

Beam

Open Top Through Truss

Closed Top Through Truss

BRIDGES:

OUR QUICK GUIDE TO SUITABLE SPANS AND CONSTRUCTION FEATURES

All design types shown are suitable for multi span bridges to cover larger spans



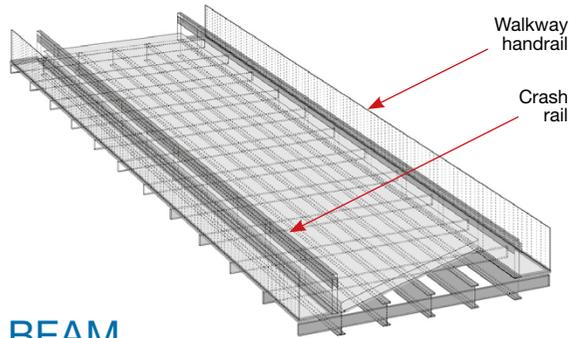
FULLY CE COMPLIANT FOR EXECUTION CLASSES 1 TO 4 • BS EN ISO 9001:2015 • BS EN ISO 14001:2015 • BS EN ISO 45001:2018
JOHN REID & SONS (STRUCSTEEL) LTD trading as REIDsteel, REIDglazing & REIDmarine • Company Registration No: 617773

REIDsteel

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HIGHWAY BRIDGE TYPES

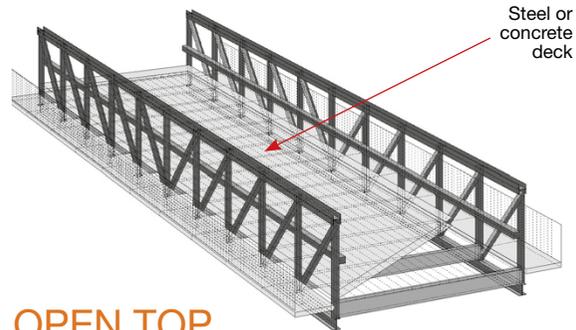
REIDsteel offer three main types of bridge structure. Each type has its own advantages and each is best suited to its own range of spans, but any length of bridge can be achieved by using multi spans with piers. Our bridges can be designed in either single or double lane variants and with or without walkways.



BEAM BRIDGE

Ideal for spans - **10m to 18m**
 maximum economic single span - **24m**
 absolute maximum single span - **35m**

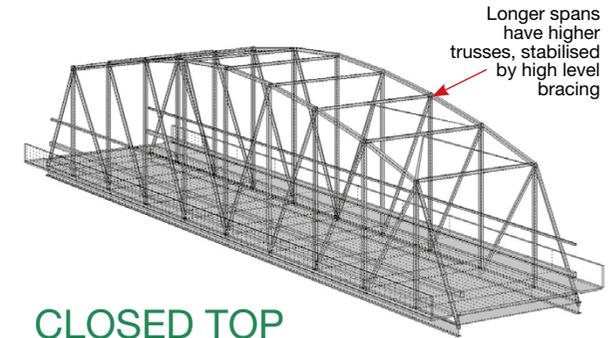
- ✓ Longer bridges are achieved by using multiple spans with piers
- ✓ single or double lane roadway
- ✓ steel or concrete deck
- ✓ with or without walkways



OPEN TOP THROUGH TRUSS BRIDGE

Ideal for spans - **16m to 40m**
 maximum economic single span - **45m**
 absolute maximum single span - **80m**

- ✓ Longer bridges are achieved by using multiple spans with piers
- ✓ single or double lane
- ✓ steel or concrete deck
- ✓ with or without walkways

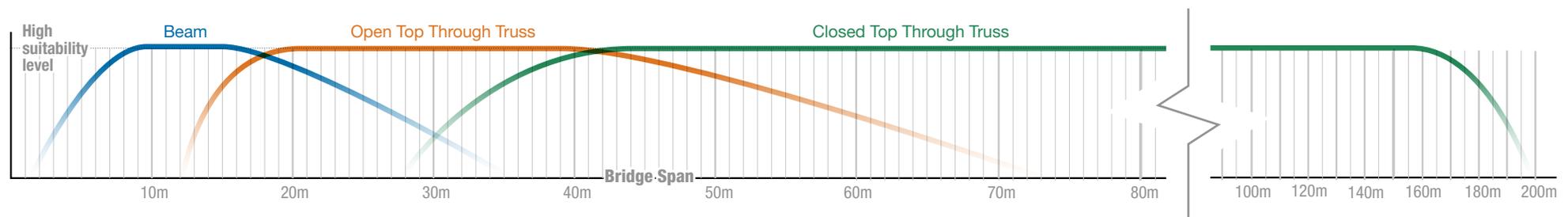


CLOSED TOP THROUGH TRUSS BRIDGE

Ideal for spans - **30m to 100m**
 maximum economic single span - **120m**
 absolute maximum single span - **200m**

- ✓ Longer bridges are achieved by using multiple spans with piers
- ✓ single or double lane roadway
- ✓ steel or concrete deck
- ✓ with or without walkways

TYPICAL BRIDGE TYPE SUITABILITY BY SINGLE SPAN LENGTH



STANDARD REIDSTEEL BRIDGE SPECIFICATION (we can offer other specifications on request)

ROADWAY - Single or double lane	Roadway widths	Single lane: 4.2m clear between crash barriers
		Two lane: 7.2m clear between crash barriers
	Crash rails	0.8m above deck level on ALL bridges. Truss bridges have further crash rails at 2.5m above deck
	Roadway deck	10mm anti-skid galvanised <input type="checkbox"/> or <input type="checkbox"/>
		Client supplied 250 to 280mm reinforced concrete (with up to 50mm tarmac surfacing) on our 'lost formwork' deck
Expansion joints	Sliding steel plate expansion joints at both ends (integral with a span less than 25m)	
WALKWAY (Optional)	Walkway deck	4-8mm anti-skid galvanised <input type="checkbox"/> or <input type="checkbox"/>
		Client supplied 130mm reinforced concrete on our 'lost formwork' deck
	Walkway width	1.3m clear width
	Handrails	1.2m high
BRIDGE STRUCTURE	Bearings	Elastomeric bearings both ends (unless integral)
	Design criteria	BS5400/1978 with HA loads and with 25 units of HB load
	Steel protection	Hot dip galvanised to 85 microns (610gms/m ²)
	Construction	Varies dependent on bridge length and location

Highway bridges can be single or double lane. If single lane, the roadway width is 4.2m between crash rails (marked as 0.6m + 3m traffic lane + 0.6m). If double lane then 7.2m (marked as 0.6m + 2 x 3m traffic lanes + 0.6m).

Our bridges are designed for road decks of either anti-skid galvanised steel placed on closely spaced joists, or with our 'lost formwork' decking on which the client can place a reinforced concrete deck with no propping. Sliding steel plate expansion joints are usually fitted at both ends of the road deck, but bridges of less than 25m may be built to the abutments without these.

Outside the traffic lanes are substantial crash rails designed to contain vehicles on the bridge and protect the bridge structure from collision damage. Truss bridges have additional crash rails at a higher level to protect the bridge from payload impact.

Walkways are optional, but when they are fitted, the crash rails also protect the pedestrians from traffic. Standard Walkways are 1.3m wide outside the crash barriers and have a handrail on the edge and mesh protection at the inner side. Walkways will have similar, but thinner, decks to the roadway.

The main bridge steelwork is all hot dip galvanised to 85 microns (610gms/m²) and is self draining for long, low maintenance life. Normally the bridge sits on elastomeric bearings with steel sliding expansion joints both ends, unless under 25m when it may be integral with your abutments.

Our standard and recommended design is to British Standard BS5400/1978 for HA loads and 25 units of HB load - a specification based on a 100 ton truck with a wheelbase 9.6m in length and consisting of four x 25 ton axles with spacings between the 4 axles of 1.8m, 6m and 1.8m. We can also design for other loads on request. Usually we design for two million fatigue cycles.

Generally, it is assumed that beam style bridges will be built using cranes. Longer span bridges can be built either on temporary causeways during dry seasons; or can be cantilever launched on rollers using a kit with rollers and a lightweight launch nose. Once bridges exceed 60m it is better to cantilever them out from counter weighted gantries on one or both sides.

STANDARD WALKWAYS & DECKS

Walkways

Many of our competitors do not offer walkways as part of their bridge package, or will offer them inside of the crash barriers. REIDsteel always recommend that bridges have pedestrian walkways for the safety of pedestrians.

Our walkways are outside the crash barriers, and on truss bridges outside the main trusses, giving pedestrians physical separation from the roadway. This is vastly safer than having walkways inside of the crash barrier and better than a pronounced kerb.

Concrete versus steel decks

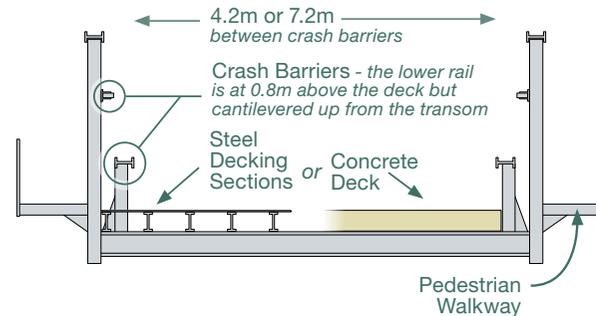
Our bridges can be designed for either steel decks or concrete decks. Deck type should be decided in advance as design calculations are specific to each type.

- **Concrete decks** are hard wearing and result in a stiffer structure. On beam bridges the concrete can also be used for composite action, giving a more efficient design.
- **Steel decks** are quick and easy to install, especially in locations where it may be difficult to pump large quantities of concrete. They are frequently cheaper as you do not have an additional operation on the bridge, and the bridge deck is at full strength from day one.

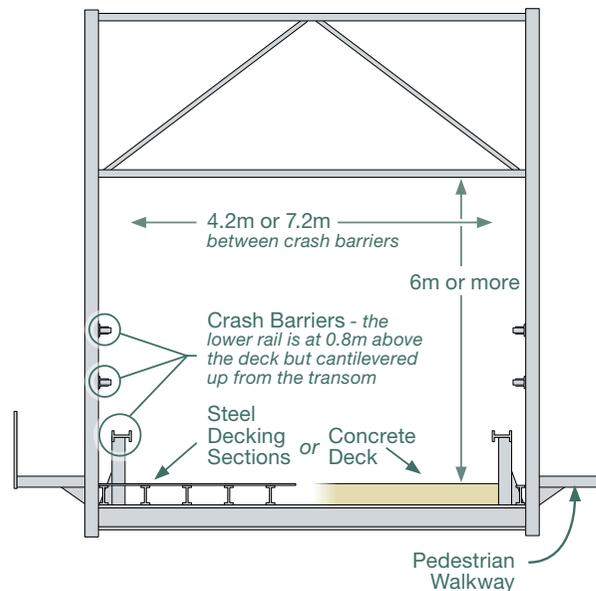
REIDsteel normally recommend concrete decks on main roads with over a hundred large trucks a day, or where concreting proves more economic.

Contact us and we will be happy to help guide you through the process of making a decision.

TYPICAL OPEN TOP THROUGH TRUSS BRIDGE WALKWAYS AND DECKS



TYPICAL CLOSED TOP THROUGH TRUSS BRIDGE WALKWAYS AND DECKS



In addition to our **steel bridges**, we are also experts in the design and construction of the following:

Aircraft hangars & hangar doors

Industrial and warehouse buildings

Commercial and office buildings

Retail superstores

Waste processing and recycling buildings

Car parks

Grandstands & stadia

Reservoir covers

Defensive structures, security gates and security barriers

Commercial glazing and solar shading

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