



# SEABEES

*"We Build, We Fight"*

# U.S. Navy Seabees During World War II

J. David Rogers



# ■ King Bee

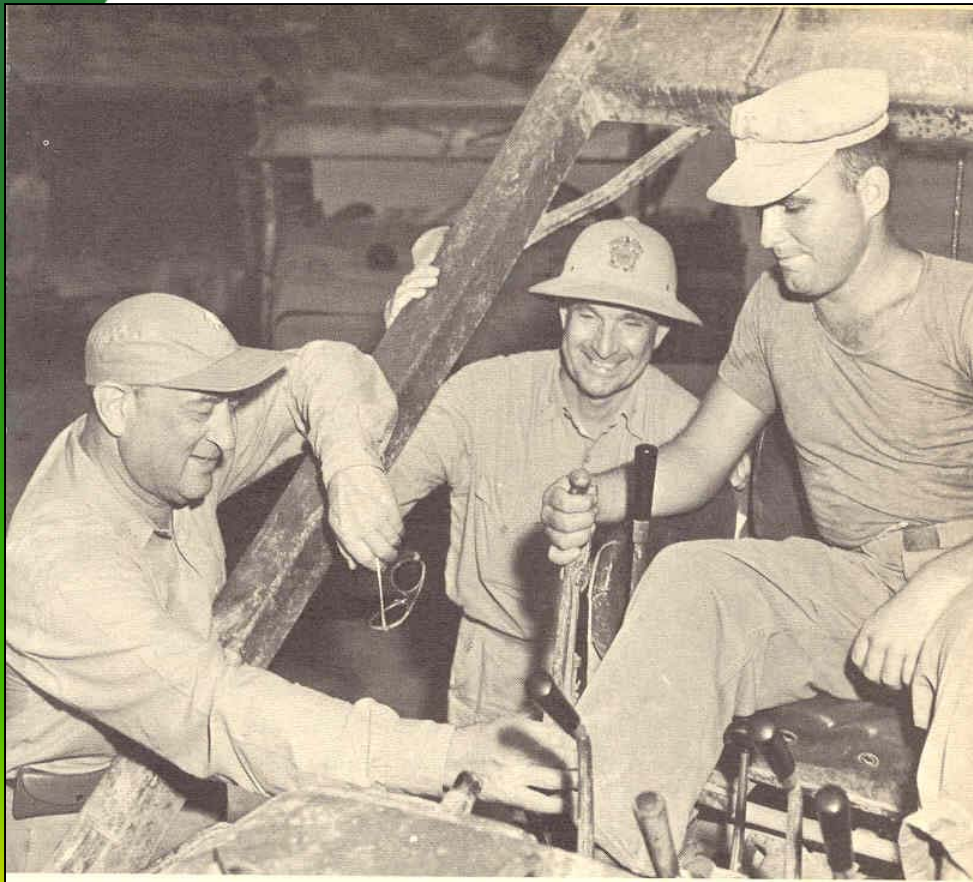
**ADM Ben Moreell** was Chief of the Navy's Bureau of Yards and Docks and the Civil Engineering Corps. He was promoted in 1937, skipping the rank of Captain

B SCE degree from Washington University in St Louis in 1913 and commissioned as a LTJG in the Navy CE Corps in 1917, during World War I. He served in the Azores with Navy Undersecretary Franklin Roosevelt

He attended École Nationale des Ponts et Chaussées in France in 1932-33, as a LCDR



Admiral Ben Moreell (1892-1978) was Chief of the Navy's Bureau of Yards & Docks and of the Civil Engineering Corps



**Moreell was promoted to VADM in 1944 and was the first staff corps officer and the first Jewish American to attain 4-star rank in the Navy in June 1946.**

- **BuDocks developed war plans in the 1930s which envisioned a massive build-up of Navy construction battalions**
- **Moreell requested activation of these war plans in Dec 1941, after the attack on Pearl Harbor.**
- **The first battalion was formed in Jan 1942, and initial Seabee deployments began in March 1942**
- **258,000 officers and men served in the Seabees during World War II**
- **80% of these forces served in the Pacific Theater**

# **Navy Recruits “*Cream of the Heavy Construction Industry*”**

**Personnel had prior experience with projects like:**

**Boulder Dam**

**National Highways**

**New York Skyscrapers**

**Mines, Quarries, and Subway Tunnels**

**Ship Yards, Docks, Wharfs, even Aircraft Carriers**

**Experience Comes with age (average age 37)**

**Battalions Designed to be:**

**“Completely equipped and self-sustaining able to construct airfields, roads, bridges, and buildings at an advance base and to install operate and maintain its public utilities.”**



# Military Training

**350 Seabee units were formed during the Second World War, many from existing heavy construction firms across the USA**

**They were provided with military training and discipline, including basic use of weapons, shown here.**



# Birth of the Seabees

early  
1942



U. S. NAVAL CONSTRUCTION TRAINING CENTER  
CAMP PEARY  
WILLIAMSBURG, VIRGINIA

**First projects were construction of patrol base facilities in Iceland and construction of graving docks at Pearl Harbor, critical to the war effort**

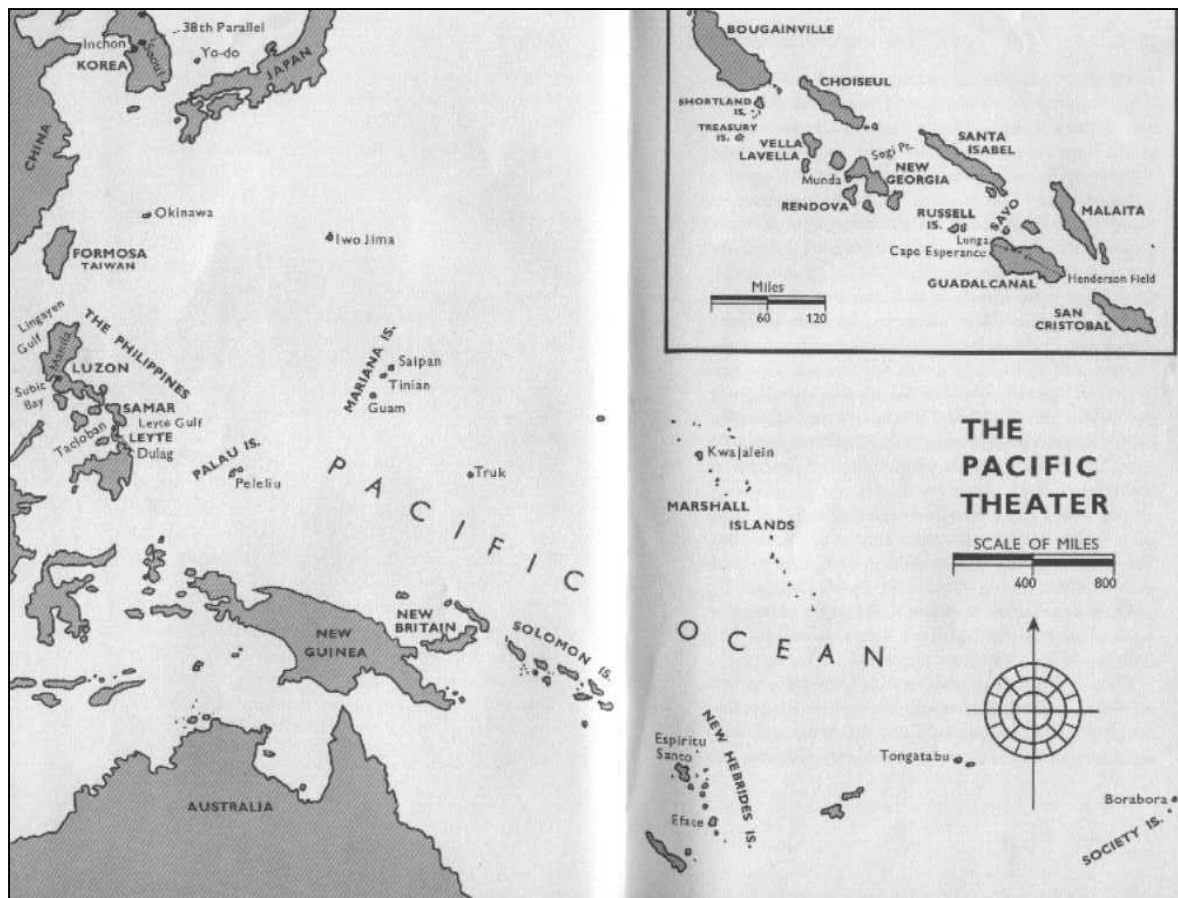
**The first Naval construction battalion, the Bobcats, were deployed on 5 Mar 1942 and the NCB was officially named “Seabees”**

**Their motto was “Construimus, Butuimus”**

The romantic image of Seabees appealed to construction workers, who were eager to contribute to the war effort in a worthwhile way - overseas







- Moreell posed the idea for Seabee construction battalions to be drawn from the ranks of civilian heavy construction firms in his initial proposal, in late 1941. Construction trade and labor unions were dubious of the concept. Seabees were the highest paid group in the military and fought in every theatre of WWII
- Crucial in Pacific island hopping during World War II



# Roles in the Atlantic in WWII

**Panama Canal**

**Puerto Rico- “Pearl Harbor of the Caribbean”**

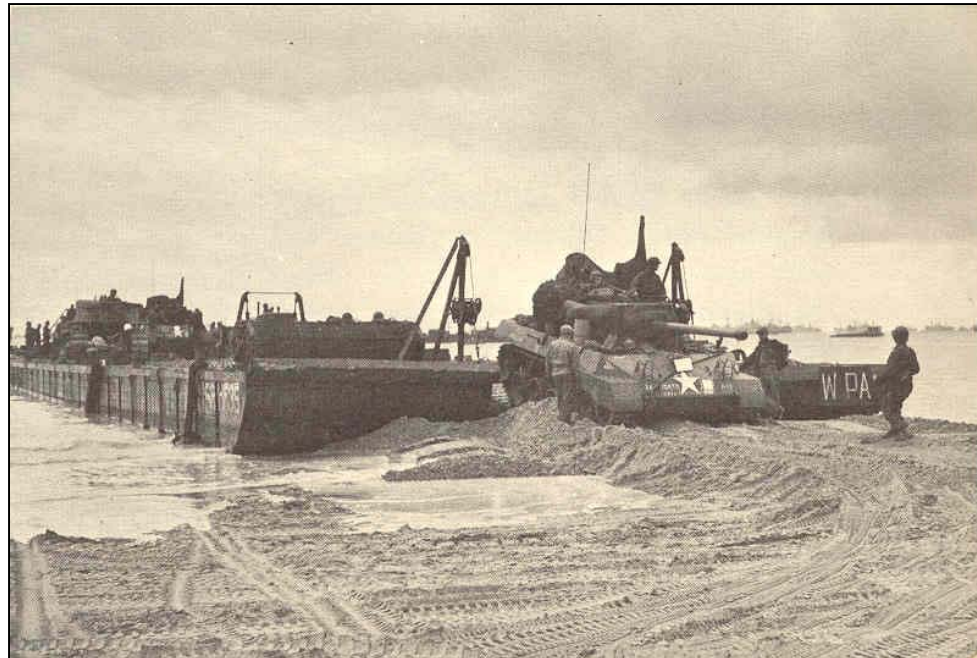
**North Africa**

**Landings at Sicily**

**D-Day: Demo units**

**Pontoon Causeways**

**Harbor Restoration**

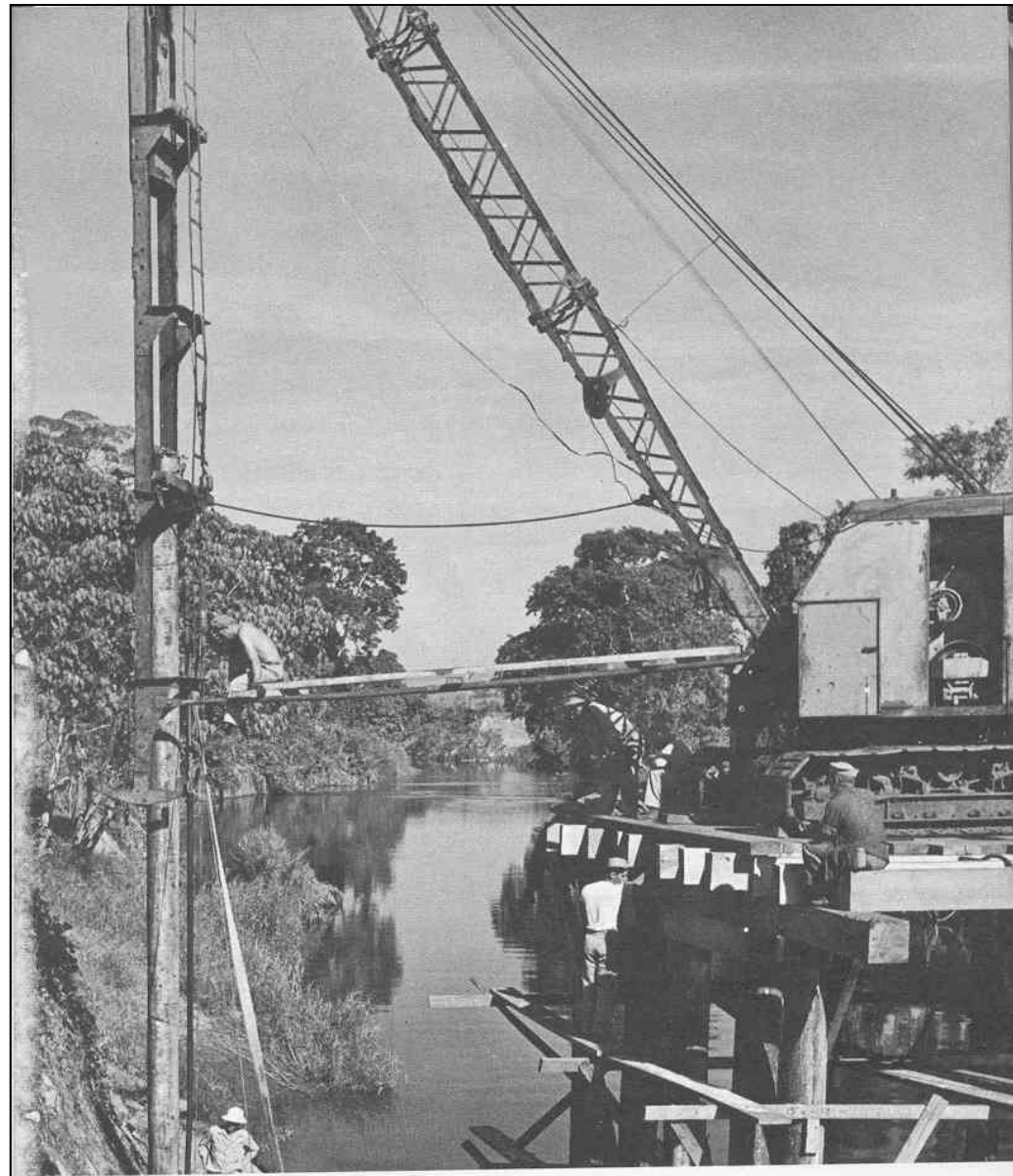




# Seabee Unit Compositions

**During World War II  
350,000 men served in  
the Seabees  
There were 151 Naval  
Construction  
Battalions (NCBs) and  
39 special battalions;  
each comprised of  
seasoned workers.**

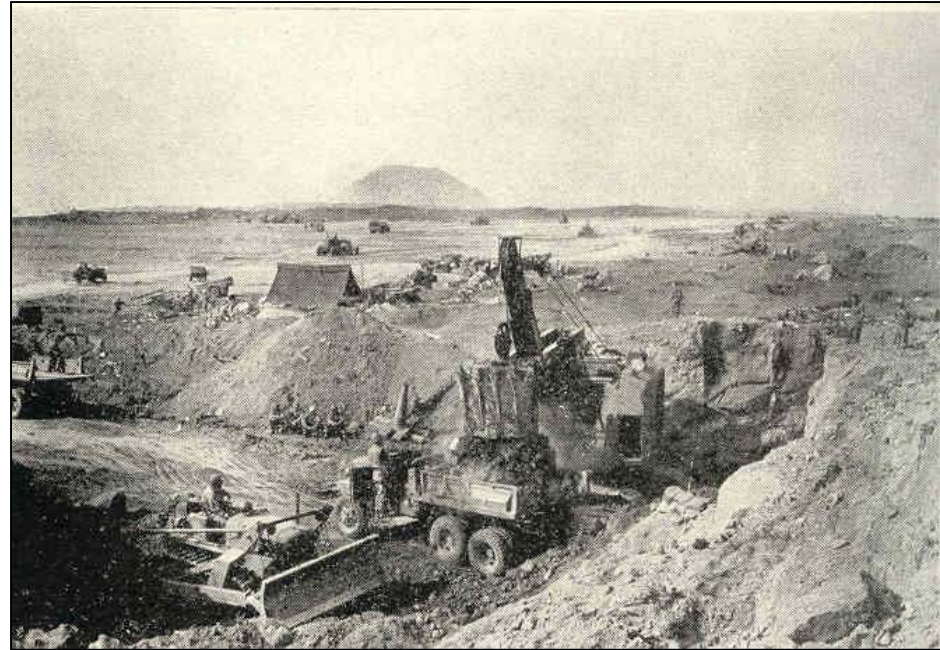
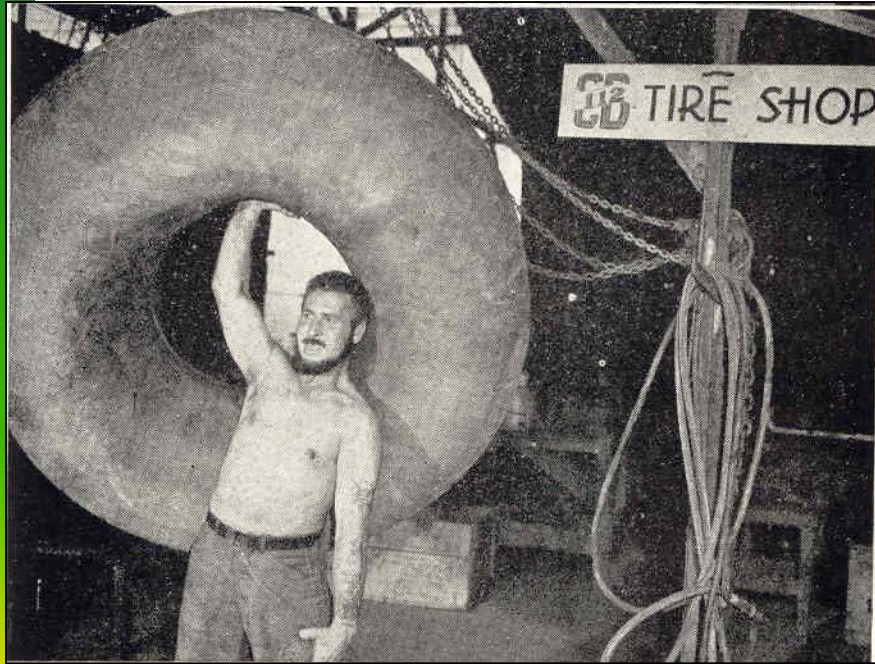
**The average age of a  
Seabee was 37 years**



Seabees of the 14th Battalion use a pile driver and heavy timbers to build a sturdy highway bridge on Guadalcanal.



# 164 Special Detachments- Anything from tire repair shops to Quarrying



**Most units were capable of constructing pontoon causeways, roads, bases, airfields and wharf facilities**



## The Navy also formed 136 Seabee Maintenance Battalions



**Repairing Marston Mats (PSP) at Henderson Field on Guadalcanal**



# 39 Special (stevedore) Battalions

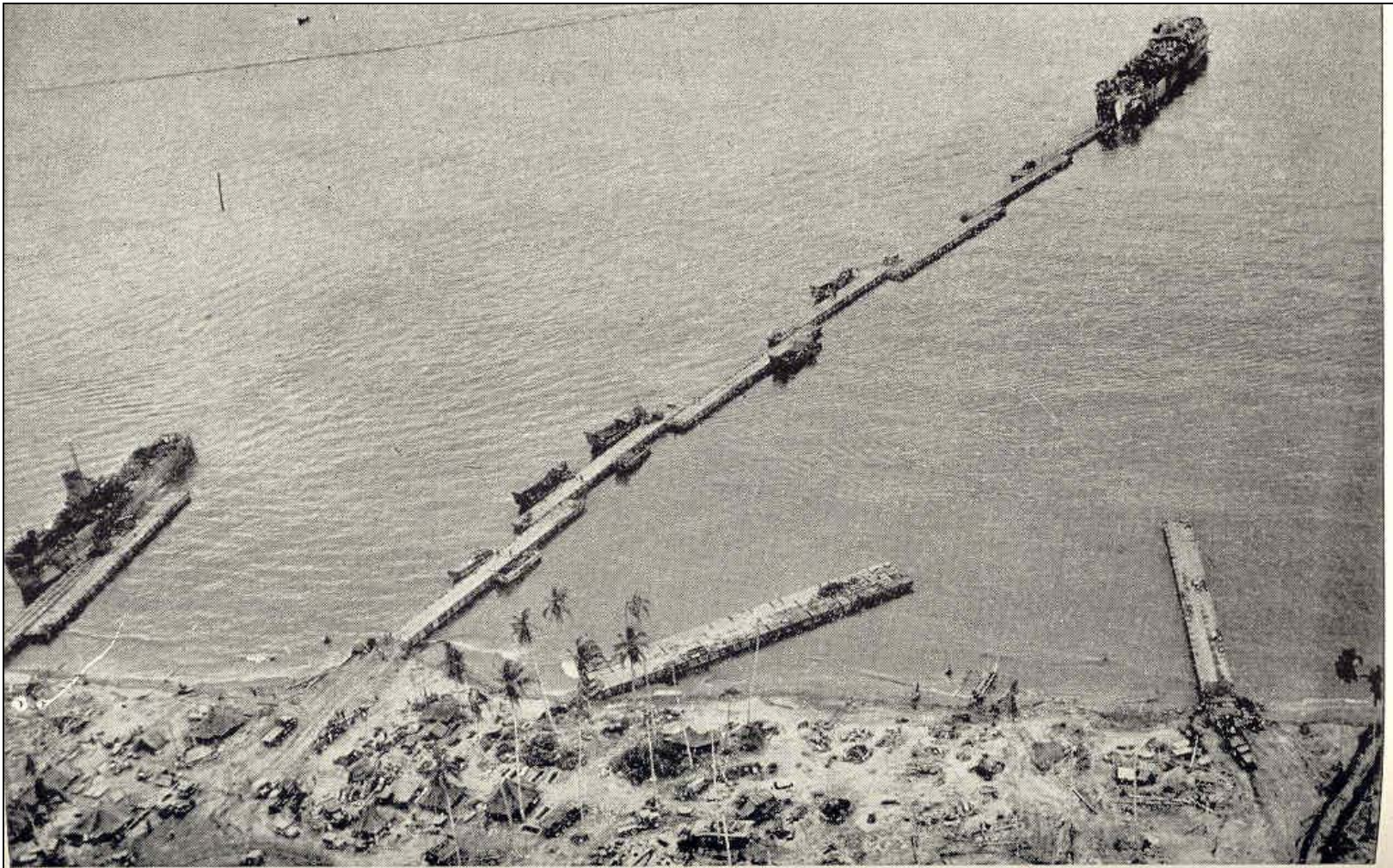


Men of the Sixth Special (stevedores) unloading cargo onto a pontoon barge.

*(Official U. S. Navy Photo)*



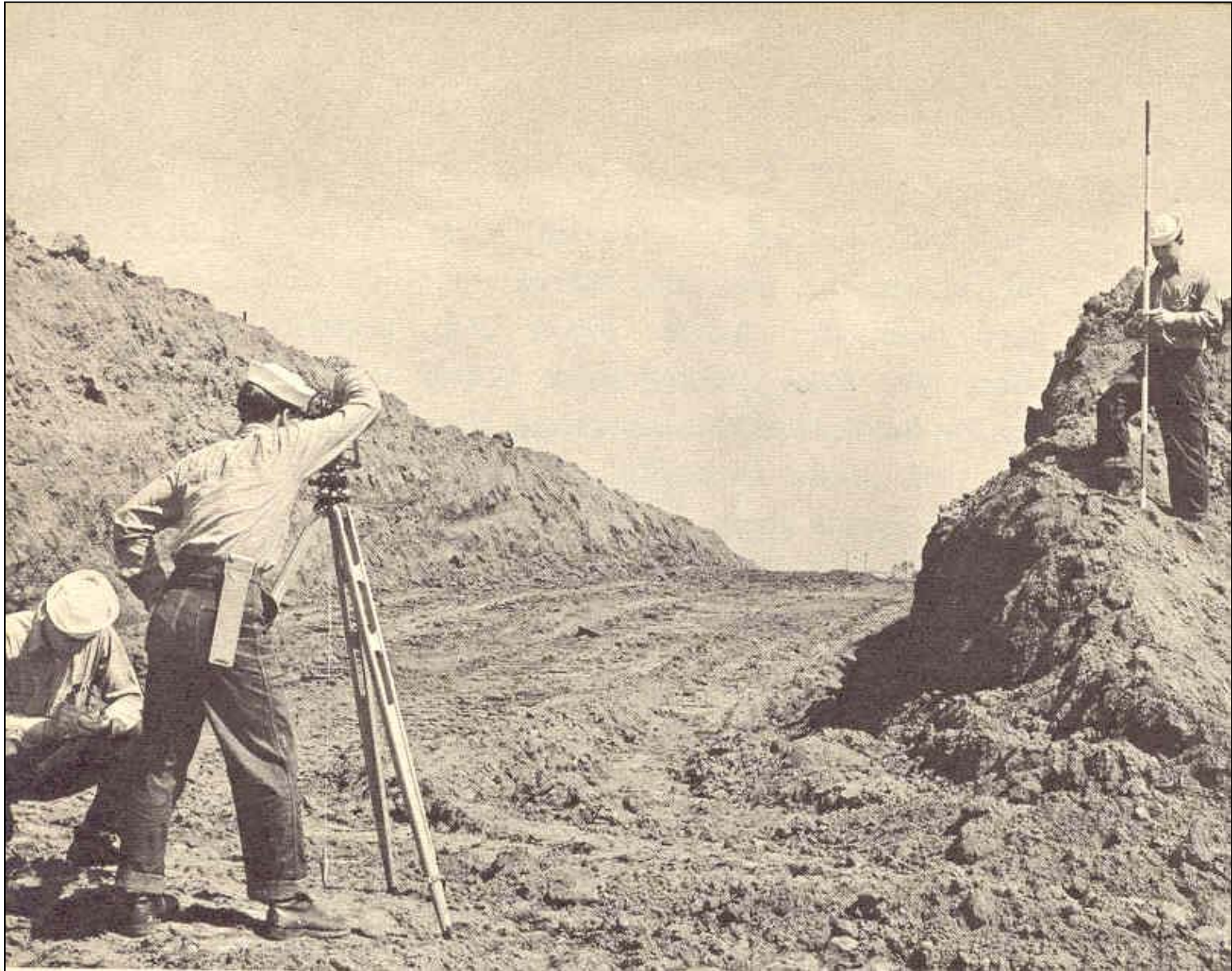
# 5 Pontoon Assembly Detachments



Because of the shallow water at the beach, the 302nd Seabees had to lay this 1100-foot pontoon causeway at Leyte to unload the LST's.

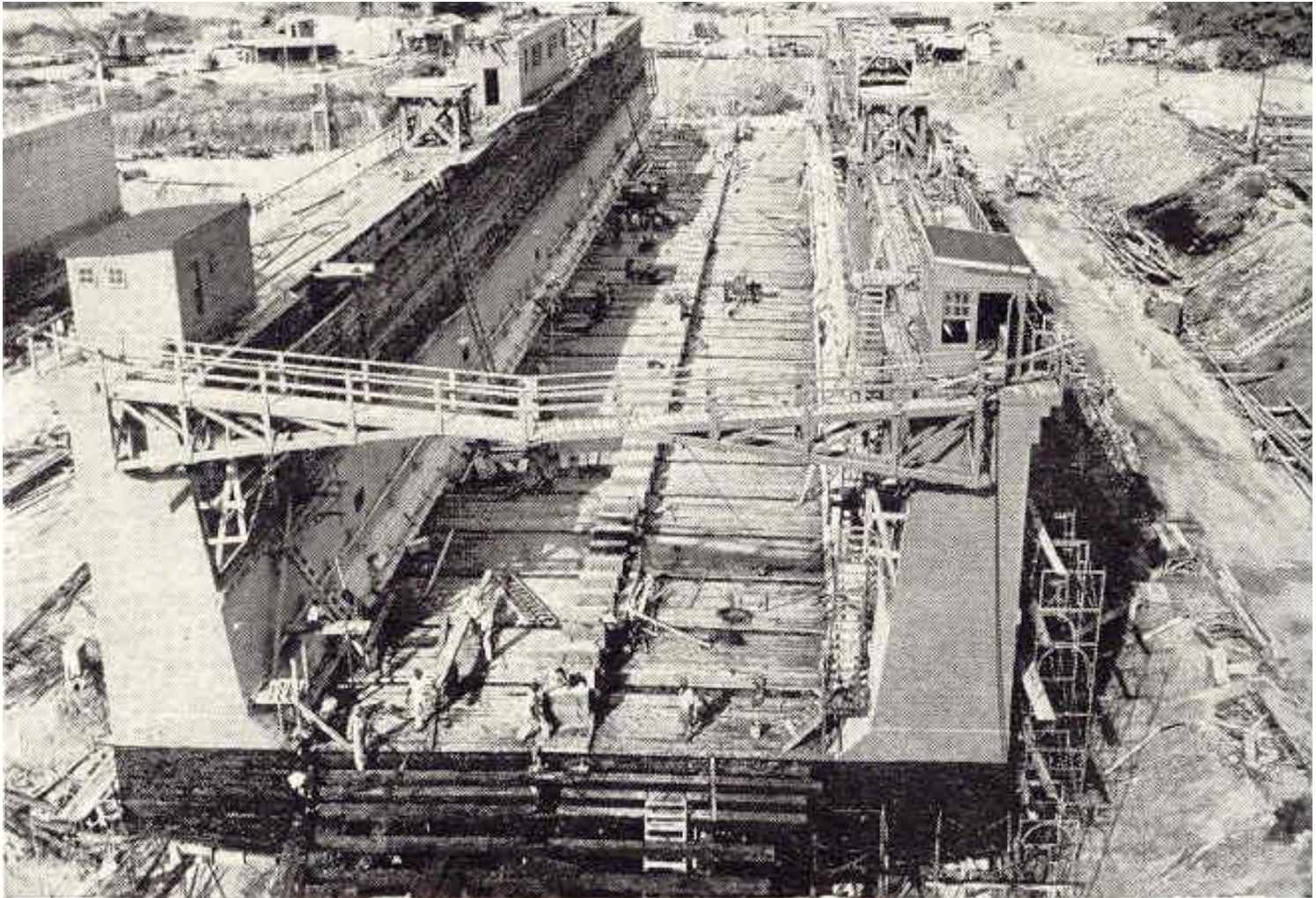


# Each Seabee unit had its own surveyors





# Seabees also built their own floating dry docks –



**THE NAVY'S  
UBIQUITOUS  
STEEL  
PONTOONS  
(Naval Lighterage)**



# Origins of the Seabee's Steel pontoons

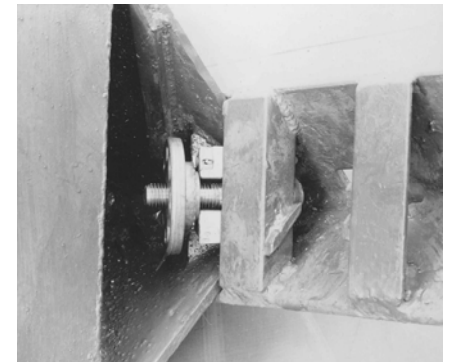


**Captain Laycock invites Admiral Moreell to lean on a cigar-box model of a string of pontoons.**

- A better way to bridge the gap from ship to shore was needed, known as Naval Lighterage, or simply “N.L.”
- Idea came from a report written in 1935, followed by observations of segmented steel pontoons supporting the gold dredge Yuba, built by Bethlehem Steel in California in 1937, for shipping to a remote site.
- Captain John Laycock began experimenting with cigar boxes and kite sticks in 1940-41.



**At left: In September 1941, the first segmented steel pontoons were delivered to the Navy at Davisville, along with the requisite “attachment jewelry,” (shown at right) used to connect the units.**



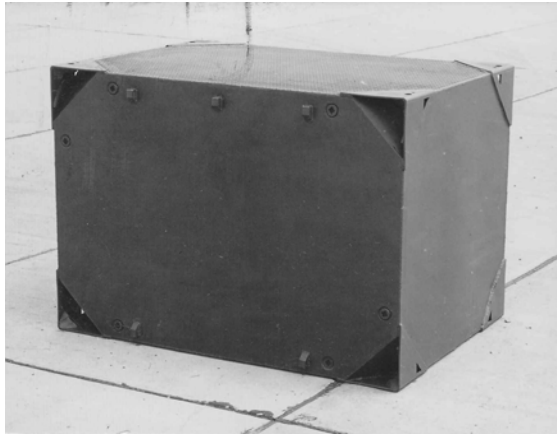
**Wedge, bolt, and nut attachment employed between pontoon corners and angle stiffeners**

"Pontoon strings" were fabricated by employing steel angle stiffeners along each corner.



# The ubiquitous T-6 box Pontoon

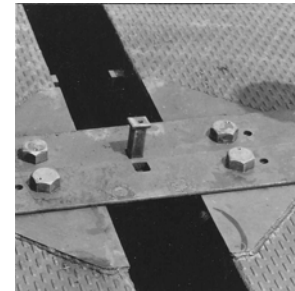
The T-6 displaced 175 cubic feet  
Could float in 1.5 ft of water  
Each pontoon could support about 5.5 tons through buoyancy



The standard Type 6 pontoon boxes were 5 ft x 7 ft x 5 ft. These were shipped flat, then assembled in-theater.



Tapered Type 7 pontoons were attached to the ends of pontoon barges, intended to navigate through open water.



Link pin being driven into top angles connecting adjacent strings of pontoons

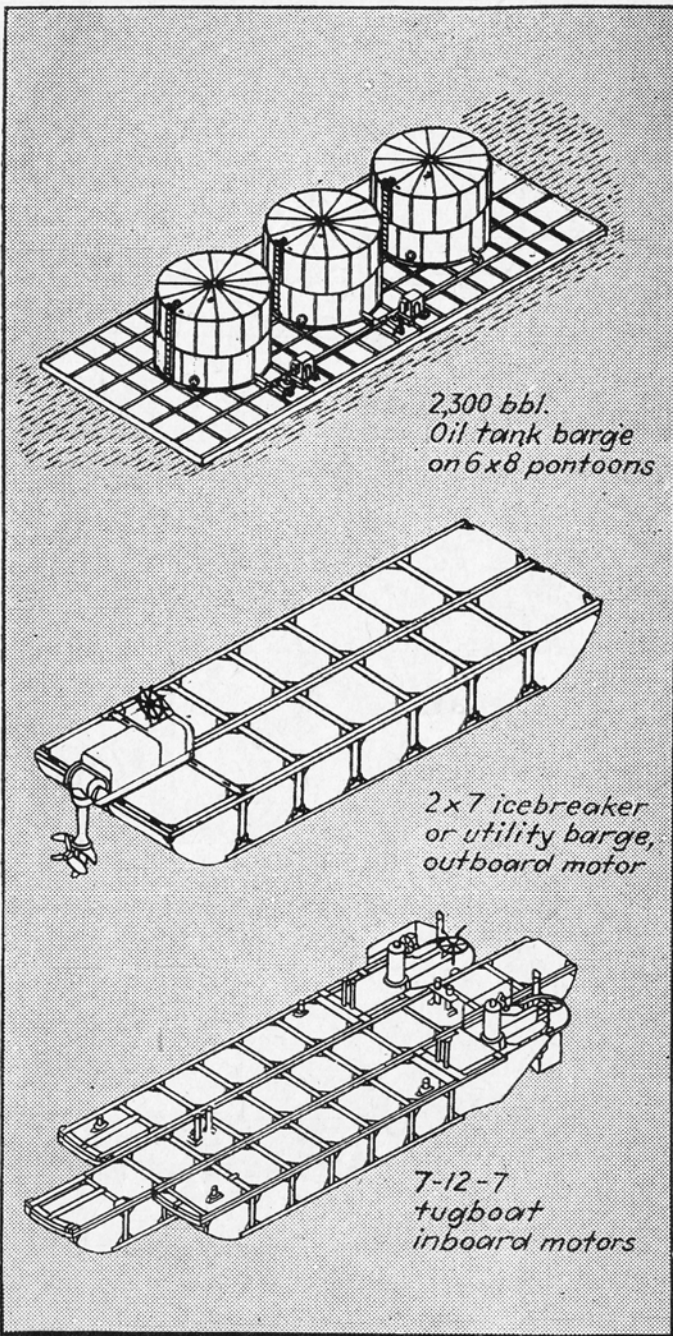


Link pin (left) and link (right), into which it was driven



Breech Plug splices used to join adjacent angle stiffeners





- **7-12-7 tugboat (shown above and at bottom left) was assembled from Type 6 and Type 7 steel pontoons, with two 1-AT marine tractor motors for propulsion**



# Outboard Motors for pontoon barges

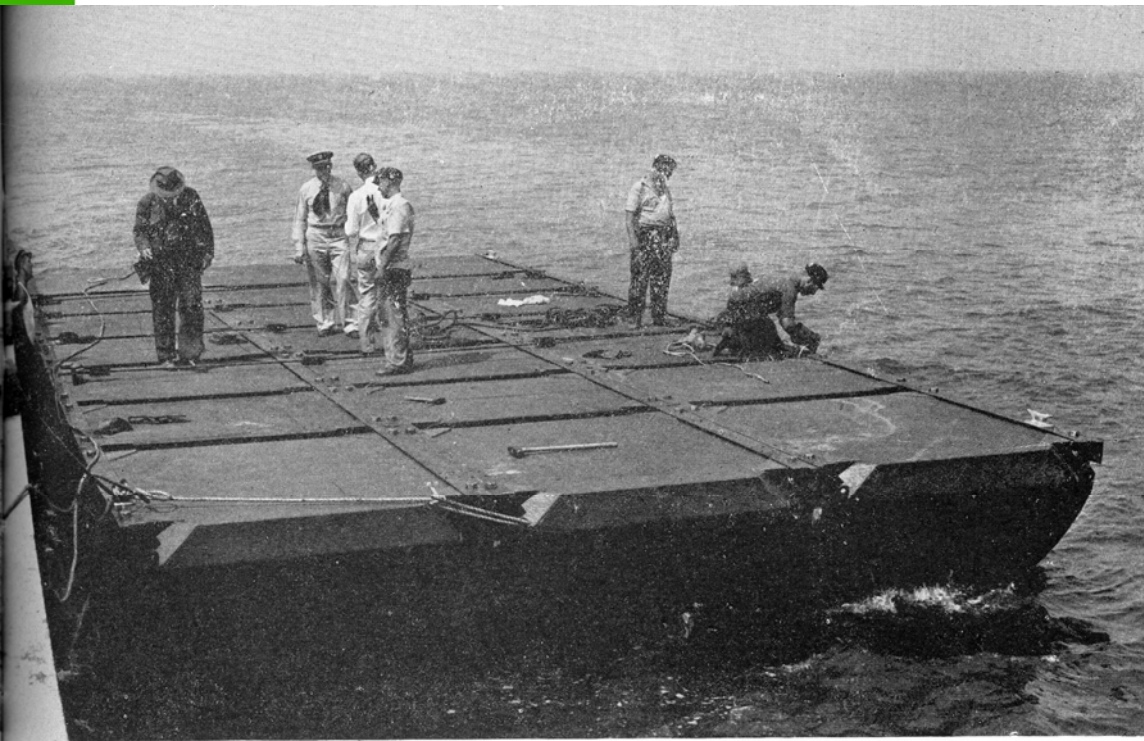
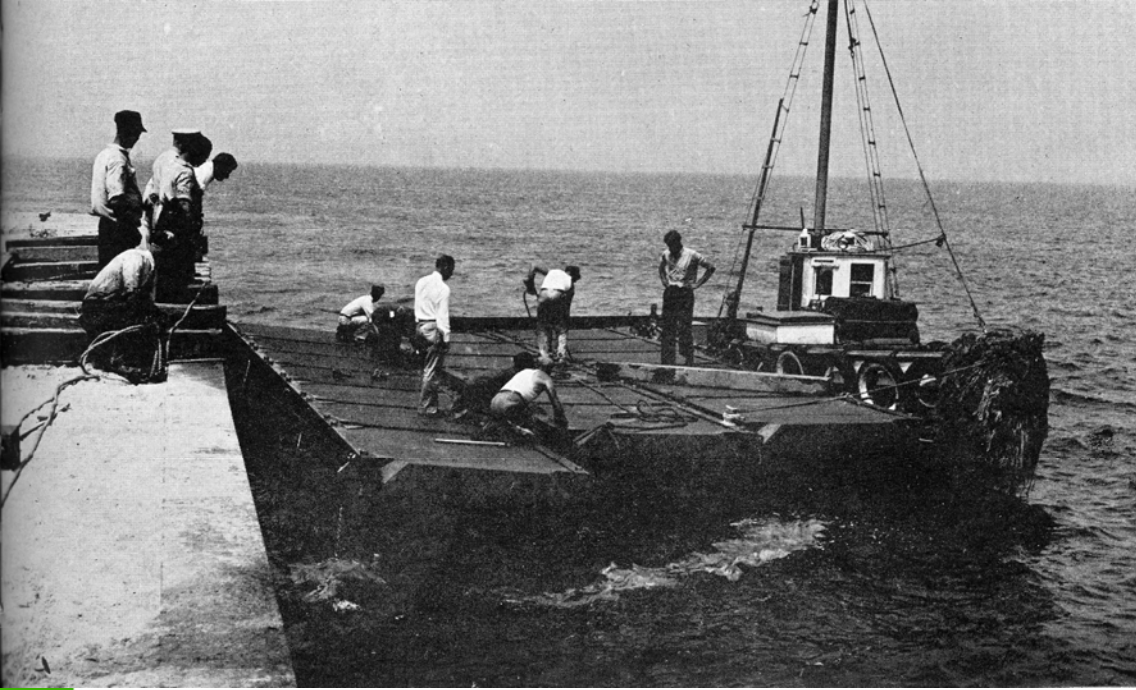


- The Navy used the world's largest outboard motors; either General Motors O2D or Gray-Marine diesels, generating 350 HP. These were about the size of a large tractor engine.

- The propeller shaft could be rotated and turned upward, as shown here. This helped to facilitate clearance in shallow water and allow on-board maintenance of the props, should they get damaged or fouled. This proved to be a wise precaution in wartime, when uncharted sunken debris was a daily hazard.



# Pontoon Barges

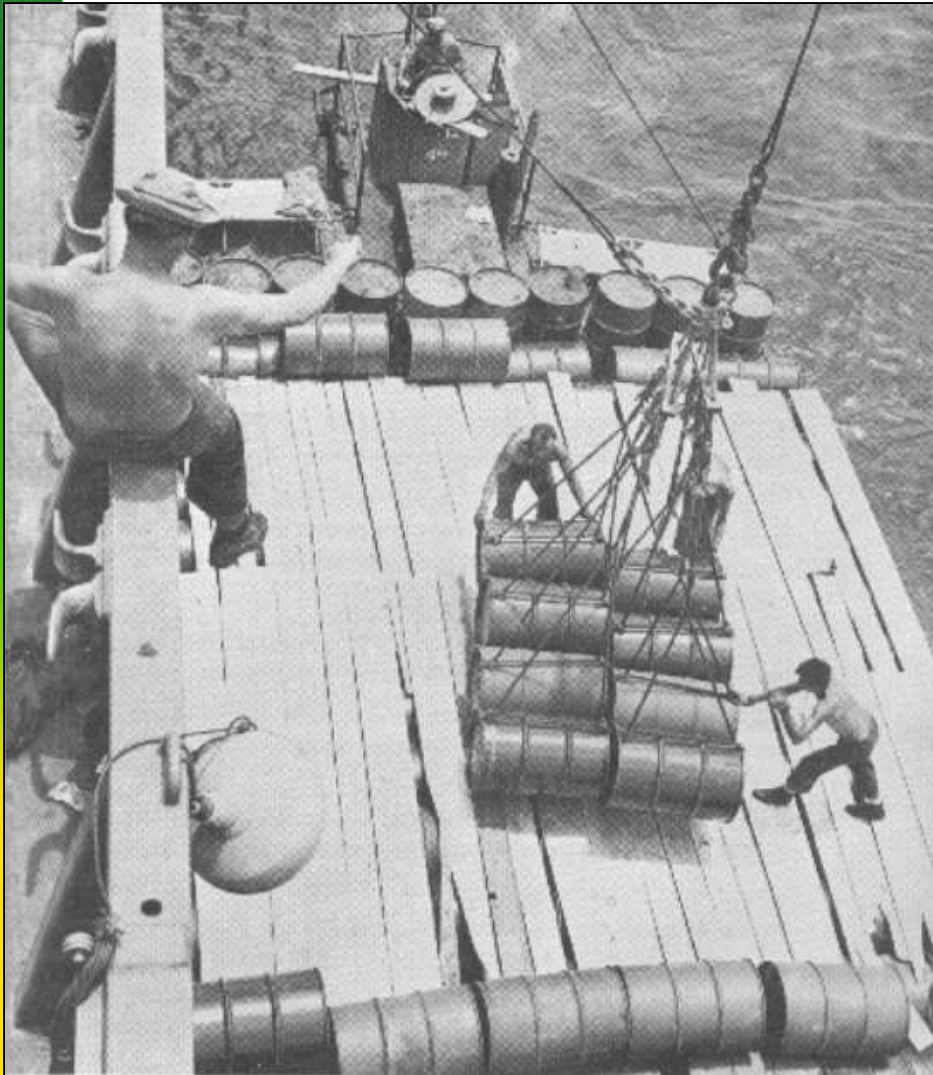


**Forward deployed Pontoon Detachments within the NCBs usually assembled the pontoons, which were shipped flat on freighters to save cargo space**

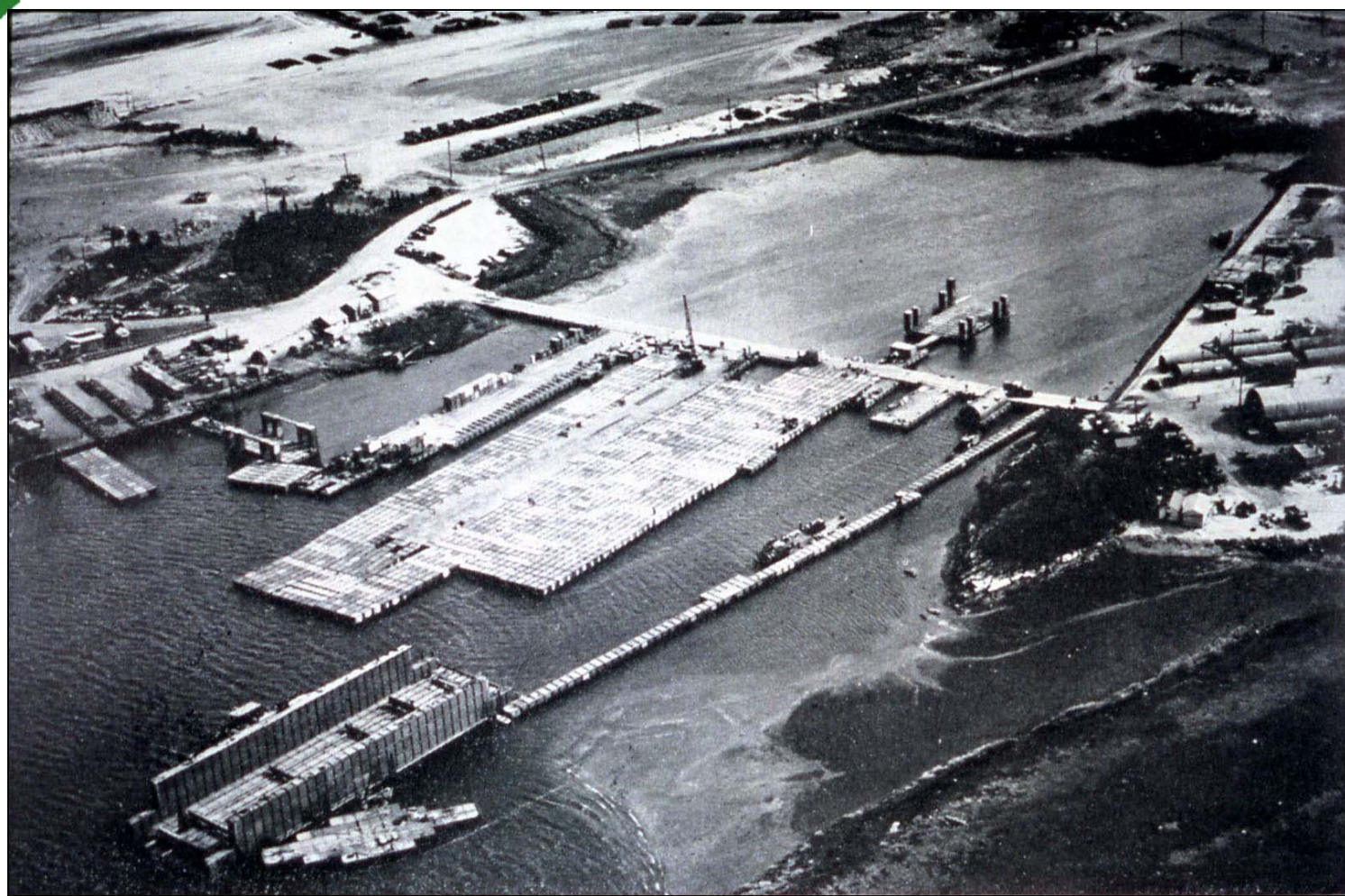
**This shows 3 x 7 pontoon barges, commonly used as lighters, in-theater**



# Pontoon Barges and Lighters



- **Pontoons were often used as offloading lighters; they could haul tons of supplies ashore quickly**
- **Able to navigate in very shallow water**
- **In this view members of the 4th Special Stevedore Battalion unload drums of gasoline and diesel fuel from a cargo ship onto a pontoon barge at Guadalcanal.**



- The Navy's Advance Base Proving Ground at Davisville, Rhode Island was established in the spring of 1942. This facility developed and experimented with the steel pontoons that were used in by Allied forces in the European, Middle Eastern, and Pacific Theaters.



# Pontoon Drydocks

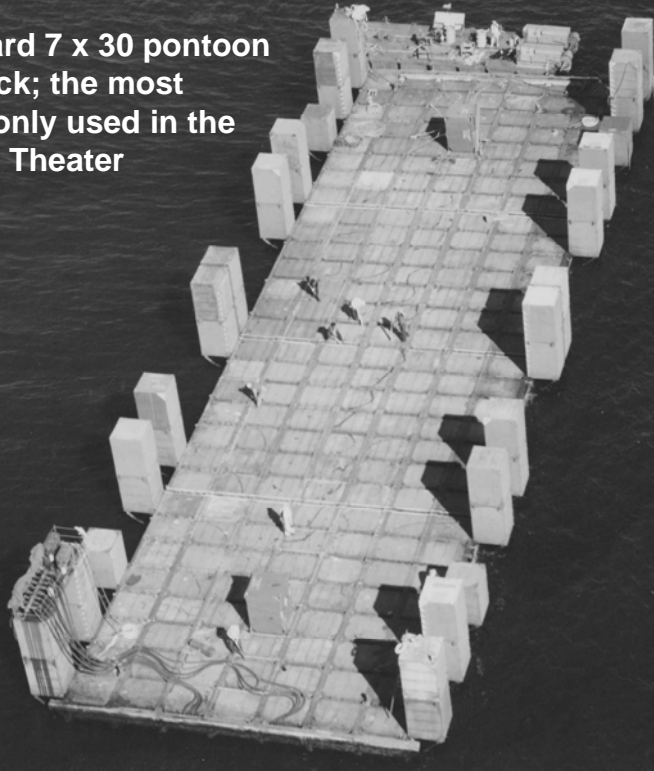


- Pontoons were configured in a variety of combinations to construct in-theater drydocks, like those shown here.



# Pontoon Drydocks in theater

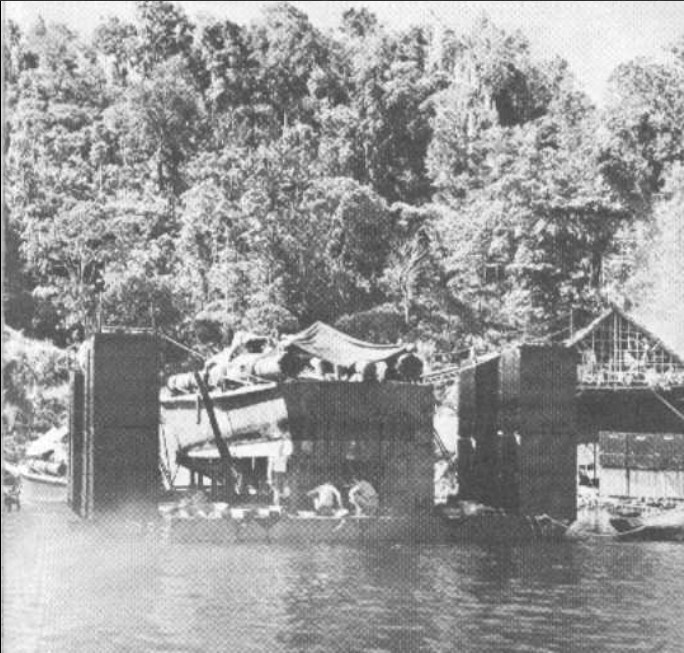
Standard 7 x 30 pontoon  
dry dock; the most  
commonly used in the  
Pacific Theater



- Drydocks are crucial to hull, shaft, and rudder maintenance and repair.

- Lifted ships out of the water so that they could be repaired

- Lower Left: A small pontoon dry dock being used to effect maintenance on a PT boat at Tulagi, in the Solomon Islands





6 x 12 pontoon seaplane barge underway, without seaplane. Note ramp at one end.



6 x 12 pontoon seaplane barge, carrying a Martin PBM Mariner patrol bomber



Load tests on two self-propelled 3 x 12 50-ton barges, their maximum capacity



Standard pontoon warping barge, used to assemble larger pontoon barge assemblies



# Rhino Ferries



A rhino ferry carrying truckloads of supplies and equipment, heads for one of the Normandy beaches.



- **36 Rhino Ferries** were assembled from steel pontoons. They 42 ft wide and 176 ft long and fitted with a 14 by 20 ft loading ramp
- They could carry 600 tons of material, about half the cargo load of an LST (Landing Ship Tank)
- Used by the British and Americans in the Normandy D-Day landings
- Advantage: could float in shallower water than an LST

Rhino Ferries were powered by Grey-Marine 350 HP outboard motors, the largest ever made

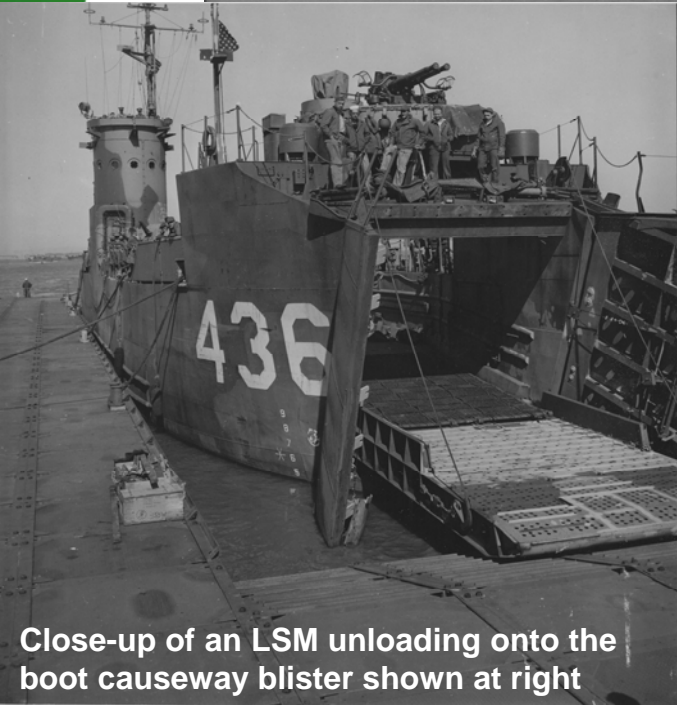


# Pontoon Tows



- Above: “Pontoon Tows” were enormous barges that were towed to landing beaches, to form landing causeways.
- Left: triple pontoon “teeth,” which were employed to conjoin adjacent tows, and thereby extend the causeways

# Boot Causeways



Close-up of an LSM unloading onto the boot causeway blister shown at right

■ Boot causeways were assembled from pontoons to allow large landing craft, such as LCTs, LCIs, LSMs, and LSTs to offload their equipment well offshore, and tapered platforms known as “blisters,” shown here.



# Pontoon landing causeways

An LST is guided to the end of a tapered 'landing boot' by LCM and LCVP landing craft, while an LCI unloads its cargo on the opposite boot blister (1945)



**Above: An LSM is coaxed into position on a tapered pontoon 'boot blister,' while an LCT is being unloaded on the opposing blister.**

**Assembly protocols were developed by the Seabee pontoon assembly detachments during the war to accommodate increasingly sophisticated landing causeway systems to effect more rapid unloading of amphibious assault vessels.**

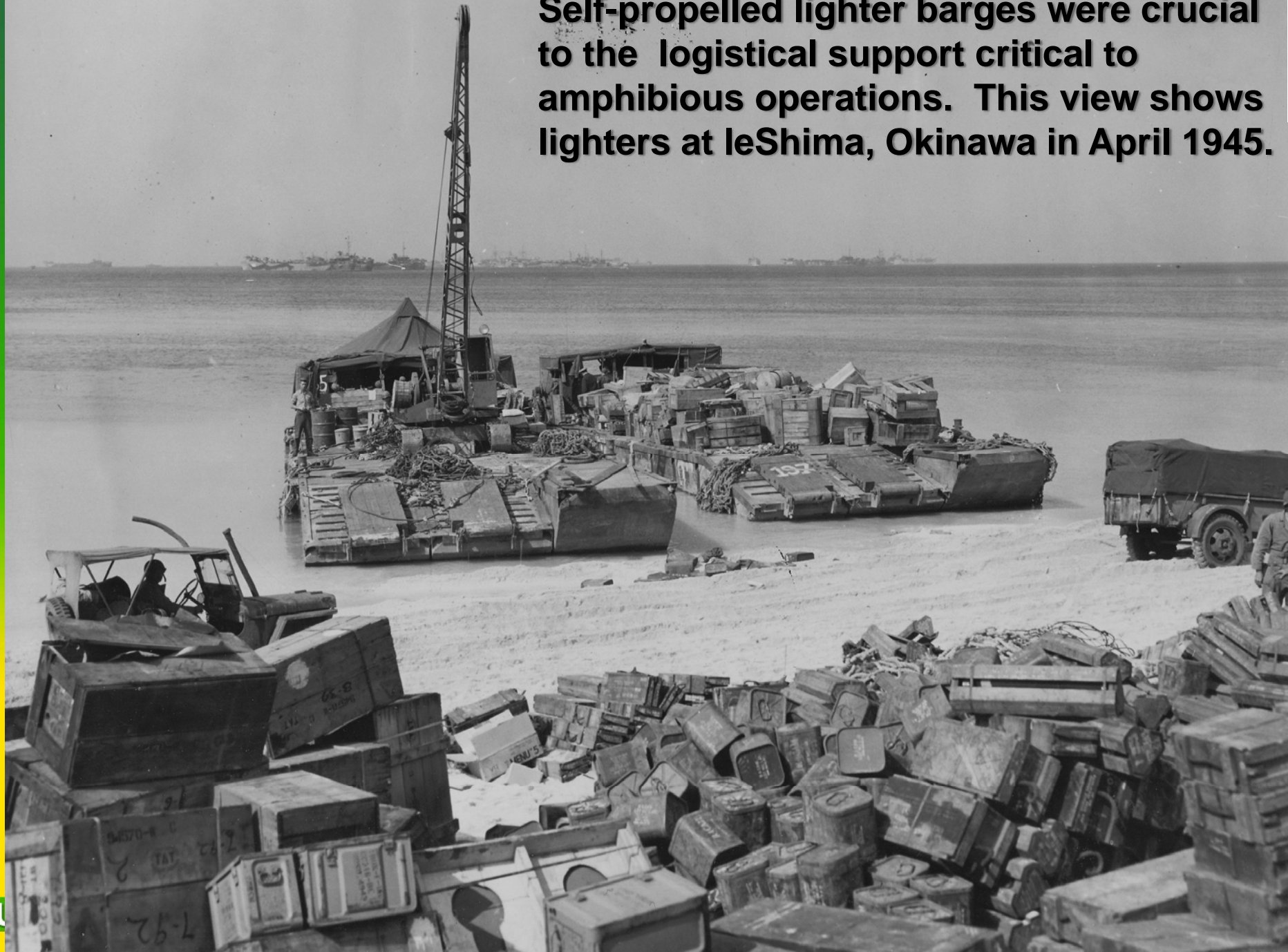
# Project Sock -1943



The most ambitious pontoon craft of the war was the mobile floating airfield shown here, code-named "Project Sock." After testing this concept was deemed impractical to handle sustained pounding by wave action that could be expected in forward deployed areas of the Pacific.



**Self-propelled lighter barges were crucial to the logistical support critical to amphibious operations. This view shows lighters at Ie Shima, Okinawa in April 1945.**



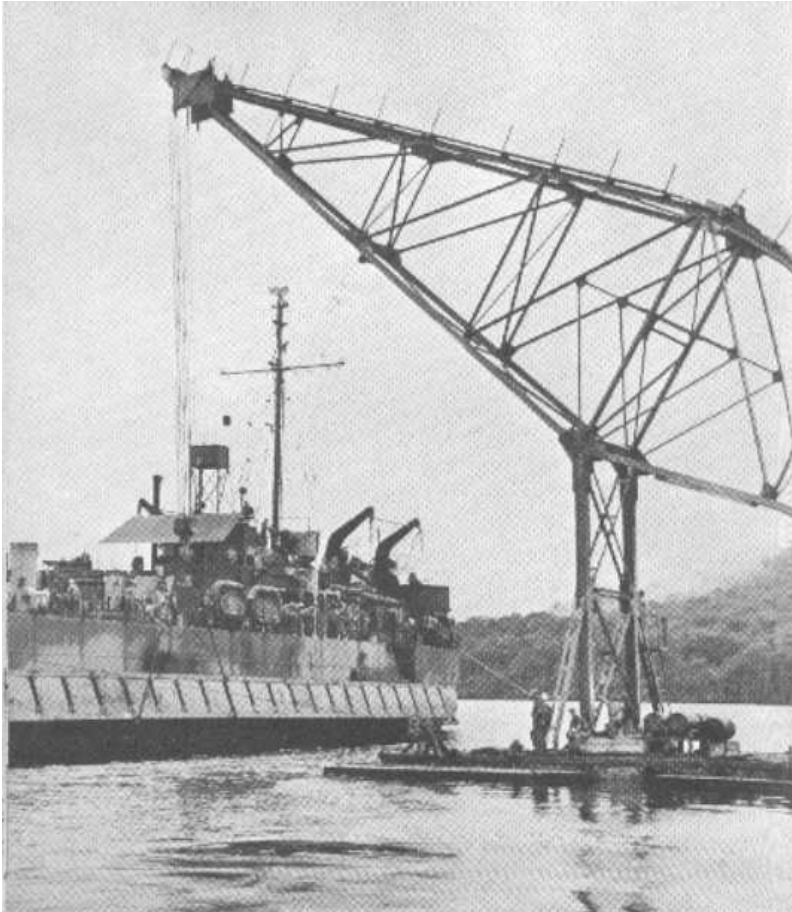
# Pontoon lighters

**Segmented steel box pontoons were used as lighters and strung together as a loading wharf for an LST during the invasion of Guam in June 1944**





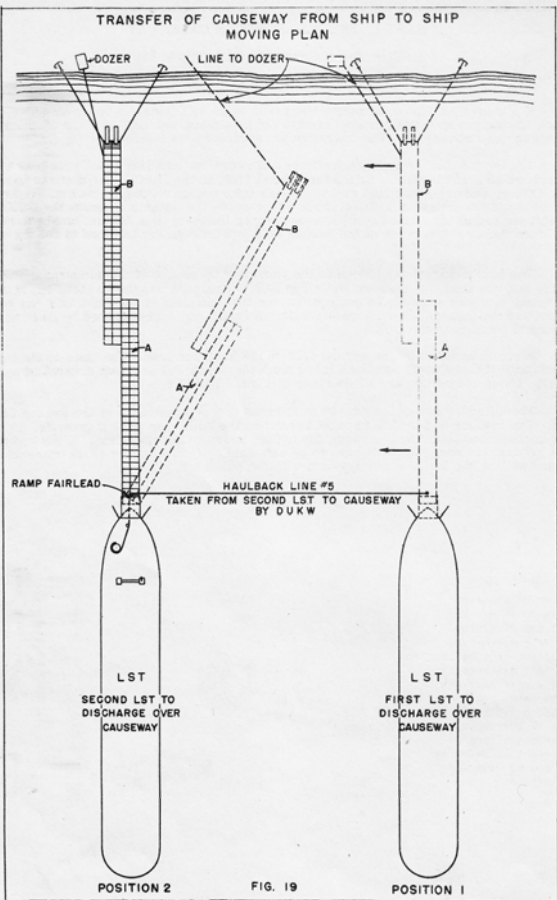
# 60-ton Mobile Crane hoisting pontoon causeways onto an LST



A huge crane on a pontoon barge, is hoisting a pontoon causeway to lash it to the side of an LST.



Cutting a pontoon causeway loose from the starboard side of an LST, prior to deployment at the beachhead



**In the Pacific Theater, coral reefs prevented the deeper draft landing vessels from beaching.**

**By mid 1944 most Pacific-based LSTs were fitted with two pre-assembled 2 x 30 pontoon causeways, lashed to the side of the vessels, as shown at left.**

**These were then used to allow the LST to unload their cargoes directly onto the beach, as shown above.**





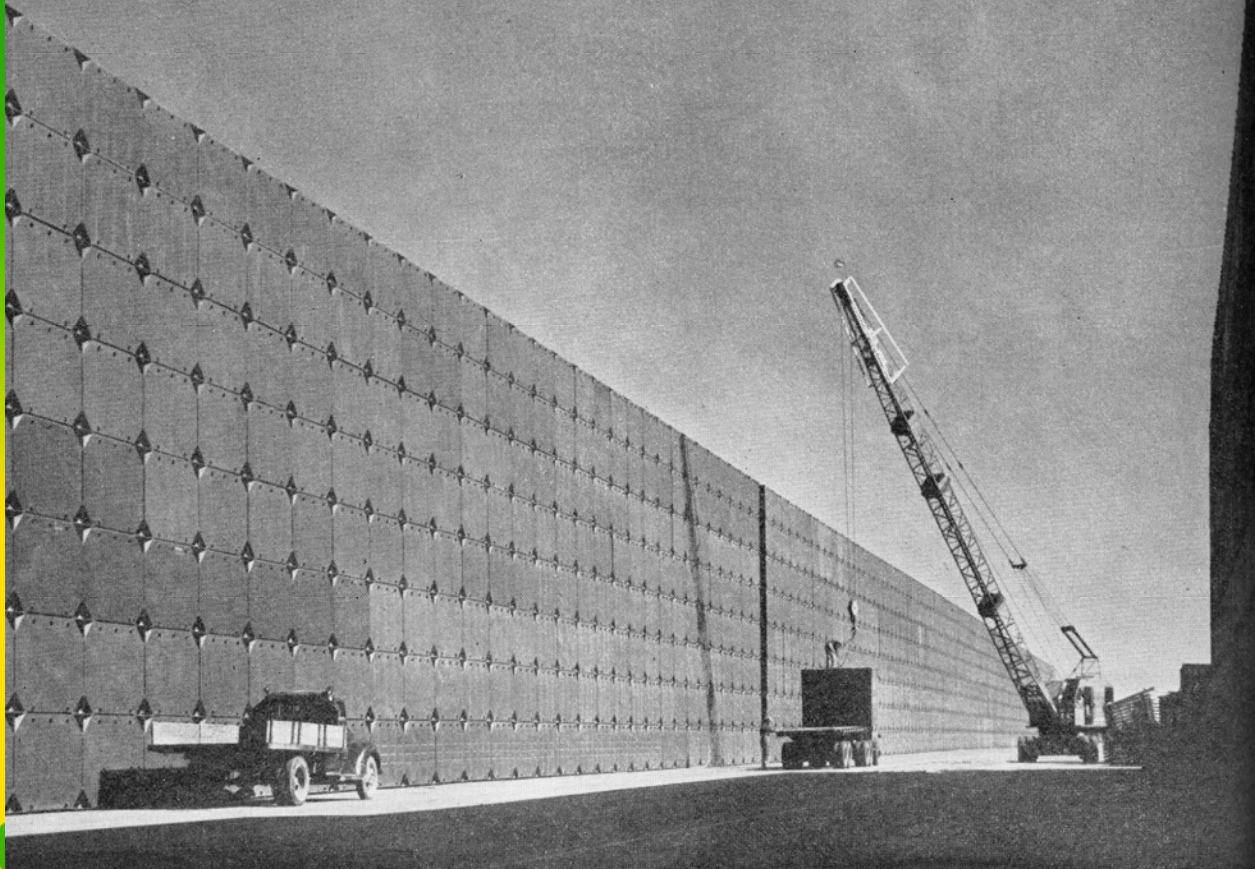
# Pontoon strings were even employed as highway bridges

**A 3 x 18 pontoon barge was placed on timber pilings over the Upper Lunga River on Guadalcanal to create a temporary highway bridge, after the wooden trestle structure was destroyed by floods in May 1944.**



# Pontoon stockpiles

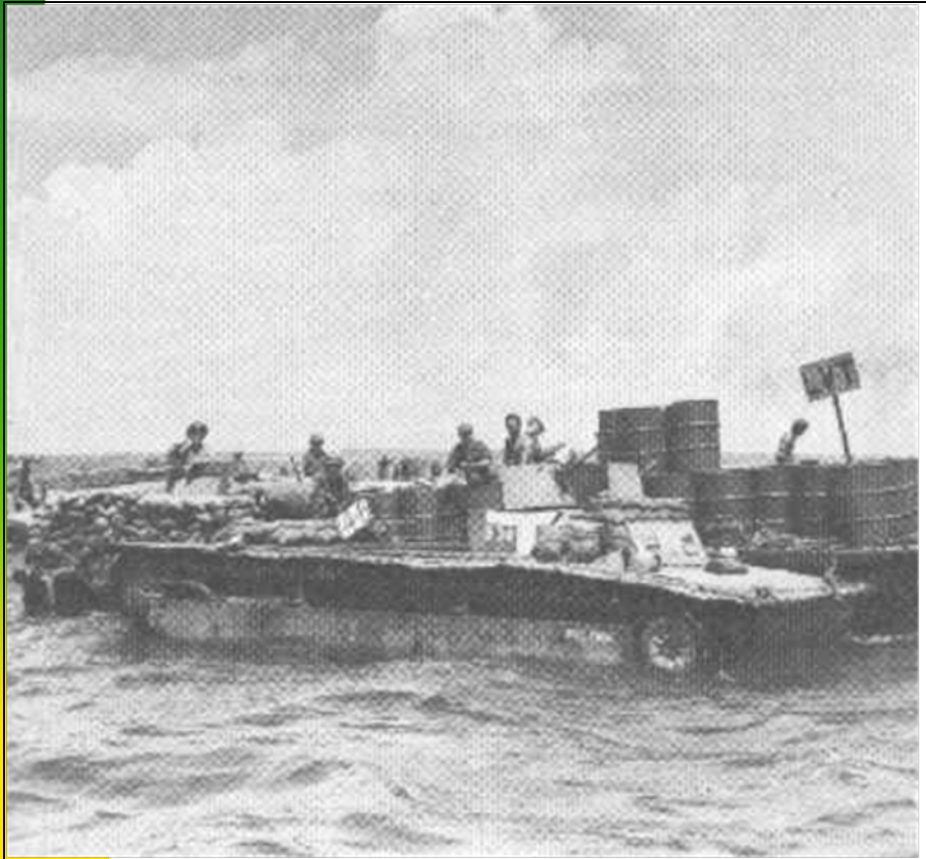
- Dozens of sub-contractors produced the ubiquitous Type 6 steel pontoons shown here at Port Hueneme, which were 5 x 7 x 5 ft
- Each pontoon weighed 2000 lbs and were shipped flat, then assembled onsite





**SEABEES  
WERE  
RENOWN AS  
INNOVATORS**

# Floating Filling Station



**During the assault on Tinian Atoll in the Marianna Islands, Seabees of the 302<sup>nd</sup> Battalion operated pontoon barges as filling stations to refuel amphibious alligators (Amtracs fitted with special landing ramps)**





## **INNOVATION:**

**One of 10 “doodlebug” landing ramps built by the Seabees mounted on an Amtracs**

**The Seabees fashioned these ramps from scrap steel taken out of a Japanese Sugar Mill on Saipan.**

**They allowed Marine Amtracs to scale the 8-foot high cliffs along the White Beach landing zone on Tinian Island, shown at right**



# Clearing Jungles



**A Seabee uses a special jig frame used to uproot coconut palm trees.**

**Men of the 6<sup>th</sup> Naval Construction Battalion laying Marston Mat (PSP) at Henderson Field on Guadalcanal.**





# Bridge Repairs

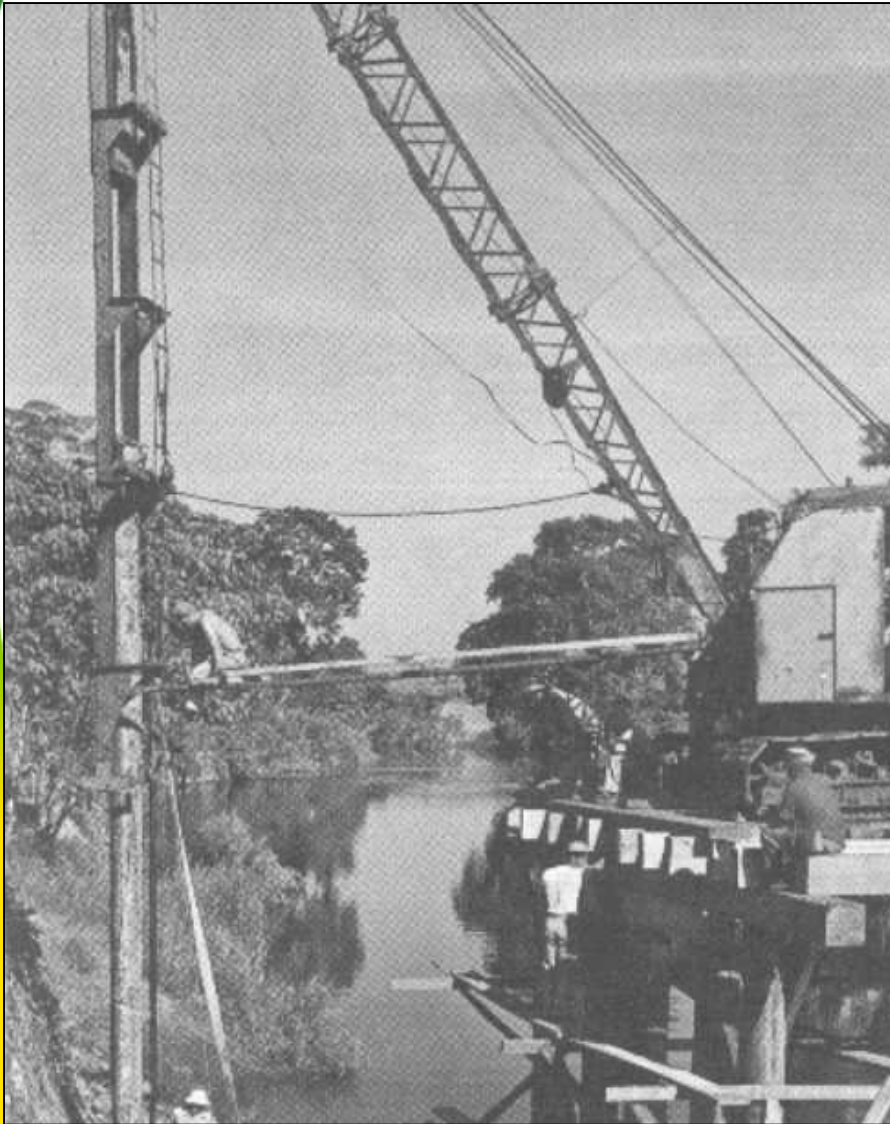


On Okinawa an army truck rolls across a battered Japanese bridge temporarily repaired by the Seabees with logs and coral fill.

Men from the 7<sup>th</sup> Battalion assemble the tower of a pile driver for use in construction work on Okinawa.



# A Cumshaw Pile Driver



“Cumshaw” is a nautical term for the procurement of needed material outside the supply chain, usually by swapping, barter, or mutual back-scratching. Often involved bartering with coffee or other food items. Officially frowned upon.

Seabees of the 14<sup>th</sup> Naval Construction Battalion use a pile driver and heavy timbers to build a sturdy highway bridge across a river on Guadalcanal in the Solomon Islands.



# Cumshaw Washing Machine



A Seabee on a Pacific island loads his “cumshaw” washing machine. The clothes go into the drum, which is then placed on the plank under the tower. As the windmill spins, the plunger — an inverted funnel— goes up and down to slosh the clothes about in the water.

# Scrounging a flagpole for the Marines at Iwo Jima



At the summit of Mt. Suribachi on Iwo Jima, U.S. Marines and a Navy corpsman hastily tie an American flag to the top of a steel flag pole hastily fashioned by the Seabees for the occasion.



# ROAD CONSTRUCTION

# Roads Across Mangrove Swamps and Rivers





# Roadway after draining and filling of the swamp



# Road Construction

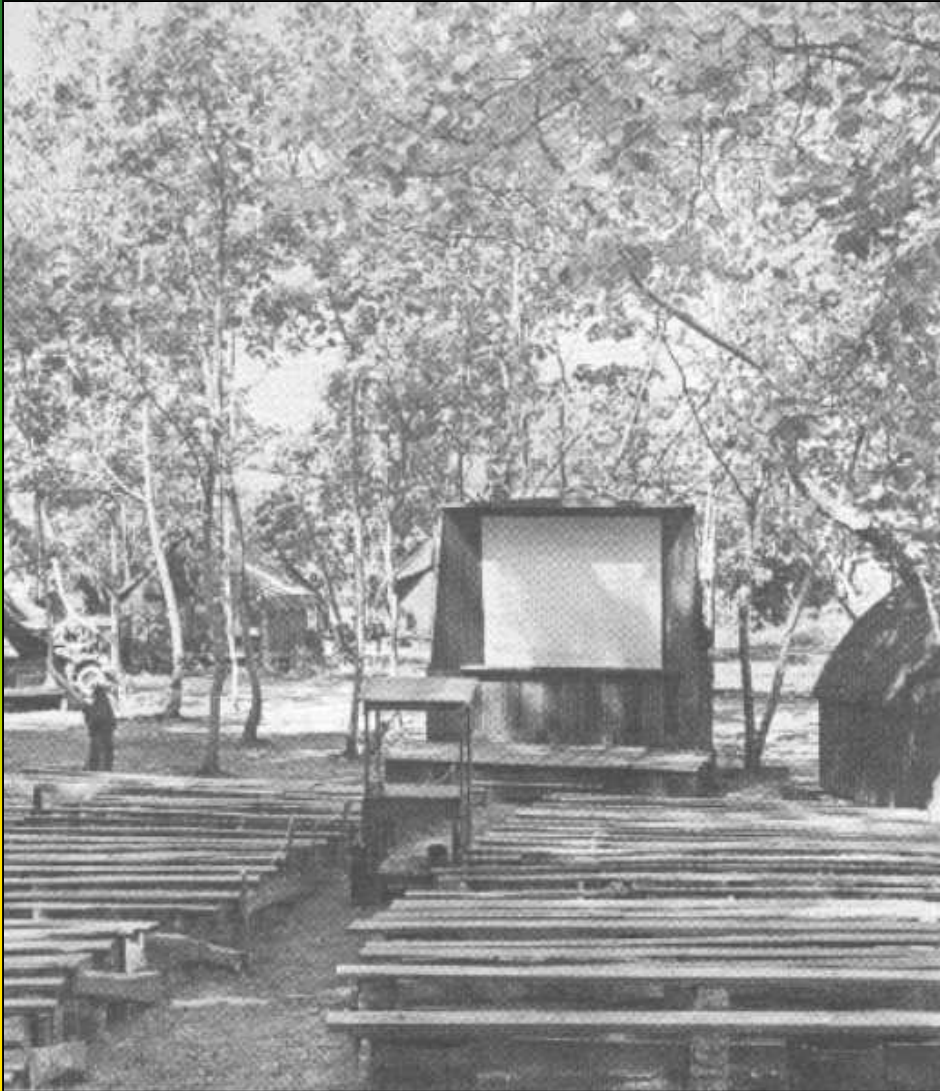


Men of the 71st Battalion are shown here working less than a mile behind the front at Bougainville. Some of the work on this island was done in *advance* of the front lines.

(Official U. S. Marine Corps Photo)



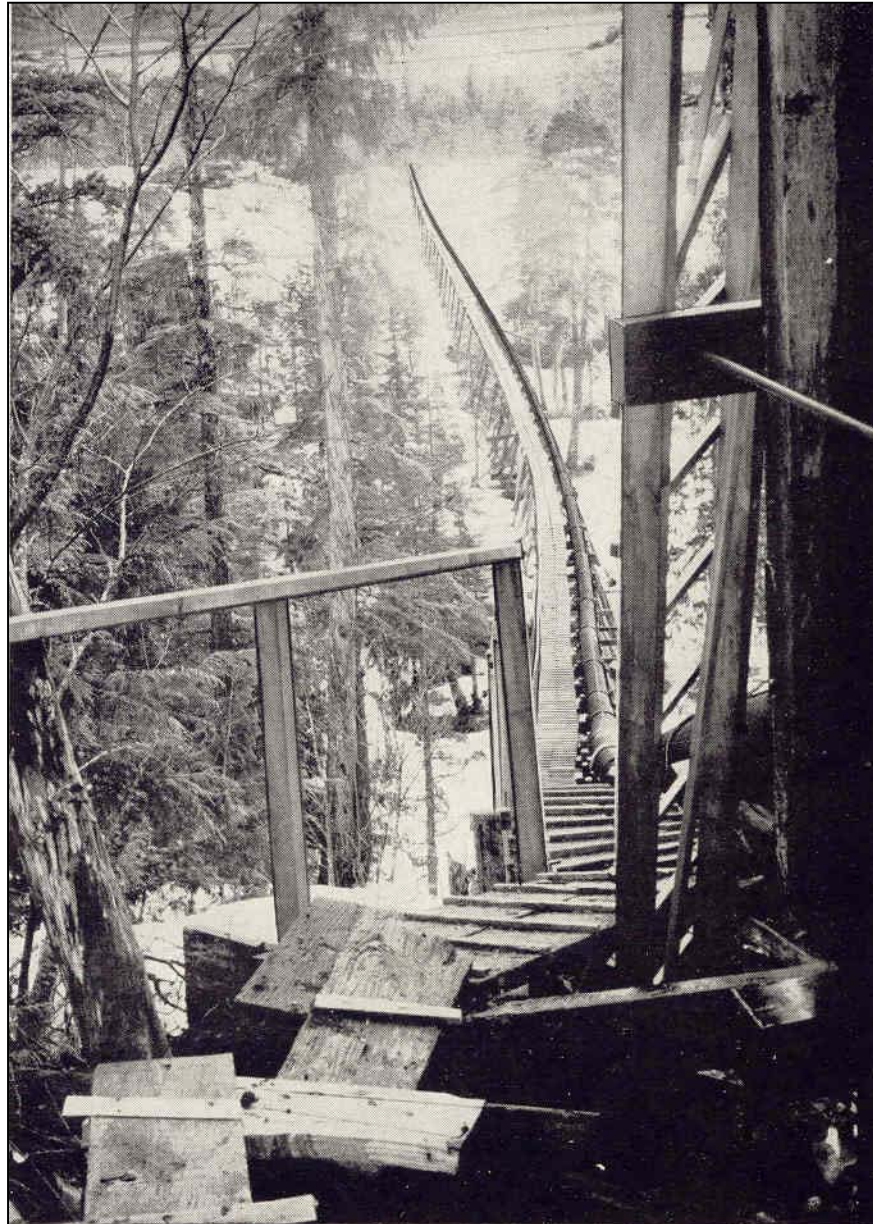
# Movie Theatres



**When the urgent construction work was finished, Seabees frequently built open air theatres in their camp areas.**

**Here is one of the theaters they constructed on the island of Guadalcanal in the Solomon Islands.**

# Pipelines



Flume box and pipe line built at Sitka, Alaska, to provide fresh water for the Naval Air Station. This work was done by the 22nd Battalion.

*(Official U. S. Navy Photo)*



**TYPICAL  
AIRFIELD  
CONSTRUCTION  
in World War II**



Here are six views showing the evolution of a jungle airfield.  
1. Clearing operations – first day. *(Official U. S. Navy Photo)*





2. Removing the windows of earth piled up by the bulldozers — fourth day.  
(Official U. S. Navy Photo)

Day 4





3. Excavating hardstands – parking areas – sixth day.

*(Official U. S. Navy Photo)*

# Day 6

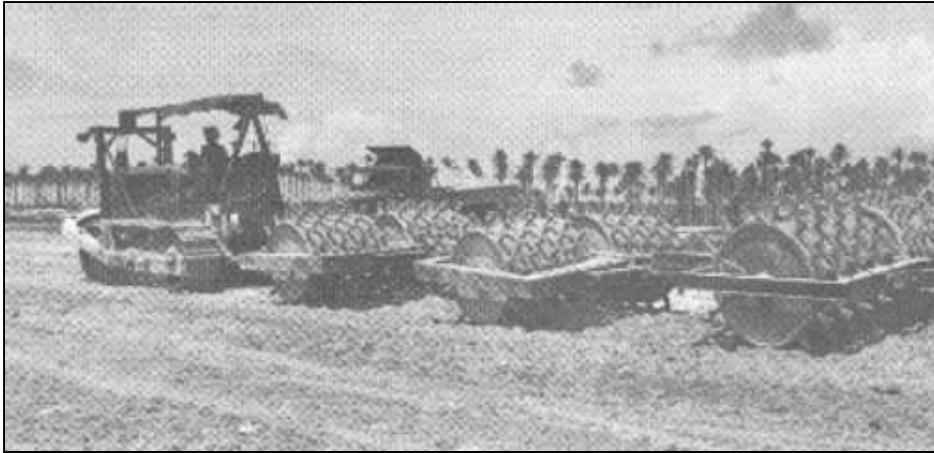




4. Grading and rolling with the "sheeps's foot" roller – eighth day. (Official U. S. Navy Photo)

Day 8

# Runway Subgrade Compaction

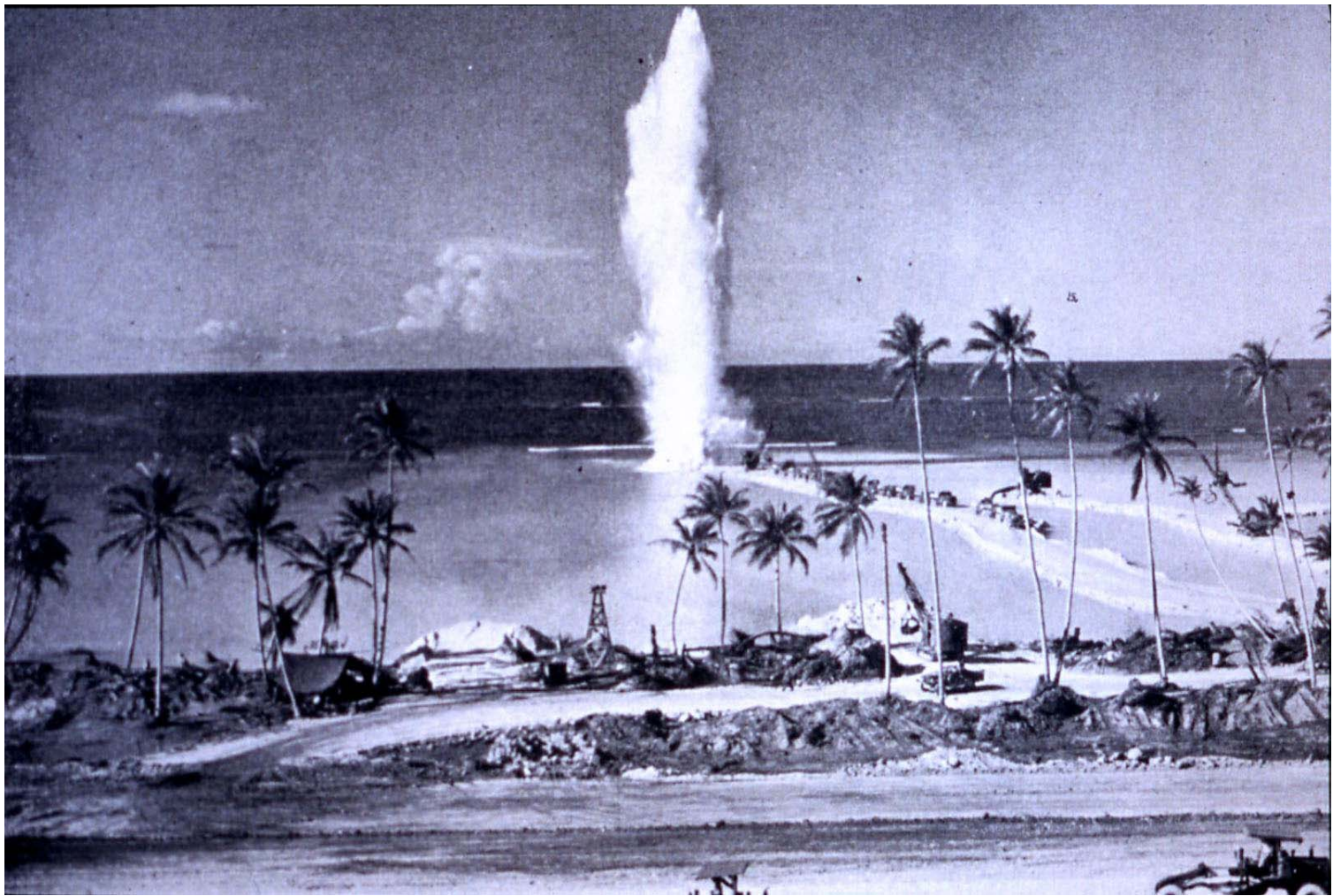


**Sheepsfoot rollers pack down coral fill for an airfield runway**

**A 107<sup>th</sup> Battalion road grader smooths out a hardstand for one of the giant B-29 airdromes on Tinian Atoll.**







- **Setting off demo charges in coral reef to allow collection of live coral for paving airstrips**





- **Tracked shovel excavating live coral for use as pervious runway paving on airfields and roads.**



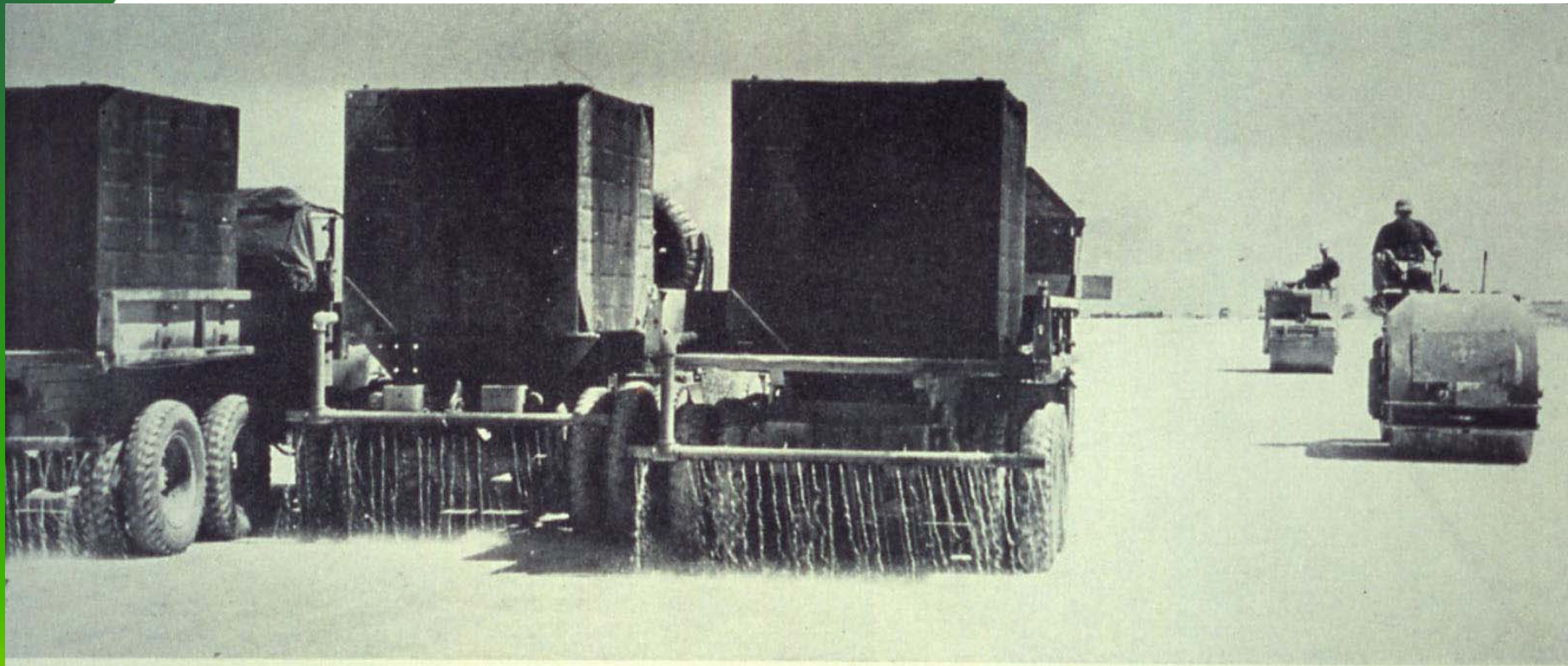


5. Surfacing with finely crushed coral – twelfth day.

*(Official U. S. Navy Photo)*

**Day 12**





PONTOONS RIGGED AS SPRINKLER TANKS ON DUMP TRUCKS  
Sprinkling freshly laid coral flight strips on Okinawa.

- **Seabee pontoons rigged as sprinkler tanks to irrigate live coral with seawater for runway construction on Okinawa.**





6. Bringing in the first plane—fourteenth day. On many fields the coral provides a sufficiently hard runway; other fields require the Marston mat. *(Official U. S. Navy Photo)*

## Day 14





**Completed coral runway supporting long range Army Air Corps B-24 bombers**



# The World's Largest Airdrome



**Seabee trucks on Tinian Atoll deposit their load of crushed coral.**

**North Field with three of its four 8,500 ft long runways, parking aprons, hardstands, quarters for aircrews and roadways.**



# Roles in the Pacific in WWII

**Bora Bora**

**Guadalcanal (First construction in combat)**

**Kwajalein**

**Guam**

**Aleutian Islands**

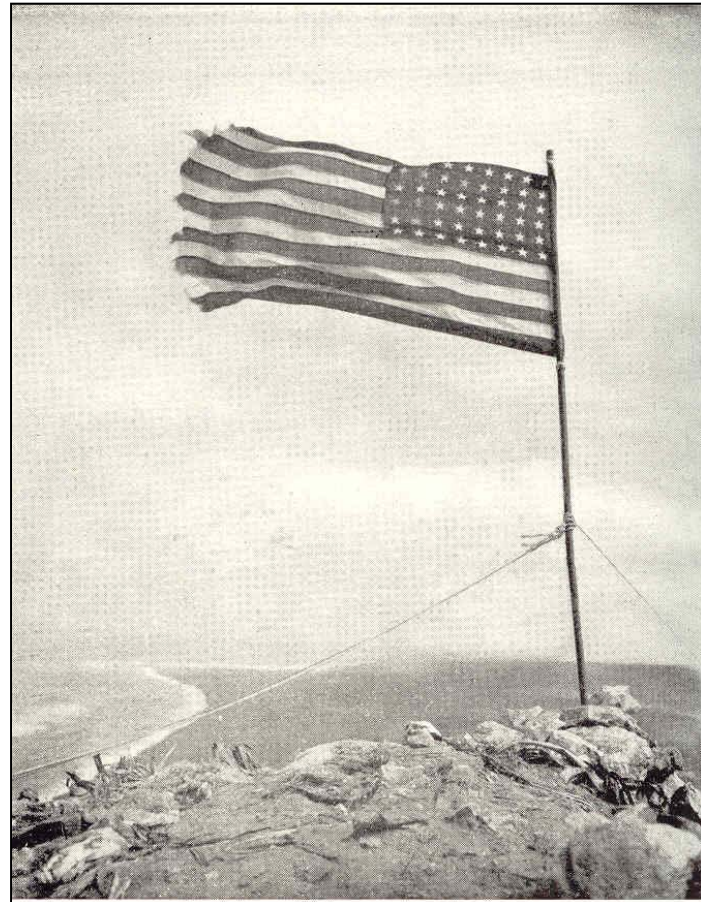
**etc**

**111 Major Airstrips**

**441 Piers**

**2258 Ammo Magazines**

**and more...**



**Seabees furnished the pole for the flag raising atop Mt Suribachi**

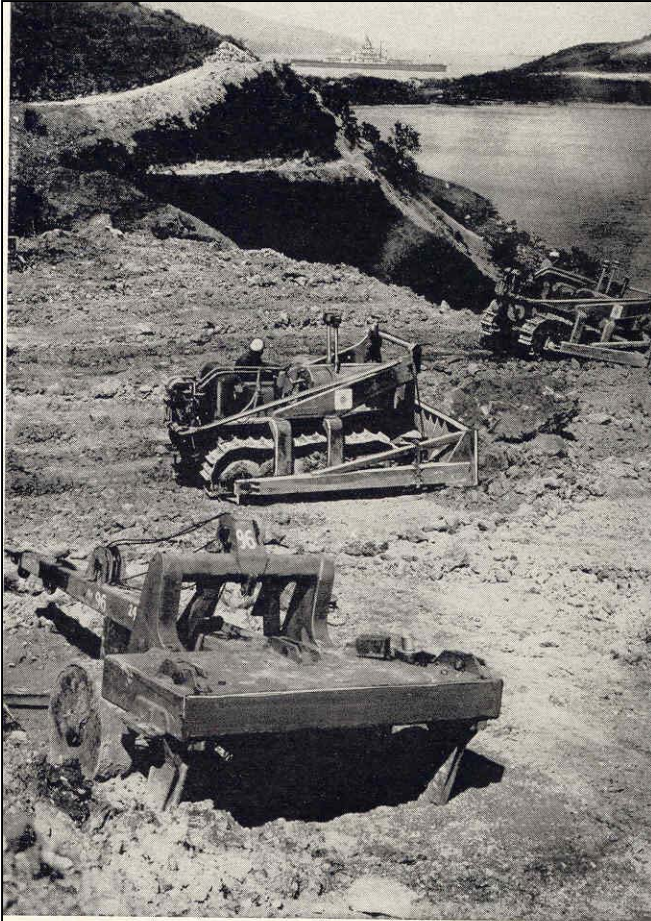


**It was said of the Seabees: *They are soldiers in sailors uniform, with marine training, doing civilian work at WPA wages***





# Nothing New under the sun – Seabees at work today



The bulldozer – machine of a thousand uses – has become the symbol of the Seabees. They hope to drive one of these machines through the streets of Tokyo.  
*(Official U.S. Navy Photo)*





# Playing Santa for kids- then and now

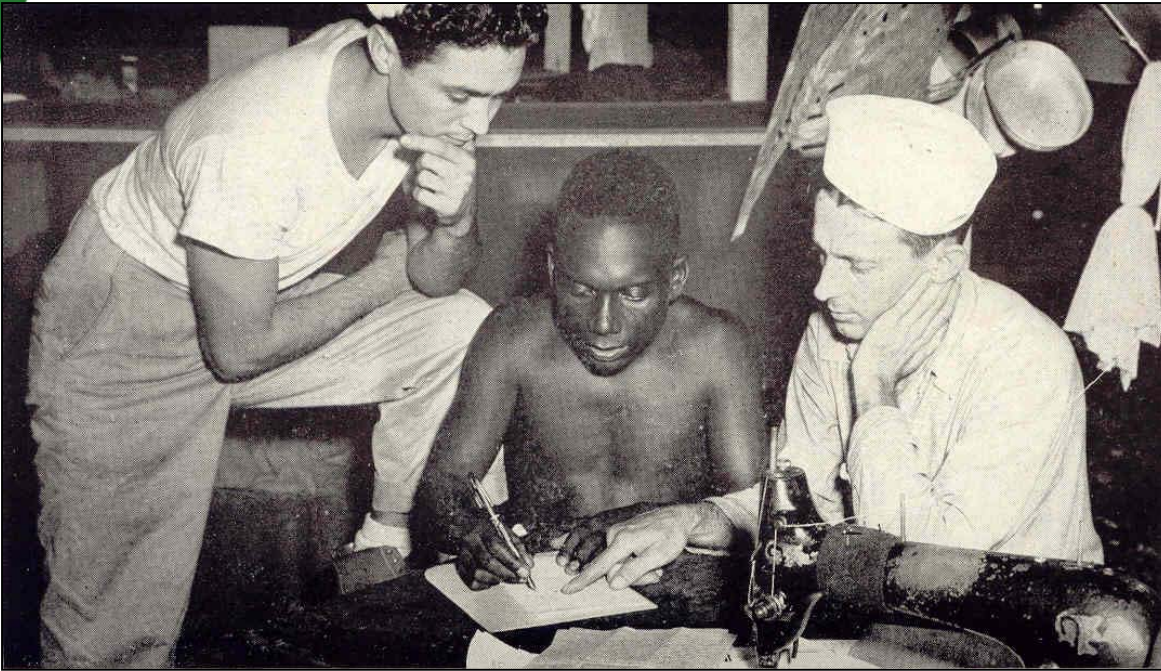


Far from their own homes, men of the 120th Battalion made Christmas, 1943, a memorable occasion for French orphans. Here battalion-made toys are being distributed at the Theresiennes Orphanage, Oran, Algeria.

*(Official U. S. Navy Photo)*







# Building schools



# Discovering wildlife

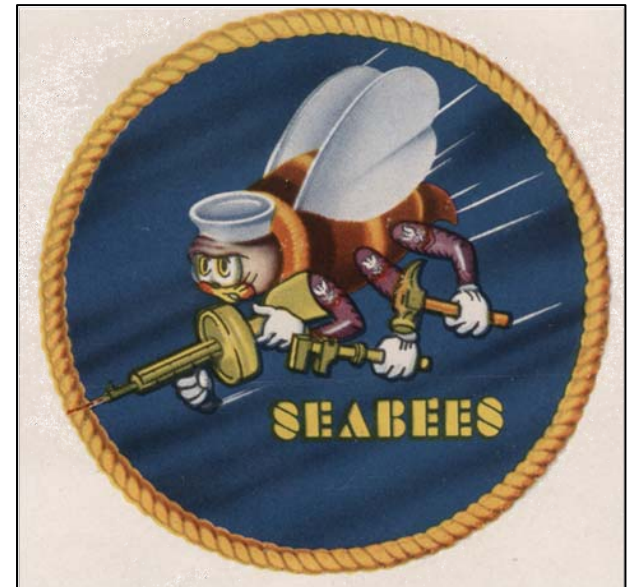


# CONCLUSION

***“The only trouble with your Seabees is that I do not have enough of them.”***

**Gen MacArthur’s remark to Admiral Moreell**

**Australia 1944**





# A Proud Heritage



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1 of 2

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