

SES Guidance Note:

## **CD622 Geotechnical Reporting Process for Minor Structures**

### **1. Introduction and Objective**

National Highways installs hundreds of minor structures comprising road traffic signs, lighting columns, high masts, barriers etc each year because of accident damage or as part of a planned asset renewal. To execute these works, National Highways employs competent suppliers/designers to assess the scheme geotechnical risk and undertake the design of minor structures. This guidance note is a document prepared for NH staff, NH suppliers and in particular the scheme Designer's Geotechnical Advisor to provide guidance on the CD622 geotechnical reporting requirements to simplify or streamline the CD622 reporting process therefore expediting the scheme delivery for minor structures.

### **2. Challenges and Constraints**

The CD622 reporting requirements and SES review period for minor structures scheme delivery are often perceived as time consuming and hence programme prohibiting and incurring disproportionate cost. To add to the scheme delivery challenge, NH has a commitment to replace damaged or knocked down road traffic sign assets within a 7-day turnaround so that NH OD can continue to control traffic operation effectively. All these constraints are posing a major challenge for NH PM to deliver the repair or renewal works safely, timely and on-budget while minimising interruption to NH customers as well as managing the risk of potential delays for recovering costs associated with damaged repairs.

### **3. Geotechnical Reporting for Minor Structures**

CI. 12.1 item 2 of CD 354 Design of Minor Structures states that geotechnical certification is required for the design of foundations of minor structures in accordance with CD 622. Clause 12.1.1 however, states that the certification process may be varied to reflect the complexity of the proposed design, subject to the agreement of the Overseeing Organisation. A compliant, pragmatic solution is therefore required to ensure that the design of minor structures can be progressed efficiently and economically without compromising the safety of the network, the safety of the customer and managing the geotechnical risk at an appropriate level. Following internal consultation between OD (Signs/Signals Asset Owners and Service Delivery) and SES (Structure and Geotechnics), a simplified or streamlined approach has been agreed for delivering CD622 risk management for minor structures. This simplified CD622 reporting approach can be described by the process flowchart in Figure 1.

The following are few high-level advice and recommendations to be considered during report preparation:

- a) Designer to consider the most efficient approach to undertake the design eg. by standardising design approach on a programmatic level, producing generic foundation designs with some flexibility to accommodate site and structure variations. Where this not possible due to site or structure specific features, a bespoke foundation design will then be required.
- b) Where the simplified GDR has no accompanying work specification, the detailed design drawings is to detail any particular site test verification/validation requirements e.g. confirming ground conditions are Poor or above, push test etc.

- c) GFRs are required to close out the CD622 process, however the SES Geotechnical Advisor can accept a simple GFR comprising as-built drawings and a simple statement stating that the Structure was built in accordance with the design or, if not, describing the changes from the design and any residual geotechnical risk.
- d) The risk from shallow mine workings should be considered holistically in terms of overall risk to the network and the end user at the site. Generally, no mitigation is required for Minor Structures unless the Structure is to be sited over an uncapped mine shaft with no other form of protection.
- e) Where Figure 1 indicates CD622 reporting is not required, the scheme delivery project manager is still required to deliver all other products as detailed in NH Structure Asset Class Handbook and OD's 3D process. It is essential that the particular functional needs/requirements (eg. as-built foundation data format) should be informed by the respective minor structure asset owners themselves as to how they need to operate and manage their assets.

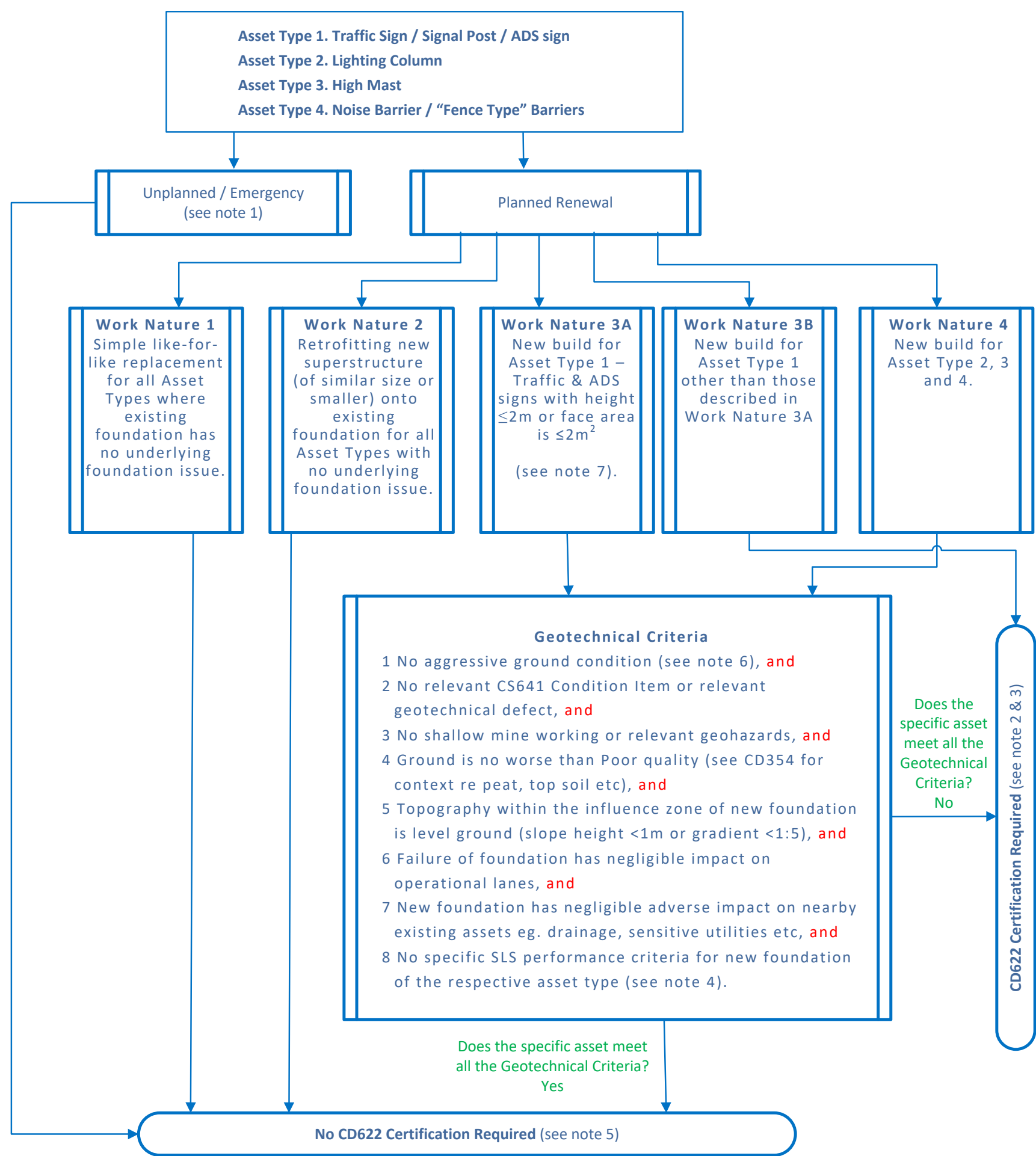
#### 4. REFERENCES

1. National Highways. 2020, Managing Geotechnical Risk, Standard CD 622 Revision 1, Design Manual for Roads, and Bridges.
2. National Highways. 2020, Managing the Maintenance of Highways Geotechnical Assets, Standard CS 641 Revision 0, Design Manual for Roads and Bridges.
3. National Highways. 2021, Technical Approval of Highway Structures, Standard CG 300 Revision 0.1.0, Design Manual for Roads and Bridges.
4. National Highways. 2024, Design of Minor Structures, Standard CD 354 Revision 2.0.0, Design Manual for Roads and Bridges.
5. BSI. 2023, Guidance on the Use of BS EN 40-3-1 and BS EN 40-3-3, PD 6547.
6. National Highways. 2023, Asset Class Handbook - Structures, Revision 2.0, Design Manual for Roads and Bridges.

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Figure 1 - CD622 Process Flow Chart for Minor Structures



**Notes**

1. This includes simple like-for-like asset replacement where the asset failure is not geotechnically related. The Designer is also required to assess and confirm that any accidental damage replacement to the asset does not warrant increasing the asset size which may otherwise require a complete new foundation.
2. The level of details of report is to match the complexity of the overall design and its risk consequence of failure. Datasheet or tabulated style (eg. based on Form C of HD22/02 or GDMS 50794, GDMS 34090 and GDMS 53990) report is normally accepted for CG300 CAT 0 or CD354 minor structures, except for particular high risk sites/schemes which should be discussed and agreed with the OOGA.
3. The need for GI is to be assessed on a case by case basis via CD622. This is generally not required for CG300 CAT 0 structures or CD354 minor structures.
4. See Chapters 5 and 12 of CD354 rev2 for the SLS design requirements of the respective asset type.
5. Project team to check with GMLE/OOGA (roles as defined in CS641 and CD622 respectively) for availability of any existing generic or appropriate site wide Sol for the proposed works. If not available, an email should be sent by the Designer to the NH PM (cc'd to OOGA) confirming that the geotechnical risk check has been carried out with no significant geotechnical risk identified.
6. If aggressive ground conditions are the only criterion that would lead to CD622 reporting from the flow chart, it is possible that CD622 reporting can be avoided if the foundation solution can be demonstrated by the Designer as not adversely impacted by aggressive ground conditions (ie not reinforced or durable concrete specified). Mitigation of risk to be included in email to PM confirming geotechnical risk mitigation as per Note 5.
7. No CD622 certification is required for traffic signs with face area ≤ 1m<sup>2</sup> regardless of height (eg. roundels, triangles and small rectangles) as well as for simple non-cantilever traffic signal posts.