29 March 1945. These tables will be prepared in duplicate, one copy remaining with the originating unit and one copy being forwarded to the Engineer Regimental Headquarters concerned.

b. Upon receipt by Regimental Headquarters of unit manning tables, these tables will be converted to alphabetical company rosters, arranged according to rank or grade and rendered in duplicate, one to be retained by Regimental Headquarters, the other to be used as a basis for the publishing of an Initial Roster by the Machine Records Unit.

c. Since the above consolidated roster will accompany the initial morning report, care will be taken that it reflects the total assigned strength of the regiment concerned and that all personnel on temporary duty, detached service, in confinement awaiting trial, in confinement serving sentence, and AWOL's not previously dropped from the rolls are properly accounted for.

9. Initial morning reports will be prepared in the normal manner with the following statement entered under "Record of Events": "This is the initial morning report for (unit), ___ Engineer General Service Regiment, having been activated ___ March 1945 per G.O. #___, Hq Fifth Army, dated _____. Strength upon activation: Officers ___; WO ___; EM ___". To this morning report will be attached a copy of the alphabetical roster referred to in 8b. above.

Orders

10. Orders assigning personnel to the 224th and 226th Engineer General Service Regiments will be issued by the Engineer, Fifth Army.

11. Assignment of personnel within the newly activated Regiments will be accomplished by special orders within the Regiments.

Appendix P

Adm. Directive #1 Command Hq, Engrs 5th Army dtd 28 Mar 1945 - cont'd

III SUPPLY

12. The clearance of company property books of the 366th Inf. Regt. will be accomplished by means of shipping tickets to the new company commanders of the Engineer Regiments, or by properly executed certificates of loss. There will be an exception to the above in the case of Cannon Company and Hq Co, 2nd Bn, 366th Inf. Regt. who will obtain their clearances by turn-in to appropriate army depots, or properly executed certificates of loss. Copies of depot receipts and loss certificates for these two companies will be forwarded to S-4 this headquarters.

13. Where a company of the 366th Inf. Regt. is redesignated a company in an Engr G.S. Regt., it will retain all of its equipment (see conversion chart Appendix A). The property of the Med. Det., 366th Inf. Regt. will be transferred to Med. Det, 224th Engr. G.S. Regt. with the exception of one truck, 3/4 ton, 4x4, Weapons Carrier, complete with accessories, which will be transferred to Med. Det., 226th Engr. G.S. Regt. Equipment of Hq. & Hq. Co., 366th Inf. Regt. will be transferred to Hq. & Service Co., 224th Engr. G.S. Regt. Equipment of Service Co., 366th Inf. Regt. will be transferred to Hq. and Service Co., 226th Engr. G.S. Regt. All of the equipment of Hq. Co., 2d Bn., 366th Inf. Regt. will be turned in to the appropriate Army depots. Cannon Co., 366th Inf. Regt. will turn in to the appropriate Army depots all equipment except necessary housekeeping equipment for the action described in Sec II, par 5c(2) of this order. The above instructions apply only to organizational property as listed in current T/O & E for an Inf. Regt. All officers and men will retain their individual equipment.

14. Company Commanders and CO, Med. Det., 366th Inf. Regt. are responsible that:

a. Signed shipping tickets or properly executed certificates of loss, sufficient to zero all property as listed on the company property book be obtained.

b. One copy of all signed shipping tickets and certificates of loss be filed with the company property book.

c. One copy of all signed shipping tickets and certificates of loss be forwarded to Regt. Supply Officer, 366th Inf. Regt. for Commanding Officer, 366th Inf. Regt.

15. Inventory and transfer of property from the old company Commanders, 366th Inf. Regt. to the new Company Commanders of the 224th and 226th Engr G.S. Regt. will be completed by 2400 hours 29 March 1945. S-4, this headquarters will be notified by Regt'l. S-4's of the 224th and 226th Engr. G.S. Regt. upon completion of transfers.

16. Upon completion of paragraphs 12, 13, 14, and 15 above, the responsibility of reorganization will shift to the Commanding Officers of the 224th and 226th Engr. G.S. Regts. who will, through their Regt'l. Supply Officers, proceed to reorganize in accordance with Section G-101, SAE Instructions, Hq., Fifth Army for the reorganization of any unit. Upon completion of the initial reports required by SAE Instructions, the Regt'l. Supply Officer will bring them to S-4 this headquarters for checking. S-4 this headquarters will then accompany Regt'l. Supply Officers to G-4, Fifth Army.

17. It will be the responsibility of the Regt'l. Supply Section, 366th Inf. to supply all organizations until the Regt'l. Supply Officers of the 224th and 226th Engr. G.S. Regts. are capable of taking over this function. Instructions covering this change of responsibility will be issued by this headquarters.

IV TRAINING

Purpose

18. The purpose of the training program is to furnish a general guide for the balanced training of engineer general service regiments, reorganized from an infantry regiment, so that they may be prepared to take their place in the field on short notice. The program as outlined herein will cover the period 2 - 28 April 1945. Further instructions covering the period 29 April - 12 May 1945 will be issued at a later date.

Objective

19. The primary objective of the program is to integrate and perfect the functional performance of the unit, so that it will fulfill its primary mission of maintaining and improving supply routes in support of a field army.

Appendix P

Adm. Directive #1 Command Hq, Engrs 5th Army dtd 28 Mar 1945 - cont'd

Time

20. The program is based on 8-hour training days, and is divided into three phases of 96 hours each. The first phase is to cover the basic subjects in the school of the soldier, plus elements of preliminary subjects in the training of engineer soldiers. This phase will be in conjunction with the actual reorganization and reequipping from infantry to engineer regiments. The second phase and third phase respectively will be basic and advanced courses in the tactical and technical training of engineer soldiers.

a. During the period covered by this training program, Sundays were not included in the total number of hours. These days are not to be excluded but are to be used as open time for church services, special inspections, and for additional training to bring elements of units up to standard. It is also to provide for the introduction of new features not provided herein, such as addresses by specially qualified individuals.

b. The schedule set forth is designed so that if the program is interrupted after the completion of the second phase, the units will have as much of the most essential training as is possible. Units will keep in mind at all times that the schedule may be terminated at any time and every effort must be made to achieve maximum efficiency in as short a period as possible.

c. Individual training will be renewed as often as necessary for continual improvement of standards and development of aggressiveness and adaptability.

Specialist Training

21. Specialist training will be carried on concurrently with the general training in order that required standards will be achieved in time for specialists to take their proper places in the units.

Methods

22. a. Practical training will be emphasized, requiring the troops to actually perform the operation involved.

b. The use of locally prepared charts, diagrams, and other training aids or training sites necessary for effective and efficient instruction will be encouraged.

Training Directives and Schedules

23. a. One copy of all regimental training directives issued to subordinate units will be furnished this headquarters.

b. Training schedules will be submitted to this headquarters for approval three days prior to their effective date except the training schedule for period 2 April to 7 April which may be submitted at any time prior to 2 April. Standard training schedule forms furnished by this office will be used.

c. An overlay, on scale of 1:25000, showing the location of all training areas and sites will accompany the training schedules.

General

24. a. Requirements for training equipment and supplies will be coordinated through this headquarters.

b. Adjustments of unit training programs to the extent required by time available for training and availability of training facilities is authorized.

c. Subjects will be eliminated and new subjects added only upon approval of this headquarters.

Adm. Directive #1 Command Hq, Engrs 5th Army dtd 28 Mar 1945 - cont'd

25. Detailed instructions for the training period 2 - 28 April 1945 are contained in Appendices as listed below:

Appendix	Subject
D	Officers' & NCO's School, 226th Engr. G.S. Regt.
E	Officers' & NCO's School, 224th Engr. G.S. Regt.
F	Training Program 2 - 7 April
G	Training Program 9 - 14 April
H	Training Program 16 - 28 April

BY COMMAND OF BRIGADIER GENERAL BOWMAN:

/s/ H. C. Rowland, Jr.
H. C. ROWLAND, JR.
Colonel, CE
Executive

8 Incls.

- 1 - Appendix "A" - Conversion Chart
- 2 - Appendix "B" - Map
- 3 - Appendix "C" - Manning Tables
- 4 - Appendix "D" - Officers' & NCO's School, 226th Engr. G.S. Regt.
- 5 - Appendix "E" - Officers' & NCO's School, 224th Engr. G.S. Regt.
- 6 - Appendix "F" - Training Program 2 - 7 April
- 7 - Appendix "G" - Training Program 9 - 14 April
- 8 - Appendix "H" - Training Program 16 - 28 April

DISTRIBUTION:

366th Inf. Regt. (25)
224th Engr. G. S. Regt. (15)
226th Engr. G. S. Regt. (12)
Command Hq. Engrs Fifth Army (10)
ETC-2 (10)
File (2)

CONVERSION CHART

To Be Completed As Soon As Assigned
Strength As Of 0001 28 March 1945 Is Determined

INFANTRY REGIMENT

	1st Bn.											2nd Bn.					3rd Bn.				
	Chap	Med Det	Hq & Hq Co	Serv Co	Can'n Co	A T Co	Hq Co	A Co	B Co	C Co	D(HW) Co	Hq Co	E Co	F Co	G Co	H(HW) Co	Hq Co	I Co	K Co	L Co	M(HW) Co
Asgd Strength (EM)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Trf. to R D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Net Strength	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	<u>Engr. G. S. Regt. (224)</u>											<u>Engr. G. S. Regt. (226)</u>									
Asgd Strength (EM)	Chap	Med Det	Hq & Hq & S Co	A Co & 1-Bn Hq	B Co	C Co	D Co & 2-Bn Hq	E Co	F Co	G Co & 3-Bn Hq	H Co	I Co	Chap	Med Det	Hq & Hq & S Co	A Co & 1-Bn Hq	B Co	C Co	D Co & 2-Bn Hq	E Co	F Co
	0	31	158	172	167	167	172	167	167	172	167	167	0	25	158	172	167	167	172	167	167

Appendix "A"

Appendix P

OFFICERS AND NCO'S SCHOOL
226TH ENGINEER GENERAL SERVICE REGIMENT

Period 2 April to 7 April 1945

1. School: The 224th Engineer General Service Regiment will conduct an Officers' and NCO's school for the 226th Engineer General Service Regiment in accordance with the enclosed training program.

2. Time: The school will be based on an eight hour training day and will cover the period 2 April to 7 April inclusive.

3. Location: All classes with the exception of training sites, will be held in or near the regimental area of the 226th Engineer General Service Regiment.

4. Attendance: All classes will be attended by the Commanding Officer, two lieutenants and the platoon sergeants of each company of the 226th Engineer General Service Regiment. Additional attendance may be specified by the Commanding Officer of the 226th Engineer General Service Regiment.

5. Training Program: Course Outline of training program is attached.

6. Demonstration Teams: 3rd Platoon, Co. "F", 92nd Engr. G. S. Regt. will be available on call to this headquarters for use by the officer instructors of the 224th Engr. G. S. Regt. as a demonstration unit or to provide enlisted training assistants. Two days prior notice of every such demand on this unit is desired in order that adequate preparations can be made.

Appendix "D" to Admin Dir #1
Cmd Hq, Engr 5th Army (ETC-2)
28 March 1945

Appendix P

TRAINING PROGRAM

(2 April to 7 April, incl)

<u>Subject</u>	<u>Hours</u>
1. Engineer Tools	4
2. Rigging	4
3. Mine Warfare	6
4. Explosives & Demolitions	4
5. Map Reading	4
6. Road Maintenance	4
7. Revetments	6
8. Culverts	6
9. Bridges	10
	48 Hours

TRAINING PROGRAM

(2 April to 7 April, incl)

Course Outline - "ENGINEER TOOLS"

Hours

- 1 1. General
 - a. Importance.
 - b. Care.
 - c. Safety.
 - d. Use.

- 3 2. Engineer Hand Tools
 - a. Axe
 - b. Hatchet
 - c. Adze
 - d. Pick and Pick Mattock
 - e. Shovels
 - f. Saws
 - g. Claw Hammer
 - h. Sledge
 - i. Maul
 - j. Peavy
 - k. Bars
 - l. Brush Hook
 - m. Machete
 - n. Earth Auger
 - o. Wire Cutters
 - p. Side Cutting Pliers
 - q. Pocket Knife
 - r. Wrenches
 - s. Brace and Bit
 - t. Ship-ring Auger
 - u. Plane
 - v. Chisels
 - w. Measuring tapes
 - x. Square
 - y. Level

4 Hours - Total

3. All paragraphs under No. 1 will be thoroughly stressed under paragraph No. 2.

References: TM 5-225, 12 December 1942
TM 5-226, 6 May 1943
FM 21-105, Chapter 2, Check List No's 14 and
15, 2 June 1943

TRAINING PROGRAM

(2 April to 7 April, incl)

Course Outline - "RIGGING"

Hours

- $\frac{1}{2}$ 1. General
 - a. Importance.
 - b. Care of Rope.
 - c. Coiling and uncoiling of rope.
- $\frac{1}{2}$ 2. Definitions
- 2 3. Knots and Their Uses
- 1 4. Blocks
 - a. Reeving of single and double blocks.

4 Hours - Total

References: TM 5-225, 12 December 1942
FM 21-105, Chapter 3, Check List No. 10,
2 June 1943
FM 5-35, 24 March 1944

TRAINING PROGRAM

(2 April to 7 April, incl)

Course Outline - "MINE WARFARE"

Hours

6 Scope: The course will be covered by lecture and demonstrations of the types, employment, and characteristics of the land and anti-personnel mines of various nations.

1. Land Mines

- a. Types.
- b. Nomenclature and recognition.
- c. Firing devices.

2. Anti-Personnel Mines

- a. Types.
- b. Nomenclature and recognition.
- c. Firing Devices.

6 Hours - Total

Note: This course will be given by a qualified instruction team provided by this headquarters 7 April 1945.

Reference: FM 5-31, 1 November 1943

TRAINING PROGRAM

(2 April to 7 April, incl)

Course Outline - "EXPLOSIVES AND DEMOLITIONS"

Hours

- $\frac{1}{2}$ 1. General
 - a. Explosives.
 - b. T. N. T.
 - c. Dynamite.
- 1 2. Demolition Equipment
 - a. Service demolition equipment
 - b. Blasting machines.
 - c. Galvanometers.
 - d. Fuze, blasting, time.
 - e. Cord, detonating (primacord).
 - f. Drill.
 - g. Crimper cap.
 - h. Tape and twine.
 - i. Reel, wire, firing.
 - j. Lighter, fuze.
 - k. Caps, electric and non-electric.
- $\frac{1}{4}$ 3. Safety Precautions - Storage and Care of Explosives
- $1\frac{1}{4}$ 4. Preparation of Charge
 - a. Primers.
 - b. Electrical Connections.
 - c. Non-electrical connections.
 - d. Detonating cord connections.

3 Hours - Total

References: FM 5-25, 29 February 1944
FM 21-105, Chapter 6, 2 June 1943

TRAINING PROGRAM

(2 April to 7 April, incl)

Course Outline - "MAP READING"

Hours

- $\frac{1}{2}$ 1. General
 - a. Kinds.
 - b. Use.
 - c. Characteristics.
- $1\frac{1}{2}$ 2. Map Reading
 - a. Symbols.
 - b. Direction.
 - c. Azimuth.
- $\frac{1}{2}$ 3. Use of the Compass
- $1\frac{1}{2}$ 4. Application of Compass and Map

4 Hours - Total

Reference: FM 21-25, 15 August 1944

TRAINING PROGRAM

(2 April to 7 April, incl)

Course Outline - "ROAD MAINTENANCE"

Hours

- 1 1. Types of Roads (width)
2. Surface of Roads (types)
3. General Terms Used in Connection with Road Maintenance
4. Drainage
 - a. Side ditches.
 - b. Crown.
 - c. Shoulders.
 - d. Culverts.
- 3 5. Group Inspection of Selected Sites in Training Area and Vicinity.
6. Items under paragraphs No. 1 to 4 to be stressed under paragraph No. 5.

4 Hours - Total

References: FM 5-10, 28 January 1944
FM 5-35, Chapter 2, Section 1, 24 March 1941
FM 21-105, Check List No. 13, 2 June 1943

TRAINING PROGRAM

(2 April to 7 April, incl)

Course Outline - "REVETMENTS"

Hours

- 1 1. Revetments
 - a. Types.
 - (1) Stone.
 - (2) Timber.
 - b. Uses.
- 3 2. Demonstrations and Inspections in Training Area
 - a. Reveting curves.
 - b. Reveting slide areas adjacent to roads.
 - c. Reveting drainage ditches.
 - d. Reveting a bridge pier or a bridge abutment.

4 Hours - Total

Reference: FM 5-10, Chapter 2, Paragraph 39 and 40
28 January 1944

TRAINING PROGRAM

(2 April to 7 April, incl)

Course Outline - "CULVERTS"

Hours

- 2 1. Culverts.
 - a. Use.
 - b. Types.
 - c. Sizes.
 - d. Placing of culverts.
 - e. Construction of box, log, and Armco culverts.

- 2 2. Field Inspection.
 - a. Items included under paragraph No. 1 to be pointed out during inspection.

- 4 3. Culvert (Practical Work)
 - a. Sites to be picked and box and log culverts to be constructed.

8 Hours - Total

References: FM 5-10, Chapter 2, Section IV, and Chapter 9,
Section IV to VI incl, 28 January 1944
FM 21-105, Check List No. 3, 2 June 1943
FM 5-35, 24 March 1944

TRAINING PROGRAM

(2 April to 7 April, incl)

Course Outline - "BRIDGES"

Hours

- 2 1. Timber Bridges
 - a. Bridge nomenclature.
 - b. Functions of abutments, stringers, flooring, curbs, and hand rails.
 - c. Design of bridges.
 - d. Kinds and types of piers.

- 1 2. Construction of Bridges
 - a. Preparation of abutments.
 - b. Preparation of materials.
 - c. Equipment required.

- 2 3. Field Inspection of Bridges in Training Area.

- 5 4. Timber Bridge 10' (Practical Work)
 - a. Ten foot timber bridge to be constructed on site in training area.

10 Hours - Total

References: FM 5-10, Chapter 2, Chapter 9, 28 January 1944
FM 21-105, Check List No. 3, 2 June 1943
FM 5-35, 24 March 1944

Appendix P

OFFICERS AND NCO'S SCHOOL
224TH ENGINEER GENERAL SERVICE REGIMENT

Period 2 April to 14 April 1945

1. School: An Officers' and NCOs' school will be conducted by the 224th Engineer General Service Regiment for two hours per night, three nights per week during the period 2 April to 14 April 1945. Engineer subjects for the school will be specified by the Commanding Officer.

2. Attendance: All company officers and NCOs' of the first three grades from the lettered companies will attend.

The commanding officer, two lieutenants, and three platoon sergeants from each company of the 226th Engineer General Service Regiment will attend classes for the period from 9 April to 14 April 1945.

3. Schedule: A complete schedule for the school will be submitted to this headquarters, not later than 1 April 1945. Schedule to include: Subject, hours, character of training, and place, and name of instructors.

Appendix "E" to Admin Dir #1
Cmd Hq, Engr 5th Army (ETC-2)
28 March 1945

Appendix P

TRAINING PROGRAM

(2 April to 7 April, incl)

<u>Subjects</u>	<u>Hours</u>
1. Organization of Corp of Engineers	1
2. Organization of Engineer General Service Regiment	1
3. Military Courtesy and Discipline	2
4. Physical Training	3
5. Military Sanitation and Personal Hygiene	4
6. First Aid	1
7. Manual of Arms	3
8. Mass Games	3
9. Infantry Drill	9
10. Full Field Inspection	4
11. Extended Order Drill	2
12. Marches	4
13. Care of Individual Clothing and Equipment	1
14. Rifle Marksmanship	2
15. Rifle Inspections	2
16. Regimental Inspection and Review	4
17. Open Time	2
	<hr/>
	48 Hours

TRAINING PROGRAM

(2 April to 7 April, incl)

COURSE OUTLINE

<u>Hours</u>	<u>Subject</u>
1	<u>Organization of Corps of Engineers</u> Brief history of organization, growth, and achievements of the corps. Stress the high degree of pride and honor maintained by the men and officers in the Corps of Engineers. Reference: FM 21-105
1	<u>Organization of Engineer General Service Regiment</u> Outline and discussion of the component parts. Make use of charts and diagrams. Reference: T.O. and E. 121 122 125 126 127
2	<u>Military Courtesy and Discipline</u> Two one-hour classes will be scheduled. Customs of the service, hand saluting, and reporting will be stressed. Emphasize that the soldiers conduct toward their superiors in their own and other organizations reflects the discipline of the unit, to which they belong. Reference: FM 21-50, 15 June 1942
3	<u>Physical Training</u> Reference: FM 21-20, 6 March 1941
4	<u>Military Sanitation and Personal Hygiene</u> Understanding of the importance of personal hygiene and group sanitation and the simple rules by which they are maintained. 1 Hour sanitary standards in the field. 1 Hour Malaria and its effect and control. 2 Hours Venereal diseases. References: FM 21-10, 31 July 1940
1	<u>First Aid</u> Use, need and application of first aid in the field. Knowledge of the use of first aid packet. Reference: FM 21-10, 31 July 1940

Appendix P

<u>Hours</u>	<u>Subjects</u>
3	<u>Manual of Arms</u> Reference: FM 21-100
3	<u>Mass Games</u> Organized games. All troops to participate. Reference: FM 21-20, 6 March 1941
4	<u>Infantry Drill</u> To instill habits of precision and response to the leader's orders. References: FM 22-5 FM 21-100
	<u>Full Field Inspection</u> Opportunity for all unit supply officers to check condition and status of personal equipment. Reference: FM 21-100
2	<u>Extended Order Drill</u> The mechanism of extended order will be taught in open terrain. Reference: FM 22-5
4	<u>Marches</u> Suggested two, 2-hour marches across country.
1	<u>Care of Individual Clothing and Equipment</u> Obligation and responsibility for the proper care of clothing and equipment. Wearing of the proper uniform. Reference: FM 21-100
2	<u>Rifle Marksmanship</u> Two, 1-hour classes. Nomenclature, sighting and aiming, and position exercises. Reference: FM 23-7
2	<u>Rifle Inspection</u>
4	<u>Regimental Inspection and Review</u> Reference: FM 22-5
2	<u>Open Time</u> Will be used to compensate for interruptions and to bring elements of units up to standard.

TRAINING PROGRAM

(9 April to 14 April, incl)

<u>Subject</u>	<u>Hours</u>
1. Axemanship	4
2. Mine Warfare	4
3. Road Maintenance	6
4. Engineer Materials	2
5. Asphalts, Tars, Road Patching	2
6. Revetments, Wood and Stone	4
7. Physical Training	3
8. Military Courtesy and Discipline	1
9. Rifle Inspections	2
10. Infantry Drill	3
11. Care of Individual Clothing and Equipment	2
12. Marches	4
13. Military Sanitation and Personal Hygiene	1
14. Mass Games	3
15. Full Field Inspection	4
16. Battalion Inspection and Review	2
17. Open Time	1
	<hr/>
	48 Hours

TRAINING PROGRAM

(9 April to 14 April, incl)

COURSE OUTLINE

<u>Hours</u>	<u>Subject</u>
4	<u>Axeranship</u> Suggested two hour periods. Proper use, care and sharpening of axes and hatchet. Practical work in chopping, cutting, splitting and hewing of logs and brush. Reference: TM 5-225
4	<u>Mine Warfare</u> Lecture and demonstration to be given by qualified instructor as per mine warfare class schedule this headquarters. Inclosure #1 to Appendix "G".
6	<u>Road Maintenance</u> One hour discussion of roads, importance of maintenance, general terms used. One hour drainage, culverts, revetments, and bridges. Four hours improving of roads and drainage in or near bivouac area. Reference: FM 5-10, 28 January 1944
2	<u>Engineer Materials</u> Discussion of all types of materials required by the engineers as lumber, steel, stone, nails, etc. Each item to be listed with its general terms or names including the usual sizes, amounts, or quantities common to the material. Reference: FM 5-10, 28 January 1944
2	<u>Asphalts, Tars. Road Patching</u> Use and need of asphalts and tars in road patching. Road patching on Route 67 to be shown and examined. Reference: FM 5-10, 28 January 1944
4	<u>Revetments. Wood and Stone</u> Discussion of the type and kinds. Demonstration of the construction of revetments of both wood and stone. Reference: FM 5-10, 28 January 1944
<u>Subjects Listed 7 to 17</u> Refer to Outline of Course for period 2 April to 7 April.	

MINE TRAINING PROGRAM FOR PERIOD

9 April to 11 May 1945

UNIT	BASIC PERIOD 4 Hours - Total						ADVANCED TRAINING 4 Hours - Total						SPECIALIST TRAINING 16 Hours - Total															
	9	10	11	12	13	14	16	17	18	19	20	21	23	24	25	27	28	30	1	2	3	4	5	7	8	9	10	11
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
224th Engr Regt (GS)																												
H&S Co.	X						X																					
Co A & 1st Bn Hq	X						X										X	X										
Co B		X						X									X	X										
Co C			X						X									X	X								X	
Co D & 2nd Bn Hq	X										X						X	X					X					X
Co E		X									X							X	X									
Co F			X								X																	
Co G & 3rd Bn Hq	X										X															X	X	
Co H				X									X												X	X		
Co I				X									X												X	X		
226th Engr Regt (GS)																												
H&S Co				X					X																			
Co A & 1st Bn Hq				X					X								X	X					X	X				
Co B					X					X							X	X					X	X				
Co C					X								X												X	X		
Co D & 2nd Bn Hq					X									X									X	X				
Co E						X									X											X	X	X
Co F						X										X										X	X	X

Inclosure #1 to Appendix G

TRAINING PROGRAM

(16 April to 28 April, incl)

<u>Subjects</u>	<u>Hours</u>
1. Physical Training and Close Order Drill	6
2. Engineer Tools and Equipment	8
3. Rigging	10
4. Mine Warfare	4
5. Explosives and Demolitions	6
6. Cements and Concrete	4
7. Asphalt and Tars, Road Patching	6
8. Road Maintenance	
a. Surfaces	4
b. Drainage	4
c. Revetments	5
d. Culverts	5
e. Practical Work	34
	<hr/>
	96 Hours

Appendix P

TRAINING PROGRAM

(16 April to 28 April, incl)

Course Outline - "ENGINEER TOOLS AND EQUIPMENT"

Hours

- $\frac{1}{2}$ 1. General
- | | |
|----------------|------------|
| a. Importance. | c. Safety. |
| b. Care. | d. Use. |
- 4 2. Engineer Hand Tools
- | | |
|--------------------------|------------------------|
| a. Axe | n. Earth Auger |
| b. Hatchet | o. Wire Cutters |
| c. Adze | p. Side Cutting Pliers |
| d. Pick and Pick Mattock | q. Pocket Knife |
| e. Shovels | r. Wrenches |
| f. Saws | s. Brace and Bit |
| g. Claw Hammer | t. Ship-ring Auger |
| h. Sledge | u. Plane |
| i. Peavy | v. Chisels |
| j. Maul | w. Measuring Tape |
| k. Bars | x. Square |
| l. Brush Hook | y. Level |
| m. Machete | |
- $1\frac{1}{2}$ 3. Engineer Tool Sets
- | | |
|----------------|----------------|
| a. Squad | b. Platoon |
| (1) Carpenter | (1) Carpenter |
| (2) Pioneer | (2) Pioneer |
| (3) Demolition | (3) Demolition |
- 2 4. Engineer Power Tools
- | | |
|-------------------------|-------------------------|
| a. Clay Diggers | d. Hammers |
| b. Wood and Rock Drills | e. Wood Saws (Gasoline) |
| c. Pavement Breakers | |

8 Hours - Total

References: TM 5-225, 12 December 1942
FM 6-226, Chapter 3, 6 May 1943
FM 21-105, Chapter 2, Check List
No's 14 and 15, 2 June 1943

TRAINING PROGRAM

(16 April to 28 April, incl)

Course Outline - "RIGGING"

Hours

- ¼ 1. General
 - a. Importance.
 - b. Care of Rope.
 - c. Coiling and uncoiling of rope.
- ¼ 2. Definitions
- 2 3. Knots and Their Uses
- 2 4. Double and Single Blocks
 - a. Reeving.
 - b. Use.
 - c. Application.
- ½ 5. Safety Precautions
- 2 6. Anchorage
 - a. Deadman.
 - b. Holdfast.
- 3 7. Gin Poles
 - a. Erection.
 - b. Application.

10 Hours - Total

References: TM 5-225, 12 December 1942
FM 21-105, Chapter 3, Check List
No. 10, 2 June 1943
FM 5-35, 15 February 1941

TRAINING PROGRAM

(16 April to 28 April, incl)

Course Outline - "MINE WARFARE"

Hours

4 Scope: The course will cover the types, employment and characteristics of land mines and booby traps of various nations.

1. Land Mines

- a. Types.
- b. Nomenclature and recognition.
- c. Firing Devices.

2. Anti Personnel Mines

- a. Types.
- b. Nomenclature and recognition.
- c. Firing devices.

3. Booby Traps

- a. Types.
- b. Firing devices.

4 Hours - Total

Reference: FM 5-31, 1 November 1943

TRAINING PROGRAM

(16 April to 28 April, incl)

Course Outline "EXPLOSIVES AND DEMOLITIONS"

Hours

- $\frac{1}{2}$ 1. General
 - a. Explosives.
 - b. T. N. T.
 - c. Dynamite.
- 1 2. Demolition Equipment.
 - a. Service Demolition equipment.
 - b. Blasting Machines.
 - c. Galvanometers.
 - d. Fuze, blasting, time.
 - e. Cord, detonating (primacord)
 - f. Drill.
 - g. Crimper cap.
 - h. Tape and twine.
 - i. Reel, wire, firing.
 - j. Lighter, fuze.
 - k. Caps , electric and non-electric.
- 1 3. Safety Precautions - Storage and Care of Explosives.
- $1\frac{1}{2}$ 4. Preparation of Charge
 - a. Primers.
 - b. Electric connections.
 - c. Non-electrical connections.
 - d. Detonating cord connections.
- 2 5. Demolition in Quarries
 - a. Actual demonstrations.

6 Hours - Total

References: FM 5-25, 29 February 1944
FM 21-105, Chapter 6

TRAINING PROGRAM

(16 April to 28 April, incl)

Course Outline - "MORTAR, CEMENT, AND CONCRETE"

Hours

- 1 1. General
- a. Use.
 - b. Kind.
 - c. Mixing.
 - d. Aggregates.
 - e. Water.
 - f. Forms.

- 3 2. Demonstration
- a. Mixing of mortar.
 - b. Mixing of cement.
 - c. Pouring of cement into forms.

Demonstrations can be of practical use in construction of cement floor, incinerator, or other useful items for camp site.

4 Hours - Total

Reference: FM 5-10, 28 Jan 1944

TRAINING PROGRAM

(16 April to 28 April, incl)

Course Outline - "ROAD MAINTENANCE"

Hours

- 1 1. Surface
- a. Types of roads (Width).
 - b. Surfaces of roads.
 - c. General terms used in road maintenance.
 - d. Kinds of damages and causes.
 - e. Methods of repair.
- 3 f. Inspection of road surfaces and repairs in training area or vicinity and explanation of above items.
2. Drainage
- a. Importance and need.
 - b. Effects of poor drainage.
 - c. Methods - side ditches, crown, shoulders, and culverts.
- 3 d. Inspection of sites in training area, showing the effects of improper drainage.
- e. Demonstration of correct ditching.
3. Revetments
- a. Types.
 - b. Use and importance.
 - c. Methods of Construction.
- 4 d. Inspection of demonstration sites.
4. Culverts
- a. Types.
 - b. Use and importance.
 - c. Methods of construction.
- 4 d. Inspection of demonstration and training sites.
- e. Construction of small box or log culvert. Practical work.
- 34 5. Maintenance Work
- Practical work on maintenance and improvement of road surfaces, drainage and culverts on the assigned regimental road sections.

52 Hours - Total

References: FM 5-10, 28 January 1944
FM 5-35, 24 March 1944
FM 21-105, Check List No 13, 2 June 1943

APPENDIX Q

HISTORY OF THE ENGINEER MESS

APPENDIX Q

THE FIFTH ARMY ENGINEER MESS IN FLORENCE

This is the story of Villa Camerata or by a more recently acquired title, Villa "Fifth Army Engineer Mess". Little do we think as we dance in the Main Ballroom or sip an Engineer Special at the modern bar, that the history of our Club House could turn the clock back so far.

Our Villa is first mentioned in the Archives of 1427 when it belonged to Bernardo Ridolfi who lived under the "Banner of the Black Lion". At this time there was a Ridolfi who attained fame as Ambassador to the Pope, the King of Naples, the King of France, and the Emperor of the Holy Roman Empire. Diplomacy did not extend to their home life, however, and the Ridolfi family divided into two factions. Those who sided with the powerful Medici clique were successful and prospered. Those of the Savonarola faction were not quite so lucky and their houses were looted and burnt after Savonarola was hung. Of the successful side of the family, Piero Ridolfi (1467-1525) captured the prize by marrying the beautiful Contessina Dei Medici, daughter of Lorenzo the Magnificent.

In spite of their success, the Ridolfi family found it difficult to keep up with the gay life of the times, and turned the Villa over in 1469 to Niccolo Del Barbiglia, a wool merchant, in settlement of a debt. The price of wool must have been good because Niccolo's heirs did not sell until 1562, almost a hundred years later. Lelio Torelli of Fano, whom Cafe Society at that time called the "Magnifico Messer", was the next owner. He held on to it until 1586, then sold it to Giovanni Sommaia, who in the same year sold it to Tommaso Da Verrazzano.

The Verrazzano family is chiefly famous because of Giovanni Da Verrazzano, the noted explorer, who directed two expeditions to the North American coast, one in 1523, the other in 1528, and also sought a western passage to the Indies. Verrazzano, financed by Francis I of France, was the first person to sail along the American coast between Florida and Labrador. During his tour, he visited the harbor of Newport and the coastline of Maine and Massachusetts. If old Verrazzano were alive today, he could make his fortune in passenger trade going in that direction. As a result of his voyages, some of the earliest maps of the Eastern seaboard of the United States were compiled. These maps were liberally sprinkled with Tuscan place names such as Impruneta and Monte Morello.

In 1649, Luca Degli Albizzi inherited the Villa from Lucrezia Da Verrazzano. The Albizzis lived here until early in the 19th Century, when it passed to the family of the Marchese Pucci. It was in the 19th Century that the Italian Scientist, Enrico Pucci, made great strides in the geodetic survey of Italy, and was largely responsible for the primary triangulation of the Italian peninsula. It was the last member of the Pucci family who modified the house and planted the beautiful English garden we see today.

Recent owners were the Halls, the Tharpes, and the latest--a Mr. and Mrs. Morgan.

APPENDIX R

TOPOGRAPHIC OPERATIONS

APPENDIX B

TOPOGRAPHIC OPERATIONS

1. Topographic Troops.

From the start of the planning for operation "AVALANCHE" early in August 1943, up to the finish of the Italian Campaign on 8 May 1945, the Engineer Topographic facilities in the Fifth Army have been at the barest minimum. The U.S. Army's normal allotment of topographic troops is one battalion per Army, and one company per Corps. The Fifth Army has had, except for short periods, three Corps. However, the Army Engineer never had more than two topographic companies at any one time and never a battalion. A total of five companies have been assigned or attached at various times during the campaign, as follows:-

66th Engr. Topo Company for 19 months
661 Engr. Topo Company for 8 months
46th Survey Co., (SAEC) for 20 months
49th Survey Co., (SAEC) for 1½ months
517 Survey Co., (Br.) for 4 months
524 Survey Co., (Br.) for 1 month (loan from AFHQ)
Total Company Months - - - 53½ months

The 20 months of operations in Italy, divided into 53½ company months, equals an average of 2.6 companies during the campaign. With the normal allotment of one battalion and 3 companies, this average would have been 6 companies. In other words, the Fifth Army operated successfully on approximately 40% of normal topographic strength. This was possible only by the frequent operation of personnel and equipment on a 2 and sometimes 3-shift basis.

2. Map Revision and Printing.

<u>No. of Sheets</u>	<u>Scale</u>	<u>No. Colors</u>	<u>Type of Work</u>	<u>Copies printed</u>
63	1/100,000	4	Revision	762,000
38	1/100,000	7	Layered	104,500
69	1/100,000	4	Reprints	416,000
26	1/50,000	7	Layered	36,500
163	1/50,000	4	Revision	1,629,000
430	1/50,000	4	Reprints	2,683,000
491	1/25,000	1 or 2	Revision	3,431,000
855	1/25,000	1 or 2	Reprints	4,801,000
123	1/12,500	1	Photo map	329,500
<u>2,258 - - Total</u>			Total - -	<u>14,272,000</u>

The number of map sheets revised totaled 717, divided as follows:-

General revision from Air Photos,	606
Totally redrafted,	35
Straight photographic enlargement,	19
Original draft from Air Photos,	3
General revision from captured sheets,	49
Redrawn for clarity,	5
Total - -	<u>717</u>

It should be noted that the 14¼ million maps printed, does not include miscellaneous jobs, such as Defense Overprints, Terrain Studies, "Goings" Maps, Road Classification Maps, Miscellaneous Forms, Shell Reports, and Booklets. These totaled over a million copies (estimated) and represented extensive drafting and lay-out time. However, it is work that, in general, is tactical and must be done for an Army Headquarters in the field.

Topographic Operations (cont'd).

In addition, the 1 $\frac{1}{4}$ million maps printed do not present the total number of maps handled and distributed by the Army Engineer Map Depots. These are divided up as follows:-

From AFHQ for "D" Day and early follow up	1,580,000
From Higher Headquarters after "D" Day	13,754,000
From our own printing	14,272,000
Total - - -	29,606,000

Map stock on hand at end of Campaign, VE Day (8 May) totaled 3,414,000 copies.

3. Field Survey.

The triangulation network, which has constantly been carried on by the Engineers, has quietly but efficiently covered a vast number of square miles over extremely rough terrain. The mountain tops were occasionally mined and booby-trapped and sometimes under enemy artillery fire. This work has been under the direct control of Group A of the 46th Survey Company, (SAEC), augmented by Survey Platoons of United States and British Topographic Companies. Work performed in terms of statistics, from October 1943 to October 1944, is as follows:-

Italian Trig. stations Verified	264
Italian Trig. stations Amended	305
New Trig. stations Established	624
Trig. stations searched for and found destroyed	83
Total - -	1,276

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COMMAND AND GENERAL STAFF SCHOOL
Fort Leavenworth, Kansas

LIBRARY REGULATIONS

NC

1. Books, pamphlets, and periodicals must be charged at the loan desk (signature on book-loan card) before being taken from the Library.

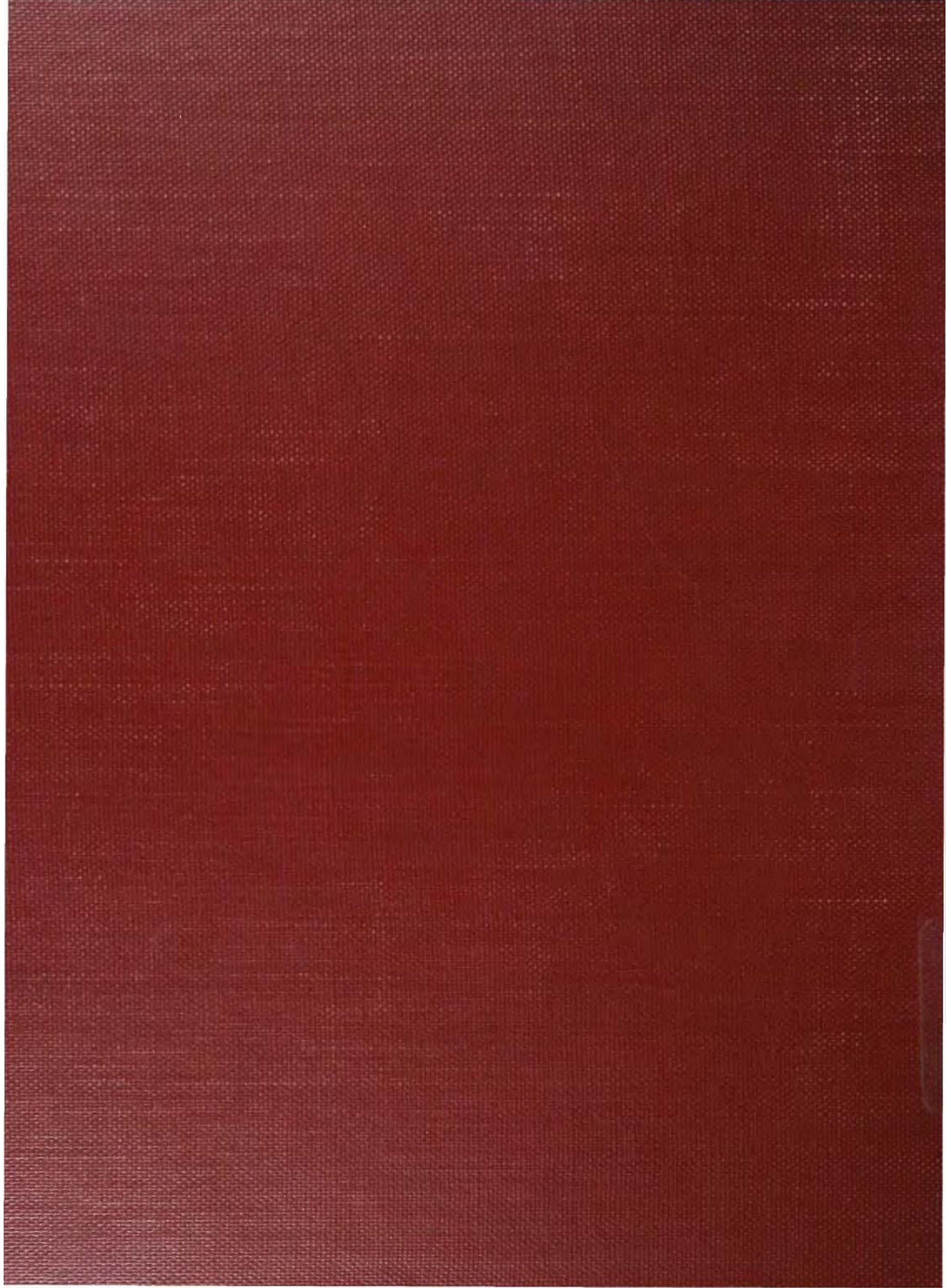
2. Any item drawn from the Library must be returned within one month.

Exceptions to this regulation are as follows:

- (1) Material issued to classes as a whole.
- (2) Material issued to instructors for professional use.
- (3) New books which are in demand must be returned within one week.
- (4) Books required for faculty use are subject to recall at any time.
- (5) All persons having library material in their possession will return same before leaving the post permanently.
- (6) Books loaned outside the School must be returned within two weeks.

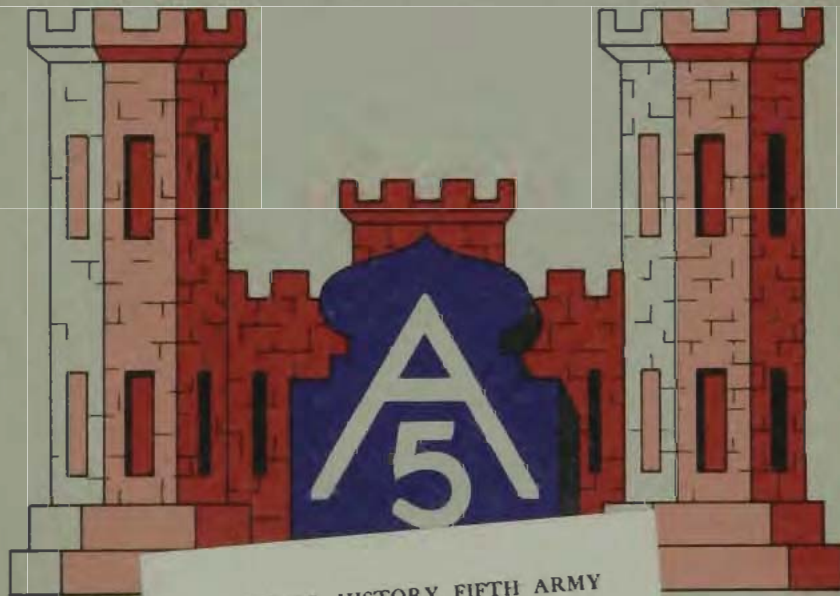
3. Reference books and current periodicals will not be removed from the library.

75



ENGINEER HISTORY

MEDITERRANEAN THEATER



ENGINEER HISTORY FIFTH ARMY

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THE ENGINEER SCHOOL

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FIFTH ARMY

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ENGINEER HISTORY - FIFTH ARMY - MEDITERRANEAN THEATER

TABLE OF CONTENTS

VOLUME ONE

	<u>Pages</u>
I. AFRICA	1 - 6
A. Formation of Fifth Army Engineer Section	1
B. Training Programs and Schools	2
C. Initial Plans	3
D. The Final Plan	3
II. SALERNO AND NAPLES	7 - 26
A. The Tactical Situation	7
B. Work at Engineer Headquarters	9
C. Unit Operations	12
III. VOLTURNO TO MAY 11TH	27 - 80
A. The Tactical Situation	27
B. Work at Engineer Headquarters	29
C. Unit Operations	32
IV. THE ANZIO BEACHHEAD	81 - 104
A. The Tactical Situation	81
B. Work at Engineer Headquarters	82
C. Unit Operations	85
V. MAY 11TH TO THE ARNO	105 - 159
A. The Tactical Situation	105
B. Work at Engineer Headquarters	105
C. Unit Operations	109

VOLUME TWO

VI. THE ARNO THROUGH THE WINTER STATIC PHASE	160 - 229
A. The Tactical Situation	160
B. Work at Engineer Headquarters	161
C. Unit Operations	166
VII. THE PO CAMPAIGN	230 - 264
A. The Tactical Situation	230
B. Work at Engineer Headquarters	232
C. Unit Operations	235
VIII. LESSONS LEARNED IN THE ITALIAN CAMPAIGN	265 - 268

VOLUME THREE

APPENDICES

SECTION I

AFRICA

A. Formation of Fifth Army Engineer Section

At one minute past midnight on 5 January 1943, Lieutenant General Mark Wayne Clark activated and assumed command of the United States Fifth Army in a school for French mesdemoiselles in Oujda, Morocco. Preparation for this action had begun on 1 December 1942 when the Fifth Army was constituted by a War Department letter to the Commanding General, European Theater of Operations. On 12 December, Headquarters, European Theater of Operations, named General Clark commander of the Fifth Army.

The Fifth Army was to have a two-fold task: (a) territorial responsibility, in cooperation with the French forces, of much of North Africa (French Morocco and Algeria west of Orleansville); and (b) occupying Spanish Morocco in the event relations with Spain were strained too far. Its most important mission, however, was "to prepare a well-organized, well-equipped, trained, and mobile striking force--fully trained in amphibious operations". This meant getting ready for one of the most difficult operations in the art of war--an over-water attack on a defended hostile shore.

On the same day as he activated the Fifth Army, General Clark published an order naming his staff officers. Colonel Frank Otto Bowman was designated as the Army Engineer. Colonel Bowman (now a Brigadier General) had been with the Corps of Engineers since his graduation from West Point in 1918 (see "Appendix A" for a brief resume of his Army career).

In December 1942, before the Fifth Army was activated, Colonel Bowman began to organize the Engineer Section on paper, using Table of Organization 5-200-1 as a model. On 11 December 1942, the first of several provisional Table of Organizations was submitted to the Army G-1. This was rejected on the ground that it was too large for an army that was not scheduled to begin combat operations for many months. Succeeding Table of Organizations were continually whittled down until the one finally approved on 5 January 1943 provided for only twelve officers, one warrant officer and eleven enlisted men (Table of Organization 5-200-1 authorized twenty-eight officers, one warrant officer and forty-three enlisted men). Major reduction in personnel was in the proposed Supply and Construction Sub-sections, whose work was to be largely handled by Base Sections during the Army's training period. To compensate for this, a few specially qualified Construction and Supply officers were requested from Allied Force Headquarters to form a nucleus for the future expansion of these Sub-sections when combat operations should begin. These and most of the other officers and enlisted men of the Engineer Section came from II Corps, which had been greatly reinforced for the landing at Oran.

When first organized, the Engineer Section had eleven officers, one warrant officer, and nine enlisted men--one officer and two enlisted men short of the personnel authorized in the provisional Table of Organization (see "Appendix B" for original personnel). The Headquarters Sub-section of the Engineer Section consisted of the Army Engineer and his Executive Officer. The Engineer was advisor to the Army Commander, and also supervised the Engineer Sub-sections, all Army Engineer work, and recommended Engineer policies. The Executive Officer was to assist the Engineer with this work, and be prepared to take over the duties of the Army Engineer in his absence. In addition to the Headquarters Sub-section, there were Administrative, Intelligence and Mapping, Operations and Training, Engineering, and Supply Sub-sections (see "Appendix C" for diagram of Original Organization).

The collection of tactical and engineering intelligence, both friendly and enemy, and its evaluation and dissemination were taken care of by the Intelligence and Mapping Sub-section, as well as the preparation and distribution of maps and charts, and supervision of topographical units.

The Operations and Training Sub-section used the information gathered by the Intelligence and Mapping Sub-section to make recommendations regarding the training and employment of Engineer troops by the Army Commander. Its other duties were the maintenance of an Engineer troop list, the study and dissemination of field defenses and demolition methods, and the supervision of Army camouflage.

The Engineering Sub-section had a purely advisory mission. It was to keep the Army Engineer informed on the progress of Engineer work, on water supply, on traffic circulation, on construction methods, on the distribution of engineer troops, and on the nature and capabilities of beaches and ports in probable operational areas.

The Supply Sub-section was to advise on all matters relating to Engineer equipment and supplies. It was also to recommend dump locations, supply priorities, and to handle all real estate problems (for the complete Engineer Section Duty List see "Appendix D").



Officers of the Engineers Section (photographed in March, 1943): First row, left to right: Major Harold E. Wetzell; Lieutenant Colonel John G. Ladd; Colonel Mark M. Boatner, Jr.; Colonel Frank O. Bowman; Lieutenant Colonel Harry O. Paxson; Major I. W. Finberg; Major Ernest C. Adams. Second row, left to right: Captain Herman H. Vanderveer; Captain Otto Dreydoppel; Captain Joseph R. Steele; Captain Bayard F. Wombacker; First Lieutenant John W. Graham, Jr.; Warrant Officer (jg) Samuel D. Jones. Third row, left to right: Captain Eric H. Yeo; Major Cecil L. Stephenson; Major Stanley J. Hawkins; Captain Robert B. Hoskyn (last four are members of the Royal British Engineers).

SECTION I

B. Training Programs and Schools

The first major operation by the Fifth Army was not undertaken until 9 September 1943. The time that elapsed between the Army's activation and that date was spent in planning and in training.

As part of a Fifth Army program, the Fifth Army Engineer Training Center was activated 12 March 1943. The school was started as a seven-day course for officers and non-commissioned officers and stressed the engineering subjects of mines, demolitions, and booby traps, with some additional training in camouflage, military courtesy and discipline, and physical conditioning. This was not at all in accord with the Army Engineer's original plan, however. Colonel Bowman had desired to send one regiment at a time to the Center for at least a month of vigorous training in mines, demolitions and the building of bridges and roads. That this could not be accomplished was due to the Base Section's reluctance to release Engineer troops wanted for its construction program. From the time of the School's activation until the Fifth Army relinquished control on 21 August 1943, nineteen classes were held with a total attendance of 1,538. Two hundred and twenty-two French troops and two British are included in this total (see "Appendix E" for attendance break-down).

The site of the school was a barren, desolate area ten miles from a main highway, about forty miles west of Oujda, Morocco. There were a few stunted trees by the side of an old Arab well and an abandoned railroad line with its decrepit station, the old Fortress of Ain Fritissa. There was also sand and heat. By this meager oasis, war was simulated--battles that must have seemed uncomfortably realistic to the shades of Beau Geste, the English Legionnaire whose famed stand had been made at this very spot. Once again this stretch of desert took on the aspects of a battle ground, for realism was the Center's keynote. Again men drilled on the blistering sands; again a bugle's tone disappeared into the desert waste.

The School's culminating demonstration was the night removal of a mine field. One half of the class laid the field, the other half had the task of neutralizing it. Realism was achieved by the utilization of smoke and tanks. As the removal parties lifted the field (sown like wheat with anti-personnel mines and booby traps), thirty and fifty-caliber weapons kept an erratic fire three feet above the sands in infiltration course style. For good measure, demolitions were set off from a control tower; ignited charges were thrown onto the field; and the demonstration tanks fired thirty-seven millimeter shells across the area. To be effective, these demonstrations had to be dangerous; yet only two men were killed during the whole series of seven-day, and later nine-day classes. Both these men were from the 111th Engineer Combat Battalion. Lieutenant Thomas A. McLeer was killed 24 June 1943 during the final night problem of the eleventh course. The faulty trajectory of a thirty-caliber machine gun was responsible. Sergeant Kenneth C. Swartz was instantly killed on 30 July while lifting an M1A1 mine. Few live mines were used in the fields; most of them were chargeless training mines containing only igniters.

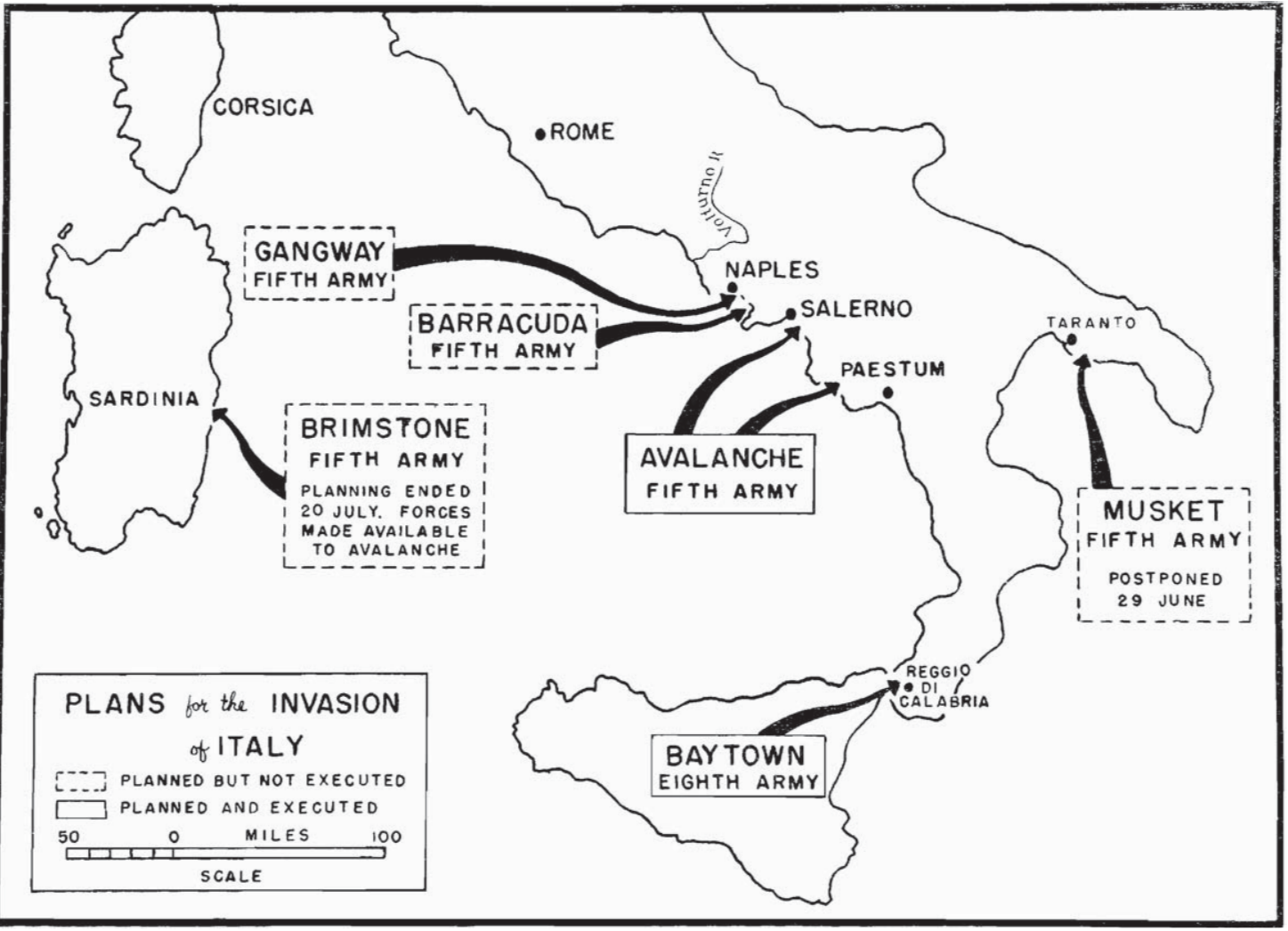
The Engineer Training Center was under the command of Lieutenant Colonel A. W. Wyatt (famed for his fatiguing "Wyatt's Run" at the Center), formerly the Executive Officer of the 20th Engineer Combat Regiment. He later left the school and went to Italy with the Engineer Section of Fifth Army. He was in command of the 141st Infantry Regiment of the 36th Infantry Division when killed by a shell near Cassino.

To establish the Center, four experienced officers were obtained from the British Eighth Army: Major C. L. Stephenson, Major S. J. Hawkins, Captain E. H. Yeo and Captain R. R. Hoskyn. They had all been fighting with the Eighth Army from El Alamein through Gafsa and were old hands with enemy mines, patterns and techniques. One company of Engineers was kept at the school for use as demonstration and administrative personnel, guards, etc.

The Army Engineer, after approving the curriculum, kept in close touch with the school through three Engineer Section officers stationed there and by frequent inspection trips--at least one each week--as well as inspection by others of his staff.

The officers from the Engineer Section were: Major H. E. Wetzel, the Executive Officer; 1st Lieutenant L. A. Caldwell; Warrant Officer (jg) S. D. Jones (for a roster of the school's staff see "Appendix F").

Considerable difficulty was experienced in getting the Training Center into operation. Although Allied Force Headquarters had promised all kinds of help, no one, or nothing was available. To confuse the situation further, Allied Force Headquarters suddenly ordered the Army Commander to open the school as soon as possible. The Army Engineer had to make his own arrangements. The British officers were borrowed; the site selected; and plans, sometimes rather fantastic, were made for supplies. For example:



SECTION I

Training Programs and Schools (cont'd).

it was impossible to obtain any appreciable amounts of enemy mines or demolition equipment. Consequently, Lieutenant Caldwell was ordered to Tunisia for reconnaissance purposes. Next, permission to use General Clark's personal C-47 was granted. In this manner, enemy mines were conveyed to the school as soon as Lieutenant Caldwell had located caches of them in the Tunisian battle ground.

In addition to the Engineer Training Center, the Arzew Amphibious Training Center was constructed for Fifth Army by engineer troops. The engineers also built instruction centers for other branches, such as the Battle Training School for Infantry and Artillery.

C. Initial Plans

The first operational task on the Army's agenda was the preparation for an attack against Spanish Morocco. Later, plans were prepared for an attack on Sardinia. These two operations were known as "BACKBONE" and "BRIMSTONE". The Engineer Section wrote terrain studies and prepared map and supply plans for both. "BACKBONE" rapidly lost consideration as the Allied hold on North Africa became more firm. After the visit of General Orgez in June, it appeared the Spanish Government had no desire for a break with the United Nations. "BRIMSTONE", however, was long considered, and plans were carefully drawn up for G-2, G-3 and G-4. It was not until 20 July 1943 that the operation was discarded entirely. Two other operations, "GANGWAY", a landing in the North Naples Bay, and "BARRACUDA", a direct entrance into the harbor of Naples, were to be used in the event the Italians capitulated and no enemy resistance was found on the mainland. Less planning was done for these operations as the projects were considered for only a short period of time. The supply plans for "BRIMSTONE" were used as a basis for all other proposed operations, with modifications made to fit each new situation. Terrain studies, and map and supply plans were also made for "MUSKET", another proposed attack on Italy, this time near the port of Taranto (see Map #1).

Then came "AVALANCHE", the final plan, the plan that was to launch the Italian campaign, the plan that was to bring about the first successful landing by the Allies of World War II on the mainland of Europe. General Eisenhower discarded operation "MUSKET" on 29 June. On 20 July, he cancelled "BRIMSTONE" (Sardinia). On 26 July, the combined chiefs of staff, Washington, D.C., cabled General Eisenhower urging "AVALANCHE", a landing on the West Italian coast, somewhere in the vicinity of Naples. And on 27 July, General Clark was instructed to prepare to take Naples and the nearby airfields "with a view to preparing a firm base for further offensive operations".

D. The Final Plan

Planning for Operation "AVALANCHE" was started immediately. The heads of all Fifth Army General and Special Staff Sections were formed into a planning group which left Oujda by plane during the last days of July, and flew to Bouzerrea, a suburb of Algiers. From 12 April until 17 August, Colonel M. M. Boatner was the Army Engineer. On 17 August, Colonel Bowman reassumed command. To assist him in the planning group were Colonel H. O. Paxson, Lieutenant Colonel J. G. Ladd, Major I. W. Finberg, 1st Lieutenant J. W. Graham, Master Sergeant J. R. Lackey, Staff Sergeant D. M. Hansen and Technician Fourth Grade J. G. Duffy.

The first British Engineer Officer to join the Engineer Section was Major G. K. Benn, R.E., who reported for duty at Planning Headquarters, Algiers, on 20 August 1943. He was joined a week later by Lieutenant Colonel B. B. Smith, R.E., who had been appointed Assistant Director of Works in command of the British Increment Engineers. On 1 September, the staff was completed by the arrival of Major H. R. G. Clements, R.E. In addition to the officer personnel, were four clerks, one a Staff Sergeant, one a Corporal, and two Lance Corporals.

Prior to the landing at Salerno, the staff was principally engaged upon clarifying the Engineer plan in respect to X Corps (British), particularly in respect to supply. There was no concrete plan from higher headquarters, and in the absence of any firm direction it was difficult to decide upon any definite plan of action. As the Chief Engineer, X Corps, had already submitted a request for supplies up to D plus 35, it was hoped that this would suffice until the situation became more clear. Major Benn left Planning Headquarters on 1 September to embark with the advance party, with which he landed on D Day at Paestum. The remainder of the section was engaged in collation of intelligence until 17 September, at which time it embarked at Oran for Italy. It landed on 21 September on the Paestum beaches.

SECTION I

The Final Plan (cont'd).

The Engineers in the Algiers planning group had the responsibility for making terrain studies covering beaches, airfields and maneuver spaces for armored units. Exhaustive research was undertaken and many information sources investigated. As in the case of the other projected operations, the Engineer Intelligence Sub-section relied heavily upon ISIS (Inter Service Information Series) Reports supplied by the British through the Assistant Chief of Staff of Allied Force Headquarters. ISIS books were invaluable. The moment war was declared in 1939, the British War Office had gathered together every bit of information obtainable concerning countries in which the Empire might some day be forced to fight. Included in the ISIS Reports were the country's history, politics, culture, habits, communication systems, statistics on weather and rainfall, topography, population, business, and export products. Pictures were added, mostly scenic snapshots to illustrate the general terrain, or to show harbor installations, dams, etc.

Aerial photos were intently studied during the planning. Although they were very difficult to obtain--the flight to Italy was long and dangerous at that time--their importance was such that the actual choosing of the landing beaches was made from them. As the photographic supplies were critically limited, the emphasis was on pictures of the beaches and harbors, or on such points of interest as communication centers and important bridges.

After a preliminary study by his staff, the Army Engineer recommended that the "AVALANCHE" landing be made either in Salerno Bay or along the beaches just north of Naples, both feasible sites for an amphibious assault. Salerno had the advantage of being a relatively undefended bay, at least in regard to permanent fortifications. The Salerno beach was preferable to the one north of Naples because of better offshore beach slope conditions and because the sand dunes, which stretched along the shores, were narrower and thus more convenient for exit routes. Also, Salerno was closer, easier to supply, and better for air support (which later became the deciding factor). Salerno's main defect was the mountainous perimeter of the beachhead arching from the shore inland, and back to the shore again. The mountains would certainly afford excellent observation posts and artillery positions for the enemy. Moreover, astride the route from Salerno to Naples was Sorrento Ridge which made a very difficult passage for any invader. The great advantage of the beaches north of Naples was a broad plain stretching inland, across which were numerous good roads for supply routes and movement. A foothold in this sector would cut Naples off from the German forces in Central and Northern Italy. To offset this, however, was the fact that the Germans expected that any attack by the Allies might likely be made between Naples and Gaeta and, therefore, the area was heavily mined and prepared for defense. More important, there were forces nearby to man these defenses. Also, in the event the Germans were forced to cede the territory, they could easily flood the area and seriously hinder the movement of any attacking army. Both the Naples and Salerno sites were approved by the Navy, which studied the coast line with a view to its part in landing the Army. The Army Commander favored the landing north of Naples, but the Air Force Commander stated that he could not guarantee air cover that far north. It was, therefore, decided that Plan "AVALANCHE" was to be executed at Salerno.

Fifth Army Headquarters and its personnel moved 480 miles from Oujda to Mostaganem while the planning group continued its labors at Bouzerrea. As soon as the exact site had been chosen, the planners went into much greater detail on "AVALANCHE". A large volume of material was assembled, evaluated and coordinated, and great cooperation was effected in integrating the varied activities within the Engineer Section, as well as between it and all other Army sections. The Intelligence Sub-section's terrain studies described the general nature of the area, the ridge system, drainage system, communications, water supply, ports and beaches. The land aspects that have a bearing on military operations were also stressed. Finally, the military significance of these facts was explained (see "Appendix G" for Terrain Study "AVALANCHE").

Accompanying the terrain study were specialized map series. These series had been annotated for concealment, communication, water lines and ridge lines. Map plans also had to be prepared. Coverage had to be provided for the geographical areas to be included in the initial operations, and it had to be decided which scales were to be used. Plans had to be made for depots and for distribution down through the normal communication channels. The initial supply of maps was furnished by Survey Directorate, Allied Force Headquarters. Maps with scales of one to twenty-five thousand, one to fifty thousand, one to one hundred thousand, and one to two hundred and fifty thousand were requisitioned, covering an area from south of Salerno to north of Anzio, and from the west coast east over most of the peninsula. In addition, one to five hundred thousand and one to one million scales from south of Salerno up to Rome and north were ordered. Finally, special outline and road maps of the Naples area were provided, as well as special beach and defense overprints. Provision for a hundred per cent replacement stockage of initial issues had to be planned for by the Army Engineer for needed distribution on the assault beaches. This, of course, meant the establishment of a map depot on the beachhead. Any one, by merely glancing at map orders, the copies themselves, or by overhearing references to maps, can immediately arrive at a fairly accurate conclusion as to the location of planned operations. For this reason, all map and photo work had to be handled with utmost secrecy. To insure this, the Map Depot Detachment worked, ate and slept under guard in a building which the men were not permitted to leave until the landing at Salerno.

SECTION I

The Final Plan (cont'd).

From the start of the planning, the Supply Sub-section had been working on its own plans. As a new operation was considered, the previous supply estimate was retained and then revised. In this way, the plan for "AVALANCHE", which was completed by the end of August, was actually a continuation of the work begun in the spring. In the same manner, the requisitioning was little more than the routine work required by any moving condition. Varying with the troop list, enough equipment had to be on hand to supply all the engineer units. The terrain study dictated the probable amount of bridging and defense materials that would be needed, and also made possible the selection of future dump and depot sites.

The corrected Operations Plan was published 26 August. D Day was set for 9 September 1943, H Hour for 0330. G-2 had reported that the enemy strength at Salerno could be anticipated to be about 39,000 troops on D Day, and that by D plus three that number could be increased to 100,000. The Allied plan was to land 125,000 troops: the British X Corps north of the Sele River, the American VI Corps south of the river. X Corps was to make the main assault towards Naples. Its immediate objective was Salerno, the Montecorvino Airfield, the rail and road center of Battipaglia and the Sele bridge. On the right, VI Corps was to take the mountain arc Altavilla - Albanella - Rocco d' Aspide - Mount Vesole - Magliano around to Agropoli at the southern end of the Bay of Salerno

The troops given to the Fifth Army for "AVALANCHE" were as follows:

VI Corps (AMERICAN):	34th Infantry Division
	36th Infantry Division
	45th Infantry Division
	1st Armored Division
	82nd Airborne Division
X Corps (BRITISH):	46th Infantry Division
	56th Infantry Division
	7th Armored Division
	1st Airborne Division

Fifth Army Engineer troops for "AVALANCHE" were as follows (see "Appendix H" for thumb-nail histories of Fifth Army Engineer units):

<u>Engineer Units</u>	<u>Assigned or Attached</u>
531st Engineer Shore Regiment	VI Corps
540th Engineer Combat Regiment (-Company "F")	VI Corps
Company "F"	82nd Airborne Infantry Division
10th Engineer Combat Battalion	3rd Infantry Division
16th Armored Engineer Battalion (-Company "B" and Detachment Company "E")	1st Armored Division
Company "B" and Detachment Company "E"	VI Corps
109th Engineer Combat Battalion	34th Infantry Division
111th Engineer Combat Battalion	36th Infantry Division
120th Engineer Combat Battalion	45th Infantry Division
307th Airborne Engineer Battalion	82nd Airborne Infantry Division
46th (Br) Infantry Division Royal Engineers	46th Infantry Division
56th (Br) Infantry Division Royal Engineers	56th Infantry Division
7th (Br) Armored Division Royal Engineers	7th Armored Division
X Corps (Br) Troops Royal Engineers	X Corps
36th Engineer Combat Regiment (-Company "H")	VI Corps
Company "H"	82nd Airborne Infantry Division
39th Engineer Combat Regiment (-2nd Battalion)	VI Corps
337th Engineer General Service Regiment	Fifth Army
343rd Engineer General Service Regiment	Fifth Army
Company "A", 405th Engineer Water Supply Battalion (-1 Detachment)	Fifth Army
Detachment, Company "A"	VI Corps
Company "C", 405th Engineer Wat Sup Battalion	Fifth Army
427th Engineer Dump Truck Company	Fifth Army
1202nd Engineer Fire Fighting Platoon	Fifth Army
1st Platoon, 451st Engineer Depot Company	Fifth Army
Detachment (Reconnaissance) 696th Petroleum Distributing Company	Fifth Army
2616th Engineer Utilities Platoon	Fifth Army
661st Engineer Topographic Company	VI Corps
2690th Engineer Map Detachment	531st Engineer Shore Regiment

SECTION I

The Final Plan (cont'd).

While all these Fifth Army engineer units were feverishly preparing for the Italian campaign, the engineer planning group returned to the Command Post at Mostaganem. Their work finished, the planners packed their things, sat down and waited.

In the first days of September, the ports of French North Africa passed from a stage of hectic activity to a state of tense inactivity. The men and the machines were poised and ready. From Oran and Mers-el-Kebir, the operation's two westernmost ports, the ships pulled out on 5 September. The beaches of Ain-el-Turk and the sunbaked backs of bathing nurses faded into the horizon. The casino on the bluffs of Canastel, where the Commandoes lived, slipped behind. Last to disappear was the rockbound fortress of Santa Cruz. Au revoir, Africa. The Avalanche rolled eastward and with its ever increasing bulk of ships and guns and supplies crashed into the Bay of Salerno in the late evening of 8 September. Ciao, Italy.

SECTION II

SALERNO AND NAPLES

A. Tactical Situation

Numerous peculiarities beset the landing at Salerno. At 1830 hours on 8 September, General Eisenhower had broadcast the news that hostilities between the United Nations and Italy had been terminated effective at that moment. The Italian representatives had met with the Allied leaders some months before, and the Italians had capitulated--but all news of the agreement was to be hushed up until the Allies decided to make it public. It was hoped that the coming of the announcement so shortly before the attack would cause the Italians to cease resistance and deprive the Germans of needed time to reorganize their defenses. Faces were tense as the moment of landing neared. Would the strategem succeed?

The moon went down just before midnight, yet the vessels could not enter the bay of Salerno--minefields blocked a close approach to shore. As a result, the ships were anchored twelve miles from the beaches until the mine sweepers had opened gaps into the bay.

The landing craft of the first wave neared shore without a shot from the enemy. Then, after a short, tense quiet, what sounded like a public address system was heard, "Come on in and give up. We have you covered!" With all possible dispatch the forces landed. The first amphibious attack on the Axis mainland was being made. But the landing was no surprise to the Germans, and within a matter of seconds the beaches were subjected to a withering fire. Rumor even has it that the German forces had staged a practice defense at this spot only the previous day. It was not too unlikely, as the invasion had been a rather poorly kept secret; all Algeria had buzzed and rumored for some weeks.

Both Corps quickly deployed and consolidated their gains throughout the first four days; both striving to gain their initial objectives, but against mounting enemy resistance. A curious situation existed on the beach. The Rangers had landed further north and were gaining the Corrento heights above Naples. Their needed reinforcements and supplies were taken from the Salerno beachhead. Thus, there was a situation of landing supplies and troops and of loading them from the same beaches at the same time.

A decisive period was reached on 13 and 14 September, when the British and American forces went over to the defensive. They lost considerable amounts of previously taken ground under the pounding of heavy enemy counterattacks. The greatest danger was the threatened separation of the two Corps along the Sele River. It was at this time that the Army Command Post was forced to move back; the only occasion that this happened during the war in Italy. After landing on D plus 1, the Army Engineer and the Signal Officer reconnoitered for an Army Command Post area. A suitable site was located in the home of Baron Roberto Ricciardi. If it had not been for the battle drumfire, General Bowman might have been on one of those romantic pre-war Cook's tours of the Mediterranean. He made his bed under a rosebush in the Italian garden, where a bright moon reflected silver off the rose petals as they showered down around him. Faintly the air stirred; water splashed in the fountain. A rugged war!

The idyl was shattered on D plus 4. Army Headquarters, which was in front of the division command posts, moved back into the brush as the enemy approached to within 1000 yards of the site.

On 15 September, the crisis had passed, and the enemy changed to the defensive. The British Eighth Army had advanced rapidly the first half of September and had reached Sapri, a town only forty miles south of the beachhead.

Slowly at first, the Avalanche regained its strength and started toward Naples. It moved over pitted roads and blown bridges. The Germans had started their demolition work five miles north of Salerno and from there on to Naples and the north all bridges were down and all routes blasted with craters. On 26 and 27 September, the fall rains began and washed down dirt and rocks on the roads and damaged several key bridges that the two Corps were using. But Naples was reached. On 1 October, the damaged city was taken. Between Allied air-raids and German demolitions, most of the harbor installations were destroyed; ships had been wrecked and scuttled at piers and in the harbor; docks and warehouses were piles of crumbled stone and fire-twisted steel. The city had no electricity, no transportation, no sewage, little water.

SECTION II



LST'S ARRIVE



DUKW'S UNLOAD THEM



LCI UNLOADS AT BEACH

SECTION II

Tactical Situation (cont'd).

But Naples was soon left behind as the Fifth Army advanced to the Volturno River. Again road blocks, blown bridges and minefields were met in profusion. Booby traps were everywhere. The Fifth Army had sustained many losses--so when the Volturno was reached on 6 October, the advance stopped. Units had to be regrouped, before the difficult river crossing was attempted in strength. The first mission had been accomplished; the Army had seized the Port of Naples and the airfields in the Naples area; a firm base for further offensive operations had been secured.

SECTION II

B. Work at Engineer Headquarters

On D Day at Salerno, Major George Boylan of the Engineer Section landed in Italy to locate a site for the Fifth Army Command Post. He was followed the next day by an advance group of the Engineer Section consisting of Colonel Frank O. Bowman, Army Engineer, Colonel Mark M. Boatner, Jr., Deputy Engineer, Lieutenant Colonel Henry C. Rowland, Jr., Operations Officer, and Captain Louis L. DeNoya, Assistant Supply Officer. That same day, 10 September, Major Boylan was killed in an air raid while at the Command Post of the 2nd Battalion, 531st Engineer Regiment. Colonel Bowman took over the reconnaissance for the Army Command Post and located a site at Paestum.

The Engineer Section began functioning immediately upon arrival in Italy. Four days later, the advance group was joined by Lieutenant Colonel John G. Ladd, the Intelligence and Mapping Officer. Nearly all of the remainder of the Section disembarked on 21 September.

Lieutenant Caldwell was administrative officer of the Engineer Section until October, at which time he was replaced by Captain Charles R. Rosenbaum. Nothing noteworthy occurred in the Administrative Sub-section during this period. Very little trouble was encountered in procuring either enlisted or officer replacements since the depots were adequately stocked.

The Operations and Training Sub-section assigned separate areas to the engineer units directly under the command of the Army Engineer. All work in the assigned sectors was initiated by the Commanding Officers concerned. This system was rarely changed. A few exceptions: the 337th Engineer General Service Regiment was specifically told to construct a bridge across the Sele River, and the 343rd Engineer General Service Regiment was similarly instructed to build a bridge at Battipaglia. Mine clearing on the beaches was performed mostly by the forward engineer units, but Army units did clear and mark some sections of the Salerno beach, and checked bridge sites and a few dump locations as the advance began. As Naples was reached, booby trap inspection crews were furnished to check the city.

Up and through Naples, 227 miles of roads were maintained, most of which had asphalt surfaces. Route marker signs were erected; hairpin curves widened; potholes filled; demolished vehicles dozed to the side; and mud brought in from access roads bladed from the pavement. Debris from bombing and shelling had created traffic blocks in Avellino, Salerno, and particularly at Battipaglia, where considerable work was required to open the streets for 2-way traffic. Appreciable damage to roads by demolition, shelling, and bombing totaled about three or four continuous miles. On these roads were constructed eight Bailey bridges totaling 620 feet, five steel treadway bridges totaling 495 feet, and one infantry support bridge 120 feet in length, in addition to 4 semi-permanent bridges with an accumulated total of 335 feet.

During this period, a chart was developed by Captain Kenyon to classify the American design of timber bridges in accordance with the British system. The American "H" system was not as flexible or accurate as the British method, and it was impossible to synchronize the two, a necessary feature in an Army composed of one American and one British corps. While the Army was still in Africa, Allied Force Headquarters had published a crude handbook that allowed a very limited transposition of values. The chart developed in the Operations Sub-section provided rules for the classification of any fixed bridge, and developed the one-way, two-way system (for load classification chart for American fixed bridges see "Appendix I", Diagram #1; for number of bridges constructed by Army Engineer units in Italy see "Appendix J", Part #1).

During the Salerno and Naples phase, cemeteries, railroads, and powerlines were continually worked on and rehabilitated. The members of the Operations and Training Sub-section made reconnaissance for local material when supplies, especially for fixed bridges, were not available. The Water Supply Officer coordinated the production of water by divisional, corps and Army engineer units. Plans were made for rear echelon units to take over the best of the divisional water points without a break in operation. Also, water supply had to be planned for many immobile installations such as hospitals and bakeries. During this period, engineer units in Italy produced 2,300,000 gallons of potable water (for a report on difficulties encountered in the operation of water supply units see "Appendix K").

By the time Italy was invaded, the camouflage responsibility had been switched to the Operations and Training Sub-section from the Intelligence Sub-section. Little camouflage inspection work was done before the Volturno was reached, as the Camouflage Officer did not arrive until 3 October. On that date, he landed at Naples with the Army Fire Fighting Units, of which he was also in charge. Two fire stations were immediately put into operation in Naples to protect Army installations in the city and its environs.

SECTION II

Work at Engineer Headquarters (cont'd).



THE 337TH'S BRIDGE ACROSS THE SELE--ORIGINAL BRIDGE IN FOREGROUND

The mapping department of the Engineer S-2 Sub-section organized and supervised the Army Map Depot, which was first built up from stocks sent in over the Salerno beaches, and later by additional stocks received through the port of Naples. The stock had been arranged for in North Africa to arrive in increments every ten days. The distribution of these maps to combat troops and Army Headquarters was supervised. In addition, the map department supervised and directed the Army topographical units in all their work of revision and reprinting of old maps, and other miscellaneous printing. Finally, all Army survey (triangulation) work in support of Army and Corps artillery was supervised and directed.

The Engineer S-2 Sub-section maintained files of data on enemy terrain north of the front lines, engineering resources, enemy engineer equipment and techniques, etc. This information was disseminated at the proper time to the Fifth Army General Staff and to Corps Engineers. Minefield records were kept, including detailed records of friendly minefields, and as much as was known of enemy minefields, in the Fifth Army Area.

At the Photo Interpretation Center, always set up at the northernmost airport in use by the Fifth Army, aerial reconnaissance photos were studied by the Engineer Photo Interpreter. Road classification maps for the area ahead of the front line were printed; details of day-by-day road and bridge demolitions by the enemy were issued in General Interpretation Reports; and Engineer Route Reports, as well as Special Engineer Reports, were published, the former giving details of all existing bridges on main roads in the enemy territory, and the latter describing main river lines and suitable crossing places over them (for sample Engineer Reports see "Appendices L and M"). By the time the Volturno was reached, the S-2 Sub-section had turned over to G-3 its recommendation on crossing sites and approaches to the river. The photo interpretation studies were made to a depth of fifty miles into enemy territory.

There were no supply functions for the Engineer Section until D plus 10, at which time the responsibility for the supply dumps was taken over. From that time on, the supply officer kept the Engineer advised as to the status of supplies. The first big headache in Italy of the S-4 Sub-section was the fact that Bailey bridges for use in the campaign had not arrived. For some weeks, the Army had only five Baileys in stock. Acetate and grease pencils were in great demand, and of the thousands of Engineer

SECTION II

Work at Engineer Headquarters (cont'd).

items stocked, were of the few found to be short. Numerous troops arriving in Italy had no idea of the type of country they were to fight in, or even in which direction they were going to move. Because of this reason, the paper and pencils were wanted for orientation of troops in addition to the anticipated demand for situation maps.

About 21 September, a program of beach checking for lost equipment was begun. Naval beach masters were continually contacted and manifests of all arriving ships examined. Whenever critical items were aboard one of these ships, their unloading was expedited when possible, and higher headquarters approached for a priority rating if necessary. During the first days of October, Lieutenant Caldwell was relieved of his administrative duties and was switched to the Supply Sub-section and put in charge of all engineer dumps. Throughout this period, the Supply Officer remained in North Africa as Engineer Representative at Fifth Army Headquarters, Rear Link.

The British increment landed at Paestum on 21 September, following the operations officer, Major Benn, who had landed on D Day. The first phase of the Italian Campaign was largely spent in sorting out the many new problems arising out of the employment of a British Corps in an American Army. The difference in organization between British and American Corps and Army engineer units brought about many initial difficulties, particularly in the taking over of road and water supply commitments behind corps boundaries. With the fall of Naples, utility services assumed greater importance, particularly rehabilitation of the electrical system which was urgently required for operation of the docks, and of water and sewage pumping stations.



RUBBLE CLEARING OPERATIONS



ENGINEER INSTALLATIONS ON D + 4 — SALERNO BEACHHEAD

SECTION III

VOLTURNO TO MAY 11TH

A. Tactical Situation

Beyond the Volturno, the outlook for the Fifth Army was not very reassuring. To the north, stretched the most difficult terrain (tactically speaking) in Italy--about as fine a defensive sector as could be found in Europe. After reaching the river on 6 October, the Army spent a week regrouping for the attack. The British X Corps was on the left flank: the 46th Infantry Division next to the sea; the 7th Armored Division in the middle; the 56th Infantry Division on the right flank next to the American VI Corps' 3rd Infantry Division. To the east of the 3rd Division, the 34th Infantry Division held the center, and the 45th Infantry Division the right. Further east was the British Eighth Army.

The attack was scheduled for the night of 12 - 13 October 1943, and at 2000 hours on the 12th six hundred guns along the 40-mile front started firing. The Germans were set on their heels. At first, they did not have time to set off their demolition charges. As their retreat became slower, however, they had much more opportunity for destruction and used it to the greatest advantage. Abatis, booby traps, "S" mines and Tellermines, new undetectable mines of concrete, wood and plastics were the order of the day. In many places, Tellermines could not be detected because of the highly mineral soil content and the abundance of shell fragments. Nevertheless, the Allies slogged on through the fall rains and mud and edged around the persistent and omnipresent obstacles.

Soon the Volturno was crossed a second time (in its upper reaches, the river flows south before it turns and goes westward to the sea). The rain continued, washing out temporary bridges and bypasses, flooding roads and bivouac sites. Naturally, the advance was slow; so again, as had happened so often in Italy, the Germans had time to construct a defensive line. The Winter Line, which the enemy was now finishing, was contacted early in November when Fifth Army forces reached the lower Garigliano River and the mountains above Mignano and Venafro.

The drive from Salerno to the Winter Line had progressed slowly but relentlessly. The position of the Fifth Army at the beginning of November, seemed an appropriate spot in which to stop, rest and regroup. The attack on the Winter Line was scheduled for 1 December, but before that time a third corps supplemented the Army's forces. II Corps was brought into the line between the British X and the American VI Corps on 17 November 1943. The line-up then, from left to right, was as follows:

X Corps	46th Infantry Division 7th Armored Division 56th Infantry Division
II Corps	36th Infantry Division 3rd Infantry Division
VI Corps	34th Infantry Division 45th Infantry Division

Later in November, the 1st Armored Division was added to II Corps. When the attack was made, the main force was exerted up the Liri Valley. The effort was begun with an even larger artillery concentration than the one which preceded the Volturno crossing. Eight hundred guns barked out as the Allies moved forward. The Fifth Army again advanced slowly, painfully. Often the terrain prevented the vehicular movement of supplies, so mules were used. Often the mule trains could not go forward, so pack trains of soldiers were formed. In this manner, food moved to the front and casualties were carried back to the hospitals, until Cassino was reached about 15 January. When the Fifth Army arrived below Mount Cassino, it had been still further augmented, this time by the French Expeditionary Corps, consisting of the 2nd French Moroccan Infantry Division and the 3rd Algerian Infantry Division. The Fifth had now become a cosmopolitan army with four nationalities: American, British, French and Italian.

SECTION III



THE ROYAL PALACE AT CASERTA

SECTION III

Tactical Situation (cont'd).

On 17 January, X Corps launched an attack along the lower Garigliano in an attempt to take the high ground across the river. The river was crossed and bridges erected, but the offensive force was not powerful enough to maintain the complete bridgehead and was forced to make a partial withdrawal. A synchronized attack across the Rapido by Combat Command "B" on 20 January met a similar fate. By 23 January, the Fifth Army units in both sectors were again in much the same positions that they had occupied before the attack began.

On the top of Mount Cassino, the aged monastery of the Benedictines kept a vigilant eye on the fortified town below and the Garigliano and Rapido River valleys. Cassino became the keystone of the entire operation. Spearheads dashed forward, only to be dulled and bent by German counterattacks. The enemy also successfully parried all out-flanking attempts. After weeks of fighting, the Liri Valley was renamed "Purple Heart Valley".

It was during this period that the operation on the beaches near Anzio was inaugurated and many Allied troops were diverted to that sector. The troops left on the Cassino front were, by now, dog-tired. They had worked and fought under the most difficult of conditions. In January and February, Cassino was rubble-ized; from 15 February on, the monastery itself came under fire, as the Americans, and then the New Zealanders, continued to try to force the strong point.

On 15 March, the largest attack yet attempted was unleashed against Cassino. All the air power in the Mediterranean Theater was turned loose in an attempt to smash to bits the enemy's greatest strong point. A vicious bombing a month before had done the defenders no apparent harm. Now all along the front the war on the ground paused. This was the Great Experiment. On the one hand, the classic defense of commanding terrain, seemingly impregnable to ground attack; on the other, the greatest massed air onslaught of the war in direct tactical support of ground forces.

Below on the battlefield, doughboys waited hopefully; artillerymen, ammunition piled high beside their pieces, anticipated their turn; and engineers on the muddy roads laid down their tools and halted the dump trucks. Every ear in the valley was cocked to catch the sound. A locust-like drone came from afar. An uncertain murmur swelled gradually; a steady, pulsing throb came from the south, as the specks began to appear, high and small against the sky.

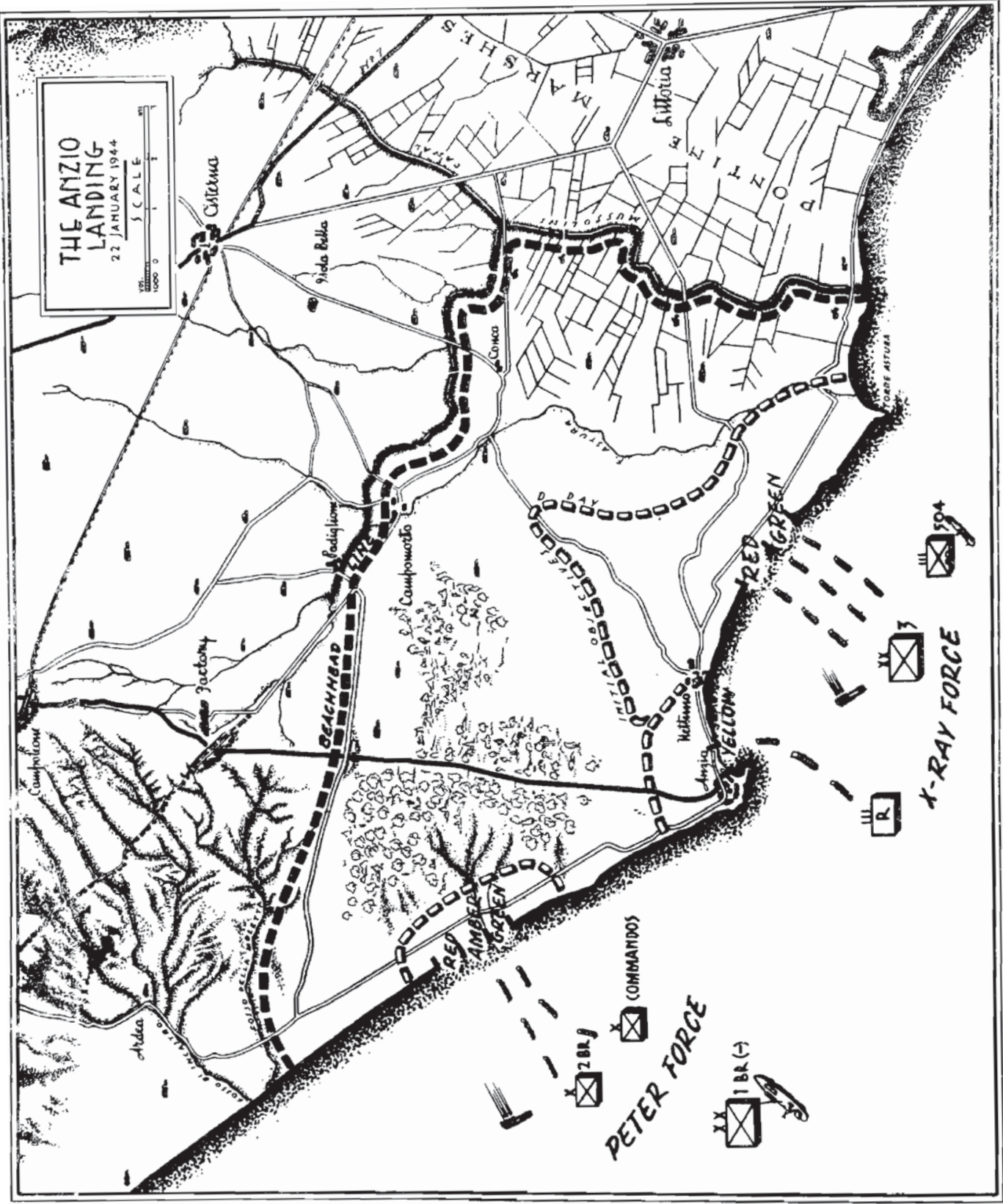
First came the mediums, B 25's and B 26's, in flights of a dozen or more. High above them the fighters flashed like quicksilver, trailing vapor. The bombers came over the target and the flights turned left. Bellies opened, the planes dropped their loads, then wheeled south once more and were gone, only to be replaced by another flight. After the mediums came the heavies, the Fortresses, and around and through them pierced the endless stream of dive bombers. All morning, the hill and the valley across the river were livid with the bright orange of bursting explosives. The strikes of the first bombs were visible, but those that followed were hidden in the billowing ocean of grey and white smoke. There were more than three thousand sorties that morning, and it was hard to believe than any human being could survive such punishment and retain his sanity.

After the bombing, the cannonade began. Every field piece in the valley (American, British, New Zealand, French), ranging from 75's to 240's, joined in one of the greatest concentrations of firepower ever directed on one target. For sheer intensity, the papers said, the barrage surpassed El Alamein, Sevastopol, Stalingrad. It was an artilleryman's dream. The target was in plain view, the range point-blank, the calibration exact, the registration perfect. For over an hour, the artillery continued, until the gunners dripped sweat in the chill air. Monastery Hill seemed to jump with the terrible detonation, seemed to writhe as if under the blows of a massive club. Great holes appeared in the 16-foot-thick walls of the Abbey; its towers crumbled, and huge chunks of masonry flew through the shrapnel-laden air.

When the barrage ceased at noon, the doughboys moved in. Surely there were no defenders left with any fight in them; surely it would be but a question of bodies and prisoners, perhaps very few of either. But it did not turn out that way. Plenty of defenders remained; plenty of fight, plenty of guns, ammunition, OP's and plenty of perseverance. Machine pistols and Spandaus hemstitched patterns up and down the draws to greet the Allied infantry; the mortar crews brought out the nebelwerfers from sheltering caves; the 88's were once again ready for business as if nothing had happened. The resistance, if anything, was more spirited than before. On the night of 17 March, for example, a New Zealand captain, haggard and grey after two nights and a day of house-to-house, room-to-room fighting said, "I started out with one hundred and fifty blokes yesterday. I'm down to forty-seven now. One sniper got thirty-four of my men in a single day before we could reach him." Allied troops were still unable to capture the Cassino stronghold.

THE ANZIO LANDING
22 JANUARY 1944

SCALE
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1:50,000



SECTION IV

THE ANZIO BEACHHEAD

A. The Tactical Situation

The Anzio Operation, known as "Shingle", was quite a shocker to the Germans. Quite a large area might have been taken after the landing on 22 January, if sufficient forces had been allocated. As it was, prudence dictated that the beachhead forces should not be overextended. The troops available were limited by shipping--the shortage of which was critical. The main purpose of the landing was to divide the German forces. The Eighth Army was to make an attack in the east; the landing was to divert enemy troops from the southern front; the big push was to be made by the main Fifth Army forces.

To insure the landing's surprise, an elaborate cover plan had been set up. A radio station was established on Corsica, which claimed to be the advance command post of VI Corps. All traffic was directed towards Leghorn, shipping was concentrated in Corsican harbors, and dummy dumps and landing craft were erected by camoufleurs.

After the landing, however, things began to go wrong. The Germans did not take as many units from the southern front as had been hoped. Instead, with astounding dispatch, a division was brought in from France, another from the Balkans, three from Northern Italy, two from the Eighth Army front, and only one and a half from the Fifth Army southern front. By D plus 11, the enemy actually outnumbered the Allied forces on the beachhead, with 98,000 troops to our 92,000. The Fifth Army now was facing a stone wall on two fronts.

Allied bombing had caused a great deal of damage to the harbor at Anzio. The mole was completely unworkable and the road at the back of Yellow Beach was completely blocked. The mole and harbor had been extensively mined with sufficient explosive to wreck the sea walls of the quays. These charges were of mixed German and Italian origin and had been laid some months. They were removed intact.

The bridges over the Incastro River and Mussolini Canal were blown by the landing troops according to plan. All these bridges had been mined by the enemy with Italian charges but it was necessary to renew all the fuzes, as the originals had deteriorated. The VI Corps defense line followed the natural anti-tank obstacles of the Moletta River and the Mussolini Canal. An urgent request for concertinas was made, 4,000 of which arrived pre-loaded on trucks on D plus 10, having been delayed by bad weather. Quantities of lumber also arrived on D plus 10, pre-loaded in trucks. The lumber had not been asked for, nor was it required.

As most roads were under shell fire, development of a road network became a matter of first importance. In depots, subsoil water was low enough to enable alluvial sand to be built up and packed by traffic. Anzio and Nettuno were honey-combed with tunnels cut in soft sandstone. These were normally used as wine cellars. One tunnel system was cleared, surveyed, and wired for VI Corps Headquarters all in 48 hours. Rumor had it that Nero built an underground tunnel from Rome to Anzio. The remains of an aqueduct were found which was several miles long, but which ran out by the Moletta River. No further trace of the Rome tunnel was found there.

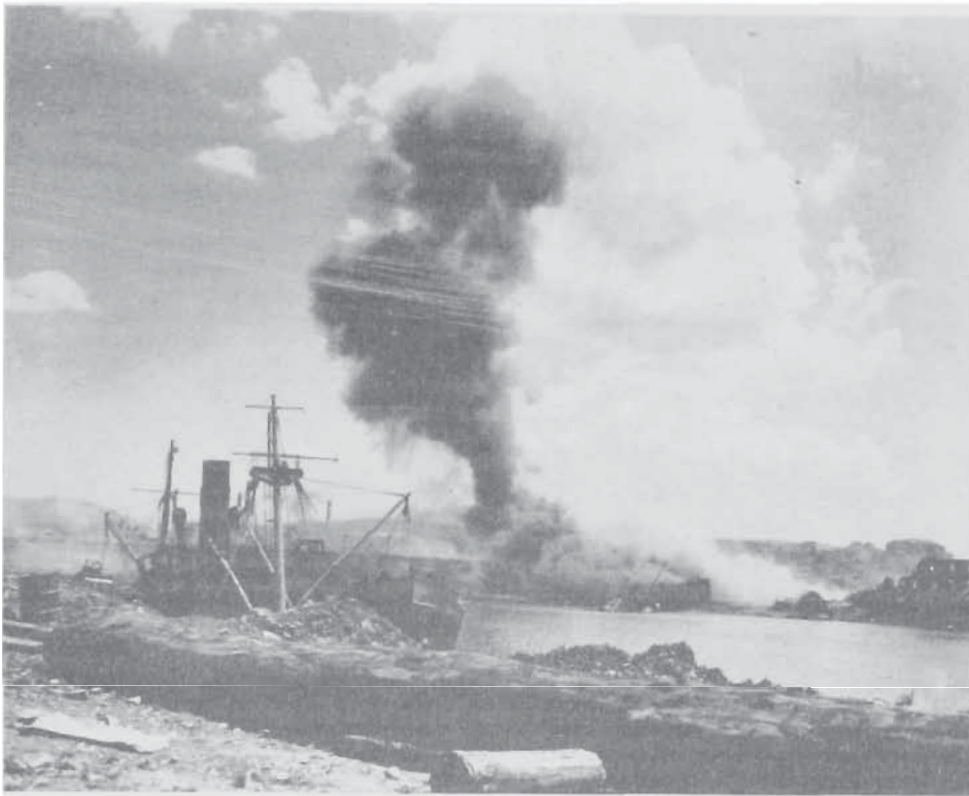
The Anzio beachhead was forced to undergo a gruelling siege, especially for the first three weeks in February, when the Germans were trying to eradicate this constant threat to their right flank. Nearly all corps and division engineer units were employed as infantry troops, either to hold frontline positions or to act as reserves.

By 19 February, however, the beachhead was firmly established and the enemy accepted the fact and dug in. The stalemate continued until late in May. The initial force at Anzio consisted of Ranger Battalions, Commandoes, the 509th Parachute Infantry Regiment, 3rd Infantry Division and the British 1st Infantry Division. Later, the 45th Infantry Division, the 1st Armored Division, the First Special Service Force, the 34th Infantry Division, the 36th Infantry Division, and the 5th and 56th British Infantry Divisions arrived as reinforcements.

SECTION IV

The Tactical Situation (cont'd).

Following the break-through of the Garigliano defenses on 11 May by the Fifth Army southern front forces, and their subsequent northward advance, the beachhead troops attacked with renewed vigor, and on 23 May broke through the German defenses on the beachhead perimeter. One of the Anzio engineers from the 36th Engineer Combat Regiment met with another engineer of the 48th Engineer Combat Battalion from the southern American force two days later, on 25 May 1945. The Fifth Army was reunited. The beachhead became history.



ANZIO HARBOR

B. Work at Engineer Headquarters

A planning board for operation "Shingle" had assembled in the Caserta palace in mid-November 1943. The representatives of the Army Engineer were Colonel Paxson, Captain Peterson, and Lieutenant Graham. The aerial photo interpreters, Captain Colvocoresses, and 1st Lieutenant Henry L. Clark, who joined the Engineer Section in November, worked at the Army Photo Center. After a thorough study of the beaches from Gaeta to Civitavecchia, the Engineer recommended the Anzio location because of the steep underwater gradient offshore, suitable beach exits and the availability of Anzio harbor.

Bids for tonnage were placed with G-4, and when the allotment for engineer supplies was made known, lists of priorities were drawn up, and plans made for the loading and unloading of engineer items.

In December, VI Corps sent a planning staff to the palace, which cooperated with the Army staff. The 540th Engineer Combat Regiment which was to be the shore engineer unit for the operations, also sent representatives. After the plans had been completed, they were turned over to the VI Corps Planning Group, because the landing was a Corps responsibility. It was this latter group that worked out the exact details and drew up the final terrain study.

When the landing was made on 22 January, the 540th Regiment went ashore at H plus 15 minutes. The regiment's Commanding Officer, Colonel George W. Marvin, was designated by General Bowman to be the Deputy Army Engineer on the Anzio beachhead.

SECTION IV

Work at Engineer Headquarters (cont'd).

Captain Peterson went to the beachhead to supervise the engineer supply depot, and expedite the movement of supplies by helping to bridge the gap from the Corps Engineer to the Army Engineer. The engineer dump at the beachhead was run by the British 15th Stores Section and the 2nd Platoon, 462nd Engineer Depot Company, the latter loaned to Fifth Army for the operation by Peninsular Base Section.

The main work for the British increment of the Engineer Section was concerned with supplies. To avoid duplication of bulky items such as Bailey bridging, a "common user" policy was formulated on all engineer items from American or British sources. Items were issued from the joint dump on demands approved by the Corps Engineer. Difficulties in communication between Army Headquarters and the beachhead made it necessary to maintain personal liaison at least twice a week, usually by PT boat or Air-Sea Rescue Craft. Coordination of British Engineer work with that of the Americans at VI Corps Headquarters was effected by the appointment of an SORE II to act as advisor to the Corps Engineer on British requirements. This position was held successively by Major G. K. Benn, Major R. T. Brain, and Major S. B. Smith.



DUKW'S WAITING TO UNLOAD LVT'S AT ANZIO

Captain Peterson of the Engineer Section was replaced by Captain Bradley in March. Demand for defensive supplies, sandbags, wire, and mines became very heavy when it was apparent that the beachhead would have to resist a siege for a considerable length of time. The engineer dump averaged about 9,000 tons and had as much as 11,000 tons of supplies at one time. It was definitely proved that an engineer depot could be operated under shell fire, a previous subject of conjecture. On the beachhead, the first salvage operations on a large scale began. Treadway bridge equipment and hand tools, especially, were repaired and reclaimed. In May, quantities of river assault crossing equipment was sent to Anzio in preparation for the crossing of the Tiber, but the subsequent seizure of the Tiber bridges intact made the use of this tactical bridging unnecessary.

SECTION IV

Work at Engineer Headquarters (cont'd).

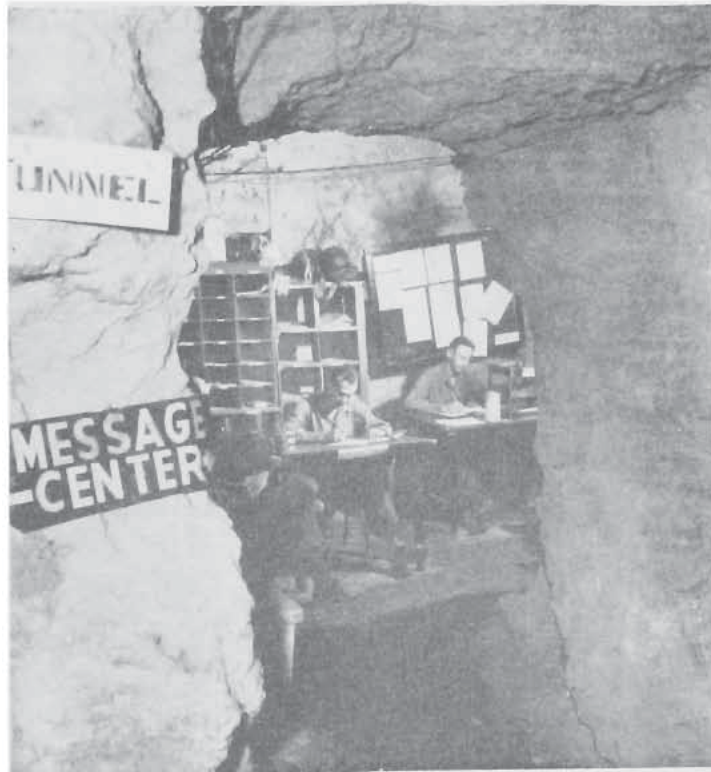
Only thirty-one miles of road were maintained at Anzio. The work consisted of taking care of the routes leading inland from the port and landing beaches. As the entire area was subjected to frequent bombing and shelling, continuous patrolling and surface repairs were necessary. Fourteen bridges, half Bailey and half steel treadway, were constructed. The area had been lightly mined before the initial assault, but gradually the perimeter of the beachhead became one of the most densely mined areas in the entire Italian peninsula. Mine laying and clearing was done almost entirely by Corps and division engineers, but Army units did check the harbor areas of Anzio and the landing beaches.

Anzio was a grave fire hazard. The great concentration of dumps and troop areas necessitated the closest of cooperation and liaison between the four Fifth Army Fire Stations, three British Stations, and the British Navy fire pumps at the ports.

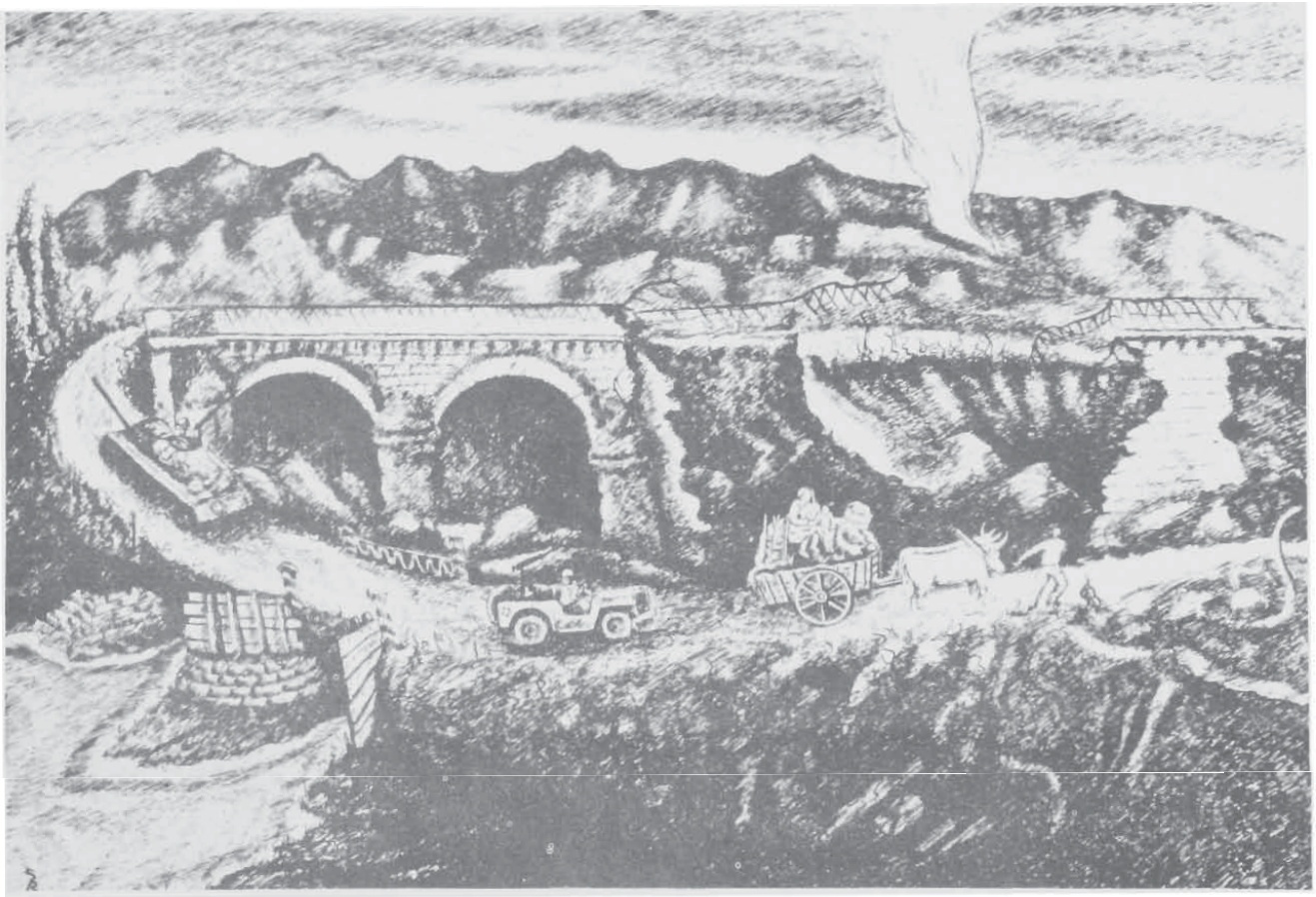
From 22 January to 25 May, 45,756,000 gallons of water were produced on the beachhead. Camouflage was restricted to individual and small installation concealment on the front lines.

Thirty-nine officers and 763 enlisted men were sent to Anzio as replacements. It was a difficult period, since two combat regiments were employed extensively as infantry with a consequent high casualty rate. The enormous demand for replacements far outran the resources of the replacement system and had to be met by transferring trained personnel from other engineer units to those engaged in the critical operations.

In May, as the attack on the Southern Front began, a Fifth Army Advance Command Post was established at Anzio in a cave constructed by the Royal Canadian Tunneling Company, and one company of the 343rd Engineer General Service Regiment. General Bowmah, Lieutenant Colonel Jones, and Major Steele went forward to this new Headquarters, where they conducted engineer operations until the two fronts joined on 25 May.



FIFTH ARMY ADVANCE COMMAND POST AT ANZIO



109TH COMBAT ENGINEER BATTALION'S BYPASS AT CECINA

Original Pen and Ink Drawing by
T/Sgt Savo Radulovic

SECTION V

MAY 11TH TO THE ARNO

A. The Tactical Situation

On 15 April 1944, a cover plan was put into operation to insure surprise for the next offensive, which was scheduled for 11 May. The build-up of men and material was to be concealed from the enemy—a difficult task inasmuch as the Fifth Army sector had been cut to a fraction of its former size and troops and dumps were being moved into front-line positions. The Eighth Army had moved to the left (Cassino was now in its sector) and the Fifth Army was concentrated between the Liri River and the Tyrrhenian Sea. The camouflage work had to make it appear that all old positions were still occupied while all new installation had to be carefully hidden. Movement was under cover of darkness and radio activity was carefully restricted.

By the morning of 11 May, the Fifth Army was ready to strike. The day was a pleasant one, and the night that followed was very quiet—until 11 P.M. Then practically every gun in Fifth Army joined in a barrage that announced the beginning of the attack. The French Expeditionary Corps on the right flank went forward into the "Impassable" terrain, and continued right through it. The enemy's carefully prepared defense sectors were neutralized by 19 May. The Gustav Line was broken; the Hitler Line outflanked. Castelforte fell, then, in quick secession, Scauri, Formia, Itri, and Fondi. Gaeta was bypassed. The Allies pressed their enemy closely. At Terracina, the 310th Engineers with the 19th Engineers, assigned to II Corps, were so far forward that a sudden but short-lived reversal on 22 May forced crews of two D-7 bulldozers to abandon their machines.

Meanwhile, the Anzio troops had prepared a supplementary attack and opened it on 23 May. Two days later an engineer of the 48th Engineer Combat Battalion from the Garigliano front shook hands with a fellow engineer of the 36th Engineer Combat Regiment from the beachhead. Anzio was no longer isolated, but part of the main Fifth Army front again. The Allies continued up to Rome on 4 June and headed north. By the end of June, the Fifth Army had rolled on to Grosseto. Soon Piombino was taken. The advance continued northward, but at a slower pace. Cecina and Highway #68 were reached. Leghorn fell on 19 August, and now another port was in Allied hands.

At the end of August, the Fifth had cleared the remaining land south of the Arno. Here the Army stopped. Before it was a situation comparable to the one that existed before 11 May. The Allies were on an open, flat plain. In front of them, in place of the Garigliano, lay the Arno, and beyond lay the Pisano hills and the Appennines. Troops were given a chance to rest and relax. As preparations were made for a new attack.

B. Work at Engineer Headquarters

With the rapid advance after 11 May, work greatly increased for the Operations and Engineering Section. A very large road net was used during this phase, and 2,907 miles were maintained by Army units. Maintenance was dropped in the rear areas as the ports of Anzio, Piombino and Civitavecchia in turn were utilized. The most important supply routes were #1, #2, #68, and at the Arno #67.

Damage to the roads by demolition, shelling and bombing resulted in road blocks wherever the lines became static. The more serious bottlenecks were at Itri, Velletri, Cisterna, Genzano, Albano, Viterbo, Civitavecchia, Cecina, and Poggibonsi. In the course of the advance 322 bridges were constructed, a great percentage of them Baileys. Army mine teams were constantly in demand. Ninety-four mined areas were cleared and marked; thirty-eight areas checked and marked. These figures were in addition to the routine checking and marking of known or suspected friendly and enemy mined areas mentioned in the monthly overlay from Engineer Headquarters.

Fifth Army fire units were required to cover a greater area than in any other period of the Italian campaign. Constant check and the closest liaison was necessary with G-4 to keep up with the movement of depots. Because of overnight closing and opening of dumps, fire departments had to move frequently and rapidly. From May to September, twenty stations were operated. Close support was given by the British Army Fire Service, civilian fire departments, and Peninsular Base Section units. During this same period 88,540,000 gallons of water was processed for army use.

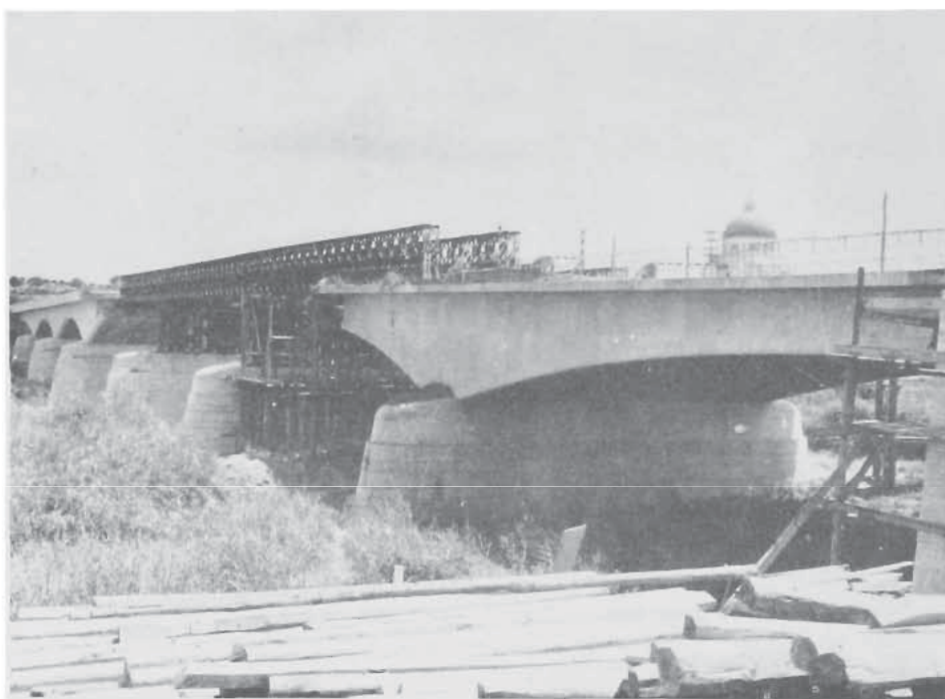
SECTION 1

Work at Engineer Headquarters (cont'd).

In the rapid advance, the only camouflage work was concealment of individual positions by frontline units. After the Arno was reached, however, and preparations were being made to attack the Gothic Line, the most ambitious operational camouflage program of the Italian campaign was started. Every effort was made to conceal the Army build-up in the Empoli-Florence areas, and to simulate strength on the feeble left flank. The camouflage officer coordinated the entire program from Army Headquarters.

Second Lieutenant Kenneth H. Mayhew joined the S-3 Section on 18 May. In addition to supervising the operational maps in the section and making reconnaissance, he functioned as Engineer Equipment Officer. Two months later, Captain F. C. Meyer was attached to the section as Tactical Bridge Officer.

The Maps and Survey Section continued its work of the previous period. There were two personnel changes: Captain R. D. Hill, South African Engineer Corps, replaced Captain Adderly, who had gone to Allied Force Headquarters in March; Major J. R. Kirk was added to handle the distribution of maps.



BAILEY ACROSS TIBER RIVER BUILT BY 337TH ENGINEERS

In the Plans, Intelligence and Training Section, Captain Humphrey Ireland replaced Major DeNoya, who returned to the United States in July. Major Shirk joined the section from Operations and Engineering, bringing with him the responsibilities for Army camouflage and fire fighting.

The Supply Section made up monthly "Maintenance Requisitions" which listed probable demands of the Fifth Army for future periods of from 90 to 120 days. Normally only special or reasonable items were requested, as Class II and IV shipments into the theater are based on maintenance factors previously set up by Mediterranean Theater of Operations or Penbark. Class V requisitions were submitted monthly by the Engineer, but were stored by Ordnance. The requisitions were not cumulative; only one Class V requisition was in effect at one time. The explosives were set aside by Peninsular Base Section and were shipped to Fifth Army when called forward by the Army Ordnance Officer. In Peninsular Base Section, asphalt and road oil were a Quartermaster responsibility; in the Fifth Army it was Engineer. Requisitions, therefore, were placed on the Quartermaster, Peninsular Base Section, as required. Forecasts on these requirements were made from three to six months in advance.

SECTION V

Work at Engineer Headquarters (cont'd).

Requisitions for Class II items were made every ten days, based on back orders and on experience with fast moving items. The depot commander submitted requisitions for Class IV goods based on back orders and turnover. The requisitions were then screened by the Supply Section, and prepared and submitted. For the requisite transportation, the engineer depot requested trucks or rail cars for movement of supplies from Peninsular directly to Army. The engineer units requested transportation through the Supply Office which, after approving the applications, made all the necessary arrangements. When bulk orders for such items as Bailey bridge, lumber or field fortification materials were phoned in by front-line units, deliveries were made from the depots to the units whenever the transportation and supplies were available. This method saved the unit's trucks and decreased the time for shipment, a vital factor in a rapidly moving situation. 1st Lieutenant D. L. Brown was assigned to the section in May, followed by 1st Lieutenant B. K. Sollars in July, when Captain Moore left for the 1108th Engineer Group.



FLORENCE AND THE ARNO

With the entrance into Rome, Engineer Real Estate function became more important than ever. The Real Estate Officer aided G-4 in the selection of exact locations for dumps and troop locations and began issuing "Military Port Development Plans" based on maps and aerial photos. An overlay for the port of Piombino designated areas to be adhered to by all troops occupying the town. A map was distributed showing the port, the depot areas, the road system, road blocks, etc.

Depots were established quickly in the sites allotted. Piombino remained free of much unnecessary congestion; the various supply services were placed where they were most accessible to the combat organizations. During slack periods, forms, cards and processing procedures were improved. Leghorn was handled still more completely and efficiently. While there, Real Estate became a separate engineer section and 2nd Lieutenants Grant King and Richard F. Fitzgerald were assigned to help Captain Steckroth. On 20 August, the Real Estate Section went into Florence with G-4 to coordinate real estate matters between the Fifth and Eighth Armies.

SECTION V

Work at Engineer Headquarters (cont'd).

There were no British Divisions under the command of the Fifth Army for the breakthrough of the Gustav and Adolf Hitler Lines, X Corps having been relieved by II Corps and the French Expeditionary Corps. The 5th British Infantry Division had relieved the 56th British Infantry Division at Anzio and, together with the 1st British Infantry Division, advanced with the VI Corps to the south bank of the Tiber where they halted, and finally left the command of Fifth Army in early June. On 14 June, the British Increment was disbanded, but Lieutenant Colonel B. B. Smith remained with the Army Engineer as there were still numerous engineer problems requiring coordination of British and American policies (the work of 104 CRE (Works) in Rome, the rehabilitation of power installations, and the development of an Eighth Army Supply Route through the Fifth Army area from Piombino to Arezzo).

In addition to his engineering duties, Lieutenant Colonel Smith, being the only British Officer at Fifth Army Headquarters, had to deal with many minor administrative problems such as the evacuation of escaped British Prisoners of War, etc. Arrangements were made in the first week of August for Headquarters 73 CRE (Works) with supporting troops to assist in road maintenance in Rear Army Area, particularly round about the port of Piombino. In addition, British engineer troops (the 543rd Electrical and Mechanical Company and bomb disposal and mechanical equipment units) were allotted to Peninsular Base Section to assist in the opening of the port of Leghorn. Information was received on 10 August that XIII Corps would come under the command of Fifth Army in the area south of Florence, and planning was immediately begun to provide for the supply of engineer items and for road maintenance in the rear of the Corps.

In the middle of July, an Army policy of employing Italian military organizations was adopted. By the end of the month, Engineer Headquarters had 10 Italian units. Below is a status report of Italian units as of 29 July 1944:

Responsible Service	Italian Unit	Working Strength		Type Work	Location	Attachment
		Off	EM			
QM	67th Inf Regt	61	1297	Unloading Supplies	Piombino Port	175th Engr GS Regt
Engineer	103rd Minatori Bn	15	316	Unloading Supplies	Venturina	175th Engr GS Regt
Engineer	6th Artieri Co	4	140	Unloading Supplies	Piombino Port	175th Engr GS Regt
Engineer	910th Engr Bn Hq	4	12	General Labor	E165855	1st Pl 451st Engr Depot Co
Engineer	12th Engr Co	5	192	General Labor	E165855	1st Pl 451st Engr Depot Co
Engineer	21st Pontieri Co	7	251	General Labor	E165855	1st Pl 451st Engr Depot Co
Engineer	101st Pontieri Co	7	269	General Labor	E165855	1st Pl 451st Engr Depot Co
Engineer	909th Engr Co	5	109	General Labor	Q380240	Engr Depot E2-28
Engineer	210th Engr Co			General Labor	E740317	Engr Depot E2-23
Engineer	23rd Artieri Bn	32	622	Engr Road Work	Q315425	1108th Engr C. Gp.

The liaison and translation work of the French Increment at Engineer Headquarters continued as before until the departure of the French in July. Below is a list of American units which were attached to the French for operations:

Company "F", 175th Engineer General Service Regiment
 2nd Platoon, Company "D", 84th Engineer Camouflage Battalion
 Detachment, 85th Engineer Heavy Ponton Battalion
 Company "A", 405th Engineer Water Supply Battalion
 344th Engineer General Service Regiment

SECTION VI

THE ARNO THROUGH THE WINTER STATIC PHASE

A. The Tactical Situation

Although the attack which was supposed to end the war in Italy came in September, the roots of it were based in the late summer months. It was at that time that the planning of the operation was begun and the participating units maneuvered into position. The 91st Division had reached the Arno River at Pontedera on 18 July; Leghorn had fallen the following day; the 34th Division had entered the southern half of Pisa on 23 July; the Eighth Army had occupied Florence on 22 August. The British XIII Corps, with the 8th Indian, 1st and 78th British Infantry Divisions, and 6th British Armored Division, was put under Fifth Army control.

The Arno was the barrier all along the Fifth Army front, an obstacle which had been crossed at only a few points, an obstacle which had to be overcome before the Army could strike at the Germans in their strongly fortified natural defenses of the Gothic Line. Experience at Salerno, the Volturno, the Garigliano and Anzio, had proved that any assault on carefully prepared German positions had to be well planned, and had to be executed with an overwhelming superiority of arms. To achieve surprise, a deception scheme, showing a build-up in the Pontedera area was inaugurated in August by the engineers. Actually, the strong Fifth Army forces were to attack from the Florence area, after a feint made by the Eighth Army along the Adriatic coast.

The attack began as planned (the official starting date of the Northern Appennine Campaign was 1 September). The Fifth Army engineers bridged the Arno at numerous spots, as the troops crossed the river the last days of August and the first part of September. Rapidly the drive went up Highway #65 until by 10 September the Gothic Line had been reached, high in the Northern Appennines. Here the 34th, 85th, 88th and 91st Divisions ran up against the strongest defenses yet encountered in Italy. Artillery and direct tank and tank destroyer fire did little damage to the deeply dug-in paratroopers and infantry. But the Gothic Line was broken and the troops were beyond Futa Pass by 17 September (about the time the fall rains began again).

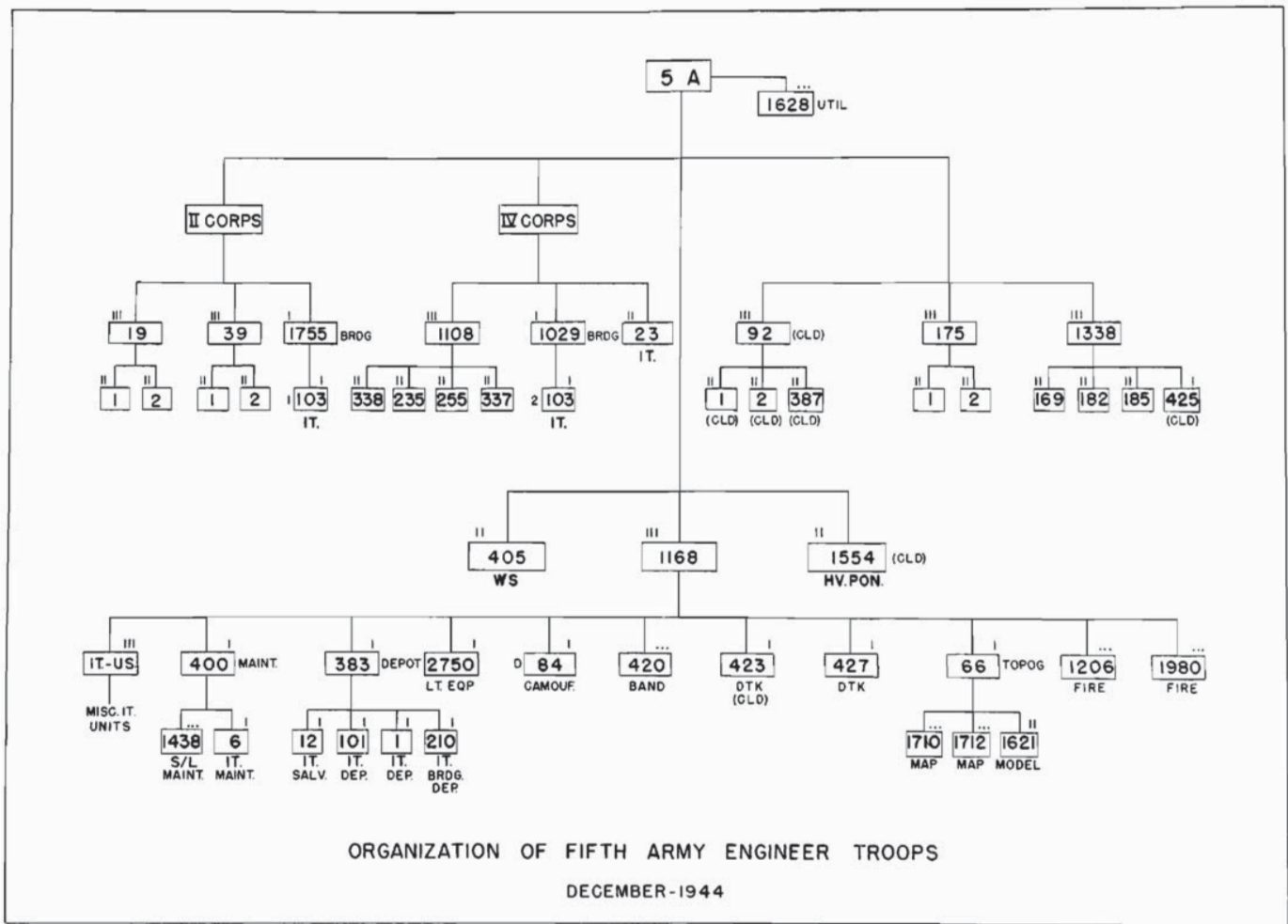
Yet the fighting was still hard. There were still twenty-eight German divisions in Italy, and they contested every hill, fighting stubbornly until II Corps was stopped within sight of Bologna, the immediate objective. The wind, snow, rain and mud of the Appennines helped, but it was the German soldier who stopped the attack.

Trails were pushed up the slippery slopes, the few highways in the sector were opened, demolished bridges gapped everywhere, and mud sloughs rocked until passable. The rains, which began in September, increased in October. By 3 November, all gullies were rushing rivers and the rivers virtual floods. Bridges were swept out throughout the Fifth Army sector, but enough remained to prevent the crippling of communications. Waters of the Arno lapped the lower sides of Bailey bridges, as the river rose to a height unequalled in ninety-nine years and fifty-one weeks.

The tactical situation became static, and combat was limited to artillery duels and patrol clashes. Preparations were made for an attack about the beginning of 1945, but this was prevented by a German attack in the Serchio River Valley in IV Corps sector at Christmas time. Troops were rapidly switched to meet the threat, and it was soon stopped.

In February, two limited objective attacks were made in the IV Corps area, one in the coastal sector north of Viareggio by the 92nd Division, and one by the 10th Mountain Division, in the Mount Belvedere - Mount Torraccio sector.

As spring approached, preparations were made once again for an attack. Supplies were built up, troops rested and re-equipped, units regrouped and artillery moved into position. As April came, the offensive was ready for the go ahead sign.



5 A

1628 UTIL

II CORPS

IV CORPS

19

39

1755 BRDG

1108

1029 BRDG

23 IT.

92 (CLD)

175

1338

1 2

1 2

1103 IT.

338 235 255 337

2 103 IT.

1 2 387 (CLD) (CLD) (CLD)

1 2

169 182 185 425 (CLD)

405 WS

1168

1554 (CLD) HV.PON.

IT-US

400 MAINT.

383 DEPOT

2750 LT. EQP

84 CAMOUF.

420 BAND

423 DTK (CLD)

427 DTK

66 TOPOG

1206 FIRE

1980 FIRE

MISC. IT. UNITS

438 S/L MAINT.

6 IT. MAINT.

12 IT. SALV.

101 IT. DEP.

1 IT. DEP.

210 IT. BRDG. DEP.

1710 MAP

1712 MAP

1621 MODEL

SECTION VI

B. Work at Engineer Headquarters

On 16 December 1944, Colonel Paxson left Engineer Headquarters and went to 15th Army Group. Lieutenant Colonel Rowland became Deputy Engineer. Lieutenant Colonel Harrison D. Wilson was assigned as Executive Officer in March. In April, when Colonel Rowland was in charge of Engineer Training Center #2, Colonel George W. Marvin was assigned as Deputy Engineer.

As the front lines became static again, engineer activities were largely normal road maintenance and construction of permanent bridges. A total of 1,231 miles of roads were maintained by Army engineer units, many miles of which were dropped south of Route #67 when the Port of Leghorn was opened. Considerable damage by bombing, shelling and demolition occurred to the towns of Pisa, S. Casciano, Viareggio, Porretta, and Firenzuola, and to the main north-south routes. About forty miles were damaged appreciably. Seven hundred and thirteen bridges were built, of which 123 were of semi-permanent construction (see Section #1, Appendix J for a tabulation of the bridges built by Fifth Army Engineer units; Section #2 for a list of all the work orders issued by the Operations and Engineering Section).



MUD AND SNOW IN THE NORTHERN APPENNINES

Practically all valleys and terrain in the Northern Appennines were checked for mines and marked to prevent troops from using them as bivouacs. A change of policy to cut down mine team casualties was inaugurated. Areas requested for bivouacs or dumps were checked and the results reported to the Operations and Engineering Section. If the area was found heavily mined, an alternate area was chosen. Often paths for gasoline pipelines and signal wires fell in this latter category.

There was a constant shifting of dump areas during the winter due to changes in the tactical plans, and this, coupled with the slippery condition of the mountain roads, necessitated the establishment of fourteen American fire stations. In addition, the British Army Fire Service operated five stations and Peninsular Base Section two stations in the Army area. More water was also produced in this period than in any previous one; 183,060,000 gallons were supplied to the Army.

SECTION VI

Work at Engineer Headquarters (cont'd).

During the campaign, camouflage activity was directed mainly toward the concealment of Command Posts, infantry positions and, especially, artillery sites. With the coming of spring, road screens were constructed, and every effort made to maintain a status quo appearance as the build-up was being made for the Po Valley attack.

In order to insure the minimum of delays to traffic on the mountain roads during the winter, and to establish facilities to handle emergencies caused by winter storms, a road post system was set up by the Engineers. Four main posts and twelve sub-posts were established on the main supply routes after a study of local weather and road conditions had been made. Areas above 500 meters had previously been subject to considerable snowfall, and sections of road above 800 meters had frequently been blocked, largely from drifts.

At the main posts, the engineer officer in command had a transportation officer or non-commissioned officer, snowplow operators, truck and wrecker drivers, radio operators, a mechanic, a cook and two first aid men to assist him. At the sub-stations, an engineer non-commission officer was in charge and the transportation representative was eliminated. These staffs were equipped to perform the missions assigned the posts. Snow plows, both motorized and V-type, graders, and bulldozers, as well as hand shovels were allocated.

Every effort was made to remove the snow before it became packed by traffic, and to prevent drifts from developing. Crushed stone was stock-piled along the routes to spread over the icy sections. Each post kept rations on hand for the use of snowbound military personnel, and the first aid men were kept in the event their services should be needed. Communication was maintained by telephone connections and radio. The network control station was at Engineer Headquarters.

A liaison officer from the Transportation Section was notified as to road conditions, and the need for chains. Wrecker service was provided to haul wrecked, stranded, or stalled vehicles off the road and generally aid the movement of traffic. A limited supply of petroleum, oil, and lubricants were stocked, but were for use in emergencies only. Daily, the main posts submitted situation reports by messenger to Engineer Headquarters giving the general condition of the road network, vehicle and medical casualties, and statistics on snow and periods of closed roads.

Throughout the Army area, eight-foot poles were erected at 200-foot intervals along the road edges to serve as snow guides. Scotch Lite tabs were tacked to each pole to aid night driving. The Operations and Engineering Section coordinated and directed this work, alerted the road posts of unusual vehicular movement, and made such inspections as necessary. There were only a few heavy snowfalls. These proved the success of the system, which would certainly have been capable of handling a much heavier winter.

During this phase, Major Kenyon revised his previous chart for the classification of steel bridges according to the British system (see Diagram #6, Appendix I), and made a chart to standardize the design of floor beams on timber stringer bridges (see Diagram #7, Appendix I). The Army road numbering system became continually more comprehensive as the campaign progressed, until it gave very complete coverage of the Northern Apennines, and Po River regions.

The Operations and Engineering Section was gradually increased during this period. Captain Frank E. Seipel became Equipment Officer, Captain Emanuel J. Cappello, Tactical Bridge Officer to replace Captain Meyer, and Captain Albert G. McKain, Roads Officer. After the death of Major Shirk near Viareggio in February, 1st Lieutenant George A. Pommer was assigned as Camouflage Officer. Lieutenant Mayhew assumed Major Shirk's duty of Fire Marshal.

In the fall, preparations were made to write the Engineer History of Fifth Army. The actual writing was started after Christmas. A questionnaire was sent to all engineer units that had ever worked under, or been assigned to, the Fifth Army. Thus the material for this volume came largely from the individual units themselves. In spite of the explicit directions on the information requests sent out, the unit histories varied greatly in content; some were very complete, others so brief or non-factual that it was impossible to present their exploits completely or to portray them in their full color.

On 5 September, Lieutenant Colonel Jones was assigned to the 235th Engineer Combat Battalion, and at that time the mapping and intelligence functions were again combined under one head in the Plans, Intelligence and Training Section. The camouflage and fire fighting duties returned to the Operations and Training Section. Work was continued on the study and interpretation of the terrain in the Po Valley. On 22 September a special engineer report on a portion of the Po River was printed (see Appendix M). This report is typical of dozens prepared by the section. In December, Major Kirk was replaced as head of map distribution by Captain Leo S. Straw.

SECTION VI

Work at Engineer Headquarters (cont'd).

The Supply Section continued its duties of the previous period. Major Ernest L. Clements and Captain Wylie B. Mendel were added to the section, and Major Peterson returned to the United States. First Lieutenant Warren E. Baldwin assumed command of the newly formed 383rd Engineer Depot Company, and Lieutenant Benjamin K. Sollars was assigned to the 400th Engineer Maintenance Company.

During the winter from October until January, the Real Estate Section was attached to City Command Section. In early November that group operated Montecatini as a rest camp for combat troops. Utilities were arranged for, the city divided into personnel and service accommodations, and assignments of property made. Planning work for Po Valley cities was done during the winter and turned over to the City Command Section. After being released from this job, the Real Estate Section resumed normal operations for the Army Engineer. First Lieutenant Richard V. Chase joined the section in February. Routine services were done for G-1, G-3, and G-4 until the April attack began.



THE WINTER FRONT

From September to April, numerous new units were formed: Three combat battalions, one light equipment company, one depot company, one maintenance company, two combat group headquarters, and two general service regiments were activated. At the same time two combat and one general service regiment were converted to combat groups, and two general service regiments were reorganized under new Tables of Organization and Equipment. These activations and reorganizations resulted in a further drain of both officer and enlisted personnel from depots, and in no case were the new units (except separate companies) ever able to come up to full strength.

The loss of personnel due to Temporary Duty in the United States and rotation reduced the strength of most units to about eighty-five per cent of Table of Organization. In connection with the foregoing, it can be added that the rotation system failed miserably since very few rotation replacements were ever furnished, and the ones that were rarely qualified for the vacancies they were to fill.

First Lieutenant Loring S. Miller was made Assistant Adjutant on 15 January 1945. On 17 March 1945, Engineer Headquarters was disbanded and the 2626th Engineer Group (Provisional) with the same personnel, Table of Organization, and functions was organized. The 1168th Engineer Combat Group was activated in December to simplify the administration of the numerous small units assigned to Engineer Headquarters.

SECTION VI

Work at Engineer Headquarters (cont'd).

Engineer Training Center Number 2 was organized in March 1945 for the purpose of training two of the newly organized general service regiments. The personnel for the 224th and 226th Engineer General Service Regiments came from the 92nd Infantry Division (Colored). Colonel Rowland was in charge of the Center, which was located south of the Arno River between Lastra a Signa and Montelupo. The first course of the school was scheduled for the period 2-28 April (see Appendix F).

Lieutenant Colonel B. B. Smith, RE, formed a new British Engineer Increment on 18 August 1944, which was composed of the following personnel:

- Lieutenant Colonel B. B. Smith, RE, (Assistant Director of Works)
- Major E. A. Hansen, MBE, RE, (SORE, Operations and Staff Duties)
- Captain J. D. Scarlett, RE, (SORE III Stores)
- 1 Corporal - Clerk
- 1 Lance Corporal - Clerk

In September two clerks were added, a sergeant and a lance corporal. In February 1945, Lieutenant M. A. S. Williams, RE, was attached to assist with supplies and equipment which had become a major problem for the section. He was relieved by Captain I. G. Storey who had similar duties from April to May.

16th Army Group, RE, with 466th Indian Corps Troops and two Army field companies and a road construction company attached were under the command of the Army Engineer for maintenance of roads to the rear of the XIII Corps sector. Also under the Engineer was Headquarters, 74rd CRE Works for rehabilitation work in Florence, a responsibility of the Army Engineer. The American engineer units with Fifth Army did many jobs around the city, but the main work of restoring public utilities, the electricity, the sewage systems and the maintenance of roads, was done by British troops given to the Engineer for this purpose.

The work of restoring the town's utilities was begun in August, and by the end of September, much of it was accomplished (see Appendix N for Rehabilitation of Florence, a report submitted by the 73rd CRE). The work continued, however, throughout the winter and spring, the utilities being constantly repaired to serve a greater and greater area. The work was first under the direct control of Lieutenant Colonel G. W. Harris, 73rd CRE, and after 12 January 1945, under 77th CRE, commanded by Lieutenant Colonel A. J. Kennedy.

A very satisfactory "common user" policy was worked out for the supply of engineer stores to the 6th South African Armored Division which was assigned to the Fifth Army. The Division was treated as an American division with access to American dumps for all tactical supplies common to both British and American armies. During the winter when the 1st and 78th British Infantry Divisions took over the 88th Division sector, it was found necessary for them to borrow twelve 6 x 6 dump trucks, as the British trucks were unable to navigate the muddy mountain trails.

The adaptability of the British "Senior Service" was again demonstrated when road work in the Pisa sector was done by Party "Jig" of the Royal Navy for approximately four months. The relinquishment of operational command of XIII Corps made virtually no difference to the work of the section other than to complicate administration. All responsibility for supply of the Corps was left with the British Increment, Fifth Army, but as operational command was now with the Eighth Army, it became impossible to exercise any control over demands made for supplies.

Throughout the winter, Italian military units were engaged and supervised by American engineer units. In the main they did manual labor. A status report of Italian units under Command Headquarters, Fifth Army Engineers, as of 5 April 1945, is printed below:

<u>Italian Unit</u>	<u>Working Strength</u> <u>Off EM</u>	<u>Type of Work</u>	<u>Location</u>	<u>Attachment</u>
103rd Italian Engr Combat Bn, Hq & Hq Service Co.	33 581	Administration	Q691739	175th Engr. G.S. Regt. (Opns. only)
1st Italian Engr. Combat Co.		Road Maint.	Q595767	"
2nd Italian Engr. Combat Co.		" "	Q686806	"
3rd Italian Engr. Combat Co.		" "	Q686711	"
210th Italian Engr. Combat Gp.	13 64	Administration	Q783695	1168th Engr. Combat Gp.
23rd Italian Engr. Combat Bn.	29 593	Engr. Road and Bridge work	L594089	1108th Engr. Combat Gp.
301st Italian Engr. Maint. Co.	5 163	General Labor	Q764746	400th Engr. Maint. Co.

SECTION VI

Work at Engineer Headquarters (cont'd).

<u>Italian Unit</u>	<u>Working Strength</u>		<u>Type of Work</u>	<u>Location</u>	<u>Attachment</u>
	<u>Off</u>	<u>EM</u>			
302nd Italian Engr. Maint. Co.	7	179	Salvage Work	Q743753	383rd Engr. Depot Co.
301st Italian Engr. Depot Co.	6	207	General Labor	Q814694	"
302nd Italian Engr. Depot Co.	8	246	" "	Q814694	"
303rd Italian Engr. Depot Co.	6	206	" "	Q743753	"
304th Italian Engr. Depot Co. (Prov)	1	189	" "	Q743753	"
305th Italian Engr. Depot Co. (Prov)			These two companies in process of organizing.		"
306th Italian Engr. Depot Co. (Prov)					
210th Italian Engr. Topo Plat.	1	53	Topo Work	Q786629	66th Engr. Topo Co.
92nd Italian Cam. (Masking) Plat.	1	30	Camouflage Work	Q768732	2916th Engr. Cam. Co.
302nd Italian QM Serv. Co.	4	212	General Labor	L859112	1755th Engr. Treadway Bridge Co. (Opns. only)
306th Italian QM Serv. Co.		180	" "	Q525879	1029th Engr. Treadway Bridge Co. (Opns. only)

SECTION VII

THE PO CAMPAIGN

A. The Tactical Situation

April brought the attack that ended the war in Italy. An engagement on the Comacchio split on 2 April raised the curtain. Three days later, the 92nd Division drove into German positions in the coastal area. Massa was taken, then Carrara, the marble town. On 9 April, the Eighth Army, which had been slowly advancing for some time, intensified its attack. On 14 April, IV Corps launched the beginning of the main Fifth Army assault towards Vergato. II Corps jumped off forty-eight hours later. The line-up for the attack was as follows:

- IV Corps - 1st Armored Division
10th Mountain Division
Brazilian Expeditionary Force
- II Corps - 6th South African Armored Division
88th Infantry Division
34th Infantry Division
91st Infantry Division
- Fifth Army - 92nd Infantry Division
442nd Regimental Combat Team



BOLOGNA

SECTION VII

The Tactical Situation (cont'd).

As the attack progressed, the 85th Division was committed in the center of the line in the IV Corps sector. The Germans retreated, fighting every inch. Beyond Vergato, the Fifth Army made better progress as it reached the downward slopes of the Appennines. On 20 April, Bologna fell.



THE PO

Bologna had been the goal of the September attack. It had remained within sight of the Americans all winter. Its capture opened up a new and entirely different phase of the Italian campaign. Deprived of their mountain defenses, the Germans were forced to shift their retreat into high gear. The Po Valley road net was so large it was impossible to do much effective cratering or bridge demolition. Finally, the withdrawal became a rout. All of the bridges over the Po had been destroyed by the Allied Air Force and many Germans and vast amounts of German equipment were stranded on the river's south bank.

The first crossing of the Po by the Fifth Army took place on 24 April at San Benedetto against only minor resistance. In the western Appennines, the Germans pulled out to avoid being trapped and La Spezia was occupied without opposition. Following the crippling losses sustained by the enemy before and during the river crossing, swift Allied thrusts were made to Verona, Brescia and Bergamo. The enemy forces were decisively split. The Germans were unable to muster enough force to try even a temporary stand in their well prepared positions along the Adige River.

There was nothing for the enemy to do now but surrender: full, final unconditional surrender of all German and Italian armies in Italy and the Austrian Tyrol. The possibility of a last-ditch stand in the Alps had been eliminated.

The surrender in Italy came on 2 May 1945. To the dirty, unshaven, dog-tired veterans of the Italian Campaign, Victory Day for all Europe (8 May) was only an anti-climax.

SECTION VII

B. Work at Engineer Headquarters

No administrative changes in Engineer Headquarters took place during the brief Po Valley Campaign. Road maintenance was confined to primary routes, and because of the extensive network in the valley, little work was required during the advance. The damage from shelling and explosives was confined largely to the roads south of Route #9. About fifty miles were effectively damaged. Along Routes #64 and #65 side hill blows and debris in the villages resulted in effective road blocks. A total of 1,006 miles of roads were maintained by Army units during this phase. One hundred and twenty-two bridges were built, including eighty-five Baileys and eleven steel treadways.

The chief engineering feat in the valley was the rapid crossing of the Po River. Minefields were numerous during the first part of the campaign, as anticipated, but after the main breakthrough the enemy had little time to use his skillful delaying tactics. Twelve areas were cleared of mines for military installations, and only one additional area had to be checked. The long supply lines and temporary dump areas had fire coverage from seven American and two British fire stations. Civilian fire departments in the Po Valley were found to be in good condition enthusiastic and cooperative. Water production was 38,270,000 gallons.

As the enemy retreat broke into a rout, all pretense of camouflage was forgotten except when soldiers actually came in contact with the enemy. In such cases, infantrymen and engineers took only the logical personal concealment measures that by now were second nature.

The S-2 Section mainly coasted along on the work it had done in the previous campaign; there were no more anticipated operations to plan for (in the European Theater, at least). Every effort was made to secure information on enemy minefields, and to disseminate overlays of friendly minefields to units in the Appennines. In regard to mapping, there was practically no further printing of new sheets, the only work being map distribution.



GERMAN PRISONERS AT BRESCIA

SECTION VII

Work at Engineer Headquarters (cont'd).

At the termination of hostilities, the Supply Section released the following summary of its work during the Italian Campaign:

1. Finance:

a. Funds obligated from 9 September 1943 through June 1944.

(1) Labor	\$ 7,692.26
(2) Materials	<u>2,333.66</u>
(3) Total	\$ 10,025.92

b. Funds obligated from July 1944 through May 1945.

(1) Labor	\$ 1,008,538.68
(2) Materials	<u>70,618.69</u>
(3) Total	\$ 1,079,157.37

2. Stocks and Consumed Tonnage:

a. A total of 101,239 tons of engineer Class II and IV materials was consumed during the Italian Campaign. Principle items were as follows: (this does not include crossing equipment, Bailey bridging, stone, gravel or locally procured supplies)

(1) Lumber	tons	37,500
(2) Bitumen	tons	10,000
(3) Road oil	tons	2,500
(4) Mechanical Equipment	tons	8,000

b. Largest amount of bridging in the Army at one time (on 12 March 1945) consisted of 226 complete sets (130 feet double-double) of Bailey bridge (150 in use, 76 in stock), 10 sets of floating Bailey, and 2,000 feet of treadway. At the beginning of the last offensive, the Fifth Army had 65 complete sets of Bailey bridge in depots, with 25 marked for recovery if required.

c. A total of 46 map, bridge, and Class II and IV depots was established during the campaign. The shortest period of operation: Bridge Depot, Bologna, E2-40, opened 23 April 1945, closed 25 April 1945. Longest period of operation: Bridge Depot, Florence, E2-36, opened 9 November 1944, closed 11 May 1945.

d. An estimated 1,200,000 tons of rock and gravel were taken from local quarries.

3. From 9 September 1943 to 11 May 1945, Fifth Army made 727 requisitions on Peninsular Base Section for engineer materials.

4. From August 1944 to 11 May 1945, 1,039 various requests for movements by transportation were made.

During the final campaign, the Real Estate Section aided the orderly occupation of Bologna, Modena and Verona. After the conquest of Northern Italy, zones were established north and south of the Po River for the administration of the territory in the Army area. Each of these areas had one real estate representative.

Meanwhile, the principle tasks of the British increment were the reserving of assault equipment for the 6th South African Armored Division and the organization of engineer troops for opening the British roadhead in Bologna. Although it was not anticipated that the South African Division would be called upon to cross the Po in the early stages of the attack, provision was made to have British river crossing equipment ready in Army dumps should the need arise. The provision was most fortunate in the turn of events, as the whole of the 12th Motorized Brigade was ferried over the Po on rafts near Felonica.

SECTION VII

Work at Engineer Headquarters (cont'd).

On the termination of the British Increment's attachment to Engineer Headquarters, Lieutenant Colonel B. B. Smith wrote: "The closing days of the section were chiefly occupied in preparing histories and reports for various headquarters, and in destroying evidence of many crimes committed in the name of operational necessity. The outstanding lesson learned from the operation of the British Increment was the absolute necessity of maintaining the closest possible liaison with the American staff. It would have been impossible to secure any degree of coordinated effort between British and American engineer troops had the staff not worked as an integral part of the Engineer Headquarters."

After the end of the war, the Adjutant General of Fifth Army released figures of Engineer casualties incurred since the landing at Salerno. The following figures include both officers and enlisted men:

Killed in action	597
Died from injuries received in action	140
Non-battle deaths	94
Total killed	831
Seriously wounded in action	786
Lightly wounded in action	1,860
Total wounded	2,646
Taken Prisoner of War	36
Missing in action	30
Total casualties	3,540

As the campaign ended, the organization of Engineer Headquarters was the same as during the previous period. Below is a roster of officers and enlisted men as of 2 May 1945:

Brigadier General	Frank O. Bowman	0-12090	Army Engineer
Colonel	George W. Marvin	0-14887	Deputy Engineer
Colonel	John G. Ladd	0-255580	S-2
Colonel	William F. Poe	0-920610	S-3
Colonel	Henry C. Rowland, Jr	0-20940	ETC-2
Lieutenant Colonel	Irving W. Finberg	0-290892	S-4
Lieutenant Colonel	John E. Kenyon	0-272818	S-3
Lieutenant Colonel	Charles R. Rosenbaum	0-303326	S-1
Lieutenant Colonel	Harrison D. Wilson	0-243249	Executive
Major	David M. Bradley	0-456332	S-4
Major	Ernest L. Clements	0-526298	S-4
Major	Wylie B. Mendel	0-364962	S-4
Major	Gustave R. Peterson	0-244307	S-4
Major	Frank E. Seipel	0-904976	S-3
Major	Joseph R. Steele	0-268938	S-3
Captain	Donald L. Brown	0-1100029	S-4
Captain	Emanuel J. Cappello	0-453329	S-3
Captain	Henry L. Clark	0-366481	S-2 (attached)
Captain	John W. Graham, Jr	0-383325	S-2
Captain	Humphrey Ireland	0-451809	S-2
Captain	Albert G. McKain	0-903918	S-3
Captain	Jack K. Shurley	0-465893	S-2
Captain	Robert H. Steckroth	0-1102066	Real Estate
Captain	Leo S. Straw	0-321591	S-2
1st Lieutenant	Richard V. Chase	0-485044	Real Estate
1st Lieutenant	Richard F. Fitzgerald	0-1112692	Real Estate
1st Lieutenant	Grant King	0-1288070	Real Estate
1st Lieutenant	Kenneth H. Mayhew	0-436433	S-3
1st Lieutenant	Loring S. Miller	0-1112326	S-1
1st Lieutenant	George A. Pommer	0-1113396	S-3
Chief Warrant Officer	Raymond F. Jewett	W-2109280	S-4
Master Sergeant	James G. Duffy	36025815	S-1
Master Sergeant	George A. Fournier	32060570	S-1
Master Sergeant	Allen Sakowitz	32118436	S-3
Master Sergeant	Edwin H. Weber	32062569	S-2
Technical Sergeant	Jesse A. Abshire	33046644	S-3
Technical Sergeant	George J. Boykoff	32171924	S-2
Technical Sergeant	George P. Gregoire	34076385	S-2
Technical Sergeant	Don N. Hansen	39682356	S-2

SECTION VII

Work at Engineer Headquarters (cont'd).

Staff Sergeant	Andrew L. Burnham	37273703	S-1
Staff Sergeant	Arnold Goshin	32326840	S-4
Staff Sergeant	James P. Morris	35104761	S-2
Technician 3rd Grade	Martin D. Broadland	31240636	S-1
Technician 3rd Grade	Gilbert W. Meyer	37604728	S-4
Technician 3rd Grade	Charles F. Murphy	31202054	Real Estate
Technician 3rd Grade	Vincent N. Nilsson	35335269	S-3
Technician 3rd Grade	Frederick T. Sanders	38133433	S-2
Technician 4th Grade	Lawrence J. Bartosch	36294818	Real Estate (TD)
Technician 4th Grade	Rubin S. Boles	38318507	S-2 (TD)
Technician 4th Grade	Lawrence C. Dugan	33797252	S-2
Technician 4th Grade	Baer M. Frimer	32610641	S-4
Technician 4th Grade	James D. Holston	33263538	S-1
Technician 4th Grade	Miles J. Kendzioriski	36108515	S-1
Technician 4th Grade	Charles J. Knabb	33677020	S-1
Technician 4th Grade	Paul H. LaPenna, Jr	12012966	S-2
Technician 4th Grade	George E. Mooney	35760712	S-1
Technician 4th Grade	Graham O. Preston	19004162	S-3
Technician 4th Grade	Charles G. Reading Jr	32367242	Real Estate (TD)
Technician 4th Grade	Abner Rothstein	32694343	S-4
Technician 5th Grade	William H. Gallogly	33740163	Real Estate
Technician 5th Grade	Andrew J. Catanzaro	32599644	S-1
Technician 5th Grade	Fred E. Gehm	16172047	S-1
Technician 5th Grade	Thomas E. Grace	34883734	Real Estate
Technician 5th Grade	Edward C. Hoffman	35742442	S-1
Technician 5th Grade	George F. Jefferson	19119664	S-4
Technician 5th Grade	Samuel Karnofsky	32325584	S-1
Technician 5th Grade	Robert H. Lewis	34544218	S-2
Technician 5th Grade	Leon Lipner	32695746	S-4
Technician 5th Grade	Charles J. McArroy	20258048	S-4 (TD)
Technician 5th Grade	William R. Mertens	32750915	S-4
Technician 5th Grade	James M. Stark	38166602	S-3
Technician 5th Grade	Roy E. Stoermer	39123201	S-2
Private First Class	Erasmus D'Agostino	20258010	S-4 (TD)
Private First Class	Perlie R. Durgin	31351777	S-2

SECTION VIII

LESSONS LEARNED IN THE ITALIAN CAMPAIGN

SECTION VIII

LESSONS LEARNED IN THE ITALIAN CAMPAIGN

I. Introduction

The Engineer Section, Fifth Army, operating as an Engineer Headquarters and later as a Group Headquarters (Provisional), commanded the engineer troops of the Army in addition to regular staff duties.

There was a shortage of engineer troops and heavy equipment throughout the Italian Campaign.

II. Planning

As to the lessons learned in the battle planning, the following points are pertinent:

1. Since Terrain Appreciations are an essential feature of modern military planning, it is imperative that the unit engineer be "let into the picture" at the earliest possible date. In the planning for "AVALANCHE" this was done, and resulted in an early narrowing down of the possible landing sites.

2. A small, compact engineer planning staff, composed of officers and enlisted men of wide experience and versatility, including members with prior troop and staff experience or training, is preferable to a staff of technical specialists.

3. The senior engineer planner need not be the unit engineer, providing the planner has the unit engineer's complete confidence. The senior engineer planner must be thoroughly familiar with engineer logistics, engineer intelligence, and engineer troop unit dispositions, availabilities, and capabilities. He should have on his planning staff an officer familiar with mapping, surveys, and photo intelligence procurement and distribution. He must have an engineer photo interpreter with prior engineer combat or troop experience. He must also have an officer thoroughly familiar with engineer procurement, fiscal matters, billeting procedure, and engineer repair parts. If the operation involves an amphibious landing, the senior planner should have on his staff a senior combat engineer officer with amphibious experience.

4. The planning staff must have a minimum accommodation of three separate rooms or tents: one for the engineer logistical planning, one for photo interpretation, intelligence files, troop lists and maps and charts, and one for conferences and discussions. A lesser number of spaces results in tremendous confusion and loss of efficiency, as well as a possible jeopardization of security.

5. The planning staff must be prepared to work steadily for long hours. Conferences may be called by the G-3 or G-4 at odd hours, and it is imperative that a qualified engineer representative attend. When troop nomination lists, or supply tonnage bids are called for, this information must be submitted complete, and on time. It can be stated categorically that in all future plans there will be numerous changes before final decisions are announced.

6. It is most important that engineer intelligence information be accurate and simply presented--preferably in map, chart, or tabular form. Overlays are difficult to read and are generally not liked by senior commanders. At least one office copy should be prepared of any maps or documents turned in, otherwise the Commanding General might pick up the only copy and neglect to return it. In the early stages of planning, neatness of presentation must be subordinated to speed and completeness. A neat, well-turned-out document submitted two hours late is often valueless, as the decision will normally have been made by that time.

SECTION VIII

II. Planning (cont'd).

7. Oral presentation of engineer data must be done forcefully, firmly, and authoritatively. A hesitant, undecided, or wavering presentation will cast doubt in the minds of the conferees as to the accuracy and validity of the facts. A strong-willed CG, C/S, G-3, G-4, or G-2, should not be permitted to talk the engineer down on facts which he positively knows to be true (as a corollary--the facts must be correct). When questions are raised on points on which no data has been collected, the only course is to acknowledge the fact, then go find out the answer, and quickly.

8. The work must be closely coordinated with engineer and intelligence sources of our own navy and air services and of allied forces.

9. The planners must not become too embroiled in the minute details of the job. The major problems should be settled and as much factual data accumulated as possible. It must be remembered that other planning staffs down the ladder will have a "say-so" on the details.

III. Comments and Observations on Operations

A. Engineer Section

1. The primary administrative lesson learned during the Italian Campaign is that of the very considerable advantage gained by having all engineer troops in the Army other than division units under the direct command of the Army Engineer. Whether this is accomplished by means of a separate headquarters as was authorized under Table of Organization 5-200-1 dated 15 July 1942 or by means of a provisional Command Group as presently organized, the final result is the same. It is felt, however, that the Engineer Headquarters (T/O 5-200-1 dated 15 July 1942) possessed distinct advantages in that it was a much more closely coordinated unit with assigned personnel whose internal administration was controlled directly by the Army Engineer. Everyone knew exactly where he stood; which materially assisted morale, especially that of enlisted personnel.

2. Operational and administrative control of troops directly under command is much simpler and a great deal faster than any other means. Reports passing through the Engineer's office in a direct chain of command can be scrutinized and evaluated and in most cases corrective action can be taken or assistance rendered without further reference to Army. In the redeployment of engineer troops, a large percentage of the readjustment was worked out within the Engineer Command and in several instances units were sent to the Redeployment Areas completely readjusted.

3. There is a definite need for an Engineer Intelligence Team, consisting of one officer and three enlisted men, with quarter-ton truck and trailer. This team should spend all its time forward with the division and lower headquarters, examining and searching for enemy equipment and methods. It should be attached to the Engineer S-2 Office.

4. An Engineer Photo Interpretation unit should be authorized and be a part of the Engineer S-2 Office. It should consist of at least two officers and four enlisted men, with pertinent equipment and transportation.

5. The Supply Sub-section must have sufficient personnel to handle the normal supply operations, planning requirements, transportation, and local resources.

B. Engineer Troops and Operations

1. The assignment and attachment of separate companies to a Group or Service Battalion Headquarters for administrative control has been found highly beneficial since more rigid control can be exercised over the administrative procedures of these small units. In general, these units are much poorer in administrative procedure than a regiment or battalion, due to the fact that the variety of paper work does not diminish with the size of the unit, while the personnel to handle it does.

2. Topographic companies (Corps) should be equipped with a "Saltzman projector" or its equivalent for the mechanical rectification of aerial photographs.

3. A topographic company (Corps) is entirely too large a unit for the needs of a Corps unless the Corps is operating independently. However, some reproduction facilities are essential. A platoon to operate one press section, provide a pool of draftsmen and a few men for map distribution (approximately six enlisted men) would be sufficient. A map depot detachment of one officer and eleven enlisted men is much too large for this purpose.

SECTION VIII

III, Comments and Observations on Operations (cont'd).

4. All engineer survey work (trig) should be done on an Army level only. Corps boundaries are too changeable and artillery locations are often situated without regard to corps sectors. Consequently, survey work by Corps Engineers is wasteful and difficult. The problem of adjustments of trig across Corps boundaries is eliminated by doing the surveying under Army control.
5. The shortage of engineer troops was handled by employing civilians and utilizing existing agencies and contractors in Army and Corps areas. The employment of a large number of civilians on road maintenance, bridge construction, skilled labor on hospital and depot installations definitely indicates the need for an engineer supervisory unit similar but larger and more complete than the British Works Section. This unit should contain construction supervisors, equipment, operators, timekeepers, contract personnel and engineer specialists in sanitary, electrical, mechanical, highway and architectural engineering and in bridge construction. A unit of this type, employed in conjunction with dump truck companies and a pool of proper equipment (perhaps in equipment companies) could supervise up to 4,000 civilians and replace from two to three General Service Regiments in the Army area, and to a lesser extent, units in the Corps areas.
6. The lack of equipment was partially relieved by the formation of light equipment companies and the special authorization issue of excess T/E equipment to units. However, construction was delayed materially due to lack of adequate equipment throughout the campaign. Additional equipment companies would have solved the problem, provided the T/E of an equipment company were modified to meet the special requirements of this theater. A limited number of equipment companies and a pool of specially selected equipment would have expedited all construction work.
7. One equipment company should be attached to each Corps.
8. Adequate maintenance companies must be assigned to Army and at least one platoon to each Corps.
9. Colored engineer units with superior white officers are able to successfully supervise civilian labor and to operate and maintain heavy equipment. Unless so officered, they should be used on work where a large amount of labor and the minimum of machinery is required.
10. The U.S. Army was far behind the British Army in the development of local resources and the procurement of local materials. This resulted in a delay of construction and necessitated shipping more materials from the States. Based upon the experience gained in this campaign, it is recommended that an engineer unit be formed to develop local resources and procure local materials. This unit should consist of a group of specialists with a very few enlisted men, equipped with adequate transportation.
11. Engineer units must have more trained equipment operators and mechanics. In most cases, operators were not sufficiently trained in the operation and maintenance of heavy equipment. It is recommended that more emphasis be placed on this phase of training, as a good operator will do three to five times the work of a poor one.
12. Officers and non-commissioned officers must have more training in job planning. Very few officers in engineer units are able to size up a job and place the proper amount of equipment or personnel on the job to complete it in the required time. On large jobs, the planning and organization of the work was rarely accomplished until the job was seventy-five per cent complete. This resulted in failure to complete the work on time and a waste of manpower and equipment. It is recommended that all officers be given more training on job estimating and planning.
13. There must be very close liaison between operations and supply. Operations have been held up on numerous occasions for Class IV supplies. The unit S-4 must follow up on all requisitions closely and the Army Engineer Supply Officer must have accurate records of materials available and must follow up through Base to see that requisitions are promptly filled.
14. A spare parts platoon must be attached to Army if the supply of spare parts is to keep up with the need.
15. Tankdozers or armored dozers should be provided for all combat engineer units. This equipment would save the lives of specially trained personnel. Such equipment is a very effective weapon for fighting ammunition fires.

SECTION VIII

III. Comments and Observations on Operations (cont'd).

16. Too much emphasis in manuals and in training has been placed on a trestle bent set on mud shoes or rock filled cribs for semi-permanent bridges. Unless there is a rock foundation, piles should be used, driven to refusal, or a minimum of twenty-five feet penetration.

17. Where heavy steel girders are not available, 100-foot stringers built of Bailey bridge panels have been successfully used on two-way Class 50, one-way Class 90 bridges.

18. The Corps Engineer should be in the supply picture and for that purpose needs a supply section. Particularly Class IV items which are in short supply must be apportioned to divisions and corps troops as needed for the operation.

19. In addition to depot companies, there is a need for small detachments similar to British Stores Sections consisting of one officer and approximately fifteen men with messing facilities and transportation to be used for small tactical depots, controlling and operating local establishments, exploiting local resources, etc.

20. Base sections cannot expand to give good support to a rapidly moving army without the addition of extra troops to close out rear installations and leap-frog forward as the area grows larger.

21. A standard system for Military Real Estate operations within an Army is a necessity. This can be accomplished by including a Real Estate Sub-section in the engineer section of Army, Corps and Divisions. These Sub-sections must use the same type of records and forms and must be given special training in the subject before attempting to operate. A definite split in responsibility must be made between the general staff sections and the real estate officer, such as:

G-1 Billeting and Recreational Facilities

G-2 Intelligence Installations

G-3 Bivouac, Training and Operational Installations

G-4 Service Installations

Army Engineer
Real Estate Officer

Allocation of facilities under general directives and decisions from the above.

APPENDIX I

CHARTS, FORMS AND ROUTE NUMBERING

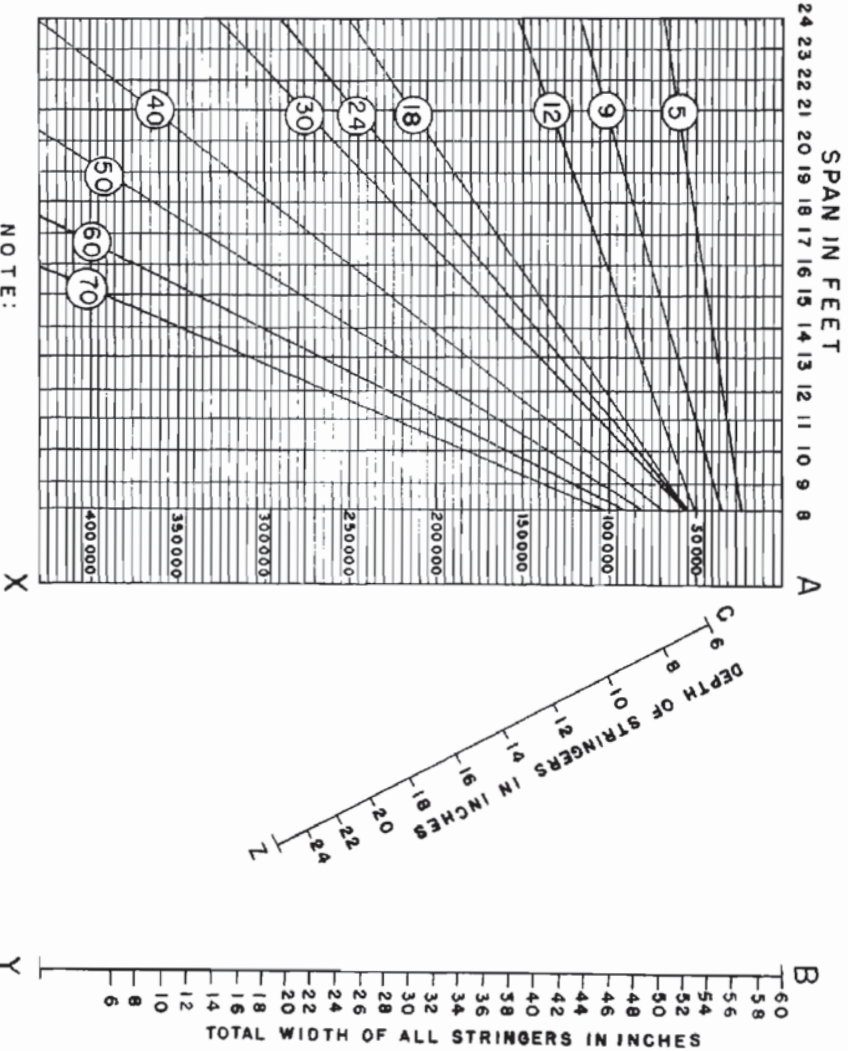
Diagram #1	Bridge Alignment Charts
Diagram #2	Work Order Form
Diagram #3	Unit Progress Report Form
Diagram #4	Route Numbering
Diagram #5	Load Classification Chart
Diagram #6	Load Classification Chart (Revised)
Diagram #7	Load Classification Chart (Floorbeams)

ALIGNMENT CHART FOR DETERMINING CLASS RATING OF EXISTING TIMBER BRIDGES OR FOR THE DESIGN OF NEW TIMBER BRIDGES

TO CLASSIFY
 FROM AXIS "B-Y" AT THE
 MEASURED TOTAL WIDTH
 OF STRINGERS, DRAW LINE
 THROUGH "C-Z" AT THE
 MEASURED DEPTH OF
 STRINGERS UNTIL IT
 INTERSECTS AXIS "A-X"
 THE INTERSECTION OF A
 HORIZONTAL LINE FROM
 THIS POINT AND THE
 VERTICAL LINE SHOWING
 MEASURED LENGTH OF
 SPAN GIVES THE CLASS
 RATING OF BRIDGE.

TO DESIGN

1. SELECT CLASS AND
 DECIDE LENGTH OF SPAN
 OR SPANS TO BE
 CONSTRUCTED.
2. AT INTERSECTION OF
 THESE TWO LINES,
 PROJECT LINE HORIZON-
 TALLY TO "A-X" AXIS.
3. A LINE FROM THIS POINT
 THROUGH "DEPTH OF
 STRINGERS" "C-Z" TO "B-Y"
 AXIS GIVES TOTAL WIDTH
 OF STRINGERS REQUIRED.
4. IF THIS FIGURE IS TOO
 LARGE SELECT SHORTER
 SPAN.



NOTE:
 BASED ON UNIT STRESS OF 1600 LBS./SQ. IN
 NO ALLOWANCE FOR IMPACT OR
 STRINGER EFFICIENCY.

PREPARED BY:
 ENGINEER SECTION FIFTH ARMY

Appendix I

Diagram #2 (Sample Work Order Form)

COMMAND HQ FIFTH ARMY ENGINEERS
2626th Engineer Group (Prov)
APO 464 US ARMY

DATE _____

SUBJECT: Allocation of Work

TO: Commanding Officer, _____

1. You are directed to make reconnaissance, prepare and submit plans, assemble materials, and proceed with work as outlined below:

a. Nature of work: _____

b. Target Date:

(1) Begin: _____

(2) Complete: _____

c. You will refer to this operation as Job # _____

d. Priority Rating established for this job is: 1 - (OP);
2 - (AA); 3 - (A); 4 - (B)

BY COMMAND OF BRIGADIER GENERAL BOWMAN:

W. F. POE
Colonel, CE
S-3

Appendix I

Diagram #3 (Unit Progress Report)

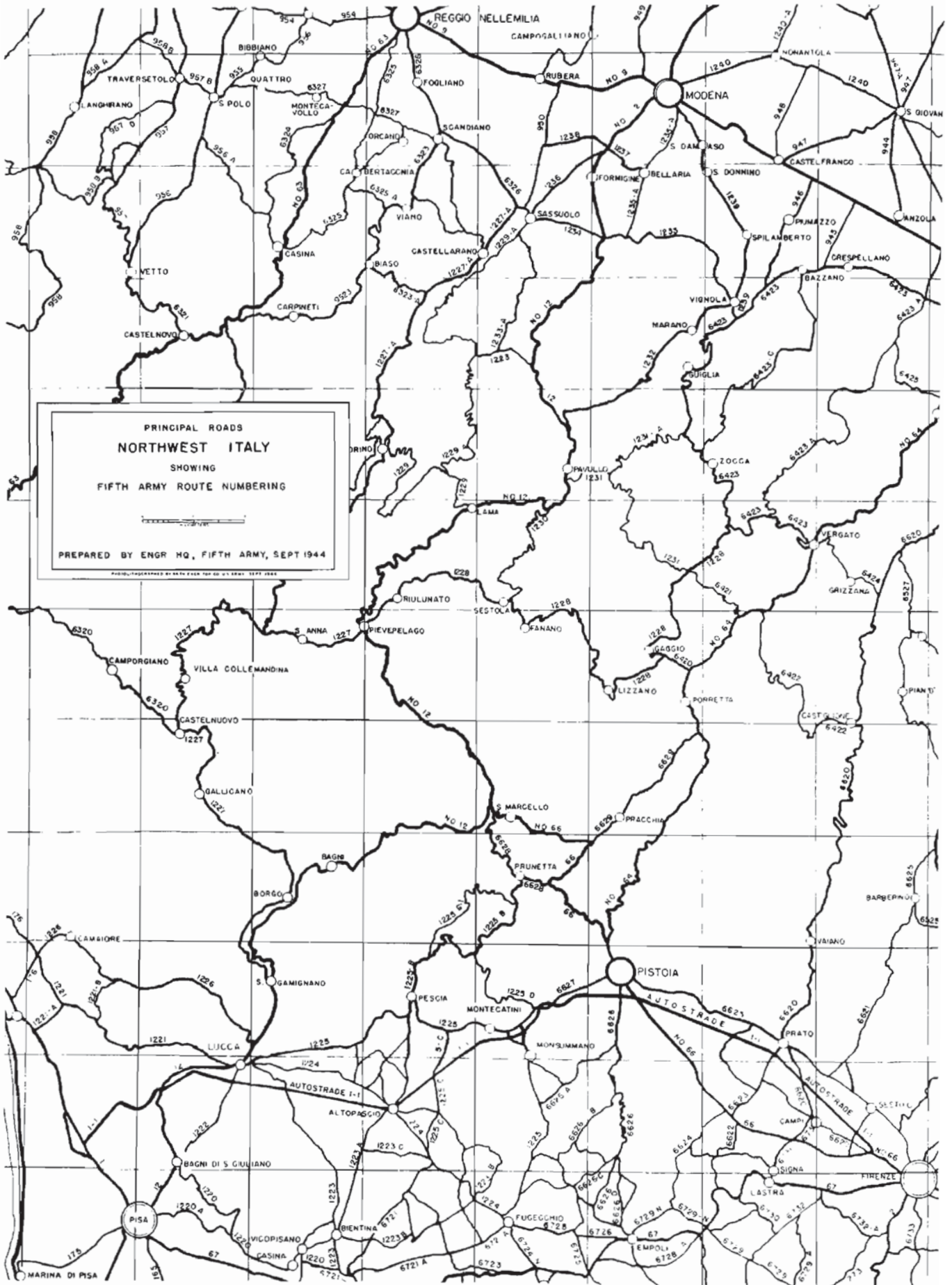
HEADQUARTERS 92ND ENGINEER GENERAL SERVICE REGIMENT
APO 404 U. S. Army

Subject: Report on Construction Work (THRU: 0600 hours _____ 1945)

To: Commanding General, Engineer Headquarters, Fifth Army.

Job No.	DESCRIPTION OF WORK	Date Started	% Comp.	Target Date	REMARKS

APPENDIX I DIAGRAM # 4



ALIGNMENT CHART TO AID IN THE DESIGN OR CLASSIFICATION OF SIMPLE STEEL STRINGER BRIDGES

TO DESIGN

1. SELECT CLASS AND ESTIMATE LENGTH OF SPAN OR SPANS TO BE CONSTRUCTED.
2. AT INTERSECTION OF THESE TWO LINES, PROJECT LINE HORIZONTALLY TO INTERSECTION WITH 'A-X' AXIS
3. A LINE FROM THIS POINT THROUGH POINT ON 'C-Z' AXIS CORRESPONDING TO DEPTH AND WIDTH OF I BEAMS TO BE USED WILL INTERSECT 'B-Y' AXIS TO GIVE NUMBER OF STRINGERS REQUIRED.
4. IF THIS NUMBER IS TOO LARGE, USE SHORTER SPAN.
5. IN GENERAL, RATIO OF SPAN IN FEET TO DEPTH OF BEAM IN INCHES SHOULD NOT EXCEED 20.

TO CLASSIFY

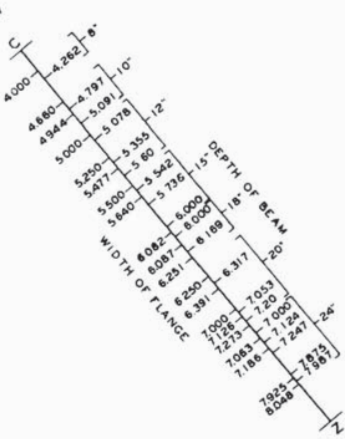
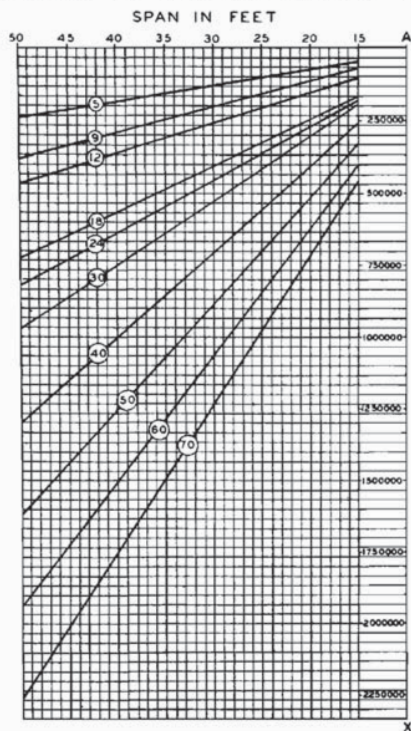
FROM AXIS 'B-Y' AT NUMBER OF STRINGERS DRAW LINE THROUGH POINT ON 'C-Z' AXIS CORRESPONDING TO TYPE OF STRINGERS AND INTERSECT 'A-X' AXIS. THE INTERSECTION OF A HORIZONTAL LINE FROM THIS POINT AND THE VERTICAL LINE DESIGNATING SPAN GIVES CLASS RATING OF BRIDGE

NOTE:

- (1). LATERAL BRACING BETWEEN STRINGERS SHOULD BE PROVIDED IN SPANS OF 15 FT. AND OVER.
- (2). MULTIPLY CLASS RATING OF BRIDGE BY 1.25 TO OBTAIN APP LOAD TO TRESTLE IN TONS FOR SPANS OVER 25'. UNDER 25' USE FACTOR OF 1.15.
- (3). FOR CLASSIFICATION OR DESIGN OF TWO-WAY BRIDGES.

TWO WAY CLASS IS EQUIVALENT TO ONE WAY.

9	18
12	24
18	40
24	50
30	60
40	70



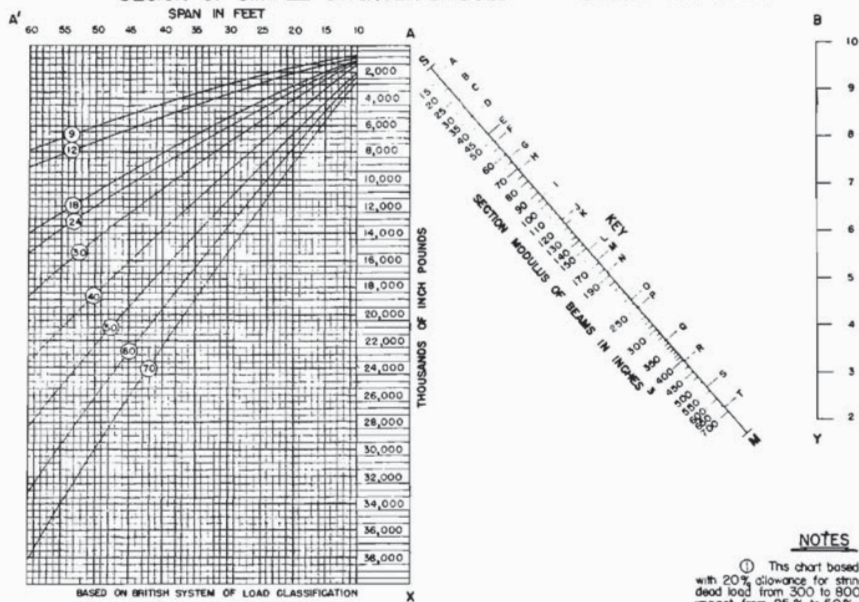
BASED ON f_s of 8000 LBS. / SQ IN. 20% ALLOWANCE FOR DEAD LOAD. 25% - 50% ALLOWANCE FOR IMPACT DEPENDING UPON CLASS AND SPAN. SECTION MODULUS AS OF AMERICAN STANDARD BEAMS.

BEARING POWER PILES 1" DIAM

CHARACTER OF SOIL	PENETRATION	PROBABLE SAFE LOAD IN LBS	SAFE LOADS SQUARE WOOD POSTS		
			SIZE	LENGTH	SAFE LOAD
MUD	15	4500	4 x 4	4	15360
	30	10000	4 x 4	10	11520
SOFT CLAY	10	7000	6 x 6	8	9600
	15	10000	6 x 6	10	34560
COMPACT SILT	20	13000	6 x 6	8	31880
	30	20000	6 x 6	10	28800
STIFF CLAY	10	15000	6 x 6	12	25920
	15	23000	6 x 6	14	23040
	30	45000	6 x 6	16	20160
	8	16000	8 x 8	8	61440
COMPACT SAND	10	20000	8 x 8	10	57600
	12	24000	8 x 8	12	53760
	15	28000	8 x 8	14	49920
	20	36000	8 x 8	16	46080
SAND AND GRAVEL	30	48000	8 x 8	18	42240
	8	20000	8 x 8	20	38400
	10	24000	8 x 8	22	34560
	12	28000	8 x 8	24	30720
	15	34000			
	20	43000			

PREPARED BY:
ENGINEER SECTION
FIFTH ARMY

DESIGN OF SIMPLE-STRINGER BRIDGES — STEEL STRINGERS



BASED ON BRITISH SYSTEM OF LOAD CLASSIFICATION

TO DESIGN

- ① From point on "A-A" axis, corresponding to length of span to be constructed, drop a vertical line to meet index line of desired class, and from this point, project a line horizontally to intersect "A-X" axis.
- ② Draw a straight line from this intersection through a point on axis "S-M", corresponding to section modulus of beams to be used, and intersect axis "B-Y".
- ③ Read on "B-Y" the required number of stringers for a single lane bridge.
- ④ If this number is too large, use shorter span or heavier steel.
- ⑤ For a 2 way bridge, double number of stringers determined in operation ③.

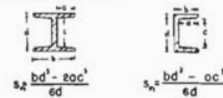
TO CLASSIFY

- TO CLASSIFY AN EXISTING ONE WAY BRIDGE —
- ① From axis "B-Y" at number of stringers, draw a line through point on "S-M", corresponding to section modulus of beams, and intersect axis "A-X".
 - ② The intersection of a horizontal line from this point and a vertical line from the measured span, gives the class rating of the bridge.
- TO CLASSIFY AN EXISTING TWO WAY BRIDGE —
- ① Proceed as for one way bridge, using, however, only one half the total number of stringers. The result will give the two way classification of the bridge.
 - ② See under "NOTES" for the one way classification of a 2 way bridge.

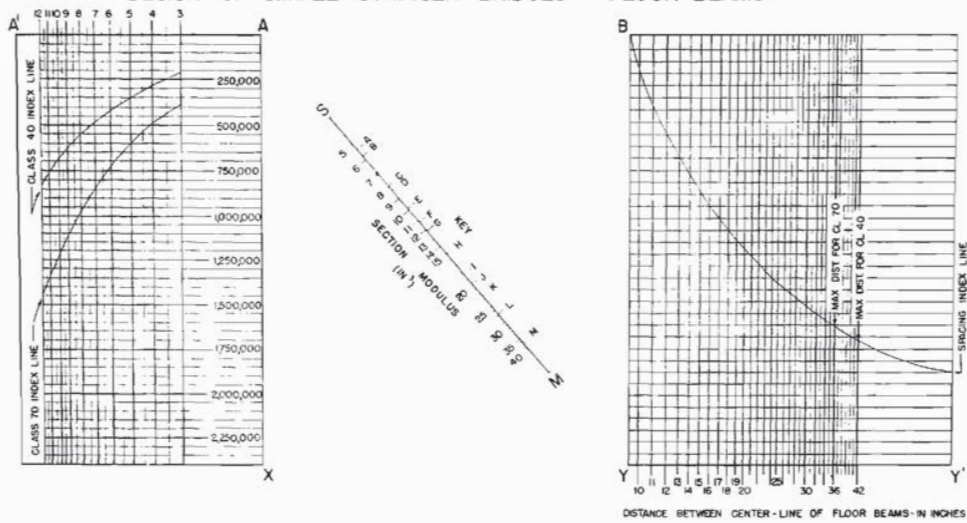
SECTION	SECTION MODULUS	KEY	S _m	KEY
8" x 6.5"	9.2648	9" x 2.430"	13.5	A
10" x 8"	10.3033	9" x 2.648"	20.8	B
12" x 8"	12.3170	9" x 2.648"	26.9	C
12" x 10"	15.3520	10" x 3.180"	35	D
14" x 8"	18.4000	12" x 3.170"	46.2	E
16" x 8"	18" x 4.000"	12" x 3.292"	51.9	F
16" x 10"	18" x 4.1"	12" x 3.292"	62.7	G
18" x 8"	15" x 3.520"	15" x 3.864"	70.7	H
18" x 10"	18" x 3.950"	15" x 3.864"	94.1	I
20" x 8"	18" x 4.20"	18" x 3.950"	117	J
20" x 10"	18" x 4.20"	18" x 4.20"	121	K
21" x 11.5"	18" x 4.20"	18" x 4.20"	151	L
21" x 9"	18" x 4.20"	18" x 4.20"	168	M
18" x 11.75"	18" x 4.20"	18" x 4.20"	184	N
27" x 10"	18" x 4.20"	18" x 4.20"	233	O
21" x 13"	18" x 4.20"	18" x 4.20"	250	P
24" x 14"	18" x 4.20"	18" x 4.20"	331	Q
27" x 14"	18" x 4.20"	18" x 4.20"	403	R
30" x 15"	18" x 4.20"	18" x 4.20"	528	S
30" x 15.75"	18" x 4.20"	18" x 4.20"	670	T

NOTES

- ① This chart based on $f_y=18000$ lbs/sq in., with 20% allowance for stringer efficiency, dead load from 300 to 800 lbs/lin ft., and impact from 25% to 50%, depending upon class and span.
- ② In general, ratio of span in inches to depth of beam in inches, should not exceed 25.
- ③ For classification or design of two way bridges:
Two way cl. — Equivalent to one way —
9 — 18
12 — 24
18 — 30
24 — 40
30 — 50
40 — 70
- ④ If center distance between stringers exceeds 36", floor beams should be used.
- ⑤ Section modulus may be calculated as shown —



DESIGN OF SIMPLE-STRINGER BRIDGES — FLOOR BEAMS



TO DETERMINE ϕ DISTANCE OF FLOOR BEAMS

- ① From point on A-X axis, corresponding to distance in feet between main stringers, drop a vertical line to meet desired index line, and from this intersection project a line horizontally to intersect A-X axis.
- ② Lay off a straight line from point on A-X axis through point on S-M (corresponding to section modulus of floor beams to be used) to intersect axis B-Y.
- ③ From this point on B-Y, draw horizontal line to meet "Spacing Index Line", and from this intersection drop a vertical line to axis Y-Y, reading required center distance in inches.
- ④ If projected line in operation ② does not intersect axis B-Y, the design must be altered by:
 - 1 Use of larger floor beams
 - 2 Use of additional main stringers to decrease floor beam span

NOTES

- ① This chart is valid only when three or more main stringers are used.
- ② With 6" lumber decking, when the distance between main stringers does not exceed 36", no floor beams are required for class 70 loading. The limiting distance for cl 40 loads is 42".
- ③ Points A, B, C, etc on scale S-M represent modulus of American Standard Sections. When other sections are used, section modulus must be determined and the value plotted on the S-M scale.
- ④ The following values and assumptions were used:
 - 1 Maximum fiber stress for steel 18,000 P.S.I.
 - 2 Maximum point load for cl. 70, including impulse and distribution factor - 40,000 lbs.
 - 3 Load will be transmitted by decking to beams within 36" radius of point of application.

Section	Section Modulus (S _x)	Key
5x3 137"	5.4	A
6"x 2 157"	5.8	B
6"x 3 443"	7.9	C
70" RR	8.9	D
8"x 2 435"	9.9	E
7"x 3 755"	11.3	F
90" RR	12.9	G
8"x 4 079"	15.1	H
10"x 2 886"	18.1	I
8"x 2 435"	19.9	J
9"x 2 465"	22.6	K
10"x 4 797"	26.7	L
12"x 3 170"	36.2	M
10"x 2 886"	36.2	M
8"x 6" TIMBER		C

SECTION MODULUS MAY BE CALCULATED AS SHOWN

$$S_x = \frac{bd^3 - 2oc^3}{6d}$$

PREPARED BY ENGINEER HEADQUARTERS
 FIFTH ARMY

APPENDIX N

REHABILITATION OF FLORENCE

APPENDIX N

THE REHABILITATION OF FLORENCE

1. Army Engineer Troops.

Eighth Army advance party arrived 4 August 1944 and main body 10 to 12 August 1944.

The units were under Major J. E. Fennellow, R.E., and consisted of:

278th Works Section, R.E.
158th Bomb Disposal Platoon, R.E.
1st Canadian Drilling Section, R.C.E.) withdrawn when Fifth
Detachment, 290th Army Troops) Army took over.
Total strength 95 all ranks.

Fifth Army advance party arrived on 23 August 1944 and main body 24 to 31 August, except for one company which came up on 19 September.

It consisted of:-

73rd C.R.E. Works
588th Army Troops Company, R.E.
697th Artisan Works Company, R.E.
698th Artisan Works Company, R.E.
287th Works Section, R.E.
88th Mechanical Equipment Platoon, R.E.
15th Stores Section, R.E.

Total strength 921 all ranks.

2. Water Supply.

Florence had no water, when the Army reached it, other than the muddy Arno river, on whose banks the city stands. The normal city water is pumped electrically from three places on the South bank--Anconella, which has wells and a filter bed; San Niccolo, a booster station from Anconella; and Mantignano wells. The first two were in our hands from 12 August; Mantignano not till 5 September.

All pipes across the river had been demolished except two on the Ponte Vecchio. This famous bridge was the only one left standing, but to prevent its immediate use the Germans demolished the houses at both ends and sowed the debris liberally with mines. So liberally, in fact, that three of the mine laying party were killed on their own mines. The pipe from Mantignano had also been destroyed where it crossed the Greve river.

Eighth Army small team of Army Engineers set to work to get some water going. Three water points were established, one on the South side on 10 August and two on the North bank on 16 August.

By 18 August, 1,200,000 gallons per day were being pumped across Ponte Vecchio. Only one of the pipes here would hold water and it was leaking, but water reached the street hydrants for half a mile radius from the North end of the bridge. To get this supply, a 23-year-old petrol engine was coaxed to go and ran one pump till 8 September, when it finally packed up. It just managed to hold on till a new diesel engine had been installed on one of the other pumps. A small generator was also located and coupled to the diesel pump belonging to the filters. Enough electricity was produced to run a second pump.

The three old turbo pumps at San Niccolo, relics of the original pre-electric water supply, were serviced and put into operation. A new wier gate had to be fitted. This was done under fire on 12 August. Much to the annoyance of its builders, a Division unit blew it up the same night to get a patrol back and they had to build another one.

On 23 August, Fifth Army took over.

APPENDIX N

The Rehabilitation of Florence (cont'd).

Little more could be done to increase the supply till electricity was available, but the installation of another diesel started by Eighth Army was completed and a small turbo generating station three miles upstream was repaired and linked in. Shellfire made work on this overhead line a most uncomfortable occupation, when the morning mist cleared. These brought the daily total up to 2,100,000 gallons by 1 September.

Meanwhile, repair of the three main pipes across the river commenced. One of these, in a gallery under the wier at San Niccolo, had to be abandoned temporarily owing to flood. It was finally completed late in September. A temporary 18-inch welded pipe was also laid on top of the wier. This was fixed with steel stirrups leaded into holes bored in the wier and stood up to a lot of battering till the record flood of 2 November tore a 25-yard gap in it.

By 11 September, a 400 KW generator was set up and three serviceable mains had been established across the river. Twelve breaks had been disclosed when the debris was cleared from the Ponte Vecchio pair. The filter bed and flume leading to it were repaired. That day 3,800,000 gallons were pumped to the city and dried the wells out in doing it. The filter beds were also filled. In four days, the water started to come through and by 21 September 7,000,000 gallons were pumped, the normal maximum for that time of year.

Meanwhile, work on the Mantignano system was in hand. The reconnaissance party crept along the dusty white roads to it on 6 September, being pulled up three times by the Police for exceeding the speed limit of five miles per hour and being greeted by a couple of close ones on arrival.

All the wells had risen and flooded the pump motors. Two of the main pumps were serviceable, sufficient for present needs. Five miles of overhead line had almost all its wires off and the low tension control panels had had a shell through them, but the transformers and high tension switch-gear were untouched. A shell had burst the main in one place. The aqueduct with its 28-inch main lay in the bed of the Greve river.

Work started on these jobs next day, also on two 18-inch steel pipes, which were laid across the river in the underslung story of the triple-triple Bailey at Ponte Vittoria.

For a quick job over the Greve, the washouts on either side of the river were joined by a 16-inch pipe on a low level pile bridge. This was later replaced by a high level 39-inch steel pipe on a 30-foot high timber pile and trestle bridge on the line of the aqueduct.

On 18 September, all was set and pumping started, but early next morning a break developed a mile up the line. This was followed by another and it was not till 24 September that a regular 5,000,000 gallons per day was put through. This brought water to the top floor of 5-story buildings. Taller ones have their own booster pumps.

Various other minor pipes were repaired, high level pumps at the reservoirs were started up and Florence water supply was back to normal--except when the electricity failed. Even that may have been normal too.

3. Electric Power.

Two 400 KW generating sets arrived on 7 September on 40-ton transporters. They were pulled off onto timber foundations sunk in the ground and one was in operation from 11 September. The other was ready by 13 September, but had to be cannibalized to keep the first one running, while several new parts were made.

Unloading was no easy job. The front wheels of the tractor nearly left the ground several times, as the timber skids under the sets had only 6-inch bearing on the transporter trackways, which made friction very high.

No transformers came with the sets; local ones had to be adapted. Valdarno Electric Company produced 4 x 260/9,000 V x 300 KW ones, and altered them by bringing out the star points. Two of these in series raised the voltage from 400 V to 6,800 V and tramway auto transformers 6,800/10,000 V brought the voltage right for connecting to the mains.

Low Tension cable took some finding; nothing large enough could be found. The sets finally had three cables for each phase to the switchboard and five cables for each phase from there to the transformers. This installation is not in accordance with "normal" practice, but it works.

The main supply from Nera Montoro, 110 miles to the South, was brought into Florence on 17 September. The majority of the work was done by 540th Electrical and Mechanical Company, R.E., of No. 1 District, but 50 bays of very badly demolished line were put right by 92nd Engineer Regiment. Electric-

APPENDIX N

The Rehabilitation of Florence (cont'd).

ity was brought from Nera Montora to Casalnuovo at 60 KV. Thence to Florence at 30 KV. Initially this was transformed on a 3,000 KW transformer specially brought up by transporter.

The Italians had saved the large transformers at Casalnuovo by burying them under debris. Considerable repair was necessary and three months exposure to the weather had let a lot of water into the oil. The first one was not quite ready by 17 September. On this date, 56 cabins in Florence had been connected and 31 were energized with a peak load of 3,000 KW. By 14 November, 172 cabins had been connected and 104 energized, and all kinds of expedients were in force to keep the load down to the allotment of 7,000 KW.

4. Roads.

The military through routes were on the whole in good order. This standard has been maintained and improved. Ponte Vecchio approaches had to be cleared, first to enable pipe repairs to be carried out and secondly to make this into a civil traffic route across the river.

The eastern approach to the South end of the bridge was completed on 6 September, despite the efforts of the Fine Arts Society to impress on us that Art was more valuable than either water or movement. On this road lay the Columbaria Library with its ground floor still standing, and also the remains of the Ghibelline Tower, two corners only, one vertical and one leaning 2 degrees out of plumb.

Work was begun with a 3/8-yard shovel, but this was too slow, and two D-7 dozers were brought in, which pushed the rubble into the river. The Library was skirted with great care, but no books of value were found in the road or in the debris at either side. The Italian representatives of the Society worked in close collaboration with us and dozers were stopped often for them to check what was being pushed away.

It was unsafe for the machines to approach the leaning portion of the Ghibelline Tower. A committee meeting was held to determine its fate, at which the Deputy Commander of Florence Garrison was present, and it was brought down. The other corner, feeling lonely, fell of its own accord a second later.

The North approach was cleared by 23 September by a 3/4-yard shovel till the 19th, then a 3/8-yard. Eleven thousand yards of rubble were cleared away. Six thousand yards of rubble were removed from the South approach with a 3/8-yard shovel and a D-8 Dozer, but the machines had to be withdrawn for operational work and the clearing was finished by the City.

On these last two works, the Fine Arts Society worked in close cooperation, shoring up buildings, which it wished to preserve, well ahead of the machines. A city gang followed up the machines building a dry rubble retaining wall at each side of the road. The driver of the 3/4-yard shovel had a lucky escape while working. He picked up a trapped Tellermine with his bucket, cutting the pull igniter in half between the striker and the cap. Later, one of the wall builders dug out an "S" Mine and threw it away not knowing what it was. It did not go off though one of the prongs bent on landing.

5. Sewers.

The initial survey disclosed 2,400 meters of damaged sewers varying from 1 to 3 meters in height, some being 6 meters below street level. These were chiefly in the vicinity of the railway stations and yards. Clearance to provide a flow in the main ones was carried out by civil labor under military supervision. The work of rebuilding commenced on 7 September 1944 on contracts let by the local civil authority, all materials being supplied and transported to site by the Army.

Great difficulty was experienced in obtaining sufficient bricklayers; Florence had few and areas up to 10 miles round had to be scoured. The labor roll on this job never rose above 384, while 500 could easily have been employed. Full sewers due to rain considerably delayed the job. As work progressed further, minor damages were found increasing the total length to 2,536 meters.

On 6 November, a shortage of cement necessitated the abandonment of all sewers in uninhabited areas. Up to this time, 1,100 meters had been completed, and a further 150 meters had been repaired up to arch level. In this period of two months, 131,000 bricks have been used and 1,410 tons of cement, sand and aggregate delivered at the site.

6. Mine and Booby Trap Clearance.

The 158th Bomb Disposal Platoon, under Lieutenant Comyn, did exceptionally fine work on this. It worked right up forward and was often in front of the Division Field Companies.

APPENDIX N

The Rehabilitation of Florence (cont'd).

On 18 August, it was clearing mines in the debris on Ponte Rosso covered by an Infantry Platoon in the houses in the rear. The 238th Field Company arrived to take over. Lieutenant Comyn withdrew his party except for his lookout men and took the Field Company officers into the debris to demonstrate how he searched for mines. He was just about to disarm a Schumine, which he had picked up, when a German suicide squad opened fire on him from a flank. Sapper Smith, one of his lookouts, killed one German with his first shot and completely upset the aim of the other. The Infantry Platoon opened fire and the officers all got out safely.

A new use was found for old arms on this work--rapiers are excellent for prodding for Schumines.

During the period 12 August to 7 October, mines and booby traps as below were removed:-

Tellermines	457
Schumines	430
"S" Mines	426
Made up Anti-Tank Charges	37
Italian Wooden Box Mines	14
Stock Mines	<u>11</u>
Total -	1,375
Booby Traps	<u>158</u>
<u>Total</u>	<u>1,533</u>

The City civilian bomb disposal gang did very good work in clearing mines in the debris at Ponte Vecchio, under the supervision of this platoon.

7. Welfare and Hospitals.

Work on three hotels, one club and the railway station, now Fifth Army Rest Center, was begun between 20 and 29 August. Careggi Hospital, the Royal Reception Hall at the railway station, for NAAFI, and the conversion of an Autoparco into a British Rest Center began in September.