

Construction Skills Certification Scheme

Candidate Pack for– CSCS Tower Crane

Please read this document carefully. Further information and clarification may be obtained from the CSCS Operations Unit, phone 01 533 2500

Guidance Notes for Candidates

The following documents are also attached:

- Part 1 – Skills Self-Analysis
- Part 2 – Applicant Details
- Part 3 – Endorsement of Operating Competence
- Part 4 – Practical Test Criteria

Aim of Programme

The CSCS crane training and assessment programme enables trained construction crane operators to gain recognition for their achievements by the way of certification, and provide an opportunity for participants to demonstrate their skills, knowledge and attitudes associated with plant operations, which provides suitable certification.

Candidate Profile

Candidates for this programme must:

- Have at least six months full time experience operating as a trainee Tower Crane operator in construction in accordance with the 5th Schedule – of the Safety, Health and Welfare at Work (Construction) Regulations 2013 – S.I. No. 291 of 2013. The six months experience must be within the last two years.
- Be in possession a valid 'Safe Pass' registration card
- Be in possession of a valid CSCS Slinger/Signaller card
- Be at least 18 years of age

Note: The above items must be verified by the current or previous employer (Part 3 of this pack)

Application Requirements

- Approved Training organisations must send the Candidate Pack and Course Notes to the Candidate at least five days prior to the course date.
- Sections A B and C of Part 2 need to be completed by the applicant with Part 3 completed by the employer.
- Section C of part 2 must list at least six months full time experience operating as a trainee Tower Crane operator.
- Part 1 - Skills Self-analysis, Part 2 Applicant Details and Part 3 - Endorsement of Operating Competence must be completed and submitted to the chosen Approved Training Organisation at least one-day prior to attending the one-day training and assessment programme. Failure to do so will result in the candidate being unable to complete the programme.

Candidates must bring with them on the day:- a passport sized photograph, their Safe Pass card, CSCS Slinger Signaller card plus safety helmet, safety boots, reflective 'hi-viz' jacket and gloves.

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One Day Programme Content

Induction

Registration and induction will be undertaken at the start of the day. Candidates **must** present their Safe Pass and Slinger Signaller cards and photograph to the assessor. Parts 1, 2 and 3 must be already submitted.

Skills Validation Session

Candidates will undertake a minimum of a 3 hour Skills Validation Session with the course instructor. The Skills Validation Session cannot give skills and knowledge not held, but allows trained operators to eliminate 'bad habits' gained on site.

Please note that the instructor has the right to refuse the candidate access to the test if they have demonstrated dangerous operating skills that contravene any part of the Safety, Health and Welfare Regulations.

Theory Test

On completion of the Skills Validation Session, candidates are allowed 45 minutes to undertake a multi-choice question paper. Questions will be based on the following:

- Legislation and regulations
- Employer and employee responsibilities
- Safe working practices
- Crane components and functions
- Correct operating techniques
- Pre-use checks and basic maintenance
- Types and characteristics of materials and loads
- Site safety
- Shut down and securing procedures

Subjects that the questions will be based on will be covered during the Skills Validation Session.

To be successful on the theory test, candidates must achieve a minimum of 70% of the total available marks. Candidates who achieve a minimum of 85% will be awarded a credit.

Practical Test

On the test the candidate will demonstrate tasks with the Crane. The tasks to be undertaken, equipment required and a sample grading sheet is contained in Part 4 of this pack – Practical Test criteria. Part 4 of this pack details the equipment and resources needed for the test and the tasks the candidate will be expected to carry out with a Tower Crane.

The grading sheet is divided into essential items and scored marks. Scored marks allow a limited number of minor errors to be made. To succeed, the candidate must achieve all essential items and not exceed the maximum score. Candidates who score no penalty marks as well as all the essential marks will be awarded a credit. The practical test has a maximum time of 1 hour and 15 minutes in which all tasks must be completed.

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Feedback and Certification

If a candidate meets the required standard, the approved training organisation will send the relevant assessment documentation to SOLAS for certification and registration. The CSCS card is printed and posted to the training provider for distribution. A QQI certificate will also be awarded as a result of a pass on the one-day programme.

Candidates who achieve a credit in the theory test **and** practical test will be awarded an overall credit.

Candidates who are referred will receive written feedback from the assessor, and may be advised to undertake further training and/or site experience.

If a candidate is successful in the theory but not the practical part of the test, then they may re-attempt just the practical part. If the candidate has not been successful in the theory test, then they may not attempt the practical test.

This concession may only occur if the candidate returns to the same approved trainer and training organisation within 9 months. If they choose to go to a different organisation, they will have to do both the practical and theory parts again.

For learners who do not reach the required standard, a period of 5 days must elapse before they can retake the test.

Registration Card Duration

CSCS registration cards are valid for five years and can be renewed up to six months before the expiry date

Cancellation of Certificates and Cards

Where it is discovered that the information provided by the Candidate was incorrect or the programme was not delivered in accordance with SOLAS specifications the Certification and registration card may be withdrawn and the relevant authorities notified.

PARTICIPANT DATA PROTECTION NOTICE

1. PERSONAL DATA COLLECTED AND OBTAINED

This Data Protection Notice ("**Notice**") sets out the basis on which SOLAS ("**SOLAS**", "**we**", "**our**" or "**us**") of Block 1, Castleforbes House, Castleforbes Road, Dublin 1 will use the personal details ("**Personal Data**") you will provide when completing the participant application form (the "**Form**") to be registered as a CSCS/QSCS cardholder. This Notice also details how SOLAS will process your Personal Data for the purpose of assessing your Form and, if successful, issuing your CSCS/QSCS card to you ("**Card**"). The Personal Data we obtain from you will be held by SOLAS as a controller.

SOLAS will collect and process the Personal Data that you provide in the Form (e.g. name, contact details, PPSN, address, photograph, occupation and employer details.).

IMPORTANT: where you provide Personal Data about other individuals (eg your existing/previous employer or endorsers), you agree that you are responsible for ensuring that such individuals know their Personal Data will be used by SOLAS accordance with this Notice.

2. HOW AND WHY WE PROCESS YOUR PERSONAL DATA

This section details how ("**legal basis**") and why ("**purposes**") we process your Personal Data:

Legal basis: it is necessary to process your Personal Data to enter into and perform our contract with you including for the following purposes: (a) to process your Form; (b) to issue you with a Card; (c) to verify your Card on an ongoing basis; (d) to renew your Card where you ask us to do so; and (e) to respond to you when we receive any correspondence from you. **IMPORTANT:** If you do not provide us with your Personal Data so that we can process it for the above purposes, we will not be able to assess or process your Form, issue you with or renew your Card and/or communicate with you as necessary in relation to your Form and/or your Card.

Legal basis: it is also necessary to process your Personal Data for the purpose of complying with legal obligations to which we are subject including to fulfil our statutory functions.

3. DISCLOSURE OF YOUR PERSONAL DATA

We may disclose some or all of your Personal Data to the following parties: SOLAS business units, SOLAS agents or service providers including CSCS/QSCS trainers, your existing or potential employers, government and state authorities including in particular the Construction Industry Federation (CIF), Credit Card Systems Ireland Ltd and Quality and Qualifications Ireland. We may also disclose your Personal Data to third parties if we are under a legal duty to disclose or share your Personal Data in order to comply with any legal or regulatory obligation or request or to perform a public function.

4. KEEPING YOUR PERSONAL DATA

We will keep your Personal Data for the period for which your Card is valid and/or renewed and for a period of 7.5 years from when your Card expires and/or is not renewed. In some cases, we will need to retain your Personal Data for longer periods for compliance with legal obligations imposed on us or where we are a party to legal proceedings with you, and to ensure you a continued client service. Such Personal Data will be securely retained in line with the SOLAS records retention and disposal Procedure.

5. YOUR RIGHTS

This subsection sets out the rights which you have to address any concerns or queries with us about our processing of your Personal Data:

| Right | Further Information |
|----------------------|---|
| Right to be Informed | <ul style="list-style-type: none">You have the right to know whether your Personal Data are being |

| | |
|---|---|
| | processed by us, how we use your Personal Data and your rights in relation to your Personal Data. We comply with this by way of this Notice. |
| Right of Access | <ul style="list-style-type: none"> You have the right to request a copy of the Personal Data held by us about you. We will only charge you for making such an access request where we feel your request is unjustified or excessive. |
| Right to Rectification | <ul style="list-style-type: none"> You have the right to request that we amend any inaccurate Personal Data that we have about you. |
| Right to Erasure | <ul style="list-style-type: none"> You have the right to ask us to erase your Personal Data where: <ol style="list-style-type: none"> it is no longer necessary to perform your contract with us; you object to the processing and we have no overriding legitimate grounds; your Personal Data has been unlawfully processed; or it must be erased to comply with a legal obligation. |
| Right to Restriction of Processing | <ul style="list-style-type: none"> You have the right to ask us to restrict processing your Personal Data in the following situations: <ol style="list-style-type: none"> where you contest the accuracy of your Personal Data; where the processing is unlawful and you do not want us to delete your Personal Data; or where we no longer need your Personal Data for the purposes of processing but you require the data in relation to a legal claim. When you exercise this right we may only store your Personal Data. We may not further process the data unless you consent or the processing is necessary in relation to a legal claim or to protect the rights of another person or legal person or for reasons of important public interest. We will inform you before the processing restriction is lifted. |
| Right to Data Portability | <ul style="list-style-type: none"> You may request us to provide you with your Personal Data which you have given us, in a structured, commonly used and machine-readable format and you may request us to transmit your Personal Data directly to another controller, where this is technically feasible. This right only arises where: <ol style="list-style-type: none"> we process your Personal Data on the legal basis that it is necessary to perform our contract with you; and the processing is carried out by automated means. |

You can exercise any of these rights by submitting a request to **the Data Protection Officer, SOLAS, Castleforbes House, Dublin 1**. We will provide you with information on any action taken upon your request in relation to any of these rights without undue delay and at the latest within one month of receiving your request. We may extend this by up to 2 months if necessary, however we will inform you if this arises.

You have the right to lodge a complaint with the Data Protection Commission with regards to our processing of your Personal Data.

6. CHANGES TO THIS NOTICE

We may amend this Notice from time to time, in whole or part, at our sole discretion. Any changes to this Notice will be posted on the SOLAS CSCS/QSCS website at <http://www.solas.ie/Pages/CSCS.aspx>

If at any time we decide to use your Personal Data in a manner significantly different from that stated in this Notice, or otherwise disclosed to you at the time it was collected, we will notify you by e-mail, and you will have a choice as to whether or not we use your information in the new manner.

7. CONTACT US

If you have questions or concerns about this Notice, please contact the SOLAS Data Protection Officer at SOLAS Data Protection Officer, SOLAS, Castleforbes House, Dublin 1.

Construction Skills Certification Scheme

Skills Self-Analysis - CSCS Tower Crane - Part 1

Introduction

The aim of this form is to allow applicants to measure their knowledge and experience on the safe use of a Tower Crane against the questions below. This is to ensure that all those attending the One-day Trained Operator Programme have sufficient skills and knowledge to comfortably meet the required standards. This section **must** be completed and returned to the chosen Approved Training Organisation prior to attending the one-day training and assessment programme.

Instructions to the Applicant

Please take your time and answer all questions honestly, as dishonest answers mean that you may be un-successful on the course programme. On completion, add up the total number of questions you have scored as 'yes' and refer to the Assessment Grading which will analyse your knowledge and experience

Please answer **all** questions as indicated:

| | Yes | No |
|--|--------------------------|--------------------------|
| 1. can you identify and use all the controls correctly? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. can you extract information from the operators handbook? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. do you correctly carry out all pre-use and running checks? | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. do you know the purpose of an anemometer? | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. do you know how to read and interpret load or duties charts correctly? | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. can you explain the different methods of determining the weight of a load? | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. do you know what the recommended minimum distance is when working near power lines? | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. do you know what is meant by 'inter-arc'ing? | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. can you lift and place various loads very accurately in confined spaces? | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. can you explain what safety equipment is required and the safety procedures if accessing the end of the jib? | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. do you know how to set up an RCI/ASLI? | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. do you know at what wind speed will put your crane out-of-service? | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. have you lifted and placed various loads using the crane's full working reach? | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. do you know what is meant by 'load centre'? | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. can you recognise the approved hand signals? | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. can you explain how to control a load swing? | <input type="checkbox"/> | <input type="checkbox"/> |
| 17. do you know which motions are cut when an overload occurs? | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. do you know how the accuracy of the flags can be checked? | <input type="checkbox"/> | <input type="checkbox"/> |
| 19. can you shut down and secure the crane correctly after work? | <input type="checkbox"/> | <input type="checkbox"/> |

Yes total _____

Candidate Name: Date:

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Assessment Grading

If you have scored 15 – 19

You appear to have a good understanding of Tower Crane operations to comfortably participate on the trained operator course programme.

If you have scored 10 – 14

Your understanding of Tower Crane operations is limited and we advise that you acquire further knowledge before attending the trained operator course programme. Remedial training and further site experience is advised.

Less than 10

Your supposed understanding of Tower Crane operations is very limited and we strongly advise you not to attend the course until you have undertaken remedial or full training.

Assessment Requirements

Should a candidate have any particular assessment requirements i.e. need a translator or reader/writer or any other form of special needs, the approved training organisation **must** be informed well in advance of attending the one day programme so that the appropriate help may be sourced.

Information regarding a candidate's particular requirements will be treated with the strictest confidence by the approved training organisation.

REMINDER

Candidates must bring with them on the day:

- Passport sized photograph ☐
- Safe Pass card ☐
- Safety helmet ☐
- Safety boots ☐
- Reflective 'hi-viz' jacket ☐
- Gloves ☐

Further information and clarification may be obtained from the CSCS Unit Office or phone 01 5332500

| |
|--|
| Application Details CSCS Tower Crane - Part 2 |
|--|

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Section A

Applicant Details

Surname Forenames.....

Address

.....

..... Date of Birth:

Tel: PPS Number

Safe Pass Expiry Date:

Candidate Profile

Candidates for this programme must:

- Have at least six months full time experience operating as a trainee Tower Crane operator in construction in accordance with the 5th Schedule – of the Safety, Health and Welfare at Work (Construction) Regulations 2013 – S.I. No. 291 of 2013. The six months experience must be within the last two years.
- Possess a valid 'Safe Pass' registration card
- Possess a valid CSCS Slinger/Signaller registration card
- Be at least 18 years of age

Section B

Applicant Declaration

I confirm that the information detailed in this application, and any submitted information is valid, genuine and correct.

- I have at least six months full time experience operating as a trainee Tower Crane operator in construction within the last two years
- I am in possession of a valid 'Safe Pass' registration card
- I am in possession of a valid CSCS Slinger Signaller registration card
- I am at least 18 years of age

Please sign

Date:

Application Details - CSCS Tower Crane - Part 2

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Section C Applicant Experience

Please briefly list work carried out with a Tower Crane for at least six months, including dates and location of work.

| Dates from/to | Machine make & model | Location and brief details of work done |
|--|-------------------------|---|
| <i>Example</i> <i>9 Jan</i> <i>14- 22</i> <i>May</i> <i>2015</i> | <i>Potain EH13</i> | <i>Barron Builds, Kilty Street, Dublin.</i> <i>Moving and placing loads and skipping concrete into office</i> <i>block development.</i> |
| | | (continue on a separate sheet if needed) |

Endorsement of Operating Competence – Tower Crane - Part 3

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Applicant Name.....

This endorsement of operating competence must be completed by an existing or previous employer. This part can only be completed by a supervisor or line manager of the employer. The endorsing individual should only initial the statements where they can confirm that the applicant can carry out the work. Some endorsements may require the initials of more than one endorser. Copies of this form may be made if there are more than two endorsers signing.

Each statement must be initialled by the endorser. The applicant can only be considered competent providing **all** statements are signed by one or more endorsers in the Endorsers details section.

| I consider that the above named applicant is able to competently: | Initials |
|---|----------|
| 1. Check, inspect and maintain the tower crane for efficient and safe use under construction site conditions | |
| 2. Understand and interpret duties/load charts and safe load indicators | |
| 3. Place the tower crane into service | |
| 4. Understand and establish safe use of lifting Accessories | |
| 5. Lift and place a variety of loads accurately and safely using the full radius and working range of the tower crane | |
| 6. Follow given instructions and signals when working with the tower crane | |
| 7. Shut down, secure and leave the tower crane in a safe condition | |
| 8. Follow manufacturers requirements when working with the tower crane | |

Endorsers Details

Full Name:

Company name and address:

.....

Position: Contact Tel no:

Relationship to Applicant.....

The named individual signing this section must be in a supervisory or managerial position, nominated by the employer organisation.

Declaration

We/I the employer confirm that:

- the applicant has at least six months full time experience operating as a trainee Tower Crane operator in construction within the last two years
- the applicant is in possession of a valid CSCS Slinger Signaller registration card
- the applicant is in possession of a valid 'Safe Pass' registration card
- the information detailed in this application, and any submitted information is valid, genuine and correct.

Signature

Date:

Practical Test Specifications – Tower Crane - Part 4

Equipment and Resources

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- Serviceable crane meeting current legislation which must have an under-hook height of not less than 14 metres, with the operator's and other appropriate manuals.
- Suitable loads of known weights, being:
 - 1 x load which must be a minimum of 75% of the cranes maximum working capacity at full radius - **Load 1**
 - 1 x load which must be within the duties chart for 2 falls of rope - **Load 2**
 - 1 x load being a tube or structure not less than 5 metres in length with two lift points, one at each end – **Load 3**
- A test area with a high structure between the lifting and landing places having have a minimum height of 5 metres, and able to carry out 'blind' lifts.
- An anemometer or other device to check the wind speed.
- A Qualified CSCS Slinger/Signaller for assistance with 2-way radios.
- Suitable certificated lifting gear for all loads.

Tasks

The Candidate needs to:

1. Carry out full pre-use checks as required by the manufacturer.
2. Put the crane into service.
3. Set the crane to lift **Load 1**. The load is to be positioned at a distance of not less than 90% of the full radius of the crane. Lift **Load 1** and slew for a minimum of 90 degrees. Place the load at minimum radius. When landed detach the load.
4. Set the crane to lift **Load 2**. The load is to be positioned at mid radius. Lift **Load 2** and place into a given position at least 75% of full radius. The route is to include lifting over a high structure of not less than 5 metres in height. Once landed return the load back to its start point and detach.
5. Set the crane to lift **Load 3**. The load is to be positioned at minimum radius. Lift **Load 3** and rotate the crane through a minimum of 360 degrees keeping minimum radius.
6. Set the crane to lift a load from a designated position, and land in a position out of sight of the candidate. On completion lift and land the load at the original start point.
7. Retrieve a 2 metre swing that has been induced, for a minimum of 1 x swing in a left to right plane and a minimum of 1 x swing in a forward to reverse plane.
8. Demonstrate changing the number of falls on the hook block from 2 to 4, or 4 to 2.
9. Put the crane out of service in the correct order and secure.

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Time

The candidate must complete all tasks within 1 hour.

Example of practical Assessment marking sheet

| |
|---|
| 1. Carry out pre-use checks and running checks |
| 2. Climb up to and descend from the cab correctly |
| 3. Put the crane into service correctly |
| 4. Confirm the signal arrangements with the signaller |
| 5. Check all crane operations and limit switches prior to lifting loads |
| 6. Demonstrate combined control use |
| 7. Place all loads at the given points within the given tolerance |
| 8. Conform correctly to given hand signals and verbal communications |
| 9. Correctly carry out shut down and securing procedures |
| 10. Complete the test in the given time |

Construction Skills Certification Scheme

Safe Lifting Operations



Tower Crane

Construction Skills Certification Scheme

Safe Lifting Operations

Tower Crane

Published by
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The Construction Skills Certification Scheme Unit has made every effort to ensure that the information contained within this publication is accurate. Its content should be used as guidance material and not as a replacement for current regulations.

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Printed in 2013

Receipt

I have received a copy of the CSCS Safe Lifting Operations – Tower Crane notes and agree to read it carefully and comply with all the guidance and advice on safety and good working practices which it contains.

| | |
|-----------|--|
| Signature | |
| Full Name | |
| Date | |

| | |
|---------------------------------|--|
| Name of Company or Organisation | |
| Address | |

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Acknowledgements

Extracts from BS 7121: Part 1 are reproduced with the kind permission of the British Standards Institution. Complete copies can be obtained by post from B.S.I. Sales, 389 Chiswick High Road, London W4 4AL.

Extracts and illustration by kind permission of:

- CITB-ConstructionSkills
- Construction Plant-hire Association.

Introduction

This guide for safe Tower Crane operations has been produced for plant operators. It sets out to provide guidance in an easy to read form, paying particular attention to the duties of the Tower Crane operator. It covers a wide range of operating conditions and activities, and aims to promote safe working practices which comply with current legislation and the precautions to be taken if accidents are to be avoided.

Specific sections on the preparation and operation of Tower Cranes contain readily accessible information in a checklist format with a simple **Do's** and **Don'ts** message.

This guide complements manufacturers' instructions and recommendations with regard to:

- general safety legislation and safe working procedures for Tower Crane operators
- safe and efficient use of Tower Cranes
- basic operator maintenance.

Manufacturer's operating manuals must always be used for the relevant machine and referred to as and when required. The manufacturer of the machine has no direct control over the operation of the machine – *it is the responsibility of the operator to work safely at all times.*

This guide does not attempt to try to cover every aspect of working conditions when using Tower Cranes and does not cover every make and model of Tower Crane available.

1. Safety, the law and you

This section provides guidance for employers, employees and the self-employed who use mobile plant equipment. Minimum legal requirements are outlined which relate to the safe use of mobile plant. Various Acts of the Oireachtas and statutory requirements, examples of which are listed below, provide the definitive legislation to be followed.

Legislation

Legislation to be followed includes the Safety, Health and Welfare at Work Act 2005 (SHAWWA). Parts of the Act and other regulations connected with the operation of plant include:

- *General Duties of Employer*
- *General Duties of Employee and Persons in Control of Places of Work*
- Protective and Preventive Measures
- Safety Representatives and Safety Consultation
- The Health and Safety Authority
- Offences and Penalties

All Health and Safety rules also apply to self-employed persons.

Regulations and Codes of Practice

Regulations made under an Act of the Oireachtas are mandatory

Safety, Health and Welfare at Work (Construction) Regulations 2013 S.I No. 291 of 2013 include

- Design and Management
- General Duties of Contractors and others
- General Safety Provisions
- Excavations, Shafts, Earthworks, Underground Works and Tunnels
- Cofferdams and Caissons
- Compressed Air
- Explosives
- General Health Hazards
- Construction Work on or Adjacent to Water
- Transport, Earthmoving and Materials-Handling Machinery and Locomotives
- Demolition
- Roads
- Construction Site Welfare Facilities
- SCHEDULE 4 - Safety Awareness Scheme
- SCHEDULE 5 - Construction Skills Certification Scheme
- SCHEDULE 6 - Procedure for Selection of Site Safety Representatives
- SCHEDULE 7 - List of Machinery

- **The Safety, Health and Welfare at Work (General Application) Regulations 2007 S.I. No. 299** include:
- Workplace and Work Equipment
- Use of Work Equipment
- Personal Protective Equipment
- Manual Handling of Loads
- Display Screen Equipment
- Electricity
- Work at Height
- Control of Noise at Work
- Control of Vibration at Work
- Safety Signs at Places of Work
- First-aid
- Explosive Atmosphere at Places of Work

The introduction of the above legislation, which protects people at work and those who may be affected by their actions, has helped to improve our working environment.

The legislation concerns employers, employees and the self-employed, and makes people responsible for their actions, as well as their omissions, including others affected by their actions.

Regulations made under an Act of the Oireachtas are mandatory and may be supplemented by an Approved Code of Practice (ACoP), which advises organisations and their staff on how to comply with the law.

If the advice of the ACoP is followed then generally you are meeting the requirements and complying with the law. If you, or your organisation, are prosecuted for breaking a health and safety law and it is proven you did not follow the advice in the ACoP, you must prove you have complied with the law in another way.

Penalties can be imposed on persons who are found guilty of a Health and Safety Offence (on summary conviction), which may include:

- a fine
- a term of imprisonment.

Penalties may be imposed for:

- disobeying a Prohibition notice
- unauthorised disclosure of information
- a breach of the conditions of a licence.

Duties of personnel

It is in the interest of every employer and employee involved in the use of plant and equipment to promote safety within their workplace.

Legal duties of employers

'Every employer shall ensure, so far as is reasonably practicable, the safety, health and welfare at work of his or her employees.' *

Employers have a duty to:

- provide a safe working environment that is without risk to health
- provide and maintain safe plant and equipment and ensure it has been designed, constructed, tested and examined to be safe
- carry out risk assessments and provide their employees with clear and appropriate information on any risks that exist in the workplace and how they intend to reduce those risks
- prepare a safety statement based on the risk assessment
- provide suitable protective clothing and equipment (PPE) to ensure the health and safety at work of their employees. *'Every employer shall ensure that any measure taken by him or her relating to safety, health and welfare at work do not involve financial cost to his or her employees'* *
- provide employees with any necessary information, including legal requirements, adequate instruction, training and supervision *'in a form, and manner and, as appropriate, language that is reasonably likely to be understood by the employee concerned'* *
- obtain the services of a competent person for Health and Safety purposes
- provide adequate welfare facilities

***Source:** Safety, Health and Welfare at Work Act 2005

Legal duties of employees

In general terms, the law says that you must:

- be responsible and as safe and careful as possible in your work, so as not to put the health and safety of yourself or others at risk, including members of the public
- co-operate with and assist your employer or any other person, as far as necessary, to enable them to carry out their legal duties in health and safety
- not interfere with or misuse any safety devices or equipment
- not intentionally or recklessly interfere with anything provided in the interest of health, safety and welfare
- follow your employer's procedures and the manufacturer's instructions which apply to the care and safe operation of the machine you are responsible for
- inform your employer, without unreasonable delay, of any work situation that you are aware of which presents a risk to the health and safety of yourself and others
- report (without delay) any defects in plant and equipment which might endanger safety.

All Health and Safety rules also apply to self-employed persons.

2. Accident prevention and control

Accidents are unplanned, unwanted events which can injure or kill people. Industry also pays a price with loss of working hours, loss of production and damage to plant and equipment and extra costs.

Remember that **you** as a Tower Crane operator **are the key to safety**: good safety practices not only protect you but also protect others around you.

Accidents can be caused by unsafe working practices and attitudes of people in the workplace. By following a safety programme and adopting safe working practices, unsafe conditions can be avoided. This contributes to improving safety in the workplace.

Prevention can remove or reduce the likelihood of an accident by following some basic rules, for example:

Do

- Protect yourself – wear all protective clothing and personal safety equipment issued to you or required by your working conditions
- Follow a safety programme – understand and follow safety procedures when working on site and using plant and work equipment
- Assess your ability to do the job – ensure you are fully aware of the job requirements and how they need to be carried out
- Stay alert – know where to get help. Know the first aid and emergency procedures
- Make yourself aware – study the manufacturer's information and your company's operating instructions and procedures for using your plant and equipment. If the information is not provided, ask your supervisor or the suppliers of the plant/equipment to supply it
- Report faulty/unsafe plant or equipment and any dangerous occurrences and incidents
- Use the equipment safely so as not to affect its condition or use
- Be careful – human error is caused by carelessness, fatigue, preoccupation and lack of concentration. Ensure you watch out for others who are affected by your actions
- Ensure all personal injuries, no matter how slight, are reported and entered in the accident book (or equivalent)
- Take advantage of any training programme offered by your employer or contractor. You are never too old to learn new practices or techniques

Don't

- Use plant or work equipment that you have not been trained to use
- Overload any plant or work equipment either by lifting or loading
- Use or treat equipment carelessly or in an unsafe manner
- Throw or drop objects from plant or work equipment
- Attempt to carry out work on moving parts of plant or work equipment with the safety guards removed
- Indulge in horseplay on plant or work equipment
- Attempt to use any type of plant or work equipment if you are under the influence of drugs, alcohol or any other substance which affects your health or judgement
- Ignore warning instructions or safety signs

3. Safe use of Tower Cranes

If you are an operator of a Tower Crane you are legally required to be responsible for your own safety and that of others who are working nearby.

Common sense plays a major part in the safe operation and working of a Tower Crane. All operators should be aware of dangers and hazards, which could injure them or other site workers nearby, or cause damage to the machine.

Operators of Tower Cranes are responsible at all times for the safety of their machine and its load.

Simple measures taken by yourself, your employer and by following some basic rules can reduce the possibility of risk. For example:

Do

- Comply fully with instructions given by site managers and supervisors
- Follow the manufacturer's instructions (operator manuals) for the Tower Crane you are operating
- Take safety precautions when using your machine prior to, during and after work
- Operate within the machine's capabilities.

Don't

- Operate any machine unless you have received appropriate training and are authorised to do so
- Ignore hazards
- Misuse, tamper or interfere with your machine and any associated safety equipment provided to you
- Endanger your own health and safety, or that of anyone else, through being negligent.

Before use

- Always check that the Tower Crane is serviceable and safe to use
- Carry out daily checks and maintenance
- Check working areas for hazards and obstacles, which could affect the operation of the Tower Crane.

Operation

Do

- Ensure you are briefed on the access procedure to be followed for the specific Tower Crane you are operating
- Ensure there are adequate communication arrangements in place so that you are advised when anyone (e.g. service engineer) is about to climb the tower
- Ensure all accessible areas of your Tower Crane are kept clean and free of all loose materials at all times and the cab is free from paper and combustible materials
- Where it is essential that materials or components remain for operational or safety reasons, ensure that they are secured in such a position that they do not present a slip, trip or falling object hazard
- Ensure where stocks of small materials are required on your Tower Crane (such as grease guns, grease cartridges, hydraulic fluid, gloves etc.), they are stored in a secure, weatherproof container, which is usually mounted on the counter jib or other suitable area
- Comply with risk assessments and method statements for general access procedures to your Tower Crane
- Stop work if any defects noted are likely to affect the operational safety of the Tower Crane.
- Ensure you only operate your Tower Crane if you have good visibility of the load and surrounding areas. Work must be suspended if it is impossible to follow the load hook because of smoke, fog, lack of light or material obstacles
- Ensure fencing/barriers are maintained around the base of the crane to restrict access to pedestrians or damage from the workplace
- Check that all safety devices work correctly prior to starting work
- Ensure you always operate within the rated capacity of your machine (refer to the manufacturer's operating manual)
- Ensure before lifting a load that the hoist line is plumb – failure to do so could affect the stability of the crane or introduce loading (stresses) into the Tower Crane for which it has not been designed
- Make sure all personnel stand clear of the load as it is lifted
- Use all controls gently and avoid shock loading to the Tower Crane
- Take care to prevent pendulum swinging of the load by careful control of the operating motions to match the swing of the load, and keep it under control at all times
- Enlist the services of a slinger/signaller or competent person to assist you with the movement of the load as necessary. Tag lines should be attached to the loads by a slinger/signaller or competent person, where movement of the load during lifting operations may be hazardous

Rescue of personnel from height on Tower Cranes

The rescue of personnel from height on Tower Cranes, although required infrequently, should be planned for wherever Tower Cranes are being erected, dismantled or in use. Legislation requires that safe systems of work are in place for all work activities. It is essential that all rescue from height on Tower Cranes is carried out by adequately trained personnel, who should be available on site at all times when rescue may be required. Details of the rescue plan should be recorded in a method statement, which should be specific for each type and model of crane. You, as an operator, may have been trained in the use of fall-arrest equipment or restraining equipment to deal with such an emergency. Ensure you are familiar with the method statement and any associated risk assessments, so that you know the procedures to follow in an emergency.

Don't

- Allow any unauthorised persons to access the jib or counter jib of the Tower Crane, unless you have given them permission to do so
- Permit anyone to operate the Tower Crane who is not trained and authorised to do so
- Lift or travel the load over people or allow them to stand or pass under the load
- Use the hoisting, slewing, traversing, luffing or travelling motions to drag any load along the ground with the hoist rope out
- Allow the hook block to drop heavily on top of the load or on the ground. This will cause slack rope and the hoisting rope will no longer wind neatly on the block
- Allow anybody to work under any raised loads
- Transport people with the load, on the hook block, slings, chains etc.
- Indulge in games or horseplay
- Use your Tower Crane as weighing scales to find out if the weight of the load is over the crane's capacity. This will cause the load limiters to function
- Ignore the warning light and audible warnings of the Automatic Safe Load Indicator (ASLI). When the alarm sounds the crane has already been overloaded
- Leave the machine unattended whilst there is a load suspended from the hook.

After use

- Shut down in accordance with the manufacturer's recommendations and your company's procedures
- Leave the Tower Crane in the correct out of service condition and vaning position (as applicable to the specific type of Tower Crane e.g. saddle jib, luffing jib).

Note: As an operator of a Tower Crane you should be aware that there are regulations concerning the use of cranes or lifting appliances. Your machine and the lifting gear you use will require certification to carry out lifting duties. The regulations are quite clear on what items require certification. You or your company may be requested by your client to produce this certification before you commence work or during work activities on site. You should always comply with this request. If you are unsure what to do in this situation consult your supervisor for further guidance (see Appendix B for statutory certification requirements).

Additional precautions to be followed for Tower Crane

Do

- Communicate regularly with your work colleagues and others, and keep them informed of what you will be doing
- Ensure that if hand signals are to be used to communicate they are approved and understood by everybody involved (see appendix A for illustration). Ensure that radio equipment to be used is fully charged at the start of every shift
- Make sure wherever possible that the Tower Crane is operated whilst you are stationary
- Ensure you work within the minimum clearance required for working near overhead power cables. Check with site management and the local electricity supplier
- Ensure you check that the selected crane configuration is correct for the load you are lifting
- Keep at least two turns of wire rope on the hoist drum(s) when operating
- Pay particular attention (operators and signallers) to possible dangers of persons working out of sight
- Remember! A slight swing or movement of the load, due to wind or uneven ground, can cause the crane to be overloaded and then the margin between overload and tipping is minimal
- Remember! Safety devices are not working devices. They should only operate in exceptional circumstances in order to avoid the effect of an incorrect operating procedure
- Use the services of a slinger/signaller to assist you if visibility is restricted, or there are obstructions in the vicinity
- If there has been heavy rain or high winds during the night, ensure you look for any signs of movement at the base of your Tower Crane and make sure the water has drained away
- In hot weather: check that soil shrinkage has not altered the state of the base – request to have it filled in and compacted where necessary

Don't

- Allow any misunderstanding between the slinger/signaller/competent person and yourself when using radio signals. Signal strength should be checked at the beginning of each shift before lifting operations have started
- Attempt to operate the crane at conditions exceeding those shown on the rating chart. Any such operation could cause the crane to tip over, cause structural damage that could cause injury or death
- Rely solely on audible alarms and warning devices and indicator aids. They are no substitute for following the rated lifting capacity charts, operating instructions and safe operating practices

- Ever let the load or any other object make contact with the jib
- Allow the load to hit or catch anything
- Leave a load suspended on the hook of your Tower Crane
- Work with winds over the recommended service wind limit set by the Tower Crane manufacturer. When this limit is reached, the Tower Crane must be put out of service.

4. Operator servicing and maintenance duties

The Operator's contribution to maintenance of the machine is of prime importance.

It is essential that adequate time and facilities are provided to carry out maintenance of your machine. Supplies of materials and substances (oils, greases, coolants etc.) should always be to hand, with suitable provision for storing them.

All maintenance should be carried out in accordance with the manufacturer's recommendations and your company's procedures.

Whatever system of maintenance and servicing is used, all operators have the responsibility to ensure the machine is in a safe condition for work.

Daily pre-use checks: At the beginning of each shift or working day, before work commences, the following visual and functional routine checks, if appropriate for the type of Tower Crane, should be carried out:

- as required by the manufacturer's handbook
- cleanliness and general signs of damage
- lubrication (as required by the manufacturer's handbook)
- visual check:
 - the ground supporting the base
 - that the base is level
 - condition of rails (rail mounted cranes only)
 - base fencing
 - condition of the power supply cable
 - wire ropes, anchorages and hook block
- wire rope spooling on the winch drums
- security of any pin/bolt locating arrangements and for visible damage to the structure
- no load operation of the crane motions to check correct functioning of motors and brakes and for movement during slewing
- correct functioning of controls and safety devices.

A record of the daily check should be kept (for example on a timesheet) and a defect reporting system should be in place so that any defects are reported and rectified promptly.

Intermediate (weekly) inspections:

- All structural parts should be sound and free from visible defects. The structure should be inspected for damage, loose or missing retaining pins, damaged hoses and wiring, and any loose or missing fittings
- Hydraulic systems (if fitted) should be free from leaks
- Hydraulic fluid levels should be checked where accessible
- The base structure, including any safety guards, should be free of damage and clear of debris
- The crane base should be level. Any stabiliser support plates should be firmly founded, the screw jacks in good condition and locked.

Note:

For Tower Cranes installed on tracks, place the fixing retaining devices on them when work is stopped to avoid movement due to unexpected wind conditions.

For Tower Cranes installed for travel along rails, check that the rails are kept in good condition and are free from any obstacles.

Do not attempt any major maintenance, repairs or adjustments to your machine which you are not authorised to carry out. This must be done by a suitably qualified and competent person!

5. Tower Crane safety checklist

Safety starts with you. Remember! You, as a Tower Crane operator, are the key to safety. You are legally responsible for your own safety and that of others working nearby.

Accidents are unplanned, unwanted events, which can injure or kill people. Simple measures taken by your employer and yourself can reduce the risk of them happening.

Fines can be imposed on your employer and yourself for breaching Health and Safety Regulations. In some instances it can also lead to imprisonment.

Ensure the weight of the load has been established before attempting to lift it.

Lifting gear and accessories must not be used unless they are certified and suitably marked, identifying the safe working load.

Irregular shaped loads should be treated with care. Their centre of gravity will need to be established to ensure safe and secure lifting.

Frequent functional checks should be carried out on your Tower Crane in cold conditions and low temperatures.

Travel the routes which the moving loads will be taking and agree with your slinger/signaller/competent person the safest routes for the loads to take and check for any additional hazards.

Idle crane – follow the specific manufacturer's instructions for putting the crane into an idle condition. You as a Tower Crane operator, are responsible for the security of your crane when it is not being used.

Never attempt to exceed the rated lifting capacity of your Tower Crane.

Give warnings to all persons to keep clear of the load prior to the start of the lift and during the movement of the load. Use appropriate methods of communication. Use approved hand and radio signals and ensure they are agreed and understood by everybody involved. Ensure that radio equipment to be used is fully charged at the start of every shift.

Observe all warning/safety signs and other activities on site.

Personal protective equipment (PPE) should be worn at all times.

Ensure you check that the selected crane configuration is correct for the load you are lifting.

Record all accidents (no matter how slight), faulty/damaged plant and equipment and any dangerous incidents. Stay alert, know where to get help, know the emergency procedures on site.

Always follow the movement of the load visually and even the hook when the crane is under no load conditions. When this is not possible, use the services of a slinger/signaller/competent person to co-ordinate and control the movement of the load.

Test all safety devices and operating functions on your Tower Crane before attempting the first lift of the day. Take nothing for granted.

Inspect your Tower Crane and working area at intervals before use to spot any defects, hazards or distractions – take nothing for granted.

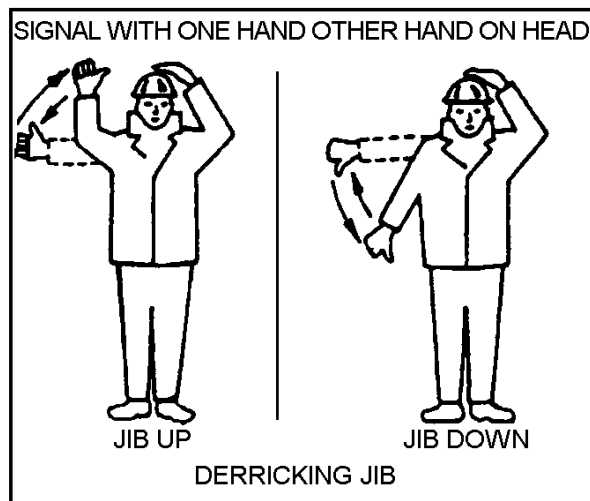
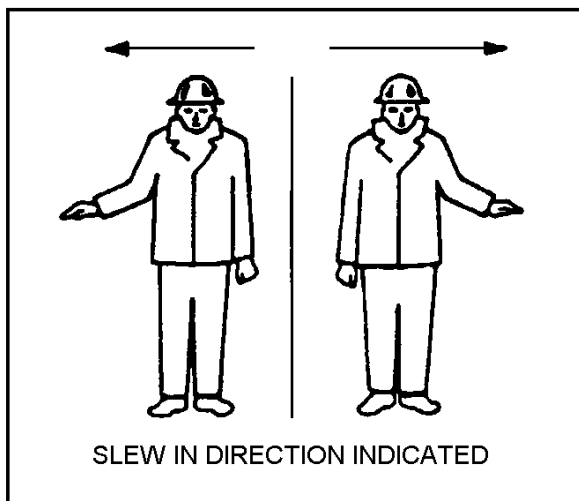
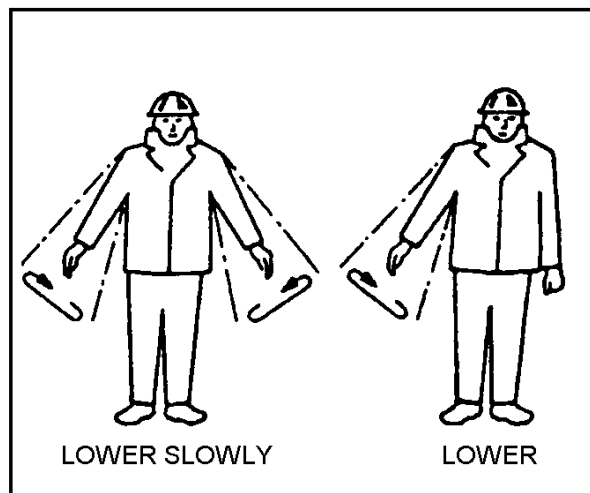
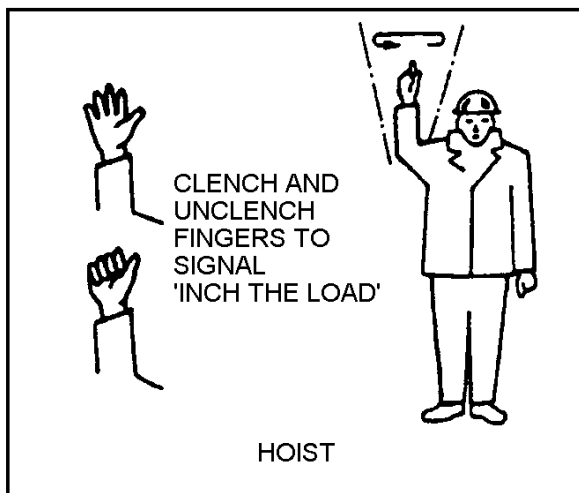
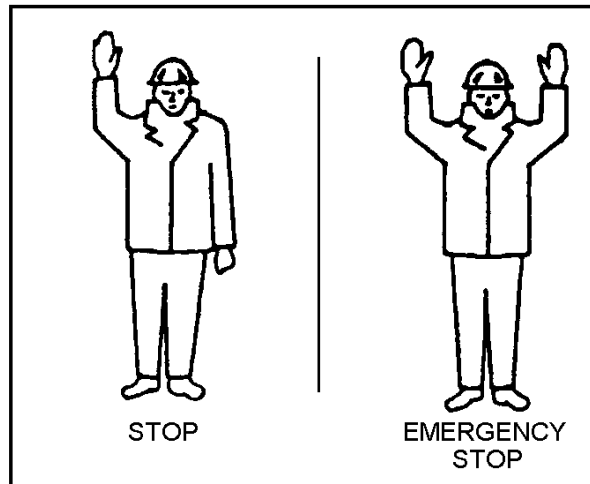
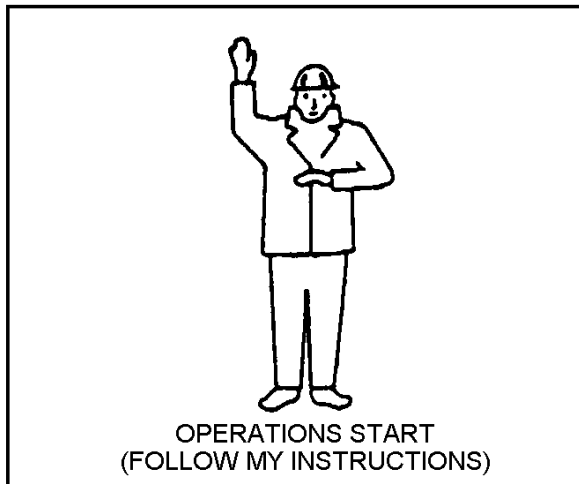
Out of service procedures should be followed when your Tower Crane is unattended, not in use or at the end of a shift. Refer to the manufacturer's recommendations for out of service procedures.

Never carry out a lifting operation if it is likely to endanger yourself and others (even if requested by work colleagues to try and cut corners on a job). If in any doubt seek guidance from your supervisor.

Shut down and secure your Tower Crane in accordance with the manufacturer's recommendations and your company's procedures.

APPENDIX A

Recommended crane signals

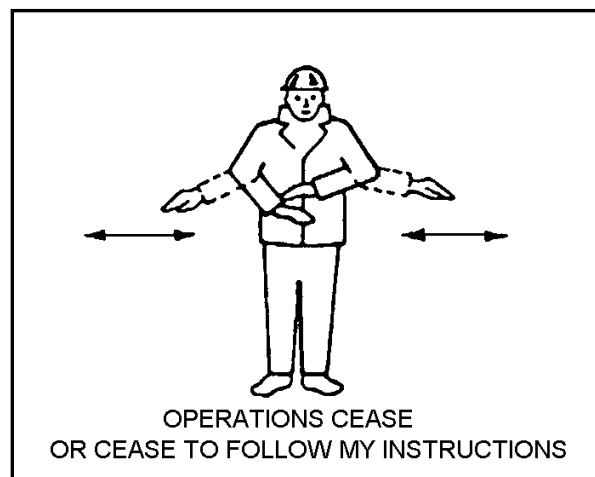
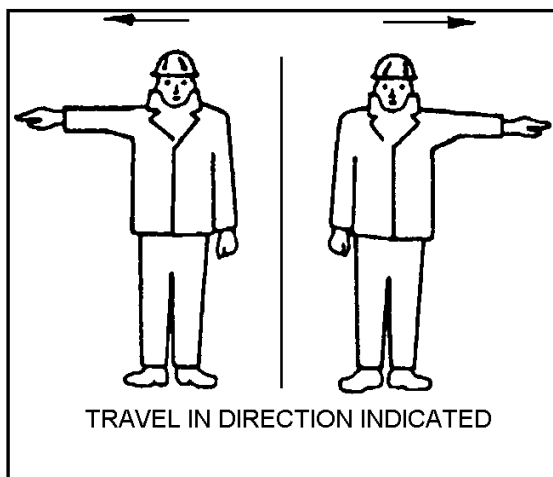
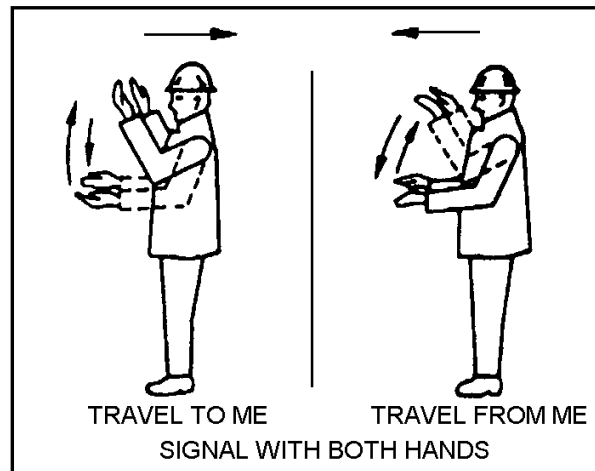
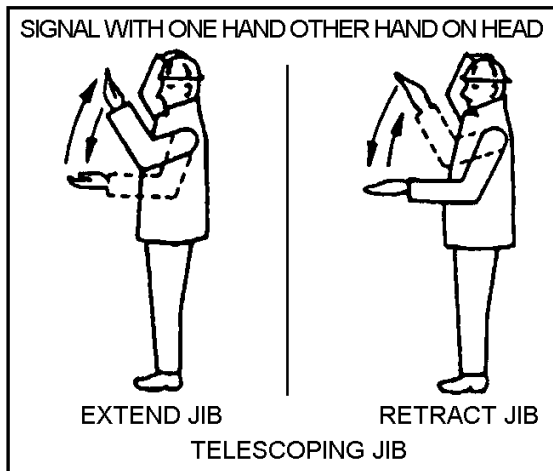


Note:

The signaller should stand in a secure position where he/she can see the load and can be seen clearly by the driver and should face the driver if possible. Each signal should be distinct and clear.

APPENDIX A

Recommended crane signals (continued)



APPENDIX B Statutory forms required for contractors'

- The Safety Health and Welfare at Work (General Applications) Regulations 2007 came into operation on 1st November 2007 and are quite clear on what items of plant require certification.
- Forms for recording Tests/Inspections are no longer prescribed. Any form can be used provided it contains the information specified in Part E of Schedule 1 of the Regulations

Lifting Accessories

| Regulation No | What is it | Who completes it | When is it required |
|-----------------|--|--------------------------|--|
| 57. [1] (a) (v) | Certificate of Test & Examination | Manufacturer / Supplier. | When supplied and while Lifting Gear is in use. |
| 57. [1] (a) (v) | Report of Results of thorough examination of: Chains, Ropes and Lifting Gear | Competent Person. | Every six months. |
| 57. [1] (i) | Report of annealing or appropriate heat treatment of: Chains and Lifting Gear | Competent Person. | When Heat Treated and at intervals as specified by the Competent Person. |

. Notes:

- Lifting accessories include: chains, chain slings, rope slings (except a fibre rope sling), or similar gear, rings, links, hooks, plate clamps, shackles, swivels and spreader beams etc.

A Certificate of Test and Examination is not required for a fibre rope or a fibre rope sling. Regulation 57 states "in the case of a fibre rope or a fibre rope sling, information from the manufacturer on its safe working load is available" and "it is marked in plain legible figures and letters with a Safe Working Load and a means of identification."

Tower Crane

| Regulation No | What is it | Who completes it | When is it required |
|-----------------|--|-------------------|--|
| 43. [1] (e) (i) | Certificate of Test & Thorough Examination of: Crane. | Competent Person. | Each time crane is erected, every 4 Years or after substantial alteration /repair. |
| 52. [3] | Report of Results of thorough examination | Competent Person. | Every 12 months or after substantial alteration or repair. |
| 43. [1] (f) | Report of results of weekly inspection of | Crane Operator. | Weekly. |

Note:

Certificates of test and examination of all Crane ropes, including derrick, suspension and hoist, should be available for inspection by the competent person. The regulations do not specifically require it but best practice does.