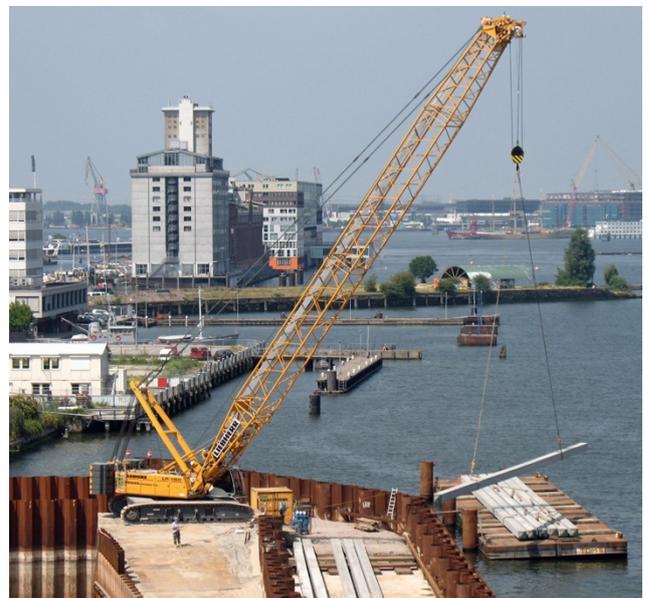


# Lifting Technician Trailblazer Crawler Crane



## Occupational Brief Training Syllabus

# Lifting Technician Apprenticeship Crawler Crane

## Training Programme Specification and Guidance Notes

### Lifting Technician – Occupation description

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#### Categorisation

The training syllabus and achievement through the end-point assessment indicates that the lifting technician has the skills and understanding to safely and proficiently operate a range of crawler cranes in a variety of situations.

#### Slinging/signalling

The lifting technician will, as part of the role attaches and secures loads, signals the movement of suspended loads to guide them to an agreed destination, and leaves the load in a safe condition.

#### Duties

**Slinging:** means the ability to safely attach and secure various types of loads to a lifting hook using the relevant lifting accessory and procedures.

**Signalling:** means the ability to convey information to the lifting equipment operator and others involved in the lift using one or a combination of manual, hand and verbal instructions.

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Reference No. CPA LTCCSyl First Published: 01 October 2017

Published by: Construction Plant-hire Association, 27/28 Newbury St, London, EC1A 7HU

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## Notes for trainers and training providers

<b>Introduction</b>	<p>This document has been devised by the Lifting Technician Trailblazer Employer Development Group and provides training guidance to support training providers and employers for the delivery of core training that may be required to prepare the lifting technician apprentice for on-site working and for the end point assessment. The content of this document can further be used by employers as a selection criteria for training providers in terms of providing expertise, resources and materials.</p>
<b>Learning Outcomes</b>	<p>The learning outcomes denote what the candidate must be able to undertake following the completion of core training and forms the foundation for supporting the application of skills within the workplace.</p> <p>The training standards and syllabus are based on the content of the Construction Plant Competence Scheme (CPCS) training material donated to the Lifting Technician Development Group to support the sector and their commitment to robust, national standards.</p> <p>The CPCS standards were derived by industry-led working groups of practitioners and professionals, and of those whose role incorporates the training of individuals for vocational roles.</p>
<b>Training programme content and delivery</b>	<p>All of the listed training content should be delivered using the actions described in the learning outcome and should be specific to lifting operations, crawler cranes and slinging/signalling duties.</p> <p>The delivery should be structured so that maximum learning potential is applied for the apprentice to be able to understand, tell and do. Knowledge and understanding can also be learnt through practical performance.</p> <p>The level and extent of the content from the syllabus should relate to commonly-used crawler cranes that service the construction and allied sectors.</p> <p>Knowledge of legislation should relate to the function, actions, requirements and responsibilities rather than the name of relevant legislation.</p> <p>The training content is not listed in a sequence for training. Training programme developers must be subject matter experts and experienced in designed training programmes which are structured to allow a logical process for learning, and comprise a mixture of theoretical and practical elements using varying teaching methods throughout the programme.</p> <p>Ongoing assessments must form part of the training programme and each topic area checked on a regular basis.</p>
<b>Apprentice Training Portfolios</b>	<p>Apprentices should keep a record of training undertaken and the number of hours spent undertaking the various activities and training content.</p> <p>An apprentice training record portfolio can be downloaded free of charge from <a href="http://www.cpa.uk.net/trailblazer-downloads/">www.cpa.uk.net/trailblazer-downloads/</a></p>

## Notes for trainers and training providers *(cont'd)*

<p><b>Trainer Qualifications and Attributes</b></p>	<p>For the delivery of formal training, trainers should as a minimum:</p> <ul style="list-style-type: none"> <li>- hold a formal teaching qualification based on national occupational standards at a minimum of level 3 issued through a reputable awarding organisation.</li> </ul> <p>Training centres must ensure that trainers have sufficient, verifiable, relevant and recent industry experience along with sufficient occupational expertise, and have up-to-date knowledge and understanding of lifting operations involving crawler cranes and slinging and signalling.</p> <p>This experience, knowledge and understanding must be of sufficient depth to be effective and reliable for the delivery of occupational training.</p> <p>Trainers must only train in their acknowledged area of occupational competence and have a sound, in-depth knowledge of, and uphold the integrity of, the sector's NOS.</p> <p>Trainers must have a sound knowledge and have the relevant teaching skills to enable the effective delivery of training and learning.</p> <p>The trainer's experience, knowledge and understanding and teaching experience can be verified by at least several of the following:</p> <ul style="list-style-type: none"> <li>- curriculum vitae and employer endorsement,</li> <li>- references,</li> <li>- possession of a relevant NVQ/SVQ, or vocationally related qualification,</li> <li>- corporate membership of a relevant professional institution,</li> <li>- professional interview.</li> </ul> <p>Guidance document published by the British Standards Institute (BSI) – BS 7121 part 1 – Code of Practice for the Safe use of Cranes provides further criteria relating to the abilities, attributes, required skills, selection and training for trainers.</p>
<p><b>Training Duration</b></p>	<p>The training programme incorporating all subject areas of the syllabus should comprise of a minimum of 300 hours.</p> <p>This training may be delivered in a training centre or the workplace, or a combination of both. Where workplace delivered, it should be segregated from work operations and with a dedicated crane that is not utilised during training for other training or work activities. 20% of the total learning time for the whole apprenticeship should be delivered 'off-the-job'. The definition of 'off-the-job' training can be found at <a href="https://www.gov.uk/government/publications/apprenticeships-off-the-job-training">https://www.gov.uk/government/publications/apprenticeships-off-the-job-training</a></p>
<p><b>Training Ratios</b></p>	<p>Within a formal training off-the-job training programme, the ratio of apprentices to trainers and supporting equipment needs to be taken into account to ensure that:</p> <ul style="list-style-type: none"> <li>• each apprentice receives the required number of hours of training</li> <li>• there is adequate and effective supervision of each apprentice, especially during practical activities</li> <li>• each apprentice is fully engaged and active during training</li> <li>• an apprentice is not placed in a situation beyond their capability</li> <li>• the trainer can effectively control the activities undertaken and be in control at all times, able to perform emergency actions when necessary.</li> </ul>

## Notes for trainers and training organisations *(cont'd)*

<p><b>Training Ratios (cont'd)</b></p>	<p>A number of factors will determine the ratios including:</p> <ul style="list-style-type: none"> <li>• the type of crane</li> <li>• the type of activity being undertaken</li> <li>• the training environment and proximity hazards</li> <li>• the stage of each apprentice within the training programme</li> <li>• the maturity and attitudes of each apprentice</li> <li>• the use and abilities of other supporting staff.</li> </ul> <p>The training provider must have in place effective safe management systems of work and devise thorough risk assessments for all activities that ensure safe systems of training.</p> <p>Due to potential maturity issues of younger apprentices, advice on potential issues can be found Strategic Forum for Construction’s Guidance on Competence to Operate Construction Plant, which includes a section on apprentices and young persons operating construction plant. The document can be downloaded free-of-charge from <a href="http://www.cpa.uk.net/sfpsgpublications/">www.cpa.uk.net/sfpsgpublications/</a></p> <p>Ideally there should be, at the start of the training programme, a maximum of:</p> <p style="text-align: center;">1 instructor – 1 crane – 2 trainees</p> <p>The ratio may be altered depending on compliance with the conditions listed above.</p>			
<p><b>Training Resources</b></p>	<p>There should be sufficient resources to facilitate effective learning. Training areas must have a suitable room or rooms for theory training purposes free from disturbances with suitable equipment to provide theoretical learning.</p> <p>Welfare and rest facilities must further be available during training.</p> <table border="1" data-bbox="400 1299 1460 1762"> <tr> <td data-bbox="400 1299 906 1762"> <p><b>Practical Equipment:</b></p> <p>Crawler crane that meets current legislation</p> <p>Operator’s manual for each machine</p> <p>Different types of loads Inc. offset, large surface area, long etc.</p> <p>Variety of lifting accessories Inc. specialist</p> <p>Sufficient area of ground suitable for placing loads at various heights and radius</p> </td> <td data-bbox="906 1299 1460 1762"> <p><b>Resources for Theory</b></p> <p>PUWER 1998 Regulations</p> <p>LOLER 1998 Regulations</p> <p>HSE GS6</p> <p>BS 7121 (parts 1, 2 and 3)</p> <p>Range of Operator’s Manual, ground pressure material and duties charts</p> <p>Specifications for types of crawler crane</p> </td> </tr> </table>		<p><b>Practical Equipment:</b></p> <p>Crawler crane that meets current legislation</p> <p>Operator’s manual for each machine</p> <p>Different types of loads Inc. offset, large surface area, long etc.</p> <p>Variety of lifting accessories Inc. specialist</p> <p>Sufficient area of ground suitable for placing loads at various heights and radius</p>	<p><b>Resources for Theory</b></p> <p>PUWER 1998 Regulations</p> <p>LOLER 1998 Regulations</p> <p>HSE GS6</p> <p>BS 7121 (parts 1, 2 and 3)</p> <p>Range of Operator’s Manual, ground pressure material and duties charts</p> <p>Specifications for types of crawler crane</p>
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**Notes for trainers and training providers (cont'd)**

<b>Training Supervision</b>	<p>All training for both crane operations and slinging/signalling must be conducted safely and against criteria contained within a written lift plan, which must be constructed by competent persons.</p> <p>Suitable and constant supervision of all lifting operations must be undertaken by nominated and experienced crane/lifting operations supervisors (see guidance No 229 – L113 - LOLER 1998)</p> <p>Others other than the trainer may be used but only after the candidate has sufficient skill on the particular activity and crane.</p> <p>Further guidance on supervision on young persons is incorporated within the Strategic Forum Plant Safety Groups guidance on Competency to Operate Construction Plant - section 11, and can be downloaded free of charge from <a href="http://www.cpa.uk.net/sfsgpublications/">www.cpa.uk.net/sfsgpublications/</a></p>
<b>Certification</b>	<p>On completion of the stated training period, the apprentice may need to undertake a test for a construction-recognised skills card to gain access to construction sites.</p> <p>The relevant suitable scheme will provide entry and certification criteria to gain a skills card for crawler crane and slinging/signalling operations.</p>
<b>On completion of the training programme</b>	<p>The apprentice will be expected to complete a period of on-site training and gain experience undertaking a range of lifts using different models and or makes of crane to accumulate a broad and wide-ranging skill set.</p> <p>A work experience EPA portfolio has been devised by the Lifting Technician Trailblazer Group to provide guidance on what work should be undertaken on site and to prepare the apprentice for the end point assessment.</p> <p>The entry criteria for the end point assessment includes a minimum number of activities that need to be undertaken and recorded, which further support the professional discussion contained within the assessment. The EPA portfolio can be downloaded from <a href="http://www.cpa.uk.net/trailblazer-downloads">www.cpa.uk.net/trailblazer-downloads</a></p> <p>The EPA Portfolio has to be completed and presented at the start of the professional discussion element of the end-point assessment.</p>
<b>Quality Control and Auditing</b>	<p>Providers delivering training for the apprenticeship must have in place internal quality assurance procedures that ensures that training is both delivered and assessed in accordance with the training specification and delivered using suitable trainers and supporting staff, and that consistency of training is delivered to all apprentices on the training programme.</p> <p>Employers when selecting a relevant training provider should interrogate the provider's quality control procedures to ensure that robust processes that ensures effective training delivery using experienced trainers and the availability of suitable resources.</p> <p>Many established training organisations would likely be accredited under one or more awarding organisations, associations, funding bodies or plant-card schemes, of which the providers would be subject to regular audits by these bodies. Employers should check with their chosen provider on how they've complied with the accredited bodies quality control requirements.</p>

## Training Syllabus

Learning outcomes		Training programme content	
Roles and responsibilities (lifting technician)	<p>1. Describe the nature of the sector of industry and their role and responsibilities as a lifting technician</p>	<ul style="list-style-type: none"> <li>• Constitution of the lifting sector</li> <li>• Sectors of industry served by the lifting sector</li> <li>• Customer/client needs for lifting operations</li> <li>• Sector contribution to UK industry's needs</li> <li>• Role of the operator</li> <li>• Reporting structures of the organisation</li> <li>• Importance and factors of lifelong skills</li> <li>• Sector working practices</li> <li>• Principles and aims of health and safety at work</li> <li>• Employer and employee's duties and responsibilities under law</li> <li>• Accident prevention and control in the workplace.</li> <li>• Procedures for handling plant-related harmful substances</li> </ul>	<ul style="list-style-type: none"> <li>• Communication methods and protocols with colleagues/management /other trades/customers</li> <li>• Responsibilities under the Health and Safety at Work Act</li> <li>• Environmental issues associated with lifting operations</li> <li>• Other trades that work with or are impacted by lifting operations</li> <li>• Social responsibilities of the individual and the organisation</li> <li>• Procedures for dealing with hazards and risks</li> <li>• Selecting health and safety control equipment (PPE) for various work situations or environments.</li> </ul>
Preparing for work (crane)	<p>2. Name and explain the purpose of principal components, the basic construction, controls and terminology</p>	<ul style="list-style-type: none"> <li>• Differing types of crawler cranes</li> <li>• Functions, applications and terminology of crane components</li> <li>• Types and function of power units</li> <li>• Hydraulic systems functions and components</li> <li>• Purpose and types of counterweights</li> <li>• Chassis types and methods of steering and travelling</li> </ul>	<ul style="list-style-type: none"> <li>• Stability factors and issues</li> <li>• Types and functions of booms/jibs</li> <li>• Hoisting gear / ropes arrangements</li> <li>• Types, purpose and methods of crane safety systems</li> <li>• Crane slewing arrangements</li> <li>• Types of common attachments</li> </ul>

## Syllabus (cont'd)

Learning outcomes		Training programme content	
Preparing for work (crane)	3. Conform with manufacturer's requirements as per the operator's handbook, other types of information source and relevant regulations and legislation	<ul style="list-style-type: none"> <li>Function and use of Operator's Manuals and other information sources</li> <li>Use of duties charts and delivery of relevant information</li> <li>Use of ground loading charts</li> <li>Extracting and applying information from a variety of sources</li> <li>Purpose and location of machine decals</li> <li>Requirements of HASWA for information, instruction etc.</li> <li>Types and use of health and safety control equipment</li> </ul>	<ul style="list-style-type: none"> <li>Lifting operations legislative requirements and limitations of lifting</li> <li>Use of and content within method statements</li> <li>Use of and content of risk assessments Inc. COSHH</li> <li>Function and methods of checks, inspections and reporting forms procedures</li> <li>Extracting and following lift plan information</li> <li>Functions of codes of practice</li> <li>Types and content of site plans/drawings</li> </ul>
	4. Explain all relevant documentation	<ul style="list-style-type: none"> <li>Requirements of test certificates and typical content</li> </ul>	<ul style="list-style-type: none"> <li>Requirements of thorough examination certificates and typical content</li> </ul>
	5. Undertake pre-use checks, running and weekly checks and inspections	<ul style="list-style-type: none"> <li>Types, actions and the carrying out of regular and non-scheduled checks, maintenance procedures and basic inspections</li> </ul>	<ul style="list-style-type: none"> <li>Sequence of pre-use checks</li> <li>Defect reporting procedures and responsibilities</li> <li>Responsibilities for checking and inspecting</li> <li>Legislative requirements for checks and inspections.</li> </ul>
Travelling & manoeuvring (crane)	6. Configure and set for travel (site and highway)	<ul style="list-style-type: none"> <li>Correct use of crane operating and tracking controls</li> <li>Transporting requirements for attachments and other resources</li> <li>Stowage and security of all component and accessories</li> </ul>	<ul style="list-style-type: none"> <li>Setting up procedure for the operating position</li> <li>Visibility requirements and actions, inc. marshalling arrangements</li> <li>Positioning and security of the boom /jib</li> <li>Use of jib and slew locks</li> </ul>

**Syllabus (cont'd)**

Learning outcomes		Training programme content	
Travelling & manoeuvring (crane)	7. Travel the crane to an area of work	<ul style="list-style-type: none"> <li>• Use of tracking controls for travel</li> <li>• Ground condition requirements for travelling with crawler cranes</li> <li>• Travelling on loose, uneven and non-compacted surfaces and inclines</li> <li>• Ground pressure loadings for travelling on non-compacted ground</li> </ul>	<ul style="list-style-type: none"> <li>• Hazards relating to crane travel</li> <li>• Travelling to and into the working area</li> <li>• Travelling on designated site routes</li> <li>• Environment protection/minimising damage to ground and surrounding area</li> <li>• Facing the direction of travel</li> </ul>
	8. Manoeuvre in confined spaces	<ul style="list-style-type: none"> <li>• Issues and actions for poor or limited visibility</li> <li>• Limitations of vision when manoeuvring a crawler crane</li> <li>• Hazards to the crane and others within the manoeuvring areas</li> </ul>	<ul style="list-style-type: none"> <li>• Height restrictions and markings</li> <li>• Protection of ground during tight turns</li> <li>• Clearance between crane components inc. jib/boom and structures</li> <li>• Environmental issues including noise and fumes</li> </ul>
Setting up for work (crane)	9. Configure the crane for lifting duties	<ul style="list-style-type: none"> <li>• Positioning the crane for a lifting operation</li> <li>• Required configuration in accordance with the lift plan</li> <li>• Use of crane (lifting-related) controls</li> <li>• Environmental conditions and effects on configuring cranes</li> <li>• Ground support requirements and conditions that require support</li> <li>• Use and methods of load spreading</li> </ul>	<ul style="list-style-type: none"> <li>• Hazards when configuring a crane</li> <li>• Levelling a crane and issues of lifting on inclines</li> <li>• General site markings and for the area of lifting</li> <li>• Effects of falls of rope and how they are increased/reduced</li> <li>• How ground bearing pressure is determined and by whom</li> <li>• What constitutes the footprint of the crane</li> </ul>
	10. Explain rigging and de-rigging procedures when fitting a lattice-type extension	<ul style="list-style-type: none"> <li>• Types of common extensions used</li> <li>• Fitting and removing procedures</li> <li>• Hazards associated with the fitting and removal of jib extensions</li> <li>• Method of supporting extensions during fitting and removing</li> </ul>	<ul style="list-style-type: none"> <li>• Storage and moving of jib extensions</li> <li>• Testing and re-certification requirements</li> <li>• Use of lift duty charts and setting up RCLs for additional extensions</li> </ul>

**Syllabus (cont'd)**

	Learning outcomes	Training programme content	
<b>Working tasks (carne)</b>	11. Explain action required for hazards, underground and overhead services	<ul style="list-style-type: none"> <li>Types of typical overhead and underground services and hazards</li> <li>Warning/identification systems for services/hazards</li> </ul>	<ul style="list-style-type: none"> <li>Reporting procedures for damage to services</li> <li>Minimum distances and clearances for overhead and underground services</li> </ul>
	12. Programme/Set-up Rated Capacity Indicators for lifting duties	<ul style="list-style-type: none"> <li>Definition of RCIs</li> <li>Regulations/legislation regarding the setting up and use of RCIS</li> <li>Principles of operation of typical/common RCIs</li> <li>Setting up RCIs for lifting duties</li> </ul>	<ul style="list-style-type: none"> <li>Function and application of common RCI types</li> <li>Testing, setting/programming for different duties</li> <li>How the number of falls can affect RCIs</li> </ul>
	13. Lift various loads using the full radius and slewing capabilities of a crane	<ul style="list-style-type: none"> <li>Use of the duties charts and other information sources</li> <li>Lifting accessories and slinging requirements for types of loads</li> <li>Following lift plan information</li> <li>Use of lifting controls to lift and move loads</li> <li>Effects of boom deflection</li> <li>Signalling and communication procedures for each lift</li> <li>Typical hazards for each type of lift.</li> </ul>	<ul style="list-style-type: none"> <li>Maintaining stability during lifting operations</li> <li>Purpose and carrying out trial lifts</li> <li>Stability and security of a range of loads</li> <li>Visibility issues and limitations during lifting operations</li> <li>Environmental conditions Inc. effects of excessive wind and rain</li> <li>Dealing with load swings</li> <li>Effects of falls of rope for different types of load or operation</li> </ul>
	14. Accurately place loads	<ul style="list-style-type: none"> <li>Ground conditions/hazards for load landing areas</li> <li>Crane operator visibility for the landing area</li> <li>Signalling/following instructions for the landing of loads</li> </ul>	<ul style="list-style-type: none"> <li>Maintaining stability during the operation</li> <li>Controlling load swings when placing loads</li> <li>Procedures for and the carrying out of out-of-sight lifts</li> <li>Protection of lifting accessories during the operation and after landing each loads</li> </ul>
	15. Change falls of rope on a hook block	<ul style="list-style-type: none"> <li>Determining the number of falls of rope for a lifting operation</li> <li>Security of all components prior to, during and after changing falls of rope</li> <li>Stability factors if falls of rope are changed</li> </ul>	<ul style="list-style-type: none"> <li>Procedures for changing falls of rope</li> <li>Types of hook block and how they need to be configured</li> <li>Lifting duties/RCI set-up following changes to falls of rope</li> </ul>

**Syllabus (cont'd)**

	Learning outcomes	Training programme content	
Working tasks (crane)	16. Minimise the swinging of loads	<ul style="list-style-type: none"> <li>• Factors of rope length on load swings</li> <li>• Techniques of minimising/controlling load swings</li> <li>• Effects of slew speeds on load control</li> </ul>	<ul style="list-style-type: none"> <li>• Observation/anticipation of when load swings will occur</li> <li>• Effects on crane stability with a swinging load</li> </ul>
	17. Move loads through machine travel	<ul style="list-style-type: none"> <li>• Duties charts for pick-and-carry duties</li> <li>• Configuration of the crane for pick-and-carry duties</li> <li>• Stability of the crane pick-and-carry duties</li> <li>• Establishing the route/ground condition</li> <li>• Load integrity/security for moving loads</li> <li>• Positioning of load handlers</li> </ul>	<ul style="list-style-type: none"> <li>• Load swing control during pick-and-carry duties</li> <li>• Visibility issues when carrying out pick-and-carry duties</li> <li>• Hazards to be observed and precautions to be taken when undertaking pick-and-carry duties</li> <li>• Regulations/legislation requirements that apply to pick-and-carry duties</li> </ul>
	18. Comply with signals and instructions	<ul style="list-style-type: none"> <li>• Communication methods with the lifting team</li> <li>• Methods and types of hand signals and visual instructions</li> <li>• Methods of verbal instruction and advantages and disadvantages of this method</li> <li>• Multiple signalling requirements</li> </ul>	<ul style="list-style-type: none"> <li>• Electronic communication/setting-up procedures and limitations of radio use</li> <li>• Codes of Practice for the use of radios, hand signals and other communication methods</li> <li>• Radio-use protocol</li> </ul>
	19. Maintain safe working situations	<ul style="list-style-type: none"> <li>• Issues that compromise stability and safety</li> <li>• How load swings can affect stability</li> </ul>	<ul style="list-style-type: none"> <li>• Load security methods and issues</li> <li>• Range of typical hazards that have affected safe lifting operations</li> </ul>
Shutting down (crane)	20. Prepare the crane for movement following lifting duties completion	<ul style="list-style-type: none"> <li>• Stowage of materials / accessories for travel purposes</li> </ul>	<ul style="list-style-type: none"> <li>• Travel configuration for travelling around typical sites</li> </ul>
	21. Carry out shut down and securing procedures	<ul style="list-style-type: none"> <li>• Shut down procedures Inc. safe access and egress for the operator</li> <li>• Parking and positioning the crane following the completion of lifting operations</li> </ul>	<ul style="list-style-type: none"> <li>• Security requirements and limiting unauthorised access to the crane</li> </ul>

**Syllabus (cont'd)**

Learning outcomes		Training programme content	
Shutting down (crane)	22. Explain the loading and unloading procedures for machine transporting	<ul style="list-style-type: none"> <li>• Compatibility of crane and transporter e.g. axle loading, transporter bed size etc.</li> <li>• Positioning of the transporter and crane prior to loading/unloading</li> <li>• Crane configuration and de-rigging procedures</li> <li>• Legislative requirements of transporting cranes on the public highway</li> </ul>	<ul style="list-style-type: none"> <li>• Crane stability with removed components</li> <li>• Loading ramp and transporter bed security requirements</li> <li>• Crane accessing/egressing when on transporter bed</li> <li>• Securing the crane for transport</li> <li>• Hazards and precautions when manoeuvring a crane onto and from a transporter</li> </ul>
Preparing for slinging /signalling work	23. Name and explain the purpose of differing types of lifting equipment and lifting accessories, basic construction, uses and applications, characteristics and terminology	<ul style="list-style-type: none"> <li>• Types of lifting equipment used for construction-related lifting operations</li> <li>• Types of accessories including specialist and non-specialist</li> <li>• Construction type materials and equipment typically handled by a slinger</li> <li>• Definitions of SWL / WLL</li> </ul>	<ul style="list-style-type: none"> <li>• Functions of common types of lifting equipment used for construction-related operations</li> <li>• Uses and applications for a range of lifting accessories</li> <li>• Applications for common specialist types of accessories</li> <li>• Definitions and terminology relating to lifting equipment and accessories</li> </ul>
	24. Conform with lifting accessory manufacturer's requirements as per technical data, other types of information source and relevant regulations and legislation	<ul style="list-style-type: none"> <li>• Function and use of information sources and relevant information</li> <li>• Purpose and location of machine and equipment-related information and warning decals</li> <li>• Requirements of HASWA for information, instruction etc.</li> <li>• Types and use of health and safety control equipment</li> </ul>	<ul style="list-style-type: none"> <li>• Lifting operations legislative requirements and limitations of lifting</li> <li>• Function and methods of checks, inspections and reporting forms procedures for lifting accessories</li> </ul>
	25. Interpret and extract information on all relevant documentation	<ul style="list-style-type: none"> <li>• Requirements of test certificates and typical content</li> <li>• Requirements of thorough examination certificates and typical content</li> </ul>	<ul style="list-style-type: none"> <li>• Use of load/tare sheet and other sources of information relating to loads</li> <li>• Function and use of duties charts</li> <li>• Extracting and applying information from a range of accessory certification</li> </ul>

**Syllabus (cont'd)**

	Learning outcomes	Training programme content	
Preparing for slinging / signalling work	26. Undertake all pre-use checks on non-specialist lifting accessories (relevant to the endorsement) and identify non-serviceable accessories	<ul style="list-style-type: none"> <li>• Types and level of typical damage and defects to lifting accessories</li> <li>• Sequence of undertaking pre-use checks</li> </ul>	<ul style="list-style-type: none"> <li>• Checking and examining procedures for a range of lifting accessories</li> <li>• Types of in-service and out-of-service markings</li> </ul>
	27. Identify specialist lifting accessories relevant to the endorsement	<ul style="list-style-type: none"> <li>• Types of construction-specific specialist accessories</li> <li>• Applications and use of typical specialist accessories</li> <li>• Types of information sources for specialist accessories how they are to be used</li> <li>• Manual handling requirements for a range of specialist accessories</li> <li>• Typical weights and centres of gravity</li> </ul>	<ul style="list-style-type: none"> <li>• Specialist checks</li> <li>• Attaching/detaching procedures for a range of specialist accessories</li> <li>• Adjustments/setting up procedures</li> <li>• Additional training requirements for a range of specialist accessories</li> <li>• Specialist accessory storage procedures</li> </ul>
	28. Explain when additional skills and knowledge for lifting operations may be required	<ul style="list-style-type: none"> <li>• Procedures for when changes in the lift plan are required</li> <li>• Environmental effects that can affect abilities of a slinger</li> <li>• Effects of working in a new working area</li> <li>• Effects of changes or addition of team members</li> </ul>	<ul style="list-style-type: none"> <li>• How new types of accessories can affect a slingers abilities</li> <li>• Issues of working between different types of lifting equipment</li> <li>• Procedures for dealing with changes to site/working area requirements</li> </ul>
	29. Explain procedures for placing non-serviceable items out-of-service	<ul style="list-style-type: none"> <li>• How and when defects should be reported</li> <li>• How defective items should be isolated and removed from use</li> </ul>	<ul style="list-style-type: none"> <li>• How defective items should be disposed off</li> </ul>
	30. Confirm methods of communication with the machine operator	<ul style="list-style-type: none"> <li>• Types of signals relevant to the lifting equipment type</li> <li>• Methods of verbal instruction and limitations for a given lifting operation</li> </ul>	<ul style="list-style-type: none"> <li>• When multiple hand-signalling is required</li> <li>• Codes of Practice and industry good practice guidance in relation to lifting operations communication</li> </ul>

**Syllabus – (cont'd)**

	Learning outcomes	Training programme content	
Setting up for slinging signalling work	31. Identify centres of gravity and weights of loads	<ul style="list-style-type: none"> <li>• Range of typical load types relevant to the industry and endorsement</li> <li>• How centres of gravity are determined</li> <li>• Issues that can affect load integrity and security and methods to minimise issues</li> <li>• How load density and shapes affect safe slinging</li> </ul>	<ul style="list-style-type: none"> <li>• Undertake basic calculations to determine safe movement of loads</li> <li>• Effect of moisture in the contents of a load</li> <li>• Use of information sheets / load markings to determine weights, C of G and stability</li> </ul>
	32. Prepare and ready the area of operation and maintain exclusion zones	<ul style="list-style-type: none"> <li>• Conform and apply the required configuration from sources such as the lift plan</li> <li>• Judging heights and distances to ensure safe lifting operations</li> <li>• Apply signage/barriers to keep pedestrian walkways and moving plant/vehicles from the lifting area</li> </ul>	<ul style="list-style-type: none"> <li>• Effects of environmental conditions on the working area – wind, wet ground etc.</li> <li>• Range of proximity hazards for lifting operations and typical control measures</li> <li>• Site procedures for areas of operation</li> <li>• Personnel identification for working within the exclusion zone</li> </ul>
	33. Choose the relevant lifting accessory for a given load	<ul style="list-style-type: none"> <li>• Identifying the lifting equipment capacity</li> <li>• Identifying the lifting accessory capacity</li> <li>• Required types of accessory for a load's size, weight and application</li> <li>• Identifying the weight of a load</li> <li>• Identification of the weight of the lifting accessory being used</li> <li>• Differences between SWL and WLL and how they are reduced</li> </ul>	<ul style="list-style-type: none"> <li>• Extracting information from the lift plan</li> <li>• Additional accessories that may be needed for given loads</li> <li>• Identification of a load's characteristics – loose, bundled, fluid, long, fragile etc.</li> <li>• How sling angles affect lift capacity</li> <li>• When lifting accessories need to be de-rating</li> </ul>
	34. Explain actions required for hazards including underground and overhead services	<ul style="list-style-type: none"> <li>• Types of typical overhead and underground services and hazards</li> <li>• Warning/identification systems for services/hazards Reporting procedures for damage to services</li> </ul>	<ul style="list-style-type: none"> <li>• Minimum distances and clearances for overhead and underground services</li> <li>• Multiple lifting equipment use and the need for co-ordination</li> </ul>

**Syllabus (cont'd)**

	Learning outcomes	Training programme content	
Working tasks (Slingsing/Signalling)	35. Secure and detach various types of load to the requisite lifting hook using the relevant lifting accessory and procedures	<ul style="list-style-type: none"> <li>Attaching lifting accessories to a range of given loads</li> <li>Identify the required SWL/WLL for the lifting equipment and load</li> <li>Attaches the accessory according to load type</li> <li>Load characteristics taken into account when attaching accessories</li> <li>Slingsing procedures for a range of given loads Inc. various sizes, weights, shapes and characteristics</li> </ul>	<ul style="list-style-type: none"> <li>Identification and use of load lifting points</li> <li>Protection of the lifting accessory during attaching</li> <li>Taking into account retrieval of accessories after landing</li> <li>Environmental factors that can affect safe attaching on a variety of loads</li> <li>Protection of the load during attaching</li> </ul>
	36. Ensure load balance, security and integrity	<ul style="list-style-type: none"> <li>Purpose of trial lifts</li> <li>Ensuring stability of given loads through the lifting operation</li> <li>Ensuring the C of G/balance of a load during a lift</li> <li>Functions, applications and use of netting / sheeting</li> </ul>	<ul style="list-style-type: none"> <li>Fluid loads</li> <li>Load surface area</li> <li>How environmental conditions such as wind, rain etc. can affect safe movements of a load</li> </ul>
	37. Guide and control the movement of loads to different types of location	<ul style="list-style-type: none"> <li>Establishing the route for each load</li> <li>Visibility factors during load movement</li> <li>Ensuring clearance/maintaining distances between other personnel / public areas</li> <li>How load swings can be caused</li> <li>Issues of being trapped between the load and a structure</li> <li>Options of tethering loads</li> </ul>	<ul style="list-style-type: none"> <li>Hand line use and requirements</li> <li>Attaching hand lines to a range of loads</li> <li>Maintaining communication during load movement</li> <li>Hazards associated with the movement of loads</li> <li>Identifying areas where there is a risk of slips, trips and falls</li> <li>Environmental considerations associated with load movement</li> </ul>
	38. Explain the importance and locations of positions of safety for a slinger and other personnel	<ul style="list-style-type: none"> <li>Identifying the layout of the work area</li> <li>Identifying issues with the types of vehicle/plant in work area</li> <li>Identifying clearances and potential crush zones and control measures to avoid trappings etc.</li> </ul>	<ul style="list-style-type: none"> <li>The need for pedestrian segregation/demarcation</li> <li>The purpose and need for refuges</li> <li>Actions needed for poor light/darkness conditions</li> </ul>

**Syllabus (cont'd)**

Learning outcomes		Training programme content	
Working tasks (Slinging/Signalling)	39. Accurately place loads	<ul style="list-style-type: none"> <li>• Verification of the desired load landing location</li> <li>• Condition of and hazards within the load landing area</li> <li>• Visibility at the landing area between load handler and lifting equipment operator</li> <li>• Procedures and issues with Out-of-sight lifts</li> <li>• Removing and retrieving the accessories after load landing</li> <li>• Signalling methods for the accurate placing of loads in a variety of situations</li> </ul>	<ul style="list-style-type: none"> <li>• Requirements of landing loads at height</li> <li>• Establishing the security of loads after landing</li> <li>• Minimising load swings during load placing</li> <li>• Maintaining protection of the load and lifting accessories</li> <li>• Environmental considerations that can affect the landing and accurate placing of loads</li> </ul>
	40. Use and comply with a range of communication procedures	<ul style="list-style-type: none"> <li>• Communication methods with the lifting team</li> <li>• Methods and types of hand signals and visual instructions</li> <li>• Methods of verbal instruction and advantages and disadvantages of this method</li> <li>• Multiple signalling requirements</li> </ul>	<ul style="list-style-type: none"> <li>• Electronic communication/setting-up procedures and limitations of radio use</li> <li>• Codes of Practice for the use of radios, hand signals and other communication methods</li> <li>• Radio-use protocol</li> </ul>
	41. Provide directions where the machine operator cannot observe the full path of the load	<ul style="list-style-type: none"> <li>• Effective communication procedures and methods</li> <li>• Access and egress to the load lifting/landing areas</li> </ul>	<ul style="list-style-type: none"> <li>• Requirements for additional signallers</li> <li>• Working at height requirements for additional signallers</li> </ul>
	42. Maintain safe working situations	<ul style="list-style-type: none"> <li>• Issues that compromise stability and safety</li> <li>• How load swings can affect stability</li> </ul>	<ul style="list-style-type: none"> <li>• Load security methods and issues</li> <li>• Range of typical hazards that have affected safe lifting operations</li> </ul>

**Syllabus (cont'd)**

	Learning outcomes	Training programme content	
Working tasks (Slings/Signalling)	43. Assess and confirm that the area for machine movement is suitable for manoeuvring activities and contains suitable locations to undertake marshalling duties	<ul style="list-style-type: none"> <li>• Use of traffic management plan/risk assessments</li> <li>• Identifying proximity hazards</li> <li>• Number and type of access/egress routes</li> <li>• Effects of ground conditions for load travel</li> <li>• Traffic plan requirements for load travel</li> <li>• Identification of safe marshalling locations</li> </ul>	<ul style="list-style-type: none"> <li>• Establishing emergency procedures specifically for load movement and moving machinery</li> <li>• Identify areas of risk and actions to be taken to minimise slips, trips and falls</li> <li>• Identification of crush zones</li> <li>• Vehicle /plant size and manoeuvrability relative to the work area</li> <li>• Reversing distances and the need to minimising all reversing</li> </ul>
	44. Control loads during pick-and-carry duties	<ul style="list-style-type: none"> <li>• Additional communication procedures with lifting equipment operator</li> <li>• Identifying safe travel routes and effects of load and machine movement on inclines</li> <li>• Effects of ground type and conditions during load and machine movement</li> <li>• Load swings</li> <li>• Wind effects/sail area on loads during machine and load movement</li> </ul>	<ul style="list-style-type: none"> <li>• Additional hand-line/tethering requirements for machine and load movement</li> <li>• Identifying and maintaining clearances between machine and load handler</li> <li>• Visibility limitations of lifting equipment operator during machine and load movement</li> <li>• Use of additional personnel to aid safe movement of machine and load</li> </ul>
Completing work (Slings/Signalling)	45. Carry out out-of-service, storing and securing procedures	<ul style="list-style-type: none"> <li>• Cleaning procedures and protecting accessories for future use</li> <li>• Manual handling of accessories for storage</li> <li>• Storage procedures for a range of lifting accessories</li> </ul>	<ul style="list-style-type: none"> <li>• Checking for damage to accessories post lifting operation use</li> <li>• Security of accessories</li> <li>• Completing and maintaining appropriate documentation</li> </ul>

**Note 1:** The listed training programme content should not be considered exhaustive and subjects may be added to reflect the individuals' working environment.

**Note 2:** the learning outcomes, syllabus and safety critical aspects of slinging signalling assume that the duty will be taken for a variety of lifting equipment.

## Safety Critical - crane and slinging/signalling

*Trainer and employers need to place emphasis to be placed on the following topics during the training programme:*

Topic	Emphasis
<ul style="list-style-type: none"> <li>Lift plans / method statements</li> </ul>	<ul style="list-style-type: none"> <li>Lift plan types and requirements and the need for lift planning. Adherence to the lift plan as constructed by a competent person</li> </ul>
<ul style="list-style-type: none"> <li>Fitting and removing fly jibs and jib extensions</li> </ul>	<ul style="list-style-type: none"> <li>Specific training and strong adherence to the specific manufacturer's procedures</li> </ul>
<ul style="list-style-type: none"> <li>Tidiness of the work area/good housekeeping</li> </ul>	<ul style="list-style-type: none"> <li>Ensuring that area of operation is organised and of suitable ground so that slips, trips &amp; falls are minimised, and that materials are suitably and safely stored</li> </ul>
<ul style="list-style-type: none"> <li>Controlling loads under pick and carry duties</li> </ul>	<ul style="list-style-type: none"> <li>Ensuring the travel route minimises the risk of slips, trips and falls and keeping well clear of the moving path of the machine whilst keeping in full vision of the machine operator and</li> </ul>
<ul style="list-style-type: none"> <li>Stability of machines with raised boom on uneven ground</li> </ul>	<ul style="list-style-type: none"> <li>Checking ground suitability prior to raising loads. Travelling and manoeuvring with raised loads. Appreciation of centres of gravity</li> </ul>
<ul style="list-style-type: none"> <li>Attaching and detaching loads to and from non-hoist rope equipment</li> </ul>	<ul style="list-style-type: none"> <li>Confirmation with machine operator in being safe to undertake work whilst in close proximity to boom/dipper components e.g. tele-handlers, excavators etc. and risks of unintentional component movement (raising/lowering/sideways)</li> </ul>
<ul style="list-style-type: none"> <li>Suspended loads and proximity hazards</li> </ul>	<ul style="list-style-type: none"> <li>Issues relating to travelling with raised boom, an operator's limitation of vision when travelling with raised boom and suspended large area loads</li> </ul>
<ul style="list-style-type: none"> <li>Suspended loads during travel</li> </ul>	<ul style="list-style-type: none"> <li>The effects and consequences of load swing when travelling with a suspended load, particularly on inclines and windy weather Inc. knowledge of wind speed limits/sail effect etc.</li> </ul>
<ul style="list-style-type: none"> <li>Out-of-sight (Inc. below ground level) load lifting and placing</li> </ul>	<ul style="list-style-type: none"> <li>Implementing of procedures for effective communication when lifting or placing loads in confined areas, areas out-of-sight of the machine operator such as below ground level load lifting and placing</li> </ul>
<ul style="list-style-type: none"> <li>Tidiness of the work area/good housekeeping</li> </ul>	<ul style="list-style-type: none"> <li>Ensuring that area of operation is organised and of suitable ground so that slips, trips &amp; falls are minimised, and that materials are suitably and safely stored</li> </ul>
<ul style="list-style-type: none"> <li>Controlling loads under pick and carry duties</li> </ul>	<ul style="list-style-type: none"> <li>Ensuring the travel route minimises the risk of slips, trips and falls and keeping well clear of the moving path of the machine whilst keeping in full vision of the machine operator</li> </ul>
<ul style="list-style-type: none"> <li>Stability of machines with raised boom on uneven ground</li> </ul>	<ul style="list-style-type: none"> <li>Checking ground suitability prior to raising loads. Travelling and manoeuvring with raised loads. Appreciation of centres of gravity</li> </ul>