

BS 3998 2010



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BS3998 2010

The Standard has **4** categories of Tree Work:

1. Care of the rooting environment – see also BS5837
2. Pruning
- 3. Restraint & Support**
4. Felling & Related Operations



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Management of weak structures



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- Problems that cannot be addressed by pruning alone.



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- Problems that cannot be addressed by pruning alone.
- Often in conjunction with pruning.
- Reduces risk - but requires maintenance and monitoring
- Requires a risk assessment before deciding to install.



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Factors to consider when choosing a restraint or support system:

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- Characteristics of the species

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- Resources for maintenance & monitoring – are they available?

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- Condition of the wood at proposed attachment points

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- Design of the system and how will it affect movement.

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- The load to be supported or restrained

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- Resources for maintenance & monitoring – are they available?
- Condition of the wood at proposed attachment points
- Design of the system and how will it affect movement.
- The load to be supported or restrained
- Physical properties of the materials to be used
- Potential damage to the tree
- Potential for adaptive growth
- Probability of failure **without** the support

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Management of weak structures



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3. Propping – support from the ground or solid structure on underside of a branch/stem reducing risk of fracture.

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4. Guying – support for leaning trees / insecure rooting.

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Specialist area – requiring an Arb with relevant experience and in depth understanding of tree anatomy and physiology and a working knowledge of engineering!!

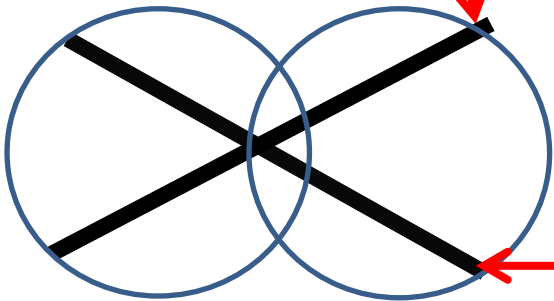
CASE STUDY

High quality
specimen tree.

Flexible bracing also
installed.

Crack forming at
inclusion



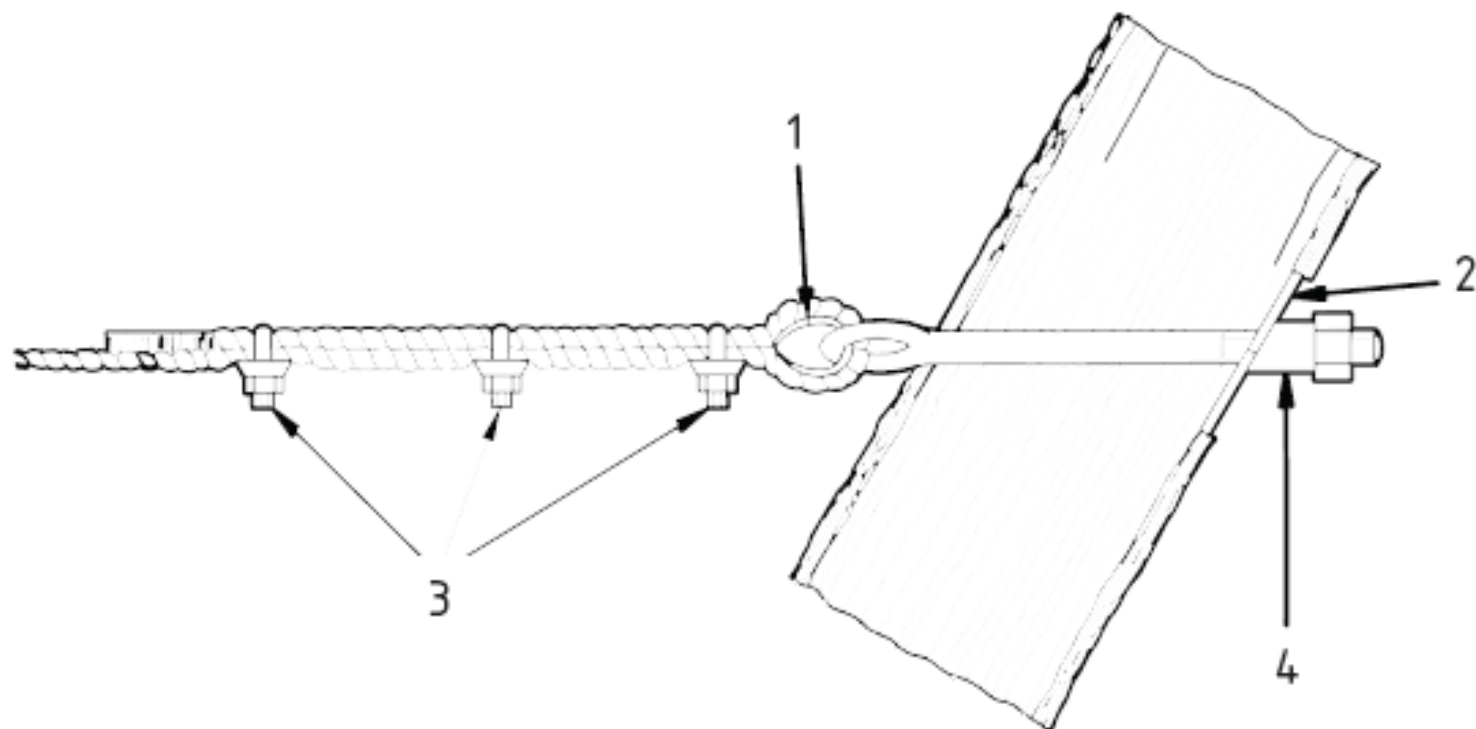




Rigid bracing – with crown reduction



Figure D.3 Diagrammatic illustration of components used in an invasive restraint system



Key

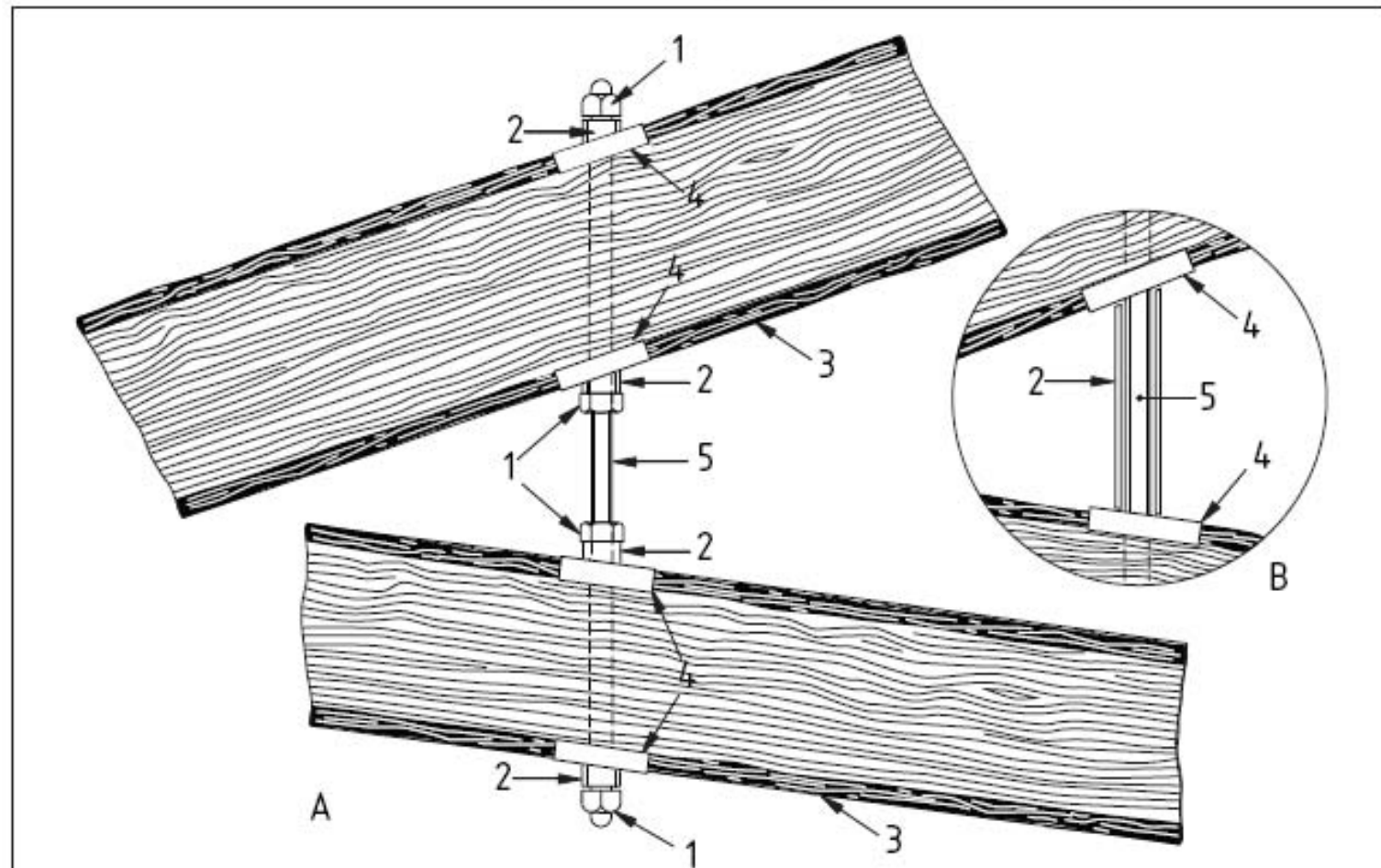
- 1 Thimble
- 2 Oval washer countersunk to wood
- 3 Wire rope grips
- 4 Angled spacer

NOTE 1 This diagram shows a straight-line assembly, in which the eyebolt is not at right angles to the grain. The other option, as described above, is to insert the eyebolt at a less oblique angle, while ensuring that it is of suitable strength.

NOTE 2 An angled spacer (4) will usually be required when the bolt is not at right angles through the branch; this will help to ensure that the pressure applied by the nut on the washer is evenly distributed.



Figure D.4 Diagrammatic illustration of systems for separating and securing rubbing branches



Key

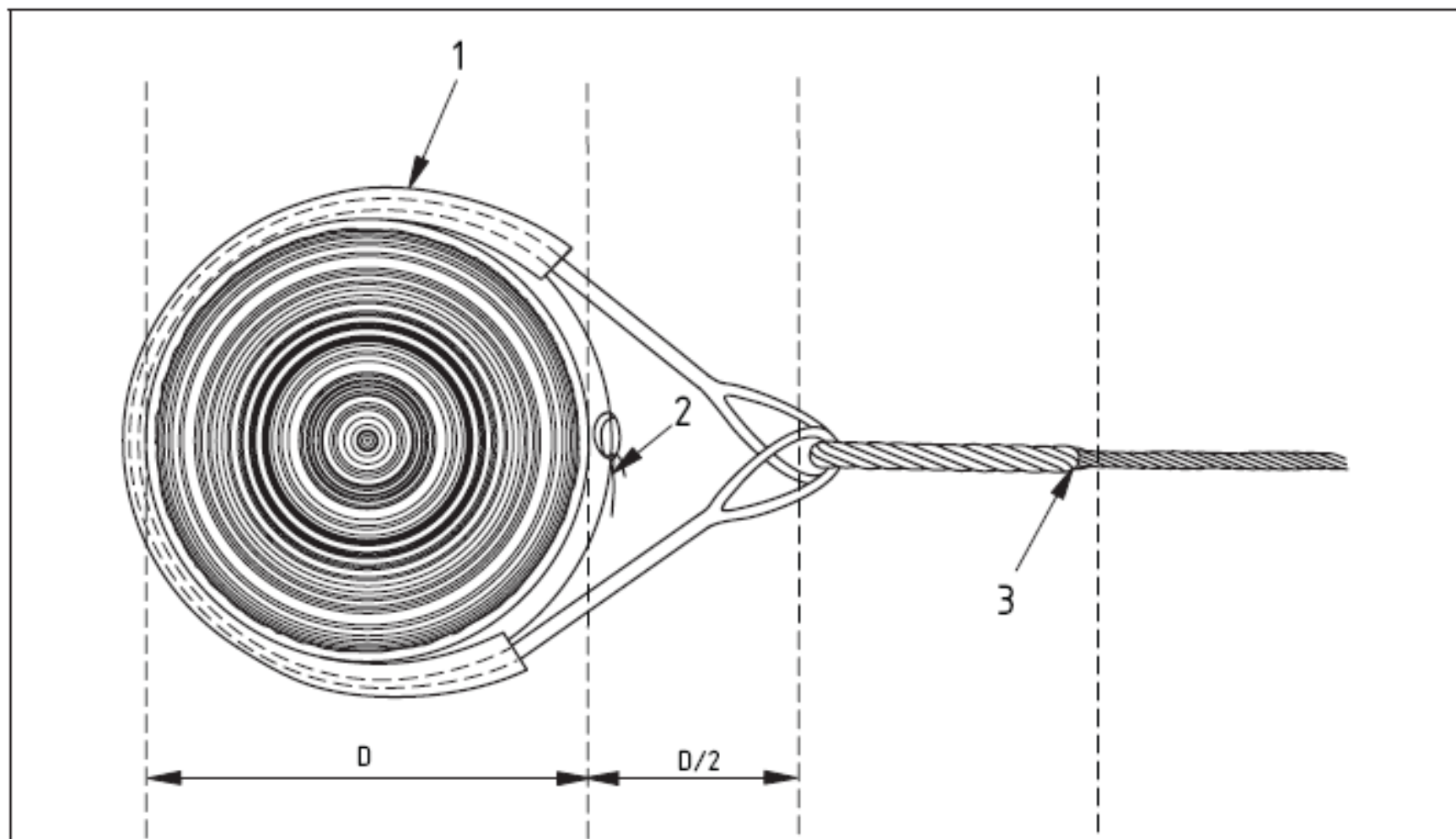
- A Unsleeved bolt
- B Sleeved bolt
- 1 Nut
- 2 Spacer
- 3 Branch
- 4 Washer
- 5 Bolt



Flexible bracing



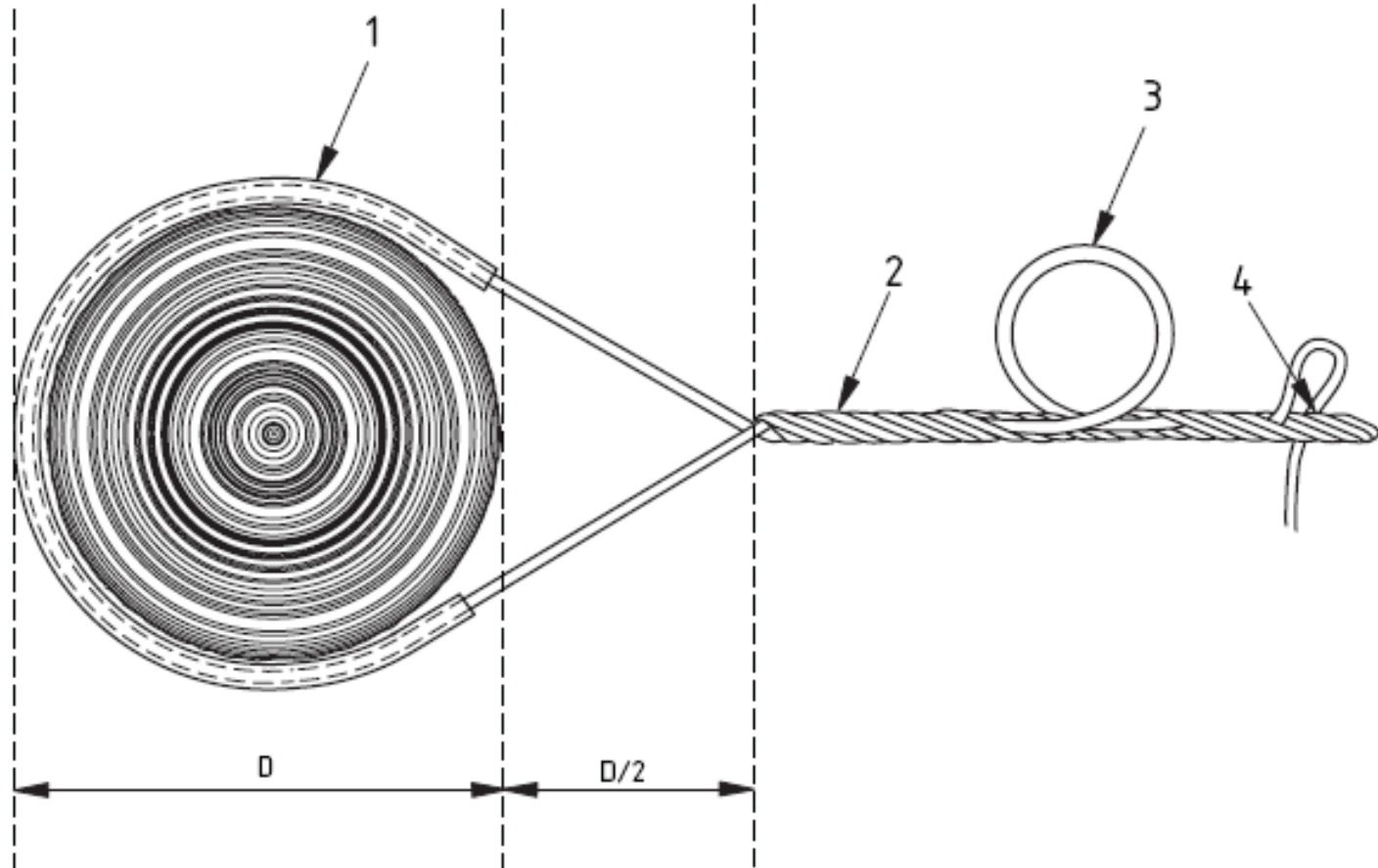
Figure D.1 Diagrammatic illustration of components used in a non-invasive restraint system: double belt system with hollow braid polyester rope



Key

- 1 Webbing retaining belt
- 2 Flexible positioning belt with sufficient elasticity to accommodate incremental growth
- 3 Hollow braid polyester rope attached to belt by spliced eye in accordance with the manufacturer's recommendations

Figure D.2 Diagrammatic illustration of components used in a non-invasive restraint system: monofilament polypropylene hollow rope system



NOTE An optional rubber shock absorber may be inserted into the rope at the mid-point of the installation to allow for low-load oscillations.

Key

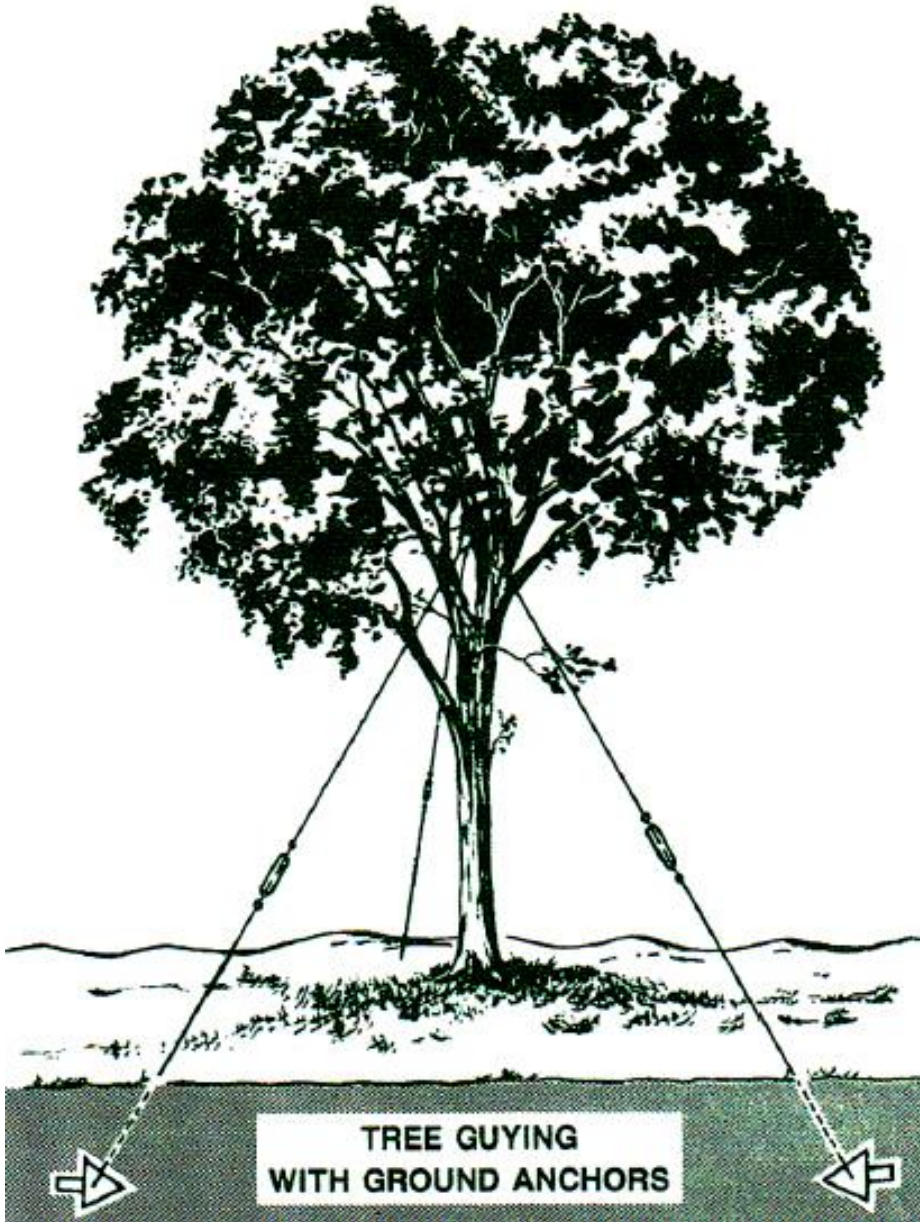
- 1 Internal expansion band and external anti-abrasion cover fitted where rope passes around the stem
- 2 Splice (rope fed into centre of rope and out again in accordance with the manufacturer's recommendations)
- 3 Tension loop to accommodate tree growth
- 4 End splice



Propping

Normally used for
'specimen' trees

TREE GUYING WITH GROUND ANCHORS



Guying

Normally used for younger trees

Thank you for listening