Appendix E
Aluminum Floating Footbridge

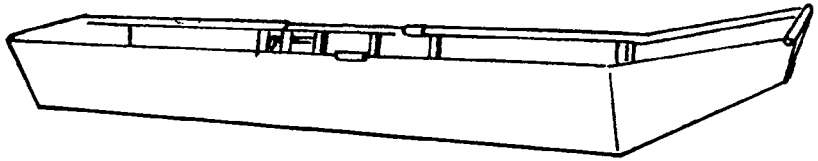
The aluminum floating footbridge provides a standard means of rapidly crossing dismounted infantrymen in support of river crossing operations. The footbridge is easily hand-erectable and can be used in currents up to 11 FPS. Although the aluminum floating footbridge is no longer authorized in float bridge companies, the US Army is currently considering a proposal to establish TOEs for aluminum footbridge teams. These teams will provide the equipment and technical advice for erecting approximately 472 feet of footbridge, or 100 feet of light vehicle (Class 2) bridge.

Components

Pontons

The aluminum ponton is 14 feet long, 2 feet wide, 1 foot 2.5 inches deep at the gunwales and weighs about 100 pounds. The ponton is fabricated from sheet aluminum, reinforced with light aluminum members. It has a false bottom 6 3/4 inches above the true bottom providing a compartment which is filled with a light cellular plastic material. This renders the ponton relatively unsinkable even when subjected to small arms fire and shell fragments. The ponton has a maximum gross displacement of 650 pounds.

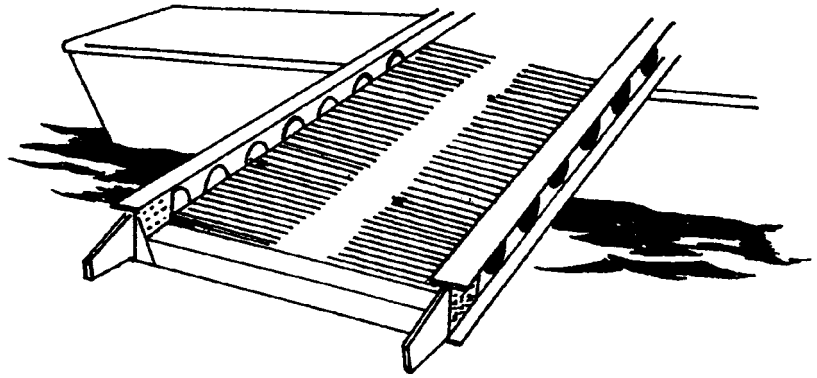
Ponton



Treadway

The aluminum treadway has a walkway width of 1 foot 8 3/4 inches, a depth of 5 1/4 inches, and an effective length of 11 feet 3 inches. The treadway weighs 84 pounds and consists of two parallel aluminum I-beams carrying transverse aluminum channels which support a corrugated aluminum sheet tread. The ends of the I-beams are fitted with spring loaded connectors, male at one end and female at the other, to provide a connection which develops continuous beam action. This serves to distribute the load over several pontons and provides a connection which does not require the insertion of separate connecting pins.

Treadway



Handrail post

The handrail post is a 1 1/4-inch aluminum tube mounted on an aluminum base and fitted at its top, with a cast aluminum attachment to receive a handrail rope. It weighs about 2 pounds and is installed by inserting the base in a receiving socket in the treadway channel and rotating the post 180 degrees to lock it in position.

Ropes and holdfasts

Each bridge set includes 1/2-inch manila rope to be used as handrail lines, guy lines, and bridle lines; and two 600-foot reels of 3/8-inch wire rope to be used as anchor cables, and as guys for improvised cable towers. Also included are 20 cable clips, for fastening the cable; 4 holdfasts, each complete with 9 pickets; and 16 approach posts.

Considerations for Tactical Employment

Site considerations

Some considerations for the use of aluminum footbridge include: stream conditions, anchorage requirements, and approach requirements.

Stream conditions. Although the aluminum floating footbridge can be used in currents up to 11 FPS, bridge capabilities are significantly reduced in currents over 8 FPS. A location on a straight reach of uniform width is preferable, since the bridge is easily effected by eddies, cross currents, or river turbulence.

Anchorage. Guy lines are always required to maintain bridge alignment. Anchor cables are required except in currents less than or equal to 3 FPS. Improvised towers using shears or poles must be constructed and raised to hold the anchor cable above the water when the cable is adjusted to an unloaded sag of 3 percent of the span.

Approaches. Assembly by successive bays is used whenever possible. Desirable site characteristics are –

- A location requiring a minimum effort in clearing the approach paths for troops on each shore with a good access road minimizing the carrying distance to the assembly sites.
- A clear, relatively smooth near shore assembly area, about 30 by 50 feet, with a 50-foot length parallel to the shore. A near shore approach road from which trucks can back up to the center of the inshore side of the assembly area is also desirable.
- A water depth of no more than 4 feet along the near shore will permit the assembly crew to efficiently work along the shore.

Transportation

One set of aluminum floating footbridge can be transported using two standard 2 l/2-ton cargo trucks and two trailers with a 2 l/2-ton capacity.

Utilization

Aluminum floating footbridge can be configured as a floating footbridge, a light vehicle bridge, or as expedient two- or three-ponton rafts.

Footbridge. This bridge is constructed in a normal configuration with one treadway and one ponton per bay. In currents up to 8 FPS, troops must cross in a single file, at a 2-pace interval. In daylight, the bridge can be used to cross 75 men per minute, at a double time. Under blackout conditions, 25 men can cross per minute, at a quick time. The crossing rates shouId be reduced by 20 percent if the current is greater than 8 FPS. Assembly times are provided in Table 64.

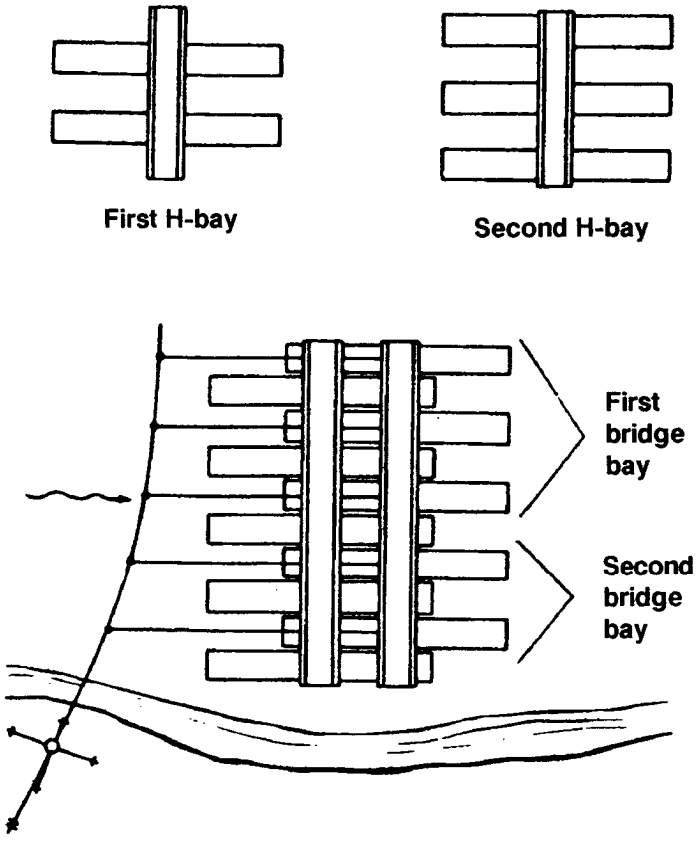
Table 64. Assembly time outlines the time requirements for assembly

Daylight	**15 minutes plus 1 minute per each 15 feet of bridge**
Night with illumination or moonlight	**20 minutes plus 1 1/4 minutes per each 15 feet of bridge**
Blackout	**30 minutes plus 2 minutes per each 15 feet of bridge**

* Based on trained and experienced troops assembling from stockpiled parts. Allow additional time for assembly from trucks, for any anticipated anchorage difficulties, enemy interference, or other delaying factors. The time includes installation of anchor cables and deadmen.

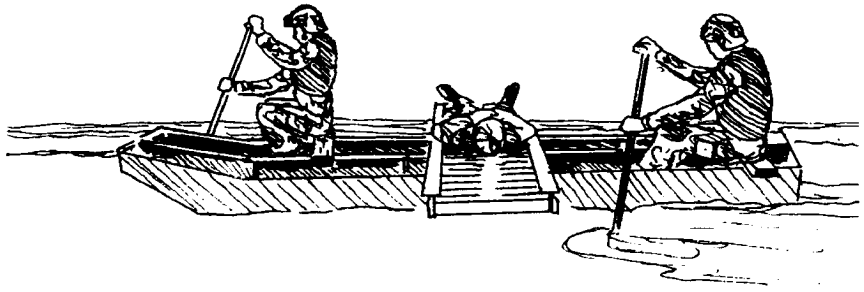
Light vehicle (Class 2) bridge. An expedient 100-foot long bridge, which will cross a jeep and trailer combination, can be assembled from one set of aluminum footbridge. The treadways are blocked apart and lashed leaving an open space of 2 feet 4 inches between them. The second bay, and succeeding alternate bays, are assembled with the two-ponton bay downstream and the three-ponton bay upstream. Handrail posts are installed only on the outer beam of each treadway. This bridge may be used in currents not exceeding 5 FPS.

Construction of a light vehicle bridge



Rafts. Aluminum footbridge may be used to assemble paddle-propelled rafts for light cargo, light vehicles, and wounded personnel. The expedient two-ponton raft is formed by lashing two pontons side by side, with one treadway placed across them. It will accommodate one wounded man and two paddlemen. The expedient three-ponton raft is formed by lashing three pontons side by side with one treadway across them, and an additional treadway along each side of the center treadway. It will accommodate three wounded men and can be paddled by four men.

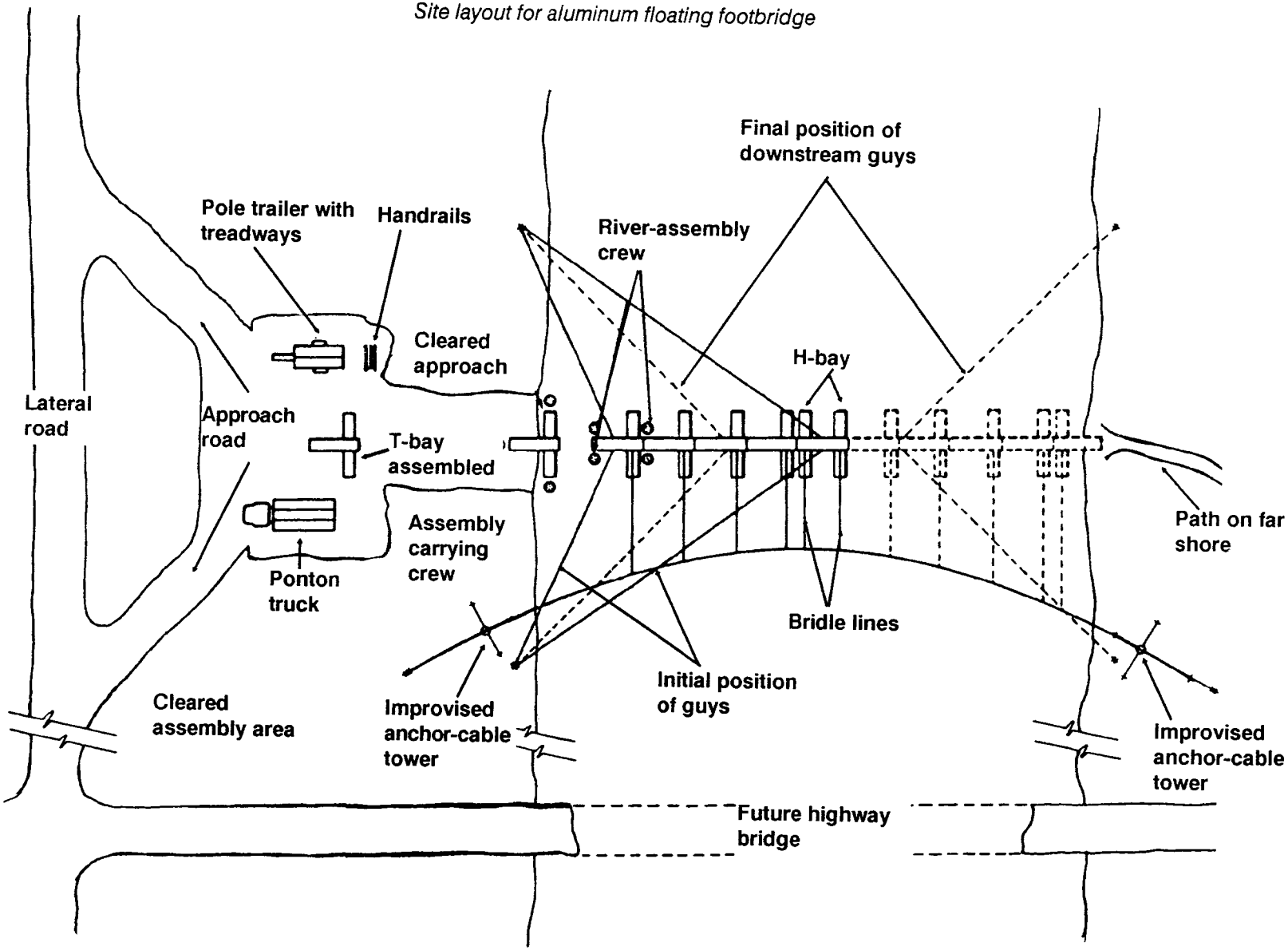
Expedient two–ponton raft



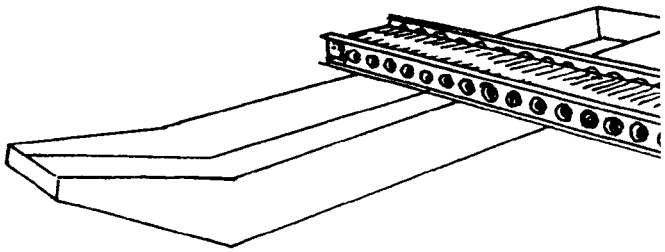
Construction of Aluminum Footbridge

Assemble aluminum floating footbridge by successive bays whenever the near shore terrain permits a reasonably smooth approach to the water's edge and a near shore assembly site layout like that shown on page 191. A typical organization of assembly details is provided in Table 65. Construction details are further illustrated on page 193.

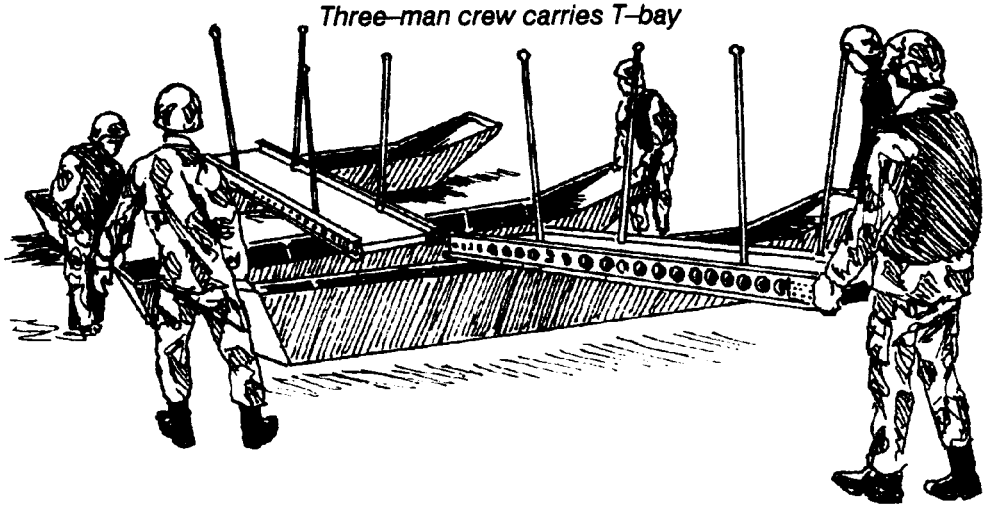
Site layout for aluminum floating footbridge



Constructed T–bay



Three–man crew carries T–bay



Connecting T–bay to bridge

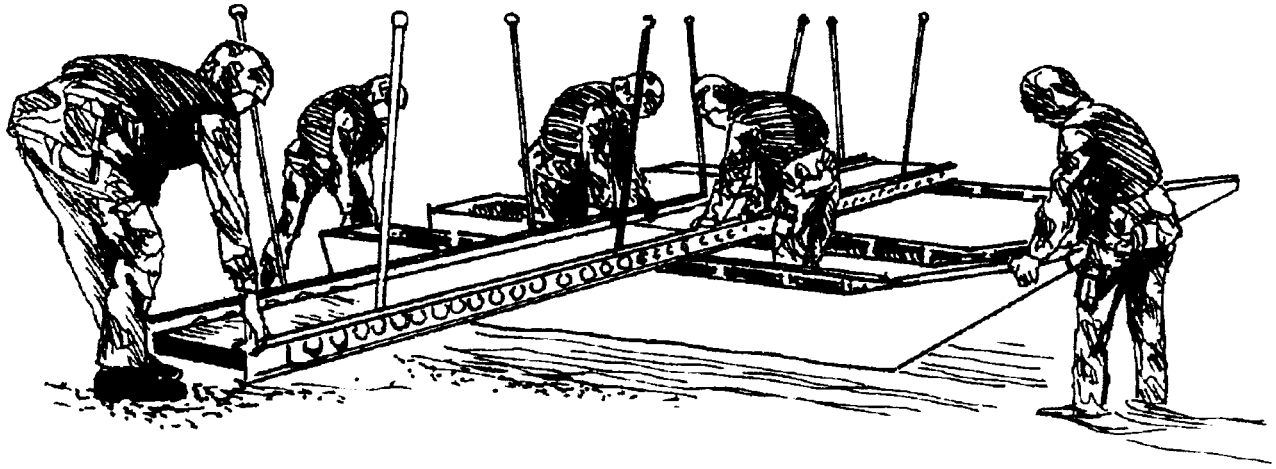


Table 65. Typical organization of assembly details

Detail	NCO	EM	Summary of tasks
Near–shore anchor cable		6	Carries near–shore holdfast materials to site, installs holdfast, improvises a cable tower, receives end of cable from far–shore detail, fastens cable, raises and tightens it on signal, improves approach and assembly areas. During bridge assembly, works as assembly–carrying detail.
Far–shore anchor cable	1	7	Loads cable and holdfasts in assault boat, passes cable end to near–shore detail, crosses stream paying out cable, installs holdfast, improvises cable tower and raises cable on it, and signals near–shore detail to tighten. As bridge end arrives, detail again signals near–shore, connects approach treadway and secures end of bridge.
Bridge–line	2 EM plus 2 EM per 100 ft of bridge	(2)	Snaps bridle lines to anchor cable, one line per ponton in current above 3 FPS, otherwise one per alternate ponton. Attach bridle lines to bridge and adjust to maintain proper alignment.
Guy line		5	Two men attach an upstream and two a downstream guy line to first bay and handle the shore end of guys. Fifth man stays on bridge, relocates bridge end of guys as needed, and assists handrail detail in threading handrail lines.
Shore assembly	1	6	Two men carry and place ponton; two men carry and place treadways, assemble T–bays with stem of T pointing away from stream. The other two men install the four handrail posts on each bay.
Assembly–carrying		*6	Carries T–bays to the water, one man at each end of ponton to carry and launch it and one man to carry shore end of treadway and push the bay out to the river–assembly detail.
River assembly	1	4	Two men, one on each side of last bay launched, support the shoreward end of the treadway. The men receive the ponton end of the next bay and connect it, advancing the bridge, then move to its shoreward end. All four men wear waders for work in the water. The NCO supervises assembly.
Handrail		3	Two men attach a handrail line to each end of the first handrail posts, leaving about 20 feet of the free end of each coiled on the treadway, and pay out line on treadway deck as bridge is advanced. Third man mounts bridge at second bay and threads handrail rope assisted by man from guy line detail.

* Also near–shore anchor cable detail