BRIEFING

Bridge engineering specialist Buckland & Taylor has hired Steven G Hunt as the company's new president and CEO. "Hunt's high standards, international experience and proven leadership make him an ideal fit for Buckland & Taylor," said Peter Taylor, Buckland & Taylor's co-founder who remains an active engineer on projects. Hunt has 26 years' experience on major infrastructure projects in America. Previously he was with Amec in Phoenix, Arizona, leading the company's infrastructure division. "Buckland & Taylor delivers top level engineering on complex, landmark bridge projects," said Hunt. "This company is comprised of the industry's most impressive talent." Some of Hunt's international projects include the planning of a new railway, the construction of a port in Chile, and the planning of the most northerly port in the USA, the DeLong Mountain Terminal. Originally from Victoria, BC, Hunt earned his engineering degree at the University of British Columbia and has a master's degree in project management.

Multi-disciplinary engineering consultancy Faber Maunsell has changed its name to Aecom, completing its integration into the global Aecom group. Faber Maunsell was taken over by Aecom in 2002 becoming part of a network of some 43,000 staff in more than 100 countries around the world. Ken Dalton will remain in his position under the new title of chief executive for Aecom Europe. Faber Maunsell is associated with numerous bridge projects worldwide, some of the most recent being the erection engineering of Stonecutters Bridge in Hong Kong and Sutong Bridge in China; the design of the Indian River Inlet Bridge in Delaware, USA and the design of the Padma Bridge in Bangladesh.

A new suspension bridge has been inaugurated in Nepal to link Hetauda Municipality and Basamadi VDC. The Basamadi Suspension Bridge is 337m long and 4m wide and cost US$190,000 to build. It will make it quicker and cheaper for Basamadi villagers to visit the town.

New footbridge completes greening of Spanish ravine

The footbridge crosses a former ravine in Guadalajara *(Paco Gómez)*

A footbridge which has just opened in Guadalajara in Spain offers a route for pedestrians over a former ravine. The Alamin Footbridge has been built over what used to be a disused ravine with an underground sewer into a public park. The project called for a 70m-long connection to enable residents in a new housing development to walk to the town centre.

The first sketch by architect Javier Delgado envisaged an observation platform supported on stick-like columns at a short distance from each abutment. A shallow arch rose from these platforms to span the 50m between the columns.

But the need to integrate the footbridge into the landscape demanded longer approach spans to give a more balanced ratio between the main spans and the approach spans. The approaches are also designed as shallow arches, supported by the abutment and columns, cantilevering out from the columns to form observation platforms.

In plan view the bridge is a polygon angling out from the cross-sections of the intermediate columns. A continuous three-span system was devised for the bridge deck. Retaining the original concept, the deck consists of three shallow arches, the two outer ones spanning respectively 18m and 13m and the central span of 36m. In plan view, the access from each abutment to the respective observation platfrom is eccentric to the arch of the outer span and shaped by a horizontal beam that rests on the abutment and the intermediate column. Arch and beam are connected at both ends, by the support diaphragm at the abutment, and in the platform area, by the stairway leading from the observation platform to the bridge deck. This solution means that the beam that forms the access to the platform is also a tension member that resists the horizontal thrust of the outer arch.

Each column has four slanted shafts of circular hollow section steel profiles with a diameter of 273mm, giving slenderness ratios of up to 35. The cantilevered observation platform and the bridge deck are supported by two shafts each and one of the four stretches above the deck as a lighting column.

Both the 3m-wide bridge deck and the platform are composite members, consisting of an open trapezoidal steel box and a 110mm-deep composite slab. While the standard section height is 500mm, on the arches around the internal supports it increases to 1m, hence the main span behaves more like a beam than an arch. Given the absence of ties in the central span, this is the preferred resistance mechanism to prevent the transmission of horizontal thrust to the adjacent spans and abutments. In the area around the internal supports of the composite beam, the bottom flange of the box girder is also composite for greater hogging bending strength and system ductility.

The main difficulty posed by the Alamin footbridge was to find an appropriate mechanism to transfer the load from the bridge deck to the columns, because the access box girders and the main spans are continuous and their axes form angles, both vertically and horizontally. Furthermore, the four slanted pier shafts are connected at different angles to the box girders they are supporting.

Loads are transferred from the webs of the box girders to a twin diaphragm comprising two steel plates spaced at 690mm and set parallel to the intersection between the steel boxes forming the accesses and main spans. Loads are transferred from these transverse plates in turn, to two longitudinal steel plates, each of which runs along the axis of one of the pier shafts that extend into the box girder and to which they are welded. The shafts transfer the loads to the foundations.

The structural engineering was carried out by Cesma Ingenieros, the main contractor was Acciona and the steel subcontractor was Incometal. The cost of the bridge was US$332,000.

Peter Tanner
Cesma Ingenieros