Reconstruction of Le Havre

by Barry W. Fowle

The logistic support to the United States forces on the European continent reached its lowest ebb during October 1944. Bad weather had an adverse effect on operations at the beaches and also prevented the use of shallow-draft shipping to the smaller ports. Cherbourg was far from complete, and the small Brittany ports made only a modest contribution to total needs. In the first three weeks of October, loadings averaged less than 25,000 tons per day against an estimated requirement of 40,000.

The supply problem would not be solved until Antwerp opened in December, but the situation took a turn for the better in November. The improvement was in part due to overcoming the clearance problem at Cherbourg. More important was the opening of two new ports, Le Havre and Rouen, which lay at least 100 miles nearer the front lines than did Cherbourg. Both ports were in operation by mid-October, making it possible to close all the minor ports in both Normandy and Brittany except two, Granville and Morlaix.

Le Havre was the most thoroughly demolished of the continental ports. Its damage exceeded that of Cherbourg and Brest. All of its locks were inoperative. The portion of the port served by the tidal basin was not usable. Every deep-water berth was destroyed by German demolition, and debris was piled upon the damaged structures by the collapse of buildings hit by Allied bombing. The heart of the city, an area of approximately one square mile, had been almost completely demolished by Allied bombers.

There were a number of obstructions to navigation in the harbor. A floating dry dock and two vessels were sunk across the entrance to the harbor. Numerous barges and other small craft were sunk throughout the majority of the basins. Although reports from prisoners indicated there was no extensive mining of the port, several controlled minefields were found, and large numbers of mines were located in other areas. All the locks in the port were damaged to some extent with damage confined to the gates themselves.

Most of the cranes were badly damaged and could not be readily repaired. The major warehouse and storage facilities were hard hit, but many frames still stood on which sides and roofing could be placed.

Debris blocked roads and bridges, and several of the bridges over the locks needed repair or replacement. The marshalling yards were relatively undamaged, but a few bomb craters existed. Tracks in the vicinity of the quays were obstructed by debris or damaged from bombing. Most of the railroad bridges over the locks and the important rail bridges over the Tancarville Canal were heavily damaged.

The 373d Engineer General Service Regiment, commanded by Colonel Frank F. Bell, was placed in charge of all units assigned to reconstruction of Le Havre. Units at the technical disposal of the 373d included: the 351st Engineer General Service Regiment (1st Battalion), the 1055th and 1061st Port Construction and Repair (PC&R) Groups, the 577th Dump Truck Company, the 392d Engineer General Service Regiment, the 1593d Utilities Detachment, and two companies of British marine engineers.

The mission of the engineers at Le Havre had four parts. The first two called for developing the port to a daily capacity of 4,000 tons by lighterage and 2 1/2-ton amphibious trucks (DUKWs) in the shortest possible time and determining the maximum tonnage which could be developed by lighterage and DUKWs. The rest of the mission involved determining the practicality of employing coasters and the feasibility of reconstructing port facilities to provide full deep-water berths within a reasonable time. Since economy of time was an important factor, the engineers constructed a number of new deep-water quays rather than restore the demolished quays which were covered by thousands of tons of debris.

The rehabilitation of Le Havre—the second largest port in France—was a complex and varied task. It included road construction and maintenance; clearance of beaches; rehabilitation of water sewage systems; repairs to an airport; docks, jetties, and quaysides; salvage of sunken vessels; reconstruction of lighting facilities; repair of old and building of new POL (petroleum, oil, and lubricants) and warehousing facilities; mine and booby trap clearance; and construction of

Company D, 373d Engineer General Service Regiment blows German concrete barges underwater. Staff Sergeant Thomas Atchison detonates the charge Le Havre, France, 1 October 1944.

expedient berthing facilities. In addition, supplies which were to be landed at Le Havre required a network of roads and streets that connected with the White and Red Ball highways serving the front lines.

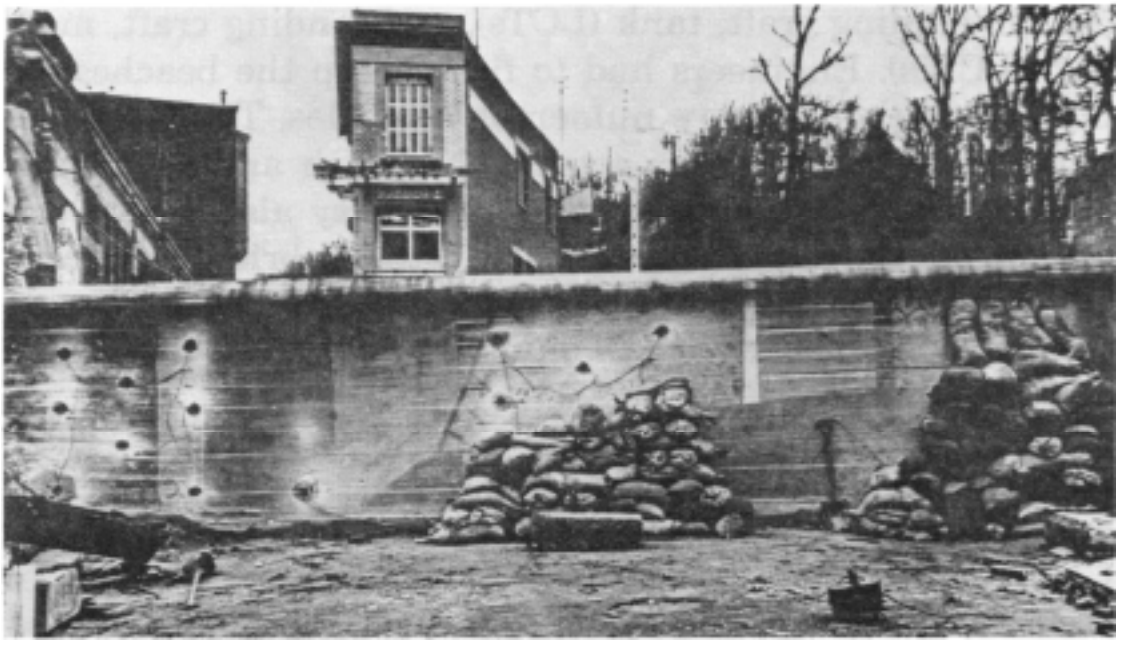
The first phase in the reopening of the port was the establishment of beaches to accommodate landing ships, tank (LSTs), landing craft, tank (LCTs), and landing craft, medium (LCMs). Engineers had to first sweep the beaches for mines and then remove numerous obstacles. The Germans had strewn tetrahedrons around the beach and built anti-landing ramps at the low tide mark. They also sunk huge reinforced concrete barges filled with debris to prevent the use of the beach by landing craft. On the high tide portion of the beach, the engineers had to remove walls and blockhouses.

The 1st Battalion, 373d Regiment, formed a special mine deactivation group that included two men from Headquarters and Service Company. First Lieutenant John K. McGrath, Company A, and Sergeant William G. Lockwood-later second lieutenant -were in charge. The regiment assigned this group the task of clearing the beach, the entire dock area of the city, and numerous buildings and areas in other locations, making them safe for occupancy by military personnel.

They were also responsible for clearing gun positions for several antiaircraft units. By 15 October, the group had deactivated over 1,100 mines.

The French, under the supervision of the 373d Regiment, assisted the special deactivation group. They were responsible for removing mines and booby traps from areas of Le Havre that had no bearing upon military operations in the city. Lieutenant McGrath assigned Sergeant Lockwood the task of instructing these civilians in the procedure of removing mines and booby traps, and for a period of several weeks supervised their work. Monsieur Lepape Robert, later killed by a mine, was the foreman of the French deactivation unit which deactivated almost 1,000 mines of different types, mostly antipersonnel and glass mines. In total, the 373d removed over 1,500 mines and bombs.

When the 373d arrived at Le Havre, practically no work had been done on the streets. The unit literally had to bulldoze its way in to make a reconnaissance of the beach areas. The engineers began road opening and clearance on 20 September, first clearing the streets leading to the beaching spots for LSTs. In order to utilize the dock area, its roads and streets had to be made passable with connections established to the White Ball Highway serving the front lines.



Before: The 373d Engineer General Service Regiment has placed demolition charges and partially sandbagged the reinforced concrete road block, Rue de Croix, Le Havre, France

After: Results of the blast on the road block (see previous photograph).

In order to establish storage and transfer points adjacent to the beaches, the 373d cleared barbed wire defenses, trenches, mines, and other antipersonnel devices from the area. The clearing of the beach areas progressed sufficiently to allow entry of a few vessels on 2 October. Brigadier General William M. Hoge's 16th Port Command, just arrived from Brittany to take over port operations, unloaded these vessels.

Once the engineers established the LST beaching areas in the Avant Port sector, installation of the first DUKW ramp on Mole Central began, followed by the installation of three DUKW landing areas on Mole Oblique.

Prior to the repair of lock gates at the seaward end of the basins by the 1055th and 1061st PC&R Groups, units under the 373d established berthing facilities for four Liberties with a floating pier constructed at the base of Mole Oblique. Attached to the 1055th was the 1071st Engineer port repair ship, the *Junior Vim Noy,* which performed a multitude of tasks including diving operations, underwater burning, sounding with a depth finder, general machine shop work, welding, and blacksmithing.

On 13 October, crews unloaded three Liberties. After that, discharge improved rapidly. In the first full week of operations, Le Havre discharged about 2,000 tons per day. In the

second week, the average rose to 3,650 tons, double that expected. By 23 October, Le Havre's target was increased to 9,100 tons within the next 30 days, exclusive of POL and coal. The discharge rate averaged 5,000 tons within a week. Since the expected opening of Antwerp was rapidly fading with the failure to secure control of the channel to the port, the Communications Zone raised Le Havre's target to 9,500 tons by 1 December. That amount was actually being exceeded by the end of the month.

During this phase of the development of the port, the 373d gave the 1055th and 1061st Engineer PC&R Groups, plus the two British marine engineer companies, the assignment of removing underwater obstructions in the basins and canals, repairing locks, and doing other specialized work for which their personnel and equipment fitted them.

The most important repair work required for the operation of the port was to the locks of the two entrances leading to Basin de L'Eure, the main basin. These entrances kept the water level in the basin at the high-tide level of 25 feet. Through the gates to the main or southern lock, vessels as big as Liberties and larger could enter or leave at any stage of the tide. Within the basin the ships moved about freely, unloading continuously without concern for the water level. The Germans took special pains to render these two locks useless.

There were four gates, or leaves, to the main lock, two outer and two inner, swinging on hinges like a door. Each weighed 275 tons. The Germans had blown the south inner gate off its hinges. The engineers towed it to a dry dock for repair by a French contractor. Repairs included rebuilding the 2-ton bottom hinge, requiring the fabrication of several new pieces and the straightening of some old pieces.

When the workers put the leaf back, a forged steel collar around the upper hinge pin broke, letting the gate drop forward. To keep the leaf from toppling over completely, operators admitted and expelled water from the ballast compartments, holding it in place. A 60-ton floating crane helped pull the gate back into position. Loss of the gate would have delayed the opening of the harbor by at least a month.

Actually, the gate was out of service only 60 hours. Colonel Bell devised a scheme to replace the forged collar with one

flame-cut from a slab of 6-inch armor plate, and French workers fabricated it. The flame case-hardened the manganese steel plate, preventing it from being machined. But it worked until the engineers could obtain a new forged and machined collar.

Replacing the south outer gate was not without problems either. Underwater demolition charges had badly damaged the gate, but it was still on its hinges. Workers estimated the time to repair the gate at several months. Fortunately, crews found a gate to fit the opening and put it into temporary service.

The second entrance to the main basin, adjacent to and north of the first entrance, was also essential to the functioning of the harbor as a series of wet docks. The Germans had suspended a demolition charge about 10 feet underwater on the center line of the gate where the two leaves came together. It blew a 40-foot hole, half in one leaf, half in the other. The charge ripped out much of the structural framing of the leaves, making them impossible to move. The only method of repair was to make them tight with a patch of some type, so they could serve as a dam controlling the tidal flow. Six 1-inch steel plates were used, stiffened with steel I-beams.

This arrangement still allowed too much water through the gates, so the cracks were patched with bags containing a mixture of 10 percent cement and 90 percent sand. To hold them in place, engineers piled a 1,500-cubic-yard rubble fill against the back of the gate. Workers used 3,500 bags.

Repair of the gates permitted ships to move about through the basins and discharge their cargo, but until the workers restored the key bridges, the unloaded shipments could go no further. The Germans had damaged all of the bridges. Four required replacement structures, and the Army provided Bailey bridge spans. In addition, the engineers built a unit construction railroad bridge (UCRB) at the lock separating basins Fluvial and Vetillart. Crews installed three of the Bailey bridges in the usual method, assembled on the bank, then pushed across as a cantilever. Two were small, with only 70-foot spans, while a third, a triple-single, had a 120-foot span.

The fourth Bailey was collocated with the UCRB. Because both were vital to port operations, they were built quickly—in

nine days. Soon after construction, the work load required that the two bridges be converted to lift spans to allow larger craft to pass under them. Workers installed gantry frames and hoist platforms at either end of the bridges. To support the additional weight, the engineers installed additional pile substructure. A 4-ton gasoline engine furnished the power to raise the 35-ton UCRB and 20-ton Bailey through a 13-foot lift which took about 4 minutes.

As military activity increased in the port, engineers extended the road network. This required that various bridges across the Tancarville canal system, exiting from the rear of the port, be repaired in addition to bridges at various other basin and lock crossings. Depots established in the area of the Schneider works east of the city called for the repair of roads in that sector and the placing of additional bridges across the canal.

The engineers erected cranes in order to unload ships coming in to harbor. They constructed the first one at Basin Dock on 18 December, installing the English type traveling gantry crane. By 2 March 1945, engineers had constructed six of them.

POL facilities were available in the area of Basin Vetillart with a pipeline running to a ship-to-shore pumping station adjacent to the Seine. They had suffered from the Allied bombing and not only were badly in need of repair, but were inadequate. Engineers constructed additional facilities. They laid new pipelines, constructed a decanting area, built a new tank-filling area, and installed new pumping stations. The storage capacity was 90,000 barrels.

To make the POL facility operational, the 373d had to repair the narrow gauge railway line which ran along the same area as the pipeline. It cleaned and overhauled the locomotive and train, and relaid the 1½ miles of track.

Located at Le Havre was Fort St. Addresse, situated on the high ground overlooking Port Le Havre and the sea. It had been a French garrison, but the Germans converted it into a strong point of the city's defenses. The U.S. Army used it as a reinforcement depot, then converted it into a leave center for personnel returning home. Company A, 373d Regiment, got the mission of rehabilitation and conversion of the fort to a center capable of handling 3,000 men.

In order to take care of the many liberated prisoners of war, the 373d gave Company C the mission of constructing a tent camp at the Le Havre airport that could accommodate 2,000 personnel. In 2½ days, assisted by prisoner of war labor, the camp and utilities were ready for use. Later the engineers added improvements such as walks and water tanks.

The rehabilitation of the port also called for the installation of lighting. Company D, 373d, got all the projects for lighting. They provided lights to the dock areas, railway yards, warehouses, dwellings, and other structures by repairing existing systems. In some instances the engineers installed completely new wiring systems and poles.

When the 28-inch water main supplying the city collapsed in February 1945 due to tidal action, the engineers quickly repaired it. Engineer personnel supplied water to the U.S. Navy and Allies by repairing a bombed-out system on the island Digue Est. The regiment kept the system in operation despite difficulties. It also installed and operated three other water points for military use.

The cold storage facilities in Le Havre lacked sufficient capacity resulting in a need for additional space. The 373d and French contractor personnel solved this problem by cooperating in the reconstruction of a refrigeration plant on Mole Oblique to augment port facilities. Company D, 373d, provided the needed supplies, supervised the prisoners of war, did rehabilitation work, and provided the technical expertise.

A historic event occurred when the 373d assisted Western Union in the reestablishment of cable service. The Germans had destroyed the landward sections of the transatlantic cables serving the city, and Western Union wanted to put them back into service. The Second Battalion deactivation group aided in the restoration by clearing mines in the beach area where the severed cable came ashore. Under the supervision of the Western Union representatives, Company D winched the cable ashore, dug a ditch, and placed the cable in it.

From 1 November to 31 December 1944, Le Havre saw a tremendous transition. It went from a battered port limited to LST beaches and DUKW ramps to large-scale utilization

of the basin system of the harbor. With basin gates repaired and essential bridges replaced, Le Havre was once again operational despite its war-wrecked state. The results—fulfilling and even exceeding the programmed tonnage for the port—were a tribute to the ingenuity, speed, inventiveness, and perseverance of U.S. Army engineers. Although they only succeeded in patching up the harbor with temporary facilities, it did support the front line troops until Antwerp and Ghent were put into service.

Sources for Further Reading

Much of the material in this essay comes from *The 373d Engineer General Service Regiment in World War II* (Dallas: Corbey Company, 1947). Roland G. Ruppenthal, *United States Army in World War II. Logistical Support of the Armies.* Volume II (Washington, DC: Office of the Chief of Military History, 1959) and Waldo G. Bowman, *American Military Engineering in Europe from Normandy to the Rhine* (New York: McGraw–Hill Publishing Co. Inc., 1945) were also helpful.

Two other sources are *Historical Report U.S. Army Corps of Engineers European Theater of Operations. Combat Engineering Report No. 11—Port Construction and Repair* (Liaison Section, Intelligence Division, OCE, 1945) and Alfred M. Beck, *United States Army in World War II. The Corps of Engineers: The War Against Germany* (Washington, DC: Office of the Chief of Military History, 1985).