



Geosynthetic

No-dig pathway solution protects mature trees in educational environment

Barnfield College: Tree Root Protection



Contractor: J D Excavations



Barnfield College, Luton, LU2 7BF



Sector: Education

Project Overview

At Barnfield College in Luton, part of the Bedfordshire-based active learning trust, an ambitious £38 million Construction and Engineering Centre project presented a unique challenge.

As a key provider of vocational and technical education recognising the growing demand for skilled workers in construction and engineering sectors, the college needed to create accessible pathways whilst protecting valuable mature trees within designated Root Protection Areas.

The Challenge

Tree preservation requirements: Planning conditions and best practice standards (including BS 5837:2012) required that no excavation, soil compaction, or heavy machinery operation take place within the Tree Root Protection Area (RPA). This created the need for a genuine no-dig solution that would prevent any damage to root systems whilst still supporting pedestrian access.

Ground stability issues: The site featured loose, uneven ground with a mixture of soft soil and organic material, increasing the risk of pathway deformation over time. Any installed surface needed to offer ground stabilisation whilst working with existing topography.

Environmental constraints: Maintaining the health of existing mature trees was a key priority, given their environmental, aesthetic, and educational value. Traditional paving or impermeable surfaces would have restricted water and air flow to the roots, potentially leading to long-term tree stress or decline.

High-traffic durability: The pathways were intended for regular pedestrian use by students, staff, and visitors in this educational environment. The surface needed to be stable, slip-resistant, and visually appropriate for the landscaped surroundings whilst meeting accessibility requirements.

Innovative Solutions:

To address the college's environmental constraints whilst meeting accessibility needs, we delivered an innovative no-dig pathway solution combining two complementary systems.

◆ Cellweb® Tree Root Protection System:

We specified and installed the Cellweb® TRP system, a geocellular confinement system designed to distribute surface loads, preventing soil compaction over sensitive root zones. This three-dimensional cellular system allows air and water permeability to maintain root health whilst eliminating the need for excavation. Installed over a non-woven geotextile membrane and filled with angular stone, this created a strong, free-draining sub-base compliant with arboricultural best practices (BS 5837:2012).

- ◆ **Golpla™ Gravel Retention Panels:** For the pathway surface, we selected Golpla™ panels offering excellent gravel containment whilst minimising displacement and surface rutting. The fully permeable design supports natural water infiltration with high load-bearing capacity suitable for frequent foot traffic. This creates a smooth, stable finish suitable for wheelchair users and accessible mobility aids whilst maintaining a natural, visually appealing appearance.



Key Benefits Delivered:

1

True no-dig compliance: Our Cellweb® TRP System provided a genuine no-dig solution, eliminating excavation within the RPA and ensuring full compliance with BS 5837:2012 – a key planning requirement for the project.

2

Enhanced accessibility: The use of Golpla™ gravel retention panels ensured a firm, stable surface suitable for wheelchair users, mobility aids, and high pedestrian footfall, helping the college meet inclusivity goals and DDA (Disability Discrimination Act) compliance.

3

Sustainable drainage benefits: Both systems are fully permeable, allowing water to pass through freely. This reduces surface runoff, improves natural drainage, and supports Sustainable Urban Drainage Systems (SuDS) principles.

4

Efficient installation: Our modular systems allowed for quick, clean installation with minimal machinery or disruption to the live site. This was essential for maintaining construction timelines and reducing impact on surrounding works.

Measurable Impact

Key project metrics:

- **Zero excavation** – complete root protection compliance
- **20 tonnes** – aggregate utilisation optimisation
- **Same volume** – efficient material usage

By enabling pathway construction without compromising mature trees, this project demonstrates how innovative geosynthetic solutions support educational facility development whilst preserving environmental assets that enhance learning experiences.

