



TITLE: Lifting Operations (Personnel & Planning)	STANDARD:	221
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Definitions (in relation to this Standard)

Competent	Trained, experienced and qualified
Lifting Operation Equipment	Cranes and all other associated lifting tackle equipment such as spreader bars, lifting frames, spacers, slings, strops, chains and shackles

Cross-References

- Procedure 222 – Lifting Operations (Mobile & Tower Crane)

Standard

Lifting Personnel

1. Appointed Competent Person (Lifting & Rigging) shall:
 - Be either a competent civil, mechanical or structural engineer who has additional 3rd party training certification that provides evidence that they are suitably qualified for rigger classifications as detailed in standard 3 below. The appointed person must have suitable experience for the works to be undertaken, and shall be interviewed for approval by Royal Commission ES&H Department prior to any lifting operations being undertaken.
 - Assess and plan all lifts with regard to selection of crane, lifting tackle, load, instruction and supervision
 - Devise and compile all lift calculation sheets and/or Lift Plans
 - Be in overall control of all lifting operations
 - Ensure that an effective procedure is in place for inspection and maintenance of all lifting operation equipment
 - Ensure that an effective procedure is in place for reporting of defects and all subsequent remedial actions for all lifting operation equipment
 - Be present on site for all lifts over 10 tonnes
 - Be authorized to cancel / postpone lifts if there are safety concerns
2. Crane Operators shall:
 - Hold a valid and in-date Saudi Government heavy equipment operator's license
 - Be trained to operate the specific crane (make & model) by examination and hold a current approved certificate / license from an approved and internationally recognized source
 - Be competent and authorized to operate the crane
 - Be physically fit and capable of operating the crane safely

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- Be authorized to cancel / postpone lifts if there are safety concerns

3. Banksman / Slingers / Riggers shall:

- Be trained, experienced and hold a current approved certificate / license from an approved and internationally recognized source
- Be able to determine the weight, centre of gravity and characteristics of a load
- Be able to inspect and determine whether associated lifting equipment is damaged
- Be familiar with different and correct slinging techniques
- Know correct hand signals (recognized signals are at Appendix 1)
- Be authorized to cancel / postpone lifts if there are safety concerns
- Complete a "Rigger's Daily Checklist" daily as per Appendix 5
- Rigger Class 3 – below 10 tonne
- Rigger Class 2 - 10tonne – 39tonne
- Rigger Class 1 – 40tonne and above

Lift Planning

4. **Any** lift where the payload weight is 10 tonnes or less requires only a Lift Calculation Sheet; this single page document requires sign-off, as a minimum, by the Contractor Appointed Competent Person and Crane Operator prior to work commencing. An example of a Lift Calculation Sheet is at Appendix 2.
5. **Any** lift where the payload weight is over 10 tonnes and less than 50 tonnes requires an industry-standard Lift Plan to be submitted to and received by Royal Commission for approval a minimum of 2 working days prior to work commencing. Requirements of a Lift Plan are at Appendix 3.
6. For all Lifts that are "Critical", Lift Plans must be submitted to and received by Royal Commission for approval a minimum of 24 working days prior to the lift taking place, for forward transmission onto Bechtel Equipment Operations for approval by a Rigging Engineer.
7. "Critical" Lifts are defined as:
 - All lifts where the payload is over 50 tonnes
 - Any tandem (2 or more cranes) lifts (including unloading of delivery vehicle)
 - Any lift regardless of payload weight, where the crane capacity is 88% or over
 - Any lift over live feedstock pipelines, unclosed roads & carriageways or occupied facilities.
 - Barge cranes

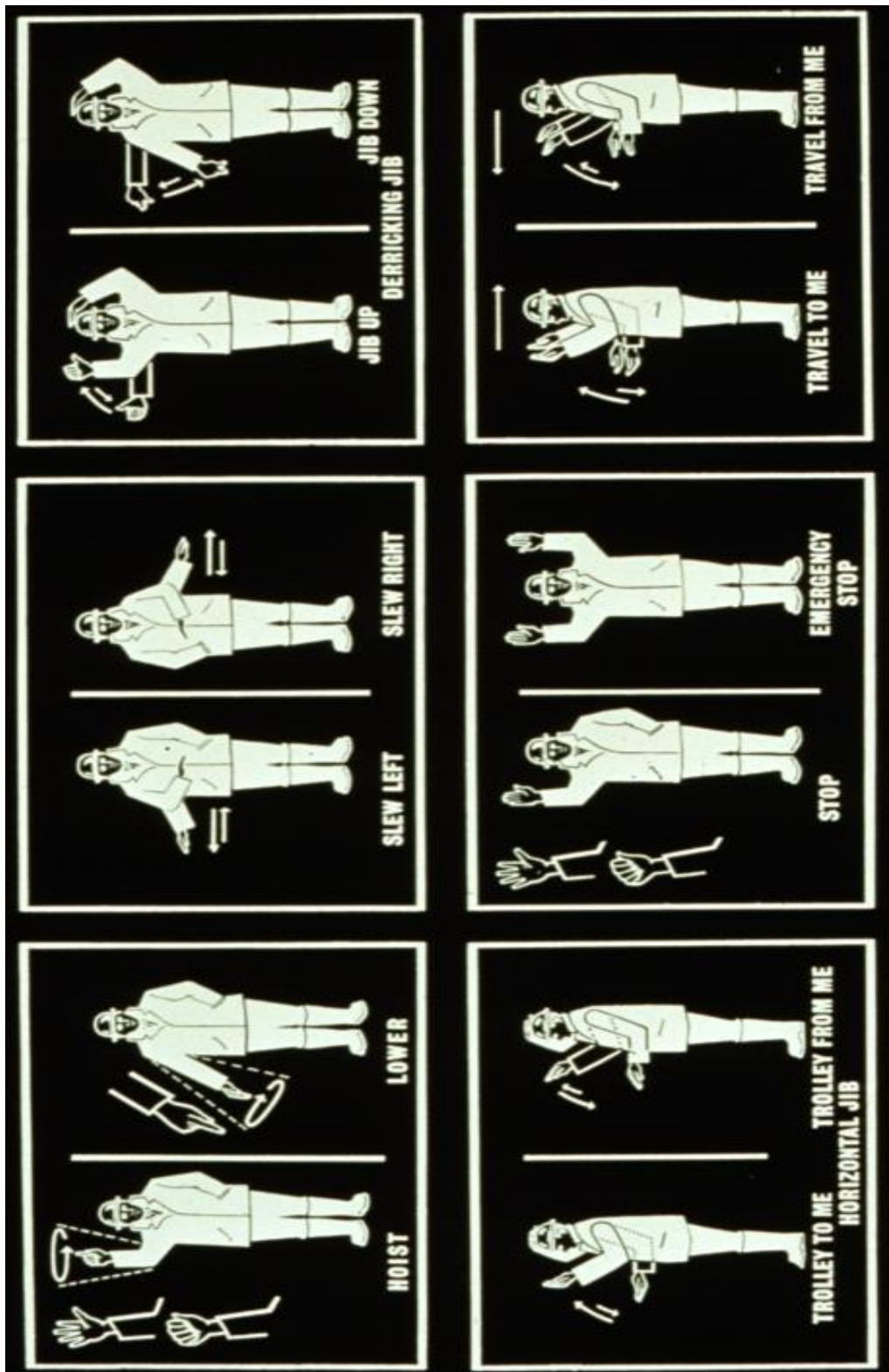
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Construction ES&H Manual

Crane Signals



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Requirements of a Lift Plan

Introduction

Brief Description of Task

Crane

Technical details of crane to be used
Copy of manufacturers Crane load chart
Copy of manufacturers Weather restrictions (Inc. wind speed)
Copy of 3rd party certificate of crane
Copy of crane operator license
Copy of rigger training qualification / license

Load & Rigging

Details of load, including center of gravity
Plan & elevation view of load (including proposed attachments & rigging)
Copy of inspection certificates for all lifting operation equipment to be used on the lift
Sling angle calculations
Lifting point calculations

Contract Lifts

Any conditions / provisions required by crane contractor (if applicable)

Site

Site layout and conditions

Hazard Identification

Risk assessment (to include control measures required for identified hazards)

Lift

Safe Sequence of Work of actual lift (logical detailed process)
Drawings: - Plan view of lift, Elevation view of lift
Lift Calculation Sheet
Ground bearing pressure calculations
Test lifts
Parts of line
Outrigger pad dimensions
LICCON software results
Any other calculations applicable (i.e. shear / bending moment calculations for adjacent structures affected by crane & earth pressures)

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