Use of cranes in arboriculture

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Guidance to the technical author:

- ***Please do not comment on items that are greyed out in this document as the context of this text will be supplied by the Arboricultural Association.***
- *Throughout the guide there will be sections or boxes that will directly relate to the ICoP - please take note of these in your response.*
- *The tone of the document should reflect the intended audience, e.g. the climbing arborist and should also reflect the relationship between this guide and the content of the ICoP.*
- *The document is also intended to provide reference for supervisors / team leaders; this will appear as summary 'check list' information in each section, generally reflecting the main items from the relevant industry best practice.*
- *Comments in green are provided to identify the expected information to be included within the technical guide.*
- *Please indicate where illustrations or photos should be included - you do not need to supply these but should either provide a rough sketch, or describe the important elements of any image.*
- ***When typing your response for each section, please use the TECH AUTHOR style.***

Front cover

Verso page

Contents

1 Introductory material:

Foreword by the Association and Acknowledgements - This would be a non-exhaustive list of those individuals who have provided significant contribution to the project.

1.1 Introduction:

Why the technical guide came about, development history and intended use.

1.2 Structure:

Clearly defining how the technical guide is framed into several parts and how these parts relate to each other.

1.3 Scope and limitations:

Who the technical guide is aimed at and who is excluded from it. Who the technical guide does not apply to, such as, tree climbing for the purposes of sport or recreation.

2.0 Technical guidance

2.1 General

competence, training, pre-planning, job packs, statement/ diagram of pre-planning (b-f from 2.2.2 ICOP)

Important note:

It is very important that the crane industry accepts this guide. It would also be very desirable for the CPA to endorse the guide and to perhaps provide a statement of endorsement at the beginning of the guide.

Without that acceptance, the techniques described may not be acceptable to the crane hire company, the appointed person or the crane operator.

Potential authors submitting a bid to write this guidance document must include the time and resource to liaise with the CPA and to deal with their comments following their review of the draft guide.

It is anticipated that the CPA will have particular interest in any crane specific content and the the use of the crane hook as an anchor point may require particular attention and liaison.

The author will find themselves involved in cross industry negotiation and politics and it is expected that as part of this authoring process they will serve as an ambassador to the arboricultural industry.

2.2 Planning

2.2.1 Risk control systems and emergency planning

Reference must be made to section 2.8.4.1 of the ICoP for Tree Work at Height.

This section should include information to enable the Responsible Person and the Competent Person to understand the purpose of the risk assessment process and their role within it.

There must also be brief guidance on application of generic and site-specific risk assessments.

2.2.2 Site factors & crane selection

2.2.2.1 Tree condition assessment

This should include an illustration and checklist highlighting key points of a visual tree assessment and the suitability of the tree for work using a crane.

Guidance on the condition and stability of the tree and the effect of removing large branch sections on the continuing stability of the tree must be included.

2.2.2.2 The area surrounding the tree (the potential worksite)

It is anticipated that an illustration shall be used depicting a common crane work scenario which identifies all of the hazards that might be found on a worksite.

Some examples that must be considered would be:

- Access
- Proximity hazards
- Overhead and underground constraints

Individual site factors and their relevance to the proposed operation and the work plan shall be explained.

2.2.2.3 Other Site Considerations

This section should include comments on areas such as wildlife disturbance, the statutory protection of the tree and surrounding features, biosecurity factors.

2.2.3 Resources

This section must cover the selection of resources at the planning stage following assessment of the tree(s) and the potential extent of the worksite.

It should provide guidance on the type and number of resources that might be required, ensuring that all resources are in a good and safe working order including detailing the requirements for thorough examination, testing and the availability of records.

This section shall include the means employed in the selection of an appropriate crane and crane operator.

Unless the author decides to cover it elsewhere in the guide, this section will probably include the factors influencing the decision to use a contract lift with an external Appointed Person or a 'crane hire' using a suitably qualified member of staff.

Resources for emergency situations such as aerial rescue, spillage and pollution must be included.

2.4 Management

2.4.1 Co-operation and co-ordination

Crane work will often involve the co-operation and co-ordination of authorities such as the Police, team members from other organisations, many operators, chip trucks and chippers, MEWP(S) and timber haulage operations. This section must cover the level and type of planning that will ensure the co-operation and co-ordination of these resources.

2.4.2 Emergency procedures

This section must include the requirements for emergency planning in relation to the use of a crane in arboricultural operations.

It is anticipated that this information will include being familiar with, and checking, the engineering systems built into a crane, emergency communication and planned landing areas.

Reference should be made to the section on aerial rescue.

2.4.3 The method statement

The method statement must be considered to be the standard planning document and it must include the lift plan.

This section must give the Responsible Person sufficient guidance so as to be able to document a suitable and sufficient method statement to be used to brief all on site.

The Responsible Person must be able to use the sub-titles in this section to formulate a method statement.

It is strongly suggested that the method statement should include a site plan which clearly shows safe zones, danger zones, layout and positioning of equipment, site access and egress and the other factors the author feels are appropriate.

The method statement must make reference to industry standards and guidance applicable to tree work at height and crane management and operation.

2.4.4 Communicating the plan as detailed in the method statement

Responsibilities and procedures for ensuring that the plan as detailed in the method statement is communicated to all relevant stakeholders must be specified here.

2.5 Roles and responsibilities

2.5.1 General

Reference must be made to the ICoP for Tree Work at Height section 2.3.1 which specifies the requirements for the Responsible Person, the Competent Person and the Proficient Operator.

This section must address the lettered points on page 10 of the ICoP for each of the job roles in relation to crane activity on an arboricultural worksite.

2.5.2 Supervision

This section must describe the roles and responsibilities of the crane owner/hire company, the appointed person, the slinger/signaller, the crane operator, the climbing arborist and the arborist ground workers.

The requirements for crane industry certification for the Appointed Person and Slinger/Signaller shall be detailed here.

The author may include a discussion on the advantages and disadvantages of using an external Appointed Person or an internal Appointed Person to control the lifting operation with reference to the requirements of BS7121.

2.5.3 Proficient operators

Reference must be made to section 2.3.5 of the ICoP for Tree Work at Height

This should be a brief statement which encompasses ensuring the operator has undertaken appropriate training in the techniques and equipment to be used.

2.6 Carrying out the tree work using a crane

2.6.1 Setting out the site

It must be stressed in this section that all setting out operations must be in line with the method statement.

This section must include guidance on the importance of the site-specific risk assessment process and of 'second checking' the planning points as set out in the method statement. Once the plant and equipment are on site, the hazards and risks can be seen in context and so planned positioning may need to be re-considered.

2.6.2 Communication

The reader must be given very clear guidance on the communications systems to be used so that everyone involved in the operation knows exactly what is happening and what is expected of them.

Communication must also include the means to ensure that the general public understand exactly what they are meant to do (site boundary, signage and security).

2.6.2.1 Communication systems

This section must include information on crane industry standard hand signals and the use of radios.

The author must deal with the advantages, disadvantages and scenarios where the various communication method would be particularly useful.

Possible misinterpretation of the communication method must be described here along with suggestions in respect of the confirmation of messages.

2.6.2.2 Knowing who to speak to and how to raise concerns

Reference must be made to section 2.3.5.4 of the ICoP for Tree Work at Height.

Communication systems employed between the Appointed Person, the Crane Operator, the Climbing Arborist and the ground staff.

2.6.3 Selection of Equipment

The specification of a suitable crane will have been covered in the section dealing with planning.

This section shall cover lifting accessories and the arboricultural equipment used during crane operations.

2.6.3.1 Chains and slings

The author must describe the relative advantages, disadvantages, tendencies and hazards of the range of equipment that could be used to connect the crane to the tree sections to be removed.

2.6.3.2 Certification and conformity

Information of the requirements for conformity, thorough examination, inspection, checking and recording for the crane, the loose lifting tackle and the arboricultural climbing and lifting equipment to be used.

2.6.3.3 Compatibility

Information on the requirements for the compatibility of the crane, the loose lifting tackle and the arboricultural climbing and lifting equipment to be used.

2.6.4 Placement of plant and vehicles

2.6.4.1 Placement and erection of the crane

Information on the requirements for the safe placement and erection of the crane.

This section will give guidance on the placement of the crane to ensure stability and safety and also for reasons of efficiency and ease of communication.

2.6.4.2 Placement of the trucks and wood chippers

Information on the requirements for the safe placement of the trucks and wood chippers.

This section will give guidance on the placement of the trucks and chippers to ensure safety and efficiency.

2.6.4.3 Control of other plant and equipment

This section will give guidance on the control of other plant and equipment such as skid steer or articulated timber handling units.

2.6.4.4 Co-ordination of operations with timber hauliers

This section will give guidance on the co-ordination and control of timber hauliers that arrive on site to collect large branch and stem sections.

Guidance on the use of roll-on/roll-off skips could be included here.

2.6.5 Accessing the crown of the tree

Reference must be made to the ICoP for Tree Work at Height section 2.8.4.2

Reference must be made to the guide on Tree Climbing and Aerial Rescue and the use of MEWPs in Arboriculture because the plan might include accessing the crown using these methods. These methods will certainly be included in the emergency and aerial rescue plan as appropriate.
This section must deal with using the crane to lift the climbing arborist into a position where they can use arboricultural climbing techniques to move into the crown.

A 'decision tree' showing the process of selecting an appropriate tree access method, (including the decision to not climb where appropriate ref. ICoP p. 24). This should also include information on selecting an access method and planning a route or movement around the tree.

2.6.5.1 Use of a man basket

The section must include a description of the use of a man basket along with the advantages, disadvantages and suitability of this technique.

2.6.5.2 Use of a climbing harness

This section must include the attachment of the climbing system to the crane hook and management of climbing equipment during the lift.

2.6.6 Branch Removal

2.6.6.1 Estimating the mass of loads

Guidance on adequate safety margins, estimating the mass of the section to be cut and communicating this estimate with the crane driver.

This section must include guidance on using safety factors.

2.6.6.2 Connecting the crane to the branch section to be removed

Guidance on the methods to be used when connecting the crane to branch sections.

The guidance must include connection to horizontal through to vertical branch sections.

The advantages and disadvantages of the means to connect the branch/stem section to the hook shall be covered. Chains versus strops slings.

2.6.6.3 Connecting the crane to a stem section to be removed

Guidance on the methods to be used when connecting the crane to stem sections.

2.6.6.4 Cutting techniques (branch sections)

Guidance on the techniques to be used when cutting branch sections that are connected to the crane with a view to lifting them clear of the climbing arborist and the crown.

Information on the implications of shock loading or swinging the load must be covered.

2.6.6.5 Cutting techniques (stem sections)

Guidance on the techniques to be used when cutting stem sections that are connected to the crane with a view to lifting them clear of the crown.

Information on the implications of shock loading or swinging the load must be covered.

2.6.7 Movement of cut sections away from the tree and onto the planned landing area.

This section must include guidance for the Appointed Person and the ground staff in directing, lowering and disconnecting the crane from the section ready for subsequent processing.

Use of tag lines must be included here.

3 Glossary of Terms and Definitions

A comprehensive glossary of terms and definitions in relation to crane use in arboriculture.

BIOSECURITY
Basic run through the precautions to be taken by climbers pre- and post-work.

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