Chapter 1

Medium Girder Bridge Components

The medium girder bridge (MGB) is lightweight, hand-built, bridging equipment, it can be built in various configurations to provide a full range of bridging capability for use both in the forward battle area and in the communications zone. Speed of erection by few soldiers is its major characteristic.

The MGB parts are fabricated from a specially developed zinc, magnesium, and aluminum alloy (DGFVE 232A). This enables a lightweight, high strength bridge to be built. All except three parts weigh under 200 kg. Most parts can be handled easily by four soldiers. The three heavier parts, used in limited quantities, are six-man loads.

The MGB is a two-girder, deck bridge. The two longitudinal girders, with deck units between, provide a 4.0m wide roadway. Girders of top panels can form a shallow, single-story configuration. This type of bridge is used for short spans that will carry light loads. A heavier double-story configuration using top panels and triangular bottom panels is used for heavy loads or longer spans. Single-story bridges can be constructed by 9 to 17 soldiers. The normal building party for double-story bridges is 25 soldiers.

The bridge can be supported on unprepared and uneven ground without grillages. It is constructed on one roller beam for single-story construction; two roller beams, 4.6m apart, for double-story construction; and on three roller beams when constructing a double-story bridge over 12 bays long. The ends of the roller beams are supported on base plates and each can be adjusted in height. No leveling or other preparation of the ground is required. Single-span bridges are launched using a centrally mounted launching nose (Figure 1).

A third configuration using the link reinforcement set (LRS) is constructed when a long, high class type of bridge is required. The LRS deepens the girder and transfers the load throughout the length of the bridge. This type of

Figure 1. Launching nose configuration

SINGLE-STORY BRIDGES THROUGH 15.2m IN LENGTH

SINGLE-STORY BRIDGES OVER 15.2m LONG

ALL DOUBLE-STORY BRIDGES THROUGH 49.7m IN LENGTH
construction requires a building party of 34 soldiers, and is built on three roller beams.

**ADVANTAGES OF THE MGB/LRS**

- **Lightweight** – no component requires more than six soldiers to lift or carry.
- **Easy to assemble** – components have special alignment aids built into them.
- **Minimal maintenance** – very little lubrication require.
- **Air transportable** – in either standard pallet loads or in partially assembled bridge configurations.

**Compatibility** – all US components will fit MGBs in use by allies, except for launching nose cross girder (LNCG) posts.

**DISADVANTAGES OF THE MGB/LRS**

- **Length** - Maximum length is 49.7m.
- **Military Load Class (MLC)** - MLC is 60, not 70.

**MAJOR PARTS (See Figure 2).**

- Top panel.
- End taper panel.
- Bankseat beam.
- Ramps – US (long) and UK (short).
- Bottom panel.
- Deck unit.
- Junction panel.

**ALLOCATION/CAPABILITIES**

An MGB company (corps level) is issued four bridge sets, two erection sets, and two link reinforcement sets. These are divided between two platoons.

![Figure 2. Location of components in bridge configurations](image-url)

2 Medium Girder Bridge Components
## COMPONENT LISTS

### Bridge Set

*Item description and quantity*

- Bag, equipment – 8
- Basket, equipment – 14
- Beam assembly, bankseat – 7
- Brace, sway – 19
- Clip, retainer – 94
- Curb assembly – 42
- Deck – 74
- Guide assembly, marker – 24
- Panel assembly, end taper – 5
- Panel assembly, bottom – 26
- Panel assembly, junction – 5
- Panel assembly, top – 34
- Pin, bracing – 68
- Pin, panel – 92
- Pin, panel, headless – 5
- Ramp assembly, short – 29
- Ramp assembly, long – 15

### Bridge Erection Set

*Item description and quantity*

- Adapter, push bar – 2
- Bag, equipment – 2
- Bar, carrying – 46
- Bar assembly, launching – 2
- Basket, equipment – 61
- Beam assembly, roller – 4
- Cable, extractor – 1
- Clip, retainer – 56
- Girder assembly, launching – 2
- Girder, cross frame – 3
- Girder, longitudinal* – 3
- Girder, push bar – 2
- Handle, carrying – 46
- Jack, bridge, 15-ton – 7
- MGB pallet, truck mounted – 13
- Rear bumper assembly – 13
- Lug, tie-down, steel – 104
- Stray assembly, 5,000-pound capacity – 52
- Strap assembly, 10,000-pound capacity – 117
- Tie-down, cargo, 10,000-pound – 26
- MGB pallet, trailer mounted – 12
- Adapter, pallet – 12
- Bracket adapter, with hardware – 48
- Rear bumper assembly – 12
- Strap assembly, 5,000-pound capacity – 28
- Strap assembly, 10,000-pound capacity – 108
- Tie-down, cargo, 10,000-pound – 48
- Nose assembly, launching – 8
- Nose, light, front – 5
- Nose, light, rear – 5
- Panel erection aid – 3
- Pedestal assembly, adjustable, MKI – 2
- Pedestal, building – 7
- Pin, anchorage** – 10
- Pin, bracing – 8
- Pin, launching nose – 23
- Pin, panel – 20
- Plate, base, DS – 6
- Plate, base, SS – 7
- Post assembly, jacking – 4
- Bracket, lifting – 4
- Post, launching nose – 2
- Roller assembly, landing – 4

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*Issued in some sets though not required.

**Transfer from link reinforcement set.

[Items with separate national stock numbers (NSNs) that together with other item(s) in brackets comprise an assembly.]
Roller assembly, launching – 2
Seat, building frame, jack – 5
Support assembly, adjustable – 6
Support assembly, fixed – 7
Support, jacking – 5
Sling, steel, wire – 1

**Link Reinforcement Set**

*Item description and quantity*

Anchor assembly – 4
Antiflutter tackle – 5
Bag, equipment – 2
Bar assembly, launching – 2
Basket, equipment – 4
Bearer, footwalk – 10
Bracket, jacking – 2
Capsill, bridging – 1
Clip, retainer – 150
Davit post assembly – 2
Footwalk, bridge – 4
Hammer, hand, nylon – 4
Jack, bridge, 20-ton – 2
Link, launching, two-tier – 3
Link, reinforcing, long – 20
Link, reinforcing, short – 4
MGB pallet, truck mounted – 1
Rear bumper assembly – 1
Lug, tie-down, steel – 8
Strap assembly, 5,000-pound capacity – 4
Strap assembly, 10,000-pound capacity – 9
Tie-down, cargo, 10,000-pound – 2
MGB pallet, trailer mounted – 1
Adapter, pallet – 1
Bracket, adapter, with hardware – 1

* Rear bumper assembly – 1
  Strap assembly, 5,000-pound capacity – 4
  Strap assembly, 10,000-pound capacity – 9
  Tie-down, cargo, 10,000-pound – 4
  Nose assembly, launching – 6
  Pedestal assembly, adjustable, MKII – 2
  Pin, anchorage* – 10
  Pin, bracing – 22
  Pin, capsill – 3
  Pin, launching – 40
  Post, footwalk – 10
  Post-tensioning assembly – 4
  Puller assembly, tirfor, T-35 – 2
  Roller assembly, rocking – 2
  Rope, guard – 4
  Seat, building frame, jack – 2
  Tackle, light – 20
  Wrench, ratchet, 3/4-inch – 2

**Expendable Supplies and Materials**

*(per bridge set)*

*Item description and unit of issue*

Grease, automotive – lb can
Oil, lubricating, GP, MIL-L-7870A – gal can
Coating compound, metal retreatment – gal can
Primer coating, phenolic resin – gal can
Enamel, alkyd, camouflage forest green – gal can
Enamel, lustreless, white – gal can
Walkway compound, OD – gal can
Cleaning solvent – gal can
Lumber, softwood, 3 x 8" x 14' – 40 each required. Cut into lengths to obtain:
  144 pieces 3" x 8 x 36
  4 pieces 3" x 8 x 84

* Transfer to bridge erection set.
[Items with separate NSNs that together with other item(s) in brackets comprise an assembly.]

4 Medium Girder Bridge Components
STEP 1. Measure the angle of repose (AR) gap. This step is common to all lengths and configurations.

Select a bridge centerline. The centerline should extend from a point approximately 15.2m on the far bank to a point approximately 45.7m on the near bank. This will ensure that there is space on the far bank for vehicle egress and space on the near bank for the R distance of any bridge length. There should be sufficient clear area extending out 3.0m on both sides of the centerline for its full length to allow for bridge construction.

Determine the location of firm ground on the near and far banks.

(1) For the field method of determining firm ground, assume the AR of the soil to be 45 degrees.

NOTE: Gaps below are shown with one prepared and one unprepared abutment. Actual sites may be any combination of examples shown.

c. Measure the distance from the edge of firm ground on the near bank (A' peg location) to the edge of firm ground on the far bank (A peg location) using one of the methods described below. This distance is known as the AR gap.

(1) Triangulation method.

(2) A string line with a weight attached thrown across the gap and measured while being retrieved.

(3) If in a relatively secure area and site conditions allow, a tape measure should be used.

d. Select the type of bridge to be built, based on resources available, the MLC desired, and the AR gap.