FENCING

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Fencing

NG 302 Requirements for Temporary and Permanent Fences

1 Clause 302 sets out the action to be taken by the Contractor, drawing particular attention to the requirements for temporary fencing in all situations where he does not provide permanent fencing immediately.

2 There may be specific temporary fencing requirements for a particular location during the construction period, e.g. to isolate a semi-permanent diversion of a public right of way or a Statutory Undertaker's works or apparatus. Such fencing should be shown on the Drawings. The Contractor is obliged under the Conditions of Contract to provide at his own cost all temporary fences required for safety and security as a result of his particular method of working, and maintain such temporary fencing during the period of the Works.

NG 303 Temporary Fencing

1 A range of fencing has been included which will cover the majority of situations arising where permanent fencing is not required or immediately erected.

2 The majority of fencing types have been selected from the range in BS 1722 and are of a quality which will provide a fence strong enough to protect property and be economical in repetitive use when the need arises. The high standard should encourage the immediate provision of permanent fencing, although this is not always practical because of the possibility of damage to the permanent fencing during the progress of the Works.

3 The height of the fence in the range selected may have to be increased or the Engineer may consider it excessive for the use it has to perform. Any further requirements or relaxation should be described on the Drawings.

NG 304 Timber Quality

1 The requirements for timber for use in the Permanent Works are given in RC 25 and should be consulted if further information is required.

NG 306 Permanent Fencing

1 The type of fence used should be sufficient to meet all environmental and amenity factors and the chosen design, which should be decided after consultation with the Employer, should fit visually into each distinctive stretch of country, each situation having its appropriate type of fence. Wherever a change of fence type is made, the transition point should be carefully selected to coincide with a convenient feature which will give a logical reason for the change in fence design.

2 Where additional stockproofing is required the provision of an additional rail or mesh or additional plain or barbed wire should be considered. The views of the landowner should be considered before deciding on the use and position of barbed wire. If, for instance horses are being contained it may not be satisfactory to fix barbed wire at a low level.

3 When the ground is uneven under the line of the fence it is suggested that the ground be trimmed, particularly if the fence is desired to be stockproof, and that this requirement be included in Appendix 3/1.

4 The Drawings should show where fencing is required, and the position, length and height for each type of fence. Appendix 3/1 should include any further details required.

5 The Engineer should state in Appendix 3/1 if concrete surround is required to the base of fence posts of timber post and rail fences. The NRA Road Construction Details refer.

NG 307 Permanent Fencing for Accommodation Works

1 Landowners should be encouraged to agree to a type of fencing for boundaries from those contained in the NRA Road Construction Details or failing that from BS 1722, which, if it has to contain stock must be adequate for the purpose. Agreed requirements should be described in Appendix 1/15, or shown on the Drawings.

NG 308 Gates and Stiles

1 The location and details of construction of gates and stiles should be shown on the Drawings. Reference should be made to the NRA Road Construction Details wherever possible.

NG 311 Preservation of Timber

1 The requirements for preservation of timber for use in the Permanent Works are given in RC 25 and should be consulted if further information is required. Accommodation works fencing should be to the same standard of preservation as Permanent Fencing and fencing that is to be painted should be treated similarly, although not with creosote. Extra supervision is usually essential to obtain the necessary standard required to keep maintenance costs low in the long term.

2 Inspection of the timber before preservative treatment is of the utmost importance and arrangements should be made for this to be carried out for each scheme. The extent of permitted defects generally is defined in RC 25 as indicated in Clause 304. Rejection of timber due to defects affected by moisture content, i.e. 'checks' and 'splits' can only be enforced when the timber is within the specified moisture content range. This is only certain before preservation treatment and before the timber is subjected to the uncontrolled conditions on Site. It is not satisfactory to inspect the material for quality control on delivery to Site except in respect of physical defects which are unaffected by moisture content.

3 To obtain satisfactory preservative treatment of timber the moisture content of the timber at the time of treatment must be 26% or less. To achieve this, fresh sawn timber should be cut to the required sizes and open-stacked preferably under cover, for a period which depends on climate, weather and species, or kiln dried.

4 The moisture meter offers a quick, practical and convenient method of assessing the moisture contents of a batch of timber before preservation treatment. Electrical resistance type moisture meters should always be used in accordance with the manufacturer's instructions. Meters should be suitably calibrated before each use against a calibrated meter or oven dried sample. A check box for this is available from TRADA.

5 It is desirable that moisture meter tests are confirmed by the oven drying tests complying with IS 96 particularly in any case when there is a possibility of dispute, but it is recommended that a non-destructive method of sampling should normally be used.

6 Quality control at all stages of the process is essential, particular care being required to ensure that the moisture content is 26% or less prior to treatment. The only way to ensure that the preservation process has been carried out as required is to witness the treatment. If this is not done, it is necessary to accept the assurance of the treater, embodied in a certificate of treatment which should be provided with each batch. In any other case the Engineer should use his judgment in making suitable arrangements regarding inspection of the timber destined for his own scheme.

7 The treatment specified will generally provide the full required level of penetration in properly seasoned wood. With copper/chromium/arsenic (CCA) treatment, particular care must be taken to ensure that the pressure time is not curtailed and that the final vacuum is not applied for an extended period.

8 A spray reagent can be used as described in BS 5666 : Part 2 to deduce whether there is any CCA preservative present in the timber when it is delivered.

9 If there is doubt over the quality of the CCA preservation it is possible by analysis to obtain a good indication that the requirements have been met. Suitable methods of analysis are described in BS 5666 : Part 3.

10 An indication of the standard of the preservation plant can be determined from the quality and amount of specialist equipment available. This should include:

(i) Moisture meter.

(ii) Hydrometer calibrated to 60°F and hydrometer jar.

(iii) Thermometer

preferably also:

(iv) A tachometer type chart recorder capable of continuous recording during the operating period levels of vacuum and pressure within the treatment plant.

There should also be ready access to an oven and a balance.

In addition there should be:

(i) certificates to show that the pressure and the chart recorder, where vacuum gauges

fitted, have been calibrated in the last 12 months; and

(ii) records substantiating the content of the certificate required under sub-Clause 311.2(vi).

NG 312 Painting of Timber Fences, Gates, Stiles and Posts

1 Appendix 1/15 should contain the details of accommodation works required in the Contract and should include the type and colour of paint required for fencing and gates. If preservation treatment is not required this should also be stated.

2 There has been considerable development in the type of paint used for exterior work recently and if the Engineer wishes to take advantage of this and include water borne acrylic paints or alkyd-acrylic paint instead of oil based paints, he should specify the requirements in Appendix 3/1.

3 Paint containing non-toxic constituents should be specified for use where the painted surfaces are accessible to animals.

NG 313 Concrete Fencing

1 Concrete fencing complies with IS 252 and should be consulted if further information is required.

2 Any additional requirements for concrete fencing or requirements if different from the requirements of Clause 313 should be included in Appendix 3/1.

NG SAMPLE APPENDIX 3/1 : FENCING, GATES AND STILES

[Note to compiler: Include here:]

1. Wooden Fencing, Gates and Stiles

(i) Preservation, Treatment / Painting *[Only included when the treatment/painting Engineer wishes to specify creosote, CCA or painting specifically].*

(ii) Trimming ground to regular level on fence line. *[Location. Only included when necessary.]*

(iii) Details of additional stockproofing required *[Location and details]*

(iv) Concrete surround to base of posts *[Location. Included when the Engineer wishes to specify concrete footings for post and rail fencing].*

(v) Requirements for timber if different from the requirements of sub-Clause 304

(vi) Requirements for fences for motorways if different from the requirements of sub-Clause 306.2

2. Temporary Fencing

(i) Requirements for temporary fencing if different from requirements of sub-Clause 302.1 and 303.1

(ii) Timing of removal of temporary fencing if different from sub-Clause 302.2

(iii) Requirements for any preservation treatment to temporary fencing [*303.3*]

3. General

(i) Requirements for bolts,screws and nuts if different from the requirements of sub-Clause 305.1

(ii) Requirements for joining permanent fencing to existing hedges, fences and to other structures if different from the requirements of sub-Clause 306.1

4. Concrete Fencing

(i) Any additional requirements for concrete fencing or requirements if different from the requirements of Clause 313.

NG SAMPLE APPENDIX 3/2 : FENCING : NRA ROAD CONSTRUCTION DETAILS

Clause No.	Road Construction Detail Drg. No.
306.1	
306.2	