SERIES NG 100
PRELIMINARIES

Contents

NATIONAL ALTERATIONS OF THE OVERSEEING ORGANISATIONS OF SCOTLAND, WALES AND NORTHERN IRELAND

# 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.

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PRELIMINARIES

NG 101 Temporary Accommodation and Equipment for the Overseeing Organisation

1 (05/01) This Clause will generally need to be supplemented by drawings cross-referenced in 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) supplies, definitive quantity of consumables, drainage facilities and other services. The Appendix should also include the standards of artificial lighting intensity and the minimum room temperature to be maintained during stated hours, including weekends where required.

2 The accommodation, furnishings and fittings and equipment provided should be in good condition, but unless there is any particular reason need not be new.

3 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 Appendix 1/1 together with the terms under which the property can be made available.

4 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 (11/03) Testing equipment to be listed in 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 Appendix 1/6, having regard to United Kingdom Accreditation Service (UKAS) or equivalent laboratory accreditation requirements where appropriate.

6 (11/03) It should be noted that UKAS or equivalent 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 When the Contractor erects temporary accommodation on land which is part of the Site or adjoining the Site (ie. has a common boundary with it) planning permission for the erection of the temporary accommodation is deemed to have been granted for the duration of construction operations.

NG 102 Vehicles for the Overseeing Organisation

1 This Clause will need supplementing by Appendix 1/2 which should describe the number and type of vehicles and indicate the period for which each vehicle is required.

2 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 (05/01) The frequency that the Overseeing Organisation's vehicles are to be cleaned by the Contractor should be described in Appendix 1/2.

NG 103 Communication System for the Overseeing Organisation

1 When a communication system is required this should be stated in 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) (05/01) Number and description of sets, (including spare batteries and charging apparatus) required for:

(a) installation in vehicles, stating that hands free kits shall be provided;

(b) portable use.

(iv) If a radio communication system is to be used the radio frequency should be obtained from the Overseeing Organisation.

2 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.

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

NG 104 (05/01) Standards, Quality Assurance, Agrément Certificates and Other Approvals

Standards

1 Where there is no declaration of equivalence in respect of a proposed alternative standard, the Overseeing Organisation should ascertain whether or not the proposed standard lays down levels of safety, suitability and fitness for purpose equivalent to those required by the specified standard. The Overseeing Organisation may also need to seek advice from the designer. The factors underlying the purpose of the specified standard and their criticality should be evaluated for each application. If the proposed standard only differs from the specified standard in a way not essential to the underlying purpose it should be considered equivalent. Similarly, if the proposed standard contains such factors but in a different technical form which achieves the same purpose as the specified standard, it should be considered equivalent.

Quality Assurance

2 (05/05) A contract specific Quality Plan should be prepared by the Contractor, which should be as brief as possible but cover all the topics in the "Model Requirements". (See NG Sample 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 Specification for Highway Works (SHW).

3 (05/05) National Highway Sector Schemes (NHSS) are being developed, as a partnership, by all sides of the highway industry to interpret BS EN ISO 9001 as it applies to a particular highway activity/industry within the United Kingdom.

4 (05/06) NHSS have generally been developed from schemes that were originally operated by individual certification bodies accredited by the National Accreditation Council for Certification Bodies (NACCB), the forerunner to the United Kingdom Accreditation Service (UKAS). Some of these earlier schemes were recognised by the Department of Transport/Highways Agency (HA) as far back as 1986, when they were introduced into the Specification for Highway Works. At that time there were six quality management schemes, of which three became product conformity schemes (cement, pipes and reinforcing steel). Over the intervening period, the number of quality management schemes has expanded and some of these are now implemented as NHSS. The current schemes are listed in Appendix A of the Specification for Highway Works.

5 (05/05) NHSS were developed with the support of UKAS, and are complementary to and interpret BS EN ISO 9001, but do not duplicate this standard. 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.

6 (11/03) UKAS is advised on each sector scheme by a separate Technical Advisory Committee (TAC). Each TAC interprets ISO 9001 in relation to the requirements of their particular activity. The TAC comes to a consensus on the minimum levels of workmanship, services, products, testing, and the training and competency of operatives needed to meet specification requirements, as well as auditor qualification. These details are contained in the individual Sector Scheme Documents (SSDs).

7 (05/06) After reaching consensus on the SSD, the final draft is then submitted to UKAS for final scrutiny as a sector scheme before being accepted. UKAS particularly check which organisations have participated in the development of the scheme, the interpretation of ISO 9001, especially the training elements and the auditor qualifications for the certification bodies. Following this scrutiny and the making of any necessary amendments, the document is then published by UKAS. UKAS provide copies to UKAS accredited certification bodies that wish to

participate in the scheme for a sector activity, and to the relevant TAC chairpersons. These organisations and the relevant chairpersons are then responsible for circulating copies to their respective suppliers and committee members. Copies can also be freely downloaded from the UKAS website (www.ukas.com).

8 Implementation of a new scheme or an amendment to a scheme is bound by time constraints. For a completely new scheme, the implementation period must allow for the accreditation of the certification bodies by UKAS and then subsequent registration of suppliers by the certification body. This is unlikely to be less than 9 months. Where a scheme is amended, the implementation period must allow suppliers time to update their quality system and be assessed against the requirements. This period will not be less than 6 months, which should generally be sufficient for certification bodies to notify suppliers of the changes so that they can be included in their quality system prior to their next surveillance assessment.

9 When needed, the schemes include a requirement for a supplier to provide, for approval by the Customer, a quality plan prior to commencement of work. This will include contract specific method statements where applicable. The plan and statements should be reviewed during the currency of a contract, and may also be audited subsequently by the certification body during a surveillance or reassessment visit.

10 Each scheme is reviewed, at least annually, by the appropriate TAC. The review takes account of feedback on the performance of the scheme including perceived deficiencies, comments received from users of the scheme and the effect that new standards or codes of practice may have on the scheme. This allows the scheme to develop naturally and provides for continuous improvement.

11 Individual technical advisory committees are overseen by the Highways Sector Scheme Liaison Group (HSSLG). This group provides a forum for discussion on 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. It is also the venue where dialogue with UKAS and the certification bodies on the application of the schemes is discussed. One of the main aims of the group is to promote the schemes throughout the country so that only certificated suppliers are used.

12 (05/06) The HSSLG comprises the sector scheme Chairperson and representation from the HA, CSS (County Surveyors Society), UKAS, Transport Scotland, the Welsh Assembly Government, the Department for Regional Development (Northern Ireland), Local Government Technical Advisory Group and Certification Body Representatives. Technical Advisory Committees consist of representation from trade associations, highway authorities, certification bodies, training organisations, HA's agents and DBFO companies, with UKAS having the right to attend as and when necessary. The committees are chaired variously by the HA, CSS, trade associations and certification bodies.

13 (05/05) NHSS provide a major opportunity for Clients to review their procurement policies, contract procedures and supervision responsibilities, enabling savings to be made in manpower and compliance testing without comprising quality.

14 (05/05) The introduction of harmonised European Standards includes requirements for factory production control and attestation of conformity. This will vary from self-certification by the manufacturer to approved third party product certification process. Currently, the European Commission has set up a Notified Bodies Group which has been charged with the responsibility of interpreting European Standards where third party certification is included in a standard. NHSS are seen as complementary to this process.

15 (05/05) Organizations' quality management schemes listed in Appendix A and product certification schemes in Appendix B comply with BS EN ISO 9001, and are third party certificated by a certification body satisfying the requirements of EN 45012 or EN 45011 and accredited for the scheme. UKAS uses EN 45011 and EN 45012 as part of the criteria for assessment so certification bodies accredited satisfy the requirements of these European Standards. Each Organization should prepare a Quality Plan covering the topics in the "Model Requirements" in addition to any requirements included in relevant NHSS documents cited in Appendix A.

16 (05/06) For listed schemes, other than NHSS, Overseeing Organisations should consider the critical factors which form the basis of the acceptability of the listed scheme when ascertaining whether or not a proposed alternative quality management scheme or product certification scheme is equivalent. The Overseeing Organisation should check that certification of the proposed quality assurance scheme has been undertaken by an independent body. Such bodies are those accredited by UKAS for certification body accreditation, or similar bodies in other Member States of the European Economic Area or a State which is party to a relevant agreement with the European Union. For the UK, the QA Register published by The Stationery Office (and formerly known as the DTI QA Register) may be checked to establish that certification of the quality management scheme or product certification scheme is being undertaken by an accredited certification body. It should be noted that

listing in the QA Register is voluntary and at the request of the organization that has successfully achieved certification. For organizations which have achieved certification under National Sector Schemes for Quality Management in Highway Works, notification of registration to the Secretary of State of the scheme and Lantra Awards forms part of the requirements of the scheme. Information on registration of organizations can be obtained by contacting Lantra Awards (02476 419703); Lantra Awards also publish a schedule of suppliers, which is available on their website but it should be noted that this may not contain a full list of NHSS registered organizations. It should be noted that not all third party certification bodies are accredited for all their activities. In the case of product certification schemes, equivalence of testing facilities may have to be checked.

17 (05/06) The majority of quality management schemes listed in Appendix A of SHW have been adopted by the Overseeing Organisations. It is intended to list other recognised schemes when these become established and enough firms are registered to ensure adequate competition within a geographical region. It should be noted that firms may be registered for part only of some schemes although their scope will be included on the Certificate of Registration as a general requirement for the NHSS.

18 The Overseeing Organisation should retain the copy certificates of conformity provided in compliance with Clause 104 as evidence of the operation of quality management schemes and product certification schemes. Certificates issued in respect of National Sector Schemes for Quality Management in Highway Works will include reference to the specific sector scheme or will be included on an attached schedule to the certificate.

19 (05/06) Some of the NHSS require that operatives successfully complete specific training and/or competency assessment. These achievements are recognised and registered operatives and foremen are required to carry registration/skill cards, which indicate status and categories of work that the holder can carry out. Each card carries a photograph of the holder. The Overseeing Organisation should check the cards against the holder and also check the validity of cards with the issuing authority. The Highways Agency publishes "Workforce Registration/Skill Card Requirements for Suppliers" on its website (www.Highways.gov.uk) which provides information on the acceptability of cards. Table NG 1/2 provides a summary of national sector scheme requirements for registration/skill cards.

TABLE NG 1/2: (05/06) **Summary of National Highway Sector Scheme Requirements for Registration/Skill Cards**

Scheme	Operative/Erectors	Foreman/Lead Operative/Lead Erectors	Issuing Authority*
2A - Fencing	Required	Required	Lantra (FISS/CSCS)
2B - Vehicle Restraint Systems	Required	Required	Lantra (FISS/CSCS)
2C - Environmental Barriers	Required	Required	Lantra (FISS/CSCS)
4 - Timber Preservation	Not applicable **	Not applicable **	Not applicable
5A - Manufacture of Parapets for Road Restraint Systems	Not applicable	Not applicable	Not applicable
5B - Installation of Parapets for Road Restraint Systems	Required	Required	Lantra (FISS/CSCS)
6 - Lighting Column manufacture, supply and verification	Not applicable	Not applicable	Not applicable
7 - Application of road marking and road studs	Required (NVQ level 2 or Certified Operative)	Required (NVQ level 2 or Certified Operative)	CSCS or LGNTO for certified operatives RMSA for NVQ holders
8, 9B and 10 - Installation and Maintenance of Highway Electrical Equipment	Required	Required	ASLEC/ECS

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TABLE NG 1/2: (05/06) **Summary of National Highway Sector Scheme Requirements for Registration/Skill Cards (continued)**

Scheme	Operative/Erectors	Foreman/Lead Operative/Lead Erectors	Issuing Authority*
9A - Traffic Sign Manufacture	Required	Required	BSGA
12A - Static Temporary Traffic Management	Required	Required	Lantra
12B - Static Temporary Traffic Management	Required	Required	Lantra
12C - Mobile Lane Closures	Required	Required	Lantra
12D - Installation, Maintenance and Removal of Temporary Traffic Management	Required	Required	Lantra
13A - Surface Dressing	Required	Required	CSCS (RSDA)
13B - Microsurfacing	Required	Required	CSCS
14 - Production of Asphalt Mixes	Not applicable	Not applicable	Not applicable
15 - Supply of Paving Grade Bitumen	Required	Not applicable	RBA
16 - The Laying of Asphalt Mixes	Required	Required	CSCS
17 - Vehicle Recovery at Highway Construction Sites	Required	Required	Not available
18 - The Environment and Landscape including Ecology	Required	Required	Various (Lantra/NPTC/ROLO)
19 - Corrosion Protection of Transportation Infrastructure Assets, 19A: Corrosion Protection of Ferrous Materials by Industrial Coatings	Required		(Icorr)

Note: Greater detail is contained in the individual sector scheme documents which are available from UKAS publication sales or they can also be accessed from UKAS website (http://www.ukas.com/information_centre/publications.asp). (11/04)

(05/05) * (see HA website: http://www.highways.gov.uk/business/procure/reg_skills/index.htm)

** (11/03) (plant operatives required to hold NVQ/CPCS)

20 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 assurance scheme is not satisfactory the certification body should be informed in writing.

British Board of Agrément Certificates

21 The Overseeing Organisation may accept equivalent certificates issued by Members of the European Union of Agrément (UEAtc).

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Statutory Type Approval

22 Statutory type approval is granted by the Secretary of State. Products which have obtained statutory type approval are listed in Advice Note SA1 (MCHW 0.3.1). 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.

Statutory Authorisation

23 Statutory authorisation is granted by the Secretary of State. 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.

Type Approval/Registration

24 (05/06) Type approval/registration is given by the Overseeing Organisation. Products which have obtained type approval and registration are listed in Advice Note SA1 (MCHW 0.3.1). Where the Contractor makes application to use work, goods or materials which are claimed to have an equivalent type approval/registration of the national highway authority of another Member State of the European Economic Area or a State which is party to a relevant agreement with the European Union, he should forward the information to the Overseeing Organisation in sufficient time for consideration to be given, taking into account the programme for the Works. Where type approval/registration is given, one copy of the approval certificate should be returned to the Contractor.

25 (05/05) A requirement for some products to have HAPAS (Highway Authorities Product Approval Scheme) Certification in place of type approval/registration of these products by the Overseeing Organisations is being introduced. This system of certification is progressively being developed by the Overseeing Organisations in association with CSS (the County Surveyors Society), Local Government Technical Approval Group (TAG), British Board of Agrément, industry and producers of the products. Products which are approved under this system will be awarded British Board of Agrément HAPAS Roads and Bridges Certificates. Advice on the status of HAPAS Certification in respect of type approval/registration for any particular type of product can be obtained from the Overseeing Organisation.

Provision of Information

26 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.

27 Frequently there is a need for the Contractor to submit working and fabrication drawings to the Overseeing Organisation. The compiler should include in 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.

28 Where Proposed Equivalent Work, Goods and Materials (PEQs) 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. Guidance on the evaluation of proposed equivalent work, goods and materials offered by the Contractor purporting to have levels of safety, suitability and fitness for purpose equivalent to those specified in the Contract is given in Advice Note SA2 (MCHW 0.3.2).

NG 105 (05/01) Goods, Materials, Sampling and Testing

Goods and Materials

1 Samples of goods and materials should be retained until the completion of the Works.

Sampling and Testing

2 (11/04) The compiler should refer to SA3 (MCHW 0.3.3) before determining the extent of testing by the Overseeing Organisation and by the Contractor. 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.

3 Details of testing to be carried out by the Contractor and test certificates to be supplied should be abstracted selectively from Table NG 1/1 and scheduled in Appendix 1/5 to enable tenderers where appropriate to allow for these in their rates and prices as no separate items (except for proof loading of piles) should 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'. The Contractor may propose that testing be carried out on his behalf by a testing laboratory, manufacturer or supplier.

4 The testing detailed in Table NG 1/1 is not necessarily exhaustive and other tests may be required. Where Contract-specific Clauses contain testing requirements, details should be scheduled in Appendix 1/5 or 1/6 as appropriate.

5 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, QA schemes. Where a British Standard or Specification Clause number is listed, the frequency of testing is specified therein and should not normally be changed.

6 Details of provision and delivery of samples by the Contractor for testing by the Overseeing Organisation should be scheduled in Appendix 1/6, to enable tenderers where appropriate to allow for these in their rates and prices as no separate items for supplying samples should 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'). The compiler should avoid duplication of testing wherever possible.

7 (05/04) 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).

8 (11/03) It is the policy of the Overseeing Organisations to require the use of testing laboratories accredited for certain tests and sampling by the United Kingdom Accreditation Service (UKAS) or equivalent for laboratory accreditation for on Site and off Site testing and sampling. Test results which are required to be UKAS or equivalent accredited are indicated in Table NG 1/1.

9 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.

Test Certificates

10 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.

11 British 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 sub-Clause 105.3 requires him to obtain test certificates provided for in a British Standard (or other standard or specification) where stated in Appendix 1/5.

NG 106 Design of Permanent Works by the Contractor

General

1 (05/06) Appendices 1/10 and 1/11 should include for each structure, structural element or feature listed a design specification (or design specifications where a choice is offered) incorporating any relevant Appendices, Standards or other requirements appropriate to the design.

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).

Structures

2 (05/06) The Contract should be compiled in accordance with BD 2 (DMRB 1.1.1) in respect of:

(i) Each structure for which a design (based on a proprietary manufactured structure) is to be submitted by the Contractor. (These structures should be listed in Appendix 1/10 (A).)

(ii) Each structure for which the Overseeing Organisation has prepared a (non-proprietary) design but for which a proprietary manufactured structure is a suitable option. (These structures should be listed in Appendix 1/10 (B).)

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).

3 (11/03) 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 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.

(11/03) **Lighting Columns and Brackets, CCTV Masts and Cantilever Masts**

5 (05/06) 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 these 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.

Structural Elements and Other Features

6 (05/06) The compiler should ensure that structural elements and other features based on proprietary products have not been specified in the Contract. Such elements and features should be designed by the Contractor, or where appropriate, by the manufacturer and proposed by the Contractor. Such elements and features, examples of which are given below, should be listed in Appendix 1/11:

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

7 (11/04) Non-proprietary structural elements and other features to be designed by the Contractor should also be listed in Appendix 1/11. Examples of such elements are:

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

NG 107 Site Extent and Limitations on Use

1 The extent of the Site should normally be shown on the Drawings but for schemes where traffic management involves temporary traffic signs outside the area of the Works it may be more appropriate to describe the extent of the Site in Appendix 1/7. Where the Site is shown on the Drawings, the drawing numbers should be stated in Appendix 1/7.

2 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 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 Appendix 1/7.

NG 108 Operatives for the Overseeing Organisation

1 The number and function of operatives required by the Overseeing Organisation should be included in Appendix 1/8.

NG 109 Control of Noise and Vibration

Noise

1 Where it is envisaged that construction or reconstruction 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.

2 The noise control requirements informally agreed with the Local Authority should be described in Appendix 1/9 together with any specific requirements of the Overseeing Organisation which are not covered by BS 5228 : Parts 1, 2 and 4 or by the Local Authority.

3 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.

4 Local Authorities have powers to control pollution by imposing requirements as to the way in which work is to be carried out and, in particular:

(i) the plant or machinery which is, or is not, to be used;

(ii) the hours during which work may be carried out;

(iii) the level of noise which may be emitted.

Guidance on noise control legislation is given in BS 5228 : Part 2.

Vibration

5 Any requirements for the control of vibration other than that due to blasting for excavation should be included in Appendix 1/9. Vibration limits for blasting are given in Clause 607, but may be varied as in Appendix 6/3.

#NG 110 Information Boards

1 (05/04) The compiler should provide in 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 although planning permission is not required for trunk roads the Local Planning Authority should be informed of the proposal to erect them as a matter of courtesy. 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 (05/01) 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 1999.

NG 112 Setting Out

1 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 The compiler should include in 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 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 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 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 Any specific requirements for setting out should be given in Appendix 1/12.

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

NG 113 Programme of Works

1 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 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 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 Regardless of how carefully the Overseeing Organisation vets the programme, it 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 may 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 Payment Applications

1 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 Appendix 1/14.

NG 115 Accommodation Works

1 Accommodation works should be described in Appendix 1/15, 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 where described therein.

NG 116 Privately and Publicly Owned Services or Supplies

1 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 The above particulars should be contained in Appendix 1/16 and include details of any advance contracts, agreements and pre-ordered material.

3 The position of all known services and supplies should be shown on the Drawings, cross-referenced in Appendix 1/16.

4 Appendix 1/16 should include details of motorway communications and/or other motorway systems which may be affected by the Works together with details of any necessary alterations or temporary alternative provisions.

#NG 117 Traffic Safety and Management

1 When major reconstruction or maintenance work is carried out on highways carrying a heavy flow of vehicles, for which the Overseeing Organisation is the highway authority, particularly where contraflow traffic management is intended or envisaged, the Contractor may be required to undertake maintenance functions on such highways within the Site. If so, this should be stated, together with a list of these functions, in 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.

2 Where contraflow traffic operation is specified by the Overseeing Organisation for which crossovers are to be designed by the Contractor full design requirements should be given in Appendix 1/17. Where crossovers are specified in 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 agree. The police should also be consulted. The Contractor will agree details of construction and maintenance with the highway authority and Clause 117 requires him to inform the Overseeing Organisation of these details. The compiler should state in Appendix 1/17 the timescale for submission and making of any statutory orders needed before work can commence.

3 If, in addition to routine maintenance functions, the Contractor is to be required when requested by a highway authority to repair accidental or wilful damage to any highway within the Site for which that authority is responsible (including any central reserve crossover specified by the Overseeing Organisation), full details

should be stated in Appendix 1/17. The Overseeing Organisation should ensure that the highway authority has been consulted.

4 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.

5 (11/06) 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. In such circumstances Appendix 1/17 should clearly indicate any specific requirements. The Contractor's programme for traffic management and site access/egress should take into account the views of the police and the appropriate highway authority.

6 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. The responsibility for this should be stated in Appendix 1/17. Where the Contractor is to be responsible, the areas of highway affected by advance signs, cones and road markings should be included in Appendix 1/7 as forming part of the Site (see NG 107.2).

7 Authorisation of non-prescribed signs or temporary traffic signals should be obtained through the Overseeing Organisation giving at least 28 days' notice. (This time period can vary.) Any other requirements which are likely to be needed should be included in Appendix 1/17.

8 The compiler should state in Appendix 1/17 the timescale for the Contractor to submit his traffic management proposals.

The Contractor should also ensure that necessary steps have been or are being taken to obtain any statutory orders required from the appropriate authority. Details of these orders should be stated in Appendix 1/17.

9 Appendix 1/17 should state the length of notice required for the making of orders necessitated by the Contractor's proposals, or if he wishes to vary the agreed measures.

10 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.

11 Any requirements for temporary lighting should be included by cross-reference to Appendix 14/3.

12 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.

13 The compiler should detail in 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.

(08/03) **Traffic Safety and Control Officer**

14 Where a Traffic Safety and Control Officer is required by Appendix 1/17, they 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 certificate of achievement at the Foreman's Training Course for Sector Scheme 12A. They should also have a working knowledge of Chapter 8 of the Traffic Signs Manual and other appropriate guidance documents relating to temporary traffic management.

Driver Information Signs at Roadworks

15 (08/03) 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 Table 1/1.

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

(05/01) **TASCAR**

16 (08/03) 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 117.32, it is

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desirable to include the following in the Instructions for Tendering:

'The Contractor's attention is drawn to Specification sub-Clause 117.32 together with Appendices 1/17, 1/26 and 1/27 which require the provision and maintenance of a Temporary Automatic Speed Camera System for the Enforcement of Mandatory Speed Limits at Roadworks (TASCAR) which will be operated under the control of the Chief Officer of Police for the …… *[give name of police district as specified in 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.'

NG 118 Temporary Diversions for Traffic

1 (05/01) The definition of the term 'temporary diversion for traffic' is included in Volume 4 of the Manual of Contract Documents for Highway Works, Section 1, Chapter IV, Series 100, Paragraph 1(c).

Temporary Diversions for Traffic Specified by the Overseeing Organisation

2 The Overseeing Organisation should ensure that:

(i) all temporary diversions for traffic required for reasons of safety or practicality, including any structures, have been specified in Appendix 1/18;

(ii) details of their construction and maintenance, together with any constraints, have been agreed with the highway authority, and described in 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 Appendix 1/7 as forming part of the Site;

(iv) the necessary orders have been or will be made by the appropriate authority.

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

4 Where the Contractor is required to design a temporary diversion for traffic, or any temporary structures, design requirements should be stated in Appendix 1/18.

5 If the ground over which the diversion route is to be provided is not to be reinstated to its original condition on completion of the Works this should be stated in Appendix 1/18 together with details of any treatment required.

Temporary Diversions for Traffic Proposed by the Contractor

6 If the Contractor proposes temporary diversions for traffic, they may be implemented only if the appropriate authority agree and the police have been consulted.

7 The compiler should state in Appendix 1/18 the timescale for submission of any statutory orders which would need to be made where required by the Contractor's proposals.

8 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 Routeing of Vehicles

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

(i) Routeing of 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 (05/01) Recovery Vehicles for Breakdowns

1 (11/05) 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 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;

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(c) (11/05) Light recovery vehicles equipped for motorcycle recovery;

(d) (11/05) 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) (11/05) 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 contractors choice - refer to IAN 65/05 for further advice on suitable locations.

(iii) (11/05) Location(s) to which broken-down or accident-damaged vehicles should be removed 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 IAN 65/05 for further advice.

(iv) Details of equipment for communication.

2 (11/05) 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.

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 2(i) above) and between that and the location to which the vehicle is to be towed (as 2(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) (11/05) Telephone numbers for Directory Enquiries, Motoring clubs 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 Progress Photographs

1 When required, Clause 122 will need supplementing by Appendix 1/22, describing the number of, and interval between visits and the number, size, type and finish of photographs required.

2 The compiler should include in Appendix 1/22 the designation of the person who should accompany the photographer to ensure that only relevant photographs are taken.

3 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.

NG 124 Health and Safety Restrictions, Precautions and Monitoring

1 Clause 124 will be supplemented by Appendix 1/23 which should describe any limitations on the Contractor's method of working or monitoring requirements when using substances hazardous to health such as silane, bridge deck waterproofing systems, paints, where these are used in locations which could result in a risk to members of the public.

2 Where protective clothing or other safety apparatus in relation to the specified use of substances hazardous to health is required for the Overseeing Organisation's staff, this should be listed in Appendix 1/1.

3 Further information and advice on the use of specified substances hazardous to health may be obtained from the Overseeing Organisation.

NG 125 Temporary Closed Circuit Television (CCTV) System for the Monitoring of Traffic

1 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 Appendix 1/25.

2 The Overseeing Organisation should specify supplementary cameras at areas such as interchanges, entrances to and exits from contraflow, etc.

NG 126 (05/04) Timber and products containing wood supplied under the Contract

1 It is essential that no timber or wood used in the works should be derived from any species of tree that is protected under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (More information about CITES can be found at http://www.cites.org/ and www.ukcites.gov.uk) unless the supplier can provide, by producing official documentation, that they have complied with the CITES requirements that permit trading in the particular species of tree so listed under the Convention.

2 It is anticipated that certificates will be provided with all timber products delivered to site and these certificates will be forwarded to the Overseeing Organisation. The Contractor will need to have processes in place to ensure that all products, whether temporary or permanent, can be verified as having been obtained from legitimate and sustainable sources.

One way in which the Overseeing Organisation will accept that the obligations have been met in proving the source of the timber and wood products is if those products are certified, by properly accredited organisations, as meeting the standards set by the Forest Stewardship Council or other similar scheme. However, the contractor is not bound to supply certified products and has the option of submitting alternative credible evidence.

3 For temporary works consideration should be given to the priority assigned to the various uses by the likely volume of material to be used. It is suggested that site accommodation, falsework and shuttering, hoardings and temporary fencing be given the highest priority.

TABLE NG 1/1: (11/06) Typical Testing Details

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)		*[Tests/samples should not normally be required]*
308	Gates and stiles				Quality management scheme applies
	Reinforced concrete posts	Cover to reinforcement	1 per consignment (maximum 1 per 100 components) (BS 3470)		*[Tests/samples should not normally be required]*
308 & 311	Preservation of timber	Full sapwood penetration.	As required in sub-Clause 311.2(v)	Required for each batch	Quality management scheme applies *[Tests/Samples should not normally be required]*
Series 400					
402	Welding	Welding procedures (Manufacturer's tests)	(Every seven years)	Required	Quality management scheme applies
		Welder qualification (Manufacturer's tests)	As required in sub-Clause 402.6(iii)		
		Production testing (Manufacturer's tests)	As required in sub-Clause 402.6(iv)		
	Welded joints	Destructive testing	*[See sub-Clauses 402.6(v) and 402.6(vi)]*		*††[See NG 402(N)]*
403	Anchorages and attachment systems for use in drilled holes	Ultimate tensile load (Manufacturer's tests)		Required	To provide well attested and documented evidence *[See NG 403.15]*
404	Anchorages in drilled holes	On-site tensile load test	As required in Appendix 4/1	Required	† *[See NG 404.2]*
	Post foundations				*[See NG 404.3 and .4]*
406	Vehicle parapets			Required	Quality management scheme applies
407	Anchorages and attachment systems for use in drilled holes	Ultimate tensile load (Manufacturer's tests)		Required	To provide well attested and documented evidence *[See NG 407.2]*
409	Vehicle parapet posts	Production testing as specified in BS 6779-1 1998 (Amd No 14290, 21 March 2003) (Manufacturer's tests)		Required	Certification in accordance with Clause 409 is required

TABLE NG 1/1: (11/06) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 400 (continued)					
410	Anchorages in drilled holes	On-site tensile load test	As required in Appendix 4/1	Required	† *[See NG 410.1]*
Series 500					
501	Pipes for drainage and service ducts				Product certification scheme applies *[Note 1. Additional manufacturer's tests are provided for in the relevant BS but should not normally be required.]* *[Note 2. 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 listed in Appendix B.]*
	Vitrified clay	*[See Note 1]*		*[See Note 2]*	
	Concrete-PC/SRC, Not exceeding 900 mm dia	*[See Note 1]*			
	Concrete-Prestressed, Not exceeding 900 mm dia				
	Iron-cast			*[See Note 2]*	
	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	BBA certification (or equivalent) applies
503	Pipe bedding	Grading and fines content	1 per week (min of 3)*	Required	*[Results of routine control tests from the factory production control system operated by the producer to be provided - see Annex C of BS EN 13242. Appropriate tests/samples for the resistance to freezing and thawing (magnesium sulfate soundness) should be scheduled where required, NG 803.4]*
		Water-soluble sulfate (WS) content (N)	5 per source*		*[Minimum to allow for natural variability of sulfur compounds]*
		Oxidisable sulfides (OS) content and total potential sulfate (TPS) content (N)	5 per source		
		Resistance to fragmentation (N)	1 per source*		*[LA category]*

TABLE NG 1/1: (11/04) 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*	Required	*[Results of routine control tests from the factory production control system operated by the producer to be provided - see Annex C of BS EN 13242 and Annex D of BS EN 13285]*
		Resistance to fragmentation (N)	1 per source*		*[Appropriate tests/samples for the resistance to freezing and thawing (magnesium sulfate soundness) should be scheduled where required, NG 803.4]*
		Water-soluble sulfate (WS) content (N)	5 per source		*[Minimum to allow for natural variability of sulfur compounds]*
		Oxidisable sulfides (OS) content and total potential sulfate (TPS) content (N)	5 per source		
		Grading and fines content	1 per week		*[Results of routine control tests from the factory production control system operated by the producer to be provided - see Annex C of BS EN 13242 and Annex D of BS EN 13285]*
		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				
	Precast concrete				Product certification scheme applies
	Corrugated galvanized steel	(Manufacturer's tests)		Required	Product certification scheme applies
	Manhole steps				
	Steel fitments				
	Covers, grates and frames				Product certification scheme applies
	Cover bolts				Quality management scheme applies
508	Gullies and pipe junction				Product certification scheme applies
	Precast concrete				
	Clay				
	Cast iron and steel				
509	Watertightness of joints	Air test	All pipelines with watertight joints *[As required in Appendix 5/1 for partly watertight joints]*	Required	

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TABLE NG 1/1: (05/04) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 500 (continued)					
512	Backfill to pipe bays	Grading	1 per 50 tonnes (min of 3)*	Required	*[Appropriate tests/samples for the resistance to freezing and thawing (magnesium sulfate soundness) should be scheduled where required, NG 803.4]*
		Water-soluble sulfate (WS) content (N)	5 per source*		Minimum to allow for natural variability of sulfur compounds
		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*	Required	*[Appropriate tests/samples for the resistance to freezing and thawing (magnesium sulfate soundness) should be scheduled where required, NG 803.4]*
		Water-soluble sulfate (WS) content (N)	5 per source	Required	*[Minimum to allow for natural variability of sulfur compounds]*
		Oxidisable sulfides (OS) content and total potential sulfate (TPS) content (N)	5 per source		
		Resistance to fragmentation (N)	1 per source*		*[LA category]*
		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	BBA certification (or equivalent) applies

TABLE NG 1/1: (05/06) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 500 (continued)					
515	Narrow filter drains				
	Geotextile, pipes and fittings	(Manufacturer's tests)		Required	BBA certification (or equivalent) applies
	Granular fill	Plastic index (N)	1 per source*		
		Resistance to fragmentation (N)			
		Water-soluble sulfate (WS) content (N)	5 per source		*[Minimum to allow for natural variability of sulfur compounds]*
		Oxidisable sulfides (OS) content and total potential sulfate (TPS) content (N)	5 per source		
		Grading and fines content	1 per week (min of 3)*		*[Results of routine control tests from the factory production control system operated by the producer to be provided - see Annex C of BS EN 13242]*
		Permeability (N)	1 per source*		
516	Combined drainage and kerb systems	Load test	A minimum of 1 test and not less than 1 test per 1000 m for each type and source	Required	Certification that the systems comply with Clause 516 is required *[Kitemark certificate or equivalent applies]*
517	Linear drainage systems	Load test	A minimum of 1 test and not less than 1 test per 1000 m for each type and source	Required	Certification that the systems comply with Clause 517 is required *[Kitemark certificate or equivalent applies]*
518	Thermoplastics structured wall pipes and fittings	(Manufacturer's tests)		Required	BBA certification (or equivalent) applies
Series 600					
601, 631 to 637, 640	Acceptable material			Required	*[For recycled aggregate, see sub-Clauses 601.12 and 601.18]*
	Class: 1 — General Description: 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*		*[LA category]*

TABLE NG 1/1: (05/06) Typical Testing Details (continued)

Clause	Work, Goods or Material		Test	Frequency of Testing	Test Certificate	Comments
Series 600 (continued)						
	Class	General Description			Required	
	2	General cohesive fill	Grading	Twice a week*	Required	
			mc/MCV/PL Undrained shear strength (N)	2 per 1000 m^3 up to max of 5 per day*		*[Cross-reference should be made to any requirements in Appendix 6/1]*
			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*		*[LA category but not for Class 6F4 and 6F5]*
			SMC (N)	Weekly*		
			omc/mc, mc or MCV (N)	1 per 400 tonnes*		*[Not for Class 6F4 and 6F5]*
			Organic matter/water soluble sulfate (WS) (N)	Weekly*		*[At least 5 tests per source for sulfur compounds over the course of the contract in accordance with TRL Report* 447, tests 1-5]
			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]*		*[Cross-reference should be made to any requirements in Appendix 6/1]*
	6F4 and 6F5		Size designation and overall grading category	1 per week*		*[Results of routine control tests from the factory production control system operated by the producer to be provided for Class 6F4 and Class 6F5 - see Annex C of BS EN 13242 and Annex D of BS EN 13285]*
			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		

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TABLE NG 1/1: (05/06) 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			*[Declared values from the factory production control system operated by the producer to be provided for Class 6F4 and Class 6F5 - see Annex D of BS EN 13285]*
			Water content			
	7	Selected cohesive fill	Grading/mc/MCV/ bulk density (N)	1 per 400 tonnes*		
			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		*[At least 5 tests per source for sulfur compounds over the course of the contract in accordance with TRL Report 447, tests 1-5]*
			Oxidisable sulfides (OS) and total potential sulfate (TPS) content (N)	Twice a week* or daily when sulfides are expected		*[At least 5 tests per source for sulfur compounds over the course of the contract]*
			pH/chloride ion content (N)	Weekly*		
			Resistivity (N)	*[As required]*		
			Undrained and drained shear parameters (N)	*[As required]*		*[Cross-reference should be made to any requirements in Appendix 6/1]*
			Permeability (N)	*[As required]*		
	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*		*[As appropriate to properties stated in Table 6/1 or Appendix 6/1]*
	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*		*[At least 5 tests per source for sulfur compounds over the course of the contract in accordance with TRL Report 447, tests 1-5]*
602	Earthworks material beneath surface of a road or paved central reserve		Frost heave (N)		Required	
	(i) Off site source			1 every four months*		
	(ii) On site source			As required		

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TABLE NG 1/1: (05/06) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 600 (continued)					
609 621	Geotextiles	Tensile load	1 per 400 square metres*	Required	*[Requirements should be given in Appendix 6/5 or 6/9 as appropriate]*
		Permeability			
		Pore size			
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	†
	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 Appendix 6/10	Required	†
626	Gabions			Required	
	Fill	Grading	1 per 400 tonnes*		
		10% fine values (N)			
	Geomesh	*[As appropriate to properties stated in Appendix 6/10]*	1 per 400 square metres*		
	PVC coated wire			Required (ASTM G23)	
642	Earthworks materials for corrugated steel buried structures	Constrained soil modulus (M*)	3 on each side of each structure*	Required	

TABLE NG 1/1: (11/04) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 700					
710	Constituent materials in recycled aggregate	Quality control	Checks are to be carried out by the Contractor in accordance with the procedure set down in 'Quality Control - Production of Recycled Aggregates' and with those in this Clause	Required	The quality control procedure should be in accordance with the 'Quality Control – Production of Recycled Aggregates' published by Waste and Resources Action Programme is available from WRAP website, http://www.wrap.org.uk The results of all quality control checks shall be delivered promptly to the Overseeing Organisation on request.
711	Overbanding and inlaid crack sealing systems			Required	BBA certification (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	*[Minimum to allow for natural vulnerability of sulfur compound]*
		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*		*[Results of routine control tests from the factory production control system operated by the producer to be provided - see Annex C of BS EN 13242]*
		Plastic index (N)			
		Resistance to fragmentation (N)	6 monthly*		*[LA category]*
		Resistance to wear - micro-Deval test			*[Where required. See NG 801.9]*
		Resistance to freezing and thawing (magnesium sulfate soundness) (N)	1 per source*		*[Where required-See NG 803.4]*
		Water absorption (N)	*[As required]*		*[See NG 801.10]*
		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*		*[See sub-Clause 801.6]*

TABLE NG 1/1: (11/04) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 800 (continued)					
		OMC/mc (N)	*[As required]*	Required	*[Declared values from the factory production control system operated by the producer to be provided - see Annex D of BS EN 13285]*
		Density (N)	*[As required]*		
		Water absorption (N)	*[As required]*		*[See NG 801.10]*
Series 900					
901, 925, 937, 938, 943	Aggregates for bituminous materials			Required	National quality management sector schemes apply.
	Resistance to fragmentation (hardness)	Resistance to fragmentation (N)	Monthly*		
	Resistance to freezing and thawing (durability)	Soundness (N)	1 per source*		*[Where required - See NG901.2]*
		Water absorption (N)	*[As required]*		
	Cleanness	Sieve test (mass passing 0.063 mm sieve) (N)	Monthly*		Washing and sieving method to be used
	Shape	Flakiness index (N)	Monthly*		
	Blastfurnace slag	Bulk density (N)	1 per 500 tonnes*		*[BS EN 1097 - 3]*
		Soundness (N)	Once every 4 months		
		Dicalcium silicate disintegration (N)	1 per 500 tonnes*		*[These are for air-cooled blastfurnace slag]*
		Iron disintegration (N)			
	Steel slag	Bulk density	1 per 500 tonnes*		
		Volume stability (N)	1 per 500 tonnes*		
	Coarse aggregate for surface courses	Resistance to polishing (PSV) (N)	1 per source*		
		Resistance to surface abrasion (AAV) (N)	1 per source*		
	Binders for bituminous materials	Penetration (N)	1 per 750 tonnes*	Required	National quality management sector schemes apply. Modified binders should have a BBA HAPAS Roads and Bridges Certificate. In the event that no such Certificates have been issued, then in the interim, only modified binders undergoing BBA assessment should be considered for approval by the Overseeing Organisation. *[More frequent tests/samples should be scheduled for modified binders.]*
		Softening point (N)	1 per 750 tonnes*		
		[Other BS EN tests]	*[As required]*		

TABLE NG 1/1: (08/08) 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		National Highway Sector Schemes apply.
		Binder Content (N)			
929	Base and Binder Course Asphalt Concrete (Design Mixtures)	Permanent Works - In situ air void content (N)	*[As required]*	Required	
		Permanent Works - Refusal air void content (N)			
		Permanent Works - Deformation resistance			
		Deformation resistance (design)	*[As required]*	Required	The test certificate is the CE Mark for the mixture
		Stiffness (design)			
930	EME 2	Permanent Works - In situ air void content (N)	*[As required]*	Required	
		Richness modulus (design)	*[As required]*	Required	The test certificate is the CE Mark for the mixture
		Duriez (design)			
		Deformation Resistance (design)			
		Stiffness (design)			
911	Hot Rolled Asphalt surface course (Design Mixtures)	Design Binder content	1 per source*	Required	The test certificate is the CE Mark for the mixture
915	Coated chippings for application to Hot Rolled Asphalt Surfacings	Hot sand test (N)	1 per source*		National Highway Sector Schemes apply.
		Rate of spread (N)	*[As required]*		

TABLE NG 1/1: (08/08) 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	BBA HAPAS Roads and Bridges certification (or equivalent) applies
		System coverage	As required in sub-Clause 924.6		
	Aggregate	Resistance to polishing (PSV) (N)	1 per source* and as required for coated chippings in sub-Clause 915.2	Required	
937	Stone mastic asphalt (SMA) binder course and regulating course	Permanent Works - In situ air void content (N)	*[As required]*	Required	
		Permanent Works - Deformation resistance			
		Binder drainage test (design)	*[As required]*	Required	The test certificate is the CE Mark for the mixture
		Deformation resistance (design)			
942	Thin surface course systems	General properties		Required	The test certificate is in the form of a BBA HAPAS Certificate
943	Hot Rolled Asphalt surface course and binder course (performance-related design mixtures)	Permanent Works - In situ air void content (N)	*[As required]*	Required	
		Permanent Works - Deformation resistance			
		Deformation resistance (design)	*[As required]*	Required	The test certificate is the CE Mark for the mixture

TABLE NG 1/1: (08/08) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 900 (continued)					
918	Slurry surfacing incorporating microsurfacing				
	Binder				Modified binders should have a BBA HAPAS Roads and Bridges Certificate. In the event that no such Certificates have been issued, then in the interim, only modified binders undergoing BBA assessment should be considered for approval by the Overseeing Organisation.
		Product Identification	Per product per source	Required	Tests are expected to be repeated every two years
		Vialit cohesion	Per product per source	Required	Tests are expected to be repeated every two years
		Rate of spread	For each machine	Required	Not more than 6 weeks prior to start of work
		Penetration at 25°C and 5°C (N)	Every manufactured batch		Manufacturer's QA test results may be submitted
	Aggregates	Flakiness index (N)	1 per source	Required	*[Less than 6 months prior to work]*
		Resistance to polishing (AAV) (N)	Source approval	Required	*[Less than 6 months prior to work]*
		Resistance to surface abrasion (AAV) (N)	Source approval	Required	*[Less than 6 months prior to work]*
		Grading (N)	1 per 200 tonnes	Required	
	System	TAIT or BBA/ HAPAS		Required	
920	Bond coats, tack coats and other bituminous sprays				
	Binder	Product identification	1 per product per source	Required	Tests are expected to be repeated every two years
		Vialit cohesion	1 per product per source	Required	Tests are expected to be repeated every two years
		Accuracy of spread	1 for each binder and sprayer per month	Required	Not more than 6 weeks prior to start of work and one per month
		Rate of spread	1 per week		
		Penetration at 25°C and 5°C (N)	Every manufactured batch		Manufacturer's QA test results may be submitted

TABLE NG 1/1: (05/04) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 900 (continued)					
919 922	Surface Dressing				National quality management sector scheme applies
	Binder				Modified binders should have a BBA HAPAS Roads and Bridges Certificate. In the event that no such Certificates have been issued, then in the interim, only modified binders undergoing BBA assessment should be considered for approval by the Overseeing Organisation.
		Product Identification	1 per product per source	Required	Tests are expected to be repeated every two years
		Vialit cohesion (N)	1 per product per source	Required	Tests are expected to be repeated every two years
		Accuracy of spread	1 for each binder sprayer per week	Required	Not more than 6 weeks prior to start of work and one per week
		Rate of spread	Every 1000 linear metres initially	Required	Frequency to be reduced to daily after 3 satisfactory results, but not less than 1 test per site
		Penetration at 25°C and 5°C (N)	Every batch		For cut back binders as supplied, manufacturer's QA viscosity test results may be submitted.
	Chippings	Resistance to (PSV) polishing (N)	Source approval	Required	*[Less than 6 months prior to work]*
		Resistance to abrasion (AAV) (N)	Source approval	Required	*[Less than 6 months prior to work]*
		Grading (N)	1 per 200 tonnes	Required	
		Binder content (N)	1 per 200 tonnes	Required	Coated chippings only
		Flakiness index (N)	1 per 200 tonnes	Required	
		Accuracy of spread (N)	1 for each chipping spreader for every change of chipping size or source	Required	Initial test not more than 6 weeks prior to start of work
		Rate of spread	Every 500 linear metres initially		Frequency to be reduced to daily after 3 satisfactory results, but not less than 1 test per lane per site
	System	TAIT or BBA/HAPAS		Required	
	Rollers	Spray bars working	Before work starts and daily during works		
950	Depressions				BBA HAPAS Roads and Bridges certification (or equivalent) applies

TABLE NG 1/1: (11/04) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1000					
1001 1030 1044	Cement			Required	Quality management and product certification schemes apply
	Portland cement CEM I				Tests and test certificates are required
	Portland blastfurnace cement				
	Blastfurnace cement CEM III/A				
	Portland pfa cement CEM II/B-V				
	Pozzolanic cement CEM IV/A			Required (BS 6610)	
	Portland cement with microsilica			Required	BBA Roads and Bridges Certificate required for microsilica
	Pulverised-fuel ash				Tests and test certificates are required. Product certification schemes apply to pfa and slag.
	Ground granulated blast furnace slag				
	Admixtures				
	Mixing water	Sulfate content (N)	Monthly		
	Aggregates	Resistance to freezing and thawing - magnesium sulfate soundness (N)	1 per source*	Required	*[Where required - See NG 1001.20. Results of routine control tests from the factory production control system operated by the producer to be provided - see Annex C of BS EN 13242]*
		Water absorption (N)	*[As required]*		
		Flakiness index (N)	Monthly*		
		Shell content (N)	1 per source*		
		Resistance to fragmentation (N)	6 monthly		
		Resistance to polishing (PSV) (N)	1 per source*		
		Resistance to abrasion (AAV) (N)	1 per source*		
		Grading and fines content (N)	1 per week per source*		
		Chloride content (N)	Weekly or as otherwise agreed (1 per source for CBM Aggregate)		
		Total sulfur (TS) and acid-soluble sulfate (AS) content (N)	Every 6 months		*[At least 5 per source for sulfur compounds]*

TABLE NG 1/1: (05/04) 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)	3 per source thereafter weekly	Required	
	Sand (ie fine aggregate)	Acid-soluble material (N)	Monthly*		Not required for CBM Aggregate *[See BS EN 12620, clause 4.7 and Annex D]*
	Blastfurnace slag	Bulk density (N)	Every 6 months		
		Dicalcium silicate disintegration (N)	Every 6 months		*[These are for air-cooled blastfurnace slag]*
		Iron disintegration (N)	Every 6 months		
		Total sulfur (TS) and acid-soluble sulfate (AS) content (N)	Every 6 months		*[at least 5 per source for compounds]*
	Pulverised-fuel ash			Required (BS 3892-2)	
1002 1003 1004 1044	Pavement concrete	Air content test (N)	As required in Table 10/10	Required	Product certification scheme 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	*[See also sub-Clause 1005.2]*
		Vebe (N)			
		Slump (N)			
1011 1012	Dowel bars Tie bars			Required (BS 4449)	Product certification scheme applies
	Dowel bars and supporting cradles	Load test	1 per arrangement*		*[See also sub-Clauses 1011.5-7]*
	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: (11/06) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1000 (continued)					
1016 1017	Applied sealants	Initial Penetration	1 per 1000m or 1 per day	Required (BS EN 14188-1, BS 2499-2, BS 5212-1, BS 5212-2) (BS EN 13880-2, BS EN 13880-3, and BS 4254)	
		Resilience	1 per 1000m or 1 per day		
	Compression seals			Required (ASTM D2628) (BS 2752) (BS 4443-4, Method 10 and BS EN ISO 2440) (BS EN ISO 1856) (BS 903: Part A16 or BS ISO 1817)	
		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*	Required	
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 cubers per 12 m^3	Required	

TABLE NG 1/1: (11/07) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1100					
#1101	Precast concrete kerbs, channels, edgings and quadrants	Bending strength	Minimum of 8 per 1000 units of each product (BS EN 1340)	Required	
1102	In situ asphalt kerbs	Grading	1 test per 500 metres laid*	Required	*[See BS 5931 for materials for in situ asphalt kerbs]*
		Binder content			
1104	Precast concrete flags	Bending strength	Minimum of 8 per 1000 m^2 of each product (BS EN 1339)	Required	
	Bedding: Granular material				*[Appropriate tests/samples should be scheduled where not included under other Clauses]*
	Bedding: Mortar				
1107	Concrete block paving	Compressive strength	Minimum of 8 per 1000 m^2 of each product (BS EN 1338)	Required	
1108	Clay pavers	Bending strength	Minimum of 8 per 1000 m^2 of each product (BS EN 1344)	Required	
		Skid resistance	Minimum of 8 per 1000 m^2 of each product (BS EN 1344)		
Series 1200					
1202	Permanent traffic signs			Required *[where considered appropriate]*	Quality management scheme applies. Certification that the traffic sign is capable of passing the tests in BS 873 : Part 1 is required
1207	Anchorage in drilled holes to supports of traffic signs	Loading test on site	*[As required]*		
1210	Holding down bolts and anchorages to bases of permanent bollards			Required *[where considered appropriate]*	Certification that the holding down bolts and anchorages are capable of complying with the performance requirements of BS 873 : Part 3 is required
1212	Road Markings				National quality management sector scheme applies. Procedures are given in BS EN 1824
		Tests specified in BS EN 1824		Required	
	Glass Beads	Arsenic trioxide content, Lead content and Antimony content (N)	One per contract and/ or per specific source of supply	Required	

TABLE NG 1/1: (11/07) 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
		Tests specified in BS 873: Part 8	2 of each size and category/type*		† *[Where required]*
	Flat traffic delineators			Required	Certification that FTD's have been tested and comply with Clause 1214 is required
		Tests specified in Clause 1214	*[As required]*		† *[Where required]*
	Other traffic delineators			Required	Certification that the delineators have been tested and comply with Clause 1214 is required
		Tests specified in Appendix 12/4	*[As required]*		† *[Where 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				Quality management scheme applies. Statutory type approval of equipment applies
	Cables				*[Special sample tests to BS 6346 should be scheduled where appropriate]* Product certification scheme 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: (11/07) 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	Anchorages for use in drilled holes	Tensile load (Manufacturer's tests)		Required	To provide well attested and documented evidence
1306	Anchorages in drilled holes to columns and masts with flange plates	Loading test on site	*[As required]*		†
1310	Welding	Welding procedures (Manufacturer's tests)	(Every seven years)		Quality management scheme applies
		Welder qualification (Manufacturer's tests)	(Sub-Clauses 1310.1 and 1310.2 (7.1.3))		
		Production testing (Manufacturer's tests)	(Sub-Clauses 1310.1 and 1310.2 (7.1.4))		
	Welded joints	Destructive testing	*[See sub-Clause 1310.1 and 1310.2 (7.1.5)]*		†† *[(N) See NG 1310]*
1313	GFRP laminates	Loss on ignition	1 per 50 production columns		*[See sub-Clauses 1313.10-17]*
		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			
		Apparent bulk density	2 per batch		
		Impact strength			
		Flexural stress			
Series 1400					
1421	Cable				*[Special sample tests to BS 6346 or BS 5467, according to the cable used, should be scheduled where appropriate]* Product certification scheme applies

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TABLE NG 1/1: (11/07) 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 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 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 Appendix 15/1 (Stage 2)		† Results to be reported in accordance with MCG 1055 or MCG 1099, as appropriate.
1522	Motorwarn 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.
1530	Cable ducts	Tests specified in BS EN 50086-1 and BS EN 50086-2-4	Each supplier	Required	Current British Board of Agrément Certificate is required.

TABLE NG 1/1: (11/07) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1500 (continued)					
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	*[Appropriate soil tests should be scheduled where required]*
1602 to 1606 1610 to 1615	Concrete Grout Reinforcement Prestressing Steelwork Welding Protection against corrosion			Required	*[Appropriate tests/samples should be scheduled where not included under other Clauses/Series]*
1606	Coatings for protection against corrosion	Adhesion	As required in Appendix 16/6		
1607	Reduction of friction on piles				*[Particular requirements detailed in Appendix 16/7 should be scheduled]*
1608 1616	Integrity testing Dynamic testing				*[Particular requirements detailed in Appendix 16/8 or 16/16 should be scheduled]*
1609	Static load testing of piles			Required	*[Testing of preliminary piles should not be scheduled in Appendix 1/5* *Particular requirements detailed in Appendix 16/9 should be scheduled]*
1612	Self hardening slurry mixes				*[Particular requirements detailed in Appendix 16/12 should be scheduled]*
1617	Instrumentation				*[Particular requirements detailed in Appendix 16/17 should be scheduled]*
1618	Support fluids	To be proposed by the Contractor			*[Particular requirements detailed in Appendix 16/18 should be scheduled]*

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TABLE NG 1/1: (05/04) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1700					
1702 1704	Cement types as stated in sub-Clause 1702.1			Required	Certificate to be provided monthly* for each type of cement Quality management and product certification schemes apply
	Cements (all types)	Chloride content	Monthly*		Tests to be carried out by the manufacturer and results included on the test certificates required above
	Pulverised-fuel ash	Sulfate content	Monthly*		
	Ground granulated blastfurnace slag	Acid-soluble alkali content	Daily (PC) Weekly (pfa ggbs)		
	Aggregates	Grading and fines content	1 per week (per source)		Results of routine control tests from the factory production control system operated by the producer to be provided - see Annex H of BS EN 12620 Product certification scheme applies
		Shell content (N)	Monthly*		
		Flakiness index (N)	Monthly*		
		Resistance to fragmentation (N)	Every 6 months		
		Drying shrinkage (N)	1 per 5 years		
		Chloride content (N)	1 per week or as otherwise agreed		
		Sulfate content (N)	Yearly		
	Blastfurnace slag	Bulk density (N)	Every 6 months		
		Stability (N)	Every 6 months		
		Sulfur content (N)	Every 6 months		
	Water	Tests specified in BS EN 1008	*[As required]*		
		Chloride content	Monthly*		
		Sulfate content	Monthly*		
		Acid-soluble alkali content	Weekly*		
	Admixtures	Chloride content	1 per consignment	Required (BS 934-2)	*[See sub-Clause 1702.3]*
		Sulfate content	1 per consignment	Required	
		Acid-soluble alkali Content	1 per consignment		

TABLE NG 1/1: (05/04) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1700 (continued)					
1707	Concrete	Cube strength (N)	Prestressed concrete-two cubes from 12 m³ or 2 batches whichever represents the lesser volume	Required	Contractor to cast and test sufficient additional cubes to demonstrate cube strength before transfer †
			Reinforced concrete-two cubes from 24 m³ or 4 batches whichever represents the lesser volume		
			Mass concrete-two cubes from 50 m³ or 50 batches whichever represents the lesser volume		*[See also Table NG 17/1]*
			Additional cubes for special purposes		*[Tests/samples should be scheduled as required See NG 1707.6]*
		Cube strength-identity testing as described in Appendix 17/4 (N)	2 cubes from each of two samples of each batch		*[Requirements should be given in Appendix 17/4 as appropriate] [See sub-Clause 1707.2 and Appendix 1/6]*
		Density	*[As required]*		*[Requirements should be given in Appendix 17/1 as appropriate]*
		Modulus of elasticity			
	Fresh concrete	Consistence (slump or compacting factor or Vebe) (N)	Each batch	Required	*[See sub-Clause 1707.2]*
		Air content	Each batch		
		Cement content	*[As required]*		
		Water/cement ratio			
1709	Silane			Required for each delivery	Certification that the silane complies with Clause 1709 is required
		Refractive Index	Three samples		*[See sub-Clause 1709.2(ii)]*
		Trial panels, where required in the Contract			*[See sub-Clause 1709.8]*

TABLE NG 1/1: (05/04) 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				*[Appropriate tests/samples should be scheduled]*
	Precast concrete manufactured off Site	Cube strength (Manufacturer's tests)			Contractor to make available records of tests by the manufacturer
1711	Grouting and Duct Systems for Post-tensioned tendons				CARES Scheme for Supply and Installation of Post-tensioned Systems In Concrete Structures or an equivalent scheme is required. Quality management and product certification schemes for cement apply
		Full scale trials, where required in the Contract			See sub-Clause 1711.1 and Appendix 17/6
		Air pressure tests			See sub-Clause 1711.3 and Appendix 17/6
		Duct assembly verification tests			See sub-Clause 1711.3 and Appendix 17/6
		Wall thickness of ducts after tensioning			See sub-Clause 1711.3 and Appendix 17/6. Contractor should provide evidence of testing
		Fluidity	See Table 17/14		See sub-Clause 1711.8 and sub-Clause 1711.9 and Table 17/15
		Bleeding			
		Volume change			
		Cube strength			
		Sieve			
		Sedimentation			
	Admixtures			Required	Quality management and product certification schemes apply Data on their suitability, including previous experience should be made available. See sub-Clause 1711.10
1712	Reinforcement				
	Steel bars			Required (BS 4449)	Product certification scheme applies
	Steel wire			Required (BS 4482)	
	Steel fabric			Required (BS 4483)	
	Stainless steel			Required (BS 6744)	

TABLE NG 1/1: (05/06) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1700 (continued)					
1713	Fabricated reinforcement			Required	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 listed in Appendix B
1716	Reinforcement jointing systems	Permanent elongation Characteristic strength (Manufacturer's tests)		Required for each type of connection	BBA Roads and Bridges certificate or CARES certificate of product assessment or fully equivalent scheme apply
1717	Reinforcement metal arc welding	Welding procedure approval (BS 7123)	As required in BS 7123		*[Where tests in addition to those specified in BS 7123 (tensile test and macroetch test) are required full details should be scheduled]* Tests should be carried out by an independent testing body specified in BS 8666
		Welder approval (BS 7123)			
1718	Prestressing tendons				Product certification scheme apply
	Steel wire			Required (BS 5896)	
	Steel bar			Required (BS 4486)	
	Seven-wire strand			Required (BS 5896)	
	Prestressing steel (all types)	Proof load Breaking load Elongation Ductility Relaxation Modulus of elasticity	*[As required]*		†
	Super strand to BS 5896 or other than lowest strength 3-7 mm dia wires to BS 5896	0.1% proof load Breaking load	Each reel		†
1724	Post-tensioning anchorages	Tests in accordance with BS EN 13391 (Manufacturer's tests)		Required (BS EN 13391)	Product certification scheme applies
1726	Stainless steel bar			Required (BS 6744)	Product certification scheme applies
1727	Inspection and testing of structures and components				*[Tests should be scheduled as appropriate and requirements given in Appendix 17/4]*

TABLE NG 1/1: (05/06) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1800					
1801 1803	Structural steels to BS EN 10025-1 to -4 and BS EN 10025-6, BS EN 10210			Required	*[Give type of document required] [Options as appropriate should be listed in Appendix 18/1]*
	Structural steels to BS 7668			Required (BS 7668)	*[Options B26-B36 as appropriate should be listed in Appendix 18/1]*
	Stainless steels to BS 970; BS EN 10084, BS EN 10087 and BS EN 10095.			Required (BS 970, BS EN 10084, BS EN 10087 and BS EN 10095.)	*[Intercrystalline corrosion test should be scheduled where required]*
	Stainless steels to BS EN 10029, BS EN 10048, BS EN 10051, BS EN 10258, BS EN 10259			Required (BS EN 10029, BS EN 10048, BS EN 10051, BS EN 10258 and BS EN 10259)	*[State condition of material if not softened condition. Give information required for test certificate as BS EN 10029; BS EN 10048; BS EN 10051; BS EN 10258; BS EN 10259]*
	Steel plate	Ultrasonic testing	*[As required]*		*[See guidance clause 3.1.4 of BS 5400 : Part 6]*
	Bolts, nuts and washers				Quality management scheme applies
	All types except high strength friction grip	Test specified in BS 4395: Part 2	As required in BS 4395: Part 2		
	High strength friction grip	Test specified in BS 4395: Part 1 or Part 2	As required in BS 4395: Part 1 or Part 2		*[Tests/samples for the optional tests provided for in BS 4395: Parts 1 and 2 should be scheduled where required]*
	Tension Control Bolts	Test specified in JSS II-09-1996 or BS 4395	As required in JSS II-09-1996 or BS 4395		
	Welding electrodes				
	Covered steel			Required (BS EN 499)	
	Wire			Required (BS EN 756; BS EN 760)	

TABLE NG 1/1: (11/05) Typical Testing Details (continued)

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1800 (continued)					
	Welding				
	Welding procedures	Tests specified in BS EN ISO 15614-1	As required in BS EN ISO 15614-1 and Appendix 18/1		Results to be reported in accordance with Annex A of BS EN ISO 15614-1
	Welder qualification	Tests specified in BS EN 287 : Part 1	As required in BS EN 287 : Part 1 for each welder	Required (BS EN 287 : Part 1)	Certificate to be in accordance with Annex B of BS EN 287 : Part 1
	Butt weld 'run-off' plates	Destructive tests specified in BS 5400 : Part 6	As required in BS 5400 : Part 6		
	Butt welds and adjacent areas of steelwork	Non-destructive tests using methods to be agreed	As required in BS 5400 : Part 6 and the following: ..... *[As required]*		*[Full details should be scheduled. See clause 5.5.2 of BS 5400: Part 6 and its guidance clauses]*
	Fillet welds	Non-destructive tests	*[As required]*		*[Full details should be scheduled]*
	Flame cutting and shearing	Tests to demonstrate procedures comply with BS 5400 : Part 6 and Appendix 18/1	As required in Appendix 18/1		
	Stud shear connectors	Fixing (BS 5400 : Part 6)	Each stud		
		Bending (BS 5400 : Part 6)	*[As required]*		
Series 1900					
1903	Abrasives	Grading	*[As required]*		*†† (See NG 1903]*
		Hardness			
1909	Galvanized coatings	Tests specified in BS EN ISO 1461	*[As required]*		
	Aluminium and zinc spray coatings	Tests specified in BS EN 22063	*[As required]*		Areas to be tested to be in accordance with Clause 1910
	Aluminium coating material			Required (BS EN 1301-1)	
	Zinc coating material			Required (BS EN 1179)	
	Sherardized coatings	Tests specified in BS 4921	*[As required]*		*[Sampling procedure and any special adhesion requirements including test method should be scheduled]*
	Zinc electroplated coatings	Tests specified in BS 3382 : Part 2	*[As required]*		
	Plating to high strength friction grip and tension control bolts				*[Special tests to detect hydrogen embrittlement should be scheduled where required]*

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

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 1900 (continued)					
1910	Metal spray coatings	Tensile test specified in BS EN 22063	*[As required]*		†
		Grid test specified in BS EN 22063	*[As required]*		†
#1911 1911SE	Paints				
	'A' and 'B' Samples	Specific gravity	*[See Clauses #1911 and 1911SE]*		†† *[See NG 1911]* Samples will be selected in accordance with Clauses 1911 and 1911SE] *[See Clauses #1912 and 1912SE]*
		Colour match			
		Composition			
		Application characteristics			
Series 2000					
2003	Permitted waterproofing systems	*[As required-* See NG 2003]			Registration and BBA Roads and Bridges Agrément certification apply
	Additional bituminous protection	Tests specified in BS 594: Part 1	1 per 15 tonnes*		Sampling to comply with BS 594: Part 1
	Stability value	Test specified in BS 598: Part 107	1 per 15 tonnes*		
2004	Tar	Tests specified in BS 76	1 per source*		Sampling to comply with BS 76
	Cut back bitumen	Tests specified in BS 3690: Part 1	1 per source*		Sampling to comply with BS 3690: Part 1 *[The viscosity test is normally sufficient]*
Series 2100					
2101	Bridge bearings				
	Elastomeric bearings	Hardness	*[As required]*	Required (BS 5400 : Section 9.2)	*[Tests/samples should be scheduled only where tests are required on samples cut from a finished bearing]*
		Tensile strength			
		Elongation			
		Ageing			
		Compression set			
		Ozone resistance			
	Complete bearings	Tests specified in Appendix 21/1	As required in Appendix 21/1		

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

Clause	Work, Goods or Material	Test	Frequency of Testing	Test Certificate	Comments
Series 2400					
2401	Masonry cement			Required (BS EN 413-1)	Quality management scheme applies *[see also clause 7.1 and the National annex NB of BS EN 413-1]*
		Chloride content	Monthly*	Required	Test to be carried out by the manufacturer and results included on the test certificate
2402	Sand			Required per consignment (BS EN 13139)	
		Chloride content	Monthly*		Test to be carried out by the manufacturer and results included on the test certificate
2403	Water	Tests specified in BS EN 1008	*[As required]*		
2404	Mortar admixtures			Required (BS EN 934-3)	
2405	Lime			Required (BS EN 459-1)	
2406/ 2417	Bricks				
	Clay	(Soluble salt content Efflorescence Compressive strength Water absorption Initial rate of suction) (BS EN 771-1/TRL Report 447)			*[Tests/samples (in accordance with BS EN 771-1/TRL Report 447) should be scheduled as required]*
	Calcium silicate			Required (BS 187)	
	Concrete			Required (BS 6073-1/BS EN 772-2)	
2407	Blocks				
	Concrete			Required (BS 6073-1/BS EN 772-2)	
2408	Reconstituted stone				*[Tests/samples (in accordance with BS 6457) should be scheduled as required]*
2410 2411	Stainless steel				
	Wire/fabric			Required (BS EN 10088-1)	
	Bars			Required (BS 6744)	
	Ready mixed mortars			Required (BS 4721)	
	Mortars	Tests specified in Appendix A1 of BS EN 10521-1	1 set of tests per mix*		

TABLE NG 1/1: (11/05) 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				BBA Roads and Bridges Certification applies
2502	Materials for reinforcing elements, prefabricated facing and capping units, and washers				BBA Roads and Bridges Certification 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			Required (BS EN 10088-1) (BS EN ISO 3506-1 and 3506-2)	
	Bolts, screws and nuts			Required (BS EN ISO 898, 4016, 4018, 4034)	Tests scheduled under Clause 1909 are required for hot dip galvanizing
2503	Materials for pocket type reinforced brickwork retaining wall structures				
	Clay bricks	(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*		*[Soluble salt content - sulfate shall be determined in accordance with Test No 2 in TRL Report 447]* *[Random sampling to BS 3921 to be employed]*

TABLE NG 1/1: (11/03) 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 *[Appropriate tests/samples should be scheduled where not included under other Clauses]*
	Timber				
	Concrete				
	Steel				
	Brickwork				
	Other materials				
	Barriers	Sound absorption	As required in Appendix 25/4		*[See NG 2504 14 - 17]*
		Sound insulation			
	Post foundations	Loading test on site	As required in Appendix 25/4		*[See NG 2504.12]*
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	*[see Note 1]*			Product certification scheme applies *[Note 1. Additional manufacturer's tests are provided for in the relevant BS but should not normally be required.]*
	Concrete PC/SRC	(Manufacturer's test)			See sub-Clause 2506.28
	Iron	*[see Note 2]*			*[Note 2. 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 listed in Appendix B of SHW.]*
	Corrugated steel	(Manufacturer's test)			Type Approval Certificate and BBA Roads and Bridges Certificate 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

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TABLE NG 1/1: (11/03) 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
Series 3000					
3001	General			required in Appendix 30/1	Inspection Reports as
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	*[As required]*		†† *[see # NG 5003]*
		Hardness			
5005	Aluminium and zinc spray coatings	Tests specified in BS EN 22063	*[As required]*		Areas to be tested in accordance with Clause 5006
	Aluminium coating material			Required (BS EN 1301-1)	
	Zinc coating material			Required (BS EN 1179)	
	Sherardized coatings	Tests specified in BS 4921	*[As required]*		[Sampling procedure and any special adhesion requirements including test method should be scheduled]
	Zinc electroplated coatings	Tests specified in BS 3382 : Part 2	*[As required]*		
	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	*[As required]*		†
		Grid test specified in BS EN 22063	*[As required]*		†

TABLE NG 1/1: (05/05) 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	*[see Clauses #5007 and 5007SE]*		††*[see NG #5007]* Samples will be selected in accordance with Clauses #5007 and 5007SE
		Colour match			
		Composition			*[see Clauses #5009 and 5009SE]*
		Application characteristics			

Key

† indicates a requirement in SHW for the test to be carried out by the Contractor; such tests should therefore be scheduled in 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 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.

(11/03) (N) indicates that a UKAS or equivalent accredited laboratory sampling and test report or certificate is required.

[Notes to compiler:
1. The above symbols apart from (N) are for guidance when preparing 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 Appendices 1/5 and 1/6. Appropriate Contract-specific requirements should be scheduled.]

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NG SAMPLE APPENDIX 1/1: (05/01) TEMPORARY ACCOMMODATION AND EQUIPMENT FOR THE OVERSEEING ORGANISATION

1 Accommodation Required

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

[Note:The compiler should bear in mind that all accommodation should satisfy the relevant requirements of current legislation on health, safety and welfare.]

2 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 Fittings and Furnishings of Accommodation

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

#NG SAMPLE APPENDIX 1/2: (05/01) VEHICLES FOR THE OVERSEEING ORGANISATION

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

1 (11/06) Type "A" 8/12 Seat Station Wagon

The vehicle is to be suitable for off-road use, have 4 wheel drive, power steering and be supplied in white or yellow colour. The vehicle shall be free from markings identifying any company associated with the Contract. The equipment shall include:

Fire extinguisher, heater and demister, hazard flashing unit, heavy duty suspension, 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, sign boards reading 'Highway Maintenance' or where appropriate 'Motorway Maintenance' in accordance with Diagram 7404 of Schedule 12, Part V of the Traffic Signs Regulations and General Directions 2002 on the rear of the vehicle (the lettering shall be the largest x height that can be accommodated out of the following heights: 37.5, 50, 62.5, 75 or 100 mm), retroreflective red and fluorescent yellow chevrons on the rear of the vehicle and a roof mounted amber flashing light bar comprising at least two light sources fitted in accordance with Section O.5 of Chapter 8 (Part 2 Operations) of the Traffic Signs Manual.

2 Type "B" Long Wheelbase Station Wagon

The vehicle shall be free from markings identifying any company associated with the Contract. The vehicle and equipment shall be as for Type A with the following variations:

Link mats and heater shall be supplied for the front only. The vehicle shall be adapted for CBR testing.

3 Type "C" Short Wheelbase Station Wagon

The vehicle and equipment is to be as type B but not adapted for CBR testing.

4 Type "D" 4-Door Estate Car

The vehicle shall have a carrying capacity of at least 0.25 tonne, a minimum ground clearance (unladen) of 150 mm and independent suspension.

The vehicle shall be finished in white or yellow colour and shall be free from markings identifying any company associated with the Contract. The equipment shall include:

Reversing lamp, fire extinguisher, luggage rack complete with straps suitable for carrying survey equipment, sign boards and roof mounted amber flashing light bar and red and yellow chevrons as above.

NG SAMPLE APPENDIX 1/3: COMMUNICATION SYSTEM FOR THE OVERSEEING ORGANISATION

Type of equipment-.....

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

Frequency for radio communication system

Base .....MHz

Mobile .....MHz

NG SAMPLE APPENDIX 1/4: WORKING AND FABRICATION DRAWINGS

Series	Description of Work	Minimum period for submission of drawings

NG SAMPLE APPENDIX 1/5: (05/01) 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 British 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) (11/03) *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 (See sub-Clause 105.4).

3 (11/03) (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.

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NG SAMPLE APPENDIX 1/6: (05/01) SUPPLY AND DELIVERY OF SAMPLES TO THE OVERSEEING ORGANISATION

[Notes to compiler:

i) (11/03) *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 but see sub-Clause 105.7.

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 (11/03) (N) indicates UKAS or equivalent laboratory accreditation required for sampling.

(05/01) The following is a model as to how compilers should complete Appendix 1/6:

APPENDIX 1/6: (11/04) 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

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 105.4).

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 (11/03) (N) indicates UKAS or equivalent laboratory accreditation required for sampling.

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NG SAMPLE APPENDIX 1/7: SITE EXTENT AND LIMITATIONS ON USE

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

1 Extent of the Site.

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

Include areas of highway for advance signing and coning by the Contractor where relevant.]

2 Limitations on the Use of the Site.

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

NG SAMPLE APPENDIX 1/8: OPERATIVES FOR THE OVERSEEING ORGANISATION

Operatives Required	No.	Period Required
Chainman/Driver Driver/Laboratory Handyman		

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SAMPLE APPENDIX 1/9: CONTROL OF NOISE AND VIBRATION

Noise

1 The Local Authority has informally agreed that the following measures would be acceptable and these 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.

2 The normal working hours within the Site shall be Monday to Friday between ... and … hours and Saturday between … and ... hours, with no working on Sundays or public holidays. Exceptionally, consent for work outside these hours may be given after any necessary consultation. .. days' notice is required from the Contractor when seeking such consent.

3 The noise levels (see Note (i) below) scheduled below for periods outside the normal working hours will only be permitted when consent has been given to exceptional working.

4 The ambient noise level, Leq (see Note (ii) below) from all sources when measured 2.0 m above the ground at noise control stations numbers 1 to ... on Drawing Numbers ..... shall either not exceed the appropriate level given in the Schedule or not exceed by more than 3dB(A) the existing ambient noise level, Leq (see Note (iii) below), at the control station measured over the same period, whichever level is the greater. The maximum sound level at any noise control station shall not exceed the level given in the Schedule. Exceptionally the Contractor may be given permission to carry out works which exceed the noise levels in the Schedule, provided that ... days' notice of the date and timing of these works is given to the Overseeing Organisation and the Contractor demonstrates that he intends to take all reasonable measures to mitigate the noise nuisance. After consultations with the Local Authority and any other interested bodies a decision will be given within ... days of receipt of the notice.

Schedule		**Total Noise Levels at Control Stations**		
Period	**Hours**	**Ambient Noise Level, Leq Measured at Control Station: dB(A)**	**Period of Hours over which Leq is applicable**	**Maximum Sound Level (see Note (iv) below) measured at Control Station: dB(A)**
Mondays to Fridays Saturdays All unattended plant outside normal working hours				

Notes:

(i) Noise levels relate to free field conditions. Where noise control stations are located 1 m from facades of buildings, the permitted noise levels can be increased by 3 dB(A).

(ii) The ambient noise level, Leq, at a noise control station is the total Leq from all the noise sources in the vicinity over the specified period.

(iii) The existing ambient noise level, Leq, at a control station is the total Leq from all the noise sources in the vicinity over the specified period prior to the commencement of the Works.

(iv) Maximum sound level is the highest value indicated on a sound level meter which meets the requirements of BS EN 60651 Type 1 or 2 set to SLOW response and frequency weighting A or on an integrating - averaging sound level meter to BS EN 60804.

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Vibration

[Note to compiler: Include here:]

(i) Locations where vibration limits are to be complied with.

(ii) Limits of vibrational amplitude and resultant peak particle velocity.

(iii) Requirements for instrumentation and monitoring.

(iv) Overseeing Organisation's arrangements for Contractor to monitor vibration in property off Site.

NG SAMPLE APPENDIX 1/10: STRUCTURES TO BE DESIGNED BY THE CONTRACTOR

[Note to compiler: List under (A) the structures to be designed by the Contractor and under (B) the structures for which a choice of designs is offered, ie. structures 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 Appendices.]

Structure	Location	Design Specification
(A)		
(B)		

NG SAMPLE APPENDIX 1/11: STRUCTURAL ELEMENTS AND OTHER FEATURES TO BE DESIGNED BY THE CONTRACTOR

[Note to compiler: List here the structural elements and other features to be designed by the Contractor. The design specifications and any special requirements should either follow immediately after the table or be cross-referenced to other Appendices.]

Element	Location	Design Specification

NG SAMPLE APPENDIX 1/12: SETTING OUT AND EXISTING GROUND LEVELS

1 The information given below will be available for inspection during the tender period at:

Regional/Agent/Consultant's Office

Address .....

Tel No. .....

and will be supplied to the Contractor at the commencement of the Works.

[Note to compiler: Include here details of the setting out information that is available.]

2 Specific requirements for setting out.

3 References to drawings or schedules quoting existing ground levels *[111.1]*.

4 Level of information on existing detail to be recorded by the Contractor.

NG SAMPLE APPENDIX 1/13: (05/01) PROGRAMME OF WORKS

1 The Contractor shall provide the programme in a form of a network diagram/bar chart [delete as appropriate] produced as a result of a 'critical path analysis' and must abide by the constraints below. It shall show the level of detail appropriate to each stage of the Works and all activities and restraints, each of which shall be given a short title. All events shall be numbered and annotated with earliest and latest event dates.

2 At the time of presentation of the programme the Contractor shall also provide a mass-haul diagram showing his intended earthworks movements and locations and capacities of anticipated plant and other resource input.

3 Schedule of Constraints

[The constraints known at tender stage should be inserted here. Typical constraints, including those that could have been commitments by the Employer, are as follows:]

(i) Work to privately and publicly owned services and supplies *[although this is usually agreed informally giving the Contractor latitude in determining his programme]*.

(ii) Possession (rail, property, etc).

(iii) Traffic safety and management including notice requirements.

(iv) Restrictions arising from the use of substances hazardous to health.

(v) 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) (05/01) Date, day and time limitations for surface treatments *[918.1, 919.1, 922.1, eg not on market days or at rush hour]. [Note to compiler: Any limitations on availability should be included in this Appendix]*.

(x) (05/01) The Contractor shall demonstrate to the Overseeing Organisation that he has available in a suitably located stockpile an adequate supply of surface dressing chippings which will enable him to not only commence the Works on the due date, but will enable him to progress the work at such a rate as will ensure compliance with the Programme of Works including traffic management.

(xi) (05/04) Submission by the Contractor of Road Restraint Systems for acceptance, including awaiting acceptance and resubmission.

4 The level of detail should be not less than the following:

Level 1

Within 21 days after the acceptance of Tender and any subsequent revision

(i) Each bridge.

(ii) Earthworks-each cutting and embankment.

(iii) Roadworks-in lengths not exceeding 1.0 km for main route and for each side road, link road and slip road:

(a) Fencing

(b) Site clearance

(c) Topsoil strip

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(d) Drainage (pre-earthworks and second stage)

(e) (05/04) Subbase

(f) Subgrade improvement layer

(g) (05/04) Base or concrete paving

(h) Surfacing.

(iv) Major privately and publicly owned services and supplies.

(v) Traffic management measures including operation of site accesses, plant crossings and temporary diversions for traffic.

Level 2

At least four weeks before the commencement of any item of work:

(i) For each bridge:

Piling

Substructure

Superstructure

Finishes

(ii) Roadworks:

As for Level 1 but intervals not exceeding 200 m and including lighting, signing, soiling and seeding, road marking, cabling and communications equipment.

(iii) All public alterations or additions to privately and publicly owned services and supplies.

Level 3

Further breakdown of items and other details as may be required.

NG SAMPLE APPENDIX 1/14: PAYMENT APPLICATIONS

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.

NG SAMPLE APPENDIX 1/15: ACCOMMODATION WORKS

1 Copies of Land Reference Plans and Schedules (*together with details of accommodation works already determined) will be available for inspection during the Tender period at:

Regional/Agent/Consultant's Office.....

Address.....

Tel No.....

and will be supplied to the Contractor before the commencement of the Works. Further information will be provided in respect of accommodation works when this has been agreed.

2 Details of accommodation works already determined are as follows:

*[*Delete where details are included]*

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NG SAMPLE APPENDIX 1/16: PRIVATELY AND PUBLICLY OWNED SERVICES AND SUPPLIES

1 This Appendix contains details of services and supplies affected by the Works, details of preliminary arrangements that have been made with Statutory Undertakers and others for the alteration of services and supplies affected by the Works, and details of any orders already placed.

2 The Contractor shall make arrangements with the Statutory Undertakers 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 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 Disconnected apparatus shall be removed by the Contractor only with the prior consent of the Authority concerned.

5 The names, addresses and telephone numbers of the authorities serving in the locality are listed below.

Names	**Address** **Tel No.**	**Contact**
Statutory Undertakers		
Other Authorities		

6 Services and Supplies Affected by the Works

Location	Description	Group*	Drawing No.	Notice Required to Commence	Time for Completion
Statutory Undertakers					
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.

C Work required after commencement of the Works which does require prior work by the Contractor.

D Work expected to be in progress at the commencement of the Works.

E Work to be wholly undertaken by the Contractor.

7 *[Note to compiler: Insert here details of any other preliminary arrangements that have been made and/or details of any orders already placed]*

NG SAMPLE APPENDIX 1/17: (05/01) TRAFFIC SAFETY AND MANAGEMENT

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

1 Traffic Safety and Management Requirements

[When the Contractor is not required to submit traffic management proposals or to supply sign faces, posts or fixings, this should be stated.]

(i) Phasing of Works *[include details of traffic orders that have been or are being made]*.

(ii) Drawings showing traffic management layout, including:

(a) Position of traffic signals.

(b) Width of lanes.

(c) Working areas.

(d) Safety zones.

(e) Crossovers *[include construction details, and geometrical design required where this has not been shown on the Drawings]*.

(f) Running lane for emergency vehicles.

(g) Location for emergency vehicles.

(iii) Timing of operations.

(iv) Road lighting requirements (Appendix 14/3).

(v) Requirements for Temporary Emergency Telephones.

(vi) Whether a traffic safety and control officer is required *[117.19]*.

(vii) Restriction arising from the use of substances hazardous to health *[crops - reference should be made to Appendix 1/23]*

(viii) A Temporary Automatic Speed Camera System for the Enforcement of Mandatory Speed Limits at Roadworks (TASCAR) shall be provided in accordance with Appendix 1/26 and Appendix 1/27 *[117.32]*.

The Contractor's attention is drawn to the need to assess the risks and develop and operate safe working practices when vehicles and plant are reversing on Site, whether or not they are on part of the highway. Rule 129 of The Highway Code 1993 is relevant but the Contractor's practices and procedures should take account of the different conditions, which will obtain on Site.

The responsibilities of the Traffic Safety and Control Officer and of his nominated deputy shall also include the following matters:

(1) Monitoring, with the assistance of sufficient mobile personnel and of sufficient other suitable and appropriate aids, the flow of traffic within the area and within the period defined for the operation of the vehicle recovery service;

(2) Ensuring that, within 5 minutes of the occurrence of an incident, as defined below, resulting in stationary vehicle(s) on a highway open to the public, the incident is reported to the vehicle recovery service;

(3) Recording and logging all incidents and all movements of recovery vehicles and, when called, all movements of the emergency services. For the purposes of this Appendix, an "incident" is defined as a shed load, vehicle breakdown, vehicle abandonment or traffic accident, whether or not the latter involves personal injury.

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2 Maintenance Requirements

(i) Crossovers
(ii) Ramps
(iii) Highways
(iv) Timescale for responsibility if different from sub-Clause 117.7

3 Notice Requirements

Notice required by the Overseeing Organisation in order to arrange for:

(i) amending or making traffic orders .....
(ii) authorising of non-prescribed signs .....
(iii) authorising temporary traffic signals .....
(iv) moving signs to be compatible with the state of the Works as described in sub-Clause 117.11.

4 Details of Events That Could Have a Bearing on the Works

[These could include such events as:]

Motor shows,
Race meetings,
Football fixtures, and
Highway reconstruction work being carried out in the vicinity.

5 Highways, Private Roads, and Other Ways Affected by the Works

Description	**Predicted 24 Hour Annual Average Daily Traffic AADT**	**Eighty Five Percentile Speed of Cars (mph)**	**Speed Limit (mph) if Proposed** *[State whether Mandatory or Advisory]*	**Type(s) Of Traffic Control**	**Special Facilities** *[Pedestrian, Equestrian etc.]*	**Whether to be Kept Open or Closed**

Note: Particulars of temporary diversions for traffic are contained in Appendix 1/18.

Highways including footpaths, cycle tracks and bridleways, described above or listed in Appendix 1/19 are the responsibility of:

Authority.....

Address.....

Tel No.....

6 Driver Information Signs at Roadworks

(i) Requirements for the use of Driver Information Signs
(ii) Required variations to legends

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NG SAMPLE APPENDIX 1/18: (05/01) TEMPORARY DIVERSIONS FOR TRAFFIC

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

1 Temporary Diversions for Traffic Specified by the Overseeing Organisation

(i) Highways Open to Vehicles

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

Note: Particulars of traffic are contained in Appendix 1/17.

[This could include a schedule of different forms of construction and geometrical design required where this has not been shown on the Drawings.]*

+ Not always a need to define individual accesses, particularly in urban situations. Reference can be made to road names or other appropriate means of identification.]

(iii) Temporary Structures Specified by the Overseeing Organisation

[Give full particulars, including outline Approval in Principle forms where appropriate, if temporary structures are to be designed by the Contractor.]

2 Temporary Diversions Proposed by the Contractor

(i) Notice Requirements *[118.6]*

(ii) Details of any Constraints

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NG SAMPLE APPENDIX 1/19: ROUTEING OF VEHICLES

[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 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.]

(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

[Detail to which temporary structures must be designed including, in the case of structures spanning a public highway, the requirement for the Contractor to follow the technical approval procedures contained in Standard BD 2. In the case of structures spanning a railway, river or canal, the requirements of the appropriate authority should be given.]

#NG SAMPLE APPENDIX 1/20: (05/01) RECOVERY VEHICLES FOR BREAKDOWNS

SHEET 1: Information to be provided by the compiler

Requirements for Recovery Vehicle Operation

1 Recovery Vehicles to be Provided

1.1 (11/05) *[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 organization.] [120.1]*

1.2 Heavy recovery vehicles:

(i) (11/05) ... no. heavy recovery vehicle(s) shall be provided. *[120.46]*

1.3 Light Recovery Vehicle:

(i) (11/05) ... no. light recovery vehicle(s) shall be provided. *[120.47]*

1.4 (11/05) Motorcycle recovery facilities:

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

1.5 (11/05) Impact Protection Vehicles:

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

2 (11/05) Locations for Recovery Vehicles

[Compiler: State here details of locations for recovery vehicles together with any specific requirements such as need for hardstandings.] [120.21]

3 (11/05) 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 (11/05) 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 IAN 65/05]. [120.22 and 120.55]

5 (11/05) 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]

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#NG SAMPLE APPENDIX 1/20: (05/01) RECOVERY VEHICLES FOR BREAKDOWNS

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

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#NG APPENDIX 1/20: (05/01) 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 Highways Agency for issue to drivers of broken-down and accident-damaged motor vehicles within the above works.

Leaflet to be distributed by recovery vehicle operatives of the appointed recovery firm on behalf of the Highways Agency.

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 to ……unless 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) (11/05) *The chosen location should take into account safety, security and the availability of a telephone, see IAN 65/05.*

   (3) The telephone number should be agreed with the police prior to the commencement of the Works.]

#NG SAMPLE APPENDIX 1/20: (05/01) RECOVERY VEHICLES FOR BREAKDOWNS

SHEET 4: Information to be provided by the Contractor

LAYOUT FOR 'VEHICLE RECOVERY LOGSHEET'

VEHICLE RECOVERY LOGSHEET (1 of 2) [Scheme name]				Recovery Vehicle:								Week Ending:			Sheet No:			
Date	Time			Where?	Dir.	Lanes Closed					Police etc Present*	Incident		Recovery	Vehicle Type #	Q'ing	Weather	Road Surface		Remarks
	Call Out	Arrival at Scene	Road Clear	Marker Post No.		HS	1	2	3	4		Acc	B/d	Tow? ** Y/N		Y/N		Dry	Wet	

*P - Police **Y - Tow/Lift#C - Car M/C - Motorcycle
F - Fire Service R - Restart V - Van
A - Ambulance F - False Call HGV - Heavy Goods Vehicle

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#NG SAMPLE APPENDIX 1/20: (05/01) RECOVERY VEHICLES FOR BREAKDOWNS

SHEET 4 (continued)

VEHICLE RECOVERY LOGSHEET (2 of 2) [Scheme name]	Recovery Vehicle: ……..……	Week Ending: ……/……../……	Sheet No: ……

Date & Time	Type of Vehicle	Registration No.	(11/05) Name and Address of Driver or Organization	Location of Breakdown	Nature of Breakdown	Recovery Operator's Name

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NG SAMPLE APPENDIX 1/21: INFORMATION BOARDS

[Note to compiler: Include here the locations and details of information boards, or cross-references to the drawings giving the information.]

NG SAMPLE APPENDIX 1/22: PROGRESS PHOTOGRAPHS.

The designation of the person to accompany the photographer.

Location	Type	No.	Aerial/Ground	Frequency Required	Remarks

NG SAMPLE APPENDIX 1/23: RISKS TO HEALTH AND SAFETY FROM MATERIALS OR SUBSTANCES

[Note to compiler: Details should be inserted in the Appendix as appropriate under the following headings:]

(i) Restrictions in relation to traffic management measures. *[These should include need for additional safety zones or lane closures.]*

(ii) Restrictions in relation to working practices. *[These should include conditions in relation to wind speed and direction, night working and restrictions in relation to traffic conditions ie. working to stop when adjacent traffic speed falls below a specified level.]*

(iii) Measures to be taken to protect members of the public. *[These should include measures such as screening and signing.]*

(iv) Monitoring to be undertaken by Contractor. *[Depending on substances or processes, air quality monitoring may be required where traffic, pedestrians or properties are adjacent to or close to the Works. Details of requirements should be given.]*

[Note to compiler: Further information on the need for specific requirements may be obtained from the Overseeing Organisation.]

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NG SAMPLE APPENDIX 1/24: QUALITY MANAGEMENT SYSTEM

[Notes to compiler:

1 The Overseeing Organisation must be consulted before preparing this Appendix.

2 When the main Contractor is required to institute a quality management system, Appendix 1/24 shall be completed as indicated below.]

1 (11/03) The Contractor shall institute and operate a quality management system complying with BS EN ISO 9001 and Clause 104. The quality management system shall be described in a Quality Plan that shall be submitted to the Overseeing Organisation for its acceptance.

The Quality Plan shall cover the following items:

(i) Contractor's organisation and management

(ii) Contractor's method statements and construction procedures

(iii) Contractor's construction quality control

(iv) (11/03) Organization's Quality Plans

(for each of the quality management schemes listed at Appendix A)

2 Quality Plans shall conform with the requirements tabulated in this Appendix, as follows:

[Compiler to insert "Model Requirements"]

3 Items i) and iii) of 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 other parts of the Quality Plan prior to commencement of any related work or activity and to a timetable included in item i).

4 Method statements are required for the works listed below:

[Note to compiler: Guidance regarding the activities requiring method statements is at Note 1 Guidance Notes to item ii) of the Model Requirements].

GUIDANCE NOTES

Numbers cross refer

2 An annotated chart is an effective means of Illustrating the organisational relationships.

3 These will include the roles commonly Attributed to the Contracts Manager, Site Agent/Contractor's Project Manager, Management Representative for Quality, Sub-agents, General Foreman, foreman, Chief and Senior Engineers and Contract Quantity Surveyor.

CONTRACTOR'S ORGANISATION AND MANAGEMENT

This section of the Quality Plan shall include:

1 Definition of the Contract and its documentation.

2 The organisation of the Contract, including the line of command and communication links between parties involved in the Contract.

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

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GUIDANCE NOTES

4 e.g meetings with the police, statutory undertakers, local authorities, landowners and others.

5 Particular reference is to be made to the main Contractor's staff responsible for subcontracted activities.

6 This must include the assessment of the subcontractor's quality assurance and quality control capabilities, the identification and implementation of additional controls needed on them to fulfil the Contractor's obligations in respect of quality assurance, monitoring arrangements and the review and acceptance of 'deliverables'.

8 Adequate time shall be allowed for the Overseeing Organisation to examine these plans prior to commencement of the activity.

9 (11/03) Organisations' QPs are required for schemes listed in Appendix A of the SHW. Organizations' QPs should be based on the model.

CONTRACTOR'S ORGANISATION AND MANAGEMENT

4 Control of liaison and meetings with third parties.

5 Identification of the Contractor's own staff responsible for overseeing each major activity.

6 The main Contractor's control of subcontracts.

7 Document control.

8 (11/03) Programme for submission of method statements and Organizations' Quality Plans.

The Quality Plan shall identify procedures (which may be a part of the Contractor's general procedures) that cover the topics listed below. Copies of these procedures shall be made available to the Overseeing Organisation on request.

9 The quality plans for subcontractors and suppliers of work, goods and materials which are the subject of quality management schemes.

10 Procedure for the preparation, review and adjustment of programmes for the effective progression of the Works and the recording of this.

11 Control and approval of purchases of materials.

12 Control of off-site activities (where appropriate).

13 Procedures for the regular review and recording by the Contractor of the quality of the Works.

14 Control of personnel selection, based on their care, skill and experience.

15 Management review/audits to monitor and exercise adequate control over the implementation of the quality plan.

16 Any other relevant item.

GUIDANCE NOTES

Numbers cross refer

1 *Method statements are required for the Principal activities e.g.*
- *demolition & site clearance*
- (05/04) *safety road restraint system - probably subject to an Organization's QP*
- *drainage*
- *earthworks -sub-divided as appropriate*
- *landscaping*
- *pavement construction - for each layer: flexible construction, or*
- *each operation for rigid*
- *each structure - by its main elements*
- *lighting and communications cabling*
- *each traffic management operation*
- *sensitive/complex accommodation works*
- *major service diversions*
- *special activities, e.g. treatment of contaminated land, major temporary works, items of public interest/concern*

Method statements may be quite brief but should describe each stage of the construction, identify the plant and materials to be used, temporary works, safety measures, working space considerations, and where appropriate the requirements for skilled labour and/or special supervision etc.

Where work is subject to environmental control, e.g. temperature, noise control, working hours, traffic conditions etc, these should be stated.

Hold points should be identified i.e. the stages at which checks are necessary before continuing. The authority for release of the hold point shall be identified.

2 *These procedures invoked by method statements will typically include, from the quality controls required by the contractor's construction quality control:*

- *Control, identification and traceability of materials, including any material or samples temporarily or otherwise removed from site for testing or other reasons.*
- *Procedure for the prevention of inadvertent use, installation or covering up of non-conforming work.*
- *Other corporate and/or contract-specific work instructions to be applied.*

CONTRACTOR'S METHOD STATEMENTS AND CONSTRUCTION PROCEDURES

This section of the Quality Plan shall include:

1 Detailed method statements for each major activity whether directly controlled or subcontracted.

The method statements shall identify hold points and invoke:
- work instructions
- quality control procedures
- compliance testing/inspection arrangements
- and work acceptance procedures

for all activities that might affect the quality of the permanent and temporary works.

2 Identify the relevant construction procedures in the Contractor's own Quality Management System (and provide copies on request).

GUIDANCE NOTES

Numbers cross refer

1 These statements will normally be expected to include:

(i) the responsibility for the initiation and updating of the Quality Plan.

(ii) responsibility of the 'Management Representative' for quality for monitoring compliance with it.

(iii) responsibility for the adequacy of the quality records produced.

5 These controls should include their identification, traceability requirements, control of document issues and their status.

They should also include the control of documents recording the verification review, approval, release and amendment of the works.

6 These should also identify 'hold points'.

7 These procedures should identify the proforma and/or database to be used for recording the inspection and test results, and the proforma to be used for recording the certification of compliance of all items of the Works by authorised key personnel. Each submission should be separately identified.

8 These procedures should include options for identification of non-conforming work and proposals for reworking and remedial work.

9 Reference should be made to those records listed in the SHW Appendix H.

CONTRACTOR'S CONSTRUCTION QUALITY CONTROL

This section of the Quality Plan shall include:

1 Statement of the Contractor's organisation for quality control.

The quality plan shall identify procedures (which may be a part of the Contractor's general procedures) that cover the topics listed below. Copies of these procedures shall be made available to the Overseeing Organisation on request.

2 Arrangements for 'receiving' and 'in-process' testing.

3 Control of test laboratories.

4 Control of test, measuring and inspection equipment.

5 Document control.

6 Procedure for monitoring and recording the inspection, test and approval status of the constructed/installed work.

7 Procedures for tests and inspections for the purpose of the Contractor certifying that prior to covering up, each part of the Works is complete and conforms to the Contract.

8 Procedure for the review of work submitted for review but not accepted as conforming to the Contract.

9 (11/03) Procedure for the collation of quality records as identified in BS EN ISO 9001 and provision of copies when requested by the Overseeing Organisation.

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GUIDANCE NOTES

Numbers cross refer

2 (11/03) *An annotated chart is an effective means of illustrating the organisation structure.*

This must address all activities, including those sublet. Names of any subcontractors and organisations involved in the production shall be provided.

3 (11/03) *It is important for the Overseeing Organization to be aware of the Organisation's quality control procedures, in order to decide on its own level of inspection and testing.*

4 (11/03) *The Organizations shall provide evidence that the training and experience requirements given in the appropriate Quality Assessment Schedule are being met. CVs may be appropriate.*

6 *Each piece or bundle of delivered product shall be indelibly marked and where appropriate, the lot identification shall be included on each package.*

7 *Instructions for repair of damaged products may be needed.*

8 *These shall include documents to demonstrate the achievement of the requirement standard, e.g. site logs, records of visits, records of verification, review and release, certificates of conformity and records of all design modifications to products and specifications.*

(11/03) ORGANISATIONS' QUALITY PLANS

The Quality Plan shall include:

1 Definition of the product or service to be provided.

2 (11/04) The organization organogram shall describe the line of command and stating the name of the senior manager responsible for the contracted Work and the name of the Organization's on-site Management representative. Contact addresses, telephone numbers etc shall be provided.

3 * (11/03) Identification of the relevant parts of the Organization's quality system relevant to the product or service being provided. (Copies to be provided to the Overseeing Organisation on request).

4 The control of personnel selection (at works and on site), including special requirements for skilled personnel e.g. certification of welders, training of operatives, experience requirements etc.

Specific procedures for the following:

5 *Receipt and examination of certificates of conformity and test results for purchased products.

6 *Product identification and traceability.

7 *Handling, storage, packaging and delivery to site and storage and handling on Site.

8 Quality records,

Items marked * where available and appropriate, copies of the Organization's quality system/general procedures may be acceptable.

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NG SAMPLE APPENDIX 1/25: (05/01) TEMPORARY CLOSED CIRCUIT TELEVISION (CCTV) SYSTEM FOR THE MONITORING OF TRAFFIC

[Note to compiler; Where this system is required the following details should be inserted and extended where necessary:]

1 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) Details of dedicated link to Police Control Office.

NG SAMPLE APPENDIX 1/26: (05/01) TEMPORARY AUTOMATIC SPEED CAMERA SYSTEM FOR THE ENFORCEMENT OF MANDATORY SPEED LIMITS AT ROADWORKS (TASCAR)

General

1 The Contractor shall supply, install, maintain in conjunction with the Chief Officer of Police and remove on completion the Temporary Automatic Speed Camera System for the Enforcement of Mandatory Speed Limits at Roadworks (TASCAR) as described in this Appendix and in Appendix 1/27. Wherever 'the Chief Officer of Police' occurs in this Appendix it shall be construed to refer to the Chief Officer of Police named in Appendix 1/27 The Contractor shall ensure that the System is completely installed and fully operational from the time defined in Appendix 1/27 and that it remains in operation for the duration of the Contract unless otherwise specified in Appendix 1/27.

2 The TASCAR equipment shall consist of a detection and measuring device, camera/image recording device, flash (or other ancillary lighting) unit and dummy units, all of which shall be fully compatible and capable of being located in pole-mounted housings which shall themselves be capable of either fixed root or trailer mounting, all of which shall be provided as part of the Contract. If a trailer mounted system is supplied it shall be fitted with retractable de-mountable wheels. The scope shall include but not be limited to all equipment, poles, housings and power supplies. The quantities of equipment required are specified in Appendix 1/27.

3 The Contractor shall arrange for the provision of a 240v AC single-phase mains electrical supply of adequate power capacity to all components of the system. Alternatively, he may provide an equivalent supply from a local electrical generator or generators which shall be used only for this purpose. Such generator(s) shall have electric start mechanisms and be adequately regulated as to voltage and frequency to suit the accuracy requirements of the equipment provided for TASCAR and be capable of running constantly for 48 hours without refuelling at an output of not less than 16.0 kVA at 0.8 power factor, or equivalent output. All generators shall be housed in vandal-proof containers and be securely locked. One set of keys shall be provided to the Overseeing Organisation for them to provide to the Chief Officer of Police.

4 As a prescribed device under the provisions of the Road Traffic Act 1991, all equipment shall conform as a minimum to the requirements of the Home Office "The Speedmeter Handbook" (Second Edition) issued by the Police Scientific Development Branch (PSDB), Publication No 27/92, and have received 'type approval' from the Secretary of State at the Home Office. All equipment shall be so maintained by the Contractor throughout the period that the TASCAR is required to be provided, as specified in Appendix 1/27.

5 The number of monitoring sites required for this Contract is specified in Appendix 1/27. All equipment necessary to bring the sites into operation shall be provided by the Contractor.

6 All electrical connections shall be easily disconnected and reconnected without the use of tools. All male plugs/ports shall be provided on the transportable equipment and all female plugs/ports shall be provided on the static equipment.

7 The Contractor shall be responsible for the design of the System which shall be approved by the Overseeing Organisation and the Chief Officer of Police before installation commences. The Contractor shall contact the Chief Officer of Police to determine the full design and operating requirements to enable his design to be equivalent to and compatible with the system of the Chief Officer of Police.

Camera and Control Unit

8 The camera and control unit shall be designed so that it is portable and easily transferable between housings. They shall be capable of operating both on a 240v AC single-phase mains supply and on a nominal 12v DC supply, at the choice of the operator.

9 The camera and control unit shall be designed such that they can be accurately positioned and firmly located within the housing. The camera mounting shall be designed so that the operator can only mount the camera in a previously calibrated position.

10 The camera unit shall be capable of taking either one or two colour photographs per offence with the operator having the facility to select the required option. If selecting the 'two photograph' option, the operator shall also have the facility to vary the interval between frames in 0.1 second steps, within the range 0.5 seconds to 1.0 seconds.

11 A video camera unit, if supplied, shall have the facility of producing one, or two or more, colour images per offence at a displayed fixed interval apart, one of which may be selected by the operator. The operator shall also have the facility to vary the interval between recorded images in 0.1 second steps within the range 0.5 seconds to 1.0 seconds.

[Compiler: This paragraph and paragraphs 13, 27 and 28 may be omitted if so agreed with the Chief Officer of Police. If this is done put instead "11 Not used." otherwise all the paragraphs will require renumbering and cross-references will need careful amendment and checking.]

12 The camera shall be so designed that the image of the target vehicle will be shown in the context of its surroundings while the registration number of the captured vehicle will also be legible in its context, in all but exceptionally adverse lighting and weather conditions. eg. a minimum resolution of 10 pixels per character in the case of a video image.

13 A video camera unit, if supplied, shall have a first stage storage medium from which it will be possible to recover a complete image not less than 24 months later without deterioration of the said image.

[Compiler: This paragraph and paragraphs 11, 27 and 28 may be omitted if so agreed with the Chief Officer of Police. If this is done put instead "13 Not used." otherwise all the paragraphs will require renumbering and cross-references will need careful amendment and checking]

14 The camera unit shall use colour film of the specification, including type and speed, which shall have been approved in writing by the Chief Officer of Police, which approval will be copied to the Overseeing Organisation. The camera shall have automatic exposure control and be adjustable for film speeds in the range of not less than 21-27 DIN (100-400 ASA). Each film shall be capable of recording 800 frames. The quantity and supplier of film shall be as specified in Appendix 1/27. The Chief Officer of Police will arrange for processing.

15 Each camera unit shall be fitted with a magazine that is capable of containing and operating with a roll of film 30 metres or less in length. Two such magazines shall be supplied with each camera.

16 Each photograph or video image of any violation shall have an information block superimposed upon it. The operator shall have the ability to introduce manuscript data into the information block. The minimum automatically recorded and displayed information for each offence shall be:

(i) Date of violation - displayed in Day, Month, Year;

(ii) Time of violation - displayed in Hours, Minutes, Seconds;

(iii) Speed of offending vehicle;

(iv) Site identification code;

(v) Offence number;

(vi) Film number;

(vii) Time interval between images.

17 If a segmented display is used, it shall only be displayed as a single image. Each element shall confirm the information block requirements of paragraph 16 above.

18 Any data collected by the camera unit shall be recorded onto a 'smart card' via a smart card reader to be supplied as part of this Contract. The format of the smart card file shall be compatible with the existing card reader interface of the Chief Officer of Police.

19 The TASCAR shall have the ability to distinguish between cars and long vehicles, with the operator being able to select an independent speed threshold for either vehicle type, within the range 13 mph - 140 mph in 1 mph steps, above which any offence will be photographed.

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20 The control unit shall be capable of recording and showing on a counter the total number of vehicles monitored and the total number of offences above an operator-specified speed threshold within the speed range specified in paragraph 19 above. Any speed measurement shall be visually displayed on the unit.

21 The system shall be self-calibrating following a single operator action. The resulting checks should show clearly if any faults are present. If a segmented display is provided there shall be a facility to check that all segments are functioning. The system shall not be capable of operation while any fault exists.

Detection Unit

22 The detection unit shall be designed so as to be portable and easily transferable between housings; it shall also be capable of both fixed and mobile operation. It shall be capable of operating both on a 240v AC single-phase mains supply and on a nominal 12v DC supply, at the choice of the operator.

23 A radar unit, if supplied, shall be designed so that it can be accurately positioned and firmly located within the housing. The radar unit mounting shall be such that the radar can only be installed by the operator in a previously determined position so that the radar will measure vehicle speeds, across the carriageway or in a specific traffic flow, at a preset angle. If a trailer mounting is being supplied then a sighting device shall also be provided.

24 The radar frequency shall be 24.1 GHZ ± 25 MHz.

25 The detector unit shall be capable of undertaking not less than 2 measurements per second.

26 If radar is proposed as the detection/measuring device, the operator shall have the facility to select receding or approaching vehicles for monitoring.

27 The Contractor may submit for consideration full technical and operational details of any alternative 'across-the-road' or traffic flow specific system which has been type-approved in accordance with paragraph 4 above and which he proposes offering to provide as a detection/measuring device. eg. laser, piezo, inductive loop.

[Compiler: This paragraph and paragraphs 11, 13, and 28 may be omitted if so agreed with the Chief Officer of Police. If this is done put instead "27 Not used." otherwise all the paragraphs will require renumbering and cross-references will need careful amendment and checking]

28 Any detection system/measuring device using two or more inductive loops, piezo cable or similar medium shall include a facility for the operator to enter/vary the detector spacing as part of the setup procedure.

[Compiler: This paragraph and paragraphs 11, 13, and 27 may be omitted if so agreed with the Chief Officer of Police. If this is done put instead "28 Not used." otherwise all the paragraphs will require renumbering and cross-references will need careful amendment and checking]

Flash Unit or Ancillary Lighting Unit

29 A flash unit or ancillary lighting unit shall be provided for each monitoring site.

30 The flash unit or ancillary lighting unit shall be designed so as to be portable and easily transferable between housings and shall also be capable of mobile operation. It shall be capable of operating both on a 240v AC single-phase mains supply and on a nominal 12v DC supply, at the choice of the operator. Alternatively, a mobile flash or lighting unit may be supplied for operation outside the fixed housing.

31 The flash or ancillary lighting unit shall be synchronised to operate with the camera and shall be adjustable so that as a minimum there shall be a Low, Medium and High setting. The power of a flash unit shall be not less than 100 watts on the Low setting and not less than 200 watts on the High setting. The flash unit or ancillary lighting unit shall be capable of being readily switched off.

32 The flash unit shall be designed to operate at intervals of not less than 0.5 seconds.

33 The unit shall be designed so that it can be accurately and firmly positioned within the housing, and the mounting so designed that the operator can only locate the flash or ancillary lighting unit in a previously fixed position.

34 The flash or ancillary lighting unit shall be capable of manual operation, for testing purposes.

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Dummy Equipment

35 The dummy equipment shall be designed to be portable and easily transferable between housings.

36 Dummy units shall be designed so that each can be accurately and firmly located within the housing.

37 Dummy units shall operate such that they are indistinguishable from a camera unit and shall appear so unless the housing is open.

38 Dummy units shall be capable of manual operation for testing purposes.

39 Dummy units shall be capable of recording and showing on a counter the total number of vehicles monitored and the total number of offences above a threshold speed which is specified by the operator within the speed range specified in paragraph 19 above.

Street Furniture

40 The housing and pole shall be of robust construction and shall include security-locking mechanisms to prevent unauthorised access or operation. All access to any hinge mechanism, or securing bolt, shall only be via the security locks. Any security lock accessed from ground level shall itself have an additional cover which requires a further piece of equipment for removal eg. Allen key. The supplier shall provide proof that all parts exposed to the weather shall, as a minimum, comply with the requirements of IEC 529: 1976 IP Rating 555 for protection against dust and water ingress and mechanical impact.

41 The housing shall be vandal resistant. It shall be mounted on a pole at a height of not less than 2.5 metres above the verge or pavement surface. When the camera unit is mounted there shall be an unrestricted view from the camera of the section of carriageway to be monitored.

42 The housing shall be designed so that all elements of the monitoring equipment can be easily installed and removed by one person. All units shall be positively located within the housing. An optional facility to mask the flash or the ancillary lighting unit shall be available for external attachment to the housing.

43 The housings which are within the central reserve, or other locations specified in Appendix 1/27, shall be capable of being turned through 180 degrees ± 5 degrees on the supplied pole. The Contractor shall provide a pole with a suitable mechanism to enable the direction of the camera housing to be reversed to a pre-calibrated orientation into which it can be locked. The camera shall be calibrated when in each of the two differing orientations. The locating mechanism shall be such that the housing can be set and locked in not less than two positions each of which has been pre-calibrated. An automatic switching mechanism shall be provided such that electrical power shall not be available to any unit located within the housing whilst the housing is not locked into either one of these two pre-calibrated positions. When turning the housing to an alternative monitoring position, the housing shall only be capable of returning to its original position by reversing the direction of travel ie. rotational movement greater than 180 degrees shall not be possible.

44 The housing or pole shall provide facilities for the termination of all external interconnections. Any terminations not accommodated within the housing or pole shall be secured against unauthorised access or operation as required in paragraph 40 above.

45 The camera pole and its support shall comply with BE Agreed Endorsement No. 1/94 for its design and structural certification. The Contractor shall supply the Overseeing Organisation with not less than 2 no. copies of the certified drawings of the pole and its supports. It shall be of a design that provides for the housing to be lowered and accessed from ground level while maintaining its upright position and orientation relative to its operational direction such that the operator can undertake all test procedures facing the section of carriageway to be monitored.

46 Security keys shall be supplied in the ratio of one set per monitoring site. Such keys shall be of a pattern unique to the Chief Officer of Police. A minimum of 2 no. keys shall be required to gain access to the automatic speed camera system at each monitoring site. The keys shall be provided to the Overseeing Organisation for them to provide to the Chief Officer of Police. The Overseeing Organisation will maintain a record of all keys received from the Contractor, the equipment and locations to which they relate and the dates of their handing over to the Chief Officer of Police, their return by them and their handing over to the Contractor, or otherwise, at the Completion of the Contract.

Installation

47 The Contractor shall install the equipment required under this Appendix and Appendix 1/27 at the monitoring locations specified in Appendix 1/27 and in accordance with any particular installation requirements in Appendix 1/27.

48 The Contractor shall install the poles in the individual monitoring locations within highway limits as instructed by the Overseeing Organisation and shall carry out reinstatement of the surface as directed by, and to the satisfaction of, the Overseeing Organisation and as specified in Appendix 1/27.

49 The Contractor shall attach the housings to the poles in the positions specified and shall install, connect and commission the remainder of the equipment as required.

50 All cables and cores shall be clearly identified at every termination point or jointing. Identification shall comply with TCSU 1 Section 5.

51 Any ducting, loop or peizo installation shall be carried out to the following Specifications:

[compiler: List of specifications should be obtained from the Overseeing Organisation]

Reusable joints shall be used between loop tails and feeder cables.

Commissioning and Acceptance

52 The Contractor shall be responsible for the commissioning of the TASCAR as a whole, including secondary checks and the calibration of each piece of equipment, including ensuring its correct operation. As part of this, the Contractor shall provide a secondary method of confirming the speed calculation of the equipment provided as shown on the Contract Drawing specified in Appendix 1/27. This method shall be approved by PSDB and involve a different principle which shall be used to verify the primary speed measurement.

53 The commissioning of the TASCAR shall be carried out by the supplier of the System in the presence of, and for acceptance by, the Chief Officer of Police and shall be in accordance with any particular requirements in Appendix 1/27. The Contractor shall give the Overseeing Organisation not less than 4 days clear notice of his intention to carry out this work, to allow for a designated representative of the Chief Officer of Police to attend. Commissioning certificates shall be provided to the Overseeing Organisation and shall include one pair of photographs or video images for acceptance by the Chief Officer of Police as part of the commissioning and acceptance procedure of the System.

Operation and Maintenance

54 The TASCAR operator will be the Chief Officer of Police and his delegated officers. Once the TASCAR has been commissioned, the repositioning of the monitoring equipment between the housings will be the responsibility of the Chief Officer of Police as operator. He will also be responsible for the loading and unloading of the film and for locating and relocating the trailer unit, if supplied. The Contractor shall furnish whatever assistance is requested by the Chief Officer of Police through the Overseeing Organisation to carry out these tasks

55 The Contractor shall provide the Overseeing Organisation with a log showing the locations of all the speed limit and repeater signs relative to existing marker posts. A repeater sign shall be positioned such that one is visible in each photograph.

56 The Contractor and his supplier shall maintain the System as specified in paragraphs 1 and 4 above and in Appendix 1/27.

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NG SAMPLE APPENDIX 1/27: (05/01) TEMPORARY AUTOMATIC SPEED CAMERA SYSTEM FOR THE ENFORCEMENT OF MANDATORY SPEED LIMITS AT ROADWORKS (TASCAR) -

PARTICULAR REQUIREMENTS

Scope - Locations and Quantities

1 The number of monitoring sites required for the TASCAR on this Contract is … no. The following ancillary equipment is therefore required:

Number of fixed housings	… no.
Number of camera units	… no.
Number of dummy units	… no.
Number of trailer-mounted housings	… no.

2 The Contractor shall supply install and maintain and remove on completion the TASCAR specified in Appendix 1/26 and in this Appendix at the following locations within the Works as shown on Contract Drawing number ....……..... :

Northbound verge	Chainage …... Chainage ……
Southbound verge	Chainage …… Chainage ……
Central Reserve (CR)	Chainage …… Chainage ……

3 Parts of the TASCAR which are located within the central reserve will be rotated through 180 degrees at some point during the Works to observe the traffic flows being reversed together with any calibration etc.

Chief Officer of Police

4 The Chief Officer of Police in Appendix 1/26 is the Chief Officer of Police for **.....** *[give name of police district eg. the County of South Yorkshire, the Metropolitan Police District, Northern Ireland, etc]*.

Provision of Film

5 If cameras are supplied, the film specified in Appendix 1/26 *[will be provided by the Chief Officer of Police] [shall be supplied by the Contractor]* at the rate of one film per day of camera operation, plus ten which shall be supplied at the commencement.

Installation, Commissioning and Period of Operation

6 The secondary method of confirming the speed calculation of the equipment provided, which is required in Appendix 1/26 paragraph 52, shall be to Contract Drawing number ..... Cameras sited on the nearside of the carriageway shall be installed and commissioned prior to 24 hour lane closures being put into operation. Cameras sited in the central reserve shall be installed and commissioned not later than 12 hours after installation of the contraflow. Both sets of cameras shall then remain in continuous operation until a Certificate of Completion has been issued for the whole of the Works. At the end of the period of operation required under the Contract, the equipment shall remain the property of the Contractor.

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Reinstatement of Surfaces

7 Reinstatement of verge areas shall consist of 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.

8 (05/04) Reinstatement of paved footway areas shall consist of backfilling any holes with Type 1 unbound subbase mixture to Clause 803 and compacting adequately such that this terminates 70 mm below specified finished levels. The remaining 70 mm thickness shall be backfilled with a 50 mm thick layer of 0/20 dense macadam binder course to Clause 906 covered by 20 mm thickness of 0/6 size dense macadam surface course to Clause 909. The surface course shall extend not less than 150 mm beyond the hole which has been backfilled and shall be keyed into existing surfacing by its prior excavation to a depth not greater than 20 mm.

9 Reinstatement of carriageway surfaces shall include, but not be limited to, removal from the pavement surface of the secondary speed check markings specified in Appendix 1/26, paragraph 52 and in paragraph 6 above. This shall be done either on removal of the TASCAR or on completion of the Works.

NATIONAL ALTERATIONS OF THE OVERSEEING ORGANISATION OF WALES

NG 150NAW (05/01) Checking Bar Schedules

1 Clause 150NAW is to be included for all trunk road and motorway contracts over £1m in value.

NG 151NAW (05/01) Dimensional Accuracy

1 Clause 151NAW is to be included for all trunk road and motorway contracts over £1m in value.

NG 152NAW (05/01) Agreement on Measurements Involving Computer Equipment

1 Where applicable to the form of Contract being used Clause 152NAW is to be included for all trunk road and motorway contracts over £1m in value.

NATIONAL ALTERATIONS OF THE OVERSEEING ORGANISATION OF NORTHERN IRELAND

NG 110NI Information Boards

1 (05/04) The compiler should provide in 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 although planning permission is not required for trunk roads the Local Planning Authority should be informed of the proposal to erect them as a matter of courtesy. 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 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 Traffic Safety and Management

1 When major reconstruction or maintenance work is carried out on highways carrying a heavy flow of vehicles, for which the Overseeing Organisation is the highway authority, particularly where contraflow traffic management is intended or envisaged, the Contractor may be required to undertake maintenance functions on such highways within the Site. If so, this should be stated, together with a list of these functions, in 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.

2 Where contraflow traffic operation is specified by the Overseeing Organisation for which crossovers are to be designed by the Contractor full design requirements should be given in Appendix 1/17. Where crossovers are specified in 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 agree. The police should also be consulted. The Contractor will agree details of construction and maintenance with the highway authority and Clause 117 requires him to inform the Overseeing Organisation of these details. The compiler should state in Appendix 1/17 the timescale for submission and making of any statutory orders needed before work can commence.

3 If, in addition to routine maintenance functions, the Contractor is to be required when requested by a highway authority to repair accidental or wilful damage to any highway within the Site for which that authority is responsible (including any central reserve crossover specified by the Overseeing Organisation), full details should be stated in Appendix 1/17. The Overseeing Organisation should ensure that the highway authority has been consulted.

4 Legally, it is the highway authority's responsibility to maintain the highway and it is not a valid defence under Roads (Northern Ireland) Order 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.

5 (11/06) 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. In such circumstances Appendix 1/17 should clearly indicate any specific requirements. The Contractor's programme for traffic management and site access/egress should take into account the views of the police and the appropriate highway authority.

6 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. The responsibility for this should be stated in Appendix 1/17. Where the Contractor is to be responsible, the areas of highway affected by advance signs, cones and road markings should be included in Appendix 1/7 as forming part of the Site (see NG 107.2).

7 Authorisation of non-prescribed signs or temporary traffic signals should be obtained through the Overseeing Organisation giving at least 28 days' notice. (This time period can vary.) Any other requirements which are likely to be needed should be included in Appendix 1/17.

8 The compiler should state in Appendix 1/17 the timescale for the Contractor to submit his traffic management proposals. The Contractor should ensure that they comply with the Overseeing Organisation's criteria and any other specific requirements given in Appendix 1/17.

The Contractor should also ensure that necessary steps have been or are being taken to obtain any statutory orders required from the appropriate authority. Details of these orders should be stated in Appendix 1/17.

9 Appendix 1/17 should state the length of notice required for the making of orders necessitated by the Contractor's proposals, or if he wishes to vary the agreed measures.

10 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.

11 Any requirements for temporary lighting should be included by cross-reference to Appendix 14/3.

12 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.

13 The compiler should detail in 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.

(08/03) **Traffic Safety and Control Officer**

14 Where a Traffic Safety and Control Officer is required by Appendix 1/17, they 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 certificate of achievement at the Foreman's Training Course for Sector Scheme 12A. They should also have a working knowledge of Chapter 8 of the Traffic Signs Manual and other appropriate guidance documents relating to temporary traffic management.

Driver Information Signs at Roadworks

15 (08/03) Driver Information Signs are for use on roads that are the Overseeing's 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 Table 1/1.

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

(05/01) **TASCAR**

16 (08/03) 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 117.32, it is desirable to include the following in the Instructions for Tendering:

'The Contractor's attention is drawn to Specification sub-Clause 117.32 together with Appendices 1/17, 1/26 and 1/27 which require the provision and maintenance of a Temporary Automatic Speed Camera System for the Enforcement of Mandatory Speed Limits at Roadworks (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 current legislation for traffic enforcement.'

NG SAMPLE APPENDIX 1/2NI: (05/01) VEHICLES FOR THE OVERSEEING ORGANISATION

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

Type "A" 8/12 Seat Station Wagon (11/06)

The vehicle is to be suitable for off-road use, have 4 wheel drive, power steering and be supplied in a white or yellow colour. The vehicle shall be free from markings identifying any company associated with the Contract. The equipment shall include:

Fire extinguisher, heater and demister, hazard flashing unit, heavy duty suspension, 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, sign boards reading 'Road Maintenance' or where appropriate 'Motorway Maintenance' in accordance with Diagram 7404 of Schedule 12, Part V of the Traffic Signs Regulations (Northern Ireland) 1997 on the rear of the vehicle (the lettering shall be the largest x height that can be accommodated out of the following heights: 37.5, 50, 62.5, 75 or 100 mm), retroreflective red and fluorescent yellow chevrons on the rear of the vehicle and a roof mounted amber flashing light bar fitted in accordance with Section O.5 of Chapter 8 (Part 2 Operations) of the Traffic Signs Manual.

Type "B" Long Wheelbase Station Wagon

The vehicle shall be free from markings identifying any company associated with the Contract. The vehicle and equipment shall be as for Type A with the following variations:

Link mats and heater shall be supplied for the front only. The vehicle shall be adapted for CBR testing.

Type "C" Short Wheelbase Station Wagon

The vehicle and equipment is to be as type B but not adapted for CBR testing.

Type "D" 4-Door Estate Car

The vehicle shall have a carrying capacity of at least 0.25 tonne, a minimum ground clearance (unladen) of 150 mm and independent suspension.

The vehicle shall be finished in white or yellow colour and shall be free from markings identifying any company associated with the Contract. The equipment shall include:

Reversing lamp, fire extinguisher, luggage rack complete with straps suitable for carrying survey equipment, sign boards and roof mounted amber flashing light bar and red and yellow chevrons as above.

NG SAMPLE APPENDIX 1/20NI: (05/01) RECOVERY VEHICLES FOR BREAKDOWNS

SHEET 1: Information to be provided by the compiler

Requirements for Recovery Vehicle Operation

1 Recovery Vehicles to be Provided

1.1 *[Compiler: Include here details of circumstances when recovery vehicles are to be provided.]*

1.2 Heavy recovery vehicles:

(a) ... no. heavy recovery vehicle(s) shall be provided, each having a crew of at least two operatives.

(b) A heavy recovery vehicle shall comply with the following:

(i) Be a recovery vehicle with not less than three axles, capable of towing by means of an underlift a loaded 44 tonnes vehicle up a slope of 4° and shall comply with all appropriate current legislation including the Motor Vehicles (Construction and Use) Regulations (Northern Ireland) 1999. The Road Traffic (Northern Ireland) Order 1981 and the Road Traffic (Northern Ireland) Order 1995. The vehicle shall be fitted with either a 10 tonne single power winch or two power winches of not less than 8 tonnes each. All equipment shall be power-operated with SWL indicated and with operating levers/buttons clearly marked for operational use.

(ii) Be equipped with chains, wire ropes and shackles suitable for the recovery of a fully-laden 44 tonnes GVW vehicle. All chains, wire ropes and shackles shall have test certificates and/or stamped showing the SWL, be free from snags, excess stretching and wear.

(iii) Have seating for not less than two adult passengers (in addition to the recovery operatives).

(iv) Be conspicuous, for example by marking with suitable tape (not less than 125 mm wide) to sides and rear of the vehicle.

(v) The heavy recovery vehicle(s) shall be fitted with the following as a minimum requirement:

(a) 1 no. amber lightbar to comply with the Road Vehicles Lighting Regulations (Northern Ireland) 2000.

(b) 2 no. fully adjustable lights to illuminate both the sides and rear of the vehicle.

(c) 2 no. fire extinguishers (1 No. 6 kg (nett) dry powder; 1 No. 9 litre (nett) aqueous film forming foam).

(d) 1 no. 1-10 person first aid kit to include disposable surgical gloves.

(e) 2 no. 10 m 12 tonne nylon straps.

(f) 2 no. 30 m x 13 mm polypropylene rope.

(g) 1 no. 44 tonne straight tow pole.

(h) 1 no. 44 tonne cranked tow pole.

(j) 10 no. highway cones 750 mm height.

(k) 1 no. proof load tested crane.

(Overlift proof test-static 7.5 tonnes, underlift proof test-static 7.0 tonnes.)

(l) 1 no. suitable socket spanner set including AF/Metric and BA sizes.

(m) 1 no. suitable tool kit.

(n) 2 no. 12 tonne bottle jacks.

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(o) 1 no. suitable wheelbrace to fit HGVs in common use and a torque wrench.

(p) 1 pair of jump leads (24 volt).

(q) 1 no. explosion and flameproof hand lamp.

(r) 1 no. crowbar.

(s) 1 no. copper hammer.

(t) The necessary fittings for connection from the air braking system of a broken-down or accident-damaged vehicle to the air braking system of the heavy recovery vehicle.

(u) 1 no. broom and shovel.

(v) 2 no. wheel chocks of HGV size.

(w) 4 no. suitable lengths of wood block skidding.

(x) 1 no. rear lighting board incorporating 'On Tow' legend in lettering of not less than 70 mm on conspicuously coloured background to conform with the Road Vehicles Lighting Regulations (Northern Ireland) 2000. The board shall be fitted with lights, reflectors and indicators. When required the recovery vehicle index number or trade licence plate shall be fitted.

(y) 1 no. sledge hammer - 7lbs minimum.

(z) 1 no. ADR (HAZCHEM) chart.

(aa) 50 kg of dry fine sand stored in a waterproof container.

(vi) The heavy recovery vehicle(s) shall also carry as a minimum requirement:

(a) 4 no. 'D' shackles SWL 12 tonnes each.

(b) 4 no. 'D' shackles SWL 3 tonnes each.

(c) 2 no. suitable length chains SWL 12 tonnes each.

(d) 2 no. suitable length chains SWL 5 tonnes each.

(e) 2 no. suitable length chains SWL 3 tonnes each.

NOTE: All lifting chains and equipment must be fully certified by an independent competent person to comply with all current legislation. Shackles listed in (vi) (a) and (b) should be stamped with the appropriate SWL. Equivalent wire ropes may be substituted for chains listed in (vi) (c), (d) and (e).

(vii) The heavy recovery vehicle(s) shall carry, and use when necessary, equipment designed and manufactured for the purpose of locking the steering of the broken-down or accident-damaged vehicle in order to tow it safely in a reverse direction.

(viii) The heavy recovery vehicle(s) shall carry equipment to enable the recovery crew to remove the drive line or shafts of the broken-down or accident-damaged vehicle.

(ix) The heavy recovery vehicle(s) shall carry blocks with a SWL of 8 tonnes, 1 No. per winch and 2 No. on boom (crane) wires.

1.3 Light Recovery Vehicle

(a) ... no. light recovery vehicle(s) shall be provided, each having a crew of not less than one operative.

(b) A light recovery vehicle shall comply with the following:

(i) Be capable of carrying or towing, by means of an underlift, a vehicle weighing 2800kg up a slope of 4° and shall comply with all appropriate current legislation including the Motor Vehicles (Construction and Use) Regulations (Northern Ireland) 1999, The Road Traffic (Northern Ireland) Order 1981 and the Road Traffic (Northern Ireland) Order 1995.

(ii) Be capable of recovering motor cycles.

(iii) Be capable of recovering trailers (ie caravans, boat trailers, horse boxes, etc.)

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(iv) Have seating capacity for four adult passengers (in addition to the recovery operatives).

(v) Be conspicuous, for example, by marking with suitable tape (not less than 125 mm wide) to sides and rear of the vehicle.

(vi) The light recovery vehicle(s) shall be fitted with the following as a minimum requirement:

(a) 1 no. amber lightbar to comply with the Road Vehicles Lighting Regulations 2000.

(b) 2 no. fully adjustable lights to illuminate both the sides and rear of the vehicle.

(c) 2 no. fire extinguishers (1 No. 6 kg (nett) dry powder; 1 No. 9 litre (nett) aqueous film forming foam).

(d) 1 no. 1-10 person first aid kit which should include disposable surgical gloves.

(e) 1 no. 30 m x 13 mm polypropylene rope.

(f) 1 no. 6 tonne straight tow pole.

(g) 10 no. highway cones 750 mm height.

(h) 1 no. proof load tested winch and/or spectacle lift.

(j) 1 no. suitable socket set including AF/Metric and BA sizes.

(k) 1 no. suitable tool kit.

(l) 1 no. 3 tonne bottle or trolley jack.

(m) 1 no. suitable wheelbrace to fit cars and light goods vehicles in common use.

(n) 1 pair of jump leads (24 volt).

(o) 1 no. explosion and flameproof hand lamp.

(p) 1 no. crowbar.

(q) 1 no. quick change towing hitch suitable for 50 mm, 2 inch or jaw type fittings.

(r) 1 no. broom and shovel.

(s) 1 no. wheel chock of light commercial size.

(t) 2 no. suitable lengths of wood block skidding.

(u) 1 no. rear lighting board incorporating 'On Tow' legend in lettering of not less than 70 mm on conspicuously coloured background to conform with the Road Vehicles Lighting Regulations (Northern Ireland) 2000. The board shall be fitted with lights, reflectors and indicators. When required the recovery vehicle index number or trade licence plate shall be fitted.

(v) Total lift facility - 2800kg slideback deck (7.6 m minimum) or heavy duty dollies.

(w) 50 kg of dry fine sand stored in a waterproof container.

(vii) The light recovery vehicle(s) shall also carry as a minimum requirement:

(a) 4 no. 'D' shackles SWL 3 tonnes each.

(b) 2 no. suitable length wire ropes SWL 3 tonnes each.

(c) 2 no. ratchet jacks SWL 6 tonnes each, or hydraulic equivalent.

(d) 1 No. suitable towing trolley.

NOTE: All lifting ropes and equipment must be fully certified by an independent competent person to comply with all current legislation. An equivalent chain may be substituted for the wire rope listed in (vii) (b).

(viii) The light recovery vehicle(s) shall carry, and use when necessary, equipment designed and manufactured for the purpose of locking the steering of the broken-down or accident-damaged vehicle in order to tow in a reverse direction.

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2 Inspection Requirements

2.1 The vehicle

The Contractor shall ensure that all recovery vehicles are maintained in such condition that at all times the vehicles conform to the requirements of The Road Traffic (Northern Ireland) Order 1981 and The Road Traffic (Northern Ireland) Order 1995 and Regulations made thereunder, and the Road Vehicles Lighting Regulations (Northern Ireland) 2000, so as to be fit to be used on the road. Evidence of this roadworthiness shall be by successful completion of an inspection by the Freight Transport Association, conducted not less than 14 days nor more than 28 days before the vehicles are required.

If the duration of the works exceeds 6 months, the Contractor shall arrange for all recovery vehicles to be inspected by the Freight Transport Association at not less than 6 monthly intervals.

2.2 Lifting equipment

All lifting equipment shall be fully certified by an independent competent person to comply with all current legislation.

2.3 Reports

A copy of each inspection report shall be:

(a) provided for the Overseeing Organisation.

(b) kept in the recovery vehicle.

2.4 Record form

The Contractor shall submit weekly to the Overseeing Organisation duplicate record forms which log the regular checks made on each recovery vehicle. A sample form is given in Sheet 2 of this Appendix.

3 Locations for Recovery Vehicles

[Compiler: State here details of locations for recovery vehicles together with any specific requirements such as need for hardstandings.]

4 Communication System

In addition to the requirements of Appendix 1/3, the Contractor shall:

(a) provide a secondary 'back up' communications system (e.g. mobile telephone, 2-way radio link or land line) between the recovery base station(s) and all recovery vehicles, and

(b) provide an emergency telephone and line at the recovery base station(s) for the sole use of emergency calls. Where possible, the link between the recovery base station(s) and the police shall be by direct land line.

The Contractor shall be responsible for all associated equipment and payment of fees to operate the system which shall be established and fully tested prior to the start of the Works.

[Compiler: Provide here details of specific communication system requirements].

5 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.]

6 Explanatory Leaflet

The Contractor shall ensure that the recovery vehicle operatives issue leaflets to the drivers of vehicles requiring assistance, before recovery commences. These shall have been prepared in liaison with the police and in accordance with Sheet 3 of this Appendix, and have been approved by the Overseeing Organisation before issue to the recovery firm.

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7 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.]

8 Requirements for Recovery Personnel

(a) Suitability: It is the responsibility of the Contractor to ensure that all personnel involved with vehicle recovery are suitable to work with 'vulnerable' motorists.

(b) Training: The Contractor shall ensure that all personnel involved with vehicle recovery shall hold a certificate certifying successful completion of an appropriate vehicle recovery course recognised by either the Institute of the Motor Industry (IMI) or the Moor Industry Training Standards Council (MITSC). A copy of each certificate shall be provided to the Overseeing Organisation not less than 14 days before the commencement of the works.

(c) Personal Protective Equipment: In addition to the provisions identified in the Health and Safety risk assessment conducted by the Contractor, the following items will be provided for each crew member of the recovery vehicle:

(i) (05/06) Safety Helmet to BS EN 397 with chin strap where considered apporpriate;

(ii) (05/06) A high visibility reflective safety jacket which prominently displays the work "RECOVERY" on the front and back. It shall conform to BS EN 471 and the specific requirements of sub-Clause 117.18;

(iii) (05/06) Safety boots with steel reinforced toecaps and midsole conforming to BS EN ISO 20345;

(iv) (05/06) Protective gloves conforming to BS EN 388; and

(vi) (05/06) Protective goggles conforming to BS EN 166.

Note: All Personal Protective Equipment should be stored and maintained in good, clean condition.

(d) Identification: The Contractor shall ensure that all personnel involved with vehicle recovery are issued with the following:

(i) An identity card which incorporates the name of the recovery contractor (or the Contractor), and the name and a photograph of the holder. This card must be available for inspection at all times and a copy must be submitted to the Overseeing Organisation prior to the commencement of the operative working.

(ii) A reflective Safety Garment (referred to in (c) (ii) above) which prominently displays the Contractor's name.

(e) Working hours:

[Compiler: Include maximum hours to be worked by recovery operatives: (For example, 12 hours on duty with the provision that no work should be undertaken in the following 12 hour period).]

9 Record Form

The Contractor shall submit weekly to the Overseeing Organisation completed duplicate record forms which log the assistance given by the recovery vehicle and their operatives. Sample forms are given in Sheet 4 of this Appendix.

NG SAMPLE APPENDIX 1/20NI: (05/01) RECOVERY VEHICLES FOR BREAKDOWNS

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

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NG APPENDIX 1/20NI: (05/01) 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 Department for Regional Development, Roads Service for issue to drivers of broken-down and accident-damaged motor vehicles within the above works.

Leaflet to be distributed by recovery vehicle operatives of the appointed recovery firm on behalf of the Department for Regional Development, Roads Service.

1. The roadworks operations commence at the "Roadworks Ahead - 2 miles" sign and end at the "Roadworks 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 to ……unless 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.

   A list of local garages is given below:

   ……

   ……...

   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.

   (3) The telephone number should be agreed with the police prior to the commencement of the Works.]

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NG SAMPLE APPENDIX 1/20NI: (05/01) RECOVERY VEHICLES FOR BREAKDOWNS

SHEET 4: Information to be provided by the Contractor

LAYOUT FOR 'VEHICLE RECOVERY LOGSHEET'

VEHICLE RECOVERY LOGSHEET (1 of 2) [Scheme name]				Recovery Vehicle: ……							Week Ending: ……			Sheet No: ……..			
Date	Time			Where?	Dir.	Lanes Closed					Police etc	Incident Present*		Recovery	Vehicle	Q'ing	Weather	Road Surface Type #		Remarks
	Call Out	Arrival at Scene	Road Clear	Marker Post No.		HS	1	2	3	4		Acc	B/d	Tow? ** Y/N		Y/N		Dry	Wet	

*P - Police **Y - Tow/Lift#C - Car M/C - Motorcycle
F - Fire Service R - Restart V - Van
A - Ambulance F - False Call HGV - Heavy Goods Vehicle

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NG SAMPLE APPENDIX 1/20NI: (05/01) RECOVERY VEHICLES FOR BREAKDOWNS

SHEET 4 (continued)

VEHICLE RECOVERY LOGSHEET (2 of 2) [Scheme name]	Recovery Vehicle: ……..…….	Week Ending: ……/……/……	Sheet No: ……

Date & Time	Type of Vehicle	Registration No.	Name and Address of Driver or Firm	Location of Breakdown	Nature of Breakdown	Recovery Operator's Name

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