Cambridgeshire Guided Busway
Gantry Crane

The aim of the Cambridgeshire Guided Busway is to provide high quality, reliable and frequent local public transport along the A14 corridor. Buses will travel on a guideway along the disused railway line from St Ives to Cambridge. They will continue through Cambridge on normal roads and then be able to rejoin the guideway for the return journey.

The guideway is constructed from pre-cast concrete sections that are built up to form a section of guideway 15m long and 2.6m wide. Each assembled section weighs approximately 32 tonnes. Bennett Associates were contracted by Edmund Nuttall Limited for Cambridgeshire County Council to design a bespoke crane to lay the assembled guideway sections along the track. The crane needed to be able to drive along the section of track it had just laid, as well as being able to fit under a number of existing bridge structures.

- Gravity foundation Initial concept design and development of the crane.
- Production of a fully detailed design for the crane, including specifications for the operation, hydraulics and electrics.
- Assisted in the procurement of the final design as well as the coordination and integration of the hydraulic and electrical systems.
- On site support during the commissioning phase, including commissioning of the electrical drives and steering system.

The gantry crane is a bespoke mobile crane weighing approximately 70 tonnes. It has its own electrical and hydraulic supplies, as well as providing welfare facilities for the people operating it.

The design of the crane started in September 2006. It needed to be able to move itself along the guideway route, laying the sections in front of it and then moving on to lay the next section. As the route follows a disused railway line, there are a number of existing bridges that pass over it, and therefore the crane needed to be able to fit underneath these while still laying concrete sections. The headroom available was not much larger than that of a single decker bus and the space at each side was approximately 1.5m wider than the guideway sections. Within this space we needed to design a crane capable of lifting a 32 tonne piece of concrete 15m long and 2.6m wide.

The crane consists of a main structure with hydraulically operated legs that are placed on the ground to support it whilst lifting the guideway sections. A hoist unit then runs along this structure, picking sections up off the back of a trailer and moving them to the front of the crane where they are then placed in position. The guideway is typically 2 lanes and it is possible for the sections to be delivered to either side of the crane. The entire structure is then mounted on two electrically driven drive bogies, each with 8 wheels. These are used to drive the crane along the section of guideway it had just laid and prepare to lay the next section.

Manufacture of the crane started in May 2007 and it is due to be commissioned on site in September 2007.

Further information on the Cambridgeshire Guided Busway can be found at Cambridgeshire County Council's website for the project.

Bennett Associates (originally founded in 1984) was acquired in 2008 by Atkins; bringing their proven technical expertise to the UK's leading engineering consultancy.

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