A repair project with **nostalgic memories**

Even the most durable concrete built to the highest standards needs repair and protection to help extend its design life. This is clearly demonstrated by a concrete repair and coating project recently carried out at Teikyo School, an independent boarding school for Japanese students in Wexham, Buckinghamshire. ***Chris Lloyd*** *of* ***Flexcrete Technologies*** *reports.*

Set in 20 acres of rural grounds, the Buckinghamshire site will be familiar with many of those with a long history in the concrete industry, as it was formerly the primary training centre for the Cement and Concrete Association (C&CA)[1]. Known as the Fulmer Grange Conference and Training Centre, and remembered by many with nostalgia for the food and camaraderie, this residential facility was constructed in 1967 and had 160 single bedrooms across two blocks, lecture and seminar rooms, plus a suite of laboratories for demonstrations and hands-on experience. At the time, the C&CA offered a total of 100 courses ranging from one to five days duration and by 1968 the six-week Advanced Concrete Technology course had been launched.

When the Fulmer Grange Conference and Training Centre was originally constructed, it represented the peak of excellence in concrete. Comprising two identical four-storey residential blocks, the concrete was made in white cement and was largely board-marked, except for the use of exposed concrete blockwork, the grey blocks contrasting with white concrete.

The effect throughout was somewhat Scandinavian and due to the repetition involved in the construction of the two blocks, an industrialised method of construction was used – an adapted form of the Bison wall frame system. Each block was constructed on a 10ft (3m) module, with precast concrete load-bearing crosswalls supporting precast slabs. The architect was Alex Gordon and Partners; Veryard and Partners was the structural engineer and Howard Farrow Construction the main contractor.

Although 100,000 people had attended C&CA courses at Fulmer Grange by 1985, the demand for residential courses declined and the training centre was sadly closed in 1987. The Teikyo University Group purchased the premises and Teikyo School was founded in 1989 after being accredited

Above: Teikyo School shares its site with the International School of Creative Arts.

Top of page: The Fulmer Grange Conference and Training Centre; and Teikyo School in Wexham, Buckinghamshire. This Jacobean mansion provides a strong contrast to the accommodation blocks.

Above: East residential block at the former training centre, with the dining room on the left.

Top left: The accommodation blocks following the coating works.

by the Ministry of Education in Japan. It is now a boarding school for male and female students aged between 15 and 18 years, and all students originate from Japan. The site is shared with the International School of Creative Arts.

C&CA Training Centre

Although the former C&CA Training Centre was built to the highest standards of concrete durability and it was originally perceived that no coating works would be required, significant remedial work was needed in 2015. As a result of spalling on precast panels on the two blocks due to the harmful effects of carbonation over the years, extensive concrete repairs were required, as well as coating of the external walls for decorative and anti-carbonation protection.

As repairs needed to be carried out vertically as well as horizontally, a lightweight repair material was required. Monolite, an ultra-high build, low-density, cementitious mortar, was specified. Able to be applied by trowel up to 100mm in a single application, it is ideal for the cosmetic repair, rendering and profiling of concrete and is suitable for overhead, vertical and horizontal applications. With excellent low sag properties, Monolite is supplied as a single-pack product and only requires the addition of clean water on-site. As it has a water-based formulation, it is safe to use, non-hazardous and virtually odourless. With ultra-low volatile organic compound (VOC) levels, it can be safely applied in sensitive or confined areas, so there was no disruption to Teikyo School students during the refurbishment work.

Following the concrete repairs, a protective, decorative coating was required for application to the complete external façade to enhance the appearance of the two blocks, while providing anti-carbonation protection. Monodex Smooth, an advanced, waterborne, elastomeric coating, was specified. With high diffusion resistance to carbon dioxide, it provides excellent protection from the effects of carbonation, chloride penetration and water ingress, yet allows damp substrates to breathe. It also provides high weatherproof protection and incorporates an active biocide, which prevents the growth of mould and fungi on its surface. Due to its elastomeric properties, it is able to withstand thermal and structural movement without cracking or flaking and maintains an attractive appearance throughout its long lifespan. It is CE marked in accordance with the demands of BS EN 1504[(2)].

The main contractor for the renovation project was Takenaka Construction and product application was carried out by TC&D Construction.

Fond memories

The author went on several residential courses at the Fulmer Grange Conference and Training Centre, including his Advanced Concrete Technology Course in 1984 and this project has certainly brought back many fond memories. Perhaps most memorable were the desserts, which usually came with lashings of custard. There were also the long summer evenings playing croquet on the manicured lawns and the rude awakening every morning when a member of staff would knock on each individual door to make sure everyone was awake – mobile phones had not been invented by then.

The concrete repair and coating work has transformed the external appearance of the accommodation blocks and will provide Teikyo School with excellent waterproof and anti-carbonation protection for many years before any maintenance is required. This nostalgic project demonstrates that even the most well-designed concrete buildings and infrastructure need some form of repair and protection in order to protect them from the elements and extend their design life. ■

The concrete cut back to the steel reinforcement.

References:

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2. BRITISH STANDARDS INSTITUTION, BS EN 1504. *Products and systems for the protection and repair of concrete structures. Definitions, requirements, quality control and evaluation of conformity. Part 1 – Definitions*. BSI, London, 2005.