

# Rehabilitating Philippine Ports

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**T**HE young, insular Republic of the Philippines depends for its cargo transportation almost entirely upon interisland and international ocean shipping. During World War II, many of the port facilities vital to this commerce were severely damaged by demolition charges, torpedoes, bombing, shellfire, or exploding stored ammunition. Lack of maintenance during the Japanese occupation also contributed greatly to the deteriorated condition of the port facilities. Under provisions of the "Philippine Rehabilitation Act of 1946," the Manila District, Corps of Engineers, U.S. Army, of which Lt. Col. W. W. Ragland is District Engineer, is engaged in the repair and reconstruction of many of these ports.

Foreseeing a need for assisting the Filipinos in their reconstruction program, the President of the United States directed the Secretary of War to have the Corps of Engineers make a study of requirements for rehabilitation and expansion of port and harbor facilities in the Philippines. The outcome of this study was the Hall Report, officially titled "Report on Port Facilities, Philippine Islands," by Colonel C. L. Hall, C. E. Colonel Hall, directed to prepare this report in a letter dated August 30, 1945, submitted it on November 9, 1945, a remarkably short time for such a comprehensive report. The problems encountered in the preparation of the report were the subject of an article by Colonel Hall in the *Military Engineer*.

Based on the Hall Report, legislation was included in Public Law No. 370 of the 79th Congress, known as the "Philippine Rehabilitation Act of 1946," in part as follows:

"As recommended in a report based upon an investigation made in the Philippines by the Corps of Engineers of the United States Army and to the extent that the findings in such report are approved by the President the Corps of Engineers is authorized, after consultation with the Philippine Government, to carry out a program for the rehabilitation, improvement, and construction of port and harbor facilities in the Philippines, such work to be done by contract, insofar as practicable, under the direction of the Secretary of War and the supervision of the Chief of Engineers, and in accordance with established procedures applicable to river and harbor projects."

This act was approved by the President on April 30, 1946. A total of \$17,800,000 has been made available for port and harbor rehabilitation.

In order to implement liaison and planning for port rehabilitation within the Philippine Government, the President of the Republic of the Philippines appointed the Philippine Port Commission, which was later authorized to consult directly with the Manila District. After establishing mutually acceptable liaison procedures with the Manila District, the Port Commission drew up a construction program. Meanwhile the Manila District assisted by assembling data, and by making preliminary designs and cost estimates. Upon approval of the program by the Philippine Executive Office, detailed surveys and plans for the ports in the program were initiated. Although changes have been made from time to time, the program is now well established and moving toward completion.

**Manila**—The port of Manila, one of the finest ports in the Orient, and by far the most important port in the Philippines, consists in reality of two ports: South Harbor, used by most international shipping, and North Harbor, a shallower port north of the Pasig River used mostly by coastwise ships. Damage to both North and South Harbors was enormous; the large piers, one over 1400 feet long, were bombed, whole palens of concrete deck together with their supports were demolished by the Japanese, concrete wharf bulkheads were blown in to land LST's, and the harbor was littered with sunken ships. The Army and Navy raised many wrecks, did some essential dredging, and repaired the damaged piers and built new piers. The repairs and new piers, however, being temporary in nature, were deteriorating rapidly. In keeping with Manila's status as the Philippines' primary port and with the extent of damage to it, the greatest part of available port rehabilitation funds is being spent on the port of Manila.

In Manila North Harbor, breakwater construction was interrupted by the war. A 2500-foot extension to the existing breakwater has been built and a further 1000-foot extension is nearing completion. Nearly 250,000 tons of rock for these breakwater extensions were quarried at Mariveles on Bataan Peninsula and barged to the site. The tie rods from the partially completed Piers 12 and 14 were removed during the war. These were replaced by steel wire rope installed by hired labor. In addition to repairing breaks in the concrete and sheet-pile bulkhead wall, new walls were constructed at the base of Slip O and between Piers 4 and 6. The fenders and dolphin clusters were also largely replaced. The principal streets in North Harbor were paved with asphalt. In all, the work at North Harbor, now substantially complete, will cost about \$2,440,000.

At Manila South Harbor, an estimated \$7,700,000 will be spent for the rehabilitation of port facilities. Already completed are concrete pavements on the principal streets and a reinforced concrete scalehouse. Over two-thirds finished is an enlarged, \$5,500,000 Pier 9, 331 by 987 feet. This pier will have a depressed center roadway with two warehouses on each side. The deck is of beam and girder construction supported on concrete pedestals built in open caissons. Pier 9 is scheduled for completion early in 1950.

Pier 13, was, before the war, when it was called Pier 7, the most handsome of Manila's piers. Over a quarter of a mile long, it had two levels in its reinforced concrete and steel superstructure, with an imposing concrete arch entrance. The superstructure, severely damaged, is being removed, to be replaced by less imposing but more efficient concrete-walled warehouses. Large breaches in the deck will be repaired by supporting new panels of concrete deck on concrete-jacketed steel H-piles, which will replace the most seriously damaged of the original concrete piles. The fender system will be replaced, and the underside of the deck, deteriorated until the reinforcing is exposed in many places, will be repaired with pneumatically placed concrete. The water and electrical systems will be replaced. A contract for \$988,500 has recently been signed for the rehabilitation of this pier.

**Cebu**—Cebu is the second port of the Philippines in importance. The piers and the warehouses on them were heavily damaged, primarily by gun-fire. Temporary repairs were made by the Army, and most wrecks which were a hazard to navigation were removed by the Navy. Reconstruction of the three main piers, on two of which warehouses are located, and the marginal wharf is under way. While the total cost of Cebu port rehabilitation will approximate \$900,000, only about half of this amount is for structural repairs to the piers and quay wall; the remainder is for repairing warehouses, replacing dolphin piles, and miscellaneous repairs to the electrical and water systems.

**Iloilo**—Iloilo, the Philippines' third port, is the outlet for a rich agricultural area. The deep-water Guimaras Wharf and its warehouse suffered extensive damage from Japanese bombing. Manganese ore had been piled around some of the warehouse columns and corroded the steel extensively. In addition, an earthquake which occurred after the signing of a contract for repair of the wharf further damaged the one remaining warehouse end wall. Damage to other parts of the port was not great. In size and in the type of work involved, this project is typical of the rehabilitation being done to pier and wharf facilities.

The rehabilitation of Guimaras Wharf required first the clearing of a tangled mass of debris, then the driving of 13 new 22 by 22-inch, and 20 new 20 by 20-inch, reinforced concrete piles averaging about 70 feet in length. To take advantage of usable existing concrete piles, 53 of them were demolished to below the lowest damage, provided with new reinforcement spliced on by lapping or welding, and rebuilt up to deck level. After new piles were driven and existing piles repaired, a new concrete beam and deck system was poured in the demolished area.

Cast monolithically with the reconstructed portion of the deck are new foundations for the warehouse, originally a structural steel frame with reinforced concrete end walls, the whole covered with galvanized iron sheets. Before the war the warehouse had longitudinal crane rails suspended from the roof trusses. In the rehabilitation, the crane rails were removed, all usable structural steel repaired and repainted, and both concrete end walls rebuilt. New structural steel will be erected as required and the entire warehouse covered with protected metal roofing and pierced plank landing mat siding.

The floor of the warehouse is being paved with asphalt. A new concrete bulkhead wall is being built on wood piles in the demolished area. Defective and missing dolphin piles and walls are to be replaced, and the electrical, railroad, mooring, and water systems are to be repaired or reinstalled as necessary.

While the material quantities required are not large, the job is complicated by the variety of work involved and by the continuous use of the more lightly damaged part of the wharf by shipping. The present contract is for \$274,449.71. The work is about two-thirds complete. The total cost of the work, including preliminary work, government-furnished materials, and government costs, will be about \$407,000.

**Davao**—A center of Japanese activity before the war, Davao is fourth in importance of Philippine ports. The government port facilities suffered minor damage but extensive deterioration during the war. However, many privately owned piers were damaged or destroyed, resulting in a great decrease in port capacity. Because of shoaling in the old harbor, a new 500-foot-long marginal wharf was built on a coral shelf along Pakiputan Strait near Sasa, six miles from Davao. At the new location sufficient depth of water can be maintained without the annual dredging required in the old harbor. This facility was completed in March, 1949, at a total cost of about \$345,000.

**Other Ports**—Other smaller Philippine ports suffered damage of varying degrees. Many of these are under rehabilitation at the present time. At Nasugbu, about 20 miles south of Corregidor, a 330-foot rock breakwater was recently completed. Complete replacement of the concrete wharf deck and some pile and causeway work is nearing completion at Tabaco. Although Tabaco was only slightly damaged during the war, waves during a typhoon removed most of the deck a short time later and enlarged the damaged area considerably. The wharf at Masbate was damaged by a torpedo, and is being partially replaced. Two breaks in the long concrete-pile causeway of the pier at the sugar port of Pulupandan have been repaired and new dolphin piles driven.

Further south, the wharf at the important inter-island port of Cagayan was largely destroyed, partly by demolition charges but largely by the explosion of a large quantity of Japanese ammunition stored on the wharf. The concrete deck and about three-fourths of the piles are being replaced. At Iligan, damage resulted partly from demolition charges placed on the concrete piles, but largely from deterioration of the concrete deck of one of the two piers and of the dolphin piles. The rehabilitation of one pier has been completed; work on the other is nearly complete. Repairs at Zamboanga and Jolo are underway. In all, rehabilitation of these smaller ports will cost about \$1,460,000.

**I**N addition to the repair and reconstruction of port and harbor facilities outlined above, most of which was done or is being done by the Manila District by contract, about \$3,960,000 worth of floating equipment has been or will be given to the Philippine Government. The 720-cubic-yard, sea-going hopper dredge *Barth* was transferred to the Philippine Bureau of Public Works in October, 1947, and has seen extensive use in maintaining project harbor depths. A crew for the 20-inch pipeline dredge *Sacramento* was trained, and the dredge was transferred to the Bureau of Public Works in June, 1948. A 60-ton revolving barge crane was assembled by the District and formally given to the Philippines in September, 1948. In addition, three shallow-draft, three-quarter-yard dipper dredges for maintenance work are being procured by the Philadelphia District. These will be assembled by the Manila District in the spring of 1950 and then turned over to the Philippine Bureau of Public Works.

Certain projects have been authorized for planning but not for construction by the Corps of Engineers. Reconnaissance surveys to determine the extent of damage have been completed, and preparation of drawing and specifications for these projects is nearly complete. Some of these ports were surveyed as part of the originally-planned program and then deleted from those authorized for construction; others were surveyed and plans and specifications are being prepared for use of the Philippine Bureau of Public Works. Projects included in these categories are mostly those of lesser importance of ports which were not damaged extensively during the war. The total cost of these surveys and the preparation of plans and specifications for these projects will be approximately \$50,000.

**I**T would be difficult for a person who had not lived in the Philippines to realize some of the problems of port and harbor rehabilitation. One of these problems is communication.

The average air-line distance from Manila to the active projects outside Manila is about 375 miles. Davao is over 600 miles from Manila by air; about 1,000 miles by ship. Commercial air transportation service is good and is used extensively, both for personnel and for twice-weekly shipments of correspondence by air freight. Still, overland transportation for distances up to 60 miles, over rough roads is required to reach

a few of the projects, sometimes accompanied by fording streams around washed-out bridges. Telegrams often require over 24 hours for delivery. But even more important than the difficulties of communication are shortages of materials sources and equipment, and of contractors experienced in stateside construction standards and methods.

Suitable materials are often difficult to obtain. The combined field services of a geologist and a materials engineer were required in locating suitable aggregate sources for some projects. Reinforcing steel is frequently not available in the Philippines in the sizes, types, and quantities required. Most structural steel for port projects is fabricated in the United States. Long wood piles are difficult to obtain, and creosoted piles over 95 feet long must be imported or spliced on the job. In addition, port and harbor rehabilitation is but a small part, dollarwise, of Philippine rehabilitation, public and private, as a whole. As a consequence, competition among contractors for the available materials is brisk.

Contractors in the Philippines at the end of the war had little or no equipment. They have made up much of this deficiency by buying surplus Army and Navy equipment left in the Philippines. It is not unusual to see a crane, air compressor, or 14-S concrete mixer with the designation of an aviation battalion or construction battalion still legible, and most of the equipment still shows OD paint. Much of this equipment is far from new, much of it is not ideally suited to the work to be done, but on the whole is proving a great help.

Even the equipment now available is not used to the extent it would be in the United States; much of the work is done by hand. Often concrete is demolished with hammers and chisels and reinforcing steel cut with hacksaws. Concrete may be poured from small two-man boxes or buckets. Aggregates have been washed by hand in mortar troughs on the job. Often cranes of capacity adequate for handling concrete piles are not readily available.

The equipment situation and construction methods, however, are constantly improving. Recently one contractor acquired a concrete pumping machine, and other contractors have begun to use pneumatic-tired concrete buggies. Some contractors have creditable job-made hopper batch plants, and some of the larger projects have modern weighing hopper batchers. As the program progresses, inspections of construction methods and results are showing evidence of steady improvement.

**T**HE port and harbor rehabilitation program is well under way. Nine usable port and harbor facilities have been turned over to the Philippine Government, and three more are nearing completion. Three large pieces of floating plant are being used by the Philippine Bureau of Public Works. About eight other major projects are underway. Completion of the reconstruction of Pier 13 in Manila, scheduled for September, 1950, should bring the program to a successful completion.

—United States Information Service, Manila.

## Story of the Telephone Company

As Told in the Santo Tomas Internment Camp

By A. V. H. HARTENDORP

**O**FFICIALS of the Philippine Long Distance Telephone Company in Manila were informed of the attack on Hawaii between 3 and 4 o'clock in the morning of Monday, December 8, and between 7 and 8 o'clock the Company's exchange in Davao reported that the Japanese were bombing and machine-gunning the airfield there. Both the attack on Hawaii and Davao had started at dawn, but dawn comes some 18 hours earlier to Hawaii by the calendar because the International Date Line lies between them, though actually only some 6 hours earlier.

The Telephone Company, which maintained a modern telephone system in the Philippines, comprising an automatic system in Manila (26,000 telephones), long-distance lines connecting all the principal cities in Luzon (together with a teletype service), and radio-phone connections with the principal cities on the other islands, rendered the USAFFE the fullest cooperation.

**AUTHOR'S NOTE:**—This is one of a number of "stories" on various Philippine industries and businesses as they were affected by the war, contained in the writer's unpublished book on the Santo Tomas Internment Camp. These "stories" were written after interviewing the persons principally concerned and were checked by them for accuracy, — then hidden away. The "Story of the Telephone Company" was written in August, 1942, and includes only what had happened and was known in the camp up to that time.

Among the immediate objectives of the Japanese attack were the bridges and railway lines, and the telephone lines parallel the railway lines. The Company's Filipino repairmen, working near the tops of the poles, were peculiarly exposed to attack and were frequently machine-gunned from the air. Although a number of them were thus killed or wounded, not one of these men quit.

The service to Baguio was maintained up to the time the Japanese entered San Fernando, Union, on December 22. Miss Aguilar, the operator at San Fernando, who had been in the Company's employ for only two years, was on the job 24 hours a day to see to it that the USAFFE orders got through. At the last, when the American-Filipino forces were withdrawing from the town, she was told she would have to come along and that the Army intended to destroy the switch-board. She connected the officer who gave her this order with J. E. H. Stevenot, general manager of the Company and a lieutenant-colonel of reserves, then on active duty in Manila, and as a result of their conversation it was decided not to destroy the exchange. Miss Aguilar was brought to Dagupan along with the USAFFE troops, but when it was necessary the next morning to get orders through to San Fernando and from there to other