SERIES NG 1200
TRAFFIC SIGNS

Contents

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

Wales

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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TRAFFIC SIGNS

#NG 1200 General

1 (08/03) The Series 1200 covers all traffic signs including permanent, prescribed temporary and temporary. It draws on BS 873 for the majority of its requirements but also other sources including The Traffic Signs Regulations and General Directions (Statutory Instrument 2002 No. 3113). For illuminated signs and traffic signals it utilises the 'electrical work' aspects of Series 1400.

2 Advice on the above and other matters is available from the Design Manual for Roads and Bridges (DMRB).

NG 1201 Regulations, Sign Classification and Standards

1 The Contractor's proposals for temporary traffic signs (including haul route signals) should be discussed with the police and the appropriate highway authority. The agreed proposals should be forwarded to the Overseeing Organisation for statutory authorisation and approval.

2 (05/01) The Contractor's proposals for traffic signal and control equipment, variable message signs and retroreflecting road studs will include details of any statutory type approval previously obtained by the manufacturer. Confirmation should be obtained from the Overseeing Organisation that such approval covers the intended use. Where this is not the case, the Contractor will need to apply to the Overseeing Organisation for statutory type approval.

3 The information to be given in Appendix 12/1 for prescribed temporary signs should be the same as that for permanent signs. Where a sign is to be erected for less than 6 months, it may be considered to be a fixed short life sign as described in sub-Clause 1216.3. Appendix 12/1 should state those signs which are to be fixed short life signs.

4 Checks should be made that current legal requirements in respect of the following as appropriate, have been met before a traffic sign is installed:

i) Statutory authorisation.

ii) Statutory approval of location.

iii) Statutory type approval.

Advice on current legal requirements can be obtained from the Overseeing Organisation.

NG 1202 General Requirements for Permanent Traffic Signs

1 Appendix 12/1 should include a Schedule of Traffic Signs containing the details listed in sample Appendix 12/1 and should also contain all the other information required to supplement the Specification Clauses which state 'as described in Appendix 12/...'. This other information may be shown on fully detailed drawings cross-referenced from the relevant Appendix.

2 (05/01) The legend layout should be determined in accordance with the Traffic Signs Manual, Chapter 7: Design of Traffic Signs and therefrom the sizes of sign faces, adding on extra area for light-spill screens, where required. From this information the actual sizes of sign posts and foundations are to be determined.

3 Unless there are scheme specific requirements the Contractor should have freedom to adopt the type of sign plate (eg. sheet aluminium, or extruded aluminium or fabricated planks) and should determine the stiffening and framing, if any, for the plate he adopts, so as to meet the 'mechanical properties and construction' requirements of Parts 5 and 6 of BS 873 as if it were to be tested in accordance with Part 1.

4 Impact Category 1 of BS 873 : Part 5 should normally be specified unless the sign panels are so located that the likelihood of damage by vandals is remote.

5 Category 2 luminances to comply with BS 873 : Part 5 are suitable for locations with a high background luminance such as those described in BS 873 : Part 5, and are achieved by internally illuminated signs.

6 It is not intended that the tests in BS 873 shall be carried out on each sign as BS 873 implies but that each sign shall be capable of passing the tests therein.

7 Assessment of the Contractor's fabrication drawings for approval should ensure that where dissimilar metals are used they are separated by electrical insulators.

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NG 1203 Foundations for Permanent Traffic Signs and Signals

1 It has been assumed that all traffic signs and signals will have a concrete foundation. However where it is considered a sign can be founded purely in the soil this should be specified in Appendix 12/1.

2 The design of concrete foundations should be prepared adopting the advice given in NG 2602 utilising the wind loading described in BS 873 : Part 1.

3 The foundations for free-standing luminaires should be designed to the same standards as those for sign posts, allowing for the size of luminaires likely to be adopted.

NG 1204 Posts for Permanent Traffic Signs

1 The number, type, size, protective finish and material of posts should be determined to satisfy the structural requirements of BS 873 : Parts 6 and 7.

2 Information is available from the Overseeing Organisation covering the design of posts using steel circular and rectangular hollow sections and reinforced or prestressed concrete.

3 The requirements for 'large' or 'small integral' base housings or a separately attached 'root box', or a 'switch box' to accommodate electrical equipment should be described in Appendix 12/1.

#NG 1206 Faces for Permanent Traffic Signs

1 Full details of the legend layout for faces of Contract-specific traffic signs (eg. directional informatory and informatory) should be shown on fully detailed drawings listed in Appendix 12/1.

2 Legend layout of faces of non-prescribed traffic signs that have been authorised by the Secretary of State should also be fully detailed on drawings listed in Appendix 12/1.

3 Other traffic signs which have standard symbols and markings (with permitted variants) need not be drawn in detail. These signs are shown in the Traffic Signs Regulations and General Directions or in Working Drawings for Traffic Sign Design and Manufacture (3 volumes, The Stationery Office). The diagram number and where necessary the required permitted variant and the overall size of the sign or where no size is given, the x height of lettering required should be included in Appendix 12/1.

4 The standard of reflectivity and whether the sign is to be internally or externally lit, retroreflective or non-retroreflective should be specified in Appendix 12/1 for each permanent traffic sign.

5 (08/03) Guidance on the use of variable message signs on all-purpose and motorway trunk roads is given in Advice Note TA 60 (DMRB 8.2) and Standard TD 33 (DMRB 8.2).

6 When using overlay material (ECOF-Electro Cutable Overlay Film) to manufacture the sign, face overlaps are not used. Manufacturers' recommendations should be followed for all face materials.

NG 1207 Construction and Assembly of Permanent Traffic Signs

1 When it is proposed to fit signs to new lighting columns the technical approval procedures should prove relatively simple. If many signs are to be added to existing columns it is likely that several different combinations of column and luminaire will be involved. Where the effects on the column are small an overall technical approval procedure may be considered. In all cases where the columns are over 5 years old the possibility of reduced strength due to corrosion should be considered. A site inspection of the condition, particularly at ground level, should be carried out and allowance made for any loss of material.

When considering the possibility of drilling holes in lighting columns the effect of the holes both on the strength and fatigue resistance of the column should be considered.

2 Puncturing of the sign face material for the purpose of affixing stiffening is not permitted.

3 Puncturing of the sign face material is permitted in accordance with sub-Clause 1207.12 for purposes other than affixing stiffeners. This includes the provision of holes for affixing temporary and permanent cover plates.

NG 1212 (05/01) Road Markings

Permanent Road Markings

1 Advice on the type and dimension and the location and layout of road markings within the highway cross section can be found in the Design Manual for Roads and Bridges, the Traffic Signs Regulations and the Traffic Signs Manual.

2 It should be stated in Appendix 12/3 (cross-referring to the appropriate Drawing) where and whether thermoplastic, paint or preformed road markings or other special materials are required and, if thermoplastic, whether it should be screed, extrusion, profiled, preformed or spray applied. If a special material is required, full specification requirements should be included in Appendix 12/3.

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3 Thermoplastic material, whether screed, extrusion, profiled, preformed, or spray applied is recommended for use on all types of roads particularly those that carry a heavy flow of vehicles and at locations which are subject to turning movements.

4 Road marking paints are best used in situations where they are not subject to heavy traffic wear or are required as temporary markings, or for the maintenance of existing edge lines.

5 The following additional information should be stated in Appendix 12/3:

(i) Whether a tack coat is to be used. Generally a tack coat is only required on concrete or on some old, polished surfaces.

(ii) Whether white or yellow colour required. The acceptable alternative shades from BS 381C are Primrose and Deep Cream which are equivalent to Class Y1 in BS EN 1436, and Canary Yellow and Lemon which are equivalent to Class Y2.

(iii) (08/03) Whether the material should be reflectorised, i.e. contain and be surface dressed with spherical glass beads. All road markings on motorways are to be reflectorised. The need for reflectorisation of road markings on other trunk roads and on side roads forming part of the Works should be determined in accordance with Regulation 31 of The Traffic Signs Regulations and General Directions 2002, or the Traffic Signs Regulations (Northern Ireland) 1997 as appropriate, and where appropriate the Traffic Signs Manual, Chapter 5. Appendix 12/3 should state that all temporary road markings shall be reflectorised.

(iv) (08/03) Whether raised rib edge lines are required. These should be provided on motorways with full hard shoulders. (Approval for the use of these on all-purpose roads must be obtained from the Overseeing Organisation who will provide the appropriate advice.) Further advice on appropriate horizontal geometry is given in Chapter 5 of the Traffic Signs Manual.

(v) Where drainage gaps are required in raised rib road markings. These are usually 25 mm to 50 mm at irregular intervals where ponding is expected, to promote free surface water drainage.

(vi) Whether there is a requirement for improved visibility for wet night conditions.

(vii) (08/03) The spacing of the transverse raised ribs where Regulation 32 permits alternatives.

6 Class S3 Skid resistance to Table 7 of BS EN 1436 should be specified for road markings at potentially hazardous locations, eg. where braking or turning is likely to occur on large areas of road surface covered by the road marking materials.

7 (11/07) Functional life of a road marking is defined in BS EN 1436 as "Period during which the road marking fulfils all the requirements initially specified by the responsible road authority". Among other factors it is also dependent upon traffic volumes and location of road markings.

This is particularly critical in respect to retroreflectivity. As surface applied glass beads are worn away the in-situ readings may likely to be below that specified until the in-mix glass beads become exposed by gradual traffic wheel-overs. All glass beads shall be accompanied by a test certificate to show that the beads have been tested by a UKAS accredited laboratory to conform to a level of not more than 1,000 ppm of Arsenic trioxide, 200 ppm of Lead and 1,000 ppm of Antimony. One certificate per contract and/or per specific source of supply should be required. Better guidance will be given by early 2008 as indicated in CHE Memo 197/07.

Glass beads eroded out of road markings find their way into water courses and subsequently reach water supply works. Increasing levels of heavy metals are infiltrating all ecosystems giving rise to concern. Although most glass manufacturing is believed to be to a safe standard, some manufacturers still rely on the addition of Arsenic and other metal to ensure clarity of the glass and control bubbles. Consequently maximum levels of Arsenic, Lead and Antimony have been set as a precaution. These levels are consistent with the EU Hazardous Waste Directive and the latest thinking from a European Standards Task Group.

Though the road trial procedures are specified to P5 Roll-over class in BS EN 1824, the manufacturers should be able to demonstrate that their material formulae will comply with the specification requirements prior to works commencing.

8 For the relevant luminance factors of white and yellow road markings see Table 5 of BS EN 1436 and for corner points of chromaticity for white and yellow road markings see Table 6 of BS EN 1436 and Table 1 of BS 381C.

Temporary Road Markings

9 (05/01) Permanent road marking material should not normally be permitted for temporary road markings on

carriageways which form part of the Permanent Works. Instead, one of the removable materials now available should be adopted but the limitations referred to in 11 below, as to their use, should be considered. Appendix 12/3 should state that all temporary road markings shall be reflectorised.

10 (08/03) Where there is a requirement to remove or cover existing road markings at road works, Appendix 12/3 should specify, according to site conditions, either permanent removal or the use of a black masking material. If the black masking materials are required to be removable, they should be constructed from a proprietary preformed black masking material.

11 (05/01) Appendix 12/3 should include the limitations as to where only certain of the removable materials will be acceptable. For example materials which are only available in 100 mm and 150 mm wide strips should not be used to form warning arrows, etc. Others should not be used on particularly rigours surfaces such as a surfaced dressed finish or a worn open textured finish. Further information may be obtained from the Overseeing Organisation and from BS EN 1790.

(08/03) **Removal Methods of Road Markings**

12 The main removal methods that are detailed below, with minor modifications, have been abstracted from the Highways Agency's publication 'Temporary Road Markings: Working Group Findings, dated March 2003 may be used as guidance.

(i) **Hot Compressed Air (H.C.A.) Lance**

This equipment works by using hot compressed air to vaporise the road marking. A flame is not used and the marking is not burnt off, and it is regarded as a mechanical method of removal. The temperatures involved are likely to cause damage to the road surface and for this reason it is inappropriate for use on thin bituminous surfaces. Noise, smoke, and fumes are also important issues that need consideration. The H.C.A. lance operates at a relatively high noise level (120 dba) and its appropriateness close to other site operations and urban areas must be therefore be assessed. The vaporised thermoplastic can cause clouds of smoke which will affect drivers' visibility and, although not toxic, may be a health and safety issue.

(ii) **Mechanical Scabbling**

Mechanical scabbling grinds the marking from the surface, but total removal is not possible without damaging the surface. Small amounts of marking are left in the voids of the surface and this has to be masked or removed by other methods. The main use of mechanical scabbling is for removing the bulk of markings and the removal of raised ribline markings which are exceptionally thick. This method produces large amounts of debris that must be cleaned up quickly to avoid the thermoplastic particles re-adhering to the surface. The equipment is also relatively noisy and operates at 90 dba, but can peak to 104 dba.

(iii) **Forced Air Abrasive (Shot Blasting)**

Abrasive particles are projected by high pressure air at the road marking. The particles abrade the road marking from the road surface. This method leaves very little scarring as heat is not generated during the process but some polishing of the aggregate is likely. Total removal of road markings from porous/thin layer surfaces can only be undertaken with this process. The equipment is relatively noisy and operates at 105 dba. If this method is specified the time factor must be considered because removal of road markings by shot blasting is very slow.

Consideration must be given to the environmental effects of the discarded abrasive material used during the removal process, especially in water courses. Captive shot blasting can be considered but the binder that is recycled with the abrasive material tends to clog the machinery.

(iv) **Mechanical/hand chipping**

This method is only suitable for removing temporary studs and tape.

(v) **New developments**

New methods of removing markings are being developed. One that is commercially available is a method of forced air particle removal that employs dry ice as an abrasive particle. The dry ice vaporises during the removal process leaving very little debris. Another new system uses a heated mixture of sand and water applied at low pressure to remove markings. The developer claims that the removal process yields a relatively small amount of damp residue that can be swept up for later disposal.

Table NG 12/1 hereafter provides a summary of the above methods.

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Table NG 12/1: Removal of Road Markings

	Minimising damage to:			Speed of removal of:			
Method	**HRA Surface**	**Thin Surface**	**Low Noise/ Fumes**	**Thermoplastic**	**Paint**	**Studs: Hot-melt, Self Adhesive**	**Temporary Tape**
Hot compressed air (HCA) lance	***	*	*	***	*	N/A	N/A
Mechanical scabbling	**** Note A	*** Note A	***	***** Note A	* Note B	N/A	N/A
Forced air abrasive	**** Note C	**** Note C	**	*	*	N/A	N/A
Hand "chipping"/ picking	*****	*****	*****	*	N/A	**	**
Mechanical	****	****	****	N/A	N/A	****	***

Key:

***** High/Good
**** Above average
*** Average
** Below average
* Low/Poor

Note A Removal of markings by mechanical scabbling can only be done to the point of damage of the surface. Total removal is not possible without some surface damage.

Note B Paint does not have any "bulk" to it so removal by mechanical scabbling cannot be undertaken.

Note C Polishing of the road surface occurs.

NG 1213 (05/01) Road Studs

Retroreflecting Road Studs

1 (08/03) The HCD show typical positions of permanent retroreflecting road studs on motorways. Regulation 31 of The Traffic Signs Regulations and General Directions 2002, or The Traffic Signs Regulations (Northern Ireland) 1997 as appropriate, together with, where appropriate, the Traffic Signs Manual Chapter 5 should be consulted for the application and spacing on all other roads.

2 Appendix 12/3 should list those locations where retroreflecting and non-retroreflecting road studs are to be used, together with any other requirements.

3 Retroreflecting road studs and components should not be installed by any method other than that recommended by the manufacturer and approved by the Overseeing Organisation. Full compliance with these installation instructions is essential.

4 Temporary retroreflecting road studs are special studs designed to be effective for a minimum of 3 months. After this period their colour may deteriorate and compliance with the photometric and colorimetric values may be outside the set limits. If the period of installation is expected to be much in excess of 3 months the temporary studs should be examined and renewed as necessary or permanent retroreflecting road studs may be used with the Overseeing Organisation's approval, depending on the total expected duration and Site conditions of the Works. Further information on permanent and temporary reflecting road studs may be obtained from the Overseeing Organisation.

NG 1214 Traffic Cones, Traffic Cylinders, Flat Traffic Delineators and Other Traffic Delineators

1 For permanent cones, cylinders, FTDs and other delineators Appendix 12/4 should state whether testing of samples selected from the batch to be supplied under the Contract is required.

2 Where testing of permanent cones, cylinders, FTDs and other delineators is to be carried out it is recommended that not less than 1 item in 500 should be selected at random for testing. However, the minimum number to be tested should be determined by the numbers required for a single test; for example, for a single test to BS 873 : Part 1, two samples of cones and four samples of cylinders are required. For FTDs it may only be necessary to have extra samples of the blades. The requirements should be listed in Appendix 12/4 and cross-referenced in Appendix 1/5.

NG 1216 (05/01) Temporary Traffic Signs

1 The term temporary in the context of the Contract includes signs known as portable in BS 873 : Part 2 and fixed short life signs of Chapter 8 of the Traffic Signs Manual.

NG 1217 Traffic Signs

General

1 (08/03) Information on the installation and maintenance of permanent traffic signals together with technical advice, is available from the Overseeing Organisation. It should be noted that BS 505: 1971 (AMD 1990, 1976) has been superseded by BS EN 12368:2000 (sub-Clause 1217.3 refers). However, the Traffic Signs Regulations and General Directions 2002 (issued January 2003) require UK traffic signals to meet the UK performance class selected from BS EN 12368. The Regulations make no requirement for UK signal heads to be Type Approved.

Although BS EN 12368 has been issued, there is no ZA Annexe identifying the conformity assessment requirements, thus the 'CE' marking process cannot be used for declaring conformity to this standard.

Until such time that a ZA Annexe is produced, suppliers are encouraged to obtain evidence of attestation of conformity by the use of notified bodies responsible for Third Party execution of Initial Type Testing within the framework of the Construction Products Directive. Alternatively, this evidence may be provided by a Third Party mutually recognised by the United Kingdom Accreditation service (UKAS).

2 The installation and commissioning of traffic signal controllers is a task calling for specialist skills and experience in this type of work. It should be established that any sub-contractor proposed has the necessary skills and experience.

Provision of Controllers

3 A minimum of four spare cores should be specified in cabling between each post and the controller. All cables should be marked or tagged at each end and at each intermediate joint or connection so as to identify the function of each cable clearly in the phasing sequence. The method of marking should be specified in Appendix 12/5.

4 All cables within the controller/signal installation should be specified to be of adequate size and rating to meet the electrical current requirements and electrical protection system, increased if necessary to ensure there is no voltage drop on longer cable lengths, eg. extensions to mast arm or bracket assemblies.

5 Low voltage and extra low voltage cables should be designed to be kept separate and not used in the same multi-core cable.

6 The minimum requirements for the location of all traffic signal equipment should be included in Appendix 12/5. The position of the controller cabinet, all posts, signal heads and push button equipment, interconnecting ducts and cable requirements, loop detector locations and the mode of operation for the signal control cycle should be included on a Drawing to a scale of 1:500 identified in Appendix 12/5.

7 The cable core to function allocation for all cables should be specified in Appendix 12/5.

Permanent

8 The requirements for permanent traffic signals, including installation of loop detector cables, should be given in Appendix 12/5. This should be written for the particular installation ensuring compatibility with Series 1200 and 1400.

9 Any special requirements for servicing of the equipment once in use should be included in Appendix 12/5.

Temporary

10 If temporary haul crossings and other Site accesses joining the public highway are likely to be required the requirements for traffic signals for these or any other purposes (in addition to any requirements required under Clause 117) should be included in Appendix 12/5. The requirements for standards of operation and for maintenance of all temporary traffic

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signals (including portable traffic signals used to control alternate one way working) based on advice from the Overseeing Organisation should be included in Appendix 12/5.

NG 1218 Detector Loops

1 (05/05) The Contractor's loop installation record drawings should be complete before being submitted to the Overseeing Organisation. For all matters relating to loop installation refer to Specification MCH 1540.

2 (05/05) For guidance on all matters relating to electrical work and safety, refer to Series NG 1400.

3 (05/05) When connecting more than one loop to a detector channel in series the total loop inductance will be the sum of the inductances of the separate loop

4 (05/05) Vehicles can also be reliably detected when up to 300 m of feeder cable is connected to a loop system, therefore a length longer than 200 m may be installed provided approval has been granted by the Overseeing Organisation. Advice should be sought from the Overseeing Organisation as to whether the detectors to be used are effective for their specified use with feeders in excess of 200 m.

5 (05/05) For guidance on all matters relating to type 600 Cabinets, refer to Series 1500.

NG 1219 Controlled and Un-controlled Crossings

1 The requirements for controlled and uncontrolled crossings should be described in Appendix 12/5. The Overseeing Organisation will advise on particular equipment specifications.

2 The required type, eg. thermoplastic (screed or spray applied) or paint, for road markings related to pedestrian crossings other than on the crossing area should be stated in Appendix 12/5.

3 (05/01) For the crossing area, the required material, eg. screed applied thermoplastic or preformed plastic tiles, should also be stated in Appendix 12/5. The choice of material should be based upon traffic flows or other requirements specific to the Site.

4 (05/04) Details of pedestrian guard railing associated with pedestrian crossings should be detailed in Appendix 4/1 to comply with Clause 411.

NG 1220 Traffic Signs on Gantries

1 The requirements for traffic signs on gantries including variable message signs and matrix signals should be included, in the same way as other traffic signs in Appendix 12/1.

2 Any illumination and electrical work on or to the gantry should also be specified utilising Series 1400 supplemented with any special requirements in Appendix 14/5, cross-referring to gantry detail drawings as appropriate. Standard drawings for fabricated steel gantries which include sign supports and electrical apparatus eg. cable trays etc. are available from the Overseeing Organisation. These drawings should be adopted wherever possible. Requirements should be given in Appendix 12/6.

NG 1221 (05/01) Preparation and Finish of Metal and Other Surfaces

1 Where paint finish is required to steel traffic sign components the minimum requirements of Series 1900 should be adopted. The items to receive such treatment should be listed in Appendix 19/2 together with the paint system (chosen from the typical ones in NG 1900) and a HA/P1 sheet incorporated in Appendix 19/2 for each differently painted item. Where the Contractor offers a painted sign in compliance with BS 873 the preparation and paint system should be equivalent to the minimum requirements of Series 1900.

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Sample Appendices

[Note to compiler: Include in Appendices 12/1 to 12/6 the information listed below, referring to any drawing numbers where this information is otherwise located.]

#NG SAMPLE APPENDIX 12/1: TRAFFIC SIGNS: GENERAL

1 Schedule of Traffic Signs

(i) Location of traffic signs included in Clause #1201 other than those in Appendices 12/2 to 12/6 inclusive.

(ii) (08/03) Drawing number or diagram number in Schedules 1, 2, 3, 4, 5 or 7 of the Traffic Signs Regulations and General Directions 2002 No. 3113 and drawing numbers giving Contract-specific details.

(iii) Overall sizes of sign plates and details of any light-spill screens.

(iv) (05/01) Requirements for type of material, preparation and finish, for sign plates, posts, etc. *[For painting, cross-reference should be made to Appendix 19/2.]*

(v) Details of foundations including cable ducting, reinstatement and any requirements for anchorages and attachment systems including their loadings and torque settings.

(vi) The number, type and size of posts including details of any baseplates or flange plates.

(vii) Details of any electrical equipment compartments.

(viii) The type of sign face material including the Class of any retroreflective material.

(ix) The type of any direct illumination; whether internal or external, overhead mounted or upward pointing luminaires and whether free standing on separate foundations. Also the luminance and impact categories of the signs and luminaires.

(x) The method of switching the illumination *[eg. photo-electric control, time switch]*.

(xi) Whether any bollards are to be internally illuminated or reflective only.

(xii) (11/08) Temporary Traffic Signs: Add here any and all temporary traffic signs required for Temporary Automatic Speed Camera System for the Enforcement of Mandatory Speed Limits at Roadworks. See Chapter 8 – Traffic Signs Manual.

2 Additional Information (05/01)

(i) Any particular requirement for the covering of signs *[1209.1]*.

(ii) Where sign fabrication drawings are not required, and the details to be provided for warning and regulatory signs *[1202.5]*.

(iii) The number of keys required for locks to traffic sign housings *[1202.6]*.

(iv) Details of location identifying marks *[1202.7]*.

(v) Requirements for filling pockets in concrete foundations if different from the requirements of sub-Clause 1208.4.

NG SAMPLE APPENDIX 12/2: TRAFFIC SIGNS: MARKER POSTS

(i) Dimensions, and locations of distance and hazard marker posts. *[Cross-reference should be made to the HCD Series E Drawings.]*

(ii) Construction/material.

NG SAMPLE APPENDIX 12/3: (05/01) TRAFFIC SIGNS: ROAD MARKINGS AND STUDS

(i) Colour, location and material type for permanent road markings. *[Any requirements for reflectorisation and for a tack coat should also be stated as should those for raised rib edge lines.]*

(ii) Locations where gaps are required in raised rib road markings.

(iii) Locations where a skid resistance Class S3 to BS EN 1436 is required for permanent road markings.

(iv) Limitations on the use of preformed temporary road marking materials.

(v) Locations and any other requirements for reflecting and non retroreflecting road studs.

(vi) Requirements for the temporary covering of road studs and road markings.

(vii) Locations where enhanced improved night visibility retroreflective road markings are required to Class R2 to Table 2 of BS EN 1436.

(viii) Spacing of transverse raised ribs.

NG SAMPLE APPENDIX 12/4: TRAFFIC SIGNS: CONES, CYLINDERS, FTDS AND OTHER TRAFFIC DELINEATORS

(i) Types of traffic delineators other than cones and cylinders and FTDs.

(ii) The requirements, sampling rate and method of testing cones, cylinders, FTDs and other delineators *[cross-referenced in Appendix 1/5]*.

(iii) The height of FTDs *[1214.4]*.

NG SAMPLE APPENDIX 12/5: TRAFFIC SIGNS: TRAFFIC SIGNALS

1 Permanent Traffic Signals

(i) Locations for:

(a) Signal heads.
(b) Controller.
(c) Ducting of carriageway and cable crossings.
(d) Electricity supply.
(e) Detection (including control units).
(f) Posts and gantries.
(g) Cables and routes.
(h) Telecommunications carrier interface.
(i) Inspection chambers.
(j) Road markings.

(ii) Equipment:

(a) Vehicular signal heads.
(b) Pedestrian signal heads.
(c) Signal heads for cyclists.
(d) Light Rapid Transit (LRT) signal heads.
(e) Push buttons for pedestrians (including audible and tactile equipment).
(f) Additional signs.
(g) Green arrow aspects.
(h) Twin head or more with or without combinations of the above.

(iii) Operation:

(a) Phasing/staging.
(b) Timings.
(c) Special functions.
(d) Linking.

(iv) Detection:

(a) Type (Loop and above ground detection).
(b) Loop: location, configuration, size, shape, facilities.
(c) Power supply and cabling.
(d) System of cable identification.

(v) Testing:

(a) Factory.
(b) Site.

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(vi) Special road surfacing.

(vii) Locations of other services (gas, water, electricity, etc.).

(viii) Maintenance and servicing requirements.

2 Temporary Traffic Signals

Generally as for 1 above with the exclusion of:

(i) as this is liable to alteration during the progress of Works, it should state at what stages during the Works temporary traffic signals are required

(iii) (b) to (d) inclusive.

(v) (a).

(vi), and

(vii)

(viii).

Add with regard to:

(i) "a power supply may be a portable generator".

(ii) cable crossing protection.

Traffic Signs

3 Controlled Crossings

[Generally as for 1 above.]

4 Zebra Crossings

(i) Location:

(a) Road markings.

(b) Beacons.

(c) Electricity supply.

(ii) Materials:

(a) Road surfacing.

(b) Road markings.

NG SAMPLE APPENDIX 12/6: TRAFFIC SIGNS: SPECIAL SIGN REQUIREMENTS ON GANTRIES

(i) Material and constructional requirements for gantries.

(ii) Mounting details for traffic signs and sign lighting requirements.

[Electrical equipment should be described in Appendix 14/5. Traffic signs including variable message signs and matrix signals should be described in Appendix 12/1.]

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Sample Appendices

[Note to compiler: Include in Appendices 12/1 to 12/6 the information listed below, referring to any drawing numbers where this information is otherwise located.]

NG SAMPLE APPENDIX 12/1NAW: (05/01) TRAFFIC SIGNS: GENERAL

1 (05/01) **Schedule of Traffic Signs**

(i) Location of traffic signs included in Clause 1201NAW other than those in Appendices 12/2 to 12/6 inclusive.

(ii) (08/03) Drawing number or diagram number in Schedules 1, 2, 3, 4, 5 or 7 of the Traffic Signs Regulations and General Directions 2002 No. 3113 and drawing numbers giving Contract-specific details.

(iii) Overall sizes of sign plates and details of any light-spill screens.

(iv) Requirements for type of material, preparation and finish, for sign plates, posts, etc. *[For painting, cross-reference should be made to Appendix 19/2.]*

(v) Details of foundations including cable ducting, reinstatement and any requirements for anchorages and attachment systems including their loadings and torque settings.

(vi) The number, type and size of posts including details of any baseplates or flange plates.

(vii) Details of any electrical equipment compartments.

(viii) The type of sign face material including the Class of any retroreflective material.

(ix) The type of any direct illumination; whether internal or external, overhead mounted or upward pointing luminaires and whether free standing on separate foundations. Also the luminance and impact categories of the signs and luminaires.

(x) The method of switching the illumination *[eg. photo-electric control, time switch]*.

(xi) Whether any bollards are to be internally illuminated or reflective only.

(xii) (11/08) Temporary Traffic Signs: Add here any and all temporary traffic signs required for Temporary Automatic Speed Camera System for the Enforcement of Mandatory Speed Limits at Roadworks. See Chapter 8 – Traffic Signs Manual.

2 **Additional Information** (05/01)

(i) Any particular requirement for the covering of signs *[1209.1]*.

(ii) Where sign fabrication drawings are not required, and the details to be provided for warning and regulatory signs *[1202.5]*.

(iii) The number of keys required for locks to traffic sign housings *[1202.6]*.

(iv) Details of location identifying marks *[1202.7]*.

(v) Requirements for filling pockets in concrete foundations if different from the requirements of sub-Clause 1208.4.

3 **Details of bilingual sign layouts** *[1201.1NAW]*.

NATIONAL ALTERATIONS OF THE OVERSEEING ORGANISATION OF NORTHERN IRELAND

NG 1200NI General

1 The Series 1200 covers all traffic signs including permanent, prescribed temporary and temporary. It draws on BS 873 for the majority of its requirements but also other sources including The Traffic Signs Regulations (Northern Ireland) 1997. For illuminated signs and traffic signals it utilises the 'electrical work' aspects of Series 1400.

2 Advice on the above and other matters is available from the Design Manual for Road and Bridges.

NG 1206NI Faces for Permanent Traffic Signs

1 Full details of the legend layout for faces of Contract-specific traffic signs (eg. directional informatory and informatory) should be shown on fully detailed drawings listed in Appendix 12/1.

2 Legend layout of faces of non-prescribed traffic signs that have been authorised by the Secretary of State should also be fully detailed on drawings listed in Appendix 12/1.

3 Other traffic signs which have standard symbols and markings (with permitted variants) need not be drawn in detail. These signs are shown in The Traffic Signs Regulations (Northern Ireland) 1997 or in Working Drawings for Traffic Sign Design and Manufacture (3 volumes, The Stationery Office). The diagram number and where necessary the required permitted variant and the overall size of the sign or where no size is given, the x height of lettering required should be included in Appendix 12/1.

4 The standard of reflectivity and whether the sign is to be internally or externally lit, retroreflective or non-retroreflective should be specified in Appendix 12/1 for each permanent traffic sign.

5 (08/03) Guidance on the use of variable message signs on all-purpose and motorway trunk roads is given in Advice Note TA 60 (DMRB 8.2) and Standard TD 33 (DMRB 8.2).

6 When using overlay material (ECOF-Electro Cutable Overlay Film) to manufacture the sign, face overlaps are not used. Manufacturers' recommendations should be followed for all face materials.

Sample Appendices

[Note to compiler: Include in Appendices 12/1 to 12/6 the information listed below, referring to any drawing numbers where this information is otherwise located.]

NG SAMPLE APPENDIX 12/1NI: TRAFFIC SIGNS: GENERAL

1 (05/01) **Schedule of Traffic Signs**

(i) Location of traffic signs included in Clause 1201NI other than those in Appendices 12/2 to 12/6 inclusive.

(ii) Drawing number or diagram number in Schedules 1, 2, 3, 4, 5 or 7 of the Traffic Signs Regulations (Northern Ireland) 1997 and drawing numbers giving Contract-specific details.

(iii) Overall sizes of sign plates and details of any light-spill screens.

(iv) Requirements for type of material, preparation and finish, for sign plates, posts, etc. *[For painting, cross-reference should be made to Appendix 19/2.]*

(v) Details of foundations including cable ducting, reinstatement and any requirements for anchorages and attachment systems including their loadings and torque settings.

(vi) The number, type and size of posts including details of any base plates or flange plates.

(vii) Details of any electrical equipment compartments.

(viii) The type of sign face material including the Class of any retroreflective material.

(ix) The type of any direct illumination; whether internal or external, overhead mounted or upward pointing luminaires and whether free standing on separate foundations. Also the luminance and impact categories of the signs and luminaires.

(x) The method of switching the illumination *[eg. photo-electric control, time switch]*.

(xi) Whether any bollards are to be internally illuminated or reflective only.

(xii) (11/08) Temporary Traffic Signs: Add here any and all temporary traffic signs required for Temporary Automatic Speed Camera System for the Enforcement of Mandatory Speed Limits at Roadworks. See Chapter 8 – Traffic Signs Manual.

2 **Additional Information** (05/01)

(i) Any particular requirement for the covering of signs *[1209.1]*.

(ii) Where sign fabrication drawings are not required, and the details to be provided for warning and regulatory signs *[1202.5]*.

(iii) The number of keys required for locks to traffic sign housings *[1202.6]*.

(iv) Details of location identifying marks *[1202.7]*.

(v) Requirements for filling pockets in concrete foundations if different from the requirements of sub-Clause 1208.4.