Welcome to Fantastic Temporary Bridges and Where to Find Them

Speaker:
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FANTASTIC TEMPORARY BRIDGES
AND WHERE TO FIND THEM
HERITAGE
BAILEY BRIDGE

• Designed, tested and in full production during 1941
• First bridge sets with troops within a year
• Load Class 40, up to Class 70
• Equally rapid development of pontoons for floating bridges
• 650 manufacturers in UK produced more than 490,000 tons
• A total of more than 400km of bridging was manufactured
• Maximum Versatility.

• Readily available materials – no aluminium alloys!

• Capable of manufacture by almost any engineering firm.

• All parts to fit in a 3 Ton GS Truck; no part more than a 6 man lift (600lbs).

• Simple to construct.
BAILEY BRIDGE
MOSTAR, BOSNIA 1994
DRIVERS FOR CHANGE

• Military Bridging
  • Separation of roles
    • Assault and Tactical bridging, speed of construction
    • Line of Communication Bridging – reliance on Host Nation Infrastructure
  • Greater focus on denying enemy mobility
  • Effect: no change, keep Bailey

• Civil Bridging
  • World-wide use of Bailey Bridge
  • Incremental development from 1967
  • Mabey improvements – Super Bailey, Compact 100, Compact 200
DEVELOPMENT
CIVILIAN BRIDGING DEVELOPMENT

1967 Super Bailey
  • Steel Deck
  • Stronger Transom

1974 Mabey Universal
  • Heavy duty, high axle loads

1983 Compact 100
  • Improved strength, lighter weight

1986 Compact 200
  • Taller Panels
  • Shear panels

1992 Compact 200 Super
  • Improved bending capacity
MILITARY BRIDGING DEVELOPMENT

- Heavy Girder Bridge (HGB) 1948
  - Max single span 187ft (57m)

- EW Bailey Bridge 1949
  - 45 years in service

- Medium Girder Bridge (MGB) 1967
  - Aluminium Alloys
  - 100ft (30.5m)
COMPACT 200 IN BOSNIA 1996
LOGISTIC SUPPORT BRIDGE
(2000)

Building on the success of the Balkan campaigns, Compact 200 was adapted for military use, optimised for MLC80(T) and MLC110(W):

• Heavier, stronger transom providing 4.2m roadway.
• Integrated Ground Beams and Grillages for use on greenfield sites or as an overbridge.
• Fully adjustable Ramp system, properly supported and braced. Profile suitable for all types of vehicles.
• Span Junction Set, for multiple spans, essential for floating bridges
• Modular Pier set providing 4m, 7m or 10m pier.
CONTINUOUS DEVELOPMENT

- LSB
- Compact 200
- Super Compact 200
- Compact 100
- Mabey Universal
- Super Bailey
- Bailey

- Full Scale Bridge Test
- Component testing
- Improved manufacturing
- Galvanising for longer life

- Shear capacity increased to 23 tonnes
- Improved fatigue life
- Steel deck design
  - Two transoms per bay

- Full Prototype Test
  - Revised deck design
  - One transom per bay

- Increased rigidity
  - 450 Mpa steel
- Super Chord Panels
  - Increased Bending Capacity
- Revised Deck Design
- FEA analyses and
- Manual assembly tools

- Steel ramps
  - Grillages and ground beams
- Deeper Panels and
  - High Shear Panels
  - Single Storey 200ft Span
  - Larger Transoms
  - 2 Lane Roadways

- 1940
- 1970
- 1980
- 1990
- 2000
MEETING ESSENTIAL MILITARY REQUIREMENTS

- Heaviest Military Load
- Greenfield Site & Over Bridge
- Rapid build
- Multi-Span Capability
- Easily Dismantled and Rebuilt
- Carried and Delivered on Military Transport
... TO CARRY THE HEAVIEST MILITARY LOADS...
THE CHALLENGE...

Challenger 2 on Oshkosh Heavy Equipment Transporter MLC110W
GROUND BEAMS & GRILLAGES
FULLY ADJUSTABLE RAMP SYSTEM
FIXED PIER SET
TAC-LOADED FLAT RACKS
UNDERSLUNG LOADS
**Example: 13 bay, 39.62m Span**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Extra Wide Bailey</th>
<th>Logistic Support Bridge</th>
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<tbody>
<tr>
<td>Length</td>
<td>39.62m</td>
<td>39.62m</td>
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<tr>
<td>Military Load Class</td>
<td>MLC 80T/70W</td>
<td>MLC 80T/110W</td>
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<td>Number of Panels</td>
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<td>52</td>
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<td>Truss construction</td>
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<tr>
<td>Number of Transoms</td>
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<tr>
<td>Roadway width</td>
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<td>4.2m</td>
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<tr>
<td>Deck</td>
<td>Timber</td>
<td>Steel</td>
</tr>
<tr>
<td>Total Weight</td>
<td>100t</td>
<td>58t</td>
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PANEL COMPARISON
FANTASTIC TEMPORARY BRIDGES

WHERE TO FIND THEM
In the build up to the invasion of Iraq and subsequently throughout the deployment we supplied more than 60 sets of LSB and more than 2000m of floating bridges to the US Marine Corps and the US Army.

In 2009 we sold 4 x 60m training sets to the US Navy Sea Bees.

All of this bridging was supplied by Mabey Inc, based in Baltimore MD.
MABEY BRIDGE LIMITED

- We have readily available stock at our manufacturing facility in UK but also in regional depots in USA, Sri Lanka and the Philippines
- Our Stock in UK can be quickly shipped by truck to anywhere in the European/NATO area
- All of our bridging fits into 40ft ISO containers for shipping worldwide
If demand is still not satisfied, all of these companies have a modular steel panel bridging system developed from the Bailey concept:

- Janson Bridging from the Netherlands
- Waagner Biro from Austria
- Matière from France
- And your very own Acrow Corporation (more later)

You are strongly advised not to use any bridging made in China. It is invariable a poor copy.
SUPPORT TO US FORCES

TEMPORARY BRIDGES ON OPERATIONS
TO CARRY THE HEAVIEST MILITARY LOADS...
... AND ALL TYPES OF CIVILIAN VEHICLES
IN BOTH DIRECTIONS
FLOATING BRIDGES IN IRAQ
MLC 80T/110W
REPLACE DAMAGED BRIDGES

AFGHANISTAN 2009
AND IN 2012
CHARACTERISTICS OF TEMPORARY BRIDGES

• Temporary can easily become permanent!

• Modular steel panel bridges are the cheapest and most readily available options.

• Optimum clear span is 39m (Double Single truss configuration)

• Typically single lane, but 2 lane and 3 lane road widths can be provided.

• Improvised approach ramps need constant maintenance
FUTURE DEVELOPMENTS

• Trend towards wider, heavier vehicles
  • Add-on armour, bar armour
  • Road width easily increased, but trade-offs
  • Modular bridge system – shorter spans are stronger
  • Heavy vehicles are no problem, but trade-offs

• Rapid installation abutments
  • Suitable for Permanent or Temporary Bridges
  • Level approaches possible
  • Environmental ‘no-concrete’ solution
GABION BASKET ABUTMENTS

PAKISTAN 2011
PROTECTED ABUTMENT
RAPID EMPLACEMENT
ABUTMENTS
RAPID ASSEMBLY
STEEL BALLAST WALL
CONCLUSION

• Truly temporary bridges can be built on green-field sites with minimum preparation.

• Modular steel panel bridges, such as Mabey Logistic Support Bridge™, are the cheapest and most readily available solutions.

• Rapid emplacement abutments offer a rapid, semi-permanent solution, providing level approaches.

• Temporary Bridging solutions are readily available in Continental USA and Europe, but also in many regions of the world.

• An essential military capability, temporary bridging has equal utility for civil emergency and disaster relief.
MABEY LOGISTIC SUPPORT BRIDGE™

ADAPTED FOR MILITARY USE;
OPTIMISED FOR MLC80(T) AND 110(W)

www.mabey.com
QUESTIONS?