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Timber is a highly versatile construction material, strong and lightweight, with tremendous ease of handling and workability. It is both attractive in its appearance and in its environmental credentials. Correctly selected it has good durability, particularly in relation to de-icing salts. Bridges made from wood also tend to exhibit a natural empathy with the landscape. For the bridge designer, using timber offers a multitude of possible bridge forms ranging from simple beams to glue laminated arches, trusses and space frames. Timber can also be used in conjunction with other materials such as natural stone, stainless steel and glass.

*Flisa Bridge, Norway. The world's largest timber highway bridge at 182 m overall length (Photo courtesy of TRADA)*



Worldwide, timber is experiencing a major revival for constructing vehicular and pedestrian bridges. Recently there have been major programmes of timber bridge building in north America and northern Europe. In the US there are 41,700 road bridges of over 6 m span that are made of timber; while in Finland about 700 timber bridges are owned by the Finnish Road Administration. Bridge clients and designers are beginning to become aware once more that bridges using this traditional material can be designed, fabricated and constructed in interesting new ways, as well as being created in forms sensitive to past traditions. Developments such as new, efficient connection techniques, modern wood based composites and stress laminated decks are further encouraging the use of timber for bridge building.

### History and modern examples

Timber is a traditional bridge building material, with examples dating in authenticated records to as long ago as 600 BC. The Romans built large timber structures crossing both the Rhine and the Thames. One of the largest and best documented of the Roman timber bridges was built over the Danube in 104 AD. Known as Trajan's Bridge, it consisted of 20 piers up to 45 m high, each joined by a semi-circular timber arch of about 52 m span. At Putney, a timber bridge consisting of 26 arches once crossed the Thames. This bridge lasted, albeit with periodic repairs, from 1726 until 1870. In the 13th century the Normans built a timber bridge across the River Wye at Chepstow. The oldest timber bridges that still exist in Europe date from the late mediaeval period. Many of these are covered bridges, owing their longevity to this simple structural protective device. Several examples of these ancient bridges are in Lucerne (eg the Kapell and the Spreuer Bridges). During the 18th century, very long timber bridge spans