The Engineer Replacement Training Center, Fort Belvoir, Virginia

by Paul K. Walker

Beginning in mid-1940, the expansion of the Army profoundly affected the Corps of Engineers. At the end of June 1940, the number of engineers in the Regular Army stood at 810 officers and 9,973 enlisted men, an increase of 24 officers and 4,183 enlisted men since the previous June. But this growth in the enlisted ranks represented a mere trickle compared to the raging torrent which followed. The number of enlisted men, supplied largely by the draft instituted in September 1940, increased seven-fold from just under 10,000 in July 1940 to 69,079 a year later. The entire Army expanded just five and a half times.

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The influx of so many men translated into a substantial requirement for additional training. The peacetime practice of training recruits in units was impractical. To help meet the need, plans were formulated in November 1940 to establish an Engineer Replacement Training Center (ERTC) at Fort Belvoir, Virginia.

The location was a natural choice. Belvoir predated World War I as a training ground for Army engineers. The War Department had acquired the Belvoir estate in 1912 as a rifle range and summer camp for engineer troops stationed at Washington Barracks in downtown Washington. During

World War I, the Army trained thousands of engineer officers and troops in basic military engineering at Belvoir before sending them overseas. The entire Engineer School relocated in 1919 to the site, known then as Camp A.A. Humphreys.

In May 1920, the War Department established a program for the Engineer School which was followed until World War II. The plan set up departments of Administration and History, Military Art, Civil Engineering (relating specifically to rivers and harbors), and Military Engineering. Initially, instruction included a basic course, an advanced course (later renamed as a company officers course), noncommissioned and enlisted specialist courses, correspondence courses, and "special courses." Also during the interwar period, the name Camp Humphreys changed successively to Fort Humphreys and finally to Fort Belvoir, as the camp evolved from a collection of temporary facilities to a permanent post.

By mid-December 1940, a cadre had formed for the ERTC with Lieutenant Colonel William M. Hoge in command. Meanwhile, barracks and other improvements were constructed at the site of the new center—a run-down farm across U.S. Route 1 from the main post. The site was selected, not only because of its proximity to Belvoir, but also because its terrain was suited to all types of training.

Preparation of the training center for the new enlistees required a pool of competent instructors. The officers comprising this group came largely from the Officers Reserve Corps, with a few from the Regular Army. The Engineer School conducted five-week officer instructor courses for the reservists. The first took place in November–December 1940. Two more sessions were completed by 3 March 1941. Upon graduation, the officers moved directly into the training center organization. Some would serve as company officers or in positions within the headquarters. Later, graduates of the Belvoir Officer Candidates School joined the training center staff.

Noncommissioned officers (NCOs) also assisted with instruction. An NCO instructors course involving 900 men taken from existing engineer organizations, and under the command of Lieutenant Colonel George W. Gillette, began 2 January and lasted until 8 March 1941. As cantonments were completed, the NCOs moved in to test them out for

the ERTC trainees. Their training schedule paralleled that planned for the selectees. When the course was over, half the officers and men went to the Belvoir center. The other half reported to a second center being organized at Fort Leonard Wood. Additional courses held included company officer activities, adjutant and administrative classes, and mess management.

Activity was intense at the Belvoir ERTC in early 1941 as the cadre organized headquarters, groups, battalions, and companies. Officers in headquarters developed training schedules and prepared training areas. They sited nearby locations for fixed and floating bridges, demolitions, field fortifications, roads, construction, obstacles, and weapons. The supply branch busily prepared for the anticipated full quota of 250 officers and 10,000 men, as heavy engineer equipment, machines, and ponton boats poured in. Thousands of workmen labored to complete the barracks, service clubs, theaters, hostess houses, post exchanges, and recreation areas that would serve each group of trainees.

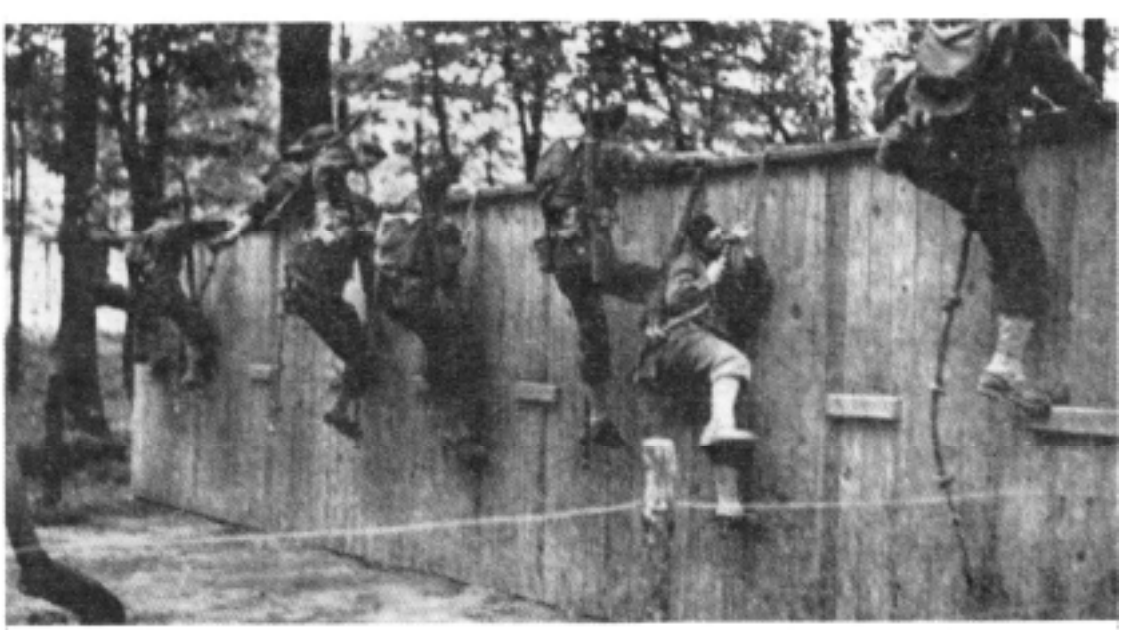
The Belvoir center included the headquarters, a headquarters company, and two training groups segregated by race. The white group consisted of seven battalions with 28 companies; the "colored" group had three battalions of 12 companies. Each training company consisted of four platoons. The center headquarters had 32 officers and no enlisted men. Two officers commanded the headquarters company and utilized enlisted men in its personnel, supply, training, drafting, and transport sections. Each group had its own headquarters with six officers and 15 enlisted men. Group headquarters dealt with supply, mess, recreation, and disciplining its battalions. The groups each had their own areas and facilities. Battalion headquarters contained two officers and 11 enlisted men. Each company had 229 trainees with a cadre of five officers and 23 enlisted men.

The first group of 250 selectees arrived at the Fort Belvoir ERTC from Camp Lee, Virginia, on 17 March 1941. Landscaping, road paving, laying of sidewalks, painting barracks, and other important jobs remained to be done to complete the new center. But the job of training selectees as fillers for units being organized for war began without delay.

To prepare as fillers for new units, the selectees embarked on a 564-hour course spread over 12 weeks. The course covered some 40 subjects related to the duties and specialties of engineer soldiers. Subjects were grouped as basic and general (166 hours); weapons (84 hours); combat (48 hours); engineer (126 hours); and pioneer (92 hours). Six days of additional training remained to be distributed as needed. Full training days were scheduled Monday through Friday with a half-day on Saturday. During the course, three full days were set aside for field training.

The soldier's life was not all work. There were frequent games and athletic competition. Separate service clubs for the white and black groups provided restaurants, lounges, and libraries as gathering places away from the routine of their standard 63-man, double-deck "pagoda" style barracks. In April 1941, the selectees formed a band as well as two orchestras and held dances twice a week. Movie theaters and post exchanges were also available.

The Military Obstacle Course, known popularly as a "steeplechase for soldiers:' was central to the soldier's training. The first of its kind to be used by the Army, the Belvoir course challenged trainees with a series of obstacles which required climbing, crawling, swinging, hopping, and jumping.



The 8-foot smooth wall from the Military Obstacle Course, Fort Belvoir, Virginia, 1941. The training course, first of its kind in the Army, was popularly known as the "steeplechase for soldiers."

The course started with a Z-foot hurdle and ended with 12-foot ladders and a 6-foot breastwork. The course was wide enough for several men to compete with each other.

Parts of the original course were deemed too easy, so Major Lewis Prentiss designed several new obstacles to challenge the troops. They dove down a 20-foot fireman's pole; boarded a ship by climbing up cargo netting from the rolling gunwales of a rowboat; crossed a stream by overhead horizontal ladder; and ended with a climb up a 45-degree slope. The new course was so popular that the Belvoir center sent its plans to other training centers. "Even football coaches investigated its features," according to the ***Military Engineer.***

As the first group of selectees underwent training in the spring of 1941, several weaknesses in the ERTC organization became clear. One problem was a shortage of officers. In April Colonel Hoge opined that existing tables of organization provided only a bare minimum of the reserve officers needed. The organization did not account for officers needed to perform essential administrative duties such as police, fire, mess, and motor transport; nor did it account for the normal complement of officers absent for sickness, leave, or other duty.

Hoge's successor, Brigadier General Edwin H. Marks, took over on 1 May and shortly thereafter proposed a revision of the center's tables of organization. The basic problem was that too many officers and selectees had to be diverted from training to other tasks. Some platoons were receiving inadequate instruction, and trainees were missing essential training. Marks requested an increase of 85 officers and 444 enlisted cadre to correct the situation lest the training of future classes also fall short.

Brigadier General Edwin Hall Marks, Corps of Engineers, commanded Fort Belvoir, Virginia from 1941 to 1944.

The center also needed new positions to augment the headquarters' personnel, administrative, and supply sections. Additional enlisted men were required at headquarters to do classification work and operate the post office. An increase of one officer per replacement company to handle mess, supply, and administration would free company and platoon leaders for training. An increase of one corporal per platoon would provide a permanent squad leader for each of three squads.

Ten medical officers and 60 enlisted men were needed to operate infirmaries, give medical instruction, and provide medical attention in training areas and on the march. A unique requirement remained for special training battalions to handle the physically and mentally handicapped.

By the end of summer 1941, several changes had occurred. In July a special training company was created for mentally and physically impaired recruits. All motor personnel were concentrated in a new motor company, but fewer than one-fourth of the additional enlisted men requested by Marks were added to the ERTC's table of organization. The specialized training unit enabled it to retain many recruits who might otherwise have been lost because of illiteracy and mental, physical, or emotional problems.

Despite difficulties encountered in its first nine months of operation, the Belvoir ERTC and a second center opened in May 1941 at Fort Leonard Wood, Missouri, were able to meet the Army's need of fillers for newly activated units. The first shipment of 1,035 trained selectees left Belvoir for Fort Bragg, North Carolina, at the end of May. A second group entered in July. Before the end of the year, the two centers were graduating about 5,000 men per month.

Pearl Harbor changed all of this drastically. The impact was immediate. Within two weeks (December 19) the Army shortened replacement training by one-third, from 12 to 8 weeks. The War Department's preferred solution was to cut the time allotted to each course rather than whole courses. The center adopted a program developed by the Operations and Training Branch, Office of the Chief of Engineers (OCE), that primarily reduced the number of technical subjects originally included in the closing weeks of training. Now units were expected to take up the slack.

The condensed 8-week course lasted only until 15 March 1942, when the general staff ordered a gradual reversion to a H-week cycle. The change brought more time for engineer subjects such as demolitions, bridging, road construction, and obstacles. This was fortunate. Troops were simply moving overseas too fast. In reality the training they received at the centers was all they got before they entered a combat theater.

Spring 1942 also brought a reorganization of the Army. Services of Supply (SOS), a new command, assumed control of the Corps of Engineers except in matters related to civil works. Thereafter, the Training Division of SOS assumed close supervision of all aspects of training. The goal was uniformity in order to produce men at desirable levels of proficiency. In August, SOS issued a basic military program to be used by all training centers during 163 of the 192 hours in the first four weeks. Under the new plan, instruction changed over to engineer subjects in the fifth week.

Rifle firing remained of highest importance. While at the center, every trainee was required to fire for record. Shortages of weapons and suitable firing ranges hampered both training centers. Belvoir had one W-target range. The requirement

Engineers build an assault boat ponton bridge (10-ton capacity) with two fixed steel trestles on the shore

that 80 percent of the trainees qualify was difficult to attain. Military courtesy, drill, and other aspects of basic training in addition to marksmanship characterized the program at all centers, but Belvoir and Leonard Wood sought to produce technically trained soldiers. For 7 of the 12 weeks of training the engineer recruits combined technical with tactical instruction. Trainees learned the elements of reconnaissance, coordination with larger groups, and building fixed and floating bridges, roads, and obstacles.

Although the initial training phase utilized scale models, practical experience in the field was at the heart of engineer training. In the floating bridge area—a 2,000-foot dredged channel that ranged to 250 feet wide—six companies could train simultaneously. Accotink Creek accommodated 4 steel bridges, 16 wooden trestle bridges, and 48 foot bridges at one time. Building 180 fixed and floating bridges in a single week was common. Bailey bridge training followed final adoption of the bridge by the Corps in February 1943.

Carrying firsthand experience forward into training, recruits also learned how to make priming charges and fire explosives. Twenty hours of roadbuilding instruction were divided into four parts. Trainees learned how to spread gravel; dig ditches; lay pipe; clear and drain fields; lay matting; mix and pour concrete; build corduroy, wire mesh, and landing mat roads; and conduct repair and maintenance. The last four-hour training segment was a night operation that might include expedient road building or repair.

Although the 12-week course had been restored, training in the first nine months of 1942 was relatively hasty and took place in an atmosphere of increasing urgency. The ERTC facilities expanded to accommodate additional recruits. Initial planning that called for 8,800 men was increased to 10,000. In June 1942, the Belvoir center graduated a peak of 4,444 trainees.

On 2 July Brigadier General Lehman W. Miller assumed command of the ERTC from General Marks. By this time the need for trained specialists in engineer units had reached emergency levels. Planners had mistakenly expected the draft to supply the Army with more than enough specialists. The Corps of Engineers, which required 727 occupational specialists per 1,000 troops, was exceeded only by the Transportation

Corps in its need for skilled and semiskilled men. Quotas for construction machinery operators were the hardest to fill. The center had to find a way to meet the crisis while continuing to produce soldiers trained in the basics.

Beginning in August, the ERTC separated arriving specialists from other recruits based on their qualification cards. The specialists then spent four weeks in basic training and one week studying technical engineering subjects before assignment to a specialists school either at Belvoir itself or in the civilian sector. One company from each of seven battalions became a specialist company.

In a program combining theory and practice, the ERTC offered basic specialist training for construction machinery operators, carpenters, truck drivers, and demolitions handlers, as well as buglers, messengers, clerks, mess sergeants, cooks, and bakers. Trainees in carpentry helped build classrooms at the center. Machine operators gained firsthand experience clearing roads, excavating pools, and preparing firing ranges.

Specialists took advanced courses at trade and service schools. Under contract, the University of Kentucky gave courses in drafting, surveying, and geodetic computing to white enlistees while the Virginia State College for Negroes trained black topographic specialists. Under similar arrangements, the Radio-Television Institute trained electricians. Caterpillar Tractor Company and R.G. LeTourneau Company trained machinery operators.

The demand for specialists dominated the engineer training program until summer 1943. Despite shortages of instructors and machinery, the Belvoir and Leonard Wood centers together were able to produce the required number of specialists. Out of 82,301 men received in the year following June 1942, the centers trained 14,409 (17.5 percent) as specialists.

Spring 1943 brought further changes. The ERTC's emphasis shifted from furnishing fillers for new units to replacing battle casualties. Trainees generally went directly into units in combat, and it was now virtually impossible to obtain additional training from their new units prior to embarkation as they had in the past.

The situation placed heavy demands on the replacement program. Lieutenant Colonel Ralph Bailey, the center's new

As part of their training at Fort Belvoir, Virginia, engineers test how well an obstacle can withstand a tank attack.

S-3, introduced new subjects to the curriculum and changed the methods of teaching to include more widespread use of training aids. Higher headquarters required that all replacements must "so far as practicable... be subjected during training to every sight, sound, and sensation of battle." Live ammunition, real mines, and a night bridging operation were introduced. Experience gained in combat in North Africa called for more tanks in training and for testing bridges and obstacles. Instructors also placed greater emphasis on building physical endurance.

By summer 1943, the specialist crisis was under control. The center should then have entered a relatively stable period and been able to develop a program, long hoped for, that would turn out soldiers who could fight; who had broad technical knowledge; and who, if required, could perform skilled work. Unfortunately several factors prevented that from happening.

The center instituted a new 17-week training program in August. The program was designed to produce both adequately trained specialists and nonspecialists. All spent the first six weeks in basic training. The specialists then spent eight weeks in specialist courses while the others trained in basic engineering tasks. For the last three weeks the two

groups were reunited for team training in the field to simulate as much as possible life in an active combat theater. Belvoir was not large enough to accommodate team training, so the troops moved out to an alternate site at Big Meadows in Shenandoah National Park near Luray, Virginia. This training eventually moved to the A.P. Hill Military Reservation.

The longer course was largely a response to reductions in manpower. It may have produced basic engineer soldiers who were better qualified, but the center's ability to respond to emergency situations would be all the more difficult under the expanded program.

Another problem stemmed from efforts to utilize the reduced pool of men more effectively. Cuts in the proportion of officers and the enlisted cadre directed by Army Service Forces soon had an adverse impact on training. The length of time such men could serve in training assignments was reduced. The change required an increased use of veterans, the physically handicapped, and men over 35 as enlisted trainers. Instructors in highly technical courses were permitted to stay longer, which enabled the quality of technical training to be maintained at a higher level than in basic training.

In April 1944, the Belvoir ERTC, like all other training centers that were then responsible to the Commanding General, Army Services Forces, became an Army Service Training Center. From then on, the center had the added mission of training units for extended field service in theaters of operation. A troop leadership course was added for noncommissioned officers.

After V-J Day, the Belvoir center established a separation point to assist veterans returning to civil life. Some training of replacements continued for occupation forces, but deactivation orders in December 1946 left further responsibility for troop training with the Field Training Group. Army Ground Forces took over all basic military training in 1947.

Despite continual pressures and uncertainties, the ERTC at Fort Belvoir achieved an admirable record. The Army highly valued the specialists produced at all engineer centers between May 1941 and June 1944—nearly 41,000 out of a total of 216,662 men. Even nonspecialists were accorded a special specification serial number (the predecessor of the

military occupation specialist code) that set them apart from basic replacements from the other services. The technical knowledge received through the Belvoir training program was the distinctive characteristic of the engineer soldier.

Sources for Further Reading

The principal published source for this essay was Blanche D. Coll, Jean E. Keith, and Herbert H. Rosenthal's *The Corps of Engineers: Troops and Equipment* (Washington, DC: U.S. Government Printing Office, 1958) a volume in the Center of Military History's *United States Army in World War II* series. Another useful volume in that series was Robert R. Palmer, Bell I. Wiley, and William R. Keast's *The Procurement and Training of Ground Combat Troops*, 1948.

Additional sources were: Ralph S. Johansen's "Training a Selectee to be an Engineer Soldier," *Military Engineer*, 33 (March–April 1941): 105–107; "Military Obstacle Course," *Military Engineer*, 33 (March–April 1941): 274–275; "Super Obstacle Course Unveiled at Fort Belvoir," *Military Engineer*, 33 (March–April 1941): 504; and Donald M. Dunne's "The Engineer School, Past and Present" reprinted from *Military Engineer* (Fort Belvoir, Virginia, 1949).

The research notes for *Troops and Equipment* in the research collections of the Office of History, U.S. Army Corps of Engineers, were indispensable.

"The Fighting Engineers," a film produced for the Department of the Army by Warner Brothers in 1942, provides an excellent visual record of the Belvoir ERTC. A videotape copy of the film is in the research collections of the Office of History, U.S. Army Corps of Engineers.