Queensbridge – Access Road Construction (Cellweb System)

Site-Specific Design & Arboricultural Method Statement

1. Introduction

This document sets out the proposed construction methodology and design approach for the formation and improvement of the access road at Queensbridge.

The design has been developed to:

- Respond sensitively to the existing ground conditions and rural character
- Minimise excavation and disturbance within the root protection areas (RPAs) of adjacent trees
- Provide a robust, low-impact access solution suitable for occasional construction and operational traffic
- Integrate drainage and long-term durability considerations

The approach follows a no-dig / reduced-dig philosophy, consistent with arboricultural best practice and guidance within:

- BS5837:2012 – Trees in Relation to Design, Demolition and Construction
- DMRB CD255 (Pavement Foundations)
- MCHW Specification for Highway Works

2. Existing Site Conditions

- Ground conditions assumed to be cohesive soil with low bearing capacity (CBR ≈ 1.0%)
- Existing access comprises informal track with variable surface condition
- Sections of the route pass within influencing distance of existing tree root systems
- Localised soft ground and potential for seasonal saturation

The design therefore prioritises:

- Load distribution rather than excavation
- Separation of structural layers from subgrade
- Protection of soil structure and tree roots

3. Design Parameters

The proposed design has been developed based on the following realistic usage assumptions:

- Maximum vehicle weight: ≤ 30 tonnes (construction traffic)
- Maximum axle load: ≤ 100 kN/axle
- Maximum wheel load: ≤ 50 kN/wheel

These parameters reflect:

- Temporary construction use
- Occasional service and maintenance access
- Long-term light vehicular use

4. Proposed Construction Build-Up

The proposed access road build-up (as illustrated in the cross-section drawing) comprises:

Surface Layer

- Porous/Permeable Asphalt wearing course (final specification and thickness to be confirmed)
- Alternative: bound gravel or reinforced gravel finish if required for visual sensitivity

Upper Structural Layer

- 25mm overfill: clean angular stone (4/20mm)
- Geotextile (Treetex) for separation

Primary Load Distribution Layer

- Cellweb TRP system (200mm depth) filled with clean angular stone (4/20mm)
- Additional layers used locally where required to achieve finished levels

Lower Structural Layer

- 70mm sub-base (clean angular stone 4/20mm)
    - Note: may be reduced where surface thickness exceeds 70mm

Formation Interface

- Geotextile (Treetex) separating sub-base from subgrade

Subgrade

- Existing ground retained in situ (CBR ~1.0%)

This build-up is confirmed within the supplied cross-section drawing .

5. Arboricultural Considerations

The design has been specifically developed to ensure compliance with tree protection principles:

5.1 Minimal Excavation

- Construction follows a reduced-dig approach, with only minor surface preparation
- No significant excavation within RPAs

- Existing soil profiles retained to preserve root function

5.2 Load Distribution

- The Cellweb system distributes loads laterally, reducing:
    - Soil compaction
    - Root damage risk
    - Long-term degradation of rooting environment

5.3 Soil Protection

- Geotextile layers prevent:
    - Contamination of subgrade
    - Migration of fines
    - Loss of structural integrity

5.4 Construction Controls

- Hand excavation used where required near sensitive areas
- No storage of materials within RPAs
- No tracking of heavy machinery directly on exposed ground

5.5 Supervision

We would welcome a planning condition requiring an Arboricultural Clerk of Works (ACoW) to:

- Monitor installation
- Ensure compliance with approved methodology
- Provide reassurance to the Local Planning Authority

6. Drainage Strategy

The proposed construction inherently supports drainage through:

- Free-draining granular materials (4/20mm stone)
- Permeable structural layers
- Optional integration of a drainage pipe beneath the formation (as indicated in the cross-section)

In line with the wider site strategy:

- Surface water will be directed toward the existing ditch network
- A defined outfall (e.g. 225–300mm pipe to manhole and ditch) will provide a clean, controlled discharge point
- This represents a significant improvement over current unmanaged runoff

7. Construction Methodology

1. Site Preparation
    - Light vegetation clearance only where required
    - No stripping of topsoil within RPAs unless agreed
2. Geotextile Installation
    - Treetex layer laid directly onto existing ground
3. Sub-base Placement
    - Clean angular stone placed and levelled
4. Cellweb Installation
    - Panels expanded and fixed in position
    - Filled with clean angular stone
5. Surface Formation
    - Overfill placed and compacted
    - Final wearing course installed
6. Drainage Installation (if required)
    - Pipe installed within formation zone
    - Connected to outfall system

8. Maintenance and Longevity

- The system is designed for long-term structural stability
- Compared to loose gravel:
    - Reduced rutting
    - Reduced displacement
    - Lower maintenance requirements

Where a gravel finish is used:

- Periodic top-up and regrading will be undertaken as part of site management

9. Verification and Site-Specific Adaptation

This design is based on initial assumptions. In line with best practice:

- Ground conditions will be verified on site prior to installation
- Any significant variation will be:

- Reviewed
- Adjusted in consultation with engineers and arboricultural advisors

10. Conclusion

The proposed access road design represents a **balanced, site-responsive solution** that:

- Minimises impact on existing trees and root systems
- Avoids unnecessary excavation
- Provides a structurally sound access for intended use
- Improves drainage and long-term resilience of the lane
- Aligns with both highways and arboricultural best practice

Overall, the scheme demonstrates a **holistic design approach**, integrating:

- Engineering requirements
- Arboricultural protection
- Landscape sensitivity

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