

SES Guidance Note:

Geotechnical Certification Process for Third Party Trenchless Installations Under National Highways' Strategic Road Network

1. Introduction

All third party promoters and their sub-contractors who intend to work under National Highways' operational Strategic Road Network (SRN) and assets (e.g. depots, compounds, service areas, etc.) are required to consult and seek technical approval from National Highways prior to commencement of the site work. This guidance note provides a summary of National Highways' geotechnical certification process for third parties who are planning to undertake new service installation under the motorways, trunk roads or other National Highways' assets.

2. Geotechnical Certification Process

The Design Manual for Roads and Bridges (DMRB) standard which sets out the geotechnical certification procedure is CD 622, Managing Geotechnical Risk¹. The key objective of CD 622 is to identify the geotechnical risks and manage those risks correctly. The following roles play a key part in the CD 622 process;

- Overseeing Organisation Geotechnical Advisor ie. National Highways Geotechnical Advisor (NHGA)
- Designer's Geotechnical Advisor (DGA)

The geotechnical certification process may take several weeks and therefore it is prudent that the third party scheme Project Manager allows sufficient time and cost as part of their planning process. It should be noted that the legal consent process is a separate process to the geotechnical certification process and that both processes need to be addressed by the scheme promoter.

3. CD 622 Geotechnical Reporting

At the inception of the CD 622 process, the third party promoter is required to identify and nominate a suitably qualified and experienced geotechnical engineer for acceptance by the NHGA to fulfil the DGA role. The criteria for the DGA role are detailed in CD 622 and the candidate is expected to be familiar with the design and construction of roads and with various trenchless crossing techniques. Once appointed, the DGA must actively engage with the NHGA throughout the planning, interpretation and implementation of the geotechnical aspects of the proposed work including CD 622 reporting. There are six key geotechnical documents required to be produced under CD 622 comprising (in sequential order);

- i. Statement of Intent (Sol)
- ii. Preliminary Sources Study report (PSSR)
- iii. Ground investigation Scope Report (GISR)
- iv. Ground Investigation Report (GIR)
- v. Geotechnical Design Report (GDR)
- vi. Geotechnical Feedback Report (GFR)

¹ <https://www.standardsforhighways.co.uk/dmrb/search/ff5ed991-71ed-4ff2-9800-094e18cd1c4c>

It should be noted that CD 622 is a risk-based stepped approval process which means a geotechnical report submission must be certified before moving to the next. For straightforward schemes where the geotechnical risks are demonstrated in the Sol to be low, some submissions (with the exception of GFR) may be combined upon advance agreement with the NHGA. If following the desk study exercise (ie PSSR) a detailed ground investigation, survey, factual data and/or specialist geotechnical interpretation are required, it is anticipated this will incur additional time to the overall CD 622 certification process. It is the responsibility of the third party promoter and their Designer and Contractor to plan and procure these surveys as well as validating any asset data and to assess and manage the risks associated with the works in a timely manner. The DGA role shall be maintained throughout the life cycle of the project and CD622 ie. from planning to design, construction and project closure.

4. Geotechnical Considerations

All geotechnical risks associated with the proposed service installation works that can affect stability of the earthworks and interacting with any other National Highways assets (e.g. bridges, pavement, drainage, lightings, signals, barriers and soft estates) are expected to be correctly managed via the CD 622 process. For trenchless installation beneath the carriageway, it is important that any drilling and duct installation method does not result in significant deformation of the pavement² or adversely impact on the adjacent assets such as drainage and nearby verges. The relevant geotechnical reporting stages will need to demonstrate as a minimum (although not limited to):

- a) An understanding of the attendant geotechnical risks to the road infrastructure with respect to the selection of appropriate method(s) of installation (e.g. consideration of cover: diameter ratio, existing underground service utilities and structures, impact of works, etc). The geotechnical risks are to be captured in a risk register in tabulated format, with a demonstration of how each of the risks are being eliminated or mitigated.
- b) An understanding of the ground conditions, with a realistic ground model presented. Provide drawings showing the details of the design alignments (vertical and horizontal) of the proposed service route, the affected National Highways assets and the interpreted geological boundaries.
- c) An assessment of the likely magnitude of settlement (including differential settlement) or heave and its implication on the affected asset.
- d) An assessment of the stability of launch / reception pits and stability of the bore itself - inasmuch as they affect the stability and integrity of the SRN and National Highways assets.
- e) Options and selection of an appropriate trenchless installation technique with justification and recognition by the installation contractor that the method of installation and means of monitoring and control (warning / trigger thresholds) detailed in the GDR can be achieved.
- f) Means of monitoring slurry pressures and returns to demonstrate how the risk of blow-out and / or slurry loss is being managed.
- g) A contingency plan for recovery of any problems related to the trenchless operation, such as might occur from excessive ground movement, slurry escapes into road drainage, drill becoming stuck, etc.
- h) Provide as-built records comprising vertical and horizontal profiles of the service crossing and construction notes in the GFR including details of any problems encountered during the works and procedures used to resolve the problems.

See also Chapter 7 of CD 622 revision 1 for other risks and requirements.

² As a general rule, the proposed works should not worsen the existing condition of any National Highways asset, all in the effort to keep National Highways assets in good condition and to meet National Highways obligations with respect to safety and service provision. For road pavement, no permanent heave or settlement greater than 10mm over 3m length on the road surface are expected.

5. USEFUL REFERENCES AND FURTHER READINGS

1. Highways England. 2020, Managing Geotechnical Risk, Standard CD 622 Revision 1, Design Manual for Roads and Bridges.
2. Highways Agency. 2008, Guidance on the Trenchless Installation of Services Beneath Motorways and Trunk Roads, Standard [HA 120](#) (Withdrawn from DMRB in 2019).
3. Highways Agency. 2000, Implementation Standard for Trenchless Installation of Highway Drainage and Service Ducts, Standard SD 14, Manual of Contract Documents for Highway Works, Volume 5, Section 8, Part 1.
4. Highways Agency. 2006, Series 8000 - Specification, Manual of Contract Documents for Highway Works, Volume 5, Section 8, Part 2.
5. Highways Agency. 2006, Series 8000 - Method of Measurement, Manual of Contract Documents for Highway Works, Volume 5, Section 8, Part 4.
6. Highways England. 2020, Roadside Technology and Communications, Standard TD 131 Revision 0, Design Manual for Roads and Bridge.

Owner	SES Geotechnics Group
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Last Reviewed	24/10/24
Version	3.0
Purpose of Revision	Version 3 (24/10/24) - Replaced HE with NH. Minor editorial and texts changed. Version 2 (09/08/21) - HD 22 withdrawn and replaced by CD 622. Version 1 (28/06/19) - Original.

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