

**MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS
VOLUME 2 NOTES FOR GUIDANCE ON THE SPECIFICATION FOR HIGHWAY WORKS**

**SERIES NG 100
PRELIMINARIES**

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**NATIONAL ALTERATIONS OF THE
OVERSEEING ORGANISATIONS OF
SCOTLAND, WALES AND NORTHERN
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denotes a Clause or Sample Appendix which has a substitute National Clause or Sample Appendix for one or more of the Overseeing Organisations of Scotland, Wales or Northern Ireland.

PRELIMINARIES

NG 101 (05/14) Temporary Accommodation and Equipment for the Overseeing Organisation

- 1 (05/14) This Clause may need to be supplemented by drawings cross-referenced in contract specific Appendix 1/1. In addition, Appendix 1/1 should indicate:
- (i) accommodation and commencement date, if different from sub-Clause 101.2, and/or removal date;
 - (ii) the size and nature of accommodation needed;
 - (iii) all the required furniture and fittings, equipment (including surveying and telecommunications) supplies, definitive quantity of consumables, drainage facilities and other services. The contract specific Appendix should also include the standards of artificial lighting intensity and the minimum room temperature to be maintained during stated hours, including weekends and overnight where required.
- 2 (05/14) The accommodation, furnishings and fittings and equipment provided should be in good condition, but unless there is any particular reason need not be new. They should also be proportional to the size, value and duration of the works.
- 3 (05/14) The provision of special temporary accommodation may be unnecessary in some instances where suitable existing property can be used. In such instances details of the property should be described in contract specific Appendix 1/1 together with the terms under which the property can be made available.
- 4 (05/14) Contract specific Appendix 1/1 should indicate, when applicable, the accommodation requirements (which may be either portable or in existing premises) needed by the Overseeing Organisation to supervise major components of the works likely to be manufactured and tested off site.
- 5 (05/14) Testing equipment to be listed in contract specific Appendix 1/1 should only include that to be used by the Overseeing Organisation for tests which are necessary to ensure compliance with the specification. In particular, the list should include equipment for carrying out tests on samples described in contract specific Appendix 1/6, having regard to accredited laboratory requirements where appropriate.
- 6 (05/14) It should be noted that laboratory accreditation for tests becomes invalid where test equipment is defective, therefore the Contractor should take prompt action to repair, replace and/or recalibrate any test equipment requiring such attention.
- 7 (05/14) Government Buying Standards (GBS) are maintained in the UK by Defra, they are aligned to the European Commission's Green Public Procurement (GPP) initiative and are designed to make it easier for government buyers to buy sustainably in order to save costs, reduce carbon and deliver other environmental benefits. They enable the Overseeing Organisation to meet EU wide criteria and comply with UK commitments. The standards are mandatory for all central government departments and their related organisations.

NG 102 (05/14) Vehicles for the Overseeing Organisation

- 1 (05/14) This Clause will need supplementing by contract specific Appendix 1/2 which should describe the number and type of vehicles and indicate the period for which each vehicle is required.
- 2 (05/14) Vehicles should not be described by proprietary names; if they cannot otherwise be described, the words 'or equivalent' should be added. New vehicles should only be required where the nature of the works and contract period make it essential.
- 3 (05/14) The frequency that the Overseeing Organisation's vehicles are to be cleaned by the Contractor should be described in contract specific Appendix 1/2.
- 4 (05/14) The vehicles should be fit for the purpose for which they are intended and appropriate for the specific site. The compiler should consider this when specifying the vehicles in contract specific Appendix 1/2.
- 5 (05/14) The compiler should also ensure that at least the mandatory Government Buying Standards (GBS) are met for public procurement when using passenger cars either directly purchased or contracted under leasing/renting systems.

- The GBS minimum mandatory standards for passenger cars are that the CO₂ emissions for fleet average for new cars should not exceed 130 g CO₂/km.
- The GBS minimum mandatory standards for vans are that the CO₂ emissions for fleet average for new vans should not exceed 175 g CO₂/km.

The compiler should consider this when specifying the vehicles in contract specific Appendix 1/2.

The GBS is not intended to cover Type A vehicles and therefore a maximum 255 g/Kg (tax band L) is suggested. Type A vehicles should only be specified where there is a specific need for this type of vehicle.

When specifying the vehicles in contract specific Appendix 1/2 the maximum emissions for Type B and C vehicles should be 130 g CO₂/km (this is equivalent to a road tax band D).

Where vans are identified as Type D vehicles in Appendix 1/2 the maximum emissions should be 175 g CO₂/km (this is equivalent to a road tax band H).

NG 103 (05/14) Radio Communication System for the Overseeing Organisation

1 (05/14) When a radio communication system is required this should be stated in contract specific Appendix 1/3, together with requirements specific to the contract which should include:

- (i) Type of equipment required.
- (ii) Location of base station if necessary.
- (iii) Number and description of sets, (including spare batteries and charging apparatus) required for portable use.
- (iv) Type of radio license required (Radios transmitting on either VHF or UHF are required to have a Business Radio License from Ofcom).

2 (05/14) This radio communications equipment would be additional to any telephone or telecommunications equipment supplied in accordance with Clause 101 and contract specific Appendix 1/1.

3 (05/14) The scale of provision should bear some relation to the length of the scheme and should not normally exceed one set per kilometre of a road scheme in addition to the base set, although variations may be necessary where particular problems of control arise.

4 (05/14) When there are particular reasons for requiring the communication facilities earlier than the normal 4 weeks from the date for commencement of the works (eg. on major maintenance contracts where traffic management measures need to be commenced early after the contract has been awarded) this should be stated in contract specific Appendix 1/3.

5 (05/14) It should be noted that other radio communications systems may be required for the site, for example, for mobile lane closures or vehicle recovery operations. These systems should be independent of anything specified in contract specific Appendix 1/3.

NG 104 (05/14) Standards, Quality Management and Acceptance

(05/14) Definitions and Abbreviations

1 (05/14) For the purposes of this Clause and the Specification for Highway Works the following definitions apply:

- (i) Certification Body or Conformity Assessment Body:

A body which undertakes and certifies conformity assessments. For the Certification Body to be credible it will be accredited in accordance with a suitable standard(s) by UKAS or equivalent, and their scope will include the relevant standard or scheme being considered. Under the Construction Products Regulation for manufacturers to prepare Declarations of Performance “notified bodies” are required to carry out third party tasks relating to the “assessment and verification of constancy of performance” of products that fall within the scope of the CPR.

- (ii) CPD:
Constructions Product Directive (89/106/EEC).
- (iii) CPR:
Construction Products Regulation (Regulation (EU) No. 305/2011).
- (iv) EEA State:
A state which is a contracting party to the European Economic Area Agreement.
- (v) ETA, European Technical Assessment:
The documented assessment of the performance of a construction product, in relation to its essential characteristics, in accordance with the CPR and issued by a Technical Assessment Body at the request of a manufacturer on the basis of a European Assessment Document. European Assessment Documents have a section serving the same function as Annex ZA in a harmonised European product standard. An ETA can be granted for products where the construction product is not covered or is not fully covered by a harmonized standard (reference CPR Art 19). Under the CPD European Technical Approvals were issued. Products with a valid European Technical Approval and CE marking are deemed to comply with the CPR.
- (vi) LVD:
Low Voltage Directive (2006/95/EEC).
- (vii) NHSS:
National Highways Sector Scheme(s).
- (viii) Product:
For the purposes of this Clause and Clause 104 the term ‘product’ should be read to mean ‘works, goods or materials’ and shall include any service or item being supplied by the Contractor as part of or to form part of the works. Under the terms of the CPR the term “construction product” means any product or kit which is produced and placed on the market for incorporation in a permanent manner in construction works or part thereof and the performance of which has an effect on the basic requirements of the construction works.
- (ix) Systems of ‘Attestation of conformity’ or ‘Assessment and verification of consistency of performance (AVCP)’:
For construction products that fall within the scope of the CPR the systems used for the declaration of performance of the essential characteristics as defined by the CPR. The system defines what activities are required such as type testing, factory production control and sample testing. The CPR provides for a range of systems from System 1+ to System 4, where System 1+ requires the greatest level of input and third party involvement and System 4 the least. Under CPR ‘Assessment and verification of consistency of performance (AVCP)’ replaces ‘Attestation of conformity’ used under the CPD. Most harmonised European standards currently use the term ‘Attestation of conformity’ as they were prepared under the CPD.
- (x) UKAS:
United Kingdom Accreditation Service. UKAS is the National Accreditation Body for the UK under the Accreditation Directive. As such it is the only National Accreditation Body that can operate in the UK.
- (xi) ‘UKAS or equivalent’:
United Kingdom Accreditation Service or equivalent European Accreditation organisation which is party to a multi-lateral agreement (MLA) with UKAS or any equivalent International Accreditation Forum MLA signatory with a scope that includes the relevant standard(s) or scheme(s).

(05/14) Standards and Mutual Recognition

2 (05/14) The SHW makes reference to British, European and other Standards, quality management schemes, product certification schemes, product acceptance schemes, type approval and registration, and statutory type approval.

SHW is used within the UK framework of legal, administrative and technical requirements; part of these are the requirements of EU legislation and the need for the Overseeing Organisation to avoid implementing barriers to trade particularly in respect of EEA states. Mutual recognition and equivalence are the principles that a product lawfully marketed in one member state (i.e. which complies with the necessary standards) should be allowed to be marketed in any other member state. This means that public procurement bodies must not present barriers to trade by specifying requirements that are not related to the performance of a product unless there is a sound justification for the requirement. Examples of such restrictive requirements might include specific markings or labelling, composition, size or weight. If a specification compiler has any doubt regarding a proposed requirement the Overseeing Organisation should be contacted with details of the proposed requirement.

(05/14) CE Marking and EU Product Legislation

3 (05/14) Since 1985 there has been a number of Directives issued under the then European Economic Community (EEC) legislation which have been termed the ‘New Approach’ Directives. These have set up an approach to harmonisation and standardisation aimed at reinforcing an internal market based upon free movement of goods across the EU.

A number of these Directives are relevant to works being undertaken using the Specification for Highway Works, in particular the Construction Products Directive (89/106/EEC) (now repealed and replaced by the CPR (305/2011/EC)) and the Low Voltage Directive (2006/95/EC) (LVD). Others that may be relevant to highway works include the Electromagnetic Compatibility Directive (2004/108/EC) (EMCD), Personal Protective Equipment Directive (96/58/EC) and the Civil Explosives Directive (93/15/EEC).

When drafting contract specific specification requirements for items covered by EU directives or regulations or other legislation compilers should ensure requirements are not included that attempt to supersede or modify manufacturers’ obligations under the legislation. Compilers should also ensure that where appropriate evidence of compliance with the legislation will be obtained for products; for example through obtaining copies of declarations of conformity.

The European Parliament voted to adopt the Construction Products Regulation (Regulation (EU) No. 305/2011) (CPR) and the majority of its provisions entered force on 1 July 2013. This is not “new approach” legislation as it covers the performance of construction products in areas other than safety. The CPR repeals and replaces the CPD. A significant implication for member states including the UK is that it has become mandatory for products placed on the market which are covered by the harmonised standards or a European Technical Assessment (European Technical Approvals under the CPD) to have a declaration of performance in accordance with Annex 3 of the CPR. Where a declaration of performance is required and has been drawn up by the product’s manufacturer the product is to carry a CE marking. For any construction product covered by a harmonised European standard or for which an ETA has been issued the CE marking shall be the only marking which attests conformity of the construction product with the declared performance against the products essential characteristics. The essential characteristics being those defined under the CPR.

Compilers of specifications should ensure that they are familiar with and apply (but do not exceed) the limitations for specifying products that the CPR places on public procurement bodies and those organisations deemed by the CPR to be equivalent to public bodies.

There are many BS EN standards referred to in the Specification for Highway Works which are already harmonised under the CPD. These products if placed on the market in accordance with the CPD before 1 July 2013 are deemed to comply with the CPR. The current list of harmonised standards and of other European standards published in the Official Journal of the European Union (OJEU) is available at <http://ec.europa.eu/enterprise/policies/european-standards/harmonised-standards/>. The CPR includes a set of basic requirements for construction works at Annex 1 of the Regulation. Products manufactured in conformity with the harmonised standards or an ETA and with the appropriate Declaration of Performance for their intended use carry with them under the CPR a presumption of conformity to the essential requirements for the stated level of performance and can be CE marked. The stated level of performance for a product can be challenged on the basis of objective evidence of non-conformance of a product. If such a challenge is being considered the Overseeing Organisation should be informed.

A CE mark is to be affixed to those construction products for which the manufacturer has drawn up a Declaration of Performance (DoP). This is deemed to be all that a manufacturer needs to provide for the product to confirm that the product meets the level of performance required by the specification for its intended use. Public procurement bodies are not permitted to place additional requirements onto CE marked products unless there are sound contract specific reasons for doing so. An example of these might be where existing features are being replaced on a structure. Then specifying limits on the loadings that replacement items can impose on the remaining elements would be reasonable additional requirements in addition to those covered by the essential characteristics. Harmonised standards may also include purchaser options for aspects not covered by the DoP, where these are relevant to the works the compiler can use these and should include requirements as appropriate to the works.

4 (05/14) The requirements placed on the manufacturer for CE marking are defined by the relevant harmonised European standard or ETA. With products subject to the CPR this is usually defined in Annex ZA of the relevant standard. The main elements of Annex ZA are usually:

- (i) lists of the standard's clauses which relate to the essential requirements and are thus required for compliance;
- (ii) the level of Assessment and Verification of Constancy of Performance (AVCP) required (AVCP replaces attestation of conformity under the CPD);
- (iii) the requirements for the Certificate of Conformity to be provided by the Notified Body to the manufacturer and the Declaration of Performance to be provided by the manufacturer;
- (iv) the information to be provided by the manufacturer under the Declaration of Performance and the associated CE marking and labelling.

With respect to products that are to be used in the works and are CE marked the information to be supplied by the Contractor to the Overseeing Organisation for acceptance will be (iv) above and should include the Declaration of Performance and any safety information.

Compilers and those supervising works should note that for some products the level of AVCP is different depending on the intended use of the product. Where the harmonised standard permits a choice of AVCP the correct level must be specified and compilers should consult available guidance documents and standards for the correct level to apply. In the absence of requirements or guidance the Overseeing Organisation should be consulted.

5 (05/14) With respect to the LVD and EMCD the essential requirements cover the safety of products within the scope of the directives. Other aspects may need to be verified by other compliance requirements.

6 (05/14) CE marking is the confirmation that the construction product complies with the essential characteristics stated in the Declaration of Performance (DoP) of a product. The DoP satisfies the basic requirements for construction works as identified within the CPR. Compilers of contract specific specifications therefore need to take account of this when compiling contract compliance testing requirements and ensure that appropriate contract compliance testing and inspection of supplied products are included in contract specific Appendix 1/5. In developing contract testing requirements, compilers should also recognize that DoPs and CE marking with some exceptions apply to the product as manufactured, and not as installed. Therefore contract compliance testing schedules should also reflect this.

(05/14) **Quality Management**

8 (05/14) A contract specific Quality Plan should be prepared by the Contractor, which should be as brief as possible but cover all the topics in contract specific Appendix 1/24. (See NG Sample Contract Specific Appendix 1/24). The quality plan should include the requirements listed in the quality plans contained in the relevant quality management schemes described in Appendix A of the SHW.

9 (05/14) National Highway Sector Schemes (NHSS) have been developed by the highways industry to interpret BS EN ISO 9001 as it applies to particular highways activities/industries within the United Kingdom. New schemes are being developed and are commenced from time to time.

The current schemes are listed in Appendix A of the Specification for Highway Works. They are designed to:

- (i) provide an industry benchmark;
- (ii) ensure that all processes are planned;
- (iii) provide a basis for continuous improvement;

- (iv) focus on quality as an objective;
- (v) reduce costs for client and supplier;
- (vi) provide and maintain a properly trained and competent workforce;
- (vii) involve all sides of industry in scheme ownership within a partnership framework;
- (viii) ensure that Certification Bodies use auditors with technical knowledge and experience of the sector concerned; and
- (ix) promote confidence in quality management systems by provision of a robust transparent system.

10 (05/14) NHSS are being progressively developed in the UK by technical advisory committees having representation from client organisations, relevant Trade Associations, Certification Bodies and training organisations to provide a consistent standard for each sector scheme.

The individual technical advisory committees are overseen by the Highways Sector Scheme Liaison Group. This group monitors the effectiveness of the Sector Schemes and co-ordinates developments so that they can be uniformly taken forward by each of the technical advisory committees.

The schemes are identified separately within the scope of accreditation of each Certification Body. The Certification Bodies are accredited by UKAS or equivalent with a scope which includes the relevant national highway sector scheme. (The scopes of UK accredited Certification Bodies are available on the UKAS web site (www.ukas.com)).

11 (05/14) Information regarding implementation, scope and requirements for individual schemes is contained in the relevant Sector Scheme Document (SSD). These should be consulted to confirm scheme status and scope.

Copies of sector scheme documents are available from UKAS Publication Sales. They can also be accessed from the UKAS web site (<http://www.ukas.com>). Alternatively, where a company/organisation wishes to become registered to an NHSS they can be obtained from Certification Bodies having accreditation from UKAS or equivalent for the relevant sector scheme.

12 (05/14) Only current certificates of assessment to the relevant NHSS, which have been issued by UKAS or equivalent accredited Certification Bodies, shall be acceptable to the Overseeing Organisation. Such certificates shall include reference to the particular sector scheme and relevant scope; details are provided in Appendix K of the SSDs.

13 (05/14) The NHSS require staff and operatives to be appropriately qualified and reach appropriate levels of competency. This generally involves attendance on approved training courses and for some schemes operatives are required to carry registration or skill cards. Specific details for each of the schemes are given in the relevant SSD. The Overseeing Organisation should check the relevant documentation for acceptance.

14 (05/14) The need for inspecting of manufacturer's premises and the testing of goods and materials subject to a quality management scheme or product certification scheme should be reviewed. If the Overseeing Organisation has reasonable confidence in the operation of a quality management scheme or product certification scheme, it can substantially reduce the level of inspection and testing or in some cases eliminate it. It should be noted that a quality management scheme differs from a product certification scheme by being based solely on written management procedures. Such schemes do not guarantee the quality of the actual product or workmanship. In the case of product certification schemes, the goods and materials have already undergone independent testing. Nevertheless if the Overseeing Organisation is not satisfied with a product appropriate testing should be undertaken. If the performance of a quality management scheme is not satisfactory the certification body should be informed in writing.

(05/14) **Product Certification Schemes**

15 (05/14) Where products are listed in Appendix B of the SHW they are required to be assessed or tested in order to prove compliance with the relevant standard(s). Compliance or testing certification is required to be supplied to the Overseeing Organisation for the product's acceptance. Where a product is CE marked in accordance with the CPR the information to be supplied will be the CE mark the Declaration of Performance and any other information to demonstrate that contract specific requirements not covered by the essential requirements are met, see sub-Clause 4 above.

Where a product is proposed that is not CE marked or certificated by a product mark scheme its compliance needs to be demonstrated using the criteria described in either sub-Clause 104.13 or 104.14. The product's compliance must be demonstrated using the level of attestation or AVCP identified in the relevant standard(s) as a minimum. Where it is not practical or suitable to affix the CE mark to a material the CPR permits that CE mark to be with the material's documentation. Other forms may also become acceptable and in such cases the Overseeing Organisation's advice should be sought.

16 (05/14) Certification Bodies used for assessing compliance must be suitably accredited. The Overseeing Organisation should check that the Certification Body is accredited by UKAS or equivalent and that it has suitable scope for the relevant standards. The Contractor should supply information to facilitate this.

Where laboratories are used for testing they are to be accredited by UKAS or equivalent.

17 (05/14) For acceptance, the Overseeing Organisation needs to be satisfied that the proposed product provides suitable levels of safety, performance and fitness for purpose. The Contractor should facilitate this by providing relevant information in a suitably timely manner.

(05/14) **Product Acceptance Schemes**

18 (05/14) The SHW references a number of product acceptance schemes. Works, goods or materials listed in Appendix C are required to have been certified by a product acceptance scheme so that products used in the works have known and suitable levels of safety, performance and fitness for purpose. The items in Appendix C are generally those for which suitable standards do not currently exist. Manufacturers, therefore, would have two options for this type of product regarding their use in highway works, that is, to obtain an ETA or use a product scheme with the features given in sub-Clause 104.16. Relevant British Board of Agrément, Roads and Bridges, HAPAS or CARES certificates meet these criteria.

19 (05/14) Where a product acceptance scheme is proposed the scheme must involve the issue of certification by an organisation which has accreditation to the appropriate certification body standard.

20 (05/14) For acceptance of the product the Overseeing Organisation should consider the details of the scheme, the scope of the accreditation of the body issuing certification, the criteria used for assessing the product, testing data and certification issued. Dates of the certification and accreditation should be considered to confirm that they are current. The Contractor should facilitate this by supplying the relevant information.

(05/14) **Assessing Equivalence**

21 (05/14) The Contractor may propose works, goods or materials which are subject to equivalent standards, quality management schemes, product certification schemes and product acceptance schemes to those identified by the specification. The Contractor may also propose products which are of an innovative nature which the Contractor believes to be equivalent to those specified.

22 (05/14) The Contractor would need to provide the evidence for an assessment to be made. The Overseeing Organisation must assess if the product, standard or scheme, is equivalent and decide if it meets the required levels of performance, safety and fitness for purpose. The consideration should not be assessing for minimum levels of performance, safety and fitness for purpose but for the expected performance, safety and fitness for purpose to be similar or better than that specified.

The factors underlying the specification and their criticality should be evaluated so far as is practical for each application. If the alternative standard differs from the specified requirement in a way not essential to the purpose of the specification, it should be considered equivalent in that particular case. Similarly, if the alternative standard addresses the critical factors in a different technical form which nevertheless achieves the same or similar result, it should be considered equivalent.

The Overseeing Organisation would need to consider any implications of adopting the proposed equivalent product, standard or scheme to the works including any changes to the design or testing requirements. Compatibility with the existing road design and infrastructure would also need to be considered.

A distinction has to be drawn between products which are offered as equivalent to those specified and those which are simply alternatives. A product offered as equivalent and accepted by the Overseeing Organisation as equivalent to that specified is deemed fully to comply with the specification. An alternative product does not meet the specification and its acceptance involves a variation of the contract. To avoid any misunderstanding the Overseeing

Organisation should confirm to the Contractor any acceptance of a product as equivalent. Acceptance of an equivalent product should not have contractual cost implications which are detrimental to the Employer.

23 (05/14) For a product the information supplied by the Contractor would normally be expected to include specifications, drawings and relevant standards, certificates, test data, and inspection reports, unless the relevant products were CE marked. If the products are CE marked the relevant information to be provided by the Contractor would be the CE marking information as defined by the relevant standard (see Sub-Clause 4 above).

24 (05/14) For a proposed equivalent quality management scheme the Overseeing Organisation's assessment would need to look at the details of the scheme including how it is governed and managed, and any documentation similar to the NHSS sector scheme documents. Third party accreditation details and certification should be looked at along with details of the third party's accreditation with UKAS or equivalent. The certification for each of these should be checked for currency. The Contractor should provide any other information or evidence to help demonstrate that the scheme provides suitable levels of performance, safety and fitness for purpose.

(05/14) **Statutory Type Approval**

25 (05/14) Statutory type approval is granted by the Secretary of State. Where the Contractor designs part of the works and makes application for approval, he should forward the information to the Overseeing Organisation in sufficient time for approval to be given, taking into account the programme for the works. Where statutory type approval is given, one copy of the approval certificate should be returned to the Contractor.

(05/14) **Statutory Authorisation**

26 (05/14) Where the Contractor designs part of the works and makes application for authorisation, he should forward the information to the Overseeing Organisation in sufficient time for authorisation to be given, taking into account the programme for the works. Where statutory authorisation is given, one copy of the authorisation should be returned to the Contractor.

(05/14) **Type Approval/Registration**

27 (05/14) Type approval/registration is given by the Overseeing Organisation.

(05/14) **Provision of Information**

28 (05/14) The Overseeing Organisation should check that all information and certificates are valid. Where certificates relate to a particular batch, it is important to ensure that the goods or materials incorporated in the works form part of that batch.

29 (05/14) The Contractor is required to manage the use of products for inclusion in the works to meet the contract programme. Where information is required to be submitted to the Overseeing Organisation for acceptance the Contractor should do so to a timescale that allows the programme to be achieved. The Overseeing Organisation should make assessments in a reasonable time and should not be expected to make assessments in an unreasonably short time because suitable pre-planning was not carried out.

30 (05/14) Where the Contractor proposes to use an equivalent standard, quality management scheme, product certification scheme or product acceptance scheme to those identified in the SHW Appendices A, B, C or E, the Contractor needs to supply the Overseeing Organisation with sufficient information for an accurate assessment to be made to a suitable timescale. If the Overseeing Organisation needs to obtain information from other sources it may not be possible to do so in a suitable timescale. It is likely that using a product that directly meets the requirements of these lettered appendices, rather than an equivalent, would have less impact on the contract programme.

31 (05/14) Frequently there is a need for the Contractor to submit working and fabrication drawings to the Overseeing Organisation. The compiler should include in contract specific Appendix 1/4 relevant details of all works (eg. steelwork, parapets, diaphragm wall details, waterproofing details, traffic signs, lighting, bearings, piles, precast concrete, joints, environmental barriers, corrugated steel buried structures, combined drainage and kerb systems) for which he requires working or fabrication drawings to be prepared by the Contractor, together with the minimum periods for submission of the drawings prior to commencement of the related works.

32 (05/14) Where proposed equivalent work, goods and materials are required to have statutory or type approval/registration, this can take a considerable time to evaluate and may not be possible within the timescale of the contract. The Overseeing Organisation should inform the Contractor of the likely timescale together with an assessment of whether it is possible to achieve approval within the time available.

NG 105 (05/14) **Goods, Materials, Sampling and Testing**

(05/14) **Goods and Materials**

1 (05/14) Testing and verification processes are carried out to ensure the works, goods and materials provide the levels of safety, performance and fitness for purpose required by the specification. The compiler should establish what sampling and testing is necessary to achieve this including the type, frequency, certification and other requirements. Testing can be carried out by the Contractor or by the Overseeing Organisation. The contract documents need to be clear about which party is expected to undertake which testing. The compiler's attention is drawn to the guidance given at Clause NG 104.6.

2 (05/14) The compiler may also be required to include testing to provide the employer with performance and monitoring information for the development of their road network. Records of goods and materials used, and where, are to be kept to enable this both during the works and after. Compilers should ensure the necessary contract specific requirements are included to ensure this information is provided.

3 (05/14) Samples of goods and materials should be retained until the completion of the works.

(05/14) **Sampling and Testing**

4 (05/14) The compiler should use contract specific Appendix 1/5 to list the testing to be carried out by the Contractor and certification to be supplied to the Overseeing Organisation. This should include details of type of test, frequency and certification requirements. Contract specific Appendix 1/6 should be used to give details of provision and delivery of samples by the Contractor for testing by the Overseeing Organisation. These Appendices are to assist tenderers, where appropriate, to allow for the requirements in their rates and prices. The compiler should avoid duplication of testing wherever possible.

5 (05/14) SHW provides for testing of works, goods and materials and checking of workmanship. Testing is covered by Clause 105 but checking is covered elsewhere and should not be listed in contract specific Appendix 1/5.

6 (05/14) Other SHW Clauses and contract specific Numbered Appendices will state sampling and testing requirements, these should also be listed and referenced in contract specific Appendices 1/5 or 1/6. For some SHW Clauses the requirements for testing and sampling will only be described in Appendix 1/5 or 1/6. Where testing requirements are contract specific they should be described in other contract specific Numbered Appendices and included in Appendix 1/5. Where contract specific Clauses contain testing requirements, details should be scheduled in contract specific Appendix 1/5 or 1/6 as appropriate.

7 (05/14) Table NG 1/1 provides a non-exhaustive list from which contract specific requirements for testing of work, goods and materials may be drawn. The testing requirements listed include site testing as well as the provision of certification for supplier or manufacturer testing. Details of testing to be carried out by the Contractor and certificates to be supplied should be abstracted from Table NG 1/1 and scheduled in contract specific Appendix 1/5. This list should also be used to inform the compilation of contract specific Appendix 1/6.

The compiler should include enough detail to clearly identify which tests are manufacturer or supplier tests and which are site tests. A differentiation should be made between acceptance testing to confirm a product is able to meet the specification requirements prior to installation, and contract compliance testing to confirm the works, goods or materials meet the specification requirements as installed. The presence of acceptance criteria such as quality management schemes, product certification or acceptance schemes, or CE marking do not preclude the need for contract compliance testing to confirm that specification requirements are met by the installed works, goods or materials.

Where a test relevant to the contract is listed in Table NG 1/1 it should be considered as a necessary requirement for inclusion in the contract either as a testing requirement for the Contractor or for the provision of samples for the Overseeing Organisation to undertake testing. Similarly where certification is listed as required this should be included in the contract for all relevant items of work, goods and materials.

However, in compiling Appendices 1/5 and 1/6, it is important to include only those samples and tests relevant to the particular contract, as these will form part of the Contractor's programme and price. Clearly, any irrelevant samples or tests will make pricing a contract more difficult for tenderers.

8 (05/14) It is not intended that all the testing (appropriate to the contract) specified in the Specification for Highway Works should necessarily be undertaken by the Contractor. The compiler should consider carefully and decide which of the specified tests would be better undertaken by the Overseeing Organisation. The specification requires those tests marked '†' in Table NG 1/1 to be undertaken by the Contractor and this requirement should not normally be changed.

9 (05/14) Where a Bill of Quantities is used separate items for sampling, testing and certification (except for proof loading of piles) should not be contained in the Bill of Quantities, unless there has been an agreed departure from the Method of Measurement (see MCHW 4.2, Chapters I, II and III, Note 7 'Testing').

10 (05/14) The Contractor may propose that testing be carried out on his behalf by a testing laboratory, manufacturer or supplier.

11 (05/14) The frequencies of testing marked '*' in Table NG 1/1 are given for general guidance and are only indicative of the frequencies that may be appropriate. The compiler should determine the frequencies to be used for the contract, taking into account all relevant factors and circumstances such as size, location, time for completion, quality management schemes. Where a Standard or specification Clause number is listed, the frequency of testing is usually specified therein and should not normally be changed.

12 (05/14) Where a part of the permanent works is to be designed by the Contractor and the associated materials and workmanship are to be tested by the Contractor, the compiler should ensure that the tests scheduled in Appendix 1/5 cover all the options permitted by the design specification. Similarly, where a part of the permanent works designed by the Contractor is to be tested by the Overseeing Organisation, the samples scheduled in Appendix 1/6 should cover all the permitted options. The same considerations apply where the Contractor selects materials from a range of permitted options (eg. type of pavement, road restraint systems, pipes for drainage and ducts).

13 (05/14) It is the policy of the Overseeing Organisations to require the use of testing laboratories which are appropriately accredited for certain tests and sampling. To ensure appropriate accreditation this is required to be by the United Kingdom Accreditation Service (UKAS) or equivalent European accreditation organisation for on site and off site testing and sampling. 'UKAS or equivalent' means United Kingdom Accreditation Service or equivalent European Accreditation organisation which is party to a multi-lateral agreement (MLA) with UKAS or any equivalent International Accreditation Forum MLA signatory with a scope that includes BS EN ISO/IEC 17025.

14 (05/14) In cases where the Contractor has sublet his testing obligations, the following should be noted. The time requirements in sub-Clause 105.2 of the specification are of the essence and the Contractor has an obligation under the contract to ensure that his subcontractor complies with sub-Clause 105.2, inter alia.

(05/14) **Test Certificates**

15 (05/14) Appendix 1/5 should indicate, where appropriate, the requirement for a test certificate for each test or series of tests carried out by the Contractor, supplier or manufacturer.

16 (05/14) Standards which specify tests are usually written in a form in which test requirements are a matter between the supplier or manufacturer and the purchaser. The Contractor is the purchaser in this context and is required to obtain certificates provided for in a Standard (or other specification) where stated in Appendix 1/5 and submit them to the Overseeing Organisation. Similarly where goods or materials are CE marked the relevant CE marking information including any relevant instructions and safety information should be obtained by the Contractor and submitted to the Overseeing Organisation.

NG 106 (05/14) Design of Works by the Contractor

(05/14) General

1 (05/14) Contract specific Appendix 1/10 should include for each work item, element or feature listed a design specification (or design specifications where a choice is offered) incorporating references to any relevant contract specific Appendices, Standards or other requirements appropriate to the design.

Contract specific Appendix 1/10 should be used for all permanent works that are to be designed by the Contractor, this should include structures, structural elements and other parts of the works.

Contract specific Appendix 1/11 should be used where there are particular requirements with respect to temporary works design that need to be included in the contract specific specification. The specified requirements should be kept to a minimum to avoid unnecessary constraints on the Contractor's design. For works other than structures listed in sub-Clause 106.9 it will not normally be appropriate for the compiler to include detailed requirements for temporary works design. However, there may be site specific constraints that need to be conveyed to the Contractor and should therefore be included in contract specific Appendix 1/11.

Contract specific Appendix 1/10 should be used as follows:

- (i) Each work item or element for which a design is to be submitted by the Contractor should be listed in contract specific Appendix 1/10 (A).
- (ii) Each work item or element for which the Overseeing Organisation has prepared a (non-proprietary) design but for which a proprietary manufactured structure is a suitable option should be listed in contract specific Appendix 1/10 (B).

(05/14) Structures

2 (05/14) The contract should be compiled in accordance with BD 2 (DMRB 1.1.1):

A Designated Outline should be shown on the Drawings for each structure to be designed by the Contractor and each structure for which a choice of designs is offered. Advice on the Designated Outline is given in BD 2 (DMRB 1.1.1).

3 (05/14) The compiler should ensure that each design specification includes an outline Approval in Principle form as referred to in Standard BD 2 (DMRB 1.1.1) or the Technical Approval Scheme adopted by the Overseeing Organisation.

4 (05/14) For structures which are not CE marked the design certificate, completed by the Contractor, should be forwarded to the Technical Approval Authority for acceptance, together with the check certificate. On receipt of the countersigned certificates, one copy should be returned to the Contractor.

5 (05/14) Examples of structures for which the suitability of proprietary systems should be considered are:

- environmental barriers;
- drains (exceeding 0.9 m diameter);
- crib walling;
- precast concrete box culverts (up to 8 m span);
- corrugated steel buried structures (0.9 to 8 m span);
- reinforced earth structures;
- anchored earth structures;
- footbridges;
- small span underbridges (up to 8 m span).

Examples of Non-proprietary structural elements to be designed by the Contractor are:

- foundations to environmental barriers;
- foundations to lighting columns and cantilever masts.

(05/14) **Lighting Columns and Brackets, CCTV Masts and Cantilever Masts**

6 (05/14) Clause 1301 requires the Contractor to propose lighting columns and brackets, CCTV masts and cantilever masts which have been designed by the manufacturer (and checked by a checking consultant) in accordance with Standard BD 2 (DMRB 1.1.1) or the Technical Approval Scheme adopted by the Overseeing Organisation and Series 1300. The Overseeing Organisation should ensure that the design and check certificates provided comply with overall requirements and where a sign is to be fitted to a lighting column, CCTV masts and cantilever masts, with the requirements of sub-Clause 1207.13.

(05/14) **Structural Elements and Other Features**

7 (05/14) The compiler should ensure that work items and elements based on proprietary products have not been specified in the contract. Such items and elements should be designed by the Contractor, or where appropriate, by the manufacturer and proposed by the Contractor. Examples of such items and elements are given below.

- combined drainage and kerb systems, and linear drainage channels;
- ground anchorages for anchored structures;
- piles;
- bridge bearings;
- bridge expansion joints.

NG 107 (05/14) **Site Extent and Limitations on Use**

1 (05/14) The extent of the site should normally be shown on the Drawings. Where traffic management involves temporary traffic signs, cones and road markings outside the area of the works it is appropriate to describe the extent of the site in contract specific Appendix 1/7 by reference to the Drawings and the areas where traffic management signing, cones and road markings are located. Where the site is shown on the Drawings, the drawing numbers should be stated in Appendix 1/7.

2 (05/14) Where the Contractor is responsible for temporary traffic signs giving advance warning of the Works, those areas of highway necessary for the installation, maintenance and removal of advance signs, cones and road markings should be included in the Site, with the agreement of the highway authority.

3 (05/14) Any limitations on the use of the site, for example restrictions on the use of verges and paved areas that have been coned off adjacent to traffic, should be described in contract specific Appendix 1/7.

NG 108 (05/14) **Operatives for the Overseeing Organisation**

1 (05/14) The number and function of operatives required by the Overseeing Organisation should be included in contract specific Appendix 1/8.

NG 109 (05/14) **Control of Noise and Vibration**

(05/14) **General**

1 (05/14) Compliance with the requirements given in Clause 109 does not confer immunity for any party from relevant legal requirements.

2 (05/14) Community relations are a vital part of any highway works. Early establishment and maintenance of these relations throughout the work programme should be set up to alleviate local concerns. Early consultation with the local authority and engaging with nearby noise sensitive receptors is essential in achieving good community relations.

3 (05/14) All Highway Works will be required to minimise levels of site noise and vibration exposure for operators and others in the neighbourhood of site operations whilst having due regard to the practicability and economic implication of any proposed control or mitigation measures.

(05/14) **Noise**

4 (05/14) Where it is envisaged that construction might involve noise disturbance, the Overseeing Organisation should have informal discussions with the Local Authority during the scheme preparation and, where possible, an informal agreement to a noise control system should be concluded.

The local authority could be contacted in order to identify the following:

- Ongoing noise complaints in the vicinity of the works;
- Existing baseline noise data for areas in the vicinity of the works;
- Policies and procedures that must be adhered to;
- Working hours and practices that must be adhered to;
- If the local authority requires a baseline noise survey on which to predict noise impacts.

Information obtained with respect to these items should be included in contract specific Appendix 1/9.

5 (05/14) The noise control requirements informally agreed with the Local Authority should be described in contract specific Appendix 1/9 together with any specific requirements of the Overseeing Organisation which are not covered by BS 5228 : Parts 1 & 2 or by the Local Authority.

6 (05/14) Contract Specific Appendix 1/9 should state that the Local Authority requirements are given as a guide to the Contractor, and it is for the Contractor to decide whether to seek the Local Authority's consent to his proposed method of work and to the steps he proposes to take to minimise noise.

7 (05/14) BS5228: Noise and Vibration Control on Construction and Open Sites - Part 1: Noise: 2009 sets out the techniques that should be used to predict and assess the likely noise effects from construction works, based on detailed information on the type and number of plant being used, their location, and the length of time they are in operation. BS 5228-1: 2009 contains a number of Annexes which provide useful reference noise level data for the prediction of noise levels from construction sites, and a method for determining the significance of noise effects and examples of methods to reduce the noise levels from site activities.

A construction noise assessment should be carried out. This can be undertaken by using either Method 1 or 2:

Method 1: Pre-existing ambient +5dB

Method 2: Local Authority Noise Limit

8 (05/14) Noise levels generated by construction activities are deemed to be significant if the total noise (pre-construction ambient plus construction noise) exceeds the pre-construction ambient noise by 5dB or more, (subject to lower cut-off values of 65dB, 55dB and 45dB $L_{Aeq, Period}$, from construction noise alone, for the daytime, evening and night-time periods, respectively; and a duration of one month or more, unless works of a shorter duration are likely to result in significant impact. This evaluation criterion is generally applicable to residential housing, hotels and hostels, buildings in religious use, buildings in educational use, and buildings in health and/or community use.

9 (05/14) For public open space, impacts might be deemed to be significant if the total noise (pre-construction ambient plus construction noise) exceeds the pre-construction ambient noise ($L_{Aeq, Period}$) by 5dB or more, for a period one month or more. However, the extent of the area impacted relative to the total available area also needs to be taken into account.

(05/14) **Vibration**

10 (05/14) BS 5228-2: 2009 Code of practice for Noise and Vibration Control on Construction and Open Sites Part 2: Vibration – provides recommendations for basic methods of vibration control relating to construction and open sites where work activities/operations generate significant vibration levels, including industry specific guidance. BS 5228-2: 2009 contains a number of Annexes that should be used to predict of the levels of vibration as a result of construction site activities and provide useful reference.

11 (05/14) The requirements for the control of vibration other than that due to blasting for excavation should be included in contract specific Appendix 1/9: Control of Noise & Vibration. Vibration limits for blasting are given in Clause 607, but may be varied as in Appendix 6/3.

12 (05/14) Where vibration occurs, reference should be made to ISO2631 – Whole Body Vibration, BS 6472 – Human Response to Vibration in Buildings.

#NG 110 (05/14) Information Boards

1 (05/14) The compiler should provide in contract specific Appendix 1/21 details of any specific requirements, and cross-refer to drawings of the information boards required for the works. Whenever possible information boards should be erected within the highway boundary, consistent with the safety of highway users and the Local Planning Authority should be informed of the proposal to erect them. The permission of the Local Authority is required for information boards erected on a non-trunk road. Safety barriers should be detailed at the site of information boards where appropriate.

2 (05/14) Contractor's advertising boards should not be located with advance direction signs or traffic management signs except when associated with information boards. Planning permission for advertisements on construction sites is covered by the Town and Country Planning (Control of Advertisements) (Amendment) Regulations 2007. Contractor's advertising boards are not permitted on Highways Agency roads.

3 (05/14) The compiler should confirm requirements for the design, content and layout of information boards so that they are consistent with any policy requirements of the Overseeing Organisation, contract Employer and/or the highway authority. Details of the relevant requirements should be included in contract specific Appendix 1/21. For Highways Agency boards the compiler should state requirements consistent with 'The Highways Agency's Visual Identity Specifications'.

NG 112 (05/14) Setting Out

1 (05/14) Generally on large schemes a pre-construction survey is undertaken by the Overseeing Organisation to confirm the co-ordinates and levels of permanent ground markers (PGMs) and permanent bench marks (PBMs). The Overseeing Organisation should ensure that missing ones are replaced and new ones provided where required to ensure that there is a sufficient number immediately adjacent to the works.

2 (05/14) The compiler should include in contract specific Appendix 1/12 particulars of the setting out details which are available. This will usually include:

- (i) Co-ordinates and levels of PGMs, PBMs.
- (ii) Offset information.
- (iii) Cross-section details.
- (iv) Computerised data.

3 (05/14) Normally it is not necessary to supply each tenderer with all this information, but it should be made available for inspection. Once the contract is awarded, the details should be given to the Contractor, who is responsible for setting out.

4 (05/14) No specific tolerances are given for setting out. The construction tolerances given in the specification relate to the agreed lines and levels of the works.

5 (05/14) The Contractor should check the co-ordinates and levels of PGMs and PBMs before setting out and the Overseeing Organisation may check the setting out as the work proceeds.

6 (05/14) Any specific requirements for setting out should be given in contract specific Appendix 1/12.

7 (05/14) Any special requirements regarding the level of information on existing details to be recorded by the Contractor should be given in contract specific Appendix 1/12.

NG 113 (05/14) Programme of Works

- 1 (05/14) Contract specific Appendix 1/13 should describe the Overseeing Organisation's requirements for the programme to be submitted in accordance with the Conditions of Contract and all supplementary information related to the programme that may be required.
- 2 (05/14) The contract may require the Overseeing Organisation to approve this programme and in this respect it is often appropriate that a schedule of output and resources to support all activities shown in the programme is requested.
- 3 (05/14) Contractors will vary in the detail into which they break down the activities of the programme. It should be remembered that there is little to be gained from requiring the Contractor to provide a programme in more detail than is his usual practice for construction projects of similar complexity. This is likely to lead to the submission of a programme which although feasible soon becomes out of date as the work progresses.
- 4 (05/14) The programme is likely to require amendment as the work progresses. The aim should be for the programme to always represent the Contractor's current working programme throughout the contract. This is likely to require updating of the programme throughout the duration of the contract. It is recommended that the Contractor should be requested to update the programme if necessary to match progress meetings.

NG 114 (05/14) Payment Applications

- 1 (05/14) Contract specific Appendix 1/14 should describe the Overseeing Organisation's requirements for applications for payment from the Contractor, unless described elsewhere within the Conditions of Contract. Standard requirements are described in NG Sample contract specific Appendix 1/14.

NG 115 (05/14) Accommodation Works

- 1 (05/14) Accommodation works should be described in contract specific Appendix 1/15 with reference to any applicable drawings, indicating where appropriate the periods for completion together with the requirements on individual plots for the benefit of each owner, lessee or occupier. Where accommodation works are not known at the time of tender, Appendix 1/15 should state where land reference plans and schedules can be inspected. Details of accommodation works that have been agreed after compilation of Appendix 1/15 should be available for reference.

NG 116 (05/14) Privately and Publicly Owned Services or Supplies

- 1 (05/14) Generally the Overseeing Organisation will make preliminary arrangements with the Statutory Undertakers for the alteration of services and supplies affected by the works. It should also, where possible, make similar arrangements for the alteration of other publicly and privately owned services and supplies.
- 2 (05/14) The above particulars should be contained in contract specific Appendix 1/16 and include details of any advance contracts, agreements and pre-ordered material. These details should be described in terms appropriate to the New Roads and Street Works Act HAUC Code of Practice for Diversionary Works. For example, where orders have been placed as C4 notices under the Code of Practice this should be stated in contract specific Appendix 1/16 in order to give the Contractor as much information as possible about the work.
- 3 (05/14) The position of all known services and supplies should be shown on the Drawings, cross-referenced in contract specific Appendix 1/16.
- 4 (05/14) Contract specific Appendix 1/16 should include details of highway systems which may be affected by the works together with details of any necessary alterations or temporary alternative provisions.

#NG 117 (05/14) Traffic Safety and Management

- 1 (05/14) The compiler should use contract specific Appendix 1/17 to detail the traffic management constraints and requirements that are specific to the site and the contract. The normal practice will be for the Contractor to design and implement the traffic management unless detailed otherwise in contract specific Appendix 1/17.
- 2 (05/14) It is essential that consultation with the police and highway authority is undertaken during scheme preparation and implementation. Traffic safety and management proposals should be discussed with the police, highway authority and Overseeing Organisation before implementation. There may be more than one police force and/or highway authority relevant to the roads involved with the works, all of them should be consulted as necessary.
- 3 (05/14) Traffic management operations need to be designed and carried out by personnel who are suitably trained and competent. The use of National Highways Sector Scheme 12 provides a framework to address this. There are three relevant NHSS schemes, 12A/B, 12C and 12D for different categories of traffic management as listed in Appendix A of the Specification for Highway Works. The company undertaking the traffic management work should be registered for the category or categories that are required by the works.
- 4 (05/14) The compiler should state in contract specific Appendix 1/17 the timescale for the Contractor to submit his traffic management proposals to the Overseeing Organisation.
- 5 (05/14) The Contractor may be required to undertake maintenance functions on highways within the site. If so, this should be stated, together with a list of these functions, in contract specific Appendix 1/17. The limits of the highway to be maintained should be stated together with the timescale during which the Contractor is responsible for maintenance.
- 6 (05/14) It is essential that all traffic safety measures are in accordance, where applicable, with the requirements and advice given in Chapter 8 of the Traffic Signs Manual and any other relevant requirements.
Chapter 8 of the Traffic Signs Manual is not a specification, and in many instances provides guidance and options, contract specific Appendix 1/17 should clearly indicate any specific requirements.
- 7 (05/14) If, in addition to routine maintenance functions, the Contractor is to be requested to repair accidental or willful damage to any highway within the site full details should be stated in contract specific Appendix 1/17. The Overseeing Organisation should ensure that the highway authority has been consulted.
- 8 (05/14) Legally, it is the highway authority's responsibility to maintain the highway and it is not a valid defence under Section 58 of the Highways Act 1980 that the Contractor was employed to carry out or supervise the maintenance of the highway. However, compensation for breach of contract may be obtainable from the Contractor if damages are paid by the highway authority because of a failure in maintenance due to fault by the Contractor.
- 9 (05/14) It may be necessary to erect, alter, cover, uncover and take down advance direction signs and other similar signs to be compatible with the state of the works. If the responsibility for this is not the Contractor's this should be stated in contract specific Appendix 1/17. The areas of highway affected by advance signs, cones and road markings should be included in contract specific Appendix 1/7 as forming part of the site (see NG 107.2).
- 10 (05/14) Authorisation of non-prescribed signs or temporary traffic signals should be obtained through the Overseeing Organisation giving at least 28 days' notice. Any other requirements which are likely to be needed (or different notice period) should be included in contract specific Appendix 1/17.
- 11 (05/14) Before the Contractor commences work on a highway, or reopens a closed highway, he should ensure that the police and highway authority agree with the proposals and are satisfied with the state of the highway to be reopened.
- 12 (05/14) Any requirements for temporary lighting should be included by cross-reference to contract specific Appendix 14/3.
- 13 (05/14) The x heights of the lettering on vehicle sign boards of 37.5, 50, 62.5, 75, 100 and 150 mm relate to the lower case and the capital sizes are 52.4, 70, 87.5, 105, 140 and 210 mm in height.
- 14 (05/14) The compiler should detail in contract specific Appendix 1/17 the highways and private rights of way which are to be kept open during the works.

(05/14) **Statutory Orders, Temporary Traffic Regulation Orders**

15 (05/14) The Contractor should ensure that necessary steps have been or are being taken to obtain any statutory orders required from the appropriate authority. Details of orders applied for by the Overseeing Organisation during the scheme preparation should be stated in contract specific Appendix 1/17.

16 (05/14) Contract specific Appendix 1/17 should state the timescale for submission and length of notice required for the making of orders necessitated by the Contractor's proposals where these are to be submitted through the Overseeing Organisation, or if he wishes to vary the measures arranged by the Overseeing Organisation.

17 (05/14) The compiler should detail in contract specific Appendix 1/17 the highways and private rights of way which are to be kept open, and those for which orders have been obtained for their closure.

(05/14) **Crossovers**

18 (05/14) Where contraflow traffic operation is identified as being required by the Overseeing Organisation for which crossovers are to be designed by the Contractor design requirements and constraints should be given in contract specific Appendix 1/17. Where crossovers are specified in contract specific Appendix 1/17 the Overseeing Organisation should ensure that the highway authority has been consulted, and list in Appendix 1/17 any maintenance functions to be carried out by the Contractor. When crossovers are proposed by the Contractor, they may be constructed only if the highway authority is in agreement. The police should also be consulted. Crossovers should be designed using TA 92 Crossover and Changeover Design (DMRB 8.4.6).

(05/14) **Traffic Safety and Control Officer**

19 (05/14) A Traffic Safety and Control Officer (TSCO) (and nominated deputies) should possess a broad experience of the highway construction industry, combined with the ability to interpret the requirements set out in contract documents. They should have a detailed working knowledge of the temporary traffic management industry and possess a TSCO (2009) Registration Card, as detailed by National Highways Sector Scheme 12.

Traffic Safety and Control Officers should also have a working knowledge of Chapter 8 of the Traffic Signs Manual and other appropriate guidance documents relating to temporary traffic management.

(05/14) **Driver Information Signs at Roadworks**

20 (05/14) Driver Information Signs are for use on roads that are the Overseeing Organisation's responsibility and where closure of traffic lanes is required for maintenance, new works or improvement schemes. Advance signs will give warning of road works ahead, and provide information about the nature and duration of the Works. Signs located within the road works will provide information about work in progress when a lane is closed and there may appear to be no activity. These signs will be used in addition to scheme notice boards where required. Authorised legends are given in Chapter 8 of the Traffic Signs Manual.

Contract specific Appendix 1/17 should state where driver information signs are required and should include details of required legends, which should be agreed with the Overseeing Organisation.

(05/14) **TASCAR**

21 (05/14) Where a Temporary Automatic Speed Camera System for the Enforcement of Mandatory Speed Limits at Roadworks (TASCAR) is to be provided in accordance with the sub-Clause 117.28, it is desirable to include the following in the Instructions for Tendering:

'The Contractor's attention is drawn to Specification sub-Clause 117.28 together with contract specific Appendices 1/17 and 1/27 which require the provision and maintenance of a TASCAR which will be operated under the control of the Enforcement Authority for the [give name of police district as specified in contract specific Appendix 1/27] and regularly maintained under the Contract at the expense of the Contractor in accordance with standards required by the Home Office in accordance with current legislation for traffic enforcement.'

The Overseeing Organisation should liaise and seek approval for the operation of any TASCAR scheme, on the Strategic Road Network, with the Enforcement Authority (EA) prior to issuing any form of tender.

There are two types of equipment that are available for use as TASCAR i.e. Spot Speed or Average Speed, confirmation of which system is required should be specified in the contract specific Appendix 1/27.

Automatic spot speed measuring devices require to have a secondary method of speed measurement, each supplier is responsible for detailing what is required for their system and these requirements need to be implemented.

For Highways Agency contracts the compiler should include in contract specific Appendix 1/27 requirements for liaison with the Regional Control Centre.

The Contractor is responsible for ensuring that all relevant requirements of the Evidential Trails for Enforcement Systems documents are applied to and achieved on the scheme.

NG 118 (05/14) Temporary Highways for Traffic

1 (05/14) The term ‘temporary highway for traffic’ shall mean a temporary carriageway, or part of carriageway, onto which vehicular traffic is diverted from a highway or a temporary footpath or bridleway onto which pedestrian or equestrian traffic is diverted from a highway or a combination of these. This includes a temporary private means of access onto which traffic is diverted from a private means of access.

This Clause does not apply to signed diversion routes on existing highways due to road closures. Requirements for these would be covered by Clause 117 and site specific Appendix 1/17.

(05/14) Temporary Highways for Traffic Specified by the Overseeing Organisation

2 (05/14) The Overseeing Organisation should ensure that:

- (i) all temporary highways, or parts of highway, for traffic required for reasons of safety or practicality, including any structures, have been specified in contract specific Appendix 1/18;
- (ii) details of their construction, maintenance and reinstatement requirements together with any environmental or other constraints, having been agreed with the highway authority, and described in contract specific Appendix 1/18;
- (iii) where applicable, licences or other rights to operate on land not owned by the Overseeing Organisation have been obtained and such land has been included in contract specific Appendix 1/7 as forming part of the site;
- (iv) the necessary orders have been or will be made by the appropriate authority.

3 (05/14) If, in addition to routine maintenance functions, the Contractor is to be required to repair accidental or wilful damage to any temporary highway for traffic specified by the Overseeing Organisation at the request of the highway authority responsible for that highway, full details should be stated in contract specific Appendix 1/18.

4 (05/14) Where the Contractor is required to design a temporary highway for traffic, or any temporary structures, design requirements should be stated in contract specific Appendix 1/18.

5 (05/14) If the ground over which the temporary highway is to be provided is not to be reinstated to its original condition on completion of the works this should be stated in contract specific Appendix 1/18 together with details of any treatment required.

(05/14) Temporary Highways for Traffic Proposed by the Contractor

6 (05/14) If the Contractor proposes temporary highways, or part of highways, for traffic, they may be implemented only if the appropriate authorities agree and the police have been consulted.

7 (05/14) The compiler should state in contract specific Appendix 1/18 if the submission of applications for any statutory orders required by the Contractor’s proposals should be made to the Overseeing Organisation rather than direct to the authorities concerned. The compiler should include details of notice periods required by the Overseeing Organisation in contract specific Appendix 1/18.

8 (05/14) The Contractor will agree details of construction and maintenance with the appropriate authority and Clause 118 requires him to inform the Overseeing Organisation of the details.

NG 119 (05/14) Routeing of Vehicles

1 Contract specific Appendix 1/19 should contain where applicable the Overseeing Organisation's specific requirements. These should include details of:

- (i) Routeing of site and delivery vehicles to and from the site;
- (ii) The use of the Permanent works by construction traffic;
- (iii) Traffic control required for machinery and plant crossing public roads and notice required before this can be implemented;
- (iv) Procedures to be adopted in complying with the Conditions of Contract to enable the Contractor to satisfy the Overseeing Organisation of the adequacy of his proposals.

NG 120 (05/14) Recovery Vehicles and Operation for Breakdowns

1 (05/14) Advice on Free Vehicle Recovery Facilities is given in Section D3.35 and D3.36 of Chapter 8 (Part 1 Design) and Section O7.3 and O7.4 of Chapter 8 (Part 2 Operations) of the Traffic Signs Manual.

2 (05/14) If recovery vehicles for breakdowns are required in the contract because of the works interfering with roads carrying a heavy flow of vehicles, this should be stated in Sheet 1 of contract specific Appendix 1/20 together with requirements specific to the contract which should include:

- (i) Number, category of vehicle and period required. Vehicle categories are:
 - (a) Heavy recovery vehicles;
 - (b) Light recovery vehicles;
 - (c) Light recovery vehicles equipped for motorcycle recovery;
 - (d) Impact Protection Vehicles – the use of IPV should be considered where vehicle speeds passing a broken down vehicle are generally in excess of 30 mph and safe refuges for vehicle occupants do not exist.

- (ii) Location(s) where the recovery vehicle(s) should be sited:

A location should only be specified if there are operational or safety reasons for limiting the Contractor's choice - refer to Chapter 8 of the Traffic Signs Manual for further advice on suitable locations.

- (iii) Location(s) to which broken-down or accident-damaged vehicles should be removed to and facilities to be provided at those locations:

The setting down location should be chosen with regard to the safety and security of the recovered motorist. Telephone facilities should always be available to arrange onward assistance – refer to Chapter 8 of the Traffic Signs Manual for further advice.

- (iv) Details of equipment for communication.

3 (05/14) The Overseeing Organisation should provide a suitable printed leaflet for the Contractor to hand out to the drivers of broken-down or accident-damaged vehicles prior to assistance being provided. These should be prepared in liaison with the police. Contract specific Appendix 1/20 should specify a sample leaflet (see Sheet 3) which should include the following information:

- (i) Definition of roadworks operations. This is usually between the 'Roadworks Ahead-2 miles' sign and the 'Road Works End' sign;
- (ii) Location to which the vehicle is to be towed;
- (iii) A statement that the recovery service is free and is limited to the area of roadworks operations (as (i) above) and between that and the location to which the vehicle is to be towed (as (ii) above);
- (iv) A statement that it will be at the discretion of individual drivers to arrange for assistance or the removal of their vehicle to garages of their choice from the location to which it has been towed;

- (v) Telephone numbers for Directory Enquiries, breakdown organisations and local garages (only after liaison with the police) which may assist with onward recovery. Where the location for depositing recovered vehicles is adjacent to an operational emergency roadside telephone, the leaflet should advise that the emergency telephone may be used to gain police assistance; and
- (vi) That the operatives of the recovery vehicles do not make arrangements with private garages for the repair of vehicles.

NG 122 (05/14) **Progress Photographs**

- 1 (05/14) When required, Clause 122 will need supplementing by contract specific Appendix 1/22, describing the number of visits, the interval between visits, the number and type of photographs required and the details of the media required for submission of the photographs to the Overseeing Organisation.
- 2 (05/14) The compiler should include in contract specific Appendix 1/22 the designation of the person who should accompany the photographer to ensure that relevant photographs are taken.
- 3 (05/14) Photographs should be taken as a record of any procedures or features which are, or could be, the subject of a third party claim or complaint eg. works which by their nature could generate considerable quantities of dust. Photographs should also be taken as a record of any procedures of features which are to be covered and not visible when works are completed.

NG 124 (05/14) **Health and Safety Restrictions, Precautions and Monitoring**

- 1 (05/14) Contract specific Appendix 1/23 should be used to describe any specific or extraordinary hazards that are known about that would place particular or unusual limitations on the Contractor's method of working. It is not intended to be exhaustive with respect to known hazards but to provide details to assist in planning the works and bring unusual items to the Contractor's attention. These details should also be included in the pre-construction health and safety information as required by the Construction Design and Management Regulations.
- 2 (05/14) Contract specific Appendix 1/23 should also be used to describe any specific monitoring requirements that the Overseeing Organisation has.
- 3 (05/14) Where protective clothing or other safety apparatus in relation to the work is required for the Overseeing Organisation's staff, this should be listed in contract specific Appendix 1/1.

NG 125 (05/14) **Temporary Closed Circuit Television (CCTV) System for the Monitoring of Traffic**

- 1 (05/14) The Overseeing Organisation should consult with the police force before specifying a temporary CCTV system. The police requirements for a dedicated communications link should be obtained and included in contract specific Appendix 1/25. For works to motorways in England the Overseeing Organisation should consult with the Regional Control Centre (RCC) operations and technology managers before specifying a temporary CCTV system. The RCC requirements for any interface to the HA CCTV System and communication links should be obtained and included in contract specific Appendix 1/25. See MCH 2530 for further guidance. The temporary CCTV system may be able to utilise existing permanent fixed CCTV cameras, this would need to be established with the relevant authority and details included as appropriate in Appendix 1/25.
- 2 (05/14) The Overseeing Organisation should specify supplementary cameras at areas such as interchanges, entrances to and exits from contraflow, etc.

NG 126 (05/14) **Timber and Products Containing Wood Supplied Under the Contract**

1 (05/14) With respect to Category A evidence as detailed in sub-Clause 126.3 “UK Government Timber Procurement Policy: Criteria for Evaluating Certification Schemes (Category A Evidence)” is available from the Overseeing Organisation on request and on CPET’s website. A list of assessed certification schemes that currently meet the government’s requirements can be found on CPET’s website.

2 (05/14) With respect to Category B evidence as detailed in sub-Clause 126.3 “UK Government Timber Procurement Policy: Framework for Evaluating Category B evidence” is available from the Overseeing Organisation on request and on CPET’s website. If mixing is unavoidable within the supply chain then sources can still be accepted provided that there are adequate controls in place and at least 70% (by volume or weight) is from a Legal and Sustainable source with the balance from a legal source.

TABLE NG 1/1: (05/17) Typical Testing Details

[Note to compiler: Appropriate contract compliance testing should be scheduled for all relevant works, goods or materials on site and as installed including those falling under the Construction Products Regulation.]

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 300					
306	Permanent fencing				Quality management scheme applies
	Concrete components	Cover to reinforcement	1 per consignment (maximum 1 per 100 components) (BS 1722)		<i>[Tests/samples should not normally be required]</i>
308	Gates and stiles				Quality management scheme applies
	Reinforced concrete posts	Cover to reinforcement	1 per consignment (maximum 1 per 100 components) (BS 3470)		<i>[Tests/samples should not normally be required]</i>
308 & 311	Preservation of timber	Full sapwood penetration	As required in sub-Clause 311.2(v)	Required for each batch	Quality management scheme applies <i>[Tests/Samples should not normally be required]</i>
Series 400					
402	Welding	Welding procedures (Manufacturer's tests)	(Every seven years)	Required	Requirements here are applicable only to legacy systems not falling under the Construction Products Regulation (CPR). Quality management scheme applies
		Welder qualification (Manufacturer's tests)	As required in sub-Clause 402.7(iii)		
		Production testing (Manufacturer's tests)	As required in sub-Clause 402.7(iv)		
	Welded joints	Destructive testing	<i>[See sub-Clauses 402.7(v) and 402.7(vi)]</i>		
403	Anchorage and attachment systems for use in drilled holes	Ultimate tensile load (Manufacturer's tests)		Required	To provide well attested and documented evidence <i>[See NG 403.3]</i>
404	Anchorage in drilled holes	Loading test on site	As required in contract specific Appendix 4/1	Required	
	Post foundations			Required	
406	Vehicle parapets			Required	Quality management scheme applies – applicable only to legacy systems not falling under the CPR.
407	Anchorage and attachment systems for use in drilled holes	Ultimate tensile load (Manufacturer's test)		Required	To provide well attested and documented evidence for legacy systems not falling under the CPR. <i>[See NG 407.1]</i>

TABLE NG 1/1: (05/17) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 400 (continued)					
409	Vehicle parapet components			Required	
	General				In accordance with manufacturer's installation manual
	Legacy systems	Static destructive testing:			Acceptance criteria in BS 6779-1 clause 9.4.3.2.6.3
410	Anchorage in drilled holes	On-site tensile load test	As required in contract specific Appendix 4/1	Required	†
411	Pedestrian Parapets and Guardrails		Manufacturer's tests: yield/proof strength of material, ultimate strength and the extension at break		(N) [see 411.8]
Series 500					
501	Pipes for drainage and service ducts				Product certification scheme or equivalent applies for products not falling under the Construction Products Regulation (CPR). [Appropriate contract compliance testing should be scheduled for all products including those falling under CPR]
	Vitrified clay				
	Concrete-PC/SRC	Not exceeding 900 mm dia			
	Concrete-Prestressed				
	Iron-cast				
	Iron-ductile				
	PVC-U				
	GRP				
	Plastics. See Table 5/1				
	Corrugated steel		(Manufacturer's tests)	Required (AASHTO)	
	Corrugated steel bitumen protection	Not exceeding 900 mm dia			
Other materials			Required	Product Acceptance Scheme or equivalent applies	
503	Pipe bedding	Grading and fines content			[Appropriate contract compliance testing should be scheduled for all products including those falling under CPR]
		Water-soluble sulfate (WS) content (N)			
		Oxidisable sulfides (OS) content and total potential sulfate (TPS) content (N)			
		Resistance to fragmentation (N)			

TABLE NG 1/1: (05/14) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 500 (continued)					
505	Filter medium backfill	Plastic index (N)	1 per source*		<p>[For bedding types not falling under the Construction Products Regulation (CPR), Results of routine control tests from the factory production control system operated by the producer to be provided - see BS EN 13285]</p> <p>[Appropriate contract compliance testing should be scheduled for all products including those falling under CPR]</p>
		Resistance to fragmentation (N)	1 per source*		
		Water-soluble sulfate (WS) content (N)	5 per source		
		Oxidisable sulfides (OS) content and total potential sulfate (TPS) content (N)	5 per source		
		Grading	1 per 500 tonnes*		
		Permeability (N)	1 per source*		
506	Sealing existing drains				[Appropriate tests/samples should be scheduled where not included under other Clauses]
	Concrete				
	Grout				
507	Chambers				<p>Product certification scheme or equivalent applies</p> <p>Required</p> <p>Product certification scheme or equivalent applies</p> <p>Product certification scheme or equivalent applies</p> <p>Quality management scheme or equivalent applies</p>
	Precast concrete				
	Corrugated galvanized steel	(Manufacturer's tests)			
	Steel fitments				
	Covers, grates and frames				
	Cover bolts				
508	Gullies and pipe junction				<p>For products not falling under the (CPR) product certification scheme or equivalent applies</p> <p>[Appropriate contract compliance testing should be scheduled for all products including those falling under CPR]</p>
	Precast concrete				
	Clay				
	Cast iron and steel				

TABLE NG 1/1: (05/14) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 500 (continued)					
509	Watertightness of joints	Air test	All pipelines with watertight joints <i>[As required in contract specific Appendix 5/1 for partly watertight joints]</i>	Required	
512	Backfill to pipe bays	Grading	1 per 50 tonnes (min of 3)*		<i>[Acceptance testing can be scheduled for bedding types not falling under the Construction Products Regulation (CPR)]</i> <i>[Appropriate contract compliance testing should be scheduled for all products including those falling under CPR]</i>
		Water-soluble sulfate (WS) content (N)	5 per source*		
		Oxidisable sulfides (OS) content and total potential sulfate (TPS) content (N)	5 per source*		
513	Permeable backing to earth retaining structures	Plastic index (N)	1 per source*		<i>[Acceptance testing can be scheduled for bedding types not falling under the CPR]</i> <i>[Appropriate contract compliance testing should be scheduled for all products including those falling under CPR]</i>
		Water-soluble sulfate (WS) content (N)	5 per source		
		Oxidisable sulfides (OS) content and total potential sulfate (TPS) content (N)	5 per source		
		Resistance to fragmentation (N)	1 per source*		
		Grading	1 per 200 tonnes (min of 3)*		
		Permeability (N)	1 per source*		
	Precast hollow concrete blocks	(Manufacturer's tests)		Required	
514	Fin Drains	(Manufacturer's tests)		Required	Product Acceptance Scheme or equivalent) applies

TABLE NG 1/1: (05/14) Typical Testing Details (continued)

Clause	Work, Goods or Material		Test	Frequency of Testing	Test Certificate	Comments
Series 500 (continued)						
515	Narrow filter drains				Required	Product Acceptance Scheme or equivalent) applies <i>[Acceptance testing can be scheduled for bedding types not falling under the Construction Products Regulation (CPR)]</i> <i>[Appropriate contract compliance testing should be scheduled for all products including those falling under CPR]</i>
	Geotextile, pipes and fittings		(Manufacturer's tests)			
	Granular fill		Plastic index (N)	1 per source*		
			Resistance to fragmentation (N)			
			Water-soluble sulfate (WS) content (N)	5 per source		
			Oxidisable sulfides (OS) content and total potential sulfate (TPS) content (N)	5 per source		
			Grading	1 per 200 tonnes (min of 3)*		
		Permeability (N)	1 per source*			
516	Combined drainage and kerb systems		Load test			
517	Linear drainage systems		Load test			
518	Thermoplastics structured wall pipes and fittings		(Manufacturer's tests)		Required	Product Acceptance Scheme or equivalent applies
Series 600						
601, 631 to 637, 640	Acceptable material				Required	<i>[Acceptance testing can be scheduled for materials not falling under the Construction Products Regulation (CPR)]</i> <i>[For recycled aggregate, see sub-Clauses 601.12 and 601.18]</i> <i>[Appropriate contract compliance testing should be scheduled for all products including those falling under CPR]</i>
	Class	General Description				
	1	General granular fill	Grading/uniformity coefficient	Twice a week*		
			mc/MCV (N)	2 per 1000 m ³ up to max of 5 per day*		
			SMC of chalk (N)	Twice a week*		
	1C only	Resistance to fragmentation (N)	Weekly*			

TABLE NG 1/1: (02/16) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments	
Series 600 (continued)						
	Class	General Description				
	2	General cohesive fill	Grading	Twice a week*	Required	[Cross-reference should be made to any requirements in contract specific Appendix 6/1]
			mc/MCV/PL Undrained shear strength (N)	2 per 1000 m ³ up to max of 5 per day*		
			SMC of chalk (N)	Twice a week*		
			Bulk density (pfa) (N)	2 per 1000 m ³ up to max of 5 per day*		
	3	General chalk fill	mc (N)	2 per 1000 m ³ up to max of 5 per day*		
			SMC (N)	Daily*		
	4	Landscape fill	Grading/mc/MCV (N)	Daily*		
	5	Topsoil	Grading	Daily*		
	6	Selected granular fill	Grading/uniformity coefficient	1 per 400 tonnes*		
			PI/LL (N)	Daily*		
			Resistance to fragmentation (N)	Weekly for on-site material*		
			SMC (N)	Weekly*		
			omc/mc, mc or MCV (N)	1 per 400 tonnes*		
			Organic matter/ water soluble sulfate (WS) (N)	Weekly*		
			Oxidisable sulfides (OS) and total potential sulfate (TPS) content (N)	Weekly*		
			pH/chloride ion content (N)	Weekly*		
			Resistivity (N)	[As required]		
			Undrained and drained shear parameters (N)	[As required]		
	6F4 and 6F5		Size designation and overall grading category	1 per week*		
Maximum fines and oversize categories			1 per week*			
Volume stability of blast furnace slag			6 monthly			
Volume stability of steel (BOF and EAF) slag			6 monthly			
Other aggregate requirements			Annex C of BS EN 13242			

TABLE NG 1/1: (02/16) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments	
Series 600 (continued)						
	Class	General Description		Required		
			Laboratory dry density and optimum water content			
			Water content			
7	Selected cohesive fill	Grading/mc/MCV/bulk density (N)	1 per 400 tonnes*		<i>[BS EN 1744-1, clause 10, clause 11, clause 13]</i>	
		SMC of chalk (N)	Twice a week*			
		PI/LL (N)	Daily*			
		Organic matter/water soluble (WS) sulfate content (N)	Twice a week* or daily where sulfates are expected			
		Oxidisable sulfides (OS) and total potential sulfate (TPS) content (N)	Twice a week* or daily when sulfides are expected			
		pH/chloride ion content (N)	Weekly*			
		Resistivity (N)	<i>[As required]</i>			
		Undrained and drained shear parameters (N)	<i>[As required]</i>			<i>[Cross-reference should be made to any requirements in contract specific Appendix 6/1]</i>
		Permeability (N)	<i>[As required]</i>			
8	Miscellaneous fill	mc/MCV (N)	Daily*			
9	Stabilised materials	Pulverisation	1 per lane width per 200 m length*			
		mc/MCV (N)				
		Bearing ratio (N)				
	Pulverised fuel ash	Chemical analysis	1 per consignment*		<i>[As appropriate to properties stated in Table 6/1 or contract specific Appendix 6/1]</i>	
	Furnace bottom ash	Grading	1 per 300 tonnes*			
	Fill adjacent to cementitious material or metallic items	Water-soluble sulfate (WS) content, oxidisable sulfides (OS) content and total potential sulfate (TPS) content (N)	1 per 400 tonnes or per location if less than 400 tonnes*		<i>[At least 5 tests per source for sulfur compounds, BS EN 1744-1 clause 10, clause 11, clause 13]</i>	
602	Earthworks material beneath surface of a road or paved central reserve	Frost heave (N)	(i) Imported onto site	1 every four months*	<i>[Acceptance testing can be scheduled for materials not falling under the Construction Products Regulation (CPR)]</i> <i>[Appropriate contract compliance testing should be scheduled for all products including those falling under CPR]</i>	
			(ii) On site source	As required		

TABLE NG 1/1: (02/16) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments	
Series 600 (continued)						
609, 621	Geotextiles	Tensile strength	1 per 400 square metres	Required	[Appropriate contract compliance testing should be scheduled. Details should be given in contract specific Appendix 6/5 or 6/9, cross reference as appropriate]	
		Elongation				
		Tensile strength of seams and joints				
		Static puncture				
		Characteristic opening size				
		Water permeability				
612	Compaction of fills			Required		
		Method compaction	Field dry density (N)		[As required]	††
		End product compaction	Optimum mc (2.5 kg rammer/vibrating hammer method) (N)		Each class or sub class of material*	†
			Field dry density (N)		1 per 400 tonnes*	†
614	Cement stabilisation to form capping	Rate of spread of cement	1 per 500 square metres of cement spread*	Required		
615, 641, 643	Lime stabilisation to form capping	Rate of spread of lime	1 per 500 square metres of lime spread*	Required		
		Available lime content	Each source of lime weekly during stabilisation operation*		†	
622, 638, 639	Earthworks for reinforced soil and anchored earth structures	Redox potential	5 locations within the affected area*	Required	[Acceptance testing can be scheduled for materials not falling under the Construction Products Regulation (CPR)] [Appropriate contract compliance testing should be scheduled for all products including those falling under CPR] †	
		Drainage layers	Grading		1 per 400 tonnes*	
			Chemical analysis			
		Reinforcing elements	Coeff. of friction		Each type of element with each type of fill*	
Anchor elements	Adhesion					
624	Ground anchorages	Proof loading	As required in contract specific Appendix 6/10	Required	†	
626	Gabions			Required	[Appropriate contract compliance testing should be scheduled. See BS EN 10223-3 or BS EN 10223-8 as appropriate. Details should be given in contract specific Appendix 6/10, cross reference as appropriate]	
		Fill	Grading			1 per 400 tonnes*
			Los Angeles coefficient (N)			
Wire and wire mesh	[As appropriate to properties stated in contract specific Appendix 6/10, e.g. tensile strength of mesh, assessment of coating, weld shear strength]	1 per 400 squaremetres*				
642	Earthworks materials for corrugated steel buried structures	Constrained soil modulus (M*)	3 on each side of each structure*	Required		

TABLE NG 1/1: (05/14) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 700					
710	Constituent materials in recycled aggregate and recycled concrete aggregate	Quality control	As required by the 'Quality Protocol for the production of aggregates from inert waste'	Required	[See NG 710.1 and NG 710.2]
711	Overbanding and inlaid crack sealing systems			Required	Product Acceptance Scheme or equivalent applies
Series 800					
801, 803, 804, 805, 806	General Requirements for unbound mixtures for adjacent to cement bound materials, concrete pavements, structures or products	Water-soluble sulfate (WS) content (N)	1 per 400 tonnes or per location if less than 400 tonnes*	Required	[Acceptance testing can be scheduled for materials not falling under the Construction Products Regulation (CPR)] [Appropriate contract compliance testing should be scheduled for all products including those falling under CPR]
		Oxidisable sulfides (OS) content and total potential sulfate (TPS) content (N)	1 per 400 tonnes or per location if less than 400 tonnes*		
	Unbound mixtures beneath surface of a road or paved central reserve	Frost heave (N)	1 per source*		
		Grading and fines content	1 per week*		
		Resistance to fragmentation (N)	6 monthly*		
		Resistance to wear - micro-Deval test			
		Resistance to freezing and thawing (magnesium sulfate soundness) (N)	1 per source*		
		Water absorption (N)	[As required]		
		Volume stability of blast furnace slags	6 monthly		
		Volume stability of steel (BOF and EAF) slags	6 monthly		
		CBR (N)	1 per source and then monthly*		
		OMC/mc (N)	[As required]		
		Density (N)	[As required]		
Water absorption (N)	[As required]				

TABLE NG 1/1: (05/14) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 800 (continued)					
821, 822, 823, 830, 831, 832, 834, 835, 840	Cement and other Hydraulically Bound Mixtures (HBM)	Tests for control and checking of HBM	Tests specified in Table 8/14 and Table 8/15	Required	
		Coefficient of linear expansion	<i>[As required]</i>		
		Tests for laboratory mixture design	Test specified in Clause 880		
Series 900					
901, 925, 937, 938, 943	Aggregates for bituminous materials			Required	
		Resistance to fragmentation (hardness)	Resistance to fragmentation (N)		
		Resistance to freezing and thawing (durability)	Soundness (N)		
			Water absorption (N)		
		Cleanness	Sieve test (mass passing 0.063 mm sieve) (N)		
		Shape	Flakiness index (N)		
		Blastfurnace slag	Bulk density (N)		
			Soundness (N)		
			Dicalcium silicate disintegration (N)		
			Iron disintegration (N)		
		Steel slag	Bulk density		
			Volume stability (N)		
		Coarse aggregate for surface courses	Resistance to polishing (PSV) (N)		
			Resistance to surface abrasion (AAV) (N)		
		Binders for bituminous materials	Penetration (N)		
Softening point (N)					
<i>[Other BS EN tests]</i>					

TABLE NG 1/1: (05/14) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 900 (continued)					
903 to 907, 909 to 912, 914, 916, 925, 926, 929, 930, 937, 938, 941, 943, 946 to 948	Bituminous mixtures	Grading (N)	For Audit Test purpose only		
		Binder Content (N)			
929	Base and Binder Course Asphalt Concrete (Design Mixtures)	Permanent Works - In situ air void content (N)	<i>[As required]</i>		
		Permanent Works - Refusal air void content (N)			
		Permanent Works - Deformation resistance			
		Deformation resistance (design)	<i>[As required]</i>		
		Stiffness (design)			
930	EME 2	Permanent Works - In situ air void content (N)	<i>[As required]</i>		
		Richness modulus (design)	<i>[As required]</i>		
		Duriez (design)			
		Deformation Resistance (design)			
		Stiffness (design)			
911	Rolled asphalt surface course (design mix)	Stability value (N)			
		Flow value (N)			
		Density (N)			
915	Coated chippings	Grading (N)			
		Binder content (N)			
		Flakiness index (N)			
		Resistance to polishing (PSV) (N)			
		Resistance to surface abrasion (AAV) (N)			
		Hot sand test (N)			
		Rate of spread (N)			

TABLE NG 1/1: (05/14) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 900 (continued)					
921	Surface macrotexture	Volumetric Patch (N)	[As required]	Required	
924	High friction surfaces	Quality control checks	As required in sub-Clause 924.5	Required	Product Acceptance Scheme or equivalent applies
		System coverage	As required in sub-Clause 924.6		
	Aggregate	Resistance to polishing (PSV) (N)			
937	Stone mastic asphalt (SMA) binder course and regulating course	Permanent Works - In situ air void content (N)	[As required]		
		Permanent Works - Deformation resistance			
		Binder drainage test (design)	[As required]		
		Deformation resistance (design)			
942	Thin surface course systems	General properties		Required	Product Acceptance Scheme or equivalent applies
943	Hot Rolled Asphalt surface course and binder course (performance-related design mixtures)	Permanent Works - In situ air void content (N)	[As required]		
		Permanent Works - Deformation resistance			
		Deformation resistance (design)	[As required]		
918	Slurry surfacing incorporating microsurfacing	Binder			
			Product Identification		
			Vialit cohesion		
			Rate of spread		
			Penetration at 25°C and 5°C (N)		
		Aggregates	Flakiness index (N)		
			Resistance to polishing (AAV) (N)		
			Resistance to surface abrasion (AAV) (N)		
			Grading (N)		
		System			
920	Bond coats, tack coats and other bituminous sprays	Binder	Product identification		
			Vialit cohesion		
			Accuracy of spread		
			Rate of spread		
			Penetration at 25°C and 5°C (N)		

TABLE NG 1/1: (05/14) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 900 (continued)					
919, 922	Surface Dressing				
		Binder			
		Product Identification			
		Vialit cohesion (N)			
		Accuracy of spread			
		Rate of spread			
		Penetration at 25°C and 5°C (N)			
	Chippings	Resistance to (PSV) polishing (N)			
		Resistance to abrasion (AAV) (N)			
		Grading (N)			
		Binder content (N)			
		Flakiness index (N)			
		Accuracy of spread (N)			
		Rate of spread			Frequency to be reduced to daily after 3 satisfactory results, but not less than 1 test per lane per site
	Rollers	Spray bars working	Before work starts and daily during works		
950	Depressions				Product Acceptance Scheme or equivalent applies

TABLE NG 1/1: (05/14) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments	
Series 1000						
1001, 1030, 1044	Cement					
	Portland cement CEM I					
	Portland blastfurnace cement					
	Blastfurnace cement CEM III/A					
	Portland pfa cement CEM II/B-V					
	Pozzolanic cement CEM IV/A					
	Portland cement with microsilica				Product Acceptance Scheme applies for microsilica	
	Pulverised-fuel ash					
	Ground granulated blast furnace slag					
	Admixtures					
	Mixing water	Sulfate content (N)				
	Aggregates	Resistance to freezing and thawing - magnesium sulfate soundness (N)				
		Water absorption (N)				
		Flakiness index (N)				
		Shell content (N)				
		Resistance to fragmentation (N)				
		Resistance to polishing (PSV) (N)				
		Resistance to abrasion (AAV) (N)				
		Grading and fines content (N)				
Chloride content (N)						
Total sulfur (TS) and acid-soluble sulfate (AS) content (N)						

TABLE NG 1/1: (05/14) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1000 (continued)					
	Flint coarse aggregate containing white flints	Water absorption (N)			
	Sand (ie fine aggregate)	Acid-soluble material (N)			
	Blastfurnace slag	Bulk density (N)			
		Dicalcium silicate disintegration (N)			
		Iron disintegration (N)			
		Total sulfur (TS) and acid-soluble sulfate (AS) content (N)			
	Pulverised-fuel ash				
1002, 1003, 1004, 1044	Pavement concrete	Air content test (N)	As required in Table 10/10	Required	Product certification scheme or equivalent applies
		Density (N)	As required in Table 10/10		
		Strength (N)	As required in Table 10/10		
1005	Consistence (Workability)	Degree of Compactability (Compaction Index) (N)	As required in Table 10/10	Required	
		Vebe (N)			
		Slump (N)			
1011, 1012	Dowel bars			Required (BS 4449)	Product certification scheme applies
	Tie bars				
	Dowel bars and supporting cradles	Load test	1 per arrangement*		
	Sheathed dowel bars	Bond stress	4 bars		
	Cranked tie bars (coated)	Bend test	4 bars*		
Salt fog cabinet		4 bars*			
1015	Joint filler board	Weathering test	3 per source	Required	Normally undertaken by manufacturer
		Compression and recovery	4 per source		
		Extrusion	1 per source		
	Cork filler board	Immersion in water	2 per source		
		Immersion in acid	2 per source		

TABLE NG 1/1: (05/14) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1000 (continued)					
1016, 1017	Applied sealants		1 per 1000m or 1 per day		
		Resilience	1 per 1000m or 1 per day		
	Compression seals	Compression set	1 per type of seal*		
		Immersion in oil	1 per type of seal*		
	Self expanding cork seal	Tests specified in Clause 1017	1 per type of seal*		
1026, 1044	Surface macrotexture	BS EN 13036-1 Volumetric Patch Technique (N)	1 per day (set of 10)*	Required	
1027	Aluminised curing compound	Efficiency index	1 per source*	Required	
1030	Wet lean concrete	Density	As required in Table 10/9	Required	
		Cube strength (N)			
1043	Foamed Concrete	Cube strength (N)	2 cubes per 12 m ³	Required	
Series 1100					
#1101	Precast concrete kerbs, channels, edgings and quadrants	Bending strength			
1102	In situ asphalt kerbs	Grading	1 test per 500 metres laid*	Required	<i>[See BS 5931 for materials for in situ asphalt kerbs]</i>
		Binder content			
1104	Precast concrete flags	Bending strength			<i>[Appropriate tests/samples should be scheduled where not included under other Clauses]</i>
	Bedding	Granular material			
		Mortar			
1107	Concrete block paving	Compressive strength			
1108	Clay pavers	Bending strength			
		Skid resistance			
Series 1200					
1202	Permanent traffic signs				
1207	Anchorage in drilled holes to supports of traffic signs	Loading test on site	<i>[As required]</i>		
1210	Holding down bolts and anchorage to bases of permanent bollards				
1212	Road Markings				

TABLE NG 1/1: (05/14) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1200 (continued)					
1214	Permanent traffic cones and traffic cylinders			Required	Certification that permanent traffic cones and cylinders have been tested and comply with BS EN 13422 is required
	Flat traffic delineators			Required	
		Tests specified in Clause 1214	[As required]		
	Other traffic delineators			Required	Certification that the delineators have been tested and comply with Clause 1214 is required
		Tests specified in contract specific Appendix 12/4	[As required]		
Temporary cones, cylinders, FTD's and other delineators			Required	Certification that at least 1 in 500 of any batch of cones, cylinders, FTD's and other delineators to be used in the Temporary Works have passed the tests in Clause 1214 as appropriate is required	
1217	Traffic signals				Statutory type approval of equipment applies
	Cables				Product certification scheme or equivalent applies
	Controllers [Other equipment]	Test specified in Appendix 12/5	Each controller before delivery to Site and again after installation		
	Cabling	Tests a, b, c, e, f, g, h, j as defined in sub-Clause 1424.2	Each traffic signals installation	Required	Certification that the installation complies with BS7671 (the IEE Wiring Regulations) is required
1218	Detector loops				
	Cable			Required	Certification that completed cables comply with specification TR 2029 is required
	Epoxy resin			Required [where considered appropriate]	Certification that the epoxy resin complies with specification MCH 1540 is required

TABLE NG 1/1: (05/14) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments	
Series 1200 (continued)						
	Feeder cable			Required	Certification that completed cables comply with specification TR 2031 is required	
	Joints	Pull test (4 kgf)	Each crimp			
	Installation	Series resistance	Each loop	Required	Certification in accordance with specification MCH 1540 is required	
		Insulation resistance				
		Inductance				
Series 1300						
1305	Anchorage for use in drilled holes	Tensile load				
1306	Anchorage in drilled holes to columns and masts with flange plates	Loading test on site	<i>[As required]</i>		†	
1313	GFRP laminates	Loss on ignition	1 per 50 production columns		<i>[See sub-Clauses 1313.10-17]</i>	
		Colour fastness	1 per batch			
		Electric strength				
		Water absorption				
		Impact strength				
1314	Brackets for laminated GFRP lighting columns			Required		
		Polyurethane foam	Bulk density			1 per batch
			Surface hardness			
		Polyurethane foam	Apparent bulk density			2 per batch
			Impact strength			
Flexural stress						
Series 1400						
1421	Cable				Product certification scheme or equivalent applies	

TABLE NG 1/1: (05/14) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1400 (continued)					
1424	Lighting Units	Tests specified in Clause 1424	Each unit	Required	† Product certification scheme or equivalent applies Certification that the installation complies with BS7671 (the IEE Wiring Regulations) is required
	Networks	Tests specified in Clause 1424	Each network	Required	† Certification that the installation complies with BS7671 (the IEE Wiring Regulations) is required
Series 1500					
1506	Copper communications cable			Required	Certification that each completed cable complies with specification TR 2150 or TR 2158, as appropriate, is required
	Optical fibre communications cable			Required	Certification that each completed cable complies with specification TR 2151 or TR 2159, as appropriate, is required
	Coaxial communications				Certification that each completed cable complies with specification TR 2152 or TR 2160, as appropriate, is required
	Energy cable			Required	Certification that each completed cable complies with specification TR 2153 or TR 2161, as appropriate, is required
1513	Cable Joint Enclosures	Test specified in Clause 1513.12	Each CJE	Required	† Certification that the CJE satisfies the air pressure test is required.
1518	Coaxial and copper communications and power cable	Tests specified in specification MCG 1022 or MCG 1099, as appropriate	Each cable (Stage 1) As required in contract specific Appendix 15/1 (Stage 2)		† Results to be reported in accordance with MCG 1022 or MCG 1099, as appropriate
	Optical fibre communications cable	Tests specified in specification MCG 1055 or MCG 1099, as appropriate	Each cable (Stage 1) As required in contract specific Appendix 15/1 (Stage 2)		† Results to be reported in accordance with MCG 1055 or MCG 1099, as appropriate
1522	Motorway System				
	Steel posts			Required (BS 6323)	
1526	Electrical Installations	Tests specified in BS 7671	Each installation	Required	† Certification that the installation complies with BS 7671 (the IEE Wiring Regulations) is required.

TABLE NG 1/1: (05/14) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1500 (continued)					
1530	Cable ducts				Product Acceptance Scheme or equivalent applies
1533	Cable ducts				
	Mandrel test	Test specified in Clause 1533	Each duct	Required	† Certificate that each length of duct between chambers satisfies the mandrel test is required.
	Air test	Test specified in Clause 1533	Each duct	Required	† Certificate that each length of duct between chambers satisfies the air test is required.
Series 1600					
1601	Soil samples In situ soil tests			Required	<i>[Appropriate soil tests should be scheduled where required]</i>
1602 to 1606 1610 to 1615	Concrete Grout Reinforcement Prestressing Steelwork Welding Protection against corrosion			Required	<i>[Appropriate tests/samples should be scheduled where not included under other Clauses/Series]</i>
1606	Coatings for protection against corrosion	Adhesion	As required in Appendix 16/6		
1607	Reduction of friction on piles				<i>[Particular requirements detailed in contract specific Appendix 16/7 should be scheduled]</i>
1608 1616	Integrity testing Dynamic testing				<i>[Particular requirements detailed in contract specific Appendix 16/8 or 16/16 should be scheduled]</i>
1609	Static load testing of piles			Required	<i>[Testing of preliminary piles should not be scheduled in contract specific Appendix 1/5 Particular requirements detailed in contract specific Appendix 16/9 should be scheduled]</i>
1612	Self hardening slurry mixes				<i>[Particular requirements detailed in contract specific Appendix 16/12 should be scheduled]</i>
1617	Instrumentation				<i>[Particular requirements detailed in contract specific Appendix 16/17 should be scheduled]</i>
1618	Support fluids	To be proposed by the Contractor			<i>[Particular requirements detailed in contract specific Appendix 16/18 should be scheduled]</i>

TABLE NG 1/1: (03/20) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1700 (continued)					
1707	Hardened concrete – Identity Testing	Cube strength (N) – as described in contract specific Appendix 17/4	Prestressed concrete-two cubes from 12 m ³ or 2 batches whichever represents the lesser volume	Required	Contractor to cast and test sufficient additional cubes to demonstrate cube strength before transfer <i>[See Clause 1724] †</i>
			Reinforced concrete-two cubes from 24 m ³ or 4 batches whichever represents the lesser volume		<i>[See also Table NG 17/2]</i>
			Mass concrete-two cubes from 50 m ³ or 50 batches whichever represents the lesser volume		<i>[See also Table NG 17/2]</i>
			Additional cubes for special purposes		<i>[Tests/samples should be scheduled as required. See NG 1707.11]</i>
		Density	<i>[As required]</i>		<i>[Requirements should be given in contract specific Appendix 17/1 as appropriate]</i>
	Fresh concrete – Identity Testing	Consistence (slump or flow) (N)	Each batch	Required	<i>[See sub-Clause 1707.2]</i>
		Air content	Each batch		
		Density	<i>[As required]</i>		
		Water/cement ratio			
	1709	Hydrophobic impregnation	Refractive Index	Three samples	
Trial panels			<i>[See sub-Clause 1709.7 (ii)]</i>		
Anti-graffiti coatings		Trial panels			<i>[See sub-Clause 1709.11]</i>

TABLE NG 1/1: (12/14) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1700 (continued)					
1710	Concrete packing Mortar packing Epoxy resin bonding agent				<i>[Appropriate tests/samples should be scheduled]</i>
	Precast concrete not conforming to any Product Standard or to BS EN 13369	Cube strength (Manufacturer's tests)			Contractor to make available records of tests by the manufacturer. See sub-Clause 1710.8
1711	Grouting and Duct Systems for Post-tensioned tendons				Product acceptance scheme or equivalent applies
		Full scale trials, where required in the contract			See sub-Clause 1711.1 and Appendix 17/6
		Duct assembly verification tests			See sub-Clause 1711.4 and Appendix 17/6
		Fluidity	In accordance with BS EN 447 and BS EN 446		See sub-Clause 1711.2 and sub-Clause 1711.3
		Bleeding			
		Volume change			
		Cube strength			
		Sieve			
		Density			
Time Setting					
1712	Reinforcement				Product certification scheme or equivalent applies
	Steel bars			Required (BS 4449)	
	Steel wire			Required (BS 4482)	
	Steel fabric			Required (BS 4483)	
	Stainless steel			Required (BS 6744)	

TABLE NG 1/1: (03/20) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1700 (continued)					
1713	Fabricated reinforcement			Required (BS 8666)	Certification that fabricated reinforcement complies with the routine inspection/testing requirements of BS 8666 is required if the fabrication is not covered by a product certification scheme or equivalent
1716	Reinforcement jointing systems	Permanent elongation characteristic strength (Manufacturer's tests)		Required for each type of connection	Product acceptance scheme or equivalent applies
1717	Reinforcement – Welding	Welding procedure approval (BS EN ISO 17660)	As required in BS EN ISO 17660		<i>[Where tests in addition to those specified in BS EN ISO 17660 are required full details should be scheduled]</i> Tests should be carried out by an independent testing body
		Welder approval (BS EN ISO 17660)			
1718	Prestressing tendons				Product certification scheme or equivalent applies
	Steel wire and strand			Required (BS 5896)	
	Steel bar			Required (BS 4486)	
	Prestressing steel (all types)	Proof load Breaking load Elongation Ductility Relaxation Modulus of elasticity	<i>[As required]</i>		†
	Other than lowest strength wire or strand to BS 5896	0.1% proof load	Each reel		†
1724	Post-tensioning anchorages	Tests in accordance with BS EN 13391 (Manufacturer's tests)		Required (BS EN 13391)	Product certification scheme or equivalent applies
1726	Stainless steel bar			Required (BS 6744)	Product certification scheme or equivalent applies
1727	Inspection and testing of structures and components				<i>[Tests should be scheduled as appropriate and requirements given in contract specific Appendix 17/4]</i>
1729	Post-installed anchors and reinforcing bar connections	Proof load	<i>[As required]</i>	Test report (BS 8539)	<i>[Requirements should be detailed in contract specific Appendix 1/5. See NG 1729.9. Cross reference contract specific Appendix 17/8 as necessary]</i>

TABLE NG 1/1: (04/21) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1800					
1805	1805.2 Metallic products listed in BS EN 1090-2:2018, Table 1	As required by the relevant product standard	As required by the relevant product standard	Required according to BS EN 1090-2:2018, Table 1	<i>[Give type of metallic product and type of document required]</i>
	1805.3.4 Additional properties of constituent products other than stainless steels	Testing to identify internal discontinuities or cracks in zones to be welded as specified in Appendix 18/1	As required in Appendix 18/1		<i>[Give specific testing requirements and frequency of testing in Appendix 18/1 with cross reference in Appendix 1/5]</i>
	1805.3.4 Additional properties of stainless steels	Testing for special delivery conditions for stainless steels as specified in Appendix 18/1	As required in Appendix 18/1		<i>[Give specific testing requirements and frequency of testing in Appendix 18/1 with cross reference in Appendix 1/5]</i>
	1805.4 Steel castings	Testing of steel castings in accordance with BS EN 1090-2:2018, 5.4 and 1812.2.1 (5).	As required according to BS EN 1090-2:2018, 5.4 and 1812.2.1 (5).		Results to be reported in accordance with the relevant standard
	1805.6.11 special fasteners	Testing of special fasteners as specified in Appendix 18/1	As required in Appendix 18/1		<i>[Give specific testing requirements and frequency of testing in Appendix 18/1 with cross reference in Appendix 1/5]</i>
1806	1806.4.4 Check of the capability of cutting processes that are likely to produce local hardness	Testing in accordance with BS EN ISO 6507	As required according to BS EN 1090-2:2018, 6.4.4		Results to be reported in accordance with BS EN ISO 6507
	1806.5.3.1 Qualification of flame straightening procedure	Testing of tensile, impact and hardness properties in accordance with BS EN ISO 10025-1	As required according to BS EN 1090-2:2018, 6.5.3.1 and 1806.5.3.1 (9)		
	1806.5.4 Check of the hardness of hollow section components subject to bending by cold forming	Testing of hardness properties in accordance with BS EN ISO 6507	As required according to BS EN 1090-2:2018, 6.5.4 i)		

TABLE NG 1/1: (04/21) **Typical Testing Details (continued)**

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1800 (continued)					
1807	1807.3 (2) Qualification of welding procedures and welding personnel for an Exceptional Welding Process	Tests specified in BS EN ISO 15613 and BS EN ISO 15614-1	As required according to BS EN ISO 15613 and BS EN ISO 15614-1		Results to be reported in accordance with BS EN ISO 15613 and BS EN ISO 15614-1
	1807.4.1.1 (4) Qualification of welding procedures for tack welds	Testing of hardness properties within the tack weld length in accordance with BS EN ISO 9015-1	As required by 1807.4.1.1 (4)		Results to be reported in accordance with BS EN ISO 9015-1
	1807.4.1.2 (1) Qualification of welding procedures for Processes 111, 114, 12, 13 and 14	Tests specified in BS EN ISO 15614-1, BS EN ISO 15613 or 17660-1 as appropriate	As required according to BS EN ISO 15614-1, BS EN ISO 15613 or 17660-1 as appropriate		Results to be reported in accordance with BS EN ISO 15614-1, BS EN ISO 15613 or 17660-1 as appropriate
	1807.4.1.2 (4) Qualification of welding procedures for joints with restricted access	Tests specified in BS EN ISO 15613	As required according to BS EN ISO 15613		Results to be reported in accordance with BS EN ISO 15613
	1807.4.1.3 Qualification of welding procedures for other welding processes	Tests specified in the standards listed in BS EN 1090-2:2018, Table 13 and 1807.4.1.3	As required in the standards listed in BS EN 1090-2:2018, Table 13 and 1807.4.1.3		Results to be reported in accordance with the standards listed in BS EN 1090-2:2018, Table 13 and 1807.4.1.3. Note the requirement in BS EN 1090-2:2018, 7.5.12 relating to stud weld procedure testing.
	1807.4.1.4 Validity of welding procedure qualification	Welding production tests in accordance with the qualification standard for the process concerned	As required by the qualification standard for the process concerned		Results to be reported in accordance with the qualification standard for the process concerned
	1807.4.2.1 Qualification of welders and welding operators	Tests specified in BS EN ISO 9606-1 (welders) or BS EN ISO 14732 (welding operators)	As required according to BS EN ISO 9606-1 (welders) or BS EN ISO 14732 (welding operators)	Required according to BS EN ISO 9606-1 (welders) or BS EN ISO 14732 (welding operators)	Certificate to be in accordance with BS EN ISO 9606-1, Annex A or BS EN ISO 14732, Annex C as appropriate
	1807.4.2.1 Qualification of welders for reinforcing steels	Tests specified in BS EN ISO 17660-1	As required according to BS EN ISO 17660-1	As required according to BS EN ISO 17660-1	Certification to be as required by BS EN ISO 17660-1
1807.4.2.1 (1) Qualification of welders of joints with restricted access	Specific qualification test. Tests specified in BS EN ISO 9606-1	As required according to BS EN ISO 9606-1	Required according to BS EN ISO 9606-1	Certificate to be in accordance with BS EN ISO 9606-1, Annex A	

TABLE NG 1/1: (04/21) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1800 (continued)					
	1807.4.2.1 Qualification of welders for an Exceptional Welding Process	Specific qualification test. Tests specified in 1807.3 (2) e)	As required by 1807.3 (2) e)	Required according to BS EN ISO 9606-1	Certificate to be in accordance with BS EN ISO 9606-1, Annex A
	1807.4.2.2 Qualification of welders of a hollow section branch connection with angles less than 60°	Specific qualification test. Tests specified in BS EN ISO 9606-1	As required according to BS EN ISO 9606-1	Required according to BS EN ISO 9606-1	Certificate to be in accordance with BS EN ISO 9606-1, Annex A
	1807.5.1.1 Verification that cut areas in joint preparation for steel grades higher than S460 are free from cracks	Testing in accordance with BS EN ISO 3452 (penetrant) or BS EN 17638 (magnetic particle)	As required		
	1807.5.1.1 (1) Qualification of welding procedures where prefabrication primers are to be left on the fusion faces or the heat affected zone.	Tests specified in BS EN ISO 15614-1 or BS EN ISO 15613 using such prefabrication primers	As required according to BS EN ISO 15614-1 or BS EN ISO 15613		<i>Results to be reported in accordance with BS EN ISO 15614-1 or BS EN ISO 15613</i>
	1807.5.4 (2) Welding of joints in hollow sections, where access to the joint is restricted	Pre-production weld test conforming to BS EN ISO 15613.	As required according to BS EN ISO 15613		
	1807.5.6 (1) Verification that the ground surface is free of cracks following removal of temporary welded attachments	Testing in accordance with BS EN 17638 (magnetic particle)	As required		
	1807.5.9.1 Verification that the ground surface is free of cracks following removal of run-on/run-off pieces or supplementary material	Testing as required by 1807.5.6 in accordance with BS EN ISO 3452 (penetrant) or BS EN 17638 (magnetic particle)	As required		
	1807.5.9.2 (1) Verification of the absence of surface cracking in continuity welds in permanent steel backing	Testing in accordance with BS EN ISO 3452 (penetrant) or BS EN 17638 (magnetic particle)	As required		

TABLE NG 1/1: (04/21) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1800 (continued)					
	1807.5.16 (1) Verification of stray arc sites for the absence of cracking	Testing in accordance with BS EN ISO 3452 (penetrant) or BS EN 17638 (magnetic particle)	As required		
	1807.5.17 Welding of orthotropic bridge decks	Production tests in accordance with BS EN 1090-2:2018, 12.4.4 c)	As required		
1808	1808.2.1 (2) Qualification of welding procedures for welding of property class 4.6 nuts, bolts and washers	Tests specified in BS EN ISO 15613	As required according to BS EN ISO 15613		Results to be reported in accordance with BS EN ISO 15613
	1808.4 Slip factor for friction surfaces in slip resistant connections	Slip factor test in accordance with BS EN 1090-2:2018, Annex G	As required by 1810.1 (5) and Appendix 18/1		[Refer to 1810.5 and associated Appendix 18/1 entry]
	1808.5.1 Use of torque wrenches	Conformance test in accordance with BS EN ISO 6789	As required according to BS EN ISO 6789	Required according to BS EN ISO 6789	
	1808.5.3 (1) <i>k</i> value check for the torque method	Test in accordance with BS EN 1090-2:2018, Annex H	Daily		
	1808.5.4 Determination of the angle of rotation for the combined method where the surface under the bolt head or nut is not perpendicular to the bolt axis	Test in accordance with BS EN 1090-2:2018, Annex H	As required		Refer to BS EN 1090-2:2018, Table 21 Note
	1808.5.4 (2) <i>k</i> value check for the combined method	Test in accordance with BS EN 1090-2:2018, Annex H	Daily		
	1808.5.5 Determination of tightening torque for a HRC bolting assembly to be tightened by the torque method	Test in accordance with BS EN 1090-2:2018, Annex H	Option, as required		
	1808.5.5 (1) Preload check for HRC method	Test in accordance with BS EN 1090-2:2018, Annex H	Each assembly lot		
	1808.8 Use of special fasteners and fastening methods	Procedure tests for special fasteners and fastening methods as specified in Appendix 18/1	As required in Appendix 18/1		[Give specific testing requirements and frequency of testing in Appendix 18/1 with cross reference in Appendix 1/5]

TABLE NG 1/1: (04/21) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1800 (continued)					
1810	1810.1 (5) Slip resistant connections	Slip factor test in accordance with BS EN 1090-2:2018, Annex G	As required in Appendix 18/1		<i>[Refer to 1808.4. Give specific requirements in Appendix 18/1 with cross reference in Appendix 1/5]</i>
	1810.1 (10) Verification of the preparation carried out before overcoating galvanized components	Test as specified in Appendix 18/1	As required in Appendix 18/1		<i>[Give specific testing requirements and frequency of testing in Appendix 18/1 with cross reference in Appendix 1/5]</i>
	1810.1 (13) Hot dip galvanised components or specific locations of hot dip galvanised components to be subject to additional non-destructive testing	Test as specified in Appendix 18/1	As required in Appendix 18/1		<i>[Give specific testing requirements and frequency of testing in Appendix 18/1 with cross reference in Appendix 1/5]</i>
	1810.6 (2) Leak testing of hermetically sealed spaces	Bubble emission technique in accordance with BS EN 1593	As required in Appendix 18/1		See Appendix 18/1 entry for 1810.6 (2) for spaces that are to be hermetically sealed
1812	1812.2.1 Specific testing of constituent products	Tests as specified in Appendix 18/1	As required in Appendix 18/1		<i>[Give specific testing requirements and frequency of testing in Appendix 18/1 with cross reference in Appendix 1/5]</i>
	1812.2.1 (1) Specific testing of proprietary products not covered by standards.	Tests as specified in Appendix 18/1	As required in Appendix 18/1		<i>[Give specific testing requirements and frequency of testing in Appendix 18/1 with cross reference in Appendix 1/5]</i>
	1812.2.1 (2) Mechanical fasteners	Sample testing as specified in 1812.2.1 (2) c) in accordance with BS EN ISO 3269	As required in 1812.2.1 (2) c) in accordance with BS EN ISO 3269		Results to be reported in accordance with 1812.2.1 (2). Testing not required if mechanical fasteners supplied by a NHSS 3 registered Organisation. See 1800.5.2 (1)
	1812.2.1 (3) Mechanical fasteners	Suitability testing as specified in 1812.2.1 (3) in accordance with the relevant standard	As required in 1812.2.1 (3), three fasteners from each inspection lot		Results to be reported in accordance with 1812.2.1 (3).
	1812.2.1 (4) Structural steel products	Sample testing as specified in 1812.2.1 (4) c) in accordance with the relevant product standard	As required in 1812.2.1 (4) c) in accordance with the relevant product standard		Results to be reported in accordance with 1812.2.1 (4). Testing not required if Structural steel products supplied by a NHSS 3B registered Organisation. See 1800.5.3 (1)

TABLE NG 1/1: (04/21) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1800 (continued)					
	1812.2.1 (5) Steel castings	Testing of steel castings in accordance with BS EN 1090-2:2018, 5.4 and 1812.2.1 (5)	As required according to BS EN 1090-2:2018, 5.4 and 1812.2.1 (5)		Results to be reported in accordance with BS EN 12681. See 1805.4
	1812.2.3 Non-conforming product testing for conformity	As required to confirm product conformity	As required		Results to be recorded
	1812.4.2.2 Type testing of welded joints	Non-destructive testing to confirm quality level B is achieved	As required		
	1812.4.2.3 Routine inspection and testing of welds	Surface non-destructive testing following visual inspection using method specified in BS EN 1090-2:2018, 12.4.2.3	As required		
	1812.4.2.3 Routine inspection and testing of welds	Supplementary non-destructive testing determined by the manufacturer, according to the nature of the work in normal production.	As required according to BS EN 1090-2:2018, 12.4.2.3 and 1812.4.2.3 (1)		
	1812.4.2.4 Project specific inspection of welded joints	Supplementary non-destructive testing in accordance with 1812.4.2.4	As required by 1812.4.2.4 (2) to (7)		Testing to 1812.4.2.3 may be included. See 1812.4.2.3 (2)
	1812.4.3 (1) Welded shear studs	Production tests as specified in BS EN ISO 14555	As required by 1812.4.3 (1)		Results to be documented in accordance with 1812.4.3 (5)
	1812.4.3 (2) Welded shear studs	Simplified production tests as required by BS EN ISO 14555	As required by 1812.4.3 (2)		Results to be documented in accordance with 1812.4.3 (5)
	1812.4.3 (3) Welded shear studs	Production surveillance hammer test as specified in 1812.4.3 (3)	Every welded stud		Results to be documented in accordance with 1812.4.3 (5)
	1812.4.4 (1) Productions tests on welding	Production tests on welding as specified in 1812.4.4 (1)	As required by 1812.4.4 (1)		Results to be reported in accordance with the relevant standard

TABLE NG 1/1: (04/21) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1800 (continued)					
	1812.4.4 (2) Specific production test on welding using run-off coupon plates	Production tests on run-off coupon plates as specified in 1812.4.4 (2)	As required by 1812.4.4 (2)		
	1812.4.4 (3) Specific production tests of welds made by an Exceptional Welding Process	Production tests on welding as specified in 1807.3 (2) i)	As required by 1807.3 (2) i)		
	1812.4.5 Testing of welding of reinforcing steel	Testing of welding in accordance with BS EN 1090-2:2018, 12.4.5, according to BS EN ISO 17660-1	As required by BS EN 1090-2:2018, 12.4.5, according to BS EN ISO 17660-1		
	1812.5.2.1 testing of preloaded bolting assemblies used for stainless steel connections	Tests as specified in Appendix 18/1	As required in Appendix 18/1		<i>[Give specific testing requirements and frequency of testing in Appendix 18/1 with cross reference in Appendix 1/5]</i>
Series 1900					
1903	Abrasives	Grading	As required		<i>[See NG 1903]</i>
	Abrasives	Hardness	As required		<i>[See NG 1903]</i>
1909	Galvanised Coatings	Tests specified in BS EN ISO 1461	As required		
	Thermally sprayed aluminium metal coatings	Tests specified in BS EN ISO 2063	As required		
	Aluminium coating material			Required in accordance with BS EN ISO 14919	
1910	Thermally sprayed aluminium metal coating	Pull off adhesion test in accordance with ASTM D4541-Type III	At the start of the works and [specify subsequent intervals]		
	Thermally sprayed aluminium metal coating (excepted areas)	Grid test specified in BS EN ISO 2063	As required		<i>[Any additional tests should be scheduled in Appendix 19/5]</i>

TABLE NG 1/1: (12/14) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1900 (continued)					
1911, Table 19/2B	Hot dip galvanised coating to fasteners	Tests specified in BS EN ISO 10684	As required		<i>[Any additional tests should be scheduled in Appendix 19/5]</i>
1912 1912SE	Paints - 'A' and 'B' samples	Provision of samples for 'A' and 'B' sample tests			Samples selected in accordance with Clauses 1912 and 1912SE
	Paints - 'A' and 'B' samples	Specific gravity	As required by rate of 'A' and 'B' sampling		See NG 1912, 3; Appendix 19/4, Note 4; Appendix 19/4SE, Note 4; NG 1912.3NI, 3 and Appendix 19/4NI
	Paints - 'A' and 'B' samples	Colour match	As required by rate of 'A' and 'B' sampling		See NG 1912, 3 and NG 1912NI, 3
1914	Coating system minimum film thicknesses	Minimum dry film thickness measurements. In accordance with BS EN ISO 2808, BS3900-C5	Required – representative testing		
	Coating system adhesion	Pull off adhesion test in accordance with ASTM D4541 – Type III	Required – representative testing		
	Coating system defects	Visual assessment supplemented by appropriate testing	Required		<i>[Any additional tests should be scheduled in Appendix 1/5]</i>
	Coating system defects – pin-holing or porosity	Low or high voltage detectors in accordance with ASTM G62-07	Required – representative testing excluding corners, bolted joints or welds		
Series 2000					
2003	Permitted waterproofing systems	<i>[As required - See NG 2003]</i>			Product Acceptance Scheme or equivalent applies
	Additional bituminous protection		1 per 15 tonnes*		
	Stability value		1 per 15 tonnes*		
2004	Tar	Tests specified in BS 76	1 per source*		Sampling to comply with BS 76
	Cut back bitumen				

TABLE NG 1/1: (02/16) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments		
Series 2100							
2101	Bridge bearings	Bearings (other than Elastomeric bearings)	Load testing – serviceability limit state	As required in contract specific Appendix 21/1			
			Load testing – ultimate limit state				
			Other tests specified in contract specific Appendix 21/1				
	Elastomeric bearings	Compressive test	As required in contract specific Appendix 21/1			<i>[Use test methods given in BS EN 1337-3 section 4.3.3 and Annex H, or state in contract specific Appendix 21/1]</i>	
							Stiffness test
							Shear stiffness test
							Other tests specified in contract specific Appendix 21/1
Series 2400							
2401	Masonry cement						
2402	Sand						
2403	Water	Tests specified in BS EN 1008	<i>[As required]</i>				
2404	Mortar admixtures						
2405	Lime						
2406/ 2417	Bricks	Clay					
		Calcium silicate					
		Concrete					
2407	Blocks	Clay					
		Concrete					
2408	Reconstituted stone						
2410, 2411	Stainless steel	Wire/fabric					
		Bars					
		Ready mixed mortars					
		Mortars		1 set of tests per mix*			

TABLE NG 1/1: (12/14) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 2500					
2501	Materials for corrugated steel buried structures exceeding 900 mm clear span or internal diameter				Type approval applies
	Steel components			Required as appropriate to the standard or specification listed in the type approval Certificate	
	Zinc coating				
	Protective coating				
Paved invert system			Product Acceptance Scheme or equivalent applies		
2502	Materials for reinforcing elements, prefabricated facing and capping units, and washers				Product Acceptance Scheme or equivalent applies
	Carbon steel strip			Required (BS 1449: Part 1.1 or BS EN 10025-1 and BS EN 10025-2)	Silicon content and mechanical properties to be stated on the certificate
	Stainless steel strip			Required (BS EN 10029, 10048, 10051, 10258 and 10259)	Mechanical properties to be stated on the certificate
	Reinforcing bar for anchor elements			Required (BS 4449)	Tests scheduled under Clauses 1717 and 1909 are required for welding and galvanizing of anchor elements
	Materials for fasteners				
	Stainless steel Bolts, screws and nuts				
2503	Materials for pocket type reinforced brickwork retaining wall structures	(Soluble salt content Efflorescence Compressive strength Water absorption Initial rate of suction) (BS 3921/TRL Report 447) (N)	1 set of tests per type of brick*		<i>[Soluble salt content – sulfate shall be determined in accordance with Test No 2 in TRL Report 447]</i> <i>[Random sampling to BS 3921 to be employed]</i>
	Clay bricks				

TABLE NG 1/1: (12/14) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 2500 (continued)					
2504	Environmental barriers				Quality management scheme applies <i>[Appropriate tests/samples should be scheduled where not included under other Clauses]</i>
	Timber				
	Concrete				
	Steel				
	Brickwork				
	Other materials				
	Barriers	Sound absorption Sound insulation	As required in Appendix 25/4		<i>[See NG 2504 14 - 17]</i>
	Post foundations	Loading test on site	As required in Appendix 25/4		<i>[See NG 2504.12]</i>
2505, 2506	Drainage structures/buried rigid pipes for drainage structures Pipes for drains and culverts having diameters or clear span exceeding 900 mm				
	Vitrified clay				
	Concrete PC/SRC	(Manufacturer's test)			See sub-Clause 2506.28
	Iron	<i>[see Note 2]</i>			<i>[Note Certificates are provided for in the relevant BS but should not normally be required except for pipes which are not quality marked by a UKAS or equivalent accredited body]</i>
	Corrugated steel	(Manufacturer's test)			Type Approval Certificate and Product Acceptance Scheme or equivalent apply
Series 2600					
2601	Bedding mortar materials			Required for each batch	Certification in accordance with Clause 2601 is required
	Bedding mortar	Flow cone test	Each batch		† Laboratory tests
		Flow between glass plates			
		Compressive strength			
		Expansion test			
		Water absorption			
		Elastic stability	1 per source		
		Flow cone test Compressive strength	Each load	Site control tests	

TABLE NG 1/1: (03/20) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 2600 (continued)					
2604	Plastic coating to fencing posts, gates and ancillaries			Required (BS 1722: Part 16) applicator is required	Certification by powder manufacturer and coating
2607	Granolithic concrete				Testing to be in accordance with Clauses 1702, 1703, 1707 and 1710
2608	Hardened foamed concrete for structures	Cube Strength (N)	2 cubes per 12 m ³	Required	<i>[Requirements should be given in contract specific Appendix 26/8 as appropriate]</i>
		Density	<i>[As required]</i>	Required	
	Fresh foamed concrete for structures	Density	<i>[As required]</i>	Required	
		Water/cement ratio			
Series 3000					
3001	General				Inspection Reports as required in contract specific Appendix 30/1
3005	Grass seeding, Wildflower seeding and turfing	Rate of spread of fertiliser	1 per 1000 square metres*		
		Rate of spread of seeding	1 per 1000 square metres*		††
		Chemical analysis of fertiliser	1 per source*		
		Grass seed germination and purity (Official Seed Testing Station tests)	1 per source and mix variety*	Required prior to sowing	†
Series 5000					
5003	Abrasives	Grading	<i>[As required]</i>		†† <i>[see # NG 5003]</i>
		Hardness			
5005	Aluminium and zinc spray coatings	Tests specified in BS EN 22063	<i>[As required]</i>		Areas to be tested in accordance with Clause 5006
				Aluminium coating material	
	Zinc coating material	Required (BS EN 1179)			
	Sherardized coatings	Tests specified in BS 4921	<i>[As required]</i>		[Sampling procedure and any special adhesion requirements including test method should be scheduled]
	Zinc electroplated coatings	Tests specified in BS 3382 : Part 2	<i>[As required]</i>		
	Plating to high strength grip and tension control bolts				[Special tests to detect hydrogen embrittlement should be scheduled where required]
5006	Metal spray coatings	Tensile test specified in BS EN 22063	<i>[As required]</i>		†
		Grid test specified in BS EN 22063	<i>[As required]</i>		†

TABLE NG 1/1: (02/20) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 5000 (continued)					
#5007, 5007SE	Paints 'A' and 'B' Samples	Specific Gravity	<i>[see Clauses #5007 and 5007SE]</i>		†† <i>[see NG #5007]</i> Samples will be selected in accordance with Clauses #5007 and 5007SE <i>[see Clauses #5009 and 5009SE]</i>
		Colour match			
		Composition			
		Application characteristics			
Series 5700					
5708, 5714	Substrate and ambient weather conditions	Temperature of substrate (observation)	Throughout application		Contractor to take measurements and keep records †
		Ambient temperature (observation)	Throughout application		
		Ambient humidity (observation)	Throughout application		
		Precipitation (observation)	Daily		
		Wind strength (observation)	Before use		
		Dew point (observation)	Throughout application		
5708	Flowable concrete or mortar	Consistency/flowability	Each batch/delivery to site		Site control tests †
		Air content	Each batch/delivery to site		
		Consistency/air content	<i>[as required]</i>		††
		Compressive strength (N)	Greatest of 1/10 m ³ or 1/100 m ² or 3 cubes per day	Required	Contractor to make samples and arrange laboratory testing. Certification required. Laboratory to be accredited by UKAS or equivalent.
		Compressive strength – cubes	<i>[as required]</i>		††

TABLE NG 1/1: (02/20) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments		
Series 5700 (continued)							
	Repair concrete or mortar	Compressive strength (N)	3 cubes daily	Required	Contractor to make samples and arrange laboratory testing. Certification required. Laboratory to be accredited by UKAS or equivalent.		
		Compressive strength – cubes	<i>[as required]</i>		††		
	Sprayed concrete or mortar (Wet spray process)	Consistency/flowability	Each batch/delivery to site		Site control tests †		
	Sprayed concrete or mortar (Dry or wet spray process)	Compressive strength (N)	Greatest of 1/10 m ³ or 1/100 m ² or 3 cubes per day	Required	Contractor to make samples and arrange laboratory testing. Certification required. Laboratory to be accredited by UKAS or equivalent.		
	Sprayed concrete	Compressive strength – cubes	<i>[as required]</i>		††		
5709	Pre-breakout survey	Hammer sounding	All delaminated areas		Site control test †		
		Electrical resistivity	Old repair patches with suspected high resistivity				
5710	Substrate conditions	Roughness	During preparation		Site control test †		
		Delamination	Before application				
	Substrate conditions	Cleanliness of substrate	Before application				
		Pre-soaking of substrate	Before application				
5711	Substrate conditions	Cleanliness of existing reinforcement	Before application		Site control test †		
	Replacement and additional reinforcing bars				Product certification scheme or equivalent applies		
						Steel bars	Required (BS 4449)
						Steel fabric	Required (BS 4449)
		Stainless steel	Required (BS 4449)				
	Reinforcement couplers		Each type or size of coupler	Required	Product acceptance scheme or equivalent applies, Clause 1716. Should comply with testing schedule TA1-A		
	Reinforcement dowels			Required (BS 6744)	Product certification scheme or equivalent applies		

TABLE NG 1/1: (02/20) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 5700 (continued)					
	Welding of Reinforcement	Welding procedure approval (BS EN ISO 17660) Welder approval (BS EN ISO 17660)	As required by BS EN ISO 17660		<i>[Where tests in addition to those specified in BS EN ISO 17660 are required, full details should be scheduled]</i> Tests shall be carried out by an independent testing body.
	Production welding	Non-destructive testing			
		Visual inspection	100%		
		Magnetic particle	100%		In accordance with BS EN 9934-1 and Appendix 57/2.
		Hardness testing	As required in contract specific Appendix 57/2		In accordance with BS EN ISO 6507 Parts 1-3 and contract specific Appendix 57/2.
		Radiographic testing or ultrasonic testing	As required in contract specific Appendix 57/2		In accordance with BS EN ISO 17636-1 and 17636-2 or BS EN ISO 17640 and contract specific Appendix 57/2.
Tensile testing	As required in contract specific Appendix 57/2		In accordance with BS EN ISO 17660-1 and contract specific Appendix 57/2.		
5712	Galvanic anodes for control of incipient anode effect	Electrical continuity of reinforcement	All reinforcement intersections within repair patch		Site control test †
		Electrical connection to reinforcement	All galvanic anode units or reference electrodes		
		Electrical potential survey (N)	Before connection of galvanic anodes and after curing of repair patch	Required	Site control test † Contractor to arrange testing by laboratory accredited by UKAS or equivalent to carry out the survey work.
5717	Sprayed concrete test panels	Procedure trials	<i>[as required]</i> , Clause 5717		<i>[requirement for test panels to be stated]</i>
		Compressive strength (N)	3 no. samples from each plain test panel	Required	Contractor to take samples and arrange laboratory testing. Certification required. Laboratory to be accredited by UKAS or equivalent.
		Elastic modulus (N)	3 no. samples from each plain test panel	Required	
		Percentage shrinkage	1 no. measurement set from each plain and reinforced test panel	Required	Site control test † Contractor to take measurements

TABLE NG 1/1: (02/20) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 5700 (continued)					
		Electrical resistivity (N)	3 no. samples from any plain test panel	Required	Contractor to take samples and arrange laboratory testing. Certification required. Laboratory to be accredited by UKAS or equivalent.
		Integrity, voidage, shadowing (observation)	4 no. samples from a reinforced test panel		Site control test † Contractor to take samples, inspect and record integrity etc.
5720, 5721	Completed repair	Hammer sounding of repair	All repairs		Site control test †
		Electrical resistivity	All repairs containing galvanic anodes		Site control test † Results of testing repaired concrete to be reported
		Core/bore – Integrity of repair	<i>[As required]</i> See Clause 5721		Site control test † Results of observations on samples to be reported
		Core – Adhesion to substrate (N)	<i>[As required]</i> See Clause 5721	Required	Site control test † Contractor to take samples and arrange laboratory testing. Laboratory to be accredited by UKAS or equivalent.
		Core – Compressive strength (N)	<i>[As required]</i> See Clause 5721	Required	
		Core – penetration of crack with injection filler	<i>[As required]</i> See Clause 5721		Site control test † Contractor to take samples. Results of observations on samples to be reported
		Core – Compressive strength of injected concrete (N)	<i>[As required]</i> See Clause 5721	Required	Site control test † Contractor to take samples and arrange laboratory testing. Laboratory to be accredited by UKAS or equivalent.

Key

- † indicates a requirement in SHW for the test to be carried out by the Contractor; such tests should therefore be scheduled in contract specific Appendix 1/5.
- †† indicates a statement in SHW that the test may/will be carried out under the direction of the Overseeing Organisation; samples for such tests should therefore be required in contract specific Appendix 1/6.
- * indicates that the frequency of testing is given for general guidance and is only indicative of the frequency that may be appropriate (ie. no frequency is given in the SHW or reference documents). Where materials are known to be marginal or if initial test results show them to be such, the frequency of testing should be increased. Conversely where material properties are consistently in excess of specified minimum requirements or well below specified maximum limits, then the frequency of testing should be reduced.
- (N) indicates that a UKAS or equivalent accredited laboratory sampling and test report or certificate is required. See Clause NG 104 for a definition of ‘UKAS or equivalent’.

[Notes to compiler:

1. *The above symbols apart from (N) are for guidance when preparing contract specific Appendices 1/5 and 1/6 and should not be reproduced in those Appendices.*
2. *Other guidance is printed in italics and should likewise not be reproduced in contract specific Appendices 1/5 and 1/6. Appropriate contract specific requirements should be scheduled.*
3. *The compiler should include details in contract specific Appendices 1/5 and 1/6 to confirm which tests are site testing and which are supplier or manufacturer tests.]*

(05/14) NG SAMPLE CONTRACT SPECIFIC APPENDIX 1/1: TEMPORARY ACCOMMODATION AND EQUIPMENT FOR THE OVERSEEING ORGANISATION

1 (05/14) Accommodation Required

[Note to compiler: Include details of the required accommodation under suitable headings, the following are examples.]

- | | | |
|--|---|----------------------------------|
| (i) Temporary initial accommodation |) | |
| (ii) Principal office |) | |
| (iii) Laboratory |) | |
| <i>[sufficient space to be allowed to retain samples of materials]</i> |) | <i>Location (if appropriate</i> |
| (iv) Subsidiary static office |) | <i>and floor area to be</i> |
| (v) Subsidiary portable office |) | <i>inserted or referenced to</i> |
| (vi) Off Site accommodation at
fabricator's or precaster's works |) | <i>drawing numbers)</i> |

[Note: The compiler should bear in mind that all accommodation should satisfy the relevant requirements of current legislation on health, safety and welfare and be proportional to the size, value and duration of the Works.]

2 (05/14) Duration of Time Accommodation Required

[Include if the date when offices/laboratories are to be occupied and equipment is to be installed, tested and made operational is different from that stated in sub-Clause #101.2.

Include date all accommodation is vacated and removed.

Include time of day and number of days in week that accommodation is required.]

3 (05/14) Fittings and Furnishings of Accommodation, and other Equipment Required

[The details should include a list of consumable stores, surveying and testing equipment, first aid equipment, details of room temperature needed and details of any other equipment required.]

(05/14) NG SAMPLE CONTRACT SPECIFIC APPENDIX 1/2: VEHICLES FOR THE OVERSEEING ORGANISATION

Type (as defined below)	Number Required	Period Required	Cleaning Frequency
A			
B			
C			
D			

[Note to compiler: Include details as appropriate, under the following headings:]

1 (05/14) Equipment

All vehicles shall have the following equipment:

[compiler to include a list of required equipment, e.g. fire extinguisher, first aid kit, heater and demister; hazard flashing unit, warning triangle, drivers log, full sized spare wheel, fuel filler cap lock, bonnet lock and spare wheel lock, internal and external mirrors, mud flaps, link mats front and rear, mudshield for front and rear brakes, rubber pads for clutch and brake pedals, interior sun visors, gearbox covers, tow rope, towing hooks front and rear, laminated windscreen, wire mesh guards for side, tail, stop and flasher lamps, covers for universal joints, straps suitable for carrying survey equipment.]

2 (05/14) Type “A” SUV/Off-road Vehicle

Maximum emissions..... *[compiler to include requirements, suggested maximum CO₂ emissions 255g/Km]*

Minimum carrying capacity *[compiler to include requirements where required]*

Minimum ground clearance ... *[compiler to include requirements where required]*

The vehicle is to be suitable for off-road use and public highway use, have 4 wheel drive, power steering, heavy duty suspension and be supplied in a conspicuous colour.

Additional requirements *[any additional requirements, e.g. that the vehicle should be adapted for CBR testing, equipment additional to that stated in 1 above]*

3 (05/14) Type “B” 4 Door Estate Car

Maximum emissions.... *[compiler to include requirements, suggested maximum CO₂ emissions 130g/Km]*

Minimum carrying capacity *[compiler to include requirements where required]*

Minimum ground clearance ... *[compiler to include requirements where required]*

Additional requirements *[any additional requirements, e.g. equipment additional to that stated in 1 above]*

4 (05/14) Type “C” Car

Maximum emissions.... *[compiler to include requirements, suggested maximum CO₂ emissions 130g/Km]*

Minimum carrying capacity *[compiler to include requirements where required]*

Minimum ground clearance ... *[compiler to include requirements where required]*

Additional requirements *[any additional requirements, e.g. equipment additional to that stated in 1 above]*

5 (05/14) Type “D” Other Vehicle

Requirements

6 (05/14) Markings

[markings and visibility requirements if different from those stated in Clause 102]

(05/14) **NG SAMPLE CONTRACT SPECIFIC APPENDIX 1/3: RADIO COMMUNICATION SYSTEM FOR THE OVERSEEING ORGANISATION**

[Note to compiler: Include details as appropriate, under the following items:]

(05/14) Type of equipment-.....

Licensing requirements and/or arrangements

Location of base station (for radio communication system) - office for the Overseeing Organisation

Location of other sets-.....

Each portable set shall have a spare set of batteries

No.	Office/Laboratory	Vehicle	Personnel	Period Required

(05/14) **Frequency for radio communication system**

BaseMHz

MobileMHz

(05/14) **NG SAMPLE CONTRACT SPECIFIC APPENDIX 1/4:
WORKING AND FABRICATION DRAWINGS**

Series	Description of Work	Minimum period for submission of drawings

(05/14) NG SAMPLE CONTRACT SPECIFIC APPENDIX 1/5: TESTING TO BE CARRIED OUT BY THE CONTRACTOR

- [Notes to compiler:*
- i) The scope of the testing covered in Table NG 1/1 should not be regarded as exhaustive. Routine tests carried out by manufacturers and suppliers in compliance with a British Standard or other standard or specification are not included but where a standard or specification makes provision for a test certificate this is indicated in the table.*
 - ii) Where tests are taken from Standards which are undated in the specification they should be checked to ensure that test requirements have not been altered by subsequent issues since the date of the last published national alteration to the SHW (see NG 004.2).*
 - iii) The schedule of tests for the contract should be completed by selecting the tests and data from Table NG 1/1. Different frequencies and additional tests should be included as appropriate. Where the frequency of testing in Table NG 1/1 is given by reference to a Clause in the SHW, the frequency requirements of the Clause should be repeated in full in Appendix 1/5.*
 - iv) Where UKAS or equivalent laboratory accreditation is required this should be indicated by the symbol (N) in the Test column. Sampling and associated tests where this should apply are indicated in Table NG 1/1.*
 - v) In the tabulation, include the same level of detail as is included in Table NG 1/1: Typical Testing Details.]*

Clause No	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments

Notes:

- 1 Unless otherwise stated above, all sampling and testing in this Appendix shall be by the Contractor.
- 2 Tests comparable to those specified in this Appendix will be necessary for any equivalent work, goods or materials proposed by the Contractor.
- 3 (N) indicates that a UKAS or equivalent accredited laboratory sampling and test report or certificate is required.
- 4 Unless otherwise shown in this Appendix tests for work, goods or materials as scheduled under any one Clause are required for all such work, goods or materials in the Works.
- 5 Cube strength tests are not required for concrete complying with Clause 2602.
- 6 Unless otherwise shown in this Appendix test certificates for work, goods or materials as scheduled under any one Clause are required for all such work, goods or materials in the Works.

(05/14) NG SAMPLE CONTRACT SPECIFIC APPENDIX 1/6: SUPPLY AND DELIVERY OF SAMPLES TO THE OVERSEEING ORGANISATION

- [Notes to compiler:*
- i) Give details of the samples, including source samples, to be provided or made available by the Contractor for testing by the Overseeing Organisation and the locations to which they are to be delivered. Where UKAS or equivalent laboratory accreditation for sampling is required this should be indicated by the symbol (N) in the “Sample Description” column. Samples where this should apply can be determined from subsequent testing requirements. Tests which require accreditation are indicated in Table NG 1/1.*
 - ii) In this case of testing by the Overseeing Organisation, it is intended that column 3, ‘Frequency of Sampling’, is obtained by reference to Table NG 1/1.*
 - iii) Compilers should consider whether the Appendix can be realistically completed in such a way as to properly indicate that the requirements can be met by use of the transport for the Overseeing Organisation to carry samples, leaving the Contractor to provide only small quantities of replacement materials. Excessive complication is often found to be unnecessary.]*

Clause No. or Series	Sample Description	Frequency of Sampling	Delivery Location	Comments

Notes:

- 1 Samples comparable to those specified in this Appendix will be necessary for any equivalent work, goods or materials proposed by the Contractor (See sub-Clause 105.6).
- 2 Unless otherwise shown in this Appendix samples of work, goods or materials as scheduled under any one Clause are required for all such work, goods or materials in the Works.
- 3 Unless otherwise scheduled under Clause 2602 samples of concrete complying with that Clause are not required.
- 4 (N) indicates UKAS or equivalent laboratory accreditation required for sampling.

[The following is a model showing how compilers should complete contract specific Appendix 1/6:]

(02/20) **APPENDIX 1/6: SUPPLY AND DELIVERY OF SAMPLES TO THE OVERSEEING ORGANISATION**

Clause No. or Series	Sample Description	Frequency of Sampling	Delivery Location	Comments
503	Pipe bedding (N)	daily	Delivery area	Sampling by the Overseeing Organisation
505	Type 'C' filter material (N)	daily	Delivery area	Sampling by the Overseeing Organisation
618	Fill (N)	daily	Delivery area	Sampling by the Overseeing Organisation
803 and 805	Type 1 and Type 3 unbound mixtures (N)	one per day per source	Laying area	Sampling by the Overseeing Organisation
806	Category B (close graded) unbound mixtures (N)	one per day per source	Laying area	Sampling by the Overseeing Organisation
915	Pre-coated chippings (N)	one per day per source	Delivery area	Sampling by the Overseeing Organisation
929	Percentage Refusal Density Test (N)	one pair of 150 mm dia. cores every 500 lane metres	Site laboratory store	Core cutting by Contractor
929 and 931	All dense base and binder course materials (N)	one per material type day per source	Laying area	Sampling by the Overseeing Organisation
942	Surface course (N)	one per day per source	Laying area	Sampling by the Overseeing Organisation
943	Surface course and binder course (N)	one per day per source	Laying area	Sampling by the Overseeing Organisation
1000	Concrete (N)	1 per load	Delivery area	Sampling by the Overseeing Organisation
1100	Asphalt kerb (N)	1 per 500m	Laying area	Sampling by the Overseeing Organisation
1212	Permanent road markings (N)	Full set of samples per visit	Laying area	Sampling by the Overseeing Organisation
1700/1707	Identity Testing	Overseeing Organisation to state	Nominated Test House	Sampling by the Overseeing Organisation
1900	'A' and 'B' samples	Clause #1912 Clause 1912SE	Nominated Test House	Sampling by the Contractor
2404	Mortar (N)	1 per day	Laying area	Sampling by the Overseeing Organisation
2606	Bricks (N)	10 per source	Delivery area	Sampling by the Overseeing Organisation
5000	'A' and 'B' samples	Clause #5009 Clause 5009SE	Nominated Test House	Sampling by the Contractor
5700/5708	Identity Testing (fresh material, cubes)	Overseeing Organisation to state	Placement area or Nominated Test House	Sampling by the Contractor
5700/5708	Repair products and other materials	Overseeing Organisation to state	Delivery area	Sampling by the Overseeing Organisation

Notes:

- 1 Samples comparable to those specified in this Appendix will be necessary for any equivalent work, goods or materials proposed by the Contractor (see sub-Clause 105.5).
- 2 Unless otherwise shown in this Appendix, samples of work, goods or materials as scheduled under any one Clause are required for all such work, goods or materials in the Works.
- 3 Unless otherwise scheduled under Clause 2602, samples of concrete complying with that Clause are not required.
- 4 (N) indicates UKAS or equivalent laboratory accreditation required for sampling.

(05/14) NG SAMPLE CONTRACT SPECIFIC APPENDIX 1/7: SITE EXTENT AND LIMITATIONS ON USE

[Note to compiler: Include details as appropriate, under the following headings:]

1 (05/14) **Extent of the Site.**

[Cross-reference should be made to the Drawings where appropriate.

Include areas of highway for traffic management and advance signing and coning by the contractor where relevant.]

2 (05/14) **Limitations on the Use of the Site.**

[Cross-reference should be made to contract specific Appendix 1/23 where appropriate.]

(05/14) NG SAMPLE CONTRACT SPECIFIC APPENDIX 1/8: OPERATIVES FOR THE OVERSEEING ORGANISATION

Operatives Required	Duties & Skills	No.	Period Required
Chainman/Driver Driver/Laboratory Operative	<i>[Outline of duties and/or skills required]</i>		

[Note to compiler: Include details as appropriate]

(05/14) NG SAMPLE CONTRACT SPECIFIC APPENDIX 1/9: CONTROL OF NOISE AND VIBRATION

[Note to compiler: insert details as required]

(05/14) General

1 (05/14) The Local Authority having responsibility for the area is:

.....

.....

Tel:

Email:

2 (05/14) The measures detailed in this Appendix are given as a guide; however it is for the Contractor to decide whether to seek the Local Authority's formal consent to his proposed methods of work and to the steps he proposes in order to minimise noise.

3 (05/14) Data/Local Authority information/requirements. [Include here any known data, relevant information or additional requirements.]

4 (05/14) Monitoring requirements

(05/14) Restrictions on Working Hours

5 (05/14) [Include details on any working hours restrictions due to the control of noise and vibration, these should be considered and cross referenced, where necessary, with any site restrictions specified elsewhere, e.g. for traffic safety and management under contract specific Appendix 1/17, or general restrictions given in contract specific Appendix 1/7.]

(05/14) Noise

(05/14) **Noise Limits:** [note to compiler: include here details of which method is being used for noise restrictions]

Method 1: Pre-existing ambient +5dB [include here the restriction details]

Method 2: Local Authority Noise Limit [include here the restriction details]

Notes:

- i. Noise levels relate to free field conditions. Where noise monitoring is undertaken at nearby noise sensitive receptor (NSR) where sound level meters are located at least 1 m from facades of buildings. When noise levels are measured within 1m of a building façade. The permitted noise levels can be increased by 3dB.
- ii. The Pre-Construction Ambient noise level, L_{Aeq} , at a NSR is the total L_{Aeq} from all the noise sources in the vicinity over the representative period prior to the commencement of the works.
- iii. The Total Noise level, L_{Aeq} , at a NSR is the total L_{Aeq} from all the noise sources in the vicinity over the representative period plus the construction noise.

(05/14) **Method 1** [delete if Method 1 is not being used]

6 (05/14) Table 1 details the results of the construction noise assessment demonstrating that (number) neighbouring noise sensitive premises are affected by significant noise levels as a result of the works.

[Note to compiler: the hours shown in the table below must cover the whole 24 hour period.]

Table 1: Construction Noise Assessment

Period	Hours	Noise Sensitive Receptor	Pre-Construction Ambient Noise level dB L _{Aeq, Period}	Total Noise dB L _{Aeq, Period}	Significance (Total Noise - Pre-Construction Ambient) dB L _{Aeq}
Mondays to Fridays					
Saturdays					
Sundays					
Bank Holidays					
All unattended plant outside normal working hours					

(05/14) **Method 2** *[delete if Method 2 is not being used]*

7 (05/14) The ambient noise level, L_{Aeq} from all sources when measured 2.0 m above the ground at noise control stations numbers 1 to ... on Drawing Numbers shall not exceed the appropriate level given in the Noise Limit (see notes).

(05/14) **Noise Reduction**

8 (05/14) The following noise reduction methods have been identified and shall be undertaken by the Contractor:

-
-
-

reducing the total noise level to within the pre-construction ambient noise (L_{Aeq, Period}) plus 5dB or less.

9 (05/14) Where it is not possible to reduce noise levels to within the pre-construction ambient noise (L_{Aeq, Period}) plus 5dB, despite extensive mitigation, consent to undertake noisy works will be made to the local authority in consultation with neighbouring noise sensitive premises.

(05/14) **Vibration**

10 (05/14) The use of explosives is / is not permitted. *[Cross reference contract specific Appendix 2/4]*

11 (05/14) Limits on vibration levels arising from the site activities *[insert details of limits giving limits of vibrational amplitude and resultant peak particle velocity]*

12 (05/14) Vibration control stations *[insert location(s) details]*

13 (05/14) Requirements for instrumentation and monitoring

14 (05/14) Any known arrangements for Contractor to monitor vibration in property off site.

15 (05/14) The following vibration reduction methods have been identified and shall be undertaken by the Contractor:

-
-
-

(05/14) NG SAMPLE CONTRACT SPECIFIC APPENDIX 1/10: PERMANENT WORKS TO BE DESIGNED BY THE CONTRACTOR

(05/14) [Note to compiler: List under (A) the work items or elements to be designed by the Contractor and under (B) the work items or elements for which a choice of designs is offered, ie. work items or elements for which the Contractor may propose a design if he elects not to construct the design prepared by the Overseeing Organisation. The design specifications and any special requirements should either follow immediately after the table or be cross-referenced to other site specific Appendices. The specification details should include standards to be used and Technical Approval requirements including timescales, for structures this should include alternative details if BD2 (DMRB 1.1.1) is not to be used.]

Work Item or Element	Location	Design Specification
(A)		
(B)		

(05/14) **NG SAMPLE CONTRACT SPECIFIC APPENDIX 1/11: TEMPORARY WORKS DESIGN**

(05/14) *[Note to compiler: List here the items that have requirements with respect to temporary works design. Any special requirements should either follow immediately after or be cross-referenced to other contract specific Appendices. Details for structures should include confirmation of technical approval procedures if BD2 (DMRB 1.1.1) is not to be used.]*

(05/14) **NG SAMPLE CONTRACT SPECIFIC APPENDIX 1/12: SETTING OUT AND EXISTING GROUND LEVELS**

(05/14) *[Note to compiler: include here the appropriate option for paragraph 1.]*

1 The information given below will be available for inspection during the tender period at:
..... *[include here address and contact details of where the information can be viewed]*
and will be supplied to the Contractor at the commencement of the Works.

[or]

1 The information given below is contained in *[include here the details and location of the Data Room, disks, extranet website or other electronic media used as appropriate.]*

(05/14) *[Note to compiler: Include here details of the setting out information that is available.]*

- 2** (05/14) Specific requirements for setting out.
- 3** (05/14) References to drawings or schedules quoting existing ground levels *[111.1]*.
- 4** (05/14) Level of information on existing detail to be recorded by the Contractor.

(05/14) NG SAMPLE CONTRACT SPECIFIC APPENDIX 1/13: PROGRAMME OF WORKS

1 (05/14) The Contractor shall provide the programme in the following form to comply with the constraints below:

[insert details of programme requirements including, for example, critical path analysis, network diagram bar chart, earliest and latest event dates.]

2 (05/14) Requirements for mass-hall diagram/earthworks details *[delete if not appropriate for the works.]*

3 (05/14) Schedule of Constraints

[The constraints known at tender stage should be inserted here. Some typical constraints, including those that could have been commitments by the employer, are as follows, this list should be edited and/or added to as required by the contract:]

The following is a list of applicable programming constraints, it is not exhaustive and all work elements should be considered for their programming requirements and constraints.

- (i) Work to privately and publicly owned services and supplies. *[cross-reference should be made to contract specific Appendix 1/16]*
- (ii) Possession (rail, property, etc).
- (iii) Traffic safety and management including notice requirements. *[cross-reference should be made to contract specific Appendix 1/17]*
- (iv) Restrictions arising from particular health and safety requirements. *[cross-reference should be made to contract specific Appendix 1/23]*
- (v) Environmental constraints including seasonal restrictions and provision of environmental protection prior to the main construction operations (environmental barriers, etc).
- (vi) Trials and demonstrations in advance of main construction.
- (vii) Completion of the communications installation 8 weeks before the date for completion of the works.
- (viii) Compliance with technical approval procedures in relation to structures designed by the Contractor, including awaiting approvals, resubmissions and modifications.
- (ix) Timeframes for acceptance, approval or authorisation requirements including authorisation of non-prescribed signs.
- (x) Restrictions with respect to avoidance of pollution due to noise and vibration. *[cross-reference should be made to contract specific Appendix 1/9 where appropriate.]*

4 (05/14) The level of detail should be not less than the following:

[Compiler to insert level of detail requirements]

(05/14) **NG SAMPLE CONTRACT SPECIFIC APPENDIX 1/14: PAYMENT APPLICATIONS**

(05/14) *[Note to compiler, include any payment application requirements including the following where appropriate.]*

(05/14) *[Where the contract uses Bills of Quantities the compiler should include the following:]*

The payment applications submitted to the Overseeing Organisation in accordance with the Conditions of Contract by the Contractor shall, whenever dealing with matters covered by the Bills of Quantities, be set out under Part and Section headings similar to those in the Bills of Quantities and shall separately identify each item and specify quantity, unit, rate and value. Items not described in Bills of Quantities but appropriate for inclusion as measured work shall be shown at the end of the relevant section or under section headings as appropriate indicating quantity, unit rate and value. In respect of all other matters referred to in the Conditions of Contract the Contractor shall separately show in the statement quantities, units and rates of goods and/or materials and also details of any other matters to which he considers himself entitled. The Contractor shall allow the Overseeing Organisation to inspect invoices for goods or materials included in the statement as may be required.

(05/14) *[Where the contract uses Activity Schedules the Compiler should include the following:]*

The payment applications submitted to the Overseeing Organisation in accordance with the Conditions of Contract by the Contractor shall, whenever dealing with matters covered by Activity Schedules, be set out under group headings similar to those in the Activity Schedules and shall separately identify each activity and specify activity price, percentage completed and value (either 0% or 100% of activity price).

(05/14) **NG SAMPLE CONTRACT SPECIFIC APPENDIX 1/15: ACCOMMODATION WORKS**

(05/14) *[Note to compiler: include here the appropriate option for paragraph 1.]*

1 Copies of Land Reference Plans and Schedules will be available for inspection during the Tender period at:
..... *[include here address and contact details of where the information can be viewed]*
and will be supplied to the Contractor before the commencement of the Works.

[or]

1 Copies of Land Reference Plans and Schedules are contained in *[include here the details and location of the Data Room, disks, extranet website or other electronic media used as appropriate.]*

2 (05/14) Details of accommodation works are as follows:

[Note to Compiler: include reference to relevant drawings and schedules information.]

(05/14) NG SAMPLE CONTRACT SPECIFIC APPENDIX 1/16: PRIVATELY AND PUBLICLY OWNED SERVICES AND SUPPLIES

- 1 (05/14) This Appendix contains details of services and supplies affected by the Works, details of preliminary arrangements that have been made with Statutory Undertakers, utility companies and others for the alteration of services and supplies affected by the Works, and details of any orders already placed.
- 2 (05/14) The Contractor shall make arrangements with the Statutory Undertakers, utility companies and others concerned, for the co-ordination of his work with all work which needs to be done by them or their contractors concurrently with the Works. Compliance with the periods of notice given in this Appendix does not relieve the Contractor of his obligations.
- 3 (05/14) Private services to individual properties have not generally been listed or shown on the Drawings. The Contractor shall make arrangements with the Statutory Undertakers and others concerned for the phasing of all necessary disconnections and diversion of private services affected by the Works.
- 4 (05/14) The names, addresses and contact details of the Statutory Undertakers, utility companies and authorities serving in the locality are listed below.

Names	Address	Contact Details
Statutory Undertakers, Utility Companies		<i>[Note to compiler: include contact names, telephone numbers and e mail addresses]</i>
Other Authorities		

5 (05/14) Services and Supplies Affected by the Works

Location	Description	Group*	Drawing No.	Details [**]
Statutory Undertakers, Utility Companies				
Other Authorities/ Bodies/Individuals				

*

- A Work expected to be completed before the commencement of the Works.
- B Work required after commencement of the Works which does not require prior work by the Contractor, but does require the Contractor to undertake liaison and coordination.
- C Work required after commencement of the Works which does require prior work by the Contractor. *[Note to compiler: include specific detail on what work the Contractor is required to do.]*
- D Work expected to be in progress at the commencement of the Works.
- E Work to be wholly undertaken by the Contractor. *[Note to compiler: include specific detail on what work the Contractor is required to do.]*

*[** Insert all relevant details including notice required to commence, time for completion, stage reached with respect to the HAUC Code of Practice for Diversionary Works, e.g. 'C4 notice has been issued' giving dates and any further liaison required.]*

- 6 (05/14) *[Note to compiler: Insert here details of any other preliminary arrangements that have been made and/or details of any orders already placed]*

(05/14) **NG SAMPLE CONTRACT SPECIFIC APPENDIX 1/17: TRAFFIC SAFETY AND MANAGEMENT**

(05/14) *[Note to compiler: When the Contractor is not required to undertake the traffic safety and management duties this should be stated along with notice periods required for programming of works. Otherwise the following should be inserted in the Appendix as appropriate and extended when required:]*

1. (05/14) Submission of Traffic Safety and Management Proposals

State timescale(s) for submission of proposals, and any other submission requirements.

2. (05/14) Traffic Safety and Management Requirements and Constraints

- (i) Site specific requirements and constraints, to including the following:
 - (a) Any restrictions on the phasing of the Works.
 - (b) Daily and weekly time restrictions on each highway concerned.
 - (c) Minimum number of traffic lanes to be open to traffic on each highway concerned, using the time restrictions detailed above.
 - (d) Any site specific requirements for the use of traffic signals, width of lanes, working areas or safety zones.
 - (e) Embargo periods such as holiday periods, stating additional restrictions for these periods.
 - (f) Any local events or conditions likely to affect traffic, stating any additional restrictions that would apply.
 - (g) Requirements for emergency running lane(s).
- (ii) Traffic data – data required for traffic management design, such as:
 - Traffic flows, peak and off peak;
 - Percentage HGVs;
 - Use of routes by buses.
- (iii) Other requirements:
 - (a) Highway maintenance functions, giving details of what is required on each highway concerned.
 - (b) Recovery Vehicles, cross reference to contract specific Appendix 1/20.
 - (c) Temporary lighting, cross reference to contract specific Appendix 14/3.
 - (d) Emergency phones.

3. (05/14) Traffic Safety and Control Officer (TSCO)

- (i) State if a TSCO is not required.
- (ii) State if the TSCO is not required to be on site at all times.
- (iii) Give details of traffic management control centre or other parties with which the TSCO is required to liaise.

4. (05/14) Temporary Traffic Regulation Orders and other Statutory Orders

- (i) Details of any orders applied for prior to time of tender.
- (ii) State if the Contractor is not required to apply for orders.
- (iii) State any procedural requirements, for example, if order applications need to be made through the Overseeing Organisation.
- (iv) Notice periods required if orders are to be made through the Overseeing Organisation.

5. (05/14) Crossovers

- (i) Requirements for crossovers.
- (ii) Design requirements.
- (iii) Any site specific restrictions.
- (iv) Removal requirements.

6. (05/14) Driver Information Signs

- (i) Sign requirements including type, numbers and locations of signs.
- (ii) Dates to be inserted into legends and legend details if not from Chapter 8.

7. (05/14) Temporary Speed Limit Cameras

- (i) State if cameras are required, cross reference contract specific Appendix 1/27.

(05/14) NG SAMPLE CONTRACT SPECIFIC APPENDIX 1/18: TEMPORARY HIGHWAYS FOR TRAFFIC

[Note to compiler: The following should be inserted in the Appendix as appropriate and extended when required:]

1 (05/14) Temporary Highways for Traffic Specified by the Overseeing Organisation

(i) Highways Open to Vehicles

Description	Drawing No. or Ref.	Design Responsibility, Construction/ Design Requirements*	Maintenance Requirements (including timescale for responsibility)	Remarks (including Constraints and Reinstatement details)
Major				
Minor				

(ii) Other Highways and Private Rights of Way

Description	Drawing No. or Ref.	Existing Usage	Design Responsibility, Construction/ Design Requirements*	Maintenance Requirements (including timescale for responsibility)	Remarks (including Constraints and Reinstatement details)
Footpaths					
Cycle Tracks					
Bridleways					
+ Private means of Access					

[* This should include a schedule of design and/or construction requirements including the standards to be used, any applicable constraints, and geometrical design details where these have not been shown on the Drawings. Cross reference should be made to contract specific Appendix 1/11 for relevant details including temporary structures. Cross reference can and should be made to other applicable contract specific appendices such as Appendix 7/1 for pavement requirements.]

+ It is not always necessary to define individual accesses, particularly in urban situations. Reference can be made to road names or other appropriate means of identification.]

2 (05/14) Temporary Highways Proposed by the Contractor

- (i) Requirements for statutory orders, including if applications are to be made through the Overseeing Organisation including notice period requirements [118.5].
- (ii) Details of any Constraints.

(05/14) **NG SAMPLE CONTRACT SPECIFIC APPENDIX 1/19: ROUTEING OF VEHICLES**

(05/14) *[Note to compiler: Insert details as appropriate under the following headings:]*

- (i) Permitted Access Routes To and From the Site

[A list of drawings showing the permitted access routes, and/or details of restrictions, and details of temporary traffic signs.]

- (ii) The Use of the Permanent Works by Construction Traffic

[The requirements with which the Contractor must comply in submitting details under the Conditions of Contract. Cross reference to restrictions due to pavement or structural requirements may be necessary.]

- (iii) Movement of Machinery and Plant Across Public Roads

[The requirements for the provision of haul route traffic signals, the equipment for which requires the approval of the Secretary of State.]

- (iv) Temporary Structures for Construction Traffic Spanning Areas Used by the Public

[Cross reference to temporary structures requirements given in contract specific Appendix 1/11]

(05/14) **NG SAMPLE CONTRACT SPECIFIC APPENDIX 1/20: RECOVERY VEHICLES FOR BREAKDOWNS**

(05/14) **SHEET 1: Information to be provided by the compiler**

(05/14) **Requirements for Recovery Vehicle Operation**

1 (05/14) Recovery Vehicles to be Provided

1.1 *[Compiler: Include here details of circumstances when recovery vehicles are to be provided and if it is permitted to use recovery vehicles and operatives from more than a single organisation.] [120.1]*

1.2 Heavy recovery vehicles:

- (i) ... no. heavy recovery vehicle(s) shall be provided. [120.46]

1.3 Light Recovery Vehicle:

- (i) ... no. light recovery vehicle(s) shall be provided. [120.47]

1.4 Motorcycle recovery facilities:

- (i)no of light recovery vehicles to be capable of recovering motorcycles. [120.47]

1.5 Impact Protection Vehicles:

[Compiler: Include here details of circumstances when impact protection vehicles should be provided to protect recovery operations.][120.49]

2 (05/14) Locations for Recovery Vehicles

[Compiler: State here details of locations for recovery vehicles together with any specific requirements such as need for hardstandings. Note: the choice of location should normally be left to the contractor unless there are particular safety implications that could limit the number of suitable locations] [120.21]

3 (05/14) Limits of Service

[Compiler: Give details of the length of carriageway over which free recovery service will operate, including any specific requirements to cover slip roads, side roads etc]. [120.18]

4 (05/14) Location(s) for Vehicle Removal

[Compiler: Insert details of location(s) to which broken-down or accident-damaged vehicles should be removed, and the facilities to be provided at those locations. These locations should take into account safety, security and the availability of a telephone, see Chapter 8 of the Traffic Signs Manual]. [120.22 and 120.55]

5 (05/14) Communication System

[Compiler: Provide here details of specific communication system requirements, e.g. mobile telephone, 2-way radio link or land line.] [120.27, 120.28]

(05/14) NG SAMPLE CONTRACT SPECIFIC APPENDIX 1/20: RECOVERY VEHICLES FOR BREAKDOWNS

(05/14) SHEET 2: Information to be provided by the Contractor

FORM FOR ‘RECOVERY VEHICLE DAILY CHECK SHEET’

RECOVERY VEHICLE DAILY CHECK SHEET							
Week Commencing:							
Driver’s Name:	Vehicle Type/Registration No:				Mileage:		
Driver to initial against check list below:							
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
OIL LEVEL							
WATER							
ENGINE							
CLEANLINESS – interior							
CLEANLINESS – exterior							
WIPER/WASHERS							
TYRES							
LIGHTS							
Driver’s Report (detail any problems):							
Action Taken (to solve above problems):							
Date:				Supervisor’s Signature:			
COMPLETED SHEET TO BE RETURNED TO OVERSEEING ORGANISATION EACH WEEK							

(05/14) NG SAMPLE CONTRACT SPECIFIC APPENDIX 1/20: RECOVERY VEHICLES FOR BREAKDOWNS

SHEET 3: Information to be provided by the Contractor

LEAFLET FOR ISSUE BY RECOVERY VEHICLE OPERATIVES TO DRIVERS OF ALL BROKEN-DOWN OR ACCIDENT-DAMAGED MOTOR VEHICLES

Name of Scheme:

[compiler: Insert accurate name of the scheme before the issue of tender documents]

.....
Vehicle Recovery Service - Explanatory Leaflet authorised by the *[compiler insert name of the Overseeing Organisation or Highway Authority as appropriate]* for issue to drivers of broken-down and accident-damaged motor vehicles within the above works.

1. The roadworks operations commence at the “Roadworks Ahead - 2 miles” sign and end at the “Roadwork End” sign. *[compiler: See Note 1 below]*
2. The recovery service provided along the extent of the roadworks operations is free.
3. Vehicles will be recovered clear of the roadworks operations tounless otherwise directed by the police. *[compiler: See Note 2 below]*
4. It will then be at the discretion of individual drivers of broken-down or accident-damaged vehicles requiring assistance to arrange for assistance or the removal of their vehicle to a garage of their choice. The operators of the free recovery service do not make such arrangements.

.....
.....
(11/05) Useful contact numbers are given below:

Directory Enquiries

AA

RAC

Greenflag

Local Garage

Assistance will also be given by telephoning *[compiler: See Note 3 below]*

If a motorway emergency telephone is used, the police will assist.

[Notes to compiler:

- (1) *If different, replace with the appropriate limits of service for the works.*
- (2) *The chosen location should take into account safety, security and the availability of a telephone, see Chapter 8 of the Traffic Signs Manual.*
- (3) *The telephone number should be agreed with the police prior to the commencement of the works.]*

(05/14) **NG SAMPLE CONTRACT SPECIFIC
APPENDIX 1/21: INFORMATION BOARDS**

(05/14) *[Note to compiler: Include here the locations and details of information boards, or cross-references to the drawings giving the information. Also include any Overseeing Organisation, or employer specific requirements for logos, branding or visual identity.]*

(05/14) **NG SAMPLE CONTRACT SPECIFIC
APPENDIX 1/22: PROGRESS PHOTOGRAPHS.**

[Note to compiler: include details as follows.]

1. (05/14) Specific times required, including the first set if it is required in a shorter time than the given interval.
2. (05/14) Specific work items or events that photographs are required for.
3. (05/14) Details of media required for submission of photographs to the Overseeing Organisation.
4. (05/14) The designation of the person to accompany the photographer.
5. (05/14) State if the photographer is not required to be a professional photographer.

Location	Type and format	No. of Photographs and Distance Between Photographs or Specific Aspects Required	Aerial/Ground	Frequency Required/Interval	Remarks

(05/14) **NG SAMPLE CONTRACT SPECIFIC APPENDIX 1/23: RISKS TO HEALTH AND SAFETY**

[Note to compiler: include here information on the following.]

1. (05/14) Details of known specific or extraordinary hazards or risks that would require particular or unusual precautions and would place limitations on the methods of working.
2. (05/14) Details of known required actions or precautions.
3. (05/14) Details of notifications required to and from the Overseeing Organisation or other parties.
4. (05/14) Details of any specific monitoring requirements and submission of records to the Overseeing Organisation.

(05/14) NG SAMPLE CONTRACT SPECIFIC APPENDIX 1/24: QUALITY MANAGEMENT SYSTEM

(05/14) [Notes to compiler: If the main Contractor is not required to institute a quality management system this should be stated in this appendix, otherwise this appendix should list the quality plan requirements, the following list can be used, supplemented as necessary.]

1. (05/14) The Quality Plan shall be submitted to the Overseeing Organisation for its acceptance not later than* days after award of the Contract

[* normally 21 days]

The Contractor shall submit method statements etc. prior to commencement of any related work or activity and to a timetable included in the Quality Plan.

2. (05/14) The Quality Plan shall include details on the following as a minimum.

(i) Contractor's Organisation and Management.

Including the organisation of the contract, line command and communication links between parties involved in the Contract on and off site.

Names, roles, responsibilities and authority of principals and key personnel.

(ii) Identification of the parts of the Contractor's Quality Management System relevant to the Works.

(iii) Supply Chain Management

Including details of control and communications processes, assessment of the supplier's and subcontractor's quality management systems and quality control capabilities, monitoring arrangements, review and acceptance of work items being undertaken by the subcontractor or supplier.

Details and scheduling of Quality Plans required by relevant National Highways Sector Schemes or other quality management schemes.

Details of registration to relevant National Highway Sector Schemes or other quality management schemes.

(iv) Document Control

Controls relevant to the Works, including the control and processing of testing results, materials and workmanship certification and quality records

The management of quality records as required in sub-Clause 104.7

The control and scheduling of all documentation to be submitted to the Overseeing Organisation as required by the Specification throughout the Works.

(v) Resource Management

Including details of relevant skills and experience of personnel involved in the Works.

The relevant training and/or competency assessment certificates and/or registration/skills cards as required by sub-Clause 104.10, or scheduling of when they will be provided.

(vi) Method Statements

Method Statements for initial items of work and scheduling for all other method statements required.

This scheduling shall include times for submission of method statements such that they are submitted a minimum of 14* days prior to the commencement of the relevant work.

[*Note to compiler: this time period should be amended to suit the particular requirements.]

(vii) Hold Points

As described in sub-Clause 104.6

(05/14) **NG SAMPLE CONTRACT SPECIFIC APPENDIX 1/25: TEMPORARY CLOSED CIRCUIT TELEVISION (CCTV) SYSTEM FOR THE MONITORING OF TRAFFIC**

(05/14) *[Note to compiler; Where this system is required the following details should be inserted and extended where necessary:]*

- 1 (05/14) Requirements for Temporary Closed Circuit Television (CCTV) system:
 - (i) The periods when the CCTV is required and operational requirements;
 - (ii) Locations of supplementary cameras;
 - (iii) The need to interface the temporary CCTV system with the permanent CCTV System;
 - (iv) If required, details of the interface between the CCTV systems *[see MCH 2530 for further guidance]*;
 - (v) Details of a dedicated communications link to the Regional Control Centre (RCC), Police Control Office or other control centre.

(05/14) **NG SAMPLE CONTRACT SPECIFIC APPENDIX 1/26:**

NOT USED

(05/14) NG SAMPLE CONTRACT SPECIFIC APPENDIX 1/27: TEMPORARY AUTOMATIC SPEED CAMERA SYSTEM FOR THE ENFORCEMENT OF MANDATORY SPEED LIMITS AT ROADWORKS (TASCAR)

(05/14) [Note to compiler: Where an instantaneous speed measuring system is to be used, paragraphs 1 to 4 apply. In this case, put "Not used" against paragraphs 5 to 6. Where an average speed measuring system is to be used, paragraphs 5 to 6 apply. In this case, put "Not used" against paragraphs 1 to 4].

(05/14) Type of System

The system(s) to be provided shall be [Compiler to insert 'Instantaneous Speed Measuring System' or 'Average Speed Systems']

(05/14) Location and Quantities

1 (05/14) The number of speed monitoring sites required for the TASCAR is ... no. The following ancillary equipment is therefore required:

Number of fixed housings	... no.*	
Number of live camera units	... no.*	
Number of monitoring only units	... no.*	
Number of trailer-mounted housings	... no.*	[*compiler to complete]

2 (05/14) For the purpose of this Appendix live camera units are Home Office Type Approval (HOTA) devices at which enforcement is taking place. Monitoring only units are for speed measurement only and not for enforcement but still activate with a flash. These units should only activate for receding traffic i.e. not flash at oncoming traffic.

3 (05/14) The TASCAR equipment shall be installed at the following locations within the works as shown on Contract Drawing number(s)**:

**Northbound verge	Chainage
	Chainage
Southbound verge	Chainage
	Chainage
Central Reserve (CR)	Chainage
	Chainage [**compiler to insert appropriate location details and/or cross reference drawings]

4 (05/14) Parts of the TASCAR which are located within the central reserve must be capable of 180° rotation if it is to be used in both directions and will require appropriate site commissioning for both directions.

5 (05/14) A camera outstation consists of a camera system and its lighting source. A pair of linked camera outstations is required for each monitored lane within a speed-controlled zone. The number of lanes to be monitored within the speed-controlled zone in this Contract isno*. The lane(s) to be monitored is/are [compiler insert Lane no(s) here, (Lane 1 is nearside lane etc)]. The lane(s) to be monitored only is/are [compiler insert Lane no(s) here if monitoring only units are required]. [Notes to compiler: It is not necessary for monitoring only outstations to be in pairs - single units can be used for this purpose. Each control cabinet can monitor a single pair of camera outstations at a time. However, it is not always necessary for every operational pair of cameras to be enforced at a given time. To change between camera pairs, the police swap over video feeds at the control cabinet location. In this way, a single cabinet can cater for up to four pairs of cameras]. The following equipment is therefore required:

Number of functional linked camera outstation pairs isno.*	
Number of monitoring only camera outstations isno.*	
Number of column-mounted outstations isno.*	
Number of structure-mounted outstation isno.*	
Number of control cabinets isno.*	<i>[*compiler to complete]</i>

6 (05/14) The TASCAR equipment shall be installed at the locations as shown on Contract Drawing(s) number(s)..... .

(05/14) Enforcement Authority (EA)

7 (05/14) The EA is *[give name of EA e.g. the County of South Yorkshire, the Metropolitan Police District, Northern Ireland, etc].*

8 (05/14) Procedures with respect to EA liaison *[give details of any Overseeing Organisation requirements e.g. liaison via Overseeing Organisation, involvement of Regional Control Centre.]*

(05/14) Installation, Commissioning and Period of Operation

9 (05/14) The period(s) of operation shall be *[insert details of start and finish times if different from those stated in Clause 117.]*

10 (05/14) Commissioning/installation requirements *[insert any specific commissioning or installation requirements, including the notice period required if it is not as stated in Clause 117 and the following where required.]*

The secondary method of confirming the speed calculation of the equipment provided, which is required shall be to Contract Drawing number

(05/14) Evidential Trail (ET)

11 (05/14) The ET requirements are *[insert requirements, including commissioning certification requirements, reference to 'Evidential Trails for Enforcement Systems' documents.]*

(05/14) Reinstatement of Surfaces

12 (05/14) Reinstatement of verge areas shall consist of *[compiler to insert reinstatement requirements, the following is an example]* backfilling any hole(s) with acceptable material to Clause 601 up to a level 100mm below specified finished levels. The remaining 100mm thickness shall be filled with topsoil Class 5B to Clause 601.

13 (05/14) Reinstatement of paved footway areas shall consist of *[compiler to insert reinstatement requirements, the following is an example]* backfilling any holes with unbound mixture Type 1 to Clause 803 and compacting adequately such that this terminates 65mm below specified finished levels. The remaining 65mm thickness shall be backfilled with a 50mm thick layer of dense base asphalt concrete (20mm aggregate) to Clause 906 covered by 15mm thickness of dense asphalt concrete surface course (6mm aggregate) to Clause 909. The surface course shall extend not less than 150mm beyond the hole which has been backfilled and shall be keyed into existing surfacing by its prior excavation to a depth not greater than 15mm.

14 (05/14) Reinstatement of carriageway surfaces shall include, but not be limited to, removal from the pavement surface of the secondary speed check markings. This shall be done *[compiler to insert timing requirement: either on removal of the TASCAR or on completion of the works]. [Compiler to insert other reinstatement requirements].*

[Note to compiler: Calibration markings may be required but are not considered to be traffic signs within the meaning of the Road Traffic Regulations Act 1984. The markings will require the agreement of the Overseeing Organisation.]

(05/14) **NATIONAL ALTERATIONS OF THE OVERSEEING ORGANISATION OF WALES**

NG 150NAW (05/14) Checking Bar Schedules

1 (05/14) Clause 150NAW is to be included for all trunk road and motorway contracts.

NG 151NAW (05/14) Dimensional Accuracy

1 (05/14) Clause 151NAW is to be included for all trunk road and motorway contracts.

NG 152NAW (05/14) Agreement on Measurements Involving Computer Equipment

1 (05/14) Where applicable to the form of Contract being used Clause 152NAW is to be included for all trunk road and motorway contracts.

(05/14) NATIONAL ALTERATIONS OF THE OVERSEEING ORGANISATION OF NORTHERN IRELAND

NG 110NI (05/14) Information Boards

1 (05/14) The compiler should provide in contract specific Appendix 1/21 details of any specific requirements, and cross-refer to drawings of the information boards required for the works. Whenever possible information boards should be erected within the highway boundary, consistent with the safety of highway users and the Local Planning Authority should be informed of the proposal to erect them. The permission of the Local Authority is required for information boards erected on a non-trunk road. Safety barriers should be detailed at the site of information boards where appropriate.

2 (05/14) Contractor's advertising boards should not be located with advance direction signs or traffic management signs except when associated with information boards. Planning permission for advertisements on construction sites is covered by the Planning (Control of Advertisements) Regulations (Northern Ireland) 1992.

NG 117NI (05/14) Traffic Safety and Management

1 (05/14) The compiler should use contract specific Appendix 1/17 to detail the traffic management constraints and requirements that are specific to the site and the contract. The normal practice will be for the Contractor to design and implement the traffic management unless detailed otherwise in contract specific Appendix 1/17.

2 (05/14) It is essential that consultation with the police and highway authority is undertaken during scheme preparation and implementation. Traffic safety and management proposals should be discussed with the police, highway authority and Overseeing Organisation before implementation. There may be more than one police force and/or highway authority relevant to the roads involved with the works, all of them should be consulted as necessary.

3 (05/14) Traffic management operations need to be designed and carried out by personnel who are suitably trained and competent. The use of National Highways Sector Scheme 12 provides a framework to address this. There are three relevant NHSS schemes, 12A/B, 12C and 12D for different categories of traffic management as listed in Appendix A of the Specification for Highway Works. The company undertaking the traffic management work should be registered for the category or categories that are required by the works.

4 (05/14) The compiler should state in contract specific Appendix 1/17 the timescale for the Contractor to submit his traffic management proposals to the Overseeing Organisation.

5 (05/14) The Contractor may be required to undertake maintenance functions on highways within the site. If so, this should be stated, together with a list of these functions, in contract specific Appendix 1/17. The limits of the highway to be maintained should be stated together with the timescale during which the Contractor is responsible for maintenance.

6 (05/14) It is essential that all traffic safety measures are in accordance, where applicable, with the requirements and advice given in Chapter 8 of the Traffic Signs Manual and any other relevant requirements.

Chapter 8 of the Traffic Signs Manual is not a specification, and in many instances provides guidance and options, contract specific Appendix 1/17 should clearly indicate any specific requirements.

7 (05/14) If, in addition to routine maintenance functions, the Contractor is to be requested to repair accidental or willful damage to any highway within the site full details should be stated in contract specific Appendix 1/17. The Overseeing Organisation should ensure that the highway authority has been consulted.

8 (05/14) Legally, it is the highway authority's responsibility to maintain the highway and it is not a valid defence under "Roads (Northern Ireland) Order 1993" that the Contractor was employed to carry out or supervise the maintenance of the highway. However, compensation for breach of contract may be obtainable from the Contractor if damages are paid by the highway authority because of a failure in maintenance due to fault by the Contractor.

9 (05/14) It may be necessary to erect, alter, cover, uncover and take down advance direction signs and other similar signs to be compatible with the state of the works. If the responsibility for this is not the Contractor's this should be stated in contract specific Appendix 1/17. The areas of highway affected by advance signs, cones and road markings should be included in contract specific Appendix 1/7 as forming part of the site (see NG 107.2).

10 (05/14) Authorisation of non-prescribed signs or temporary traffic signals should be obtained through the Overseeing Organisation giving at least 28 days notice. Any other requirements which are likely to be needed (or different notice period) should be included in contract specific Appendix 1/17.

11 (05/14) Before the Contractor commences work on a highway, or reopens a closed highway, he should ensure that the police and highway authority agree with the proposals and are satisfied with the state of the highway to be reopened.

12 (05/14) Any requirements for temporary lighting should be included by cross-reference to contract specific Appendix 14/3.

13 (05/14) The x heights of the lettering on vehicle sign boards of 37.5, 50, 62.5, 75, 100 and 150 mm relate to the lower case and the capital sizes are 52.4, 70, 87.5, 105, 140 and 210 mm in height.

14 (05/14) The compiler should detail in contract specific Appendix 1/17 the highways and private rights of way which are to be kept open during the works.

(05/14) **Statutory Orders, Temporary Traffic Regulation Orders**

15 (05/14) The Contractor should ensure that necessary steps have been or are being taken to obtain any statutory orders required from the appropriate authority. Details of orders applied for by the Overseeing Organisation during the scheme preparation should be stated in contract specific Appendix 1/17.

16 (05/14) Contract specific Appendix 1/17 should state the timescale for submission and length of notice required for the making of orders necessitated by the Contractor's proposals where these are to be submitted through the Overseeing Organisation, or if he wishes to vary the measures arranged by the Overseeing Organisation.

17 (05/14) The compiler should detail in contract specific Appendix 1/17 the highways and private rights of way which are to be kept open, and those for which orders have been obtained for their closure.

(05/14) **Crossovers**

18 (05/14) Where contraflow traffic operation is identified as being required by the Overseeing Organisation for which crossovers are to be designed by the Contractor design requirements and constraints should be given in contract specific Appendix 1/17. Where crossovers are specified in contract specific Appendix 1/17 the Overseeing Organisation should ensure that the highway authority has been consulted, and list in Appendix 1/17 any maintenance functions to be carried out by the Contractor. When crossovers are proposed by the Contractor, they may be constructed only if the highway authority is in agreement. The police should also be consulted. Crossovers should be designed using TA 92 Crossover and Changeover Design (DMRB 8.4.6)

(05/14) **Traffic Safety and Control Officer**

19 (05/14) A Traffic Safety and Control Officer (TSCO) (and nominated deputies) should possess a broad experience of the highway construction industry, combined with the ability to interpret the requirements set out in contract documents. They should have a detailed working knowledge of the temporary traffic management industry and possess a TSCO (2009) Registration Card, as detailed by National Highways Sector Scheme 12.

Traffic Safety and Control Officers should also have a working knowledge of Chapter 8 of the Traffic Signs Manual and other appropriate guidance documents relating to temporary traffic management.

(05/14) **Driver Information Signs at Roadworks**

20 (05/14) Driver Information Signs are for use on roads that are the Overseeing Organisation's responsibility and where closure of traffic lanes is required for maintenance, new works or improvement schemes. Advance signs will give warning of road works ahead, and provide information about the nature and duration of the works. Signs located within the road works will provide information about work in progress when a lane is closed and there may appear to be no activity. These signs will be used in addition to scheme notice boards where required. Authorised legends are given in Chapter 8 of the Traffic Signs Manual.

Contract specific Appendix 1/17 should state where driver information signs are required and should include details of required legends, which should be agreed with the Overseeing Organisation.

(05/14) **TASCAR**

21 (05/14) Where a Temporary Automatic Speed Camera System for the Enforcement of Mandatory Speed Limits at Roadworks (TASCAR) is to be provided in accordance with the sub-Clause 117.28NI, it is desirable to include the following in the Instructions for Tendering:

‘The Contractor’s attention is drawn to Specification sub-Clause 117.28NI together with contract specific Appendices 1/17 and 1/27 which require the provision and maintenance of a TASCAR which will be operated under the control of the Police and regularly maintained under the Contract at the expense of the Contractor in accordance with standards required by the Home Office in accordance with current legislation for traffic enforcement.’

The Overseeing Organisation should liaise and seek approval for the operation of any TASCAR scheme with the Police / Enforcement Authority (EA) prior to issuing any form of tender.

There are two types of equipment that are available for use as TASCAR i.e. Spot Speed or Average Speed, confirmation of which system is required should be specified in the contract specific Appendix 1/27.

Automatic spot speed measuring devices require to have a secondary method of speed measurement, each supplier is responsible for detailing what is required for their system and these requirements need to be implemented.

The Contractor is responsible for ensuring that all relevant requirements of the Evidential Trails for Enforcement Systems documents are applied to and achieved on the scheme.