The FlexiArch is a patented arch bridge system based on modern precast concrete methods whilst performing like a masonry arch bridge. The system is the result of years of research in the School of Civil Engineering at Queen’s University Belfast, and three years of intense development with Macrete, who have provided the commercial, manufacturing and installation expertise.

- **Approval:** AIP from DRD Road Service N. Ireland
- **Material:** Standard mix precast concrete
- **Reinforcement:** Polymeric reinforcement for lifting
- **Spans:** Available up to 10m span
- **Rise:** Available up to 4m rise
- **Widths:** Available in 1m wide arch rings
- **Loading:** As per Highway Agency BD 37 / 01 or as required by Client
- **Future Developments:** Long span bridges up to 15m and skew span up to 30 degrees

FlexiArch can be ordered from:

Macrete Ireland Limited
50 Creagh Road, Toomebridge
Co. Antrim, N. Ireland BT41 3SE
Tel: +44 (0)28 796 504 71
Fax: +44 (0)28 796 500 84
Email: info@macrete.com
Web: www.macrete.co.uk

FlexiArch specialist contact: Abhey Gupta

For further FlexiArch information, including photographic examples of installations, please visit our website.
What is FlexiArch?
FlexiArch is a modular, precast, concrete arch bridge system. It was invented by Professor Adrian Long, President of the ICE 2002/3, and developed with his department at Queen’s University Belfast. The commercial development partner and manufacturer for the system is precast concrete specialist Macrete.

How does it work?
The FlexiArch system is based on the same principles as traditional stone masonry built arch bridges dating from Roman times – but without the stone mason. Individual concrete voussoirs (tapered blocks) – precast with the correct taper for a given span and rise – have been connected by a polymeric flexible membrane, which allows the arch to fall into its perfect shape as it is craned into position.

Where can I use it?
FlexiArch can be used for any kind of new crossing or Highway bridge replacement for up to 10m span. (A 15m span bridge is in development.)

How wide is it?
FlexiArch flexible arch rings are made in 1m widths, therefore a FlexiArch bridge can be installed using any number of 1m wide units.

How does it arrive on site?
A FlexiArch bridge will arrive on site completely flat – on a number of flatbed transporters. The components will include the correct number of flexible arch rings for the width of the crossing, together with precast spandrels which can be supplied with a decorative finish. These spandrels form the outside finish to the bridge. They do not carry any traffic loads however they act as permanent shuttering for the poured concrete infill which takes the arch from the foundations to roadway level.

What is the construction process?
Footings will have been prepared on each side of the crossing. The attendant crane will lift each flexible arch ring and lower it into position on the footings. When all the arch rings for the required bridge width are in place, the spandrels will be craned into position and secured with tie bars. The time for this installation will take between 4 and 8 hours. The bridge is then ready for concrete infill, roadway finish and levelling, and any railing protection that may be necessary.

You say it is “sustainable”. What do you mean by that?
FlexiArch requires no internal steel reinforcement. As a compression structure, it is self-supporting by virtue of its own weight without the aid of mortar. Without a steel rebar content, the possibilities for internal corrosion, rebar expansion, and resultant concrete cracking or spalling are eliminated.