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How the Army Builds Bridges

The blitz in blitzkrieg is really spelled b-r-i-d-g-e-s.

Without bridges there could be no blitzkrieg. In fact, there could be but little "krieg" without modern military bridges.

Bridges are the key to mobility, and mobility is the heart and soul of the 20th century war. All the mechanization in the world is valueless if it has to stop at the first deep creek or river.

When Hitler overran France - the France that wanted to fight as she did a generation ago - his initial purely military successes were due to his bridges. France never overcame these initial successes.

The Nazi army either had heavy bridges tailor made to replace those at the border destroyed by the retreating army, or was able to throw temporary bridges accross streams so fast the French army lost almost all the value of destroying its bridges behind it.

Last winter the amazing Red Army held Leningrad because it was able to maintain communications with the beleaguered city over a bridge built accross frozen Lake Ladoga.

Here in the United States we have not only kept up with the armies of the rest of the world, but we have developed techniques and styles unequalled elsewhere.

Our Army Engineers can throw a footbridge for infantry over a fast-flowing 300-foot-wide river in a shade over 10 minutes. It can span this river with a bridge that will carry 20 tons - comparable with a civilian bridge that will carry 100 tons - in less than a half hour. It has a bridge that will carry 30 tons thatit can complete in less than 2 hours, a bridge that will carry all but our very heaviest tanks.

It has just recently ~~invented~~ designed and perfected a special bridge for the

use of the armored forces. This bridge will carry 30 tons, is practically unsinkable, and is exclusive with us.

Bridgebuilding is a big operation. It is carried out jointly by the infantry and engineers.

Most important is the element of surprise. If we can get started before the enemy expects us we can save a lot of lives and have a better chance of success. For this reason the army begins the job at night. It can be done in the daytime, by use of smokescreens.

First step is to establish what is known as a "bridgehead" on the opposite shore. What this means, simply, is that we hold and control the approaches to what will be the far end of the bridge.

To do this the Army uses small, light assault boats which will carry 11 men, or fewer men and very light equipment. Two men are always engineers, who return for nine more infantrymen as soon as they discharge a load of soldiers.

These infantrymen must drive back the defending forces before it is relatively safe to proceed with the next step.

Under actual war conditions, these operations will extend for about two miles along the river, with perhaps 100 assault boats ferrying men. The army plans it so the opposite shore is held by our forces by dawn.

When we hold enough of the opposite shore we throw a footbridge accross the river. This is a narrow bridge about two feet wide supported by unsinkable, solid floats made from scrap rubber. The bridge surface has already been prepared in eight-foot lengths which are anchored onto the floats. Sidepieces are added, the bridge is braced against the flow of the river and then the men dash accross in fairly large numbers.

These men force the enemy back farther and insure our control of bridgeheads.

During the short while it takes to make the footbridge ferrying operations can be carried out by rafts made of two assault boats lashed together. These rafts will carry small cannon and peeps, which are used as tractors until heavier equipment crosses.

Once the footbridge is completed the biggest operation can be started. This is what the army calls a "ponton" - not "pontoon" - bridge.

Depending upon the needs of the situation, this bridge can be constructed rapidly and within a couple of hours of the commencing of the assault our superb medium tanks, heavy trucks and masses of troops can be rumbling forward to the attack.

Basic unit in this type of construction is a sturdy, square-ended ponton. Two of these pontons, with flooring, form a section of the bridge. They are assembled at the shore and placed in position with light outboard motors. Each unit attaches at the end of those already in place.

In order to more strongly protect the bridge what usually happens is that while the near approach is being constructed several units are assembled. They can carry light tanks and 37 and 75 mm. guns to the opposite shore, where they can be used to drive the enemy back out of artillery range of the bridge or even to knock him out. The footbridge is narrow and is a poor artillery target, but the ponton bridge is not a difficult target.

After ferrying this equipment accross these units return to the end of the rbidge, where they are attached. This process is repeated until construction is completed.

Ponton bridges are not as simple as footbridges. The approaches are a problem, because if they are too steep a heavy tank of about 30 tons would hit them with a force that might be great enough to shatter the flooring. To insure against this the approaches are braced and strengthened with trestles, as many as

some of the stress to anchorages on the shore.

(The various photos show these trestles. Because these shots are of different bridges they will show as many as three trestles. Be careful in using them to use a single operation, where the trestles show. Other terminology used by the engineers to describe parts of this kind of bridge: Balk - the beams that support the flooring; chess - the flooring.)

This type of bridge is rugged and can be used for all purposes. It permits a heavy flow of men and equipment. It safely carries armored forces.

However, there is a superior type bridge for the armored forces. This bridge is an exclusive development of the U.S.Army Engineers. It is designed to meet the needs of our mechanized forces, but it can be used for general purposes.

This bridge, also a ponton bridge, is of dual steel treadways coming in sections rather than continuous flooring, which must be added by hand. These treadways weigh about a ton apiece. They are so designed that a motorcycle with sidecar can cross on a single treadway, and a jeep can cross on the pair. Yet the pair of treadways is wide enough to allow passage for America's 30-ton tank.

Rubber pontons, or floats, withcompartments that are inflated but separated from each other so that a hole in one or several compartments will not sink the pontons, support the treadways. A special plywood saddle fits onto the ponton, and the treadways are locked to it.

This bridge makes it possible for the armored forces to attain a maximum of mobility and speed, without which they are practically valueless. Yet it has the heaviest load carrying capacity.

Ferrying operations are facilitated by this design. The pontons and

treadways are assembled in units at the shore. They are loaded, propelled to the opposite shore, returned to the advanced point in the bridge and locked into place. These sections carry a heavier load that the wooden sections. They can be put into service faster, too.

The ideal situation for the army is to employ all three types of bridges simultaneously. The footbridge can be used even after the larger bridges are in, and when the special armored-force bridge is used to suplement the standard ponton bridge a maximum flow of both men and materials is possible.

Contrary to popular opinion, the major problems in building these bridges, once the parts have been brought up, is neither the depth of the river nor the speed of its current. The approaches give most trouble. Steep banks may mean bottlenecks because all work must be done at one point. Steep banks may also make it impossible to sue the bridge sections as ferries. They may also add to the danger of the initial assault by keeping the offensive force from hitting over a wide area.

But when the bridges are to to built, we have the stuff to build them with and the "know-how". Neither end of the axis exceeds us in this.

When the last of battle zones from which the temporary bridges are replaced by semi-permanent wooden structures, or the latter bridges are repaired, and the foot traffic equipment is transported to the front to be used again for the next advance.