Case study

POUNDFIELD PRECAST
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'INNOVATION in CONCRETE'

Box culverts for Eastern Green, Coventry

New junctions for the A45 at Eastern Green in Coventry, along with a flyover, are part of wider plans for up to 2,400 new homes to be built. The infrastructure project includes a new bridge with a span of 40 metres, 200,000m^3 of earthworks, three culverted watercourses along with 2kms of new carriageways and three new roundabouts.

Background

The site is in an area west of the city of Coventry and covers approximately 142 hectares and will eventually be a mixture of residential, commercial and open space. The site contains existing watercourses – Pickford Brook and Slipperside Brook and associated tributaries – which provide habitat and amenity interest.

Main Contractor

BREHENY CIVIL ENGINEERING

The Grove | Creeting St Peter | Ipswich | Suffolk | IP6 8QG
01449 723150 | enquiries@poundfield.com | **www.poundfield.com**

Solution

Precast concrete box culverts are ideal for civils projects where a water course needs to be maintained or diverted underneath highways and where a long service life is required. They provide many years of service and require the minimum of maintenance.

Three bespoke precast culverts were designed to protect the flow of water of the existing waterways and to have no impact on the watercourse. This allowed for the construction of highways above the streams, which at the greatest point the new road level was 7.6 metres above the top of one of the culverts.

How we helped

We supplied 131 precast culverts units along with 96 wingwalls/headwalls. The culvert units weighed, on average, 10 tonnes and were manufactured under factory-controlled conditions using steel moulds. These were used to create three lengths of culverts in separate areas of the development, in total covering a length of 165 metres.

In preparation for the laying of the culverts any low strength existing ground was removed to a competent formation, before backfilling with varying depths of engineered 6b and 6n aggregates. The culverts were laid on 100mm of blinding concrete and a 20mm sand bed.

Once in position a cast insitu low flow channel and walkway was then created.

Photo courtesy of Damian Ellis

The individual box culvert sections had a compressible sealant strip and polyurethane joint sealant applied between each unit to provide a watertight seal. Externally, a butyl rubber membrane was used prior to a waterproofing being sprayed to the top of the units.

Mammal ledges were added to encourage safe passage for wildlife to navigate the culvert in the event of high water levels.

The headwalls and wingwalls provided protection to the area surrounding the culvert from erosion whilst retaining the embankment. They are designed to increase the effectiveness and longevity of the culvert.

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