



Lime matches traditional plaster specification at landmark restoration project

A British Lime Association member has been called in to one of the country's leading restoration projects.

The project concerned is the £13 million makeover of the former Devonshire Royal Hospital, one of the most distinctive buildings in Buxton, Derbyshire. The Grade II* - listed building is being converted by GF Tomlinson Building Ltd into a campus for about 1,000 new students for the University of Derby.

The sensitive renovation is being supervised by English Heritage and its brief calls for traditional materials and methods in sympathy with the original building. This includes matching the Victorian plaster mix and this traditional specification is being met by lime products.

"This really is a special project for us," says BLI Managing Director Clive James. "The building has been a prominent feature of Buxton's skyline for years and we're very proud to be playing a part in bringing it back to life."

The site was built as a giant stables for the 5th Duke of Devonshire in the 1780s and was converted to a charity hospital to the designs of Victorian architect Robert Rippon Duke. The spectacular dome was built in 1880. It is still one of the largest unsupported structures in the world, bigger than St Paul's in London and St Peter's in Rome.

The project is a huge undertaking. The work includes conserving the dome's massive lead roof, the stonework and timber. Plasterwork beneath the dome and on various ceilings and walls is also being renovated – including reinstating original laths.

The company has helped re-create a Victorian recipe for traditional lime plasters used in this three coat work. The lime putty used in the plasters was made from the finest quicklime which was slaked to produce a high calcium quality lime putty, then matured over several months.

For the two base coats of plaster, the matured lime putty was mixed with selected coarse sands and Chinese goat hair and this plaster was matured for some weeks before use. The goat hair was anthrax tested. The fine finishing lime plaster used for the top coat was a 1:1 mix of the mature lime putty and a super-fine sand.

“It’s a brilliant product from Victorian times and I don’t know why we ever got rid of it,” says master plasterer Paul Hindley of specialist firm Steeltech Coating. “It’s far better than using plasterboard with a gypsum plaster skim.”

Traditional buildings usually have no damp proof course, which means they need to ‘breathe’ to let moisture evaporate. Lime plasters and mortars have various advantages over other materials for this type of conservation work:

- greater porosity allows the structure to breathe
- greater flexibility accommodates general movement
- greater bond strength
- greater water-tightness
- autogenous healing – when water penetrates, it migrates to any cracks, dissolving lime in the process. The lime is deposited as the water evaporates. Carbon dioxide in the atmosphere then converts this deposited lime into calcium carbonate, so sealing the crack.

“If any one of the thousands of slates on the dome ever leak, the simple fact is this plaster can hold twice its weight in water,” Steeltech’s Hindley says. “It dries out without losing its integrity, unlike gypsum plaster which would perish. It’s also much more flexible and easy to work – you can go in really deep or just put on a thin coat. For example, we’re going to 125-200mm thicknesses at window reveals and 35-40mm thickness on the walls. ”

Professor Roger Waterhouse, Vice-Chancellor of the University of Derby, said: “Capturing the original character of the historic Devonshire Royal Hospital in Buxton is a crucial aspect of the University’s refurbishment programme for the site.

“Attention to detail and recreating primary features, often using traditional crafts methods, will ensure the University’s new Buxton campus becomes a national landmark to be proud of.”

The Devonshire Royal Campus for the University of Derby is not just about breathing new life into a landmark building. It is also expected to revive the local economy. Some estimates suggest the new campus could eventually pull up to £25 million a year in new investment into the town.

Devonshire Royal Hospital, Buxton



The Devonshire Royal Campus was designed by Derby architects Hall Grey. The conservation consultant appointed by English Heritage is Donald Insall Associates and the main contractor is GF Tomlinson Building Ltd of Derby.